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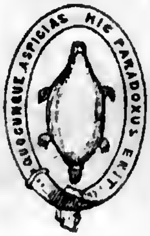
OF

NATURAL SCIENCE, AGRICULTURE, STATISTICS, &c.

VOL. III.



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Art. I. *On the occurrence of Trilobites in the Protozoic Rocks of New South Wales.* By the Rev. W. B. Clarke, M.A., F.G.S., &c.

In the address of the President, Sir R. I. Murchison, to the Geological Society of London, on 18th February, 1842, occur the following remarks* :—

" In that singular country, Australia, in which so large a portion of the existing terrestrial and marine fauna differ so essentially from those of every other region, it is curious to detect in the rocks many fossil Corallines and Mollusks closely analogous to the Silurian species of the British Isles; thus adding another proof to many we already possess, that the same climatological and physical conditions were very widely spread during the earlier ages of the earth."

And in a note it is added :—

" Although *Trilobites*, so characteristic of the protozoic era,

* Proceedings of the Geological Society, vol. iii, p. 645.

have not yet been detected, my friend, Mr. MacLeay, acquaints me that he has recently recognized the first fossil crustacean found in Australia, a macrourous decapode,"........" nearly allied to Thalassina," &c. [This specimen was found by one of the officers of H.M. exploring ships, on the north coast of New Holland.]

In the recently-published work of Count de Strzelecki, (1845) that author enumerates amongst the fossils of *his* "SECOND EPOCH" —"*Impressions of Trilobites, not exceeding half an inch.*"

This is all that has been announced in Europe, so far as I know, respecting the occurrence of Trilobites in New South Wales.

But in the year 1843 it was stated, in an article in the *Sydney Morning Herald*, that the author of this notice had discovered specimens of those crustaceans, but the locality was not mentioned. The date of my first finding these Trilobites was 2nd December, 1842. They occurred in a micaceous sandy mudstone, or shale, on the right bank of the Paterson River, at a spot called Burragood. Associated with them were Spirifers, Orthides, a Mytilus, and abundance of fragments of encrinital stems of different species. The size of the Trilobites, of which I found several species, chiefly *Trinuclei*, varied from that mentioned by Strzelecki to that of an inch. In the beginning of 1845 I again searched the same locality, and was rewarded by the discovery of other species, and amongst them of an Asaphus. Mr. MacLeay has honoured me by calling one species Trinucleus *Clarkii*. The Trinucleus is the characteristic genus of Trilobite in the Lower Silurian formations.

During the present month (May, 1846) Capt. P. P. King, R.N. has shown me a rock similar to that of Burragood, from the neighbourhood of the Murrumbidgee, and not far from Queanbeyan, in the county of Murray, and at a linear distance, S.W. from Burragood of more than two hundred English miles. The rock there literally swarms with Trilobites, some of them *Asaphi*, others *Trinuclei.* They were discovered by Terence A. Murray, Esq., M.C. (who gave them to Captain King,) at an elevation of about two thousand feet above the sea, in beds of great inclination; and Mr. Murray informs me that similar deposits exist near Mount Murray, at an elevation of nearly five thousand feet.

One species of those in Captain King's possession is very near *A. Powisii* of Murchison's "Silurian System," (23, fig. 8.)

In the course of my examination of the rocks along the Allyn River, I found also in January, 1845, on a hill of some considederable elevation, called Borrumbat, near Cum yr Allyn, (the seat of Charles Boydell, Esq.) where bauds of the Burragood shale alternate with limestone and siliceous rock, all of which are charged with numerous fossils of Silurian aspect, Trilobites in some abundance, but of different species from those at Burragood. The rocks of Borrumbat pass into rather thick-bedded limestone at Binjabury Creek, near Lewin's Brook, a feeder of the Allyn; and in them I found other fragmentary remains of Trilobites. One or two species I also met with in the limestone bands near the Rouchel River, and on the Brushy Mountain, at Segenhoe, on the river Page, in the Upper Hunter district; and some traces of Trilobites in a siliceous rock allied with the others, and apparently identical with that of Borrumbat, near the Karu River, in the district of Port Stephens. The existence of Trilobites in New South Wales, in great abundance it may be said, has, therefore, been fully determined; and I do not doubt that, when other localities where the analogous rocks occur, and which are very numerous, shall have been searched, many other species of Trilobites will come to light.

Although not necessarily connected with the immediate purpose of this communication, I cannot refrain from alluding to the singular fact, that in many instances the most abundant fossils are found in the districts above mentioned in *siliceous* rock, which in some cases is a *nearly pure Quartzite.* Such is the case at Borrumbat and at Colocolo, where *Turbinolopsis* is an abundant genus, and other fossils of true Silurian types occur. In the neighbourhood of Yass the limestone beds contain corals, some of which (Strombodes *plicatum*, S.S. 16 bis. 4) are identical with species in the Wenlock Rocks of Shropshire. Yet even near Yass siliceous beds occur, equally charged with fossils. James Macarthur, Esq., jun., of Arthursleigh, in the county of Argyle, lately gave me a Porites of considerable elegance, near to P. pyriformis, (S.S. 16, 2) from the neighbourhood of Yass. Its matrix is quartz rock, which in many cases divides the casts with the limestone. That particular fossil I have provisionally named *P. Macarthuri*. At some future time, if opportunity allows, I intend to search that locality for Trilobites. For the present I will only remark, that I have laid before the Geological Society* some remarks on the occurrence of dykes of marble and quartz rock in granite in the bed and banks of the Wollondilly, near Arthursleigh; and since my paper was read I have discovered in the marble a few miles distant, which I know to have similar relations with quartz rock, traces of corals. Hitherto that marble, which is in some places a pure crystalline white Carrara marble, has been considered, as I stated it to be, without fossils; but it is now found to be fossiliferous. As it is associated with various granitic traps and green stone, its crystalline structure and general freedom from fossils may be due to igneous agency. There can be no doubt that numerous organic remains distinguish the rocks of this class all over New South Wales; and amongst others I have a Fucoid, which I found in the siliceous rocks of Colocolo, associated with orthides and turbinolopsis, and which much resembles F. *antiquus* of Brongniart's *Vegetaux Fossiles* (4, fig. 1).

As my object in this brief account is chiefly to make known the occurrence of Trilobites in the ancient deposits of Australia, and to claim priority for the first discoverers, I purposely abstain from the mention of other facts, bearing on the presumption that the inclined beds underlying the coal deposits of New South Wales belong to true Silurian types, though it is neither wise nor safe, perhaps, at present to attempt to classify them by European denominations. Among other determined Silurian fossils, *Favosites Gothlandica* is a well-known species in the rocks near Yass and elsewhere. My own collection of New South Wales fossils, which amounts to considerably more than one thousand species, would probably furnish many other points of comparison.

Paramatta, 29th May, 1846.

* Journal of Geological Society, vol. i. p. 342.

Art. II. *Notes on the Acaciæ of Tasmania.* By Mr. Ronald C. Gunn.

Mr. George Bentham published in the *London Journal of Botany* an admirable Synopsis of the Mimoseæ, which contains descriptions of all our known Tasmanian species of Acacia, a genus possessing much beauty and interest; and as many of the botanical readers of the "Tasmanian Journal" may not possess that very excellent book, I have thought it desirable to extract from it the descriptions of our Van Diemen's Land species, and to add such observations on their distribution, &c., in the island, as I thought might prove interesting.

Out of twenty-one species thus described as indigenous to the colony, three only have bipinnate leaves; the other eighteen belonging to the leafless division, a character almost peculiar to the Australian Acaciæ.

The following are the principal groups into which Mr. Bentham has distributed the Australian species of Acacia;—

Series I.—Phyllodineæ, *foliis ad petiolos foliiformis reductis, rarius omnino nullis.* (Australasicæ.) Spec. 1-204.

§ 1. *Aphyllæ*, phyllodiis nullis. Spec. 1-2.

§ 2. *Alatæ*, phyllodiis decurrentibus. Spec. 3—11.

§ 3. *Armatæ*, stipulis spinescentibus, phyllodiis ex ovato ad lineare. Spec. 12—26.

§ 4. *Triangulares*, stipulis variis, phyllodiis parvis, angulo inferiore mucronato, superiore sæpe glandulifero. Spec. 27—39.

§ 5. *Pungentes*, stipulis minutis v. nullis, phyllodiis ex lanceolato ad subulatum brevibus acuminato-pungentibus. Spec. 40—61.

* Capitatæ plurinerviæ. Spec. 40—48. ** Capitatæ uninerviæ. Spec. 49—56. *** Spicatæ. Spec. 57—61.

§ 6. *Calamiformes*, stipulis subnullis, phyllodiis subulatis elongatis non pungentibus, inflorescentia capitata. Spec. 62—69.

§ 7. *Brunioideæ*, stipulis setaceis v. nullis, phyllodiis brevibus verticillatis v. sparsim confertis angustis teretibusve non pungentibus. Spec. 70—76.

§ 8. *Uninerviæ*, stipulis subnullis, phyllodiis ex ovato ad lineare non pungentibus uninerviis, inflorescentia capitata. Spec. 77—139.

1. Latifoliæ infl. simplici. Spec. 77—83. 2. Latifoliæ capitulis racemosis multifloris. Spec. 84—91. 3. Pauciforæ, capitulis racemosis 2-4 floris. Spec. 92—94. 4. Squamatæ, capitulis racemosis junioribus squamis obtectis. Spec. 95—97. 5. Falcatæ, capitulis racemosis. Spec. 98—105. 6. Crassiusculæ, capitulis racemosis. Spec. 106—122. 7. Angustifoliæ infl. simplici. Spec. 123—139

§ 9. *Brachybotryæ*, stipulis subnullis, phyllodiis planis plurinerviis, inflorescentia capitata. Spec. 140—160.

§ 10. *Julifloræ*, stipulis subnullis, phyllodiis plurinerviis rarius uninerviis subulatisve non pungentibus, infl. spicata. Spec. 161—195.

1. Subulatæ. Spec. 161—165. 2. Rectæ. Spec. 166—173. 3. Falcatæ leguminæ coriaceo. Spec. 174—184. 4. Falcatæ legumine cochleato. Spec. 185, 186. 5. Falcatæ legumine lignoso septato. Spec. 187—195.

§ 11. *Dimidiatæ*, stipulis subnullis, phyllodiis obliquis falcatisve dimidiatis 2-4-nerviis transverse venosis. Spec. 196—204.

* Infl. capitata. Spec. 196—200. ** Infl. spicata. Spec. 201—204.

Series II.—Botrycephalæ. *Inermes, foliis bipinnatis, capitulis racemosis, pedunculis solitariis.* (Australasicæ.) Spec. 205—217.

Series III.—Pulchellæ. *Inermes v. spinis axillaribus, foliis bipinnatis, capitulis v. spicis axillaribus, pedunculis e quaque gemma solitariis (in axilla sæpe pluribus).* (Australasicæ.) Spec. 218—228.

The figures which follow the sections indicate the number of species belonging to each, showing not fewer than two hundred and twenty-eight species of this one genus as indigenous to Australia. Our Tasmanian species will, however, be distributed as follows :—

To Series I. § 4, spec. 1. § 5, spec. 2—7. § 8, spec. 8—12. § 9, spec. 13. § 10, spec. 14—18. And to Series II. spec. 19—21.

Series I.—Phyllodineæ, *foliis ad petiolos foliiformos reductis, rarius omnino nullis.*

1. *Acacia Gunnii* (Bentham, sp. n.), tota breviter puberula, ramulis teretibus, stipulis setaceis obsoletisque, phyllodiis parvis ovato-triangularibus basi cuneatis nervo margini inferiori approximato in spinulam excurrente, angulo superiore obtusissimo rarius glandulifero nunc obsoleto, pedunculis phyllodium superantibus, capitulis multifloris.—Phyllodia interdum fere oblonga, sæpius 2-3 lin. longa.—Van Diemen's Land, *Gunn*, n. 423; N. S. Wales Vineyard, *Hügel;* Macquarie Range and Argyle County, *Cunningham*.

Abundant on the summit of Grass Tree Hill, between Hobart Town and Richmond ; at the base of Mount Wellington ; and in Epping Forest, about ten miles north of Campbell Town. This is a small shrub, growing usually procumbent or suberect, and seldom exceeding a foot in height, although the bushes are sometimes large ; in a clayey gravelly soil, and flowering in August and September.

Another species, apparently closely allied to this, grows near George Town, and at West Head, Port Dalrymple ; but I have not detected it in flower.

2. *A. siculæformis* (Cunn. MSS.), glabra, ramulis compresso-teretibus, phyllodiis breviter linearibus, v. lineari-lanceolatis rigidis pungenti-mucronatis uninerviis aveniis nitidis basi angustatis, pedunculis capitulo multifloro longioribus.—Fruticulus ramosissimus, ramulis tenuibus rigidis fuscis. Phyllodia 6-9 rarius 12 lin. longa.—Camden and Argyle Counties; Rocky Hills N. of Lake George, *Cunningham.*

Var.? bossiæoides, pedunculo abbreviato, calyce dimidium corollæ superante, legumine stipitato lineari plano marginato lævi 6-18 lin. longo vix 2½ lin. lato, valvulis membranaceo-coriaceis.—V. Diemen's Land, *Lawrence*, *Gunn*, *n.* 207.—Perhaps a distinct species, but Cunningham's specimens are not sufficiently advanced to establish any positive character to separate them.

This is the only species of Acacia I have found on the mountains so high as four thousand feet above the sea level. On the Western Mountains it is very common, growing prostrate amongst the rocks and stones, and associated with the usual shrubby alpine plants. The branches seldom exceed about two feet in length. It occurs also on the South Esk River, and on the River Derwent above Cluny.

3. *A. diffusa* (Lindl. Bot. Reg. t. 632.), glabra, ramulis angulatis, phyllodiis linearibus angustis rigidis crassis pungenti-mucronatis uninerviis siccitate substriatis aveniis basi vix angustatis, pedunculis subgeminis capitulo 12-20-floro 2-3-plo longioribus, calyce corolla pluries breviore.—*A. prostrata*, Lodd. Bot. Cab. t. 631.—Phyllodia divaricata, pollicaria. Pedunculi tenues, semipollicares, et longiores. Corolla campanulata 3-4-fida. Legumen 2-4-pollicare, stipitatum, lineare, subfalcatum, planum, marginatum, glabrum, valvulis membranaceo-coriaceis. V. Diemen's Land, *Scott*, *Gunn*, *n.* 131.

Very common in stiff clay land and in rocky places in many parts of the colony, attaining in some situations to a height of five to six feet, but usually not exceeding three to four, and oftener less, with a very straggling habit and few branches. The Phyllodia vary much both as to length and breadth in different situations, so that an ordinary observer would be apt to suppose the *varieties* were distinct species. It flowers in September and the early part of October.

4. *A. ovoidea* (Benth. sp. n.), prostrata, glabra, ramulis angulato-striatis, phyllodiis divaricatis hinc inde verticillatis linearis ubulatis rigidis acuminato-pungentibus nervo prominente subtetragonis basi non angustatis, pedunculis phyllodio brevioribus, spicis ovoideis v. oblongis densis multifloris.—Laxior quam *A. verticillata*, phyllodiis sæpe sparsis. Spiculæ vix unquam duplo longiores quam latæ, pleræque 2-2½ lin. longæ. Bracteolæ acuminatæ. Ovarium tomentosum. Legumen pollicare, 1½ lin. latum, vix falcatum, utrinque acutiusculum, compressum, marginatum, valvulis membranaceo-coriaceis.—V. Diemen's Land, *Gunn, n.* 676; S. E. Australia, *Mitchell.*

A weak straggling plant, having a slight resemblance to *A. verticillata*, which grows on the Sand-hills, and in sandy land not far removed from the sea at George Town and Circular Head. It is usually procumbent, and one of the least attractive of the Tasmanian Acaciæ. It flowers in September. Colour of the flower, very pale yellow.

5. *A. verticillata* (Willd. Spec. iv. 1049.), glabra v. pubescens, ramulis angulato-striatis, phyllodiis divaricatis subverticillatis lineari-subulatis lanceolatis v. oblongis rigidis mucronato-pungentibus basi subangustatis uuinerviis v. rarius subtrinerviis, spicis cylindricis densis phyllodia superantibus, bracteolis acuminatis.—Vent. Malm. t. 63.—Bot. Mag. t. 110.—Bot. Cab. t. 535.—Phyllodia vix unquam semipollicaria, latitudine valde variabilia, nunc subulato-tetragona, nunc 1½-2 lin. lata. Spicæ semipollicares, rarius fere pollicares. Calyx puberulus, profunde partitus, corolla membranacea dimidio brevior. Legumen 1½-2 pollicare, lineare, subfalcatum, utrinque acutiusculum, compressum, marginatum, valvulis membranaceo-coriaceis.—V. Diemen's Land, *Gunn, n.* 204, *and* 481, *and other collections.*

Var. latifolia, DC.—*A. ruscifolia*, Cunn. in G. Don, Gard. Dict. ii. 407.—Bot. Mag. t. 3174.—With the last.

A most variable plant; and certainly some specimens I obtained at Recherche Bay and from Macquarie Harbour might almost justify the re-establishment of *A. ruscifolia* as a species, were there not intermediate forms to connect the broad-leaved variety with the more common one. The present plant is usually called in the colony the "Prickly Mimosa." It forms dense thickets in wet situations, growing ten to fifteen feet high, flowering in October. The roots, when cut—and the whole plant in certain states of the atmosphere—emit a peculiar odour, like that from the roots of the *Fritillaria imperialis.*

6. *A. Riceana* (Henslow, in Botanist.) glabra, ramulis angulatis, phyllodiis anguste linearibus subulatisve sparsis subverticillatisque acuminato-pungentibus uninerviis, spicis elongatis gracilibus dissitifloris phyllodia superantibus, bracteolis abbreviatis.—*A. setigera,* Hook. Ic. Pl. iv. t. 316.—Phyllodia 6-9 lin. longa, subrecurva. Spicæ 1-1½-pollicares. Flores glabri sæpius trimeri. Calyx brevis. Ovarium villosum.—V. Diemen's Land, *Gunn, n.* 482.

Very common in the neighbourhood of Hobart Town towards the Cascade, where it forms a beautiful shrub, growing eight to twelve feet high, and flowering in September and October.

7. *A. axillaris* (Bentham, sp. n.) glabra v. ramulis minute puberulis subteretibus, phyllodiis anguste linearibus subulatisve recurvis rigidis mucronato-pungentibus 1-2-nerviis, spicis brevissimis sessilibus 1-3-floris, bracteolis lanceolatis fuscis floribusque glaberrimis.—Phyllodia subpollicaria. Pedunculi bracteis parvis deciduis subtensi, nunc uniflori vix semilineam longi, nunc 1½-2 lin. longi, subtrifiori. Flores *S Riceanæ* v. paullo majores.—V. Diemen's Land, *Gunn, n.* 132.

A very beautiful species, common upon the Derwent above New Norfolk, where it grows eight to ten feet high, hanging over the river in the most graceful manner, the extremities of the branches drooping downwards. It flowers in September and October.

8. *A. myrtifolia* (Willd. Sp. iv. 1054.) glaberrima, ramulis angulatis, phyllodiis oblique oblongis falcatisve calloso-mucronatis crassis marginatis nervo incurvo basi angustatis infra medium glanduliferis, racemis phyllodiis brevioribus, ovario glabro v. leviter puberulo.—Sw.

Fl. Austral. t. 49.—Bot. Cab. t. 772.—Phyllodia 1-2-pollicaria, plus minusve incurva. Calyx brevissimus, truncato-dentatus. Corolla majuscula. Stamina numerosissima. Legumen 1-2-pollicare, lineare, subtortum, crasso-compressum, margine crasso, valvulis coriaceis sublignosis.—N. S. Wales, *Sieber*, *n.* 437, *Cunningham*, *Fraser*, *Hügel*; V. Diemen's Land, *Gunn*, *n.* 203.

A pretty small plant, seldom exceeding eighteen inches to two feet in height, growing abundantly near Hobart Town and George Town in clayey land, but occurring also in sandy soils. Flowers in September. This is the only species which bears its seed pods erect.

9. *A. suaveolens* (Willd. Spec. iv. 1050.) glaberrima, ramulis triquetris, phyllodiis linearibus sublanceolatisve obtusis mucronulatis basi longe angustatis crassiusculis marginatis uninerviis prope basin minute glanduliferis, racemis brevibus, capitulis 6-10-floris, ovario glabro.—Sm. Linn. Trans. i. 253.—Labill. Nov. Holl. ii. t. 236.—Bot. Cab. t. 730.—Phyllodia 3-4 poll. longa, 2-4 lin. lata. Bracteæ squamæ-formes, membranaceo-striatæ, imbricatæ, jam ante anthesin deciduæ. Racemorum rhachis et pedunculi tenues, breves. Legumen oblongum, 1-1½ poll. longum, 8-8 lin. latum, planum, glauco-pruinosum, marginatum, valvulis coriaceis.—V. Diemen's Land, *Gunn*, *n.* 372; Port Jackson.

One of the sweetest scented of the Acaciæ, flowering in August and September. The height usually about two feet, but occasionally in sheltered spots rising to four or five feet, of a very weak habit, having usually not more than two or three branches. I have only observed it growing in sandy soil, not far from the influence of the sea, near which, however, it is common all along the north coast.

10. *A. saligna* (Wendl. Diss. 26.) from Labillardière's figure (Nov. Holl. ii. t. 86.) must be very near *A. cyanophylla* and is represented with one nerved phyllodia and racemose heads of flowers. It is however described as having nerveless phyllodia and solitary heads of flowers, and said to be a native of V. Diemen's Land, from whence I have not as yet seen any species of this group.

Figured by La Billardière, who found it at Recherche Bay; but I have not seen it.

11. *A verniciflua* (Cunn. in Field, N. S. Wales, 344), glabra, viscosissima, ramulis angulatis, phyllodiis lineari-v. oblongo-lanceolatis utrinque angustatis acutis calloso-mucronatis subfalcatis margine raro glanduliferis binerviis v. rarius subuninerviis venis obscuris, pedunculis brevibus, capitulis multifloris.—Bot. Mag. t. 3266.—*A. graveolens* Cunn. in G. Don Gard. Dict. ii. 404.—Bot. Cab t. 1460.—Bot. Mag. 3279.—*A. virgata* Lodd. Bot. Cab. t. 1246.—Phyllodia 2-4 poll. longa, 2-4 lin. vel rarius sub 6 lin. lata, magis divaricata et acutiora quam in sequentibus. Calycis dentes ciliatæ. Bracteæ ad basin pedunculorum minimæ. Legumen lineare, rectum, subplanum, glabrum, marginatum, valvulis coriaceis.—N. S. Wales, *Cunningham*, *Fraser*, *Hügel;* V. Diemen's Land, *Gunn*, *n.* 479.

A very beautiful light-green viscous-leaved species, very abundant about Hobart Town, and forming dense thickets in some of the ravines at the base of Mount Wellington. It also occurs sparingly near New Norfolk, and on the St. Patrick's River, N.E. of Launceston. It grows nearly six to ten feet high, but occasionally much more, and flowers in September.

12. *A. stricta* (Willd. Spec. iv. 1052.) glabra, subresinosa, ramulis angulatis, phyllodiis longe et latiuscule linearibus apice obtusis v. retuso-glanduliferis rarius obsolete mucronatis basi longe angustatis margine sæpe glanduliferis uninerviis creberrime et tenuiter penniveniis, pedunculis capitulo multifloro subbrevioribus.—Bot. Rep. t. 53.—Bot. Mag. t. 1121.—Bot. Cab. t. 99.—*A. emarginata* Wendl. Diss. 27.—Phyllodia 3-4-pollicaria, latiora et obtusiora quam in *A. dentifera*. Species, etsi variabilis, venulis crebris facile distinguitur.—N. S. Wales, *Sieber n.* 456 *and others*.—V. Diemen's Land, *Gunn*, n. 205, 478, and 801.

A social plant, with glaucous green leaves, covering spots several acres in extent near George Town, but found also widely distributed over the colony in rather poor wet land. Its usual height is about four feet, but acres of it may be seen not exceeding two feet in height, and occasionally a patch growing six to nine feet. As the *Phyllodia* vary much in width, the varieties are apt to be taken for different species. It may be distinguished from all other Tasmanian species by the very obviously feather-veined character of the phyllodia, a peculiarity not shown in the figure in the Botanical Magazine. It flowers in September and October.

13. *A. melanoxylon* (Br. in Hort. Kew, ed. 3, v. 462.), glabra, ramulis angulatis, phyllodiis falcato-oblongis sublanceolatisve obtusis v. rarius acutis basi longe angustatis coriaceis rigidulis multinerviis crebre venulosis, racemis brevibus 1-4-cephalis, capitulis dense multifloris, legumine lato-lineari plano arcuato glabro marginibus incrassatis valvulis coriaceis.—Wendl. Diss. t. 6.—Bot. Mag. t. 1659.—Bot. Cab. t. 630.—*A. arcuata* Sieb. Pl. Nov. Holl. n. 459.—Phyllodia sæpius 3-4 poll. longa, ½-1 poll. lata. Peduuculi 3-4 lin. longi, raro solitarii. Flores in capitulo ultra 30. Calyces membranacei, subciliati, corolla paullo breviores. Legumen subglaucescens, 2-4 poll. longum, interdum fere in circulum curvatum. Semina suborbicularia, strophiola magna cincta.—Common in N. S. Wales, *Cunningham, Sieber n.* 459; *Hügel, Mitchell, &c.;* V. Diemen's Land, *Gunn, n.* 201.

This is the *Blackwood* and *Lightwood* of the colonists; the former being the term applied to it in the northern, and the latter in the southern parts of the island. It varies very much in size and aspect; from being a very small round-headed tree, growing in rich open valleys, to a tree of seventy to eighty feet in height on the rich alluvial banks of rivers. The timber is very good, and is considered the best colonial wood for spokes of wheels and similar purposes. It was also formerly much used for household furniture and house work, and is still occasionally used where attainable; but trees of any large size are becoming scarce in all accessible places. Flowers in October.

A smaller plant, usually not exceeding four to six feet high, and of a very different habit, though otherwise very similar, grows in very wet poor sandy soil at Circular Head and near George Town; but until the fruit is known I cannot ascertain whether it is distinct from *A. Melanoxylon.*

14. *A. linearis* (Sims Bot. Mag. t. 2156), glabra v. junior leviter puberula, ramulis angulatis, phyllodiis longe et anguste linearibus muticis v. vix mucronatis 1-3-nerviis nervo mediano prominente lateralibus obscuris basi longe angustatis eglandulosis, spicis gracilibus interruptis phyllodio multo brevioribus glabris, calyce brevi 4-dentato, legumine anguste lineari intus continuo.—Bot. Cab. t. 595.—*A. longissima,* Wendl. Diss. t. 11.—Bot. Reg. t. 680.—Phyllodia sæpius 5-6 poll. longa, vix linea latiora, interdum 9-10 poll. longa. Racemi

1-2-pollicares. Petala per anthesin sæpius libera.—Port Jackson, *Sieber*, *n.* 451, etc.

Var. Tasmanica, phyllodiis rigidioribus, spicis abbreviatis. V. Diemen's Land, *Gunn*, *n.* 677.

I have only found this species in one limited spot at Circular Head, where it did not exceed three to four feet in height, flowering in October. It flowered very sparingly, and I did not find it in fruit. In habit it more closely resembles *A. suaveolens* than any other Tasmanian species.

15. *A. dissitiflora* (Benth. sp. n.) glabra v. junior puberula, ramulis angulatis, phyllodiis longiusculis lineari-lanceolatis subspathulatisve obtusiusculis mucronatis basi angustatis subcoriaceis basi 3-5-nerviis venis subparallelis v. vix reticulatis, racemis gracilibus interruptis phyllodio brevioribus, calyce brevi dentato, legumine anguste lineari subtereti.—Inter *A. floribunda* et *A. mucronata* media. Phyllodia Phyllodia quam in priore obtusiora, rigidiora, pleraque 3-4-pollicaria; latiora, longiora, et tenuiora quam in *A. mucronata*. Spicæ et flores *A. floribundæ*. Legumina longa subtorulosa.—V. Diemen's Land, *Gunn*, *n.* 802. This and the four following species, however different in their extreme forms, run much into one another, and are difficult to define with precision.

This forms a tall shrub or small tree, fifteen to twenty feet high, on the outskirts of a dense forest of *Fagus Cunninghami*, near Circular Head; and I believe the same species occurs from Lake St. Clair, towards Macquarie Harbour; but, as I did not observe it either in flower or fruit at the latter station, I am uncertain. *A. dissitiflora* grows in a wet siliceous soil, flowering in October. It approaches very closely in general appearance and habit to *A. mucronata*.

16. *A. mucronata* (Willd. Enum. Suppl. 68), glabra v. junior puberula, ramulis vix angulatis, phyllodiis anguste lineari-spathulatis obtusis basi angustatis coriaceis striato-trinerviis vix venosis, spicis interruptis phyllodio brevioribus, calyce brevi dentato, legumine auguste lineari subtereti.—Wendl. Diss. t. 12.—Bot. Mag. t. 2747.—Phyllodia pleraque 1½-2½ poll. longa, 1-2 lin. lata. Spicæ pollicares. Legumen 3-5-pollicare, utrinque acutum, marginatum, subtorulosum.—V. Diemen's Land, *Gunn*, *n.* 130.

A species very common on the margins of the South Esk River and streams in the vicinity of Launceston, where it seldom exceeds ten to twelve feet in height, and flowers in September. Grows erect, much branched.

17. *A. dependens* (Cunn. MSS.), glabra v. junior pubescens, ramulis vix angulatis, phyllodiis anguste oblongis v. late lineari-spathulatis obtusis submucronatis basi angustatis coriaceis multinerviis vix reticulatis, spicis interruptis phyllodio brevioribus, calyce brevi dentato, legumine anguste lineari subtereti.—Ab *A. mucronata*, cujus forte mera varietas, differt præcipue phyllodiis latioribus, ab *A. Sophoræ* phyllodiis angustioribus raro anostomosantibue.—V. Diemen's Land, *Cunningham*, *Gunn*, *n*. 202, 480, 678.

Very common at Woolnorth, the extreme north-western point of Van Diemen's Land, where, associated with various *Myrtaceæ*, *Epacrideæ*, &c., it covers an extensive tract of quartz-rock formation. Its height being usually six to eight feet, often less, and flowering in October.

18. *A. Sophoræ* (Br. in Hort. Kew, ed. 3, v. 462), glabra v. junior puberula, ramulis angulatis, phyllodiis obovato-oblongis obtusis calloso-mucronatis basi cuneatis coriaceis 3-5-nerviis reticulato-venosis, spicis interruptis phyllodio brevioribus, calyce brevi dentato, legumine anguste lineari subtereti arcuato.—Labill. Nov. Holl. t. 237.—Bot. Cab. t. 1351.—Ramuli crassiores quam in præcedentibus. Phyllodia pleraque bipollicaria, 8-12 lin. lata, interdum vero occurrunt formæ phyllodiis longioribus fere *A. longifoliæ*. Calyx paullo major quam in affinibus. Legumen valde arcuatum, nec ut in affinibus rectum.—V. Diemen's Land, *Labillardière*, *Gunn*, *n*. 675, and apparently the same species in fruit from Moreton Bay, *Cunningham*.

Boobyalla of the aborigines. Very distinct from the three preceding species, although associated with them by Mr. Bentham; dried specimens not affording to the British botanist the peculiarities of growth, &c., which would widely separate it from all the others. *A. Sophoræ* grows only on the sea shore, or in its immediate vicinity, where it forms almost impenetrable thickets. When exposed to the violence of the sea gales, its height seldom exceeds six to nine feet, but the branches lie along the sand for several yards. When sheltered behind the sand hills it forms most beautiful light-green masses, growing ten to twelve feet high, with a diameter at the ground considerably more, as from the weakness of the branches it spreads much. Near West Head, Tamar, few objects can be prettier than the Boobyalla trees, when in flower. It is certainly one of the handsomest species we possess. From *Acacia mucronata* it differs in the yellower green of its leaves, brighter yellow of its flowers, different arrangement of the phyllodia on the branches, and general habit. The legumes and seeds, too, separate it from all the preceding species. It flowers early in September. It was called *Boobyalla* by the aborigines, and the seeds formed an article of their food.—(Vide *Tasmanian Journal, vol.* i. *p.* 37.)

Series II.—Botrycephalæ.—*Inermes, foliis bipinnatis, capitulis racemosis, pedunculis solitariis.*

19. *A. maritima* (Bentham, sp. n.), glaberrima, ramulis angulatis, pinnis 2-3-jugis, glandula petiolari magna scutellæformi, jugalibus paucis v. nullis, foliolis 10-15-jugis oblongo-lanceolatis mucronulatis distincte uninerviis supra viridibus subtus pallidis, capitulorum racemis (omnibus?) axillaribus folio brevioribus, floribus glabris, calyce corolla striata subtriplo breviore, legumine oblongo-lineari falcato plano glabro.—Foliola paullo minora quam in *A. discolori.* Racemi in speciminibus suppetentibus breves, oligocephali.—Near the Sea Coast, V. Diemen's Land, *Gunn, n.* 373, *Cunningham.*

A very pretty species, which grows near the sea at George Town, and along the north coast, and at the base of Mount Wellington, Hobart Town, in sandy soil, but occurring occasionally in clay. It is rarely found many miles inland, or in situations where exposed to severe frost. Its usual height is about four to seven feet, but it is occasionally drawn up a little higher in dense thickets. This is the earliest flowering species in the island, being in full blossom in May and June, the flowers lasting until July, being the depth of our Tasmanian winter for most exotic plants, but the commencement of spring to the indigenous vegetation, the season of rest being January to May. The width and size of the legumes distinguish it from all other Tasmanian species.

20. *A. mollissima* (Willd. Enum. 1053), ramulis angulatis petiolisque velutino-pubescentibus, pinnis 8-18-jugis, glandulis verrucæformi-

bus ad omnia paria pinnarum, foliolis 30-40-jugis confertis linearibus obtusis pubescentibus, capitulorum racemis paniculatis, floribus glabriusculis, calyce corolla lævi dimidio breviore, legumine lato-lineari recto plano glabro.—Sw. Fl. Austral. t. 12 —*A. decurrens var. mollissima*, Lindl. Bot. Reg. t. 371.—V. Diemen's Land, *Gunn, n.* 477.

This is known as the *Black* or *Green Wattle* of the colonists, although these names are not applied with any great precision. This is not a common species in the colony although rather abundant in the vicinity of both Hobart Town and Launceston; the Acacias in the Government Demesne at Hobart Town being almost exclusively of this species. It forms a pretty small tree, from fifteen to twenty feet high, flowering from 1st to 25th December, being the latest flowering species in the island. The seeds do not ripen for twelve or thirteen months after flowering, in this respect also widely differing from all our other species. It is usually found in stiff clay soil.

21. *A. dealbata* (Link. Enum. Hort. Berol. 455), ramis obscure angulatis petiolisque pube minuta incanis glaucisve, pinnis 10-20-jugis, glandulis verrucæformibus ad omnia v. pleraque paria pinnarum, foliolis 30-40-jugis confertis parvis linearibus obtusis minute cano-puberulis glaucisve, capitulorum racemis paniculatis, floribus glabris, calyce corolla lævi dimidio breviore.—Bot. Cab. t. 1928.—Silver Wattle.—Common in the Blue Mountains, N. S. Wales, *Sieber, n.* 446 and others; V. Diemen's Land, *Gunn, n.* 476.

Silver Wattle of the colonists. This beautiful species is scattered over all the settled districts of the Island, but is rare in that extensive portion of the western side where primary rocks prevail. On the side of Mount Wellington, near Hobart Town, and on the rich alluvial flats which border the Meander, St. Patrick, and other rivers, as well as in some other localities, this species attains to a great size; having clean cylindrical trunks seventy to eighty or ninety feet high without a branch, and varying from four to six or eight feet in circumference near the base. In these situations it occasionally forms small forests to the exclusion of other trees; and I have supposed them to have grown where fires had destroyed the previous occupants of the ground, as the boundaries of these forests are usually well defined. This is not, however, the usual and best-known appearance of the *Acacia dealbata.* In the settled parts of the colony it forms a small tree fifteen to twenty feet high with a large bushy head. Wherever the land has been cleared it springs up by thousands, and where land once cultivated is abandoned it becomes in a very few years (five or six) so densely and exclusively covered by this plant as to render the land perfectly valueless for pastoral purposes. As it throws up innumerable suckers from the roots when cut down, it has become in many places a serious pest to the farmer. The seeds must, from their hard outer coat, retain their vegetative power for many years, as, wherever the Eucalypti are destroyed, the Silver Wattle springs into existence, although not previously apparent in the neighbourhood.

The bark has been largely exported to Britain for tanning purposes under the name of "Mimosa bark." The quantity shipped from the port of Launceston alone from 1831 to 1845 amounted to 15,516 tons, (upwards of 2500 tons in one year) at an estimated value by the Customs' books of £62,833 sterling; and, when it is borne in mind that to obtain the bark the tree is destroyed its abundance may be imagined. Nevertheless, if any demand now existed for it in England thousands of tons might be shipped. Although two kinds of Wattle bark are recognised in England, I believe both to be the produce of this tree; as the Black Wattle *(A. molissima)* is too scarce to yield any quantity for exportation, and the bark of the *A. dealbata* varies in colour from a silvery white in the dense forests to a jet black in the more open country.

A kind of gum very similar in its properties to Gum Arabic is yielded by the two last-named species of Acacia; but it has not hitherto been made an article of export from this colony, although our neighbours of South Australia are exporting a similar production to England in large quantities.

The *A. dealbata* flowers in August and September, and grows in almost any soil.

Art. III. *Report of the Expedition from Moreton Bay to Port Essington.* By L. Leichardt, Esq.

(From the Sydney Australian, March 26, 1846.)

I left Sydney the 13th August, 1844, in the *Sovereign*, Captain Cape, the Hunter River Steam Navigation Company having given to me and to my party a free passage to Moreton Bay. After recruiting my horses at Moreton Bay I went up to Darling Downs, and stayed for a month at Mr. Campbell's station, waiting for my provisions, which the kind people of Moreton Bay had volunteered to send up to the Downs with drays. Finding that my horses were not sufficient to move all the provisions, and considering that bullocks would give at the same time means to move our provisions, and form a good stock of provisions themselves, I bought three bullocks from Major North, at Laidley Plains, and five from Mr. Hughes, at Darling Downs. My party consisted originally of six persons—Mr. Roper, Mr. James Calvert, John Murphy, Phillips, and the black fellow, Harry Brown, of Newcastle. In Moreton Bay, a negro, Caleb, and a black of Bathurst, Charley, joined me. At the Downs, Mr. Hodgson and Mr. Gilbert increased the number of my party to ten persons. The two latter added two bullocks to those I had, and Messrs. Stephens and Campbell made us a present of four young steers and a bullock. Mr. Isaacks gave a fat bullock. I started, therefore, from Jimba, the farthest station of Darling Downs to the westward, on the 13th October, 1844, with sixteen head of cattle, seventeen horses, and four kangaroo dogs. Mr. Hodgson and Caleb returned with two horses, from Kent's Lagoon, about seventy miles from Jimba. We travelled at first through the system of waters of the Condamine, which goes much farther to the northward than is laid down in the map, as I left it about 26 deg. 44 min. of latitude. I passed several creeks which evidently joined the Condamine in latitude 26 deg. 26 min. and 26 deg. 16 min. and 26 deg. 10 min. in a course north west from Jimba; and I have soon to mention that I came on westerly waters again, in latitude 25 deg. 19 min. and 25 deg. 13 min., which, in all probability, go to the westward and southward to join the Condamine, or belong to the great basin of the Darling.

After having passed the great plains of the Condamine, between Coxen's station, Jimba, and Russell's station, we entered into a country which was alternately covered with fine open forest land, well grassed, and fit for cattle and horse breeding, and with long stretches of almost impassable bricklow scrub, so called from the bricklow (a species of acacia,) being one of its principal components. Open myall scrub was frequent, particularly along the Condamine. Though the bricklow scrubs were frequently of great length and breadth, I do not think that they ever form uninterrupted lines of more than twenty or thirty miles, so that they always allow to be skirted. The frequency of these scrubs, however, renders the establishment of stations unadvisable, as they not only allow a secure retreat to hostile black fellows, but to wild cattle.

Following a narrow passage through a very extensive bricklow scrub, over a flat country, I entered into a new system of waters, which at first turned to the north-north-west and north-west; but about seventy miles lower down, in latitude 25 deg. 36 min. turned to the north-east. I came on it in latitude 26 deg. 4 min. I called the principal river "the Dawson." Fine flats extend along its banks; and open ridges, with sound ground, are some miles off the river. Lower down, however, ranges appear, covered with scrub; and I suppose that the river, where it turns to the north-east, enters into rather a mountainous country, to work its way into the flats of the east coast. A large creek joins it in latitude 25 deg. 34 min., which comes from the north-west; and I called it Palm-tree Creek, as fine corypha palms grew along its banks. It is accompanied by rich flats and fine ridges, and has a plentiful supply of water, in detached holes, as the Upper Dawson had. But these rich flats, which would delight the eye of the cattle breeders, are limited towards the ranges by thick bricklow scrub. This scrub covers the hills to the southward, between the creek and a long range, and is interrupted by plains, almost entirely grown over with vervain, which made me call them "Vervain Plains," whenever I met with them, even should this plant be less abundant.

In following up the creek, I came again on a flat table land,

and on waters which turned to the south-west. Should the creek I met in latitude 25 deg. 29 min., and which I called "Robinson's Creek," belong to the Condamine, the shed of waters here would be one of the most curious which ever have been observed. The shallow channels which form the heads of Palm-tree Creek (an easterly water) are scarcely a quarter of a mile distant from the broad deep sandy bed of Robinson's Creek, the latter turning to the south-west, the former collecting towards the east. Several sedgy swamps and lagoons, covered with water fowl, are found at the left bank of Robinson's Creek.

This creek comes from a hilly country, which, more to the north-west, rises into ranges of considerable elevation, giving rise to a great number of water-courses, creeks, and gullies, all collecting into Robinson's Creek. The whole country is openly timbered, the ridges at the upper part of it in part covered with silver-leaved iron-bark, well adapted for sheep. Fine flats extend along its banks, where I first met it in latitude 25 deg. 28 min. I passed the principal range of Robinson's Creek in latitude 25 deg. 19 min., and came again to waters which turn to the west and south-west. In pursuing a north-west course, I entered into a knot of mountains, from which the waters flowed in almost every direction: to the east, north-east, north, west, and south. Only long and tedious reconnoitres enabled me to find a passage through this intricate country. And even these would have been, perhaps, unsuccessful, if Providence had not thrown, by an accident, some light on our dark and difficult path. In following a north-easterly creek to its head, I found an easy mountain pass, and came on the heads of a creek going to the northward. These are in latitude 25 deg. 5 min. In latitude 24 deg. 54 min., the creek, which I called "Zamia Creek," from fine arborescent zamias (or cycas) growing on its flats, turns to the north-east. Its deep channel gets very shallow as it enters a flat country of very great extent, almost unbounded by any rise towards the north-east. The creek is accompanied by small flats and thick scrub. But the flats extend more and more, and the scrub recedes as it approaches the large flat country, which appears openly timbered, and well grassed in the proper season. When we went along it, the 4th—9th December, 1844, the grass was all burnt, and the country looked bleak, with some few exceptions of old burnings, which were covered with luxuriant grass. The creek has very little water.

I turned round a range at the left of Zamia Creek. Its two most conspicuous mountains we had seen a long time ago. The one, a sharp peak, covered with scrub, I called "Aldis's Peak." The other, dome-shaped, I called "Mount Nicholson." They are excellent land-marks, and must be seen for a great distance from the north-east. Their latitude is about 24 deg. 52 min. 30 sec. The range to which they belong I called the "Expedition Range."

Travelling along its east side, I crossed several creeks, the largest of which I called "Expedition Creek." Palm-trees were again frequent. Another creek, which, from the abundance of erythrina trees, I called "Erythrina Creek," was amply supplied with fine reedy water-holes. The country is openly timbered and well grassed; but I fear that all these creeks get very dry as they leave the mountains.

I crossed the range. The passage is very difficult. The stock of the range is basaltic. The spurs and subordinate ranges are sandstone. The basaltic part is openly timbered, arborescent zamias very frequent. The sandstone spurs are covered with scrub and underwood, peculiar to this description of country. From the north-west side of this range a view opens over a large valley, bounded to the west and north-west by distant ranges, which I called "the Christmas Ranges." It is almost entirely filled with scrub, the extent of which was well calculated to try a man's courage. Some few plains were visible, and isolated hills rose in different directions out of this sea of scrub. The water-courses, very different from those of the other side of the range, were dry near the range, but contained fine water-holes within the scrub. [Latitude 24 deg. 45 min. to lat. 24 deg. 26 min.] I followed a water-course through the scrub in a north-north-east direction, and came to open box flats and openly-timbered basaltic ridges, which, however, soon changed again with scrub. The creek led me to a small river, lined with fine casuarinas and flooded gum.

I called it "Comet River," as I saw the fine comet (of the 29th December, 1844,) in travelling along its banks. It comes from downs and plains to the westward, and is accompanied by a narrow strip of open forest land, hemmed in by scrub, which lower down takes entire possession of its banks, until it joins a fine river (the Mackenzie,) well supplied with water, its water-holes forming broad stretches of two, three, to ten miles, full of excellent and various fishes, and of fresh-water muscles, which appear to form the principal food of the natives. The Comet River is badly supplied with water. From latitude 24 deg. 25 min. to almost 23 deg. 41 min. its bed was entirely dry, small water-holes supplied by late thunder-storms assisting us to pass over this thirsty country. As it approaches the Mackenzie, the supply of water increases, and from latitude 23 deg. 41 min. to 23 deg. 34 min. fine numerous water-holes are found in the bed of the creek. The valley of scrubs between Expedition and Christmas ranges and the Comet River is not available for any pastoral purpose. The sportsman alone would be remunerated by rich sport in the detached patches of scrub surrounded by vervain and sow-thistle plains, which teem with kangaroos.

The Mackenzie comes from the westward. I should have followed it up to its head, if the scrub which lined its banks had not made it advisable to follow it down, in order to come to a more open country. The heads of the Mackenzie are, however, a very interesting point, as they will lead to a water-shed between the eastern and western waters. It is the only easterly water I passed, with the exception of Comet River, the heads of which remained unknown.

The Mackenzie winds through a peculiar country. Its valley is deep and narrow; on its left side a high level country extends, near the river with belts of scrub, farther off with plains and open forest—generally box forest; but these plains and open forest are again lined by scrub. From time to time sandstone crops out in the deep cut creeks which join the river, or in the banks of the river itself. In one of these sections several layers of fine coal were found, identical with the formation of the Newcastle coal. Rounded pieces of coal had been found in the bed of the river, where we first came to it, evidently showing that the coal formation extends high up the river. The windings of the Mackenzie are numerous and large. It was difficult to make out its general course. Lower down, however, it becomes more regular. It seems to enter the flats of the east, similar to those I mentioned at Zamia Creek. Its course is north-east, according to the black fellows, who are very numerous, and behaved very friendly to us.

I do not think that that part of the Mackenzie we passed is well adapted for the establishment of cattle or sheep stations. The scrub is too frequent and too thick ; but the water, the variety and richness of the grasses, the fine plains, and open box forests, are very inviting. I have reason to believe that the scrub is less frequent down the river.

At latitude 23 deg. 21 min. 30 sec. I left the Mackenzie, and travelled again in a north-west direction. In an extent of twenty-five miles we passed long stretches of thick scrub, of fine opened narrow-leaved iron-bark forest, of box flats and plains ; the latter of a rich black soil, strewed over with pieces of fossil wood, changed into ironstone and silex. Some of the finest country, with rich grass and herbs, plenty of water, open forests and plain, with honey sweet as that of Hymettus, with plenty of game ; the air fragrant with wild thyme and marjoram—lined with dense bricklow scrub, extending more than twenty-five miles, interrupted only by creeks, which appear all to belong to the system of the Mackenzie. A fine range of peaks was seen from almost the only hill of this country, in a north-west direction. As I approached it, other lower ranges appeared, and two fine creeks, lined with casuarinæ, with reedy water-holes, running to the south-west, lay in our course. These creeks are accompanied by fine open box and narrow-leaved iron-bark flats ; the latter, however, generally with rotten ground. I followed one of the creeks up to its head, and going up a sandstone spur, I came to a fine table land, where plains of rich black soil, covered with luxuriant grass and herbs, were separated by narrow strips of sandy ironbark forest. The plains enlarged as I advanced, and a series of magnificent cones and ranges rose from this level. I called this range "Peak Range," and gave the most prominent peaks separate names. They are composed of domite, whilst the ridges to the east and south-east were of sandstone; and the ridges varying the plains, to the westward, of basalt. The latitude of Peak Range is 22 deg. 56 min. 54 sec., its longitude about 148 deg. 19 min. The plains and downs extend far to the westward, where another range of peaks was observed. There was good water in a sandstone creek running to the south-west, with rocky water-holes; but the plains were badly watered. The young grass, late burnings, and smoke rising to the eastward of the range, showed evidently that this fine country was well inhabited. Black fellows were even seen by some of the party. A closer examination would detect more water; and this procured, no country would be better adapted for pastoral purposes than the plains and downs of Peak Range, and the whole country to the eastward which I have seen.

Numerous creeks go down to the eastward, either coming from basaltic ridges, and winding through small plains of black soil, or from sandstone ridges passing along between them, until they enter a flat country to the east and north-east, which I had twice occasion to mention. Many of these creeks are well provided with water-holes, though not near the range, but further down. The water-holes are generally rocky basins.

I travelled through this country during January and February, 1845. There was no continuous rain, but only occasional thunder showers, which frequently filled the empty water-holes, to give us a stepping-stone over a dry country.

I travelled from latitude 22 deg. 43 min. to latitude 22 deg. 23 min. in a northerly course over sandstone ranges (spurs of the table land,) between which creeks came down, frequently accompanied by grassy plains or well-grassed open forest. The ranges were so rocky, and their slopes so steep, that I determined to follow one of the easterly creeks down. I called this creek "Hugh's Creek." Between the ranges it was well provided with fine water-holes, in the flat country which it entered; after leaving the sandstone ranges, it was almost entirely waterless. At the upper part of this creek the drooping tea-tree was first observed. We found it afterwards at every creek and every river. It was generally the companion of water, and its drooping foliage gave a rich shade.

The flat country which we had entered was covered with narrow-leaved iron-bark, with box, and a new species of gum, which we called poplar gum, as its leaf and foliage resembles very much in form and verdure the trembling poplar of Europe. The ground of the iron-bark forest is generally rotten; that of the box is sound, as the box grows on a stiff soil, which is also the case with the poplar gum. Patches of scrub appeared as we came lower down the creek. Some puddled water-holes of the scrub gave us the necessary supply of water.

The flat country continued, the scrub increased, and formed belts of various breadths along the creek; fine open undulating country, interrupted, however, by bands of scrub, extend to the north and north-west.

This creek brought us to a river with a broad sandy bed and high banks, lined by fine flooded gum-trees and casuarinas. It was entirely dry; but in a rushy swamp, parallel to its banks, fine water was found. I named this river the "Isaacks." From latitude 22 deg. 20 min. to latitude 21 deg. 35 min. we travelled along the Isaacks in a north-north-westerly course, following it up to its head.

The bed of the river was dry, with some few exceptions, until we came to the sandstone range near its head; black fellows' wells were frequent, and the presence of fine water-holes in a more favourable season was indicated by a wreath of reeds surrounding dry basins. The water-holes which supplied us with water were parallel to the river, or in little creeks adjoining it, the rain-water being collected in puddled basins. These water-holes were generally at the outside of scrubs.

In latitude 22 deg. 11 min. a range extends at the left side of the river parallel to it. I named it "Coxen's Peak and Range." It forms an excellent landmark. The river breaks through two ranges, striking from north-west to south-east, and its heads are at the north side of the most northern one, in an undulating country. Flats one and two miles broad accompany the river. A belt of scrub, sometimes very narrow, separates them from an undulating or openly timbered country farther off the river. Silver-leaved iron-bark is the prevailing timber of the hills and ridges. Between the two ranges of its upper course plains extend, which were well provided with water belonging to the finest country we have met, and are highly adapted for any pastoral purposes, particularly for the breeding of cattle and horses.

At the end of February, and at the commencement of March, we had for several days a drizzling rain.

From the heads of the Isaacks we came to small creeks collecting into a common water-course, going at first to the northward, afterwards to the westward, and even to south-west. I called this " Suttor's Creek." Opening iron-bark slopes—small plains, render it very fit for cattle stations; but as the lower part of this creek, as well as the river which it joins, and which I called " the Suttor," got very scrubby, it may be rather considered as a continuation of the Isaacks, from which the access to it is very easy.

The River Suttor, which I followed down from latitude 21 deg. 21 min. 36 sec. to 20 deg. 37 min. 13 sec., has in its upper course fine reedy water-holes. The flats which accompany its banks are openly timbered, but they change with thick scrubs and rocky country. In latitude 21 deg. 39 min. 58 sec. it splits into many branches, enters a thick scrub, and becomes deficient in water.

At latitude 21 deg. 37 min. 31 sec., however, there is a most magnificent sheet of water, like a little lake in its bed. Between 21 deg. 33 min. and 32 min. it entirely disappears as a distinct water-course, and forms chains of water-holes, which were, however, well supplied with water. The country opens at about 21 deg. 20 min.; a big creek joining the Suttor from the south-east. Primitive rocks appear amongst sandstone rock, and a limestone hill was observed in latitude 21 deg. 6 min. A river as large as the Suttor, which I called the " Cape," joins from the westward. It turns in latitude 20 deg. 44 min. round a fine isolated mountain, which I named " Mount Maconnel," and joins a running stream, with a bed one mile broad, which comes from the northwest and turns to the eastward. I made my first camp in the bed of this river, in latitude 20 deg. 37 min. 13 sec., and called it "the Burdekin," as an acknowledgment of the liberal support which I received from Mr. Burdekin in forming my expedition.

Fine flats accompany the Suttor in its lower course. The grasses are very various and dense. There is particularly one grass, the oaten grass of the Isaacks, which grows to a considerable height, and the stem of which is very juicy and sweet. But besides this, there are at least twenty different grasses, with various herbs which cattle and horses were fond to feed upon. Water is abundant, the water-holes are often long and broad, and covered with ducks. It is even running five miles above its junction with the Burdekin. The pandanus was first observed here; and in its bed, round old fire-places of black fellows, we found the empty shell of the fruit of cycas, the tree of which we first observed at the Upper Burdekin. A new species of grevillea was equally found, and the poplar-gum was frequent. The drooping tea-tree, which grows to a great size in its bed, yields an excellent timber. The blood-wood and iron-bark are generally of a good size for building huts. There was also no want of timber at the Isaacks nor at the Burdekin.

I travelled along the Burdekin from latitude 20 deg. 37 min. 13 sec. to latitude 18 deg. 32 min. 37 sec., through 2 deg. 4 min. 36 sec. of latitude, in a north-west by west course, and I had to leave it, probably still about fifty to sixty miles distant from its head, as it turned too much to the northward and eastward.

Almost the whole extent of its banks is available for pasturing purposes.

The character of the country is various; fine iron-bark and box flats, open ridges, high ranges off the river, sometimes approaching the river, and rendering the passage very difficult. Those who follow me will find easier roads off the river. The river is supplied with abundance of water by living springs and brooks coming from a basaltic table-land. Creeks provided with water-holes, with broad sandy beds lined with casuarinas, are numerous. At latitude 20 deg. 8 min. 26 sec., at 20 deg. 0 min. 36 sec., at 19 deg. 49 min. 19 sec., at 19 deg. 13 min., at 18 deg. 59 min., at 18 deg. 52 min., large creeks and rivers join the Burdekin.

From the Suttor up to latitude 19 deg. 58 min. 11 sec. the whole country is composed of granite and sienitic rock. Pegmatite and hornblende rock are frequent. At 19 deg. 58 min. I first observed basalt. At 19 deg. 54 min. a fine limestone, with many fossil corals, crops out; but higher up the river basaltic ridges are prevailing, which are several times interrupted by quartz porphyry (latitudes 19 deg. 18 min. 6 sec. to 19 deg. 13 sec.). Both rocks seem to have broken through talcschist, sandstone, and conglomerate.

In latitude 18 deg. 48 min. 9 sec. we entered into a large valley with numerous lagoons, at the east side of which the river came down, whilst a reedy brook swept along the basaltic ridges, which bounded it to the southward. The lagoons were covered by Nymphæa (the lotus,) the seed vessels and rhizomæ of which formed the principal food of numerous black fellows. I called this country the "Valley of Lagoons," or the "Country of the Lotophagians." After ascending the basaltic ridges, which surrounded the valley to the south, the west, and north-west, we found ourselves on a level country, openly timbered with narrow-leaved iron-bark, or box, the forest changing, with fine plains, sometimes many miles long and several miles broad. Often a small brook was running in them. To a very conspicuous mountain on the basaltic table land I gave the name of "Mount Lang."

A big creek sweeps along the east and north-east side of this plateau, and separates it from primitive formations. The frequency of big fantastic hills of the white ant, which I had not seen before of such a size, induced me to call it "Big Ant-hill Creek." At latitude 18 deg. 16 min. 37 sec., running brooks came down along the plains of the table land from Mount Lang, and several other isolated hills, and join Big Ant-hill Creek. In leaving the Burdekin I followed up this creek, passed in a north-north-west direction over a level country, and came in latitude 18 deg. 22 min. 2 sec. on waters which flowed to the east and north-east. They either belong to the Burdekin or to a more northerly system. I called the first creek I came to "Separation Creek," as it separated the basaltic from the primitive formations, as Big Ant-hill Creek had done. Several other creeks joined it lower down. Fine flats extend along its banks. The whole table land is beautifully grassed, of great extent, well provided with water along the creeks, the brooks, and the river, but in the dry season waterless in its centre. This country is a pattern for cattle and sheep stations. The elevation of it (at least 2000 to 2800 feet above the level of the sea) renders it cool and fit for sheep. The ground is sound, the forest is very open. It is in the centre of the York Peninsula, equally distant from the east coast and from the Gulf of Carpentaria, to which, as I shall presently show, a system of rivers, well provided with water, forms an easy communication, with the exception of some mountainous passages, which later travellers will change with easier roads farther off the rivers.

It would be tedious to mention the numerous mountain ranges along the Burdekin, to some of which I gave names, leaving many of them nameless.

About fourteen miles from "Separation Creek," in a north-north-west direction, we came on gullies and creeks, which collected into a water-course going to the westward. In latitude 17 deg. 58 min. we found a fine reedy water-hole, below which another bigger creek joined from the northward. The bed became very broad, in some places more than half a mile, with several channels which, however, collected again in passing through mountain gorges. I called this river "the Lynd," in acknowledgment of the infinite kindness which this gentleman has bestowed upon me. I followed it down from 17 deg. 58 min. to 16 deg. 30 min., where it joins a river coming from the east.

The Lynd works its way in a north-westerly course, through a very mountainous country, from 17 deg. 58 min. to 17 deg. 9 min. 17 sec. There is, however, plenty of grass and water to feed any number of cattle or horses which might be driven down to the gulf. Several big running creeks come in from the westward. They will probably allow a more immediate communication with the head of the gulf. From 17 deg. 9 min. 17 sec. fine flats, well grassed, accompany the river. They are mostly timbered with box, apple gum (a new species of gum, with the foliage of the apple tree of Darling Downs, and with the black butt of the Moreton Bay ash,) blood-wood, and occasionally stringy bark.

We passed several fine lagoons on the flats along its lower course. It had a running stream from latitude 17 deg. 25 min.

The rock of the upper Lynd is primitive; granite, sienite, pegmatite, hornblende; lower down, taleschist, broken by porphyry, appear; and before the river enters the flats, it is accompanied by sandstone ranges, which, in some places, form perpendicular walls on both sides of the broad sandy bed.

It is interesting to see how we descend from the table-land to the gulf from the same series of rock through which we had ascended from the east coast along the Burdekin, only in an inverted order.

Many new trees made their appearance on the ranges as well as along the river and within its bed. I shall mention a gum tree, with showy orange blossoms, very big seed vessels, two inches long, one inch broad, with a short foliaceous bark, the upper branches remaining white and naked. We called it tea-tree gum, as the foliaceous nature of its bark reminded us of the tea tree. This tree was not observed at the east side of the gulf, but re-appeared very extensively at the west side up to Port Essington, forming the even forest round Victoria. Several other forest trees, intermediate between the blood-wood and gum tree, were observed. All these trees are, however, of no use to the settler or squatter, as the fibre of their wood is too interwoven to allow splitting; nor is their bark easily stripped. The iron-bark disappears where the Lynd enters into the flats, and it is wanting all round the gulf. At the neck of the Coburg Peninsula is a tree which resembles the iron-bark; but it is rare, and differs essentially from it. The stringy bark, the blood-wood, and the box, are the only forest trees which accompanied us to the end of our journey, always re-appearing where the soil favoured their growth.

From latitude 16 deg. 30 min. to 15 deg. 51 min. we travelled along a fine river, with a running stream, now narrow and shallow, now swelling into fine long sheets of water. I called it "the Mitchell," in honour of Sir Thomas Mitchell. A belt of open forest accompanies its banks Farther off, the country opens more and more, and changes into a series of plains, extending parallel to the river. They are limited by a forest of small acacia trees, and several others, which I have not yet been able to determine. Lagoons became larger and larger, and more frequent, as we travelled down the river. The country improved, the plains grew bigger, the forest land richer, receding further from the river.

In a large water-hole of the Lynd we found a dead saw-fish (pristis). In those of the Mitchell alligators were seen by my black fellows.

I expected that the Lynd, and afterwards the Mitchell, would turn to the westward, and join the sea in latitudes where the Van Diemen, the Staaten, the Nassau, were indicated; but the Mitchell passed the latitude of the Nassau, and I could now only expect to see it join the sea at the Waterplats, to which its general course inclined. I had followed these rivers, more out of scientific and geographical interest, than for the benefit of my expedition; for I was compelled to go back, in order to head the gulf. If my provisions had been sufficient, I should have followed the Mitchell up to its mouth; but afraid that I should be short of provisions, I left the river and went to the westward.

Plains, open forest land, lagoons full of fish, and covered with the broad leaves and showy blossoms of nymphæa, gave a great variety to this fine country, well adapted for the breeding of cattle, and particularly horses, though deficient of good timber.

Here, at one of the lagoons, in latitude 15 deg. 55 min., not very far from a large creek, which I consider the upper part of the Nassau, Mr. Gilbert was killed by the black fellows, who had sneaked upon us immediately after nightfall, just when the greatest part of the party had retired to their couches. They wounded Mr. Roper and Mr. Calvert severely; but Mr. Gilbert was the only one who received a deadly wound, a spear entering into the chest between the neck and the clavicle, at the moment when he was stooping to get out of his tent. At the first discharge of our guns the black fellows ran away. The next morning they were wailing for one of their number, who, it seems, had been severely wounded. They left the country, and we did not see any more of them.

I passed the Staaten in latitude 16 deg. 27 min. 26 sec. It is a river with a broad sandy bed, easily to be crossed at low tide. Its water is briny. Between the Staaten and the Van Diemen, which I crossed at 17 deg. 0 min. 13 sec., I passed four creeks, all provided with water holes and fine water. Between the Staaten and Gilbert's Lagoon I found three creeks with water. The country along both rivers is excellent. Between the Van Diemen and the Caron, latitude 17 deg. 28 min. 11 sec. I passed a small river which had no name, and which I called the "Gilbert," in commemoration of the fate of my unfortunate companion. Its latitude was about 17 deg. 5 min. It contained numerous water-holes of fresh water, but was not running. A fine chain of lagoons is between the Van Diemen and the Gilbert; seven creeks with water between the Gilbert and the Caron. Towards the latter river, which had no water in its bed, but chains of lagoons parallel to its banks, the creeks were lined by a dense tea-tree scrub, half a mile or more broad. The tea-tree is of a peculiar species, which always indicates the neighbourhood of salt water. In latitude 17 deg. 49 min. we came on a salt-water river, which I called the "Yappar," this word being frequently used by friendly black fellows, whom we met at one of the fine lagoons alongside the river. Between the Yappar and the Caron there is a chain of shallow lagoons of fresh water.

The whole country from Gilbert's Lagoons to the Yappar, extending along the east coast of the Gulf of Carpentaria, is highly adapted for pastoral pursuits. Cattle and horses would thrive exceedingly well. Sheep would not. Neither the climate, the temperature, nor the nature of the soil is favourable for them. Large plains, limited by narrow belts of open forest land, extensive box flats and tea-tree flats openly timbered, changing with a more undulating country, fine grassy meadows along frequent chains of lagoons, and shady forest land along the rivers, render this country pleasing to the eye of the traveller and inviting to the squatter. After what I have learnt of the cultivation of rice and cotton, I can add that long stretches of country would be adapted for both.

The country is well inhabited by black fellows. We had three times intercourse with them. The first time they were hostile (when Gilbert was killed ;) the second time they were very noisy, but withdrew at the approach of a horseman, and were not seen again ; the third time, at the Yappar, they were very friendly, and it was evident that they had seen either Malays or white men before us.

I called the whole country between the Mitchell and the Van Diemen the "Nonda Country," from a fine shady tree with a yellow eatable fruit, which we enjoyed very much. It grew in the stretches of open forest land with the blood-wood and the pandanus. I had seen it first at the upper Lynd. It disappeared at the Van Diemen, and we never met it again.

Between the Yappar, longitude 140 deg. 45 min., approx., and the Nicholson, longitude 138 deg. 55 min., which latter river I crossed in latitude 17 deg. 57 min., passed three big salt-water rivers, one fine running creek, which I called "Beames' Brook," and several chains of fresh-water lagoons. The country west of the Yappar is undulating and hilly forest land, frequently scrubby, for an extent of about twenty miles. Here it opens in immense plains, some of them three miles broad, ten miles long and longer. The plains stretch along the banks of the rivers, and are separated by creeks, lined by thickets of a small tree, which we called raspberry-jam tree, from the scent of its wood. These creeks had fine water-holes, but they were all for the greater part dry. We found our water principally in grassy lagoons, surrounded by polygonum ; but the country is in general badly watered, though the number of black fellows, the smoke of whose fires we saw all around us in crossing the plains, showed that a nearer acquaintance of the country would probably lead to the discovery of a sufficient supply of water.

Beames' Brook, which I crossed in latitude 17 deg. 57 min., was about twenty yards broad where I first met it. A rich verdant brush of pandanus and the palm-tree, and several other trees, lined it. Its water was fresh, but affected by the tide. At the crossing place (about eight miles lower down) it was three yards broad, very deep in some places, shallow in others, a full flowing little stream, with magnificent oak trees and palms, and pandanus and flooded gum, along its banks. We never had met, nor did we meet another brook like it again.

About three miles further we crossed the "Nicholson," called so in honour of Dr. William A. Nicholson, of Bristol, who had enabled me to come to Australia to explore it, and to study its nature. Its bed is one hundred yards broad, sandy, with magnificent drooping trees; a shallow running stream, flood-marks fifteen feet eight inches high, a chain of fine lotus lagoons parallel to its banks, which are accompanied by fine box flats at its left.

The salt-water rivers which I had crossed, as well as those which I have still to mention, are very broad (150, 200, and 300 yards;) but they were easily fordable after one or two travelling upwards, the fords generally being formed by rocky bars crossing the rivers. These fords were generally indicated by fisheries of the natives, sticks having been stuck close to each other to form a sort of hedge, preventing the fish from returning with the tide, or stone walls having been formed by heaping loose stones on each other. At the head of the salt water the bed of these rivers usually enlarged, and frequently it was formed by two or three deep chasms, separated by high bergues. One channel either contained a running stream of fresh water, lined by pandanus and the drooping tea-tree, or it had just ceased running, a chain of fine water-holes still remaining.

From the Nicholson to the Roper (latitude 14 deg. 50 min., longitude 135 deg. 10 min.) we travelled through a country, in part miserably scrubby, in part covered by a dense tea-tree forest and by stringy-bark forest, which was sometimes open, but generally scrubby, and rendered difficult for passage by a dense underwood. There was particularly a leguminous shrub, from two, three, to five feet high, with a winged stem, and branches, leafless, with yellow blossoms (like Bossiæa scolopendrium,) which composed the scrub and underwood of this country. Several species of scrubby acaciæ and several grevilleas were very frequent. The vegetation preserves the same character all along the west side of the gulf, across the Arnhem Peninsula, and up to Port Essington, wherever the soil is similar. Along large rivers the country opened, and fine box flats and open forest land refreshed the eye, tired by the endless scrub. It is very probable that farther from the sea coast, and higher up the rivers, before they enter into the mountains, a fine favourable country exists. The country is in general well watered, numerous creeks provided with good water-holes, and several rivers, with running streams at the head of the salt water, go in a north-easterly direction, which changes into an east-north-east and easterly one, to the sea.

Between the Nicholson and the Marlow (latitude 17 deg.) named after Captain Marlow, of the Royal Engineers, for his kind contribution to our expedition, we met numerous creeks, which contained either fresh or slightly-brackish water. The first (latitude 17 deg. 39 min.) I called "Moonlight Creek," as I had found it on a reconnoitre during a moonlight night; another about sixteen miles, north 30 deg. west, I called "Smith's Creek;" a third I met in latitude 17 deg. 25 min.; a fourth about eleven miles north-north-west. The whole country was covered with an almost uninterrupted tea-tree scrub.

Between the Marlow (longitude 138 deg. 25 min. appigree) and the Van Alphen (latitude 16 deg. 30 min., longitude 137 deg. 18 min.,) I passed six creeks, containing a greater or smaller supply of fresh or brackish water. Some of the very isolated waterholes were very small, and often very brackish. Seven creeks, ten to twenty yards broad, were salt, the water filling their whole bed. They were easily fordable, as the bed was composed of a firm sand, or of rock. The three most southern ones probably join into a large river, the mangrove line of which I saw in the distance. I called the most southern one "Turner's Creek," in acknowledgment of the liberal support I received from Cooper Turner, Esq. In latitude 16 deg. 52 min., about eighteen miles south-east of the Van Alphen, the country opens, and fine plains extend along a big creek, though badly supplied with water. In the bed of this creek I found a piece of granite, and near another, about eight miles west-north-west of this, a large piece of porphyry, in an old black-fellow's camp. This piece had served to crush the seed-vessels of the pandanus, which grows abundantly all along these creeks. These pebbles show that the table land, or the division of the waters, is not very distant, as I found the primitive rocks almost invariably connected with at least the ascent to a table land.

Between the Van Alphen and the Abel Tasman (latitude 16 deg. 29 min.) I passed a big creek (latitude 16 deg. 35 min.,) and a small river well supplied with water, which I called "the Calvert," in commemoration of the good services of my trusty companion, Mr. James Calvert. Sandstone rock crept frequently out in the open stringybark forest, which covers the greater part of the intervening country. Sandstone ranges were seen to the west and north-west. The lower part of the Abel Tasman forms a broad sheet of salt water. The banks are steep, lined with mangrove and several trees peculiar to the change of fresh and salt water, as I feel convinced that during the rainy season the freshes go far out into the sea. The flats along the river are well grassed, openly timbered with blood-wood, stringy-bark, and white gum. In latitude 16 deg. 29 min. the water is fresh, running strong over a rocky bed, the stream is about three feet deep, fifteen to twenty yards broad, the whole bed from bank to bank three hundred yards.

Between the Abel Tasman and the Seven Emu River (longitude 137 deg. 5 min., latitude 16 deg. 12 min.,) I crossed seven creeks, containing pools of water, some of them brackish; four had a fine supply of it. The whole country is a succession of tea-tree and cypress-pine thickets and scrubs. A fine open well-grassed country extends along "the Seven Emu River," which received its name from numerous flocks of emus, seven of which were hunted down, as we travelled eight miles up its banks. We met soon the fresh-water stream, which we crossed at a black-fellow's well and a fishery.

Between the Seven Emu River and the Robinson (latitude 16 deg. 8 min., longitude 136 deg. 43 min.) several small waterless creeks were met, after having passed the fine country near the river and some miserable scrub. A fine path of the natives led me to a large but waterless creek, the banks of which were covered with cypress pine and cycas groves (the cycas, a tree of the aspect of the palm, thirty to fifty feet high and higher, frequently with two or three heads, the leaves like those of Zamia spiralis in the neighbourhood of Sydney, the nuts arranged in two parallel lines along an intermediate flat fleshy fruit stalk.) The foot-path went from cycas grove to cycas grove. Big wells, six to eight feet deep, were dug in a sandy soil, which rested on a layer of stiff clay. All these wells were, however, dry, though the whole country looked fresh and verdant. About five miles from this creek we came to a large salt-water river, equally accompanied by cycas groves. A fine foot-path brought us to a large well under the bank of the river. An alligator was tracked at this well, and porpoises were seen playing in the broad salt-water of the river. Two miles below the spot where we came to the river, it entered into a still bigger one coming from the westward. The first became narrow, five miles higher up, where the salt-water ceased and fresh-water pools commenced. I called this "Cycas Creek," and the more northerly river "the Robinson," as a slight sign of gratitude towards P. L. Robinson, Esq., for his kind support of our expedition.

The fruit of the cycas forms the principal food of the natives during September. They cut it in slices of the size and thickness of a shilling, spread these slices on the ground and dry them, soak them for several days in water, and after this pack them closely up in sheets of tea-tree bark. Here it undergoes a process of fermentation, the deleterious properties of the fruit are destroyed, and the mealy substance with a musty flavour remains, which the black fellows very probably form into cakes, which they bake. The fruit of the pandanus forms another apparently very much-liked eatable of the natives. We found heaps of them in their camps, and soaking in the water contained in large koolimans made of stringy bark. I am inclined to believe that they are able to obtain a fermented liquor, by soaking the seed vessel of the pandanus, and by washing the sweet mealy substance out, which is contained in the lower part of the seed vessel between its fibres.

Between the Robinson and the Macarthur (latitude 16 deg. 5 min. 26 sec., longitude 136 deg. 10 min.,) named after Messrs. James and William Macarthur, in acknowledgment of their kind support of my expedition, I crossed a fine creek, with a chain of deep pools and two waterless creeks. The whole country is a stringy-bark forest, mixed with melaleuca gum, with cypress pine thickets and tea-tree scrub. About five miles from the creek, we had an interview with a tribe of black fellows, who gave evident signs that they knew the gun and the knife. They were very friendly, and we exchanged some presents with them. They were circumcised, as all the black fellows of the gulf we had seen. The head of a crocodile was seen at Cycas Creek. The carcase of another I found at the upper crossing place of the Robinson. Tracks were observed by Charley at the water-holes of the creek, between the Robinson and the Macarthur.

The country along the Macarthur is well grassed, and openly timbered for a half to one and a half miles off the river. Sandstone ranges commence at latitude 16 deg. 5 min. 26 sec. Two miles higher up it is fordable, a running stream of fresh water enters the broad salt-water river, its bed gets broad and sandy, with the vegetation of the Lynd, and fine plains extend along its banks to the westward.

Between the Macarthur and the Red Kangaroo River, I passed three creeks, well provided with water. The most southern is about ten miles north-west from the crossing-place of the Macarthur. The second, a pandanus creek, is only one and a half miles from the former, and joins it lower down. The third, about nine miles north-north-west farther, I called the "Sterculia Creek," as the Sterculia heterophylla grows very frequently along its lower course. The Red Kangaroo River (latitude 15 deg. 35 min.) has a very broad sandy bed, two channels, separated by a broad high bergue. The northern channel has a fine supply of water in numerous water-holes, the connecting stream of which has just ceased running. A fine lagoon extends along its southern bank about half a mile from the river. The country near the crossing place of the Macarthur is intersected by rocky sandstone ranges. Towards the first creek tea-tree forest and box flats render the travelling easy. Sandstone ranges were seen to the left. From the second creek to Red Kangaroo River the country is a miserable scrubby stringy-bark forest.

From the Red Kangaroo River to Limmen-bight River (latitude 15 deg. 5 min., longitude 135 deg. 30 min.) we passed through a continuous low dense scrub. In four creeks intersecting our course we found either fresh or brackish water. The sandstone range which I just mentioned continued to our left. In this scrub, twenty-nine miles long, almost all the small trees had been thrown down by a violent wind. They lay from south-east to north-west. At Port Essington I learned from Captain Macarthur that a hurricane had passed over Victoria in 1838, and I saw the trees which it had uprooted. They lay in the same direction as those of Limmen Bight, and I feel assured that the same hurricane has passed over the west coast of the Gulf of Carpentaria.

In latitude 15 deg. 14 min. I came to the sea coast. I went in a north-west course to the northern extremity of the Sandstone Range, indicated in the map of Arrowsmith. We saw the sea, an island, (Maria ?) and a large river coming from the westward. White sand plains were seen along its course.

I had to find my way through an intricate country, intersected by salt-water creeks. Fresh water was generally found in creeks coming from sandstone ranges. Their heads were frequently formed by fern swamps (a species of blechnum was very frequent.) From latitude 15 deg. 31 min. I crossed the salt-water river by a rocky bar.

Ten miles farther to the north-west I met a second branch of the same river, with a fine broad bed, several channels, fresh water in detached pools, which just had ceased running, lined with pandanus and drooping tea-trees. Both branches are of equal size, and probably came from an equal distance. Captain Wickham has explored the lower part of the river, and probably one of its branches. I do not know whether Captain Wickham has given a name to these rivers. I called the lower "the Limmen-bight River," and its northern branch "the Wickham," in honour of the successful explorer of this coast and of the north-west coast of Australia.

Between the Wickham and the Roper, (latitude 14 deg. 50 min., longitude 135 deg. 10 min.) the country is badly watered. Though we passed nine creeks, two of which were very considerable, we found water only in the pools of two, after having followed them down for a considerable distance. The country is very remarkable, particularly after leaving the Wickham. Steep sandstone ranges parallel to each other, with a direction from south-west to north-east, intersected our course. They were separated by tea-tree flats; but at their foot generally a richer vegetation of pandanus, of the leguminous iron-bark, and of blood-wood, existed, which made me mistake them for the verdant belt of trees accompanying rivers and big creeks. From the top of these ranges still more ranges appeared, one above the other, till their dim outlines were lost in the misty blue of the horizon. My horses and cattle got very foot sore, and I was compelled to go to the northward, in order to get out of these ranges.

After having passed over tea-tree flats, I entered again into scrubby stringy-bark forest, with patches of cypress pine thickets. The creek with water was in latitude 15 deg. 10 min. Towards the Roper sandstone ranges re-appeared. Fine box-tree flats with dry water-courses stretch from south by west to north by east, but they are limited towards the river by a narrow belt of thick scrub. Plains with groves or thickets of the raspberry-jam tree, and overgrown with salicornia, indicate the neighbourhood of salt water. A fine open country, undulating or hilly, extends along the Roper; and fine lagoons, some two or three miles long, covered with ducks and wild geese, are parallel to the river, quarter to two miles off.

I followed the Roper from latitude 14 deg. 50 min. to 14 deg. 40 min., longitude 134 deg. 18 min.; but I came again on its upper course, and I believe that the creeks which I passed from latitude 14 deg. 40 min. to 13 deg. 44 min. (longitude 133 deg. 45 min. appr.) belonged to the system of that river; and I equally believe that the corresponding waters to the north-west belong to the system of the South Alligator, on the main branch (?) of which river I came much later in descending from the table land into the valleys to the westward. I observed the tide to latitude 14 deg. 44 min., where the bed of the river assumes the character of the Lynd and many rivers, mentioned before. As far as the tide extends, the river is from one hundred and fifty to two hundred yards broad, deep, with steep banks, lined with dense hedges of pandanus, of the drooping tea-tree, and several other brush trees, amongst which was a jasmine, which was in blossom, and rendered the air fragrant with the perfume of its flowers. Vines hung from tree to tree; and a fine leguminous climber (Kennedya ?) with green flowers, big pods, big brown seeds, grew in great abundance. These seeds, crushed and boiled, formed a tolerable satisfying food. It appeared that the black fellows did crush it on stones, which were in all the camps along the river. This strip of brush was, however, very narrow, and cannot be compared with the river brushes of Moreton Bay, which I have not met in an equal extent during my whole expedition. A big creek came in from the southward, in latitude 14 deg. 48 min., and a branch as big as the main branch came from the northward.

The country along the river is openly timbered, and particularly its upper part, which opens into fine plains, would be well adapted for pastoral purposes. There are, however, many rocky ranges, bluff isolated hills and mountains, which frequently approach the river, and render the travelling along its banks difficult. The rock which composes these ranges is a fritted sandstone and indurated clay, regularly and horizontally stratified. In latitude 14 deg. 39 min. the plains commence, the river splits into a great number of channels, almost all with a running streamlet, every one lined with pandanus and tea-tree. I suppose that the main branch turns off to the south-west and west-south-west, as even the branch which I followed turns considerably to the south-west.

The banks of the river are inhabited by numerous black fellows. We had friendly intercourse with them at its lower part. At the Plains, Charley and Brown, my black fellows, asserted to have seen four of them coming up to our camp, at nightfall, in order to attack us. They however ran away, when they saw that we were prepared to receive them, even without the discharge of a gun.

After leaving this branch of the Roper, as its source is in latitude 14 deg. 40 min., longitude 134 deg. 16 min., we saw a living spring coming out of a gentle rise beyond the plains. I passed it in a north-west direction, through a country in which ridges, flats, and sandstone ranges frequently changed. In latitude 14 deg. 33 min. I came to a big creek with a good water-hole. In 14 deg. 24 min. basalt first made its appearance, at the foot of sandstone ranges. A creek which I met here was waterless; but in one of the gullies which go down to it, a small rocky basin of water, fed by a spring, was found. Both creeks go down to the south-east and join the Roper. Having passed these ranges, I came to a large fine valley, the south-east and east side of which was limited by basaltic ridges. A water-course, turning to the south-west, brought me to a fine running brook, lined with groves of pandanus. The basaltic ridges made me believe that I was at the head of westerly waters; but the Pandanus Brook turned to the southward; and as I met in latitude 14 deg. 16 min. a large creek with a sandy bed, about ten yards broad, filled by a rapid stream running to the southward, which is joined by the Pandanus Brook, I feel assured that I was again at the Roper, the main branch of which had probably made a large sweep at first to the westward, and afterwards to the northward. I followed the big creek up its course to latitude 14 deg. 2 min. The country is in part very fine; but it becomes more and more mountainous, and the flats along its banks become more and more limited.

Leaving the creek, and ascending the sandstone ranges, I came to a table land, level, with sandy soil, cypress pine and stringy-bark forest, frequently scrubby. Water-courses and gullies went down to the south-east and south-west. Both were collected by large creeks joining the Roper.

I met one of these creeks running to the south-east, with grassy lawns along its banks, in latitude 13 deg. 57 min. Another, with the direction to the south-west, in latitude 13 deg. 50 min. My course changed between north-west and north-north-west. In latitude 13 deg. 41 min. approx., I came on the heads of the first westerly water, and found the first water-hole in its bed in latitude 13 deg. 38 min., longitude 133 deg. 30 min.

Open well-grassed stone ridges accompany this creek, which I followed for several days. But as it turned too far to the south-west, I left it again, following my old course to the north-west, after having crossed a very rocky creek, well provided with water, and came again to a table land of the same description as the former, but sandstone rock crept out more frequently, and formed into rocky ranges, cut by deep gullies. From one of these ranges I had a view over the country before me, and I almost despaired of ever getting through it. Sandstone ridges behind sandstone ridges lifting their white rocky crests over the forest, deep gullies, with perpendicular walls, rocky creeks, with boulders loosely heaped in their beds, frequently interrupted by precipices over which the waters must form magnificent water-falls during the rainy season.

I worked my way down to one of these creeks, and followed it along its bed, until a precipice between two mountain walls compelled me to leave it. Following a grassy lawn up to the northward, I came to a water-shed, and into another grassy lawn with a small creek, longitude 133 deg. 6 min., which brought me to the deep valley of a river coming from the east and going to the westward. It was difficult to get down the steep slopes; but once down, we found a fine provision of water in big holes, the water running through the loose pebbles which fill the bed.

Having crossed the river, and following a northerly or north-north-westerly course, I passed again over the table-land, from which numerous creeks, one, two, and three miles distant from each other, went down to the westward. They generally take their origin from rocky ridges rising out of the level land. Frequently tea-tree swamps are at the head of these creeks. They soon become very rocky on both sides for half, two, and three miles, and open again on fine grassy flats, well provided with water, which is found in deep puddleholes of the creeks. Still further down they become rocky again, deep gullies join them from both sides, higher or lower precipices interrupt their course, and, at last, arrived at the border of the table-land, a fine broad valley is deep below them, and their waters rush over a perpendicular wall of five hundred or eight hundred feet high, down into a rocky basin, and into the channel, in which they flow to the westward to join the main branch of the South Alligator River.

The table-land is covered by forests of stringy-bark, of malaleuca gum, and Banksia. Several grassy flats, with a white gum (similar to the flooded gum) were observed. The drooping tea-tree grows in the swamps I mentioned to a great size; the grass is excellent in some of these swamps; but a sedge is prevailing which, it appeared to me, was not so much liked by our cattle and horses as the deep green colour of the young plant after late burnings made me first believe.

It was very difficult to find a passage down the table-land. I succeeded, though the descent was very steep even for our horses and pack bullocks. This descent was about latitude 13 deg. 22 min., longitude 132 deg. 50 min.

I dare say that my passage over the table-land would have been much simplified by following the main branch of the Roper to its head, to pass over to Snowdrop's Creek, and follow it down, notwithstanding its southing; for Snowdrop's Creek, in all probability, joins the Flying Fox River, which I consider the main head of the South Alligator. This route would be practicable for cattle and horses, which might be driven over to the west side. I could certainly not recommend my line of march. It is very remarkable that pegmatite cropped out at the foot of the slope where we made our descent, whilst at the top, as well as all over the table-land, when we met the rock, it was found to be fritted sandstone.

The south Alligator River is joined by a great number of creeks, which, as far as we could see, came down over a precipice, and must of course form as many water-falls during the rainy season.

I followed the river to latitude 12 deg. 51 min. At the upper part of the valley the river passes between a high range and an isolated peak. At the foot of the former I observed pegmatite again. Further down, big lagoons, with an outlet into the river, are very frequent. Farther off the river, iron sandstone ridges, covered with a scrubby forest, in which a small fan-leaved palm-tree became more and more frequent, extend between small creeks, which go down the river.

The lagoons were surrounded by magnificent tea-trees, and this outlet was lined by pandanus. Myriads of ducks and wild geese covered the water. The whole country had been burnt, and the late thunder showers had produced the most luxuriant grass. We experienced the first thunder shower on the 14th November, at the table-land, after having been without rain from March, 1845, with the exception of a shower in June and a drizzling rain on the 1st September.

In latitude 12 deg. 51 min. large plains accompanied the river; either grassy, with a rich loose black soil, or entirely bare with a stiff clayey soil. On plains of the latter kind we first met a salt-water creek lined with mangroves. The river bank was covered with a thick vine brush, gigantic tea-trees, palms, and bamboo.

In latitude 12 deg. 49 min. I came apparently to a river with fresh water, lined with pandanus, palm-trees, &c., which joined the South Alligator. I was compelled to go up its course in order to head it. After about three miles' travelling, we found that it was the outlet of a remarkable swamp, which, according to the statement of friendly black fellows, extended far to the eastward. The swamp was, with a few exceptions, dry, its bed a stiff clay, cracked by the heat of the sun. Out of its bed small islands of pandanus and of tea-tree rose, either round, like a tuft of green grass, or long and irregular. Fortunately we were able to cross it. The black fellows gave us to understand that a big lake of water is at its head. In the rainy season a passage would be impossible; and the traveller would have to keep out far to the north-east from the upper part of the South Alligator, or on the table-land, not only to avoid this big water, but to avoid being caught by the East Alligator, which, as I shall mention, compelled me to go far to the south again in order to cross it.

In an almost northerly course I passed over iron-stone ridges, covered with rather scrubby forest, in which the small fan-leaved palm-tree became so abundant that it formed almost for itself the forest. A small tree, which we called the gooseberry-tree, as the taste of its ripe fruit resembled that of the gooseberry, was very frequent. We had found it all along the outside of the gulf. We crossed numerous creeks. The first to the south-east probably joined the swamp; the others to the westward. We met with water in latitudes 12 deg. 38 min., 12 deg. 26 min. 41 sec., 12 deg. 21 min. 49 sec. Here I met with granite again, which cropt out in the bed of a fine creek, with an abundant supply of water. At about 12 deg. 17 min. I crossed a running brook, bubbling and murmuring like the mountain brooks of Europe. It was probably the outlet of a tea-tree swamp. Its bed was rocky. A fine path of the natives passed along its banks.

My northerly course brought me to an immense plain, six to seven miles broad, and endless to the eye to the westward and eastward. That part which was nearest to the forest land (which ended everywhere in pandanus groves and tea-tree hollows) was composed of black soil and richly grassed. Nearer to the salt-water creeks, which we met, and which compelled us to return to the forest, the soil was a stiff clay, covered with a stiff dry grass. The salt-water creeks were lined by mangroves. We found water in a swamp along the forest. It was covered with geese and ducks. About four miles farther to the east-north-east, friendly black fellows showed us a number of deep wells (six to seven feet deep,) which were dug through the sand to a layer of clay, on which the water collected. These wells were observed all along those big plains, which we passed or crossed afterwards. It appears that the black fellows either dig them, because open water is wanting, or because the water in swamps and lagoons is very bad, or because they want water in the immediate neighbourhood of those places where they find abundant food during a certain season. I believe that the latter is generally the case, though the two other ones may occasionally compel them to procure water by digging.

At latitude 12 deg. 8 min., longitude 132 deg. 40 min., I came on the East Alligator, and I saw myself compelled to go to the southward, as far as latitude 12 deg. 23 min., in a south-south-easterly course, to cross the river. Large plains accompany it all along its left bank. Ridges and forest land are beyond the plains, and along the outskirts of the forest land the wells of the natives are found. At the right side we observed conical and strange-shaped hills, either isolated or connected in short ranges; and when we came to the higher part of the river, rocky sandstone ranges, rising abruptly out of the level of the plain, appeared to surround the valley of the river. At the foot of these rocky ranges fine lagoons were found, which were so crowded with wild geese that Brown, one of my black fellows, shot six at one shot. The plains were full of melon holes; and dead fish shells, lymnæa and paludina, were covering the ground.

The valley of the Upper East Alligator, which I should rather call Goose River (for nowhere we observed so many geese—and what is called alligator is no alligator, but a crocodile,) is one of the most romantic spots I have seen in my wanderings. A broad valley, level, with the most luxuriant verdure, abrupt hills and ranges rising everywhere along its east and west sides, and closing it apparently at its southern extremity; lagoons, forming fine sheets of water, scattered over it; a creek, though with salt water, winding through it.

After having crossed the river I went to the northward, passed a plain about eight miles long, from which I saw bluff mountain heads to the north-east, which seemed to indicate the valley of a northerly river, entered the forest land, passed several creeks, running to the eastward (one at 12 deg. 11 min., with water,) and followed a well-trodden footpath of the natives, which led me through rocky sandstone ridges, over numerous creeks running to the westward to the broad sandy bed of a river, with fine pools of water, which I consider to be the fresh-water branch of the East Alligator, coming from the east. Not very far from the river, we came to a fine lagoon, beyond which a large plain extended. The latitude of this lagoon (Bilge's Lagoon) was 12 deg. 6 min.

I passed the plain, and entered the forest land. Just where the latter commenced, on a swampy ground between sandstone rocks, the first tracks of buffaloes were observed.

The forest covers an undulating country, in which the ironstone frequently crops out. A fine chain of lagoons and a tea-tree swamp, changing into a pandanus creek, were well supplied with water. Both went to the eastward. At the latter buffalo tracks were seen again. (Latitude 11 deg. 56 min.)

We travelled in a northerly course again, through forest land,

and crossed a small plain, in which a mangrove creek turned to the westward, and further on a tea-tree swamp equally to the west. On a fine plain we met a tribe of black fellows (Nywall's tribe,) who guided us to a good-sized lagoon. This plain extended far to the northward and westward. Two isolated peaks and two low ranges were seen from it to the east and south-east. We crossed and skirted these plains in a north-north-west course, and entered the forest land, which was undulating with low ironstone ridges, from which numerous creeks went down to Van Diemen's Gulf, along which we travelled. Black fellows had guided us two days, but they left us at the neck of the Coburg Peninsula, which we entered on a fine footpath. Keeping a little too much to the northward on a narrow neck, we came to westerly waters and to Mountnorris Bay. I turned, however, again to the westward, to come to westerly waters. Creeks are numerous on both sides, and fresh water was frequent after the late thunder showers. I made my latitude at 11 deg. 32 min. on a westerly water, and at 11 deg. 26 min. on an easterly water (Baki Baki's Creek.) Keeping a little too much to the northward, from the latter creek, I came to Raffle's Bay, from which black fellows familiar with the settlement guided us round Port Essington to Victoria, which I entered at about five o'clock, the 17th December, 1845.

Ridges composed of the clayey ironstone (a ferruginous psammite,) which I had found so extensively in travelling round the gulf, form the watershed in the neck of the Coburg Peninsula, and become more numerous and higher within the Peninsula itself. Between Mountnorris Bay and Raffle's Bay I passed several high ridges and a fine running creek, about fifteen miles from the head of the harbour. The ridges are rather densely wooded. The stringy-bark, the melaleuca gum, the leguminous iron-bark, are the prevailing timber. Along the creeks and in the swamps, the tea-tree grows to a stately size and yields an excellent timber. The stringy-bark is useful for its bark and its wood. The cypress pine is abundant on the neck of the Peninsula. The cabbage palm, with long pinnatifid leaves, grows along some of the creeks, and even on the ridges, and forms groves, and almost a forest at Montjejalk, between Raffle's Bay and the harbour. The small fan-leaved palm is very abundant. The little gooseberry-tree becomes a low shrub.

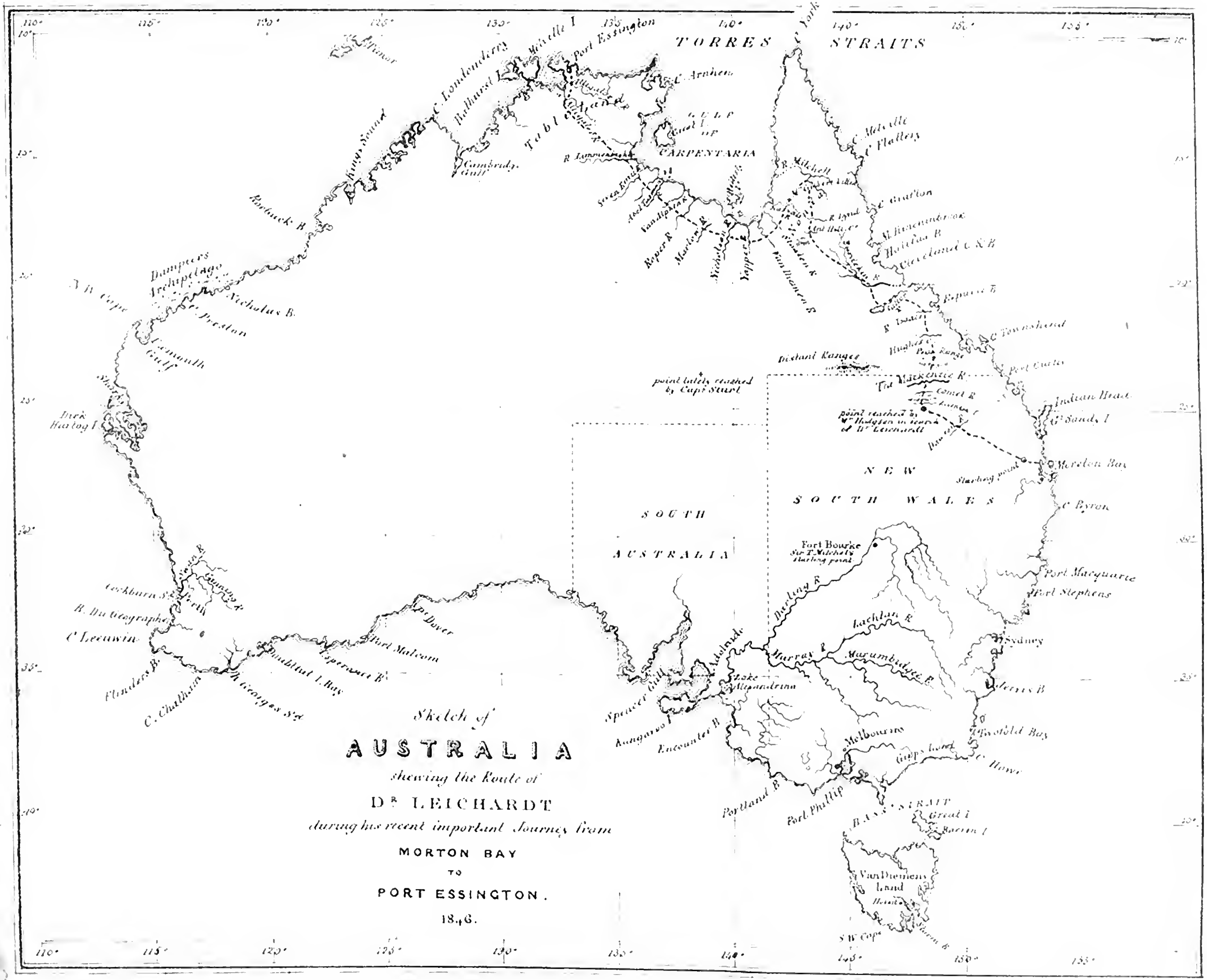
The tracks of buffaloes became more and more numerous as we advanced on the neck of the Peninsula. They formed at last a regular broad path along the sea coast, sometimes skirting the mangrove swamps, in which all the western and eastern creeks end, sometimes entering into the swamp itself. Farther on other paths turned off into the forest or along creeks, and formed a meshwork which rendered it impossible for me to keep to the principal black fellows' footpath, leading from Nywall's Lagoon to the settlement. We frequently saw buffaloes as we went on, and they were very numerous at Baki Baki's Creek, which joins Mountnorris Bay. In riding along it I saw three and four at the time hurrying out of the deep holes of water within the creek to which they come in the heat of the day to cool themselves. About seven miles from Nywall Lagoon, we succeeded in shooting a fine beast, of about three years old, which fortunate accident enabled me to bring my last pack bullock to the settlement. The buffaloes are equally abundant between Raffle's Bay and the harbour; and the whole country, particularly round the Baki Baki Bay and on the neck, is as closely covered with buffalo tracks as a well-stocked cattle run of New South Wales could be.

I entered Victoria with one pack bullock and with eight horses. We had killed fifteen of our bullocks, and had dried their meat. Along the east coast, and at the east side of the gulf, they kept in very good condition, and yielded a fine supply of fat meat; but at the west side long stages, bad grass, and several waterless camps, rendered them very weak, and compelled me to kill them; the heaviest bullock of the lot scarcely yielding a fortnight's supply of meat. My horses did exceedingly well. They got several times foot sore in passing a very rocky country, but they soon recovered on soft flats. At the Burdekin one broke its thigh-bone. We killed it and dried its meat. At the Lynd another died suddenly, probably by the gripes. At the Roper four, the finest of the whole lot, were drowned, the banks being very steep and boggy, and the river very deep. The loss of these was very heavy. I had to throw away the greatest part of my botanical and geological collections; and my plans of returning over land, cutting off the angles of my route, and keeping more to the westward, were frustrated.

When our flour, our tea, our salt, our sugar, were gone, we lived on dried beef and water, and we lived well on it, as long as the beef was good; but at the latter part of the journey the beef got bad, as it was very poor, and of knocked-up beasts, and as the moist sea breeze made it very liable to taint. Fortunately the game became abundant round the gulf, and we caught, for instance, in August fifteen, and in September sixteen emus, every one of which provided meat for a day.

At the head of the South Alligator, black fellows came up to us, and we exchanged presents with them. They gave me the red ochre, which they seemed to consider as the best of their run. At the commencement of the plain, a large tribe of black fellows came to our camp, and one of them pointed to the north-west, when we asked where he got his tomahawk and a piece of shawl from. They knew Pitche Nelumbo (Van Diemen's Gulf). At the big Pandanus Swamp another tribe of black fellows guided us over the swamp, and behaved very kind. They used the words peri good (very good) no good, Mankiterra (Malays). At the mouth of the East Alligator, Eooanberry's and Minorelli's tribe were equally hospitable and kind. We met another tribe in travelling up the river, and at its head. The latter were however noisy, boisterous, and inclined to theft. At the north bank of the river we met Bilge's tribe, Bilge being the most important personage amongst them. At Nywall's Lagoon, Nywall treated us with imberbi (the root of a species of convolvulus), and two black fellows guided us two days farther. At Mountnorris Bay we met Baki Baki, and at Raffle's Bay Bill White's tribe; and Bill White himself guided us into the settlement.

At Eooanberry's tribe we first heard the question, "what's your name?" and the name for white men "Balanda." At Nywall's tribe they asked for flour, bread, rice, tobacco, and one of them had even a pipe. It is difficult to express our joy when English words were heard again, and when every sign which the black fellows made proved that we were near the end of our jour-


Sketch of
AUSTRALIA
shewing the Route of
Dr LEICHARDT
during his recent important Journey from
MORTON BAY
TO
PORT ESSINGTON.
1846.
TORRES STRAITS
Port Essington
C. Arnhem
GULF OF CARPENTARIA
Dampiers Archipelago
Nicholas B.
Dirk Hartog I.
C. Leeuwin
Perth
Flinders B.
C. Chatham
K. Georges Sd.
Port Malcolm
Esperance B.
Spencer Gulf
Kangaroo I.
Encounter B.
Adelaide
Lake Alexandrina
Portland B.
Port Phillip
Melbourne
Gipps land
BASS STRAIT
Van Diemens Land
SOUTH AUSTRALIA
NEW SOUTH WALES
Fort Bourke
Darling R.
Lachlan R.
Murray R.
Murumbidgee R.
Sydney
Port Macquarie
Port Stephens
C. Byron
Moreton Bay
Indian Head
Distant Ranges
point lately reached by Capt. Sturt
Starting point
C. Grafton
C. Townshend
Port Curtis
R. Mitchell
C. York

ney, particularly as December advanced, and the setting in of the rainy season was to be expected every moment.

I think that the most important results of my expedition are the discovery of the Mackenzie, the Isaacks, the Downs of Peak Range, and the Suttor; that of a communication between the east coast of Australia and the east coast of the Gulf of Carpentaria, along the river, with running water through a fine country; that of the Nonda Country, and of the Big Plains at the east side, and at the head of the Gulf; that of communication between Limmen-bight and the South Alligator River, along running streams and creeks. The future will show how far the country along the Big Rivers between the head of the Gulf and Limmen-bight is available. *

[Dr. Leichardt's Lectures on the Physical Geography, Productions, Capabilities, &c. of the Country visited by him, will appear in the January Number of the *Tasmanian Journal.*—Ed.]

Art. IV. *On Dykes of Marble and Quartz, in connexion with Plutonic Rocks, on the Upper Wollondilly, in Argyle County, New South Wales.* By the Rev. W. B. Clarke, M.A., F.G.S.

The tract of country described by the author in this memoir is situated not far from Sydney and Port Jackson, the river Wollondilly, whose gorge lays bare the geological structure of the district, taking its rise in latitude 34° 26′ south, longitude 149° 23′ east, and, after receiving the waters of several streams running into the Nepean river, and emptying itself into the ocean considerably to the south of Sydney. The stratified rocks traversed by the remarkable defiles through which these rivers flow, belong to the steril upper portions of the carboniferous formation so widely spread in Australia; and these carboniferous rocks are traceable (with occasional interruptions from basaltic dykes), from the district in question to the borders of the Illawarra region, where they present a lofty mural escarpment.

* For the Map which accompanies this Article we are indebted to the kindness of W. G. Elliston, Esq., the proprietor of the *Hobart Town Courier*...*Ed.*

The Wollondilly, however, from its source to its junction with the Uringalla (except near Towrang), is described by the author as running through igneous and metamorphic rocks, which are laid bare over a considerable area between the Cockburndoon, the Derra, and the Uringalla rivers, where recent volcanic outbursts have disturbed the older rocks. The sedimentary roeks wrapt round the margin of this area, the beds dipping at a considerable angle.

On the north banks of the river, at a place called Jaoramin, beds of conglomerate are described, containing fragments apparently of transition rock; and the author considers, from the condition and appcaranec of the river banks, and the fact that a wide space, at a considerable height above the water, is covered with the debris of these conglomerates, that a considerable change of level has taken plaee in the district, producing elevation.

Having given a general account of the district, the author then proceeds to describe the different plutonic rocks found in it, and states that they consist of syenite, syenitic granite, protogene, and porphyritic rocks of various kinds, and of greenstone, basalt, and trachyte,—all, with the exception of the three latter, passing, by regular gradations, from one to another. The syenites are said to resemble those of Skiddaw, and the syenitic granite that of Guernsey; while a protogene is described greatly resembling a beautiful rock of the same kind in St. John's Vale, near Keswick.

At Arthursleigh, the author describes a spot where the face of an exposed cliff exhibits a net-work of quartz veins, with dykes of syenitic rock and hornstone; and not far off, a dyke of ironstone, and others of basaltic rocks, amongst which are some injected trachytes, that have been used for building purposes.

Having described the position and mineral character of these igneous roeks, as they appear *en masse*, the author then proceeds to allude to some singular instances of intrusive dykes of limestone and marble, at a spot known as "Campbells," or "Shepherds," situated on the estate of Arthursleigh, just alluded to. These dykes occur in contact with hard, large-grained, grey syenite, and were seen on the right bank of the river Wollondilly.

In the first instance mentioned, the width of the dyke is stated to be 47 yards; its dip, 50° south-west; and its strike, south 22° east. Alternations of quartz rock and crystalline white and grey marble compose this dyke; innumerable lines and scratches mark the edges and face of the marble; and the quartz has also been subject to a semicrystalline action, the surface being crumpled or doubled up into parallel anticlinal ridges." There appears to be no line of demarcation traceable between the quartz and marble; and the two together, after descending into the bed of the river, suddenly curve round and re-enter the granite as a second dyke. Traces of green carbonate of copper are found associated with the other minerals of this dyke.

The author considers that the scratches and furrows which he has observed, and other phenomena in the line of dip, could not have been in existence before the formation of the present river channel.

A second dyke is then described, in a place where the rocks are thrown into great disorder, and the author details some changes which have produced singular conditions of mineral structure. He also supposes that they exhibit marks of a gradation existing between limestone and quartz. A third dyke of the same character is then mentioned, in which the constituents of the granite are mixed up with the calcareous rock; and the author states, that, near these dykes, the granite assumes a distinct character, a greater proportion of felspar, and less mica, being present.

At Jaoramin, higher up the river than the spot just alluded to, the structure of the rocks is described as somewhat different, the felspar being less completely mingled with the other minerals, but the rock occasionally passing into porphyry. Where it is not denuded, the rock, however, is here overlaid by a mass of conglomerate, from 200 to 300 feet thick, through which the river makes its way. At St. Peter's are low hills, more decidedly granitic. Near Stuckey's farm are numerous fragments of crystalline rock, the surface of which is much worn, as is the case with other calcareous rocks all over New South Wales. No traces of fossils have been found in these limestones.

The author remarks, that the greenstone becomes compact near the marble, and assumes a bottle-green colour, traces of limestone being common in it; whilst, on the other hand, the marble near the greenstone is also changed, so that a passage may be traced from one to the other. The author concludes by referring to other instances in New South Wales, in which similar phenomena have been produced. He mentions one case in lat. 32° 6′ south, and longitude about 151° east, where, in the neighbourhood of the river Page, veins of marble intersect a lava-like trap; and another about 16 miles north of Arthursleigh, where a magnificent tunnel, in white crystalline marble, occurs in the bed of a creek surrounded by basaltic rocks. On a branch of the Abercrombie river, west of the Dividing Range, and about 40 miles south of Bathurst, a similar tunnel of gigantic dimensions, nearly 800 feet long, and 80 feet high, also passes through a mass of white crystalline marble, at the bottom of a ravine in the middle of a country of volcanic rocks, and blocks of snow-white quartz.

The author hopes to be able, at a future time, to describe these examples more fully. He alludes to them now to shew, that there is reason to believe that these connections of limestone, plutonic rocks, and quartz dykes, are not without their application to a condition of geological phenomena, to the elucidation of which the banks of the Wollondilly have exhibited a clue.—*Proceedings of the Geological Society, February* 5, 1845.

Art. V. *Algæ of Tasmania.* By W. H. Harvey, M.D., &c.

(Continued from page 427, vol. ii.)

(*From the London Journal of Botany, August*, 1844.)

13. Polysiphonia *fuscescens*, Harv.; frondibus aggregatis, fruticosis, ramosissimis, articulatis, sulcatis, setaceis; e basi in ramis elongatis erecti sdivisis; ramis attenuatis bi-tripinnatis; pinnis pinulisque erecto-patentibus, brevibus, simplicibus v. ramulosis, apice fibris hyalinis byssoideis ornatis; articulis ramorum diametro 2-4-plo longioribus, ramulorum brevissimis, 4 striatis; keramidiis.... ?

George Town, V.D.L., *R. Gunn, Esq.*, n. 1316 in part.—*Fronds* 6-8 inches high, excessively branched and bushy, but not of so shrub-like a character as *P. frutex*, much divided from near the base into long erect branches or stems, which are generally simple, or merely throw out from their lower part long branches similar to themselves. These branches are in circumscription linear or narrow lanceolate, fasciculato-bipinnate throughout their length, the pinnæ very short, in proportion to the length of the branch, or ¼ to ½ inch long on branches that are 4-5 inches long, erect or erecto-patent, pinnulated with short simple spine-like ramuli, the apices beset with byssoid fibres. Articulations of the stem and branches 4 striate, from 2 to 4 times longer than broad. Colour a dull brownish or grey.—This species, which may be looked on as the V. D. Land representative of *P. nigrescens*, is nearly allied to *P. frutex*, but differs something in habit, and clearly in the length of the joints. The structure of the stem is similar in both.

14. Polysiphonia *cancellata*, Harv.; frondibus ultrasetaceis, fruticulosis, spinoso-ramosissimis, articulatis, sulcatis; ramis e basi emissis, longissimis, flexuosis, divaricatis v. horizontalibus, ramulis alternis, distantibus, patentissimis vix pinnulatis v. margine subuliferis; articulis diametro duplo brevioribus, reticulatis, 4 striatis; keramidiis minutis, ovatis, sessilibus.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1318 and 1320. —*Fronds* 4-5 inches high, thicker than bristle at the base, forming a thorny bush, the outline of which is broadly ovate or globose; branches as long as the principal stem, and issuing at right angles with it, flexuous, from a quarter to half an inch asunder, furnished with a second series of horizontally patent ramuli each about an inch long. These ramuli are either furnished with a series of distant, short, spinelike pinnules, or they are more or less *bipinnate*, the pinnæ in this latter case resembling the main ramuli in the former; the ultimate pinnules always patent and spinelike. Articulations deeply furrowed, much shorter than broad, 4 striate; the striæ which mark the tubes as evident as those which divide the branch into joints, and thus the frond has a netted appearauce.—Keramidia very small, sessile on the ramuli, ovate. The stem is seven-tubed as in the last two species.

15. Polysiphonia *acanthophora*, Harv.; caule longissimo, crasso, indiviso, inarticulato, bi-tripinnato; pinnulis elongatis, tenuibus, alternis, distantibus, ramulis minutis spinulosis bi-tri-multifidis apice fibrilliferis distiche obsessis; ramulis solum articulatis, articulis sesquilongioribus, bistriatis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1291, 1297, 1321. —Stem 8-10 inches long or probably more, cartilaginous, from ¼ to ½ a line or even more in diameter at base, gradually attenuated to the thickness of bristle above; pinnated with patent branches much more slender than itself, which gradually diminish in length from the lower part to the top, so that the general outline of the frond is ovate-lanceolate. These branches are usually again once-pinnated, but in large specimens twice-pinnated, with slender patent pinnæ of from ½ an inch to 1½ inches in length; both stem, branches, pinnæ, and pinnulæ perfectly opaque and inarticulate. The pinnæ and pinnulæ are distichously set with minute, jointed, spinelike ramuli, which are about ½ a line in length or less, and either simple, bifid, trifid, or multifid with alternate divisions, their apices producing colourless byssoid fibres. Fruit unknown. Stem internally with four principal tubes round a minute central one, and a wide cellular fleshy periphery. Colour in the dry state greyish brown, with a stain of red.—This is one of those inarticulate species which will probably be separated from *Polysiphonia*, and perhaps placed in *Alsidium* as at present defined. It bears an outward resemblance to *P. byssoides*, but is of a totally different structure; and it also something resembles *Acanthophora Delilii*, whence the specific name.

Tribe 2. Chondrieæ, *J. Ag.*

16. Bonnemaisonia *elegans*, Ag.; fronde compressâ, membranaceâ, anguste lineari, decomposito-ramosissima; ramis alternis, flabellatis, ramulis setaceo-subulatis distichis alternis utrinque pectinatis; keramidiis solitariis ovatis in jugamento immersis, poro ad axillam directo. Ag. *Sp. Alg. vol. i. p.* 198.

George Town, V. D. Land, *R. Gunn, Esq.*, n. 1299, 1300.—*Frond* 6-12 inches long, excessively and finely branched; the stem and branches compressed, the ultimate divisions perfectly flat and membranaceous. All the branches, through their whole length, and through all the divisions, are bordered with distichous very slender setaceo-subulate ramuli about a line in length, and tapering to an acute point. Frond internally composed, as in *B. asparagoides*, of large polygonal cellules, which are visible through the smaller ones which form its surface. No trace of midrib or central opacity. Keramidia ovate, immersed in the sinus of the marginal ciliæ, equally convex on either surface of the frond, opening by a pore directed to the axil of the ramulus, and containing a tuft of pear-shaped seeds. These keramidia, or capsules, are usually solitary on each branchlet, and generally but shortly removed from the apex; but occasionally a branch is found with two, one above the other.—This beautiful plant, which, as Agardh well remarks, bears so striking a resemblance to the European *B. asparagoides*, that, except by the fruit, it might be difficult to distinguish them, has also many points in common with *Calocladia pulchra*, Grev., and I am disposed to concur with Mr. J. Agardh in uniting *Calocladia* to *Bonnemaisonia*. So great is the resemblance between *Cal. pulchra* and *B. elegans*, that, had I not before me an authentic specimen of *Cal. pulchra* communicated by Dr. Greville, and numerous other specimens of that plant found by Dr. Joseph Hooker at Kerguelen's Land, I should perhaps have fallen into the error of considering these two species identical. *B. elegans* is, however, a much more delicately and finely branched plant. Its substance is far more tender, the ciliæ that border its branches are slenderer, and its capsules are removed from the apex of the ramuli. M. Montagne informs me that Greville's *Calocladia pulchra* belongs to the Lamourouxian genus *Delisia*, and he considers it distinct from *D. fimbriata*, Lam.

17. Laurencia? *membranacea*, Harv.; fronde plana, tenuimembranacea (!), lato-lineari, profunde bipinnatifida; pinnis pinnulisque alternis patentibus, inferioribus brevibus denti-

formibus, superioribus linearibus elongatis; axillis rotundatis; pinnulis obtusè dentatis; apicibus obtusis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1277.—Having seen but a solitary barren specimen of this remarkable plant, I am unable to give more than a very imperfect description of it, and cannot altogether satisfy myself of the proper genus to which it should be referred. It has so much the colour and outline of very luxuriant specimens of *Laurencia pinnatifida*, that I venture to place it in the same genus, although its substance is as thin and membranous as the frond of *Rhodomenia bifida*, or of *Thamnophora Mertensii*. Had the apices been *acute*, and the colour less purple, I should probably have placed it in *Thamnophora*. The fruit, when discovered, will decide the question. Mr. Gunn's specimen, which is broken at base, and may be only a branch, measures 8 inches in length, aud, taking the expansion of its branches, 7 inches across; the breadth of the frond being half an inch in the widest, and more than a quarter in the narrowest place. There is neither midrib nor thickening in the middle, the whole is a thin membrane. The stem is undivided; its lower half furnished with short, closely-set, alternate, bluntly-toothed pinnæ about half an inch long; its upper half bears long pinnæ 3 inches long, which are again pinnatifid, the pinnules bluntly toothed, and the teeth themselves bluntly cleft at the apex. All the apices and axils are blunt. Colour a pale purplish red, greenish in the lower part, exactly resembling that of *L. pinnatifida.*

18. Laurencia *tenuissima*, Grev. (Fucus tenuissimus, *Turn. t.* 100.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1296, 1319—and part of 1288 (specimens in decay).

19. Laurencia *dasyphylla*, Grev. (Fucus dasyphyllus, *Turn. t.* 22.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1281.—Colour much darker than usual, deep purple.

20. Laurencia *obtusa*, Lamour. (Fucus obtusus, *Turn. t.* 21.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1288, in part.

21. Laurencia *botryoides*, Gaill. (Fucus botryoides, *Turn. t.* 178.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1286.

22. Chylocladia *kaliformis*, Grev. (Fucus kaliformis, *Turn. t.* 29.)
George Town, V. D. L., *R. Gunn, Esq.*, n. 1323.

23. Chylocladia *Tasmanica*, Harv., M.S.S.
George Town, V. D. L., *R. Gunn, Esq.*, n. 1295.—Two imperfect and half-decomposed specimens of a fine *Chylocladia*, probably new, but too closely allied to *C. articulata* for me to venture to describe it without more perfect specimens. The substance is far more gelatinous than in *C. articulata*, and the size, unless we compare it with the gigantic state figured by Turner, is much greater. The length of the lowermost constrictions is, in one specimen, an inch and in the other 1½ inches. It appears to decompose rapidly in fresh water, throwing off its ultimate ramuli as a Starfish does its rays. The frond is irregularly dichotomous, with very patent axils, constricted at the branching; the upper divisions umbellate, 4-5 new branches springing from the top of an old one, and these from their apices giving birth to saccate clavate ramuli.

Tribe 3. Sphærococcoideæ, *J. Ag.*

24. Hypnea *musciformis, v. Valentiæ*, Harv. *in Hook. Journ. Bot.* 1, *p.* 153.—Fucus Valentiæ, *Turn. t.* 78.
George Town, V. D. L., *R. Gunn, Esq.*, n. 1314.—This specimen bears sphærospores in the patent ramuli.

25. Gracilaria *lichenoides?* (Fucus lichenoides, *Turn. t.* 118?)
George Town, V. D. L., *R. Gunn, Esq.*, n. 1292.—Either *G. lichenoides* or a species very closely resembling it. The specimen produces irregular wartlike nemathecia.

26. Sphærococcus *australis*, Harv.; caule brevi, carnoso, cylindrico, mox cuneato et in fronde lineari, compresso-planâ, membranaceâ, coccinea, ecostatâ abeunte; fronde decomposito-dichotomâ; segmentis circumscriptione flabelliformibus, ramulis dichotomè multifidis sensim angustioribus distichis patentibus pinnatis; axillis rotundatis obtusissimis; apicibus acutis, laceratis; coccidiis acutis demum tuberculatis ad apices ramulorum sessilibus.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1279:—also abundantly in the collection of 1840. Root scutate. Stem as thick as a sparrow's quill, cylindrical, cartilaginous, about a quarter of an inch in length, expanding thence, from a cuneate thickened apex, into a frond 4-12 inches long or probably more, which divides in an irregularly dichotomous manner into a few principal segments which preserve a nearly equal breadth of from 1-2 lines (in different specimens), and produce along their margins in a manner sometimes alternately pinnate, sometimes alternately geminate secund, or imperfectly dichotomous, *lesser* distichous *segments* half the breadth of those from which they spring, which either at once divide into dichotomously multifid ramuli gradually narrower, or are themselves pinnated with such multifid ramuli. These *multifid ramuli*, and even the major segments, preserve a tolerably defined flabellate outline.—Such is the common state of the more regular specimens, but others occur which are cleft in a manner so exceedingly irregular, between pinnate and dichotomous, that it is impossible to convey in words any idea of the branching. One character, however, runs through all the varieties, namely: every axil, from the greatest to the least, is remarkably rounded and large; and in the more finely divided or upper part of the frond, the segments overlap each other above the axils, leaving wide circular spaces like holes in a net. The apices are all *acute ;* the ultimate ramuli even *subulate*, from which circumstance, added to the colour, the position of the fruit, and the internal structure of the frond, I am induced to place this plant in the *restricted* genus *Sphærococcus* (Grev.) rather than in *Rhodomenia*, although there is no trace of midrib. The internal structure to which I allude consists in a number of large intercellular spaces of a roundish figure that exist throughout the substance of the frond, and give a transverse section of it a honey-combed appearance; while under a pocket lens they impart a netted character to the surface of the frond. These air-cells separate the two opposite surfaces so considerably, that we must call the frond rather very much *compressed* than truly *flat*. The coccidia are borne only on the ultimate divisions, and generally at or near the apices. At first they are conical, they afterwards become more globose, and finally are tuberculated and very irregular in form. They are of a fleshy substance, and contain a *favella*, or mass of sporules divided into a great number of lesser clusters. The colour is exactly that of *S. coronopifolius*, and the habit is not dissimilar. The substance is thinner, yet it scarcely adheres to paper.—I had at first thought that this plant, which appears to be common in V. D. L., might be *Rhodomenia alcicornis*, J. Ag., but on reading over his description carefully, I cannot suppose them the same. The position of the fruit affords an obvious difference.

(To be continued.)

ART. VI. *Proceedings of the Zoological Society of London.*

(Continued from vol. ii., p. 447.)

June 25, 1844.

PHASCOGALE CRASSICAUDATA. *Phasc. suprà cinerea flavo-tincta; corpore subtùs, pedibusque albis; auribus mediocris, externè maculâ nigrâ ornatis; caudâ brevi crassâ.*

	Inch.	Lin.
Length from tip of nose to extremity of tail	5	7
—— of tail	2	1
—— of ear	0	5½
—— tarsi and toes	0	7

Hab. Western Australia.

This species is about the size of the common mouse, and is not unlike the *Mus sylvaticus* in its colouring; above grey with a wash of yellow, and on the sides of the body distinctly tinted with yellow; under parts and feet pure white; tail much swollen, especially in the middle, and clothed throughout with very minute pale hairs; ears clothed with pale hairs, but with a largish black spot externally; eyes encircled with black hairs; fur moderately long and soft.

AVES.

IERACIDEA OCCIDENTALIS. *Ier. vertice et corpore superiore ferrugineo-fuscis; singulis plumis strigâ centrali nigrâ angustè notatis; caudâ fusco multi-fasciatâ; corpore subtùs albo plumis lineâ fuscâ angustâ notatis.*

Crown of the head, back, and scapularies rusty brown, with a narrow stripe of black down the centre; rump deep rusty brown, crossed by broad bands of dark brown, the tip of each feather buffy white; wings very dark brown; the inner webs of the primaries with a series of large spots, assuming the form of bars, of a deep rusty brown near the shaft, and fading into buffy white on the margin; wing-coverts tipped with rusty red; spurious wing with a row of rusty red spots on either side of the shaft; tail dark brown, crossed by numerous broad irregular bars of rusty red, and tipped with pale buff; ear-coverts and a stripe running down from the angle of the lower mandible dark brown; chin, all the under surface, and a broad band which nearly encircles the neck, white, with a fine line of dark brown down the centre; thighs deep rust-red, each feather with a line of black down the centre and tipped with buffy white; cere very light greenish flesh-colour; irides wood-brown; space round the eye pale yellow, becoming brighter near the eye; base of the upper mandible, the under mandible and gape, very light horn-colour; tip of the upper mandible black.

Total length, 16 inches; bill, $1\frac{1}{4}$; wing, $12\frac{1}{2}$; tail, $7\frac{3}{4}$; tarsi, $2\frac{1}{2}$.

Hab. Western Australia.

Ægotheles leucogaster. *Æ. quoad colorem Æ.* Nov. Hollandiæ *consimilis, at grandior, rostro longiore, et abdomine albo.*

Head black; crown, lunar-shaped mark at the back of the head, and a collar surrounding the neck, black, freckled with grey in the centre of each feather; back freckled black and white; wings brown, crossed by numerous bands of lighter brown, freckled with dark brown; primaries margined externally with buff, interrupted with blotchings of dark brown; tail dark brown, crossed by numerous broad irregular bands of reddish buff, freckled with dark brown; ear-coverts straw-white; chin, abdomen, and under tail-coverts white; breast, sides of the neck, and a narrow collar surrounding the back of the neck, white, crossed by numerous narrow freckled bars of black; irides dark brown;

upper mandible dark olive-brown, lower white, with a black tip; legs pale yellow; claws black.

Total length, 9½ inches; bill, 1; wing, 5¾; tail, 5; tarsi, 1.

Hab. Port Essington.

Malurus pulcherrimus. *Mal.* Mas: *vertice, et fasciâ dorsali splendidè violaceo-cæruleis; orbitis et plumis auricularibus ex ærugine cæruleis; gulâ indico-cæruleâ, nigro subtùs indistinctè marginatâ; plumis scapularibus castaneis; loris, nuchâ, et dorso imo holoserico-nigris.* Fœm.: *fusca, subtùs pallidior, orbitis rubidè fuscis.*

Crown of the head and a broad band across the centre of the back rich glossy violet-blue; space surrounding the eye and the ear-coverts verditer-blue; throat intense indigo-blue, bounded below by an indistinct band of black; lores, collar surrounding the back of the neck, and the lower part of the back, deep velvety black; scapularies chesnut; wings brown; tail dull greenish blue, indistinctly barred with a darker tint and slightly tipped with white; abdomen and under tail-coverts white; bill and feet black; irides dark brown.

Female dull brown, paler beneath; tail-feathers like those of the male, but less bright; bill and space round the eye reddish brown.

Remarks.—Very similar in its markings and general contour to *M. Lamberti.* It may, however, be always distinguished from that species by its larger size and by the deep indigo-blue colour of the throat and chest, which parts are black in *M. Lamberti.*

Total length, 5¼ inches; bill, nine-sixteenths; wing, 2; tail, 3¼; tarsi, fifteen-sixteenths.

Hab. Western Australia.

Pachycephala Gilbertii. *Pach.* Mas: *colore saturatè olivaceo-fusco; capite plumbeo; loris nigris; gulâ ferrugineâ; humeris subtùs, abdomine medio, crissoque arenaceis.* Fœm. *differt, loris non nigris, neque gulâ ferrugineâ.*

The plumage dark greyish olive-brown; the head dark slate-grey, and the breast of a lighter grey; the lores black; throat rust-red; under surface of the shoulder, centre of the abdomen and under tail-coverts sandy buff; irides light brown; bill and feet black. The female is similar in colour, but is destitute of the black on the lores and the red on the throat.

Total length, $6\frac{3}{4}$ inches; bill, eleven-sixteenths; wing, $3\frac{7}{8}$; tarsi, 1.

Hab. Western Australia.

July 9, 1844.

Description of a new species of *Cytherea* by Sylvanus Hanley, Esq.

CYTHEREA DIEMENENSIS. *C. testâ oblongo cordatâ, convexâ, nitidiusculâ, concentricè et obsoletè sulcatâ, carneo-fulvâ; radiis angustis lunulâque lanceolatâ, colore tinctis saturatiore; pube albâ, strigis flexuosis literatâ; superficie internâ albidâ, radio fusco-purpureo obliquâ, sub umbonibus ornatâ; margine integro.* Long. 0·80; lat. 1·20 poll.

Hab. Van Diemen's Land. Mus. Metcalfe.

Easily to be distinguished from those allied to it in form by its internal ray. The hinge is that of the section *Chione*.

Description of a new species of *Triton* by Lovell Reeve, Esq.

TRITON EXARATUS. *Trit. testâ subtrigono-fusiformi, varicibus duobus; spirâ elevato-turritâ; anfractibus supernè planissimo-angulatis, ad angulum subnodosis, transversim liratis, liris compressis, duplicatis, crenulatis, interstitiis excavato-sulcatis; albidâ, fuscescente cæruleoque variè tinctâ; columellâ albâ, subrugosâ; canali longiusculo; aperturâ rotundâ; labro intus dentato.*

Conch. Icon. *Triton*, pl. 13. f. 50. *a* and *b*.

Var. *Testâ nigricante-fuscâ, albibalteatâ.*

Hab. North coast of New Holland.

This is a very characteristic species, with the transverse ridges standing out in bold relief, and the upper part of the whorls peculiarly flat and indented at the sutures.

August 13, 1844.

Mr. Gould exhibited a specimen of an Australian bird, which he described as follows :—

PODICEPS AUSTRALIS. *P. quoad colorem* P. cristato *consimilis, at cristâ collari in medio latiùs et saturatiùs castaneâ, et ad apicem latiùs nigrâ.*

Crown of the head and occipital tufts black; frill black at the outer edge and chesnut in the centre, gradually passing into buffy white on the face; upper surface and wings dark brown; scapularies and secondaries pure white; all the under surface silvery white, stained with brown and chesnut on the flanks; irides red; bill dark horn-colour; upper surface of the tarsi and toes dark olive-green; under surface pale yellow.

Total length, 24 inches; bill, $2\frac{3}{4}$; wing, $7\frac{1}{2}$; tarsi, $2\frac{1}{4}$.

Hab. Australia and Van Diemen's Land.

Remark.—Nearly allied to *P. cristatus*, but differs in being somewhat larger in size, and in having the frill fuller and of a blacker hue than in that species.

October 22, 1844.

A paper by Sylvanus Hanley, Esq., was read, containing descriptions of a new species of *Cyrena*, *Venus*, and *Amphidesma*, of which the two following were Australian :—

VENUS RORORATA. *Ven. testâ cordato-trigonâ, solidâ, validè inæquilaterali, magis minusve ventricosâ, albidâ (intus purpureo posticè infectâ), concentricè cingulatâ; cingulis multis, levibus, obtusis; interstitiis lævibus; margine ventrali arcuato (intus leviter crenulato); dorsali postico convexo et valdè declivi; lunulâ profundâ, cordatâ; pube lævi, excavatâ; sulco radiante obtusissimo, lunulam alteram, ad extremitatem anticam simulante.*

(To be continued.)

Bibliographical Notice.

The Botany of the Antarctic Voyage. By JOSEPH DALTON HOOKER, M.D., R.N., F.L.S.

THAT portion of Dr. Hooker's *Flora Antarctica* devoted to Lord Auckland's Group and Campbell's Island (the former in latitude $50\frac{1}{2}°$ S. and longitude 166° E., and the latter in latitude $52\frac{1}{2}°$ and longitude 169° E.) has now been completed and reached this colony. A work so highly and deservedly praised in Europe requires no commendation from us. The botany of these islands, however, is necessarily so intimately connected with that of Australia generally, and more especially with Tasmania, which may be considered as the southern point of New Holland, that we think no Australian botanist ought to be without the present work. The plates are admirably executed, the subjects well selected, and no less than 150 plants figured. The work is accompanied by a chart of the South Circumpolar Regions, and introduced by a summary of the voyage and account of the botany of the islands. A more complete work upon the subject could not be furnished, and we shall hail with much pleasure the other works on the botany of the southern lands by the same author as they appear. The second part of the *Flora Antarctica*, to contain the plants of Fuegia, the Falkland Islands, and Kerguelen's Land, is publishing regularly (one part per month,) two parts having already reached us. We can only say that they quite equal those that have preceded them, and no greater praise can be offered. Perhaps the best way of bringing the interest of the work before our readers will be to furnish a tabular view of the Flora of these little-known islands, which we subjoin. Of the Flowering Plants and the Ferns all are represented in Tasmania except those marked with an asterisk.

DICOTYLEDONES.

Natural Order.	Genus.	No. of Species.	No. of Sp. in V.D.L.
Ranunculceæ	Ranunculus	3	
Cruciferæ	Cardamine	4	
Caryophylleæ....	Stellaria	1	
Droseraccæ	Drosera	1	
Geraniaceæ	Geranium	1	
Rosaceæ........	*Sieversia............	1	
..	Acæna	2	1
Onagraricæ	Epilobium	3	
Halorageæ	Callitriche	1	1
Myrtaceæ	Metrosideros	1	
Portulaceæ......	Montia	1	1
.. ?	Colobanthus	3	1
Crassulaceæ	Bulliarda	1	
Umbelliferæ	*Pozoa..............	1	
..	*Anizotome, *nov. gen*...	2	
Araliaceæ	Panax..............	1	
..	*Aralia..............	1	
Rubiaceæ	Coprosma	6	1
..	*Nertera	1	
Compositæ......	*Trineuron, *nov. gen.* ..	1	
..	*Ceratella, *nov. gen.* ..	1	
..	*Leptinella	3	
..	Ozothamnus	1	
..	Helichrysum	1	
..	*Pleurophyllum,*nov. gen.*	2	
..	Celmisia............	1	
..	? Gnaphalium	1	
..	Doubtful genus	1	
Stylideæ........	*Forstera	1	
Lobeliaceæ......	*Pratia..............	1	
Epacrideæ	*Androstoma, *nov. gen.*	1	
..	Dracophyllum	2	
*Myrsineæ	*Suttonia............	1	
Gentianeæ	Gentiana	2	
Boragineæ	Myosotis	2	
Scrophularineæ ..	Veronica	3	
Plantagineæ	Plantago	2	1
Polygoneæ	Rumex	1	
Urticeæ	Urtica..............	2	

MONOCOTYLEDONES.

Orchideæ	Chiloglottis	1	
..	Thelymitra..........	2	
..	Caladenia	2	

Natural Order.	Genus.	No. of Species.	No. of Sp. in V.D.L.
Orchideæ	Acianthus	1	
..	Species uncertain	2	
Asphodeleæ	*Chrysobactron, *nov. gen.*	1	
Inter Asphodeleas et Junceas	Astelia	1	
	Juncus	2	
Junceæ	*Rostkovia	2	
..	Luzula	1	
Restiaceæ	*Gaimardia	2	
Cyperaceæ	Oreobolus	1	
..	Isolepis	1	
..	Carex	3	1
..	Uncinia	1	
Gramineæ	Hierochloe	2	
..	Agrostis	4	
..	*Trisetum............	1	
..	Bromus	1	
..	Festuca	2	
..	Poa	2	
..	*Catabrosa	1	

Acotyledones.

Filices	Hymenophyllum	5	2
..	Aspidium	1	
..	Asplenium	3	1
..	Pteris	1	1
..	Lomaria	2	2
..	Polypodium	2	1
..	Phymatodes	1	1
..	Grammitis	1	1
..	Schizæa	1	
..	Lycopodium	3	1
Musci	Andreæa	4	
..	Sphagnum	1	
..	Leptostomum........	1	
..	Splachnum..........	2	
..	Dryptodon	1	
..	Racomitrium	1	
..	Orthotrichum........	2	
..	Macromitrium	2	
..	Schlotheimia	1	
..	Weissia	2	
..	Sprucea	1	
..	Dicranum	4	
..	Campylopnus........	2	
..	Lophiodon	1	
..	Ceratodon	1	

Natural Order.	Genus.	No. of Species.	No. of Sp. in V.D.L.
	Brought forward ..	26	
Musci	Polytrichum	1	
..	Conostomum	1	
..	Bartramia	3	
..	Bryum	5	
..	Funaria	1	
..	Anœctangium	1	
..	Leucodon	1	
..	Leskia	3	
..	Hypnum............	20	
..	Hookeria	4	
		66	
Hepaticæ	Jungermannia	82	
..	Hygropila	1	
..	Marchantia	1	
..	Anthoceros..........	1	
..	Riccia?	1	
		86	
Fungi..........	Agaricus............	1	
..	Cladosporium	1	
..	Hendersonia	1	
..	Uredo..............	1	
..	Sphæria............	5	
..	Dothidea	2	
..	Asteroma	1	
..	Hysterium	1	
..	Aylographum....... .	1	
..	Antennaria	1	
..	Sclerotium?	1	
		16	
Algæ	Marginaria	1	
..	D'Urvillea............	1	
..	Xiphophora	1	
..	Laminaria............	1	
..	Macrocystis	1	
..	Desmarestia	1	
..	Dictyosiphon	1	
..	Chorda	1	
		8	

Natural Order.	Genus.	No. of Species.	No. of Sp. in V.D.L.
	Brought forward..	8	
Algæ	Adenocystis	1	
..	Asperococcus	1	
..	Chordaria	1	
..	Sphacelaria	1	
..	Rhodomela	1	
..	Polyzonia	1	
..	Polysiphonia	8	
..	Jania	1	
..	Laurencia	1	
..	Delesseria	2	
..	Nitophyllum	2	
..	Plocamium	1	
..	Rhodomenia	3	
..	Hypnea	1	
..	Grateloupia	1	
..	Phyllophora	1	
..	Gigartina	1	
..	Nothogenia	1	
..	Chondrus	1	
..	Iridæa	1	
..	Halymenia............	1	
..	Dumontia	2	
..	Ballia	1	
..	Ptilota	1	
..	Ceramium	3	
..	Griffithsia	1	
..	Calithamnion	4	
..	Conferva	2	
..	Codium	1	
..	Ulva	1	
..	Porphyra	1	
..	Schizonema	1	
		58	
Lichenes........	Usnea................	2	
..	Ramalina	1	
..	Sphærophoron........	3	
..	Stereocaulon..........	2	
..	Cænomyce	5	
..	Peltidea..............	1	
..	Sticta	6	
..	Parmelia	2	
		22	

Natural Order.	Genus.	No of Species.	No. of Sp. in V.D.L.
	Brought forward..	22	
Lichenes	Lecanora	4	
..	Lecidea	2	
..	Porina	1	
..	Thelotrema	1	
..	Opegrapha	1	
		31	

SUMMARY.

Class.	Natural Orders.	Genera.	Species.	Sp. found in V.D.L.
Dicotyledones ..	25	38	65	6
Monocotyledones	6	21	36	1
Acotyledones	Filices	10	20	10
..	Musci	25	66	
..	Hepaticæ	5	86	
..	Fungi	11	16	
..	Algæ	40	58	
..	Lichenes	13	31	
Totals....	37	163	378	17

It will be perceived that the Flora of these islands is, as might be expected, more closely related to that of New Zealand than to Tasmania; but on comparing the phænogamous vegetation and the ferns with this island, they show considerable affinity. Of the 25 natural orders, 38 genera, and 65 species belonging to Dicotelydones, all the natural orders except Myrsineæ, and 23 genera (and 2 doubtful,) are represented in Tasmania; 6 of the species being identical. Of the Monocotyledones, all the 6 natural orders and 16 out of the 21 genera are found here; 1 species being identical. Of the Acotyledones of this colony, too little is yet known to enable us to institute a comparison, except with regard to the Filices, of which the 10 genera found in the Auckland and Campbell's Islands all are represented here; and 10 out of the 20 species are common to both.

Three new species of Tasmanian plants are first described in the *Flora Antarctica*, viz., *Coprosma repens*, *Celmisia asteliæfolia*, and *Richea pandanifolia*. R. C. G.

Miscellanea.

RICHEA PANDANIFOLIA.

This new and highly interesting species of *Epacrideous* plant is found in the dense humid forests skirting the margin of Lake St. Clair, and in the tract of country extending from thence to Macquarie Harbour. It rises to a height of upwards of 30 feet. I measured one 36½ feet high without a branch, the trunk 21 inches in circumference at the butt, and 12 inches in circumference at 28 feet up. Another was 28 feet high also without a branch, and 42 inches in circumference at the base; and many others equally large grew all around. The whole appearance of the plant was remarkably like one of the Monocotyledones, a resemblance supported by the palm-like mode of growth, the character of the leaves, &c.; so that I hardly wonder at the celebrated botanist, La Billardiere, describing the *Dracophyllum verticillatum* (which is a closely-allied plant) as Monocotyledonous. The trunks are invariably gently curved like those of some palms, caused by the weight of the large head of leaves, which occupies 3 to 6 feet of the top. The dead leaves of some seasons' growth usually retain their hold and hang pendant, as shown in the annexed sketch. Although there is commonly but one head, yet occasionally two or more branches spring out; and in one case, where the leading shoot had been injured, 20 to 30 branches spread out in all directions, so as to make it more closely resemble the species of Richea on the side of Mount Wellington, near Hobart Town. The flowers are small, of a pinkish-white colour, and grow in the axils of the leaves. The leaves are 3 to 5 feet long.

The accompanying sketch, made by James Grant, Esq., of Launceston, from a small individual 12 to 15 feet high, will give an excellent idea of the general aspect of the plant.

Ronald C. Gunn.

EXPORTS GRAIN AND FLOUR.

(Compiled from Government Gazette.—Extracted from Launceston Examiner, July 15, 1846.)

	Year.	Wheat. bush.	Oats. bush.	Barley. bush.	Flour. bush.
Launceston..........	1839	78,763	32,674	6,215	1,130
Hobart Town........	„	59,357	5,566	11,335	669
Total....		138,120	38,240*	17,550	1,799
Launceston..........	1840	50,125	69,994	11,441	1,833¾
Hobart Town........	„	39,302	11,300	12,410	997
Total....		89,427	81,294	23,851	2,830¾
Launceston..........	1841	43,186	27,986	8,119	1,832¾
Hobart Town........	„	35,845	591	4,560	980
Total....		79,031	28,577	12,679	2,812¾
Launceston..........	1842	100,728	49,544	9,032	2,265
Hobart Town........	„	14,930	1,208	1,740	1,162
Total....		115,658	50,752	10,772	3,427
Launceston..........	1843	236,953	64,430	10,007	1,831¼
Hobart Town........	„	14,615	1,531	3,573	857¼
Total....		251,568	65,961	13,580	2,688½
Launceston..........	1844	272,941	38,526	8,006	1,844
Hobart Town........	„	15,521	3,295	1,225	1,127¾
Total....		288,462	41,821	9,231	2,971¾
Launceston..........	1845	188,805	27,177	15,142	1,316¾
Hobart Town........	„	25,396	2,294	4,551	644
Total....		214,201	29,471	19,693	1,960¾
Launceston to July 2	1846	250,174	15,895	6,804	688½
Hobart Town to July 3	„	43,319	982	6,965	538¼
Total....		293,493	16,877	13,769	1,226¾

* Exported subsequent to 2d May, 1839.

RESIN OF XANTHORRHŒA.

CHEMICAL SOCIETY, Nov. 17, 1845.—J. T. Cooper, Esq., V.P., in the Chair.

A paper was read, "on the Resin of the *Xanthorrhœa hastile*," by Dr. J. Stenhouse. This is the substance known in commerce as the resin of Botany Bay, and is collected in considerable quantity in the neighbourhood of Sydney. Besides a peculiar resin, it contains very sensible quantities of cinnamic and benzoic acids, and a small quantity of a volatile essential oil, to which it appears to owe its balsamic characters. Treated with nitric acid, it yields carbazotic acid so abundantly as to recommend it as a source of that acid.—*Athenæum, No.* 947, 20*th Dec.*, 1845.

MINUTES OF THE TASMANIAN SOCIETY.

February 25, 1846.

READ a paper "On Microscopic Life in the Ocean at the South Pole, and at considerable depths, by Professor Ehrenberg," as published in the Annals of Natural History, vol. xiv. p. 169.

Lieut. W. H. Breton exhibited numerous specimens of *Sphæria Robertsii* with the stipes branched or binate; and one specimen with an undeveloped stipes growing out of the tail of the caterpillar, as well as one from the back of the head. These were all from New Zealand.

Mr. Breton also exhibited various interesting specimens of rocks and minerals from New Zealand and Adelaide.

Mr. R. C. Gunn produced some bottles of the mineral waters from Circular Head, which were analysed by M. de Strzelecki, as detailed at p. 77, vol. i. *Tasmanian Journal.*

March 25, 1846.

Read extracts from a letter from Dr. E. C. Hobson, dated Melbourne, Port Phillip, 11th Feb., 1846, to Mr. R. C. Gunn, relative to the Geology of a portion of the Port Phillip district:

"Since writing you I have visited the Necropolis at Lake Colingoolac (which is the aboriginal name for Lloyd's Lake;) but from the fossil bones being scattered over a wide surface, and not concentrated, as at Mount Macedon, I got but few specimens of interest. I found during my ramble fragments of bones of fossil *Emus*, *Kangaroos* (probably from their size those of *Macropus Titan* and *Atlas* of Owen,) and *Phascolarctos*, with portion of a human skeleton buried in the bank, but not fossilized.

"The lake itself is very shallow, not exceeding in the deepest part three feet, and intensely salt. Its sides are in some places steep, and from thirty to forty feet high. Commencing at the surface, they are composed as follows:—First, about two feet of volcanic and vegetable soil, that is, of soil the result of disintegration of volcanic rocks and stones; next, a marly stratum, varying very much in thickness, in which the bones are deposited, and from which they are disinterred by the winter rains, and fall down to the beach of the lake; the remainder of the bank is a stiff dark clay. The bottom of the lake, when the mud has been removed, is trap in various states of compactness.

"My own idea of this country is that the destroying agent has been volcanic action; and that the level of this part of Australia was, at the time of the existence of the animals whose bones we now find in a fossil state, much lower than it now is, the climate more humid, and its vegctation more succulent. The lakes in this neighbourhood seem to have been drained by upheaving, which, perhaps, if carefully observed, is not yet at an eud; for many of them have dried up with astonishing rapidity since this colony has been settled (about ten years,) a result, however, which may be partly influenced by the grass having been fed off.

"The coast range from Portland Bay to Wilson's Promontory appears to have been one long line of volcanic action, which has shut out the sea wherever the range was continuous, leaving openings, where it was incomplete, to bays such as Port Phillip and Western Port. The nucleus of the isthmus from Cape Shank to Point Nepcan is basaltic, covered with pretty pure lime on the surface, and a siliceous limestone next to the basalt, which is in some places perfectly crystalline. This barrier having once been formed, I suppose large salt-water lakes were left in the interior, which were altogether cut off from the sea, or communicated with the estuaries now existing. This is supported by the fact that Western Port and Port Phillip have occupied much larger areas at one time than they do at present. Indeed there are the remains of old lakes which now communicate with the Bay in the winter season; and in digging on these lakes you first find shells of a lacustrine character, and deeper you find those of a marine character, whose congeners now exist in the Bay. Many such situations are not only now dry, but covered with trees of a considerable age. This lacustrine character of the ancient country is well seen in all the country to the west and north-west of Geelong, where there are immense lakes, such as Carangamite, which, following its sinuosities, is nearly seventy miles in circumference, and hundreds of others, many of which have perhaps been dry for thousands of years, and are only indicated by the salsolaceous plants which inhabit the surface, and the thiek deposit of shells which lies immediately beneath. I may mention that the trees in this part of the provinee are small, whieh appears to me to be from their youth; as the same species in the same soil in other parts of the eountry are six times as large, and in those parts of the plains which are lowest the trees appear only just now to be coming into existenee.

"All the hills are volcanic; and most of them are very perfect cones, with craters in the centre, from which streams of lava can be distinctly traeed. Such are Mount Elephant, Mounts Jura, Gellibrand, Hesse, Eeles, &c. One lake, on which Messrs. Manifold have a station, has all the marks of the crater of an extinct volcano. Its water is, I believe, on an average twenty fathoms deep, and the sides very steep in some places, and composed of regularly stratified seoriæ, forming perfectly horizontal strata, excepting in those plaees where they have been eurved by the falling of great globular masses of compact lava. The water of this lake is fresh and excellent, abounding in eels, blackfish, and a small fish, about an inch long, which is found in all these lakes in myriads, and, like the salmon, ascends the small streams at eertain seasons to deposit its spawn. This lake, or old crater, contains *lymneæ* and a small bivalve shell, also a *palæmon*, and many other interesting creatures."

April 22, 1846.

Dr. Grant stated that a speeimen of the *Petaurus sciureus*, or Port Phillip Squirrel, had reeently been brought into Launeeston from "O'Connor's Sugar-loaf," a hill on the Lake River about thirty miles south of Launceston.

Mr. C. S. Henty exhibited a bird, a species of the *Grallatores*, from the south side of the island, whieh was new to the members.

Lieut. Friend, R.N., produced a new and very curious species of spider from the sandy eountry near George Town.

Mr. R. C. Gunn exhibited specimens of the woods of the various coniferous trees of Van Diemen's Land, viz. of

Callitris Australis, Br.
,, *Gunnii*, Hook. fil.
Athrotaxis selaginoides, Don.
,, *cupressoides*, Don.
,, *laxifolia*, Hook.
Microcachrys tetragona, Hook. fil.
Podocarpus alpina, Br.
Phyllocladus aspleniifolia, Rich. Celery-topt Pine.
Dacrydium Franklinii, Hook fil. Huon Pine.

The wood of the species of *Athrotaxis* was very soft and easily worked.

Dr. Grant produced specimens of some small animals from King George's Sound. They are there called *Tait* or *Noolbengar* by the aborigines, and are found in the trees.

May 20, 1846.

Mr. Gunn stated that he had seen a specimen of that beautiful pigeon, the *Lopholaimus Antarcticus*, which had been shot by Mr. Brumby at M'Rae's Hills in the Norfolk Plains district. It was the only specimen he had ever seen in the colony, and must be a rare visitant.

Read the Report of the Expedition of Dr. Leichardt from Moreton Bay to Port Essington.

Mr. Gunn exhibited specimens of a very curious species of *Sphæria*, or fungoid caterpillar, found during the last week in April by the boys at Mr. W. H. Hawkes' Academy, Franklin Village, about four miles south of Launceston. It occurred abundantly in a sandy soil at the back of the school, the caterpillar having burrowed into the ground to undergo its metamorphosis; and whilst underground the fungus became developed, coming up through the hole made by the caterpillar in descending, and the end of the stipes projecting two to three inches above the surface, although the whole length of the fungus varied from five to eighteen inches. The extremity of the fungus was of a dark olivaceous black colour, shading off into a yellow, and all the part underground was white. The fungus in all instances sprung from behind the head of the caterpillar. The upper end of the fungus was club-shaped, and usually about half an inch in diameter.

June 17, 1846.

Joseph Milligan, Esq., read a paper "On the Fossil impressions found in Shale and Sandstone at Hobart Town; as also on the recent formations at Launceston and Hobart Town, and their peculiar Fossils"—which he illustrated by numerous specimens. An abstract of his paper will appear in the next Number of the *Tasmanian Journal.*

July 1, 1846.

Read a paper "On the occurrence of *Trilobites* in the Protozoic rocks of New South Wales. By the Rev. W. B. Clarke, M.A., F.G.S., &c."

Dr. W. R. Pugh drew the attention of the members to the fact that water at the level of his house in Launceston (about fifty feet above the sea) boiled at a temperature of 213°, as shown by Dr. Wollaston's boiling-water apparatus, constructed by Messrs. Troughton and Simms, a circumstance previously observed by M. de Strzelecki when in this colony, but not noticed in his work.

Dr. Pugh exhibited specimens of gold ore from South Australia, as also some other interesting minerals; also *Guano* from Lawrence Island, near Portland Bay.

July 15, 1846.

Read a paper "On Dykes of Marble and Quartz, in connexion with Plutonic Rocks, on the Upper Wollondilly, in Argyle County, New South Wales." By the Rev. W. B. Clarke, M.A., F.G.S., &c.

Read a paper by Dr. E. C. Hobson, detailing the particulars of a curious case of extra-uterine fœtation which occurred in his practice at Melbourne, and which was caused by the absence of the fimbriæ of the fallopian tubes.

Read a paper "On the habits and structure of the Kangaroo Rats (*Bettongia cuniculus*, Ogilby, and *Hypsiprymnus minor*, Cuv.) of Tasmania. By James Grant, Esq."

Mr. Gunn drew the attention of the members to the unusual height of the barometer during the three preceding days. At Penquite, about 120 feet above the sea level, it was as follows:

	9, A.M.	Attached Therm.	3, P.M.	Attached Therm.
July 13.	30.706	43½	30.681	46
,, 14.	30.800	41	30.621	43
,, 15.	30.685	39½	30.594	44

The instrument used was a syphon mountain barometer made by Troughton and Simms. The weather was clear and fine, with hard frosts at night.

July 29, 1846.

The Rev. S. Windsor was admitted a member.

Read extracts from a letter from Dr. E. C. Hobson to Mr. R. C. Gunn, wherein he describes some geological peculiarities at Point Nepean, Port Phillip. Dr. Hobson observes:—

"I send you some of the fossiliferous limestone from Cape Schank, and some nodules of flint taken out of the soft chalky limestone of Point Nepean, which exhibits the form of sponge. They will be highly interesting when examined by a microscope. I am rather puzzled by the fossil shells I send you. They are found in huge masses or blocks on the beach, and in some you find well-rounded boulders of trap. I suspect these shells to be recent littoral species which have been cemented together by the percolation of water holding carbonate of lime in solution, which is continually trickling down the basaltic cliffs from the stratum of fossiliferous limestone which overlies and has been uplifted by the trap. The shells, gravel, and boulders on the beach have, with the lime, formed what is now solid rock; the existing shells being apparently of the same species, or, at any rate, generically the same as the fossil ones."

Specimens in illustration of Dr. Hobson's letter were exhibited.

Dr. W. R Pugh exhibited a calculus taken from an ox killed by Mr. Williatt at Evandale, which had been fed at the Nile rivulet. The calculus had a most powerful odour of musk.

"The Analysis of the Gum of Xanthorrhœa," as stated in proceedings of the Chemical Society, was read, and specimens were produced.

August 12, 1846.

Mr. Ronald C. Gunn read a paper "On the Flora of Lord Auckland's and Campbell's Islands, founded upon Dr. Hooker's *Flora Antarctica*;" and drew attention to the various genera and natural orders found in these islands and in Tasmania.

Mr. James Grant produced the section of a Blue Gum tree *(Eucalyptus globulus,)* 16 years old, which was 4 feet in circumference at the ground, 3⅓ feet at 9 feet up, and the whole height of the tree was 47 feet. Its size was nothing unusual for its age. The annual rings indicating its growth were plainly perceptible.

Mr. Gunn drew attention to the probable value of this very fast-growing indigenous tree, which far exceeded all exotic trees with reference to its growth for timber purposes. It flourishes in any soil, and the timber is very good. It would answer admirably for purposes of shelter in exposed situations, &c.

Lieut. M. C. Friend, R.N., exhibited specimens of *Apus productus*, Latr. (*Monoculus Apus*, Linn.,) or a closely-allied species, found in pools of water at George Town. It also occurs in pools near Launceston.

August 31, 1846.

J. R. Kenworthy, Esq., exhibited five very distinct varieties of Carbonate of Iron found in the island. One occurs in nodules in an amygdaloidal trap rock at Campbell Town, and possesses much beauty. A somewhat similar form is found in trap rock, at Cambock, Evandale. A third variety is found in the centre of nodules of clay ironstone, and is very pure. Another variety was from the bottom of a well 60 to 70 feet deep at Trafalgar, near Launceston.

Mr. Kenworthy produced a most interesting specimen of a fossil *Crustacean* picked up in the gravel upon the road at Fingal, near a farm known as "Gilligans." It is the first species of fossil Crustacean found in Van Diemen's Land. Mr. Kenworthy also exhibited a fossil *Encrinite?* from the Lime Quarry at Middle Arm, River Tamar, and a specimen of *Stenopora crinita?* from Fingal Lime Quarry.

September 23, 1846.

James Grant, Esq., exhibited a new species of mouse found at Kerry Lodge, near Launceston. Mr. Grant also produced some beautiful impressions of the leaves of plants, of apparently existing species, obtained from an indurated clay at Curramore, near Launceston, in sinking a well a few feet below the surface.

CONTENTS.

*** *It is requested that all communications for the Tasmanian Society and Tasmanian Journal may be addressed to the Secretary,* Mr. RONALD C. GUNN, *Launceston, Tasmania.*

G. A. Robinson Esq

Vol. III.] JANUARY. [No. II.

THE

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OF

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1847.

THE

TASMANIAN JOURNAL

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NATURAL SCIENCE.

*** *The plates to illustrate Art. XIII. have been unavoidably delayed, but will appear in the next number.*

necessarily untouched several very interesting points, to which I should like to direct your attention, as they bear equally on physical geography in general, and on the practicability of colonization.

If we examine the country according to the conformation of its surface, the nature of its soil and vegetation, its supply of water, and its meteorological relations, the whole line of route may be divided very naturally into about eight sections, each of which bears its peculiar character. Three belong to the East Coast, three to the Gulf of Carpentaria, and two to Arnheim's Land, and the north-west coast of Australia.

THE

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NATURAL SCIENCE.

JANUARY, 1847.

Art. VII. *Lectures on the Geology, Botany, Natural History, and Capabilities of the Country between Moreton Bay and Port Essington.* By Dr. Leichardt.

Lecture I.

On my arrival in Sydney I published a short account of my journey to Port Essington, which contained, however, only a very superficial description of the country. There remained necessarily untouched several very interesting points, to which I should like to direct your attention, as they bear equally on physical geography in general, and on the practicability of colonization.

If we examine the country according to the conformation of its surface, the nature of its soil and vegetation, its supply of water, and its meteorological relations, the whole line of route may be divided very naturally into about eight sections, each of which bears its peculiar character. Three belong to the East Coast, three to the Gulf of Carpentaria, and two to Arnheim's Land, and the north-west coast of Australia.

1. The first comprises the scrubby country between Darling Downs and Peak Range, with the Dawson and the Mackenzie (latitude 27° 23′.)

2. The Plains of Peak Range, the Isaacks, and the Upper Suttor, of which the Isaacks forms the outlet to the sea, between 23°—20° 50′ latitude.

3. The Lower Suttor, the Burdekin, and its table land (21°—18°.)

4. The Lynd, the Mitchell, and the east coast of the Gulf of Carpentaria, between 18°—16° of latitude.

5. The "Plains of Promise," so called by Captain Stokes, at the head of the Gulf, in 18° of latitude, with the Flinders, the Albert, and the Nicholson.

6. The scrubby west coast of the Gulf, with the Van Alphen, the Abel Tasman, the Seven Emu River, the Robinson, the Macarthur, the Limnenbight River, and the Wickham, between 18°—15°.

7. The River Roper and Arnheim Land, 15°—13° 40′.

8. The Alligator River and the Coburg Peninsula (latitude 13° 40′—11° 21′.)

The country between Darling Downs and the Mackenzie, between the 27° and 23° of latitude, is eminently characterised by the frequency and by the peculiarities of its scrubs. It is principally composed of sandstone, which, judging from its coal beds, and the impressions of plants contained in it, is identical with the sandstone formation of the Lower Hunter. But in several localities it has been broken by basalt (whinstone,) which forms either peaks, as Mount Aldis and Mount Nicholson, or the spine of large ranges, as Expedition Range. The sandstone ranges are remarkable for the number and steepness of their gullies, and for their scrubby vegetation. The basalt is generally connected with plains or with very openly timbered and treeless downs, clothed in a rich vegetation of herbs and grasses. The country was, with a few exceptions, well watered; and almost daily thunder-storms cooled the atmosphere during October, November, December, and January. But not only the high level land west of Darling Downs, which sloped almost imperceptibly to the south-west, but the valleys of the rivers and the sides of the mountains were covered with extensive scrubs principally composed of a species of acacia, which has received the name of bricklow from the squatters, between the Severn and the Condamine. This shrub or small tree has a foliage of greyish green colour, and grows so close that it is impossible, or only with the greatest difficulty, that a man on horseback can make his way through it. Along the hills which bounded Palm-tree Creek and the Dawson, at their junction, this scrub surrounded the Downs (frequently several miles in extent), which were rendered extremely pleasing, not only on account of the open view which they allowed to the eye, tired of the uniform density of the scrub, but also on account of small copses of bricklow, fusanus, and Bauhinia, which were picturesquely scattered over them, and which often clustered round stately bottle-trees, the shady retreat of numerous kangaroos and wallobis. These downs and plains were covered with various grasses and herbs; but the vervain, a wiry plant, prevailed to such a degree on many of them, that I called those Vervain Plains. Whenever the grey dense barrier of the bricklow met our eyes, either in travelling across an open forest or following down the banks of rivers, it was a disheartening dismal sight; but never was the extent of misery so apparent as when we stood on one of the steep gullies at the north-west side of Expedition Range, and looked over a valley almost boundless to the eye, which was filled with one almost uninterrupted sea of scrub.

This country was, however, not devoid of some redeeming characteristics, which were hailed with the greater delight, inasmuch as they formed a pleasing contrast with the inhospitable character of the surrounding scrub. The upper part of the Dawson, Palm-tree Creek, with its swampy Lakes, its fine flats, and noble palm-trees, part of Robinson's Creek, the Creek of Ruined Castles, and the country south-east of Expedition Range, will be remembered by the members of the party as so many places of rest and enjoyment, on which our hopes brightened and our energies revived.

Though the banks of the Mackenzie, so far as we travelled along it, partook of the scrubby character of the country, I have reason to believe that the scrub ceased a little lower down, and its large supply of water makes me suppose, that it forms a eonsiderable stream towards the sea-coast. It disembogues very probably at Broad Sound, in latitude 21° 30′, as the natives pointed to the north-east, when we asked them about the course of the river.

The eountry south-east of Expedition Range, between Zamia Creek and Erythrina Creek, was, for a great distanee to the eastward, flat and openly timbered. It was well grassed and tolerably well provided with water at the foot of the range. Its latitude was 24° 50′, but the eourse of its waters seemed to be directed either to Port Curtis or to Keppel Bay. Should a practicable eommunication with the sea-coast be found, I have no doubt that this will beeome a valuable district for pastoral purposes, and that even the good country of Castle Creek, Robinson's Creek, and Palm-tree Creek, will be accessible from this side.

2. The seeond part of my journey, which extended from lat. 23° to lat. 21° 40′, eomprising Peak Range, the Isaaeks, and the Upper Suttor, bears a character very different from that of the first. Here a long range of noble peaks, eomposed of domite, extends far to the W.N.W., and offers to the west and south-west a wide view over basaltie plains and open downs, which alternate with low and openly-timbered ridges. To the eastward of those peaks, basaltic ridges, with gently-undulating outlines, narrow plains, and abrupt sandstone ranges, form numerous valleys, along which creeks descend to the eastward, winding in their lower eourse through an immense level country, and joining the Isaacks, whieh eomes from the north-west, and forms the chief outlet of the waters to the sea. An open forest covered the whole district, with the exception of some narrow belts of serub along the Isaacks and on the sandstone ranges; and the most luxuriant grass elothed not only the blaek soil of the basaltie plains, but the stiff flats and the sandy bergs along the creeks and river. The supply of water was, however, not in proportion to the number or size of the ehannels; and it was on those magnificent downs of Peak Range that Mr. Calvert and myself nearly perished for want of water. It was here that we felt for the last time a hot wind, from the west and south-west, which direction points to that desert interior which even the persevering boldness of Captain Sturt has

not been able to conquer. Water-holes existed, however, in the upper part of the eastern creeks, and swampy lagoons seemed to become numerous down the Isaacks, which joins the sea very probably near the Mackenzie, in Broad Sound. The Upper Suttor partakes of the character of the Isaacks; and as it was by far more accessible from the head of the latter than from its own lower course, I have placed it in the second division of my journey, though it belongs to the system of the waters of the third.

If, at a close examination, a sufficient quantity of water should be found, a wide extent of country will be opened to the squatter, who will travel with his herds without difficulty over the level country along the Isaacks and its tributaries, and will ascend on gentle ridges to the plains of Peak Range, and probably still farther to the westward, beyond another range of peaks, which we perceived in that direction. He will stock the beautiful country at the head of the Isaacks and the Suttor, over which at present numerous flocks of emus roam; and will fill with animation that immense tract of country which spreads out round the foot of Coxen's Peak.

During the month of February, till March, we were favoured with frequent thunder-storms, from the west and south-west, which enabled us to pass along the driest part of the Isaacks; and after having left the Mackenzie, we enjoyed every night a strong refreshing breeze from the northward, which set in at half-past eight o'clock at the Mackenzie, but every day earlier as we passed Peak Range and travelled along the Isaacks to the north-north-west. During the day, gentle easterly and north-easterly breezes prevailed.

3. The third division of my journey comprises the Lower Suttor, the Burdekin, and the country intervening between the latter river and the Lynd (the upper part of which is more accessible from the east than from the westward). It extends from latitude 21° to 18°, and is characterised by its supply of running water, by its primitive rocks, its limestone, its numerous ranges, and its fine open well-grassed forest.

If you bear in mind that it comprises three degrees of latitude and two and a half of longitude; that the elevation on its upper course renders the climate much cooler than might be expected from its latitude; and besides that several large tributaries, as the Cape, the Clarke, the Perry, drain in all probability large tracts of available country; you will on consideration agree with me that if a settlement is to be established on the east coast it ought to be at the mouth of the Burdekin, which I suppose to be at Cape Upstart, on the southern extremity of Halifax Bay. Should the entrance of the river be barred, as is the case with all the rivers of the east coast south of Wide Bay, it must be remembered that the inner barrier, which extends from Cape York down to Bunker's Islands, forms along the coast a channel of smooth water, which may be considered in the light of a river, the navigation of which has been repeatedly recommended by Captain King, the best authority to whom an appeal can be made.

The flats along the river are chiefly formed by the detritus of coarse granitic rocks, the feldspar of which has been transformed into clay, mixed with grains of quartz derived from the same source. Stiff clay soil was limited, and confined to hollows and depressions, round which the poplar-gum generally formed a belt of bright green foliage. Rotten ground was not uncommon, but it always proved to be a mixture of clay with sand; for the funnel-ant, which forms its habitations in such a soil, requires clay to cement the moving grains of sand.

I wish I was capable of giving you an adequate idea of the beauty and richness of the basaltic table land. The open forest of narrow-leaved iron-bark and box, on a sound rather stony ground, alternated with plains of various extent, richly grassed and frequently watered by numerous running brooks and springs. Large and deep lagoons were scattered over the valley, or were parallel to the river. The latter was still running strongly over its sandy, pebbly, or rocky bed, with a rich and luxuriant pasture everywhere around it. But the approach to this interesting country is intercepted by a very mountainous region, and by many deep creeks, over which more practicable roads will no doubt be found in the progress of colonization. The basalt appeared to have been broken by a still more recent eruption of lava, which expanded partly over it, and formed as wild and irregular fields of rock as ever covered the slopes of a volcano.

We travelled along the Burdekin during April and May, and we had, with two trifling exceptions, neither rain nor thunder-storms; but though the days were frequently exceedingly hot, we still felt the night breeze from the northward, and the clear nights were so cold and dewy that we greatly enjoyed our fires.

From the ridges and mountains which rose above the table-land, the waters descended not only to the valley of the Burdekin in a south-east direction, but also to the north-east and to the westward. The country along the creeks was open and flat, as long as they passed over the table-land; but when they descended, their channels deepened, their banks became surrounded with steep ranges, and their beds were either formed by solid rock or covered with loose shingle and boulders, which rendered it impossible to travel within or along them, and compelled us to find a circuitous passage beyond the neighbouring ranges and gullies.

4. The fourth division of my journey embraces the Lynd, the Mitchell, and the east coast of the Gulf of Carpentaria. The fall towards the level country, which forms a broad belt round the Gulf of Carpentaria, is much more rapid than the ascent from the east coast; and the course of the Upper Lynd is much more mountainous and wild than that of the Upper Burdekin.

It is extremely interesting to the geologist to observe the same succession of rocks, granite, talchiste, porphyry, and sandstone, in descending to the Gulf, which he found at the east coast in ascending to the table-land. But limestone was not met with on the west side of the York Peninsula, though it appeared extensively developed on the Burdekin. Basalt has broken through the various rocks, but the level country itself is formed of a clayey ironstone with grains of quartz, which extended all round the Gulf to Port Essington, and may be considered of a newer formation.

The Lynd was joined by several running creeks, and was in its whole course well supplied with water. The country was openly timbered, and well grassed, and at the lower part of the Lynd and parallel to the Mitchell, very large and deep nymphæa ponds existed, around which the pasture was particularly rich.

The rivers within the tropics are almost all remarkable for the immense width of their beds, which are filled with sand, with the exception of those spots in which the naked rock cropped out. They were overgrown with small trees, and the number and size of the latter depends upon the frequency and strength of those rushes of water which occasionally sweep down. The Upper Lynd was, for instance, covered with trees, whilst the bed of the Mitchell was entirely free from them. We observed water marks fifteen and eighteen feet above the level of the bed—evidently showing that a large body of water flows down to the sea in, perhaps, unusually rainy seasons.

In finding these large channels, whether dry or with tiny streams, occasionally lost in the loose sands, are we then to suppose that the power of the floods which formed them was formerly greater than at present, and that the decrease of moisture, which has been remarked by the old inhabitants of the colony, has equally taken place in the tropics? Analogy certainly justifies such a conclusion.

Large tracts of country on the east coast of the Gulf were covered with box (a species of eucalyptus,) and with a small tea-tree with broad lanceolate leaves. These trees generally indicated a stiff soil, which in the level country was never free from shallow holes, such as are called melon-holes by the squatters, formed, no doubt, by the infiltrating rain and standing water. In many of these holes we found dead crabs, and even fresh-water turtles, and many shells, which also proved that long drought had prevailed and destroyed these animals.

Another feature of the country are slight undulations, on which grew a few scattered rather stunted trees, amongst which a species of grevillia (gr. mimosoides R. Br.) with long, narrow, drooping, silvery leaves, particularly attracted our attention.

The finest and most available country was along the creeks and rivers. Here the soil was much lighter, and the bloodwood, the leguminous iron-bark, and the pandanus, grew well on it, forming an open forest.

All the rivers of Australia have lines of holes and hollows parallel to them. These are generally filled by high floods, and keep the water much longer than the rivers themselves. Lagoons of this description were very numerous along the Staaten, the Van Diemen, the Gilbert, and the Caron, and appeared to be the constant resorts of the natives. To the north of the Staaten towards the sea coast, there is a succession of plains, but the grass was generally stiff and wiry.

If we compare the course of the rivers on the east coast of the Gulf of Carpentaria, it will be considered remarkable that the Lynd, which rises in the latitude of the head of the Gulf, from the table-land of the York Peninsula, should go to the north-north-west, and belong to a system of waters which joins the sea in latitude 15°, instead of taking a direct course to the westward, and of disemboguing in or near the head of the Gulf. A number of coast rivers, of probably very short courses, the Nassau, the Staaten, the Van Diemen, Gilbert, and Caron, take their origin, from the moderately elevated country which bounds the valley of the Lynd and Mitchell to the westward.

5. The fifth division of my route comprises the Plains of Promise, so called by Captain Stokes, which extend from the Flinders to the Nicholson, and are drained by tributaries of three large salt-water rivers or creeks, the most western of which is the Albert of Stokes, and the Maet Suyker of the Dutch navigators. These plains were covered with a variety of tender grasses and herbs, but bare of wood, with the exception of a few straggling trees. The narrow valleys of the creeks were, however, filled with open scrub, formed by a small tree, which we called raspberry-jam tree, because its fresh-cut wood had the scent of raspberry jam.

Should a harbour be found at the head of the Gulf of Carpentaria, which might allow ships to approach and to moor in safety, it would not only open this fine country to colonisation, but would allow the produce of the high land of the York Peninsula, to be brought down to the Gulf of Carpentaria, as well as to the east coast. Cattle and horses could be easily driven from coast to coast, and they would even fatten, as water and feed are every where abundant.

6. The sixth part of my journey between the Nicholson and the Roper was as remarkable for the number of large salt-water rivers, as for the density of its tea-tree scrubs, and for the extent of its stringy-bark forest.

Here we came again to hills and ranges; and pebbles of granite and porphyry made it evident that the great arc of high land, which sweeps round the head of the Gulf of Carpentaria, again approached the sea-coast. The Van Alphen, the Abel Tasman, the Robinson, the Macarthur, and the Limmenbight Rivers, formed broad channels of water, and offered to us a magnificent sight, when, after long and harassing stages through a dense scrubby monotonous forest, we came suddenly upon them.

Captain Stokes, when exploring the head of the gulf, was struck with the comparatively low temperature in this latitude. Though the want of a thermometer prevented me from making any exact observations, I was still able to collect a number of facts which tend to corroborate Captain Stokes's statements. In travelling along the east coast of the gulf, we had generally light easterly and south-easterly airs during the day, but a strong cold wind from the south-west and south by west set in at night, from which we suffered the more, as we avoided keeping a large fire, which would have prevented us from watching the approach of hostile natives.

At the head of the gulf the night winds came more and more from the southward, and changed to the south-east, and even east-south-east, as we advanced along the west coast. During the day we had a very regular sea-breeze from the northward, which was particularly strong near the large rivers, the valley of which seemed to condense and to accelerate its current. The stronger the sea-breeze was during the day, the heavier was the dew during the night, which was easily accounted for by the action of the cold southerly land breeze on the warmer moisture with which the sea air was charged.

A phenomenon, which I observed several times, shows clearly the action of these two currents of air when they meet and mix. About 10—11 o'clock at night, a veil of loose clouds formed suddenly to the southward, and rose rapidly with a strong puff of southerly wind; another mass of clouds formed in the same quarter, and passed as rapidly as the first, and after that a strong full breeze set in from the southward, with a perfectly clear sky. According to the Rev. Mr. Clarke, something similar takes place over Sydney, about sundown, in the summer season, but is succeeded by a still night.

The bracing nature of the south breeze at night, had a very beneficial influence on our constitutions; as the regular interchange of land and sea breeze contributes every where to render a climate healthy.

7. The seventh division of my route is formed by the Roper and by the high land of Arnheim's Peninsula. The Roper is the only large fresh-water river of the west coast of the gulf, as far as we followed it to the northward. It is fed by a great number of running creeks and brooks, all closely fringed by belts of pandanus. Almost the whole country along the river was open, well grassed, and available for depasturing purposes. At its upper course exist fine plains, which are bound by sandstone ridges, and diversified by pandanus creeks, forming an extremely pleasing landscape. The high land was covered with an open stringy-bark forest on a sandy soil, but its level is frequently interrupted by steep rocky sandstone hills and ridges, at the foot of which tea-tree swamps, with a peaty soil, formed frequently the heads of creeks.

I have mentioned that the fall of the high land of the York Peninsula is more sudden to the westward; the same is the case in a still higher degree in Arnheim's Land, for there is not only a very rapid fall in the creeks, but there are precipices 500—800 feet high, which border the valley of the South Alligator River, and over which numerous cascades rushed down to join their waters with those of that river.

It was very remarkable that the only slope which allowed us to descend into the valley is formed by granite, whereas the whole of Arnheim's land and the ranges of the Roper are composed of sandstone, which has been broken through by basalt, near the divisions of the waters of the Gulf of Carpentaria and the north-west coast.

8. The eighth part of my journey comprises the two Alligator Rivers, and the Coburg Peninsula. Its leading features are large swampy lagoons; extensive plains at the lower part of their course, densely wooded ironstone ridges, and a great number of creeks in the Coburg Peninsula, with limited flats of light alluvial soil, which are richly clothed with herbs and grasses during and immediately after the rainy season. These creeks generally enlarge into swamps called "Marairs" by the natives, before they are lost in the mangrove thicket, which covers their junction with the sea.

I have mentioned that at the east coast we enjoyed a regular cool northerly night breeze, which frequently increased to a gale, and that round the gulf the strong night breeze was southerly, from south-west and south-east, whilst the sea-breeze blew during the afternoon from the northward. We were deeply interested in these movements of the atmosphere, not only on account of their meteorological importance, but also on account of the relief which they afforded us whilst under the influence of a scorching tropical sun.

Along the Roper the sea-breeze continued strong and regular from the eastward, but the night-breeze became indistinct, probably in consequence of a great number of parallel ranges, which intercepted its course. At the head of the river, however, we again felt a strong but warm wind from north-north-west—north-north-east, about nine o'clock at night. This I considered to be the sea-breeze from the north coast of Australia, flowing probably up to the high land along the valley of the Liverpool River.

The 14th November, when on the high land of Arnheim's Land, and on western waters, we experienced the first thunder-storm since we had left the east coast. Similar ones rose almost every day to the 23rd of November, and veered invariably from south to west, from north to east. It was the time when the north-west monsoon sets in, and these thunder-storms appeared to be the first indications of the change.

I had been extremely anxious to reach Port Essington before the setting in of the rainy season, as there was good reason to believe that the peninsula was connected with the main land by a neck of low land and mangrove swamps, which would have been rendered impassable by any continuance of rain. Though I afterwards found that connecting ridges run from the main land into the peninsula, it would notwithstanding have been extremely difficult to cross the plains and flats, which were large and numerous along the Alligator Rivers and Van Diemen Gulf. We were again favoured with fine weather until we were fairly on the peninsula, when the thunder-storms recommenced; and the day we arrived in Victoria heavy rains set in, which rendered the flats boggy and flooded the creeks.

Captain Macarthur gave the following description of the setting in of the north-west monsoon. At sunset, a low body of clouds is seen to the southward and south-west, which draws off to the westward between the main land and Melville Island. These clouds approach nearer and nearer to the zenith every succeeding day. At first they just skirt the settlement, accompanied by brief showers, but at length the whole body passes fairly over the peninsula, and the regular rains commence.

The body of clouds before mentioned forms and rests very probably on the high land, at the head of the Alligator rivers, and is produced by the moist warm north-west wind flowing up the valley to the elevated cooler country, and meeting perhaps cold winds from the west side of the Gulf of Carpentaria, and from the high lands to the southward.

I will here mention that the sea-breeze at Victoria is extremely weak, and I think that Captain Macarthur is right in attributing partly to this fact the fever, from which the garrison has several times severely suffered. It is extremely difficult to assign any other reason for the want of salubrity. The country is undulating and hilly; the soil is sandy, and absorbs rapidly the heaviest showers; the forest is open; the mangrove thickets which cover the mouth of the creeks scarcely deserve the name of swamps, as they are washed by the tide, and form no accumulation of vegetable matter which might produce the miasma or malaria which generally renders tropical countries so dangerous. After rain the air is fresh and pure, the ground dry, and a walk most agreeable. Those localities which are freely exposed to the sea-breeze, as, for instance, Crocker's Island, are, according to Captain Macarthur, very healthy.

If you ask me how far the country we have travelled over will be available for colonisation, I would reply that the greatest part is fit for pastoral purposes; and I except only the scrubs of the east coast of Australia, the mountain gorges of the Upper Lynd, and the tea-tree scrubs of the west coast of the Gulf of Carpentaria. But even here broad belts of fine country extend along both sides of the larger rivers, and will very probably be found quite as good as the country of the Roper. Horses and cattle will do well over the whole extent, particularly at Expedition Range, along the Isaacks, the Burdekin, the east coast of the gulf, and on the plains at its head. The rapid increase of the buffaloes on the Coburg Peninsula, and the excellent condition of the herd of cattle which they keep at Port Essington, shows that the north-west coast of Australia is no less favourable for the development of animal life.

The elevation of Peak Range, and of the Table Land of the Burdekin, leads me to believe that these regions are fit for sheep.

I am not sufficiently acquainted with the cultivation of tropical plants to give a decided opinion; but there is such a variety of soil, of aspect, and of elevation, that I feel convinced tropical plants will grow freely, where sufficient moisture exists. The cotton, the indigo, the cocoanut, the banana, the arrowroot, the sweet potatoe, the bread-fruit tree, the jackfruit, the sowersop, the pine-apple, the mango, and mangostine grow well in Port Essington; and Captain Macarthur assured me that, according to the statement of the Malays, who had examined the swamps west of the settlement, they would do excellently for growing rice. The large plains of the Alligator Rivers would suit equally well, and to an almost unlimited extent.

If we draw a line from Halifax Bay to Port Essington, and divide it into three almost equal parts, the points of division would fall on Halifax Bay, on the Head of the Gulf, on Limmenbight, and Port Essington. Should good harbours be found, and settlements be established on those points of division, they would scarcely be as far from each other as Sydney from Port Phillip, and the overland communication would be probably equally easy, or would be rendered so after a very short time.

I shall mention once more those facts which have induced me to suppose that part of the country had been remarkably dry for a succession of years.

1. The condition of large channels of rivers and creeks, which were either entirely dry or contained only tiny streams not at all proportionate to their widths.

2. The occurrence of dead crabs and fresh-water turtle on the box flats at the east side of the Gulf of Carpentaria. The turtle requires a great supply of water, and those skeletons which I observed did not seem to have been carried thither by the natives.

3. Extensive shallows at the west coast of the Gulf, surrounded by heaps of dead fresh-water muscle-shells, of large size, which were overgrown by small tea-trees, about four or five years old. The muscles must have lived and grown for a number of years in those hollows, which were now entirely dry.

4. The plains of the East Alligator River were covered by dead fresh-water shells, particularly limnæas, which must have lived and grown in shallow holes and lagoons, which extend all over those plains.

5. Lines of drooping tea-trees along several salt-water creeks at the west coast of the Gulf, were dead, in consequence of the want of the usual freshes, as the tree seems not to live on water entirely salt.

It seems impossible, in the present state of our information, to account for this remarkable phenomenon of the decreasing supply of water on the surface of this continent. The supposition of a gradual rise of the land would explain why arms of the sea recede, and parts of the bottom of these become dry; but it would not explain the decrease of moisture in the atmosphere, or the greater evaporation or absorption of the waters in lagoons, which are not connected with any water-course. The rise of the country would rather lead us to expect a greater precipitation of moisture round its elevated points.

My observations on the uninhabited parts of the colony, show that this desication is not dependent upon colonisation, upon the clearing of the ground, and the increase of stock, though there is no doubt that the latter must make a great impression on limited water-holes not supplied by springs. We are, therefore, compelled to look for the cause in some until now unknown change of the atmosphere, which may be periodical, and allow us to hope that the continent will be again favoured with a series of more rainy seasons.

Lecture II.

I shall now give you an account of the change of vegetation we experienced in advancing into the tropics. I shall enumerate all the edible vegetable substances we found, the change of animals, and shall conclude with some observations on the natives we met during our journey.

The vegetation changed very little along the east coast from Moreton Bay to the northward. The open forest was generally formed by the narrow-leaved and silver-leaved iron-bark; the flats were covered by box; the bergs along the rivers and creeks by bloodwood and Moreton Bay ash; and the immediate banks of the creeks were lined by flooded gums and casuarinas, which, farther northward, gave way to the drooping tea-tree. We never met with vine and cedar brushes like those which grow along the rivers of Port Macquarie and Moreton Bay, or on the sides of mountains, like the bunya-bunya brushes. There were narrow belts of palm-tree brush at the Mitchell, and of bamboo brush on the South Alligator River, but nothing to be compared with the dense masses of vegetation which are found in the districts above mentioned. No species of araucaria was seen; but calitris, the cyprus-pine, covers the whole continent wherever a sandy rocky soil favoured its growth. The drooping myall ceased at Peak Range, the bricklow at the heads of the Burdekin and the Upper Lynd, where also the iron-bark disappeared. Several species of bauhinia adorned the scrubs with their rich white blossoms; and an arborescent cassia, with very long narrow seed-vessels, was observed between latitude 27° 30′ and 19°. Careya arborea was first met with at the Suttor, the clustered fig-tree first at the Burdekin; grevillea mimosoides and hakea lorea appeared first in latitude 26° 42′. Grevillea lanceolata, a new species with broad lanceolate leaf, thus named by me, showed itself first at the Suttor, where it was growing on a light sandy soil with pandanus spiralis. Grevillea ceratophylla, and acacia equisetifolia, were first met with in latitude 19° 19′. The poplar-gum, a species of eucalyptus with a bright green foliage, formed patches of forest along the Isaacks, and grew on the stiff hollows along the Burdekin. An arborescent zamia was growing on the heads of Zamia Creek and on Expedition Range, in latitude 24° 43′; a cycas about four to five feet high, with pinnate leaves of glaucus colour, on the Burdekin in latitude 18° 45′; and a sciadophyllum in the Valley of Lagoons in almost the same latitude.

Nymphæa was first observed on Brown's Lagoons in latitude 24° 45′, and nelumbium near the Mackenzie, in latitude 23° 21′.

When entering upon the system of the waters of the gulf, the character of the vegetation changed very considerably, and a number of new forms appeared, which bore resemblance to the flora of the Malay Islands and of India. The head of the Lynd was remarkably rich in various plants and trees. Here cochlospermum gossypium and a rose-coloured sterculia attracted our attention by the beauty of its blossoms; and a species of eucalyptus with its butt covered by short foliaceous bark bearing seed-vessels of immense size, and blossoms of an orange colour. A rubiaceous tree belonging to the sarcocephaleæ was distinguished by its rich dark green umbrageous foliage, and a dwarf grevillea by its bunches of crimson-coloured flowers. Two species of terminalia either shaded the creeks or grew on the rocky slopes. Lower down the river, a species of stravadium, with loose drooping racemes of red blossoms, fringed the shallow swampy lagoons; and on the banks of the Mitchell, in latitude 15° 51′, the corypha palm grew to a large size and in great numbers.

A yellow villarsia shared with nymphæa the ponds, and several yellow ipomæas twined round the trees at the very edge of the water.

Various species of melaleuca took the place of the eucalyptus, which disappeared, with the exception of the box, as we approached the coast. One species of pandanus was growing on a light sandy soil in the open bloodwood forest, and formed broad belts at the outside of the forest land along the levels of the Alligator Rivers. Another species crowded round the running creeks in an almost impassable jungle on the west side of the Gulf. The nonda-tree, which belongs in all probability to the rhamnaceæ, was a fine shady spreading tree, laden with yellow plums, between the Lynd and the Van Diemen. The raspberry-jam tree covered the slopes of the salt-water rivers and the valleys of those creeks which intersected the plains at the head of the gulf. The stringy-bark tree re-appeared on the sandy flats of the Upper Lynd; but on the west coast of the gulf it formed the principal part of a scrubby forest. Over Arnheim's Land and the north-west coast towards Port Essington, the orange-blossomed eucalyptus, a leguminous tree with a dark fissured bark, and the Livistona-palm had an equal share in the composition of the forest. Inga moniliformis was first seen at a tributary creek of the Mitchell; but was afterwards, with a broad-leaved terminalia, a white gum, and the mangrove myrtle (stravadium), a constant companion of creeks and waterholes. A species of bossiæa, with flat stem, composed principally the scrub of the west coast of the gulf, and it was here we observed grevillea pungens with thirsi of scarlet flowers. A noble cycas-tree, which frequently attained the height of fifty feet, formed large groves on Cycas Creek and the Robinson; but disappeared as we left this river, and was not observed again until we arrived at Port Essington, where two or three small trees are growing near Victoria.

The Corypha-palm, which we had observed on Palm-tree Creek, and under Expedition Range, was found again on the Mitchell, at Beames's Brook, and on the South Alligator River. Very low specimens of seaforthia grew on Arnheim's Land, but noble trees of it were on the patches of brush along the Alligator Rivers, and formed groves and even a whole tract of forest between Raffles Bay and Port Essington.

It is generally believed that Australia is poor in edible fruits and vegetables. There is no doubt that very few are good, but it will be seen by the subjoined catalogue, that the number of the edible productions of the vegetable kingdom was by no means small.

We boiled the young shoots of native spinach (mesembrianthemum), the goose-foot (chenopodium), portulacca, and the sow-thistle (sonchus), as vegetables. The seaforthia, corypha, and livistona palms, yielded young edible shoots; but the two latter were either bitter or gave only a small supply, whilst the seaforthia shoots (myroin of the natives of Port Essington) afforded most excellent eating. Salicornia, a small plant with articulate fleshy stem, which grows always on soil impregnated with salt, tasted well when boiled with our stewed meat, particularly when we were without salt. The youngest leaves of typha (bullrush) and the lower part of the leaf-stalks of nelumbium were good to eat. The stem of a species of cymbidium was edible, but very glutinous and insipid.

A small round tuber, about three quarters of an inch in diameter, of a sweet agreeable taste, was found in a camp of natives at Comet River, and belongs probably to a water-plant, with floating leaves like potamogeton. In the scrubs between the Mackenzie and Peak Range and along the Isaacks, we found large watery slightly pungent tubers of a vine, which bore blue berries of a still more pungent nature.

At the head of the Lynd, two sorts of potatoes were found in great abundance in a camp of the natives; but they were excessively bitter, and neither roasting nor boiling would render them palatable; at last I pounded them carefully, washed the pounded pulp, and obtained a tasteless starch, which very much resembled arrowroot.

The seed-vessels, the stems (ombelborro), and tubers (toori) of nymphæa were eaten by the natives of the Upper Burdekin, and of the east coast of the gulf, and gave us some hearty meals.

The stems and tubers which the natives pounded were very good indeed. The thick root of a little bean with yellow blossoms, and those of a convolvulus on the plains of the Albert, were found in a camp of natives; and the "imberbi," perhaps the root of the same convolvulus, formed the principal part of the repast of Nywall's tribe, near the East Alligator River. But the finest and most substantial food was the allamur, or murruatt, the mealy rhizoma, or subterranean stem of a sedge, which the natives of the Alligator Rivers and of the Coburg Peninsula obtained in large quantities.

Amongst the fruits I have to mention a small lemon, which had an acidulous taste, and abounded in the scrubs of Expedition Range and Comet River.

The seeds of the dwarf kouradjong (grewia) yielded, when boiled for a long time, an agreeable acidulous drink.

Those of sterculia heterophylla (the kooremin), and of the rose-coloured sterculia, round the gulf, made, when slightly roasted, a fine coffee, and the remaining grounds were good to eat.

The spongy wood of the bottle tree (another species of sterculia) contained a cellular mealy substance between its fibres, which, when chewed, satisfied the cravings of hunger.

The seeds of the Mackenzie bean, so called from being found first and most abundantly in the sandy bed of that river, formed a good substitute for coffee. Those of nelumbium were however much finer, and the remaining grounds were agreeable to eat and wholesome. The seeds of the vine-bean of the Roper (a species of mucuna?) when pounded and boiled for a long time formed a very satisfying meal.

Several species of capparis, either shrubs or small trees, had edible fruits, which when perfectly ripe we enjoyed greatly, as they contained a sweet pulpy substance, in which the seeds were imbedded. The latter were however very pungent.

At the Isaacks a little tree with coriaceous leaves bore a small oblong fruit, having a surrounding calyx like a little acorn, with a thin but sweet rind. The abundance of this fruit made up for the scantiness of its edible parts. It was much sought after by crows and cockatoos.

At the head of the Isaacks and in the valley of lagoons we found a purple fruit with a many-celled seed-vessel. The thin rind had a slightly stringent acidulous agreeable taste. The tree had a pinnate leaf resembling that of the red cedar.

Santalum lanceolatum yielded occasionally blue edible berries of the size of small cherries.

Fusanus, which is mentioned in Sir Thomas Mitchell's expeditions, gave us a rich harvest of fruit in the bottle-tree scrubs west of Darling Downs.

I frequently collected the small red fruits of rhagodia; but they were not worth the trouble, and I willingly left them to the bronze-winged pigeons, the crops of which at Comet River were crowded with them.

A native mulberry with small white fruit, of a sweet taste, grew on the fields of lava, at the Burdekin; and an edible fruit of a white colour, with persistent calyx, and viscous, like the fruit of the mistletoe, grew on a small tree along the upper course of the same river.

Several species of figs, the rough purple fig (ficus muntia), the small round yellow fruit of ficus Australis, and the clustered fig of the Burdekin, were successively gathered. The latter yielded by far the richest harvest, as numerous bunches of the fruit were sprouting out of the trunk and largest branches from top to bottom. They were of the size of a small garden fig, of a yellow colour when ripe, but generally full of small flies and black ants. They were very heavy and indigestible, and we several times suffered from eating too many of them.

Careya arborea? (belonging to the Barringtoneæ) bore a harmless fruit, which, however, we never found perfectly ripe.

The little gooseberry-tree (coniogeton arborescens? belonging to the Terebinthaceæ) had a fruit of the size of a small compressed cherry, which we boiled, when not yet ripe enough, to obtain from it an acidulous drink, but which was very agreeable to eat when sufficiently ripened.

The seed vessels of pandanus spiralis, when ripe, contain a very sweet pear-like pulp between their fibres. It is very agreeable at the time, but afterwards extremely pungent, and a severe purgative. The natives roast and soak them, and probably drink the fluid with which they have washed out the pulp. I would not even be surprised if this fluid were to undergo fermentation and yield a spirituous liquor. After having used the seed-vessel the natives break it to obtain the kernel, which is also good to eat.

The seeds of cycas seem to form a considerable part of the food of the natives at Cycas Creek and the Robinson. They are cut in slices, and spread over the ground and dried. When brittle, they are soaked for several days in water, and afterwards tied up in tea-tree bark, to undergo a sort of fermentation, which destroys their poisonous principle; for in a fresh state they are violently cathartic and emetical.

We collected three species of rose-apple (eugenia). One was a large scarlet fruit, with longitudinal ribs, of a coarse and strong aromatic taste. Another was of a delicate rose colour, and extremely pleasant. The smaller fruit of a species of acmena was also occasionally gathered along the western creeks of Arnheim's Land.

A small rubiaceous tree at the Upper Lynd bore a rather dry, round, many-seeded acidulous fruit, which tasted like coarse rye bread, and induced us to call it the little bread-tree.

The nonda fruit, oblong in form, about an inch in length, and of yellow colour when ripe, was very agreeable, and it appeared that the emus were very fond of it. But they ate principally the unripe fruit, which was excessively bitter. It seems as if this bird was altogether fond of bitter fruits; for that of a small euphorbiaceous tree, on which the creature principally lived, was perhaps the most bitter fruit I have ever tasted, and this bitterness was imparted to the flesh, and even to the marrow.

At Raffles Bay we found "the lugula," a species of anacardium, the succulent fruit stalks of which were very agreeable; but the envelope of the seed was exceedingly sharp, blistering our lips and skin whenever the juice adhered to them.

The gibong (persoonia falcata), and the fruit of exocarpus latifolia were occasionally found and eaten in Arnheim's Land.

On the ridges of the north-west coast I picked from a little tree with ternate leaf, a small round black berry, which was of a very agreeable taste.

One species of acacia, a sapindaceous tree, and two species of terminalia, yielded a fine supply of edible gum, and the fruit of one of the terminalia was tolerably good to eat.

The native nutmeg of Port Essington (myristica) is of an oblong form, and not so large as that cultivated by the Dutch, but strongly aromatic.

We washed out the blossoms of the drooping tea-tree (melaleuca leucodendron) to get at the honey, which they contained in great quantity.

The native marjoram, of which we met three sorts, one belonging to the genus "Anisomeles" R. Br., was used for tea and for flavouring our soup.

On one occasion we found an edible mushroom. This grew in the scrubs west of Darling Downs.

In our endeavours to find substitutes for tea, we were once severely punished on using the seeds of a species of acacia, which produced violent sickness and bowel complaints in several of my companions. I mentioned the blistering qualities of the "Lugula." Still more remarkable was that of the glutinous juice which exuded from the seed-vessels of a species of grevillea along the banks of the Macarthur. The pulpy substance which separated the seeds of the arborescent cassia had an acidulous taste, and was a mild and very effective medicine.

I used wood ashes in general, but particularly those of the little raspberry-jam tree, to make a lye or wash, with which I dressed the wounds of my companions, using the quill of bustards or of native companions, as a kind of syringe to inject the fluid, where the wound was deep.

The Animal Kingdom.—Of molluscous animals we observed two species of unio (fresh-water muscles), on which the natives along the Mackenzie, the Suttor, and the lagoons of the east coast of the gulf, seemed principally to live, two species of cyclas, three species of limnæa, one of physa, two of melania, one of ancylus. Several species of helix, of which one species, almost as large as the edible helix pomatia, was eaten by the natives of the Isaaks and the Suttor. A species of the elongated form of clausilia was once found in the stomach of a bronze-winged pigeon on Comet Creek. A species of succinea was living in the fissures of the bark of the gum trees, and in the moist grass west of Darling Downs.

Small brown leeches abounded in some water-holes west of Darling Downs. They were very keen within the water, but dropped off as soon as we lifted our feet out of it.

Of crustaceous animals we observed occasionally the crawfish (astacus), which abounds in many creeks of Darling Downs as in other parts of the colony. A land crab, burrowing under logs of trees, or in the mud of water-holes, was caught several times alive. Dead shells were frequently observed in the dried-up water-holes.

Probably in consequence of the extreme dryness of the season, we met with very few insects, and those were generally of familiar forms. A fine grasshopper, however, of a bright red colour, and with blue marks, attracted our attention on the elevated parts of Arnheim's Land. We never observed fire flies; suffered comparatively little from mosquitos and sand flies, but were much annoyed by small flies, and particularly by two species of horse flies, as we approached Port Essington. Various species of ants either attacked our meat or ran over us when lying on the ground. In the latter respect a very minute black ant was particularly troublesome. The green-tree ant, which lives on shady trees and shrubs, was noticed first at the Lower Lynd.

We observed the structures of the white ant (termites) in every form from the narrow cone one of three feet high, to colossal piles fifteen feet high, and more than eight feet in diameter, with various buttresses and turrets. The latter were particularly large near the sea-coast.

The native bee was so abundant in some localities that numbers of them settled on our plates and hands. Their honey was very aromatic in those parts where the native marjoram grew. Hornets attacked us frequently at the commencement of our journey, and stung ourselves and our cattle, which became wild, and in consequence upset their load.

Of fishes we observed several small ones belonging to the perches, one probably belonging to the carps. Eels were in the water-holes of the eastern waters. A silurus, a guard fish, the broad-scaled fish of the Mackenzie, (a species of ostioglossum,) which attains a great size and is excellent eating, seems to live in the lagoons, in the rivers, and even in the salt water. A saw fish (pristis) which belongs to the sharks, was found far from the sea-coast, in a water-hole of the River Lynd.

Reptiles.—Several species of tiliqua, of scincus, one with a blunt tail and nobby scales, of gheckos, of agamas, gramatophorus, chlamydophorus (the Jew-lizard of the Hunter), chlamydosaurus kingii, and two or three species of hydrosaurus and the crocodile were seen. The latter seems to inhabit the estuaries of all the tropical rivers, and was seen several times in large lagoons far inland. We heard several times a low bellowing noise along the large rivers, which we ascribed to this animal. It is very remarkable that the natives which visited Captain Sturt in the desert recognised the crocodile when shown its outline. We observed very few snakes; the carpet-snake, a small brownish snake, in the water-holes along Comet River, a whip-snake with yellow belly, at the Suttor, and a long greyish snake at the East Alligator, were all we saw.

Birds.—Very few new, and no striking species of birds were observed along the east coast of Australia. The bustard and the emu frequented the plains, both very inferior in size and condition to those of the southern parts of Australia. The nest of the native turkey (tallegalla lathami), and the bower of the bower-bird (chlamydera maculata, Gld.), attracted occasionally our attention in the scrubs. The cockatoo was, as usual, fond of shady creeks; the laughing-jackass chaunted our matins and vespers; the boobook or barking bird, and the curlew called during the night; the fan-tailed fly-catcher and a warbler of the reeds cheered us with their pretty song by day. Kites and crows contended with us for our meat, as the harpies with Æneas, or came to pick the few bones we left, as their share. The black cockatoo was still the most wary bird of the bush. The Moreton Bay rosella, red shoulders, blue mountaineers, betsherrygahs, (melopsittacus undulatus, Gld.), a new parrot which Mr. Gilbert had first observed on Darling Downs, partridge, and bronze-winged pigeons, several species of doves and various finches, came to share the water with us. The black duck, the wood duck, the teal, grebes, and pelicans, inhabited the large lagoons. The black swan disappeared to the northward, and was observed last at the junction of the Suttor with the Burdekin. Parra gallinacea, Gld. was first seen in the valley of lagoons, lat. 18° 42′. The wonga-wonga pigeon (leucosarcia picata) was seen last at the north side of Expedition Range, 24° 40′.

When we entered into the river system of the gulf, new birds appeared, which Mr. Gilbert had only observed at Port Essington, or which had been collected by Dr. Bynoe at the north-west coast. A smaller species of laughing jackass (dacelo cervina, Gld.), with a voice a little more melodious than that of the large one, was first heard on the Upper Lynd; the crested partridge pigeon, geophaps plumifera, lived along the ridgy banks of that river; the whistling duck, leptotarsis eytoni, Gld.; the shield-rake, tadorna rajah; and the black-winged pelican occupied the lagoons. Cocatua sanguinea (a small species of cockatoo), the rose cockatoo, cocatua eos, Gld., the betshirygah, the harlequin pigeon, peristera histrionica, lived on the plains at the head of the gulf. The Torres Strait pigeon, carpophaga luctuosa, and geophaps Smithi were first seen in lat. 16° 51′ west of the gulf; Brown's parrokeet (platycercus Brownii) was observed at the head of the Roper; a new species of Rock pigeon (petraphassa, Gld.) lived amongst the sandstone cliffs in Arnheim's Land. The lagoons of the Alligator Rivers abounded with wild geese (anseranas Melanoleuca), and with myriads of whistling ducks, black ducks, teal, shieldrakes, dwarf geese (nettapus pulchellusæ, Gld.), and spoonbills (with black and yellow bills), ibisses, and native companions. Its plains abounded with the small cockatoo (cocatua sanguinea). The most interesting bird of Port Essington was the jungle fowl, (megapodius,) the eggs of which would indeed never be expected to be found in the huge mounds of clay which seem to have been accumulated by several generations of birds in succession.

One bird seemed to be closely attached to the cypress pine; for its remarkable note was heard whenever we were near these trees. It was heard at night, and particularly towards morning; the note was a melodious repetition of "gluck, gluck," which terminated in a kind of shake. Mr. Gilbert did not know it, and we could never get a sight of it; its voice was besides extremely deceiving as to distance. The very pleasing note of another bird was heard in the most rocky intricate part of Arnheim's Land; it was the repetition of a long full whistle, rising each time about half a note.

Quadrupeds.—Respecting the quadrupeds, it may be mentioned that the common grey kangaroo (macropus major) lives along the whole east coast of Australia, and that we killed the last at the Van Diemen River; the open grassy forest of which abounded with them. At the west coast of the gulf, the red forester of Port Essington (osphranter Antilopenus, Gld.), took its place, and was tolerably numerous in small flocks. The walluru (osphranter robustus) was observed last in the rocky wilds of the Upper South Alligator River. Rock wallabies, resembling petrogale lateralis, Gld., were living amongst the cliffs of Ruined Castle Creek, in lat. 25° 9′. At the Mitchell we met a brush wallabi of a brownish colour and very coarse hair (halmaturus agilis, Gld.), which was common all round the Gulf of Carpentaria. At the head of the gulf a dark grey kangaroo was killed; it had a nail at the end of the tail, but appeared to differ from macropus unguifer of Gould, in its darker colour. Lagorchestes was killed at the table land of the Burdekin. The kangaroo-rat (Bettongia) was observed wherever dry grass offered a hiding place. It did not differ from the species of Moreton Bay (B. rufescens); in the scrubs one of my blackfellows saw, however, another species with a tawny back, which became black towards the hinder extremities.

The opossums and flying squirrels seemed to disappear to the northward, or were at least so silent at night that we became rarely aware of their presence. On the Upper Burdekin, on the Lynd and Mitchell, the ring-tailed opossum (Phalangista Cookii) was caught, and at Port Essington opossums and sugar-squirrels (Petaurus sciureus) had been very numerous according to Captain

Macarthur, but had now almost disappeared. The bandicoot (perameles nasuta) was occasionally seen and killed as far as the Lynd, where it used to come at night into our camp. The native cat (dasyurus maugei) was very numerous along the Upper Lynd, and frequently visited our larder when it contained fresh game.

Most useful to us were two species of flying fox (pteropus), a small one with a bright fox-coloured neck, and a larger one of a generally darker colour. These animals were exceedingly numerous at the head of the Roper, and in the patches of brush along the Alligator River. The large species was remarkably fat, and we killed several times great numbers of them, which were most welcome at our dinner. They were living on the blossoms of several gum trees, and when feeding during the night used to make an incessant screeching noise.

Several mice or rat-like rodentiæ were killed at the commencement of our journey; but they were very rare, and never attempted to make free with our provisions.

The want of insects explains sufficiently the rare occurrence of bats.

The native dog was frequently heard howling round our camp, particularly in countries which abounded with game. Several times they came at night into the camp to gnaw bones which we had left. That of Port Essington seems larger and more daring than others, as it attacks goats, and will come even into the enclosures to carry away fowls.

The buffalo, which we met first at the east Alligator River, is not indigenous, but imported from the Malay Islands.

I have seen no difference in the physical constitution of the natives of the east coast of the Gulf of Carpentaria, and of the north-west coast. The coast black of Moreton Bay is a fine well-made man, and so is the coast black of the Alligator River.

Farther in the interior he is generally not so well fed, and has consequently a weaker frame ; but when there is abundant food the native of the inland country is not inferior in strength to that of the coast, and Captain Sturt describes his ichthyophagist friends as equally well made and strong. The natives of the gulf we met with were rather slim, but very intelligent. In the interior the families were more scattered, the tribes smaller, the intermixing between each other was less rapid.

Mr. Eyre remarked, that at the south coast the presence of natives does not indicate a supply, or at least an abundance of water. This, I think, may be the case at the sea-coast, where an abundant supply of food constantly invites the natives, who are consequently trained from childhood to do with the smallest possible quantity of water. In the interior the fires and burnings of grass were almost invariably the indications of an approach to water. At the Alligator Rivers the natives generally resorted to wells, which they had dug along the outlines of large plains, which abounded not only with animal but also with vegetable food.

In their habits there were decided differences. In the first account of my journey, published in the *Herald* and *Australian* newspapers, I have alluded to the remarkable custom of circumcision of the natives of the Gulf of Carpentaria. Having compared my notes, I find that the custom was only observed at the west side of the gulf; but Captain Flinders mentions it as characteristic of all the natives of the Gulf of Carpentaria.

At the Macarthur we still saw the bommerang, which is unknown at the Alligator Rivers and Port Essington, where the throwing stick and the goose spears are the means of obtaining game; and the common spear made of wood or strong reeds, and headed with a sharp quartzose stone, form their means of offence and defence. The barbed spear, either on one side or on both, and spears jagged with sharp pieces of quartz were also common. Kangaroo nets made of the bark of kooremin (sterculia heterophylla), nets of various size for fishing were found in the camps of the natives. At Port Essington their baskets are made of the fibres of the young pandanus leaf. The rock crystal was found in their dillis as far as the gulf, but never precious stones or brilliant ores were observed.

Of their language I have but little to say. That there was a difference, at least of dialect, between three tribes of the Alligator Rivers whose territories joined, was indicated by the name of the little edible root, which was called "allamurr" by one, "murruatt" by another, and a still more different name by a third.

The two black fellows, Brown and Charley, who accompanied me, were of course unable to understand even the first tribe of natives we met, and I am sure that variations of language exist all over the distant country we have seen, similar to those which are observed in the known parts of this colony. Language not fixed by literature is constantly and rapidly changing, and though I feel satisfied that the Australian natives belong to one stock, I am equally sure that it would be in vain to trace the various dialects to one root.

The limited custom of circumcision is indeed exceedingly remarkable, and its appearance at the Gulf of Carpentaria, and at the south-coast of Australia, makes a migration of tribes very probable. But could such a custom not be connected with endemic disorders, which have led the reasoning mind of man to the same preventive.

When we see the Asiatic grinding the various cerealia to make a wholesome bread, and the native of the interior of Australia pounding one of its largest grass-seeds to make a cake, we do not think of a tradition of the custom from Asia to Australia, but we naturally conclude that our Maker has given to all races of men the same reasoning power, which will lead them, if not to the same, at least to analogous results.

The same may be said of those rude traces of art, to which my attention was drawn by the Rev. Mr. Clarke and Mr. Miles, as being found at Port Jackson, which were observed at Clack's Island by Allan Cunningham, at the north-west coast by Captain Grey, and at Arnheim's Land and the East Alligator River, by my party and myself. We saw the foot of an emu cut very carefully and accurately into the bark of a tree, and other fanciful forms which we could not understand. A turtle and fish were depicted very accurately with red ochre on a rock, in caves in which the natives were accustomed to paint themselves for corrobories. It is extremely interesting to compare these efforts of the Australian native with those of more advanced nations, and we are involuntarily induced to suppose meanings which we know as belonging to the latter. These imitations of the human body were, however, too near, and too easy, and could be as well the produce of play and accident as conventional design.

The gentlemen of Port Essington, comparing my own blackfellows with the natives of the place, were of course inclined to think that the natives of the southern part of the continent were superior to those of the north-west coast. I have had, however, opportunity of observing the native of the east coast in his natural state, and I rather think that the north-west coast black is more advanced; I would explain this by their long intercourse with the Malays, who have frequently taken them to the Malay Islands.

I shall advert now to a circumstance with which I was frequently struck on my meeting with the natives—I mean their perfect incapability of supposing that there is in existence anything stronger or more powerful than themselves, or that any dangerous enemy could be near them when walking in the open forest, which forms their well-known dwelling-place. Their ear, so sensitive to noises with the origin of which they are acquainted, to the rustling of a lizard or snake, or to the rapid start of a kangaroo rat, did not perceive the foot-fall of our horses, and we were once with our whole train near a camp of jabbering, laughing, moving natives, without their being aware of our approach. Once, a native walked at dusk into our camp, and was surrounded by our horses before he knew that other beings were present. The discharge of a gun made generally a great impression on them; it seemed to remind them of supernatural agency. We noticed several times the screams of natives on hearing the reports of our guns without seeing us.

Having now given you a digest of my late journey, I shall lay before you the plan of an expedition on which I intend to start in October next. Captain Sturt's expedition has shewn that the interior, in the longitude of the head of the gulf, is a desert at least to latitude 24°, where the explorer was compelled to return. It would therefore not be advisable were I to attempt to cross the continent in that or a higher latitude; I shall, therefore, proceed at once to latitude 23°, where I found the Mackenzie and Peak

Range, during my last journey; and as the Mackenzie was well supplied with water, I shall follow it up to its sources, which I expect to find about 80 or 100 miles to the westward of the spot where we first came on the river; I might then be able to ascertain whether the western branches of the supposed water-shed go down to the southward to join the system of the Darling, or whether they turn to the northward, and form the sources of the largest rivers of the head of the Gulf of Carpentaria. Should the latter be the case, and should the country be sufficiently well watered, I would of course proceed to the westward, keeping the same latitude, and try to reach the waters of the north-west coast. But should want of water not allow me to continue my journey to the westward, or even to the northward, I will retrace my steps down the Mackenzie, and follow the track of my last journey up to the Burdekin, where it is joined by the Clarke, in latitude 19° 12′.

I would follow the latter river, and I have no doubt of finding the heads of the Flinders, after having crossed either a table-land or a dividing range. I would then continue my journey to the Albert, and follow that River up to ascertain the latitude of its sources, and the nature of the country.

Again, I would try a westerly course, to come successively to the heads of the Nicholson, the Van Alphen, the Abel Tasman, the Robinson, and the Macarthur, and from the latter River I would hope to reach the waters of the west coast, in about latitude 17° to 18°. Should I succeed in this, I shall turn to the southward and work my way parallel to the north-west and west coast until I reach Swan River.

This journey I hope to complete in two years, though I am aware that unforeseen difficulties may retard my progress. Be it as it may, I feel confident, after the kind reception I experienced on my arrival from my late expedition, that, borrowing the words of that beautiful lyric in which I have been honoured by the Australian Muses—

"A nation's smiling welcome, will be my greeting home again!"

I thank you, Ladies and Gentlemen, for the attention with which you have listened to this lecture, in which I have endeavoured to give you such information on the nature of the country as I thought most interesting; though I am not able to add those ornaments of your language with which a more experienced English scholar would have endeavoured to embellish the all-engrossing subject of discovery.

I rely on your generosity, of which I have so abundantly felt the effects already, to pardon all my defects of idiom and expression; and I now, earnestly desiring that my labours and those of my companions may not be found altogether useless to the colonists at large, or a mere subject of momentary curiosity, respectfully and gratefully bid you farewell!

When the "Prince of Explorers" reached head quarters in April last, in high spirits, after discovering a country surpassing in richness any that he had previously seen in Australia, the attention of almost every individual in New South Wales and the neighbouring colonies was so completely absorbed with the wonderful route performed by the gallant leader, as almost to banish from their memories the *public expedition* and the progress it is making, or the prospects held out to them by its further discoveries. To the credit of the benevolent character of New South Wales, a public subscription was immediately set on foot; and this was not closed until £2,520 18s. 6d. were raised,—£1,520 18s. 6d. by the generous Australians, and £1000 by a liberal government. The learned Explorer will take with him in his second expedition a quantity of goats, which are to have bells suspended to their necks, and which will not only carry small burthens, but afford a supply of milk at times, perhaps, when water could not be procured. Mules, trained for the purpose, will also form part of the expedition.*

* Dr. Leichardt has since started upon his second expedition to cross the Continent of New Holland from east to west,—with the warmest wishes of the Australian community.—*Ed.*

Art. VIII. *On Microscopic Life in the Ocean at the South Pole, and at considerable depths.* By Prof. Ehrenberg.*

(From the Annals of Natural History, Sept., 1844.)

The following is the substance of a paper laid by Prof. Ehrenberg, May 23rd, 1844, before the Berlin Academy, and containing some of the results derived from his recent investigations upon materials furnished from the South Polar expedition of Captain Ross, and the voyages of Messrs. Darwin and Schayer; their object being to determine the relation of minute organic life in the ocean, and at the greatest depths hitherto accessible.

Last year the author submitted to the Academy a survey of the geographical distribution of such organisms over the entire crust of the earth; but the field of these enquiries being one of such vast extent and importance, it became evident to him that to arrive at any positive general results, it was necessary to examine the subject under a more special point of view; and under this conviction, two different courses of investigation suggested themselves as best adapted to fulfil that purpose; viz., first, to ascertain both the constant and periodical proportion which minute organisms bear to the surface of the ocean in different latitudes; and secondly, to examine submarine soil or sea-bottom raised from the greatest possible depths. It is an easy matter, generally, to collect materials of this kind; but before applying to them the test of philosophic criticism and research, the author feels that it is essentially requisite to retrace the contributions of other writers upon the same subject; premising, however, that their value will always be enhanced in so far as the materials collected have been obtained with due care and reference to their several localities.

1. *The South Polar Voyage from* 1841 *to* 1843.

Very essential progress was made in our knowledge of the minute and invisible forms of organic life during the years devoted to this expedition by Captain Ross. In the year 1840, the Royal Society of London appointed a committee to prepare a series of physical and meteorological questions to be solved by the pro-

* From the Proceedings of the Berlin Academy for May, and communicated by the Author.

posed expedition ; and it was at the express desire of the author that Alex. v. Humboldt undertook to suggest to that body the importance of attention being paid to the study of the relations under which minute organisms exist, as one likely to throw considerable light upon the principal questions now agitated, involved in the recent history of the earth's crust, and also to recommend that the directions given by the author as to the methods of collecting them should be adopted throughout the whole voyage. Through the scientific ardour of Dr. J. Hooker, son of the well-known botanist, and a voyager on board the ship *Erebus,* a variety of valuable materials were collected during the expedition, and a short time back about forty packages and three glasses of water were transmitted to Germany from the neighbourhood of Cape Horn and Victoria Land. About the same time also, Mr. Darwin, the profound observer upon the formation of coral reefs in the South Seas, contributed objects from other localities.

The author set about examining carefully without delay, as such an opportunity might not again recur, water which had been taken from the South Polar Sea of from 75° to 78° 10′ south latitude, and 162° west longitude, with a view of determining its relative amount of minute organic life. Of the dry materials some packets only have as yet been examined, those namely which from their localities appear to possess the greatest interest, and among these were specimens of the remains of melted polar ice and sea-bottom, taken under south latitudes 63° and 78°, from depths of 190 to 270 fathoms (*i. e.* 1140—1620 feet), the greatest depths that have been hitherto sounded.

The relations of minute organic life were found, as the author had anticipated, to be the same at the south as at the north pole, and generally of great extent and intensity at the greatest depths of the ocean.

Previous observations upon those loftiest mountains whose pinnacles are capped with eternal ice, had determined that a gradual progressive disappearance of organic life takes place from the base to their summit, and that too in accordance with particular laws; to the tree succeeding the lowly shrub, next grass and lichens, till finally we arrive at the regions of perpetual snow, where there is a complete absence of all life. In like manner the development of organised beings has been conceived to diminish from the equator to the arctic regions of the earth, the latter becoming first destitute of trees, then of grass, lastly of lichens and algæ, until at the poles ice and death hold solemn reign.

The greatest depths in the ocean at which Mollusca had been found to exist were, according to the observations of Mr. Cuming in the year 1834, the genera *Venus*, *Cytherea*, and *Venericardia* at 50, *Byssoarca* at 75, and *Terebratula* in 90 fathom water. According to Milne-Edwards and Elie de Beaumont, 244 metres, or 732 feet, formed the extreme range for the growth of corals and the development of organic matter in the sea off the coast of Barbary. From 100 fathoms depth, Péron drew up in the year 1800, off New Holland, *Sertulariæ* and a variety of corallines, which were all luminous, and on an average three degrees higher in temperature than the surface of the sea. In 1824 and 1825 Quoy and Gimard, in their valuable researches upon the structure of corals, asserted that branched corallines could occur only in a depth of from 40 to 50 fathoms, and that in a 100 fathoms of water *Retepora* alone existed. According to Ellis and Mylius, who wrote in 1753, the greatest known depth from which a living animal had been taken was the *Umbellaria Encrinus*, which was fished up by Captain Adrian, in Greenland, from 236 fathoms of water, equal to a depth of 1416 feet. Specimens, however, of the sea-bottom have been drawn up from still greater depths; for at Gibraltar, Captain Smith found in 950 fathoms, or 5700 feet of water, sand containing fragments of shells; and Captain Vidal, according to Mr. Lyell, detected in the mud of Galway Firth, from a depth of 240 fathoms, only some *Dentalia*, the remainder of the sea-bottom from the same depth consisting of pulverised shells and other organic remains devoid of life.

According to the calculations of Parrot, a column of sea-water at a depth of 1500 feet exercises a pressure of 750 pounds, or 7½ hundred weight, upon the square inch; and since the atmospheric air inclosed in these animals of a delicate cellular structure descending from the surface of the ocean would produce alternately such extremes of expansion and contraction as to appear destructive to such organisms, just doubts have been raised whether organic life could actually subsist at great depths.

Wollaston, moreover, in 1840, proved that at the great depth of 670 fathoms, in the Mediterranean Sea off Gibraltar, the proportion of salt in the water was four times greater than at the surface. Very accurate and scientific investigations upon the amount of salts of the sea had been already published by Lens in Petersburg during 1830; and Mr. Lyell, in his "Geology" of 1840, was induced to regard the observations of Wollaston not as simply indicating a local phænomenon, but to conclude that at still greater depths the relative proportion of saline matter would be still more remarkable, and must progress in a similar advancing ratio.

Lastly, Elie de Beaumont, in 1841, adopted the opinion, that the limits to which the waters of the sea had been found by Siau capable of being set in motion, must be also those at which sessile marine animals could exist, since these have to wait for their food, which in this way only could be conveyed to them, and that consequently the limits of stationary organic life, taken in conjunction with the depth of the waves, could not much exceed 200 metres or 600 feet.

Such considerations, deeply affecting the general science of geology, and to which must be added observations upon the increase of temperature towards the centre of the earth, have ever suggested as an interesting matter for enquiry to the author, to examine minute organic life in relation to the depth of the element in which it could exist.

Science indeed owes a great debt of gratitude to those travellers who have so industriously provided the materials of this investigation; in respect of which materials it may be observed generally, that they are very rich in quite new typical forms, particularly in genera, of which some contain several species; these, occasionally with some mud and fragments of small crustaceans, form the chief part of the mass. The new genera* and species are here recorded, and of these the *Asteromphali* are very remarkable, from their particularly beautiful stellate forms.

* Of the 7 new genera of Polygastrica, viz., *Anaulus*, *Asteromphalus*, *Chætoceros*, *Halionyx*, *Hemiaulus*, *Hemizoster*, and *Triaulacias*, short characters are given in the Proceedings of the Academy: also of the 71 new species.

Analysis of the various materials furnished by Dr. Hooker from the South Polar Voyage.

1. Residue from some melted Pancake Ice* at the barrier in 78° 10′ S. lat., 162° W. long.

A. SILICEOUS POLYGASTRICA.

1. *Actinoptychus biternarius.*
2. ASTEROMPHALUS *Hookerii.*
3. — *Rossii.*
4. — *Buchii.*
5. — *Beaumontii.*
6. — *Humboldtii.*
7. — *Cuvierii.*
8. *Coscinodiscus actinochilus.*
9. — *Apollinis.*
10. — *cingulatus.*
11. — eccentricus.
12. — *gemmifer.*
13. — limbatus.
14. — lineatus.
15. — *Lunæ.*
16. — Oculus Iridis.
17. — radiolatus.
18. — subtilis.
19. — velatus.
20. *Dicladia antennata.*
21. — *bulbosa.*
22. *Dictyocha* aculeata.
23. — Binoculus.
24. — *biternaria.*
25. — Epiodon.
26. — *octonaria.*
27. *Dictyocha* Ornamentum.
28. — septenaria.
29. — Speculum.
30. *Flustrella* concentrica.
31. *Fragillaria* acuta.
32. — Amphiceros.
33. *Gallionella pileata.*
34. — sulcata?
35. HALIONYX *senarius.*
36. — *duodenarius.*
37. HEMIAULUS *antarcticus.*
38. HEMIZOSTER *tubulosus.*
39. *Lithobotrys denticulata.*
40. *Lithocampe australis.*
41. *Pyxidicula dentata.*
42. — hellenica.
43. *Rhizosolenia Calyptra.*
44. — *Ornithoglossa.*
45. *Symbolophora Microtrias.*
46. — *Tetras.*
47. — *Pentas.*
48. — *Hexas.*
49. *Synedra* Ulna?
50. *Triceratium Pileolus.*
51. *Zygoceros australis.*

B. SILICEOUS PHYTOLITHARIA.

52. *Amphidiscus* Agaricus.
53. — clavatus.
54. — *Helvella.*
55. *Lithasteriscus bulbosus.*
56. *Spongolithis* acicularis.
57. *Spongolithis* aspera.
58. — *brachiata.*
59. — Caput serpentis.
60. — cenocephala.
61. — Clavus.

* Thin and level fragments of ice found floating on the ocean.

62. *Spongolithis*	collaris.	69. *Spongolithis*	*radiata.*
63. —	Fustis.	70. —	trachelotyla.
64. —	*Heteroconus.*	71. —	*Trachistauron.*
65. —	inflexa.	72. —	*Trianchora.*
66. —	*Leptostauron.*	73. —	*vaginata.*
67. —	mesogongyla.	74. —	verticillata.
68. —	neptunia.	75. —	uncinata.

C. CALCAREOUS POLYTHALAMIA.

76. *Grammostomum divergens.*	78. *Rotalia Erebi.*
77. *Rotalia antarctica.*	79. *Spiroloculina*—?

In several forms of the genius *Coscinodiscus* their green ovaries were recognizable, consequently they must have been alive.

2. Residue from melted ice, while the ship sailed through a broad tract of brown pancake ice, in 74° to 78° south lat. (Materials from 75° S. lat., 170° W. long.)

A. SILICEOUS POLYGASTRICA.

1. Asteromphalus	*Buchii.*	8. *Dictyocha*	aculeata.
2. —	*Rossii.*	9. *Eunotia*	gibberula.
3. *Coscinodiscus*	lineatus.	10. *Fragilaria*	acuta.
4. —	*Lunæ.*	11. —	*pinnulata.*
5. —	Oculus Iridis.	12. —	rotundata.
6. —	radiolatus.	13. Hemiaulus	*antarcticus.*
7. —	subtilis.	14. Hemizoster	*tubulosus.*

B. SILICEOUS PHYTOLITHARIA.

15. *Spongolithis Fustis?* Fragm.

These and the former specimens were sent over in bottles of water. They were the same sealed bottles in which they were collected in the year 1842. In the first little bottle, in which the sediment was considerable, almost every atom being a distinct siliceous organism, *Hemiaulus antarcticus* predominated. The larger bottle of the second mass had allowed the greater part to leak through the sealed cork, so that only about a quarter remained. The mass of sediment arrived in Berlin in May, 1844, almost all in such a condition, that the author had no hesitation in considering them still alive, although they all belonged to the almost or perfectly motionless forms. The Fragilarias predominated *(F. pinnulata)*; these, though rarely adherent in chains, had their green ovaries mostly preserved in a distinct natural disposition: *Conscinodisci* and *Hemiaulus* also often exhibited groups of green granules in their interior. No movement.

The following numbers were sent over dried:—

3. Sea-bottom drawn up by the lead from 190 fathom depth, in 78° 10′ S. lat., 162° W. long.

A. SILICEOUS POLYGASTRICA.

1. ASTEROMPHALUS *Hookerii.*	14. *Fragilaria* al. sp.
2. — *Buchii.*	15. *Gallionella Sol.*
3. — *Humboldtii.*	16. HEMIAULUS *antarcticus.*
4. — *Cuvierii.*	17. *Lithobotrys denticulata.*
5. *Coscinodiscus Apollinis.*	18. *Mesocena Spongolithis.*
6. — *gemmifer.*	19. *Pyxidicula.*
7. — limbatus.	20. *Rhizosolenia Ornithoglossa.*
8. — lineatus.	21. *Symbolophora? Microtrias.*
9. — *Lunæ.*	22. — *Tetras.*
10. — radiolatus.	23. — *Pentas.*
11. *Dictyocha septenaria.*	24. — *Hexas.*
12. — Speculum.	25. TRIAULACIAS *triquetra.*
13. *Fragilaria* Amphiceros.	26. *Triceratium Pileolus.*

B. SILICEOUS PHYTOLITHARIA.

27. *Amphidiscus Polydiscus.*	34. *Spongolithis* Fustis.
28. *Spongolithis* acicularis.	35. — neptunia.
29. — aspera.	36. — *Pes Mantidis.*
30. — *brachiata.*	37. — *Trianchora.*
31. — Caput serpentis.	38. — *vaginata.*
32. — cenocephala.	39. — uncinata.
33. — *Clavus.*	

4 From snow and ice taken from the sea in 76° S. lat., 165° W. long., near Victoria Land.

SILICEOUS POLYGASTRICA.

1. *Coscinodiscus* lineatus	4. *Fragilaria pinnulata.*
2. — *Lunæ.*	5. — rotundata.
3. — subtilis.	6. — al. sp.

The chief mass was densely crowded with *Fragilaria pinnulata,* and with *Coscinodiscus*, which on softening in water generally exhibited their green ovaries, perhaps originally brown.

5. Contents of the stomach of a Salpa, 66° S. lat., 157° W. long. 1842.

SILICEOUS POLYGASTRICA.

1. *Actiniscus Lancearius.*	8. *Dictyocha* aculeata.
2. *Coscinodiscus Apollinis.*	9. -- Speculum.
3. — *singulatus.*	10. *Fragilaria* acuta.
4. — *gemmifer.*	11. — *granulata.*
5. — lineatus.	12. — rotundata.
6. — *Lunæ.*	13. HALIONYX *duodenarias.*
7. — subtilis.	14. *Pyxidicula.*

This material contained a large number of *Dictyochus*, which evidently must have been particularly sought for by the Salpa, since they do not occur in the other samples, and consequently appear to be a favourite food of the Salpa.

6. Flakes floating on the surface of the ocean in 64° S. lat., 160° W. long.

They are like the *Oscillatoriæ* of our waters, matted with delicate fibres and with granules interspersed through the mass. The chief substance is formed of siliceous, very delicate, lateral tubes of the quite new and peculiar genus *Chætoceros*. The nature of the granules remains doubtful. The other forms are scattered through this matted substance; all exhibit, however, their dried-up ovaries, and consequently were collected alive.

SILICEOUS POLYGASTRICA.

1. *Asteromphalus Darwinii.*	10. *Dictyocha* aculeata.
2. — *Hookerii.*	11. — Binoculus.
3. — *Rossii.*	12. — Ornamentum.
4. — *Buchii.*	13. — Speculum.
5. — *Humboldtii.*	14. *Fragilaria* Amphiceros.
6. CHÆTOCEROS *Dichæta.*	15. — *granulata.*
7. — *Tetrachæta.*	16. HEMIAULUS *obtusus.*
8. *Coscinodiscus* lineatus.	17. *Lithobotrys denticulata.*
9. — subtilis.	

7. The mass brought up by the lead from the bottom of the sea in the Gulf of Erebus and Terror, at the depth of 207 fathoms, in 63° 40′ S. lat., 55° W. long.

The following species, occasionally with distinct green ovaries, were found in this very small sample, mixed among the apparently unorganic sand.

A. SILICEOUS POLYGASTRICA.

1. ANAULUS *scalaris.*
2. *Biddulphia ursina.*
3. *Coscinodiscus Apollinis.*
4. — *cingulatus.*
5. — *Lunæ.*
6. — subtilis.
7. — velatus.
8. *Fragilaria* rotundata.
9. *Gallionella Sol.*
10. — *Tympanum.*
11. *Grammatophora* parallela.
12. HEMIAULUS *antarcticus.*
13. *Rhaphoneïs fasciolata.*
14. *Zygoceros ? australis.*

B. SILICEOUS PHYTOLITHARIA.

15. *Spongolithis* acicularis.
16. *Spongolithis* Fustis.

8. Sea-bottom drawn up by the lead from 270 fathom, in 63° 40′ S. lat., 55° W, long.

A. SILICEOUS POLYGASTRICA.

1. *Achnanthes* turgens.
2. *Amphora* libyca.
3. ANAULUS *scalaris.*
4. *Biddulphia ursina.*
5. *Campylodiscus* Clypeus.
6. *Coscinodiscus Apollinis.*
7. — *gemmifer.*
8. — lineatus.
9. — *Lunæ.*
10. — Oculus Iridis.
11. — radiolatus.
12. — subtilis.
13. *Denticella lævis.*
14. *Discoplea Rota.*
15. — *Rotula.*
16. *Flustrella* concentrica.
17. *Fragilaria* Amphiceros.
18. *Fragilaria pinnulata.*
19. *Gallionella Oculus.*
20. — *Sol.*
21. — sulcata.
22. *Grammatophora* africana.
23. — parallela.
24. — *serpentina.*
25. HEMIAULUS *antarcticus.*
26. *Lithocampe* n. sp.
27. *Mesocena Spongolithis.*
28. *Navicula elliptica.*
29. *Podosphenia* cuneata.
30. *Pyxidicula* hellenica ?
31. *Raphoneïs fasciolata.*
32. *Rhizosolenia Calyptra.*
33. — *Ornithoglossa.*
34. *Stauroptera aspera.*

35. *Symbolophora Microtrias.*	38. *Symbolophora Hexas.*
36. — *Tetras.*	39. *Synedra* Ulna.
37. — *Pentas.*	

B. SILICEOUS PHYTOLITHARIA.

40. *Amphidiscus* clavatus.	47. *Spongolithis Heteroconus.*
41. *Spongolithis* acicularis.	48. — *ingens.*
42. — aspera.	49. — neptunia.
43. — *brachiata.*	50. — obtusa.
44. — Caput serpentis.	51. — *vaginata.*
45. — Clavus.	52. — uncinata.
46. — Fustis.	

C. CALCAREOUS POLYTHALAMIA.

53. *Grammostomum divergens.*

9. Samples from Cockburn's Island, the furthest limit of vegetation at the South Pole, 64° 12′ S. lat., 57° W. long.

Off Cockburn's Island (Cockburn's Head) Dr. Hooker saw an Alga, as the lowest and furthest step of vegetation, with forms of *Protococcus.* The Alga is one of the *Tetraspora* allied to *Ulva,* which Dr. Hooker has reserved in order to describe more accurately: I have not recognised the *Protococcus* in its dried condition. This mass, however, is chiefly and equally peopled with and made up of Siliceous Polygastrica. An apparently unorganic sand, penguins' feathers and excrements, the *Ulva,* and only five as yet distinguished species of siliceous Infusoria in great numbers, form the mass sent over. The vegetable substances may indeed have disappeared by putrefaction. The excrement of the birds, like guano, might abundantly furnish solid matter; but the solid siliceous earthy element of the little invisible polygastric animals appears to form no inconsiderable part of the solid substance, which by the death of generations goes to form earth and land.

The following forms were observed :—

SILICEOUS POLYGASTRICA.

1. *Eunotia* amphioxys.	4. *Rhaphoneïs Scutellum.*
2. *Pinnularia* borealis.	5. *Stauroptera capitata.*
3. — peregrina?	

Two forms are new, two have been observed also at the north pole, and one is widely distributed.

II. *Oceanic materials from M. Schayer.*

M. Schayer, of Berlin, who for fifteen years was superintendent of English sheep-folds at Woolnorth in Van Diemen's Land, has, in answer to a request sent to him in the year 1842 by the author, collected materials unquestionably rich in microscopic animals; he also collected water taken from the ocean in different regions on his return in 1843, and brought with him to Berlin four bottles holding from a quarter to half a pint. The author had wished that water had been drawn up at a distance from the coast in accurately known places, in order to become acquainted in some measure with the usual amount of microscopic life of the ocean.

The four well-preserved sealed bottles which have arrived in Berlin were shown to the Academy by the author, and the water is still quite clear and transparent, having only a few flakes at the bottom, which render it turbid when shaken, but soon subside again to the bottom, and the former transparency is restored. When opened, a slight but yet evident trace of sulphuretted hydrogen was perceptible.

The microscopic investigation has given the following results:

1. Water from the south of Cape Horn on the high sea under 57° S. lat., 70° W. long., contained—

SILICEOUS POLYGASTRICA.

1. *Fragilaria granulata.*
2. HEMIAULUS *obtusus.*
3. *Lithostylidium* Serra.

2. Water from the region of the Brazilian coast, near Rio de Janeiro, on the high sea, in 23° S. lat., 28° W. long.

A. SILICEOUS POLYGASTRICA.

1. *Cocconeïs* Scutellum.
2. *Fragilaria* Navicula.
3. *Gallionella* sulcata.
4. *Haliomma* radiatum.
5. *Navicula* dirhynchus.
6. *Navicula* Scalprum
7. *Pinnularia oceanica.*
8. — peregrina.
9. *Surirella* sigmoidea.
10. *Synedra* Ulna.

B. SILICEOUS PHYTOLITHARIA.

11. *Spongolithis* aspera.
12. — cenocephala.
13. *Spongolithis* Fustis.
14. — *vaginata.*

3. Water from the equatorial ocean in the direction of St. Louis, in Brazil, in 0° lat., 28° W. long.

A. SILICEOUS POLYGASTRICA.

1. *Fragilaria* rhabdosoma. 2. *Fragilaria* Navicula.

B. SILICEOUS PHYTOLITHARIA.

3. *Lithostylidium* rude. 4. *Lithostylidium* Serra.

4. Water from the Antilles Ocean, 24° N. lat., 40° W. long.

A. SILICEOUS POLYGASTRICA.

1. *Haliomma* radiatum.

B. SILICEOUS PHYTOLITHARIA.

2. *Lithodontium* nasutun. 4. *Lithostylidium* rude.
3. *Lithostylidium* Amphiodom.

C. MEMBRANOUS PORTIONS OF PLANTS.

5. *Pollen* Pini.

It follows from these four series of observations obtained through M. Schayer, that the ocean, in its usual condition, without peculiarity of colour, without storms and other influences, contains, in the most transparent sea-water, numerous perfect and wholly invisible organisms suspended in it, and that the siliceous-shelled species are the most predominant in all those cases, although the analysis of sea-water does not show silica as a constant ingredient.

III. *On a Cloud of Dust which rendered the whole air hazy for a long time in the high Atlantic Ocean in* 17° 43′ *N. lat.*, 26° *W. long., and its being constituted of numerous siliceous animalcules.*

Mr. Darwin, the well-known and most meritorious English traveller and writer on coral reefs, relates in the account of his travels, that a fine dust constantly fell from the hazy atmosphere off the Cape Verd Islands, and also on the high sea of that region, while he was there; and likewise on a ship, which, according to the account in his letter, was 380 sea-miles distant from land. The wind was then blowing from the African coast. Mr. Darwin has sent to the author for examination a sample of the dust which fell on the ship on the high sea at that great distance from land. This dust has been universally regarded hitherto as volcanic ashes. The microscopic analysis has clearly shown that a considerable portion, perhaps one-sixth of the mass, consists of numerous species of Siliceous Polygastrica, and portions of silicated terrestrial plants, as follows :—

A. SILICEOUS POLYGASTRICA.

1. *Campylodiscus* Clypeus.	10. *Himantidium* Arcus.
2. *Eunotia* Amphioxys.	11. — Papilio.
3. — gibberula.	12. *Navicula* affinis ?
4. *Gallionella* crenata.	13. — lineolata.
5. — distans.	14. — Semen.
6. — granulata.	15. *Pinnularia* borealis.
7. — marchica.	16. — gibba.
8. — procera.	17. *Surirella* (peruviana ?)
9. *Gomphonema* rotundatum ?	18. *Synedra* Ulna.

B. SILICEOUS PHYTOLITHARIA.

19. *Amphidiscus* Clavus.	29. *Lithostylidium* Ossiculum.
20. *Lithodontium* Bursa.	30. — quadratum.
21. — curvatum.	31. — rude.
22. — furcatum.	32. — Serra.
23. — nasutum.	33. — *spiriferum*.
24. — truncatum.	34. *Spongolithis* acicularis.
25. *Lithostylidium* Amphiodon.	35. — aspera.
26. — *clavatum*,	36. — mesogongyla.
27. — cornutum.	37. — obtusa.
28. — læve.	

The forms included in this catalogue, mostly known and for the most part European, prove—

1. That this meteoric shower of dust was of terrestrial origin.

2. That it was not volcanic ash.

3. That it was dust which had been lifted up to a great height from a dried-up marshy district by an unusually strong current of air or a whirlwind.

4. That the dust did not necessarily and evidently come from Africa, as being the nearest land, although the wind blew from thence when the dust fell; for this reason, that no exclusively African forms are among it.

5. That as *Himantidium Papilio,* a very marked form, has hitherto occurred only in Cayenne (see the Mikroskopische Leben in Süd- und Nord-Amerika, plate 2, fig. 2), and as the *Surirella* is also probably an American form, only two conclusions present themselves; either that the dust was raised in South America into the upper strata of air, and brought by a change of the current in another direction, or *Himantidium Papilio,* together with *Surirella,* likewise occur elsewhere, namely, in Africa.

Review of the Results of these Investigations.

1. Not only is there, as resulted from the former observations of the author (vide d. Mikroskopische Leben in Amerika, Spitzbergen, &c.), an invisible minute creation in the neighbourhood of the Pole, where the larger animals can no longer subsist, but a similar creation is highly developed at the South Pole.

2. Even the ice and snow of the South Polar Sea is rich in living organisms, contending successfully with the extremity of cold.

3. The microscopic living forms of the South Polar Sea contain great riches hitherto wholly unknown, frequently of very elegant shape, since no less than seven peculiar genera have been discovered, of which some contain several, one as many as seven species.

4. The forms collected in the year 1842, near Victoria Land, were capable of being examined in an almost fresh state in Berlin, in May, 1844, which shows how long preservation is possible.

5. The ocean is not only populated at certain localities, and in inland seas or on the coasts, with invisible living atoms, but is proportionately thickly crowded with life everywhere in the clearest state of the sea-water and far from the coasts.

6. Hitherto but one perfectly microscopic form from the high sea was known, and even that from the neighbourhood of the

coast, namely, the *Astasia oceanica*, which Von Chamisso had observed; all other accounts were imperfect and useless. By the new materials the number of species is increased nearly 100.

7. The hitherto observed oceanie microscopic forms are chiefly siliceous-loricated animals with some calcareous-shelled. Do these numerous forms derive the material of their shells from the bottom of the sea? This question becomes daily more interesting.

8. Siliceous, and calcareous-shelled minute living forms are not only mixed up with the muddy sea-bottom, but they themselves form it. They live even to a depth of 270 fathoms, and consequently support a pressure of water equal to 50 atmospheres; the whole influence of this does not indeed bear upon their organic tissues when they are locally fixed, but when they move from the bottom upwards or reversely; yet it does not appear to have acted on the drawn up specimens. Who can doubt but that organic beings which can support a weight of 50 atmospheres may support 100 and more.

9. The supposition, that in great depths, above 100 fathoms, there is no fresh nutriment for organised beings of any kind, has become untenable.

10. Life and temperature in the depths of the oeean are, in their variable relation, the points which at present deserve especial attention.

11. The showers of meteoric dust, or supposed ashes, have at present been proved to be, even in the case where they fell 380 sea-miles from land, of organic and terrestrial origin.

12. It is not perishable *Protococci* or *Ulvæ* or Lichens that principally constitutes the organic covering and soil of the ultimate islands in the Polar Sea; but the living creatures that form the first layer of solid earth are invisible, minute, free animals of the genera *Pinnularia*, *Eunotia*, and *Stauroneïs* with their siliceous loricæ. Several species from the North Pole and the South Pole are identical.

Art. IX. *Note on some Marine Animals, brought up by Deep-sea Dredging, during the Antarctic Voyage of Captain Sir James C. Ross, R.N.* By Joseph Dalton Hooker, M.D.

(From the Annals of Natural History, October, 1845.)

Having remarked, in the notiee given of Mr. Goodsir's valuable labours in the last number of the 'Annals of Nat. Hist.,' that 300 fathoms is supposed to be the extreme depth from which living animals have been dredged, I think it may interest some of your readers to know that Sir James Ross, during the late Antarctic Voyage, used the dredge on several occasions with considerable success in the same and in much deeper water.

In latitude 33° 32′ S. and long. 167° 40′ E., living specimens of *Hornera frondosa*, besides four other Corals, a *Dictrupia*, two *Ophiuræ*, an Annelide, one small *Echinus* (and the spines of another, three inches in length), were all procured in a living state from 400 fathoms.

Off Victoria Land, between the parallels of 71° and 78° of south latitude, the dredge was repeatedly employed; once with great success at 380 fathoms. Generally the contents of the net, after dredging at between 200 and 400 fathoms in these latitudes, were various Crustacea, as numerous *Nymphia*, *Pycnogona* of a very large size, and such Arctic genera as *Crangon*, *Alpheus*, *Gammarus* and *Idotea*, the species sometimes resembling very closely indeed those that Capt. Ross had met with during the North Polar voyages: of Mollusca, the genus *Chiton*, *Boltenia*, and the remains of both univalve and bivalve shells, of which we found no traces on the lands we visited; various Annelides and *Serpulæ*, *Ophiuræ* and *Asteriæ*, *Alectos*, *Bicellariæ*, an Encrinite resembling the Irish one, very many *Virgulariæ* and Sponges, with *Holothuriæ* several inches in length. The pebbles were generally covered with *Flustræ*; but on onc occasion a magnificent mass of syenite was procured, the edges of which were sharp, and the surface clean; it must have been but recently deposited by an iceberg, for the greater proportion of the stones around were of trap or basalt of various kinds.

The most remarkable circumstance connected with this subject of deep-sea dredging is, that the bottom of the Antarctic Ocean, near the lands visited by Sir James Ross, was found to be covered with a mud consisting in great part of the remains of Infusoria, very similar to those forming the "fossil powder" detected in the neighbourhood of New York, and in other parts of the globe. Prof. Ehrenberg has described from our collections as many as 140 species, or thereabouts, all brought from the vicinity of Palmer's and Victoria Land. In a living state they inhabit the surface of the ocean and the newly-forming ice, and afford food for *Salpæ* and animals of a higher organization; which, in their turn, nourish the most fully-developed beings inhabiting those regions where the animal kingdom lives and abounds independently it would seem of the vegetable. Well may we agree with Professor Owen in regarding these "minute Infusory animalcules" as "the wakeful members of nature's invisible police, everywhere ready to arrest the fugitive organised particles which are suspended in water, and to turn them back into the ascending stream of animal life."

It is probable that animal life exists at a very great depth, suspended in the ocean. On one occasion a sounding-line that had been lowered to 1000 fathoms, brought up at the 550-fathom mark long strings of animal matter, about the diameter of a crow-quill, of indefinite length, great elasticity, and as viscid as bird-lime. It is certainly possible that in descending or ascending the line may have become entangled with this substance nearer the surface; but I am not inclined to suppose so for the following reasons: because the tow-net was constantly used, both during and before and after the souudiugs, without procuring any of the substance; because its viscidity was so great, that no other part of the line could well have passed through without a portion adhering to it; and because, upon two future occasions, the same substance came up on the sounding-line from unquestionably very deep water.

West Park, Kew, August 31, 1845.

Art. X. *On some Fossil Plants found near Hobart Town and Launceston.* By Joseph Milligan, Esq.

[The following paper was read before the Tasmanian Society, on 17th June, 1846, when an extensive suite of specimens was exhibited by Mr. Milligan, to illustrate his opinions as to their characters and affinities. It has been deemed preferable to give Mr. Milligan's views in full, rather than an abridgment of them in the minutes of the proceedings.—Ed. *Tasmanian Journal.*]

The specimens of fossil vegetation submitted for inspection, and which are the subject of the following remarks, are from three different formations, namely—

1. A fresh water limestone,
2. A carboniferous sandstone and shale, and
3. A brown argillaceous claystone rock, disrupted and re-imbedded.

First. The fresh water limestone occurs in the suburbs of Hobart Town, between Elizabeth-street and "Knocklofty" Range. It is regularly quarried and burnt into lime. The quarrymen state that the depth of the deposit is 30 to 40 feet.

It forms the rounded northern summit of a greenstone hill, a spur from Knocklofty, and is covered with a bed of clayey loam, which encloses boulders of greenstone of various size. These have undergone decomposition to a greater or less extent. The larger masses, scaling off in concentric layers, retain within the semi-crystalline structure, and something of the hardness, but not the tenacity, characteristic of greenstone. The smaller boulders have pretty generally passed into a substance soft enough to be cut with a knife, and having much the aspect and character of steatite.

These dislocated masses of greenstone occur in and upon the soil and over the superficial rock formations throughout the district, and may therefore be regarded as the result of the last great upheaving force which disturbed the strata of the colony, and which probably at same time raised the limestone deposit nearly to its present elevation.

There occurs, filling the interstices between these greenstone boulders, a white semi-crystallised and sometimes chalky carbonate of lime; and this is equally the case whether these overlay sandstone, shale, the claystone above, trap itself, or this calcareous bed.

The bed of superiucumbent loam, from 10 to 15 feet in depth, contains calcareous bodies of various size and figure, yet possessing sufficient regularity to bespeak an organic origin.

One, the most striking in number and appearance, bears exteriorly a close resemblance to the fungus, known as "native bread," the *Mylitta Australis*, and occurs from the size of a small tennis ball to that of an irregular flattened oval of about 10 or 12 inches by 6. The exterior is a rough brown, studded at intervals with plates of oxide of iron. When this brown cortical surface is removed and disintegration has taken place from atmospheric influences, the same irregular cuboid structure is disclosed, which results from the effect of long-continued weathering upon a broken surface of "native bread."

The next most remarkable form is that of a flattened spheroid of 4 to 5 inches through, which has the axis of its short diameter slightly produced into a rounded knob on one side, from which pass broad elevated and somewhat rounded meridional bands at right angles to its greatest circumference.

The third and least frequent form is an oval flattened on one side like our oblong Echini, having a smooth surface irregularly intersected with fissures which tend rather than radiate to the centre, and form the natural cleavage of the mass.

Other oval bodies are also found having within thin shell-like walls *nuclei* of corresponding forms and dimensions. It is likely that close and continued observations may discover in them such invariable and essential characteristics as will at length determine their nature and origin.

I think that the first-mentioned of these imbedded calcareous masses has been "native bread," or fungi of similar appearance and structure originally; and I am confirmed in this notion by having recently discovered in a bed of loam near Launceston, similar fungi, having the brown external cortical crust or rind entire, and retaining for the most part its chiefly vegetable character; while internally the fungoid substance had been replaced by a clayey earth, subdivided aud partitioned off by the extension in various directions of a new white membrane-like fungus, akin to that which is sometimes met with in the rotten yet symmetrical trunks of many of our large myrtles (*Fagus Cunninghamii*) in the dank forests to the westward of the colony, where they abound.

Touching the mineralogical characters of the calcareous bed itself, they are exceedingly various.

Its colour varies from reddish brown to greyish white; its hardness from that of the hardest marble to that of chalk. Its structure has a fine pasty aspect, and it is porous and vesicular throughout, but unequally so, and it contains irregular beds, masses, and nodules of clay and Fuller's earth. Its tenacity is great, and its fracture sharp, uneven, and splintery. It contains no shells, so far as I have been able to ascertain by attentive observation and careful enquiry on the spot; but it exhibits numerous traces, casts, and impressions of vegetable remains, and in many instances the *ligneous fibre* of twigs and roots of plants of a bye-gone day is preserved in the most solid portions of the rock, and but little changed. It contains no distinct casts or impressions of masses of wood of a large size that I have seen.

Besides impressions of twigs, leaves, and roots of plants which cannot be identified or determined, I recognise in it the following:—

Leaves resembling the *Sassafras* of Van Diemen's Land.

A palmate leaf, noticed but not figured in Strzelecki's work. The trifid fan-shaped leaf appears to have been sessile, and, including foot-stalk, not more than 3 or 4 inches in height. It may prove to be a fern, as suggested by Mr. Gunn.

Impressions of leaves and the cast of a seed vessel like those of the Weinmannia.

Part of the cast of a seed vessel like that of a Banksia.

Impressions of leaves like a Leptospermum, of which I have also collected formerly a fine cast of a seed vessel.

Impressions of leaves like those of Phebalium Billardierii.

There is a beautifully distinct impression of an unknown leaf, of an oval shape, acuminated at either end, and pretty equally divided by collateral converging parallel veins like those of Plantago.

There are multitudinous and imperfect, but indubitable casts and traces of the stems, roots, &c., of Cyperaceæ and Restiaceæ, intermixed with twigs and roots of ligneous plants. *Two shells* are figured by Strzelecki as common to this and the limestone of Risdon, on the opposite side of the Derwent, and the two calcareous beds are considered to be identical—a fact which I question; for to my apprehension these limestones differ in *appearance, structure, solidity,* and *contents.* That from Risdon quarries is compact, moderately hard, of a granular and somewhat earthy structure, homogeneous composition, and even colour of yellowish brown, with two or three fresh water shells distributed throughout, and some casts of ligneous matter; characters which sufficiently distinguish it if compared with the description I have given of that from near Elizabeth-street, Hobart Town. The Risdon limestone seems to have been deposited from a tranquil lake, fed by calcareous and other springs, and without tributary streams of sufficient magnitude or force to introduce great variety in the shape of vegetable matter, or essentially to influence the nature of the sedimentary substance.

The Elizabeth-street limestone appears to have been formed in a shallow sedgy valley, maintained chiefly by calcareous springs, but occasionally dry, or nearly so, and subject to temporary inundations from higher ground, or from the quiet sinuous arm or basin of some neighbouring river.

The same calcareous source may thus in turn have supplied material for both these local deposits; and afterwards have furnished that which is scattered amongst the greenstone boulders; and even now may be furnishing forth somewhere in the estuary of the Derwent a fresh place for future observation and conjecture.

Second. The shale and sandstone yielding the fossil remains next to be noticed are also from the vicinity of Hobart Town, and lie at no great distance from the limestone just mentioned, though in geological relation widely separated, the former belonging to the coal strata, the latter to the most recent of the tertiary beds.

The shale is from the summit of "Swan's" Hill, where the Launceston road crosses its ridge.

The sandstone is from "Spode's" quarry, and from a well in "Marshall's" garden, a distance of 100 to 200 yards on either hand.

The shale crops out in thin laminæ; has a direction nearly east and west, and dips to the southward at an angle of about 20° to 25°, alternating on either hand with a more compact schistose clay, and passing on one side into a granular grauwacké-like rock, and the fine white even sandstone of Marshall's garden, and on the other, into the more carbonaceous and less even-grained sandstone of Spode's quarry.

These fossil impressions, which are chiefly of ferns, and displayed with a delicacy and hardness of outline rarely seen, abound most where the slatey character is most perfect. By a sort of natural electrotype process the vegetable matter has been replaced by oxide of iron, fixing with a fidelity scarcely conceivable the most slender ramifications and gossamer-like veins. In some, for instance, the traces of fructification are preserved.

All these ferns branch repeatedly; and it has been remarked that the angle of divergence is, as compared with that of the existing members of the tribe, exceedingly acute. In the fine-grained shale the profusion and interlacing of the fossil contents is often such as to render almost indistinguishable individual forms. The difficulty of discrimination and identification is rendered still greater, by the natural tendency of all ferns to depart, more or less, in the developement of their minuter parts, from the established type of their respective species. I shall not therefore attempt any exact definition, but merely set down, as rough landmarks in further enquiries, a few prominent and palpable peculiarities of the most striking of these forms, in the order in which they present themselves.

A fern, probably an Odontopteris, and perhaps the same as figured by Strzelecki, tab. vi. fig. 4. The leaflets are long and narrow, and rounded at the apex. They form an acute angle with the rachis on which they are set alternately.

A narrow-stemmed slender plant, chiefly bifurcate without leaves, probably a fern akin to Sphenopteris Bifida, which, according to Lindley, is met with in the mountain limestone at

" Burdy House," near Edinburgh ; also what appears to be a variety of the preceding, not strictly dichotomous.

Fern, like an Aspidium, bipinnate or more, ultimate leaflets set opposite and close (1 inch in length by $\frac{3}{8}$ in breadth) on a strong bent rachis, leaflets entire edged—venation singularly well marked, and like that of Odontopteris.

Fern—venation that of Sphenopteris and delicately preserved, bipinnate or more—ultimate leaflets, very short, alternate—slightly crenulated—broad and attached along their whole breadth to the rachis, and nearly at right angles.

Zamia ? Fronds pinnate, like those of a Blechnum, but with a parallel venation—leaflets about two inches long, from half an inch in breadth near the rachis, to $\frac{3}{8}$ towards the distal end, which is truncated and somewhat like a swallow's tail.

Fragment of the leaflet of a Zamia? one inch in breadth, and probably only a larger individual of preceding.

Fern—venation like that of Picopteris, but not very distinct, bipinnate—elegant and wavy, with appearance of venation along the outer edges of the leaflets, which are tooth-shaped, short, and set opposite on the rachis at an angle of about 45°.

Fern—bipinnate, with venation of a Neuropteris, and very beautifully impressed. Leaflets a perfect oval, broadest toward the base, where they are attached by a rather small neck to the rachis.

Fern—with short oblong leaflets, alternately set on the rachis, and having a deep central vein, and slight traces of lateral veins going off at right angles.

A small dichotomous bare stemmed plant, one and a half inch in height.

An entire leaf of a beautifully delineated Neuropteris.

Fern—tripinnate ; the pinnæ having rather a continuous crenulated margin upon a long narrow frond (like the leaf of the Banksia serrata) where the ultimate leaflets spring from the rachis they are distinct, with an even rounded edge, but become decidedly continuous toward the apex, which is obtuse.

Fern—figured by Strzelecki, plate vii. fig. 1.

Fern—bipinnate, perhaps tripinnate, and probably arborescent

—venation well delineated—apparently a Sphenopteris ; ultimate leaflets small, obovate, and attached to the rachis by a small surface.

Seed vessel? of a Zamia?

The sandstone in Marshall's garden yielded about five or six species of ferns, of which two are figured by "Strzelecki," plate vi. figs. 2, 3, 4, and 5.

A third looks like a Stegania; is slender and nearly erect, the branches tapering elegantly, and in a delicate terminal leaflet; bipinnate, but as in sandstone usually the venation is indistinct.

A fourth appears to be a Sphenopteris, having the greater breadth of the leaflet attached to the rachis.

A fifth is a sessile looking fern of some four or five inches in length, with small leaflets at the lower part of the rachis, widening as they ascend, and again tapering into a long terminal leaflet, so as to give the whole a lanceolate appearance.

And a large fern, with a thick rachis, repeatedly subdivided, like that of the Pteris esculenta. The leaflets are however broad, and it may prove to be the same as the fourth.

The sandstone of "Spode's" quarry is partially inter-stratified with thin beds of limestone, and throughout with seams of carbonaceous matter, more or less schistose, and of various but trifling thickness; the which, though it contains abundant traces of vegetable remains, presents little sufficiently well defined to form any conclusion upon. There occurs in the sandstone itself, a strap-shaped, palm-like, leaf, often 3 feet in length and 4 to 6 inches in breath. Of *ferns*, I found only one or two imperfect specimens in it. But I was fortunate enough to discover a few inches in length of the impression of a jointed stem, terminating in a rounded cavity, partly lined with carbonaceous matter. The cavity was such as a cocoa-nut might be imagined to form. The stem had the appearance of a string of rounded bodies of vertebræ, and was not unlike the stem of the Lily Encrinite, as it is figured usually. It may have been the flowering spike of a palm or zamia.

In a layer of soft shale, in the quarry, I also met with the impress of the tricuspid head, or flowering spike, of some dicotyledonous plant, which, however, was so soft, friable, and carbonaceous, as to be very indistinct.

Third. The compact and somewhat schistose argillaceous rock, from which the next series of specimens has been procured, exists in the immediate vicinity of Launceston. It is extensively distributed in pieces of various size, in, upon, and throughout the superficial bed of loam forming the Windmill Hill, there. It belongs, apparently, to the more recent era of the Pleiocene Period. It passes into a coarse-grained, gravelly, and ferruginous sandstone, as is exemplified in various fragments. There is contained in it, amongst impressions of ferns not now extant, numerous casts of strap-shaped leaves and stems, (to which they were probably appendages at one time), together with casts of the bark, wood, and leaves of various trees, which, though exquisitely delineated, cannot be identified with any of the existing vegetation.

But, besides these, there are many which I recognise as identical with, or analogous to existing individuals, or tribes, viz.—

Transverse and other sections of rounded columnar bodies of a heterogeneous and red ochreous matter, exhibiting very closely the structure of the *Fern tree* tribe.

Impressions of the imbricated twigs and leaves of two or three plants resembling species of Athrotaxis of our western mountains.

Imbedded specimens of reed-like stems, partially charred.

Bark of what may have been a fagus, or young coniferous tree.

Numerous beautifully clear impressions of the leaves of eucalypti?

Impressions of leaves of Oxylobium? or Phebalium? or both.

Small specimens of ferruginised wood, such as is found with fragments of siliceous coniferæ, on *Salt Pan Plains,* near Ross; and with the well-established casuarina, on the south-east of Flinder's Island, in Bass's Straits.

Cross section of what may have been a *grass tree* (Xanthorrhoea), denuded of its exterior fibrous covering, or more probably yet, a *palm,* for it retains the marks of the setting on of leaves, forming oblique, spirally ascending, interrupted lines.

A very well marked section across the cone of a Banksia, small size.

A longitudinal section of what may have been a cone of a large Banksia, or of a Zamia? It is 6 inches in length by three and a quarter in width.

Linear leaves, like those of our melaleuca.

The very decisive experiments of Lindley, on the comparative durability of the leaves, &c., of various plants, which he macerated in water for two years, have conclusively determined the kind and character of plants which we may reasonably look for in a fossil state. And if in the earlier stages of existence of these colonies, the phanerogamous flora partook as strongly of astringent and resinous principles as it does now; and the vascular cryptogamiæ were then as prevalent as they now are, we may fairly enough look upon this as the best field the world presents for the study of Fossil Botany.

Be this as it may, however, there is proof sufficient in the new and interesting specimens exhibited, that ordinary industry and research will on every hand meet with both encouragement and recompense.

Art. XI. *Statistics of the Port of Launceston, Van Diemen's Land, for* 1846.

(From the Launceston Examiner.)

The following statistics, compiled with care from official records, contain valuable information, and are worth the studious examination of all who take an interest in the commercial prosperity of the port.

Imports for the Quarter ending 5th January, 1847.

From	Value. £	s.	d.	Duty Collected. £	s.	d.
Great Britain	28,645	9	6	3,587	7	8
New South Wales	10,666	12	0	1,332	11	5
South Australia	735	16	10	66	10	10
New Zealand	324	8	0	34	5	3
China				2	4	8
Singapore				8	18	6
Cape of Good Hope				14	6	6
United States				14	17	0
	£40,372	6	4	£5,061	1	10

Exports for the same Quarter.

	£	s.	d.
To Great Britain	27,975	0	0
„ New South Wales	23,618	3	3
„ South Australia	4,000	6	4
„ New Zealand	1,461	15	0
„ Mauritius	4,109	0	0
„ Guam	925	0	0
	£62,089	4	7

Recapitulation of Imports and Exports for 1846.

Imports.	Value. £	s.	d.		Duty Paid. £	s.	d.
Lady Day Quarter	38,681	17	11	..	5,385	13	4
Midsummer „	46,468	9	9	..	7,847	18	1
Michælmas „	44,821	18	2	..	5,975	9	8
Christmas „	40,372	6	4	..	5,061	1	10
	£170,344	12	2		£24,270	2	11

Exports.	Value. £	s.	d.
Lady Day Quarter	111,763	0	9
Midsummer „	77,145	0	0
Michælmas „	51,326	11	4
Christmas „	62,089	4	7
	£302,323	16	8

Return of Value of Imports and Exports during the last six years.

	Imports. £	s.	d.		Exports. £
1840	418,291	16	4	......	474,814
1841	399,567	8	4	......	325,794
1842	203,023	8	11	......	291,341
1843	256,505	6	9	......	229,883
1844	152,464	13	5	......	217,571
1845	201,995	6	5	......	198,066
1846	170,344	12	2	......	302,323

From the above returns, it will be seen that our exports for 1846 exceeded those of the year preceding by no less a sum than £104,257, and are greater than any year since 1841 ; the exports of 1845, however, were the lowest on record for many years past, having amounted only to £198,066. It will also be observed that our exports during the year just expired exceed the imports in round numbers by £131,979, whilst in 1845 the reverse was the case, the imports having exceeded the exports by £3,929. These returns plainly indicate a rapid return to a more healthy state of mercantile relationship with the mother country and the neighbouring colonies. It is to some extent also gratifying to observe, that the value of imports is less than those of the preceding year by £31,651, which we take as an evidence of prudent retrenchment, and the encouragement of colonial productions, although no doubt in part occasioned by the emigration of a large portion of our free population, who were consumers of British manufactures. These facts will meet the eye at a glance, and are highly satisfactory. We now subjoin a detail of the items of imports and exports, which form an interesting return :

Imports at the Port of Launceston, for the year ending 5th January, 1847.

	Value. £	s.	d.
Apothecary	787	11	8
Apparel and slops	15,348	0	0
Arms and ammunition	932	0	0
Books and stationery	2,551	5	0
Boots and shoes	1,461	0	0
Butter and cheese	607	18	0
Canvas and bagging	6,159	10	4
Carriages	185	0	0
Cottons and linens	12,889	0	0
Coals	2,149	0	0
Coffee and cocoa	586	10	3
Deals and oars	380	0	0
Earthenware and glass	3,572	17	6
Furniture	287	0	0
Grain, flour, and seeds	287	5	0

Haberdashery and hosiery	12,211	10	0
Hats and caps	1,065	0	0
Hops	2,133	0	0
Ironmongery and hardware	11,516	10	0
Instruments, musical	50	0	0
Live stock	7,246	0	0
Malt liquor	4,235	14	0
Millinery	631	0	0
Oilman's stores	6,819	16	3
Provisions, salt	1,472	15	0
Rice	318	16	6
Rope and twine	1,398	5	5
Saddlery and harness	10	10	0
Soap and candles	3,193	0	0
Salt	1,091	10	0
Silks	82	0	0
Spirits—Brandy	1,979	1	0
Geneva	1,666	18	0
Rum, B.P.	3,604	0	0
Whiskey	24	0	0
Cordials	705	0	0
Sugar, refined	1,696	0	0
Ditto, raw	9,486	13	4
Timber	2,367	18	0
Tea	8,980	12	6
Tobacco and cigars	4,973	0	0
Whalebone	130	0	0
Wine	5,780	18	6
Wool	15,264	0	0
Woollens	8,129	0	0
Unenumerated	4,533	11	0
Total	£170,344	12	2

Exports from the Port of Launceston, for the year ending 5th *Jan.* 1847.

	Value. £	*s.*	*d.*
Apothecary	293	0	0
Apparel and slops	6,518	0	0
Arms and ammunition	128	0	0

Bark	875	0	0
Books and stationery	629	0	0
Bran	1,175	0	0
Carriages and carts	2,615	0	0
Canvas and bagging	394	0	0
Curiosities	60	0	0
Earthenware and glass	1,393	0	0
Flour, 1,978 tons, 3cwt., 2qrs.	23,993	0	0
Furniture	2,788	0	0
Fruit	2,966	13	11
Grain—Barley, 7,763 bushels	1,447	0	0
Oats, 30,841 „	4,986	0	0
Wheat, 367,421 „	80,594	0	0
Haberdashery and hosiery	1,360	0	0
Hay	1,922	0	0
Ironmongery and hardware	6,038	0	0
Live stock—Horned cattle (77)	353	0	0
Horses (1073)	14,108	0	0
Sheep (568)	1,107	0	0
Malt	444	0	0
Malt liquor	2,157	0	0
Oil and head-matter, 54 tuns	1,937	0	0
Oilman's stores	1,325	0	0
Potatoes	4,414	0	0
Provisions, salt	448	0	0
Skins and leather	1,175	0	0
Spirits—Brandy	2,306	0	0
Geneva	723	0	0
Rum (bond)	1,389	0	0
Rum (foreign)	50	0	0
Sugar	861	6	5
Tallow	25	0	0
Tea	580	1	4
Timber	3,632	0	0
Tobacco and cigars	2,158	0	0
Whalebone, 27 cwt.	200	0	0
Wine	1,209	15	0
Wool, 7,813 bales	112,777	0	0
Unenumerated	9,670	0	0
Total	£303,223	16	8

There are a number of articles included under the list of imports, which might be, and many indeed are produced in the colony. We enumerate a few of the most striking items: boots and shoes, £1,461; butter and cheese, £607; coals, £2,149; furniture, £287; hops, £2,133; live stock, £7,246; malt liquor, £4,325; salt provisions, £1,472; soap and candles, £3,193; salt, £1,091. These articles amount to nearly £37,000, and all will acknowledge that whilst many are even at the present time procurable within the colony quite equal to any imported, there is not one here mentioned which might not be supplied by the colony, and thus afford increased employment to the industrious classes of our population.

The export return shows a remarkable increase in the quantity of grain shipped from this port, and for more distinct reference we refer the reader to a table subjoined. The clip of wool has also increased by 912 bales; there has been also an increase in the total value of horses exported; and the item of fruit has risen to nearly £3000, which the previous year amounted only to £1,726. Potatoes stand at £4,414, against £1,007 in 1845. There has been a slight decrease in the export of bark, the shipments of 1845 amounting to £1,090, whilst in 1846 they were only £875; this is, we believe, the only article of colonial produce that has diminished in export.

Return of the Value and Quantity of Grain, Flour, Malt, and Bran, exported from Launceston, during the year 1846, *compared with the preceding year.*

		1845.		1846.	
		Quantity. Bushels.	Value. £	Quantity. Bushels.	Value. £
Britain	Wheat	48126	9330	137464	24731
B. Possessions	Wheat	119946	20814	225251	54663
	Barley	14150	2704	7763	1447
	Oats	27100	3602	30841	4986
	Bran	10054	298	17691	1150
	Malt	4611	1165	——	444
	Flour	1335t.	13788	1920t.	23393

Foreign	Wheat	16652 .. 3600	4706 .. 1200
	Bran	1050 .. 10	633 .. 25
	Flour	79 tons 540	58 tons 600
		£46,521	£112,442

Quantity and Value of Wool, Oil, Whalebone, and Bark, exported during the years 1845 *and* 1846.

	1845.		1846.	
	Quantity.	Value.	Quantity.	Value.
Wool	5929 bales	£71980	6841 bales	£99362
Oil	7½ tuns	222	61t. 149 galls.	1947
Whalebone	4¾ tons	900	27cwt.	200
Bark	386¼ tons	1090	361 tons	875

Shipping.

There have been four vessels built during the year, the *Peri*, *Raven*, *Emu Packet*, and *Ranger*, the united burthen being 379 tons; in 1845 there were three built, amounting to 146 tons. No vessels are returned for 1846 as employed in the fisheries, whilst for 1845 there were two of 307 tons, and the fisheries were valued at £4,600. The number of vessels registered at this port has also decreased, amounting now to 39, tonnage, 2,837; and in 1845 there were 42 vessels, tonnage, 3,043. It will be seen, however, from the following return, that the British and inter-colonial trade has considerably increased, both the arrivals and departures far exceeding those of 1845, the year of unparalleled depression.

Arrivals and Departures.

Arrivals.	1845.			1846.		
From	No.	tons.	men.	No.	tons.	men.
Great Britain	16	4980	1669	9	3141	1940
Colonies	160	16692		210	24005	
Foreign	2	434		1	149	
Total	178	22106		220	27295	

Departures.	1845.			1846.		
To	No.	tons.	men.	No.	tons.	men.
Great Britain	10..	3206		.... 16..	5393	
Colonies	172..	1876	1763	....222..	23299	2136
Foreign	3..	497		.... 2..	278	
Total......	185..	22470		240..	28970	

Coasting Trade.

Arrivals—23, 2864 tons. Departures—25, 2485 tons.

Art. XII. *Exports of Produce from Van Diemen's Land to Great Britain for the Season of* 1846.

(*Compiled by Mr. C. H. Goldsmith, of Launceston.*)

Articles.		Launceston.	Hobart.	Total.
Wool	bales	*6,940	†5,619	12,523
Wheat	bushels ..	137,312	24,711	162,023
Flour............................	tons		27¾	27¾
Black Oil	tuns	73	1,074	1,147
Sperm Oil	tuns		285	284
Whalebone	tons		40. 5. 3. 18	40. 5. 3. 18
Bark (from *Acacia dealbata*)	tons	158¼	31	189¼
Tallow	casks	2	28	30
Leather............................	bales	‡59	61	120
Kangaroo Skins	casks		1	1
Horns	number..	4,451	2,300	6,751
Bones	tons	2		2¼
Gum Planks..........................	number..		121	121
,, ,, ...	feet	5000		5000
Paling	number..		900	900
Trenails	,, ..	56,365	950	57,315
Black Wood (*Acacia melanoxylon*)	pieces ..	56		56
Gun Stocks	number..	796		796
Gum { from *Acacia dealbata* and *Acacia molissima* }	cases	5	‖215	220
,, ...	bags		‖392	392
Potatoes	baskets ..		20	20
Turnip Seed	bags		7	7
Curiosities	cases	5	10	15
Excluding articles not the produce of V. D. L.				

* Less from New South Wales 1455 bales.
† Less from New South Wales 105 ,,
‡ Less from New South Wales 11 ,,
‖ Uncertain what gum this is, but it is probably not produce of Van Diemen's Land.

To the Return of Exports of Grain and Flour, which appears at page 73 of this volume, the following may be added as the total Exports for the year 1846, then incomplete :

	Wheat, bushels	Oats, bush.	Barley, bush.	Flour, tons.
Launceston, 1846......	369,722....	31,136....	7,785....	2,067
Hobart Town ,, ...	65,249....	5,166....	12,332 ...	1,482¾
	434,971	36,302	20,117	3,549¾

By mistake in that Return "Flour, *bushels*," is printed instead of "Flour, *tons*."

Art. XIII. *On the "Bunyip" of Australia Felix.* By Mr. Ronald C. Gunn.*

(*With Three Plates.*)

From time to time for many years various indistinct reports have been received from the aborigines of Port Phillip, of the existence of a large amphibious animal, inhabiting the rivers of that colony, and called by different tribes by the names *Bunyip or Bunyup, Katenpai, Kayan-prati, Tumutba, Tunatpan,* &c., but no traces of it have been seen by any of the white inhabitants. The statement of the aborigines relative to the Bunyip is, that it is of the size of a bullock, with a head and neck like an emu's, and a mane and tail like a horse's. In their rude drawings of it they give it two tusks, or front teeth, curved downwards; and feet like those of a seal; they say that it is oviparous and burrows, commencing its burrow under water, and working upwards until it is above the water level, where in a chamber, accessible only through the water, it deposits its eggs, which are as large as a bucket, enclosed in a membranous skin like a turtle's, and not in a hard shell. They say that it eats black-fellows, and all are afraid of those deep holes in the rivers which it inhabits,—but its usual food is crayfish or lobsters (very abundant in the large rivers in that colony) and roots. Many other particulars are furnished by the blacks, but they do not all agree either in their drawings or details, so that much uncertainty prevails as to the existence of this wonderful animal, although many attach a considerable degree of credit to the assertions of the aborigines. During last month (January), however, Athol Fletcher, Esq., found a *skull* on the banks of the river Murrumbidgee, which all the natives to whom it was shown called a Bunyip's, and as it was unlike that of any animal with which he was acquainted he brought it with him to Melbourne. No other bones of any description were found with it. There it has excited much interest; and as it will probably be forwarded to London by an early vessel, I was very much gratified to have the opportunity afforded me of examining

* An unavoidable delay which has taken place in publishing the present number of the *Tasmanian Journal* has enabled us to introduce this article with its illustrations.—*Ed.*

it through the kindness of my friend Edward Curr, Esq., of St. Heliers, near Melbourne, who obtained the loan of it from Mr. Fletcher, and forwarded it to Launceston for my inspection. From the letters of His Excellency C. J. Latrobe, Esq., and more especially from those of Mr. Curr, I have drawn the preceding particulars.

I at once submitted the skull to my friend Dr. James Grant, whose report I subjoin, illustrated by three very accurate drawings :—

19*th February*, 1846.

My Dear Sir,—It is to be regretted that we have no museum in these colonies to which we might refer in cases like this of the so called Bunyip, where an apparently new form presents itself. The skull is that of a very young animal, probably even fœtal; and although the general form of the head and the arrangement of the teeth are different from those of any animal with which I am acquainted, I am not aware how much of this apparent peculiarity may not be owing to the mere circumstance of imperfect development. It has been suggested that it might prove to be that of a young camel, a few of which animals were introduced to Australia about seven years since. I send you three drawings, (plates III., IV., and V.,) which exhibit different views of the skull. It is that of a large *herbivorous* animal; the bones are very smooth, thin, and some of them imperfectly ossified; the two sides of the head are not symmetrical, and the teeth were covered with a membrane, which I scraped off in order to make the drawings. From its general appearance the skull could not have been exposed many months. There is a very unusual disproportion between the relative sizes of the face and of the cranium—the former being very small, while the latter is very much developed; the brain must have been of enormous magnitude. The smallness of the muzzle seems to be partly owing to the circumstance that the three molar teeth (plates III. IV., e. f. g.) are placed very far forward in the mouth. Immediately anterior to these are two small sockets (h) apparently for small premolars; but as the front part of the palate plate has been broken off I cannot say whether there were any incisor teeth, especially as it is impossible to trace intermaxillary bones. A very small portion only seems to have been broken off, and if there were incisor teeth, they must have been very small and placed close to the molars, without the usual intervening space. The teeth are of large size, and have their folds of enamel placed longitudinally: the anterior tooth (e) is 1 6-10ths inch in width, and 8-10ths inch in thickness; the two others (f. g.) are somewhat less; the infra-orbital foramen opens in the centre of the maxillary bone; the nasal bones are broad at the base, where they join the lachrymal bones—these form the anterior part of the orbits, and extend a considerable way over the face, which is very wide between the orbits. The malar bone, with the processes from the temporal and frontal bones, forms the straight and slender zygoma; and the transverse depression at its base for the articulation of the lower jaw is very shallow, and the temporal fossa is very slight. The anterior part of the cranium is very wide and high; the large frontal bones rising at an obtuse angle from those of the face are connected to each other by a well marked suture; but at m. (plate V.) there is a considerable space which was filled up by membrane alone; and the same imperfect ossification exists at n. (plate V.) in the parietal and occipital bones. The basilar portion of the occipital bone with the condyles has been broken off, and very little remains of the sphenoid and ethmoid bones.

The dimensions of the head are as follows,—the same letters applying to all the plates:—

a to b	11 inches.
i to k	6 1-10th inch.
c to d	5 2-10ths ,,
c to f	7 6-10ths ,,
m to n	6 4-10ths ,,

I am your's, &c.,

J. Grant.

Every effort is now making to obtain an entire or living *Bunyip*, or ascertain whether it is to be classed amongst fabulous animals.

R. C. G.

Launceston, 20th February, 1847.

ART. XIV. *Proceedings of the Zoological Society of London.*

(Continued from page 65.)

Index Test. Sup. t. 16. f. 25. Long. 1; lat. 1 poll.

Hab. Van Diemen's Land. Mus. Hanley, Metcalfe.

Not at all unlike the *dyscra* of Chemnitz, but the concentric ribs are in that species distant and membranaceous, whilst in ours they are thick, obtuse, and rather crowded.

VENUS DECIPIENS. *Ven. testâ parvâ, rotundato-subtrigonâ, compressâ, inæquilaterali, solidâ, pallidè fulvâ, radiis latis rufobrunneis variegatâ, concentricè costata; costis glabris, subremotis, depressis, posticè sublamellosis, et supra pubem impressam porrectis; interstitiis subconcavis, lævibus; margine ventrali subarcuato, intusque subcrenato; dorsali, utrinque declivi, posticè convexo, anticè brevi, subrecto; lunulâ lanceolatâ; ligamento angustissimo, infosso.*

Index Test. Sup. t. 16. f. 22. Long. 0·75; lat. 0·90.

Hab. Australia? Mus. Hanley, Cuming.

So extremely like the young of *fasciata* as with difficulty to be distinguished. Its form, however, is proportionably broader between the lateral extremities, the valves are much more compressed, and the interstitial spaces decidedly broader. The hinder terminations of the lamellar ribs, which project beyond the escutcheon in compressed tubercules, do not appear to become obsolete by age, as in *fasciata.*

December 10, 1844.

Descriptions of new species of *Cardium* and *Mitra* by Lovell Reeve, Esq.

CARDIUM AUSTRALIENSE. *Card. testâ transversè ovatâ, Donaciformi, medio subcontractâ, posticè flexuoso-angulatâ, subrostratâ, anticè compresso-attenuatâ; dimidio postico radiatim sulcato, antico lævigato, nitente; albidâ, areâ posticâ strigis brevibus fuscis utrinque ornatâ.*

Conch. Icon. *Cardium*, pl. 5. 24.

Hab. Port Lincoln, South Australia; Harvey.

This shell may be chiefly distinguished from the *Cardium Donaciforme*, to which it is in many respects allied, by the contracted flexuous prolongation of the posterior portion, and by the peculiarity of one-half of the shell being conspicuously grooved, whilst the other half is smooth and shining.

Mitra tumida. *Mitr. testâ abbreviato-fusiformi, spirâ brevi, apice acuto; anfractibus tumidis, supernè plano-angulatis, longitudinaliter rudè costatis, costis ad angulum noduloso-tumidis; albidâ aut virescente, anfractibus ad angulum rufo tinctis, ultimo balteo nigro latiusculo cingulato; columellâ tri- aut quadriplicatâ; aperturæ fauce nigricante-fuscâ.*

Conch. Icon., *Mitra*, pl. 8. f. 51.

Hab. New Holland.

A few specimens of this peculiarly swollen shell were lately brought from New Holland in H.M.S. *Beagle.*

January 14, 1845.

Mr. Gould exhibited to the meeting a small species of Mammal, which he characterised as

Dromicia concinna. *Drom. maculâ nigrâ ante oculos; corpore supernè et parte exteriore crurum pallidè brunneis; crurum parte interiore et corpore subtùs distinctè albis.*

Before the eye a mark of black; all the upper surface, the outer side of the limbs and the tail, pale sandy brown; all the under surface and the inner side of the limbs white; the two colours distinctly separated, or not blending into each other.

Length of the head and body, 3¾ inches; of the tail, 3¼; of the ear, ½.

Hab. Western Australia.

Very nearly allied to the *Dromicia* of Van Diemen's Land, but distinguished from that animal by its much smaller size, by the distinct separation of the colours of the upper and under surface, and by the absence of any enlargement at the base of the tail.

Also a new Grallatorial bird, which he named

Fulica australis. *Ful. capite colloque nigris; supernè griseo-nigro, subtùs fuliginoso; iridibus rubris; rostro cinereo-cæruleo; vertice viridi-albo; tarsis pedibusque griseis.*

Head and neck black; all the upper surface greyish black; under surface sooty black; irides bright red; bill light bluish grey; crown of the head greenish white; legs and feet French grey.

Total length 14 inches; bill, 1¼; wing, 8; tail, 2¼; tarsi, 2¼.
Hab. Western Australia.

January 28, 1845.

Sylvanus Hanley, Esq., read the following description of a new species of Australian shell belonging to the genus *Artemis*:—

Artemis sculpta. *Art. testâ orbiculari-subquadratâ, magis minusve ventricosâ, solidiusculâ, inæquilaterali, subnitidâ, sordidè albidâ aut albido-lutescente (nonnunqnam pallidè livido-fuscescente alboque marmoratâ), concentricè sulcatâ; striis radiantibus, sulcos confertissimos anticè (plerumque etiam posticè) decussantibus sulcis medio subimbricatis, ad utramque extremitatem lamellosis; margine ventrali subarcuato; dorsali posticè convexiusculo vixque declivi, anticè retuso et paulò declivi; lunulâ impressâ, ovatocordatâ; areâ dorsali posticâ nullâ; natibus haud prominentibus.* Long. 1·80; lat. 2 poll.

Ind. Test., sup. t. 15. f. 42.
Hab. Australia? Mus. Hanley, &c.

The radiating lines are not always perceptible on the posterior side of the adult, and the concentric sulci in that case appear fimbriated. It is allied to *subrosea* of Gray.

Art. XV. *Algæ of Tasmania.* By W. H. Harvey, M.D., &c.

(Continued from page 61.)

(*From the London Journal of Botany, August*, 1844.)

Tribe 4. Delesserieæ, *J. Ag.*

27. Nitophyllum *punctatum*, Grev. (Fucus punctatus, *Turn. t.* 71.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1270 (with capsules), and n. 1269, 1271 (with granular fruit).

28. Nitophyllum, *n. sp.*?

George Town, V. D. L., *R. Gunn, Esq.*, n. 1273 and 1276? —The specimens are without fruit, and therefore I do not venture to found a species upon them in a genus liable to such variations of form. It so closely resembles, in the dichotonous linear frond, bordered with ciliæ, some states of *Rhodomenia bifida*, that I at first regarded it as that species; but the reticulation of the frond are very much larger, and evidently point to a place in *Nitophyllum*.—Mr. Gunn's n. 1282, is also a *Nitophyllum* in a young state, and probably new.

29. Nitophyllum *affine*, Harv.; caule brevi, carnoso, mox in fronde latissimé flabelliformi, laceratâ, enervosâ, membranaceâ, basi subopacâ crassâ expanso; segmentis subpinnatifidis, sinubus rotundatis, soris granularum oblongis in segmentis ultimis longitudinaliter ordinatis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1272.—Nearly related to *N. Gmelini*, and strongly resembling the large Irish state of that plant, but differing in the position of the sori. It rises with an evident stem which soon expands into the cuneate dark-coloured base of a flabellate membranous frond, 5 inches long and 7 inches wide, veinless, except for the fused indication of the stem at the base, thin and delicate, but probably crisp in a recent state, and only imperfectly adhering to paper. It is deeply inciso-lacerate, or many lobed, the segments coarsely sinuato-dentate or subpinnatifid; the marginal lobes blunt and shallow. Sori minute, oblong or linear, ranged in longitudinal rows across the tips of the segments, or scattered over them;—in our specimen past their prime.

30. Thamnophora *procera*, J. Ag. *in Linnæa XV. p.* 10.

George Town, V. D. L., *R. Gunn, Esq.*, 1278 in part.—In this species, and in *T. Mertensii*, Grev. I find an evident fine medial line running through the frond and branching off to each lacinia. The expression " fronde ecostata" is rather too strong.

31 Thamnophora *costata*, J. Ag. *in Linnæa XV. p.* 10.

George Town, V. D. L., *R. Gunn, Esq.*, 1278 in part. A fragment only.

32. Thamnophora *angusta*, J. Ag. *in Linnæa XV. p.* 10.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1304.

Tribe 6. Cryptonemeæ, *J. Ag.*.

33. Chrysimenia *coccinea*, Harv.; fronde compressâ (?), tubulosâ, coccineâ, circumscriptione pyramidali; caule subindiviso vel furcato: ramis alternis v. vagis, erectopatentibus, dichotomè pinnatis, multifidis; axillis sub-acutis; ramulis ultimis erectis, basi vix constrictis, apice acutis; coccidiis......? granulis triangule divisis in ramulis ultimis nidulantibus.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1301.—*Frond* (a single specimen only seen) 4 inches high, tubular, with a few lax threads running through the centre, apparently compressed. Stem as thick as bristle, undivided, or nearly so, beset from near the base to the apex with alternate or spiral multifid erecto-patent branches, the lowest longest, the rest gradually smaller upwards, all of them divided in a manner partly dichotomous, partly pinnate, the branches very erect, and the ultimate ramuli elongate and acute, slightly constricted at base. Colour a fine pinky red. Substance membranous and tender, but not very gelatinous. Granules imbedded in all the ramuli. This plant has much the habit of *Gracilaria*, but not the structure.

34. Halymenia *membranacea*, Harv.; fronde planâ, membranaceâ, pallide rubra, lineari, basi cuneatâ, vagè subdichotomo-pinnatim v. palmatim-fissâ; segmentis patentibus, e margine ramenta lanceolata v. furcato-cuneata emittentibus; sphærosporis (triangule divisis) per totam frondem sparsis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1276.—*Fronds* tufted, 3-4 inches high, quite flat and thin, membranaceous, cuneate at base, afterwards preserving nearly an uniform breadth of one to two lines, or in the largest specimen nearly ¼ of an inch, very irregularly divided, more pinnatifid than dichotomous, sometimes with several secund segments, sometimes palmate, or laciniate; the axils rounded, and the segments widely spreading or divaricated. The margin in our specimens emits small ramenta, the youngest of which are linear, then lanceolate, and finally forked or palmatifid; all attenuated at base. Colour a pale dull red. Substance membranous, not in the least gelatinous, and not adhering to paper. *Fruit:* innumerable sphærospores, divided triangularly, scattered over the whole surface of the frond, dark-coloured, solitary, dot-like, immersed in the periphery. The structure of the frond internally exhibits very lax anastomosing central filaments ending outwardly in large cellules.—The aspect of this species is very much that of *Rhodomenia sobolifera*, but the structure is very different.

Tribe 7. CERAMIEÆ, *J. Ag.*

35. Ceramium *rubrum*, Ag. (Conferva rubra, *Eng. Bot. t.* 1166.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1292 and 1305 (in part).

36. Ceramium *diaphanum*, Roth. (Conferva diaphana, *Eng. Bot. t.* 1472).

George Town, V. D. D., *R. Gunn, Esq.*, n. 1309, 1310, 1311, and 1313.

37. Spyridia *filamentosa*, Harv. *in Br. Fl.* 2, *p.* 337.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1284, 1312, 1305? (but not 1305).—There are two varieties, to the first of which, distinguished by scattered setæ or ramuli, the above numbers belong. This is identical with the Mediterranean and British Plant.—The second variety, or perhaps species, may be called—*verticillata*, n. 1298. It is remarkable for having the setæ regularly whorled round the branches, and much denser than in var. *α*.

38. Spyridia? *pellucida*, Harv.; frondibus e basi communi lata stuposa ortis, tenuibus, pellucidis, monosiphoniis, articulatis, roseis, vagè sub-dichotomè ramosissimis: ramis ad quodque geniculum ramulis brevissimis subulatis oppositis v. verticillatis ornatis; articulis diametro sesqui-v. subduplo longioribus.

George Town, V. D. L., *R. Gunn, Esq.*, 1305: also in the collection of 1840.—*Fronds* 5-6 inches long, as thick as those of *Ceramium rubrum*, several growing from the same shaggy base, and often matted together below, much and irregularly divided on a dichotomous type, the lesser branches generally alternate, straight; the apices not hooked in. Every part of the stem is clearly jointed, one-tubed and pellucid, but red-coloured, and all the larger and smaller branches, and the stems to their very base, are furnished at each joint with short, awl-shaped, opposite or cruciate ramuli, which are jointed like the stem, and more than half its diameter. These sufficiently mark the species from any variety of *C. rubrum*, and seem to indicate an affinity with *Spyridia:* but I am not sure that I am right in referring it to this genus, in preference to *Ceramium*, with which the structure of the frond more nearly agrees.

39. Griffithsia *setacea?* Ag.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1290, 1302.—These specimens are not in fruit, and have not been sufficiently displayed to show the ramification; n. 1302, as well as it can be examined, seems identical with the European form; n. 1290 is smaller, more slender, and may be different.

40. Griffithsia *flabelliformis*, Harv.; fronde latissime flabellatâ, petiolatâ, multoties dichotomâ; axilis inferioribus patentissimis, superioribus acutis; articulis inferioribus cylindricis, diametro 4-5 plo longioribus: superioribus ellipticis geniculis maxime contractis; ultimis moniliformibus, attenuatis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1294.—A large species, 6 inches long, by 7 inches wide, twelve or fourteen times dichotomous. The lower axils very patent, the upper equally acute and close. Joints in the patent portion of the frond cylindrical, 4-5 times longer than broad; in the erect or upper portion strongly contracted at the genicula, swollen in their middle, and thrice as long as broad; those of the ultimate divisions, which taper to a very fine point, resolved into a string of elliptical beads. Colour a fine blood red. Substance lubricous, but less gelatinous than in *G. corallina*, to which this species is very closely allied.

41. Wrangelia *plumosa*, Harv.; caule nodoso, articulato, frondem percurrente, tripinnato; pinnis pinnulisque nodoso-articulatis; nodis omnibus ramulis verticillati tenuissimis brevissimis dichotomis densè vestitis; favellis terminalibus, vix involucratis, densissime ramulis hirtiformibus velatis; articulis ramorum diametro 4-plo longioribus, striatis.

George Town, V. D. L., *R. Gunn, Esq.*, 1285, 1315.—*Fronds* 6 inches long or more; stems robust, nearly half a line in diameter at the base, gradually attenuated upwards, undivided, or breaking near the base into a few principal stems, erect, closely set with alternate branches, which are themselves twice pinnate: the whole frond is therefore thrice divided in a pinnate manner, and luxuriant specimens even still more decompounded. The main stem and branches are all evidently jointed, the joints 3-4 diameters asunder, swollen, or knobby, and each densely clothed with minute, almost fibrilliform, dichotomous and gelatinous ramuli, which in the old parts are sometimes worn down into hairyness. In the young parts, and especially in the pinnules, which they entirely invest, they are lengthened, though never exceeding half a line, and much divided dichotomously. The *sphærospores* (or *capsules*) are large, dark red, and abundantly scattered among these ramuli. The *favellæ* are borne on the tips of the branches; they are sphærical and densely tomentose;—but the specimen which produces them is very much battered, which is perhaps the cause of the seeming absence of involucre. Colour dark grey, fading in fresh water, and slightly staining paper pink. Substance tender and gelatinous.

42. Callithamnion? *comosum*, Harv.; caule elongato, tenui, crinito, frondem percurrente, ramosissimo; ramis sensim attenuatis multoties pinnatis, oppositis vel sæpissime abortu alternis vel secundis (ramo abortivo ad ramulum minutum mutato), nodoso-articulatis, nodis filis minutis verticilatis

hirtis; pinnulis penultimis cæteris similibus, quoque nodo duos ramulos oppositos emittentibus; ramulis byssoideis, tenuissimis, alterne v. secunde divisis, apicibus elongatis, erectis; sphærosporis pedicellatis, ovalibus.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1307, and 1303 in part.—Frond 6-8 inches high, setaceous below, excessively branched in a regular pinnate manner, each successive pinnation being more slender than the last, till at the fifth or sixth the diameter is reduced to that byssoid fineness that requires a strong magnifying power to see it clearly. The *scheme* of branching is obviously by *opposite* patent branches or pinnæ, repeated over and over again; but from some cause it happens that in by far the greater number of cases in the earlier development of the frond, *one* of these branches is either very much shorter than the other, or is reduced to a mere rudiment, or even altogether wanting; though its place is usually found occupied by a small ramulus. The main branches, and their divisions, therefore, are frequently alternate. The structure of the stem is peculiar, and something at variance with the genus, while it shows a transition to *Crouania* or *Dudresnaia*. It is composed of a bundle of fine longitudinal threads, glued together, and as if knotted or more firmly combined together at each joint or node from which the branches issue. In old parts it is wholly covered with short hair-like ramuli, but in younger parts these are confined to the nodes, which are 2 or 3 diameters apart from each other. This nodose structure is found in all the divisions till we come to the last where the frond is reduced to a byssoid fineness and a single tube. The last or extreme nodose-pinnules, besides the hair-like ramuli that clothe the nodes, throw out at each node a pair of opposite slender byssoid pinnulated ramuli, whose pinnules are either alternate or secund, erecto-patent, and bear along their upper face, from joint to joint, a row of pedicels, each of which supports a sphærospore. Joints of the ramuli 4 times longer than broad. Colour a fine rosy red, not soon changing in fresh water, and well preserved in drying. Substance very tender and lubricous. —A noble species, and not likely to be confounded with any other.

43. Callithamnion *latissimum*, Harv.; caule elongato, frondem percurrente, tenui, basi opaco, subsetoso, e fibris constituto, in parte superiore articulato glabro; fronde latissimâ, pluries pinnatâ, divisionibus omnibus alternis; ramis primariis tripinnatis, articulatis, pellucidis, glabris; pinnis similibis sed tenuioribus; pinnulis penultimis (vel *plumulis*) patentibus, tenuibus, flexuosis, simpliciter pinnatis; articulatis diametro 3-4-plo longioribus; sphærosporis minutissimis, sphæricis, brevè pedicellatis basin versus pinnellarum ultimarum secundis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1308.—Stem 5-6 inches long, or more, setaceous below, gradually attenuated upwards, continued throughout the broadly ovate, excessively pinnated frond, opake and subsetose below, pellucid and naked above; all the divisions alternate. Main branches very patent or horizontal, 2-3 inches long, about half the diameter of the stem, pellucid and jointed; the joints 4-5 times longer than broad, triply pinnate, the pinnæ resembling the main rachis. Pinnules and their divisions very slender and patent, filiform, blunt. Colour a fine rose red, without any gloss when dry. Substance membranaceous, not very gelatinous. Sphærospores exceedingly minute, secund along the ultimate ramuli near their bases, 4-5 on each ramulus, sphærical, on short stalks.

44. Callithamnion *cruciatum*, Ag.

George Town, V. D. L., *R. Gunn, Esq.*—These specimens do not materially differ from the more slender British states of this variable but easily recognised species, and are equally distinguished by the darkened tips of the branches, caused by the crowding of the ramuli about them.

(To be continued.)

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF AUGUST, 1846.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Thermom.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Thermom.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	EXTERNAL THERMOMETER. Nine, A.M. Wet.	EXTERNAL THERMOMETER. Three, P.M. Dry.	EXTERNAL THERMOMETER. Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 A.M.	WINDS. 3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29,524	46°	29,520	46°5	44°	38°	46°	40°			S. W.	S. W.	Evaporation during the month .. .. .. 0,480.	Nil.
2	29,692	46°5	29,745	47°	47°	42°	47°	42°			S. W.	S. W.		Nil.
3	29,960	44°	30,070	47°	47°	39°	47°	42°	48°	31°	S. W.	S. W.		,006
4	30,190	46°	30,161	48°	47°	40°	48°	43°	48°	31°	S. W.	S. W.		Nil.
5	30,291	42°	30,269	55°	40°	34°	49°	44°	49°5	31°	S. W.	S. W.		Nil.
6	30,413	48°	30,332	48°5	43°	38°	49°	44°	58°5	30°	Calm.	S. W.		,028
7	30,191	46°	30,021	49°	43°	39°	47°	44°	47°	35°	,,	N. W.		,270
8	29,908	48°	29,805	49°	42°	40°	50°	47°	57°	37°	,,	N. W.		,432
9	29,731	50°	29,751	50°	52°	46°	48°	43°	60°	41°	N. W.	N. W.		,032
10	29,963	47°	30,095	48°	42°	39°	43°	39°	60°	33°	S. W.	S. W.		,006
11	30,415	38°	30,372	46°	36°	31°	44°	39°	49°	27°	S. W.	N. W.		Nil.
12	30,349	42°5	30,332	47°	37°	33°	47°	42°	58°	32°	Calm.	N. W.		Nil.
13	30,408	43°5	30,393	48°	37°	34°	47°	43°	66°	31°	,,	N. W.		Nil.
14	30,579	47°	30,564	51°	47°	44°	55°	48°	68°	40°	,,	N. W.		Nil.
15	30,594	48°	30,537	50°	47°	44°	56°	50°	57°	43°	,,	N. W.		Nil.
16	30,585	47°5	30,494	51°	50°	44°	54°5	50°	75°5	36°	S. W.	N. W.		Nil.
17	30,502	49°	30,377	51°	54°	50°	55°	51°	69°5	39°5	Calm.	N. W.		,069
18	30,316	51°	30,176	53°	53°	50°	58°	54°	58°5	49°	,,	Calm.		,240
19	29,700	53°	29,634	54°	53°	50°	55°	51°	56°5	50°	,,	S. W.		,006
20	29,988	51°	29,929	52°	54°	50°	52°	46°	70°	41°	S. W.	S. W.		Nil.
21	29,882	48°	29,814	50°	44°	41°	52°	47°	70°	38°	Calm.	N. W.		Nil.
22	29,903	46°	29,855	47°	39°	35°	40°	35°	48°	31°	,,	S. W.		Nil.
23	29,981	48°	29,968	50°	54°	50°	54°	48°5	80°	52°	,,	N. W.		Nil.
24	30,030	47°5	29,925	50°5	49°	44°	56°	50°5	79°	37°	,,	N. W.		,050
25	29,820	48°5	29,765	50°	52°	49°	50°	47°	51°	48°	,,	N. W.		,390
26	29,871	48°	29,930	50°	48°	45°	49°	44°	66°	41°5	,,	N. W.		Nil.
27	30,042	44°5	30,042	47°5	39°	35°	50°	44°	58°5	33°	,,	S. W.		Nil.
28	30,106	46°	30,047	49°	50°	46°	54°	48°	75°	32°5	,,	S. W.		Nil.
29	30,007	46°	29,894	49°5	49°	44°	53°	48°	56°	35°5	,,	S. W.		,120
30	29,866	49°	29,837	55°	52°	47°	51°	48°	59°	36°	S. W.	S. W.		,190
31	29,954	50°5	29,942	53°	60°	48°	57°	51°	72°	35°5	S. W.	S. W.		,046

Rain fallen during the month....1,891.

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF SEPTEMBER, 1846.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours : in inches.	Rain fallen in Inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine. A.M.		Three, P.M.							
					Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	30,077	51° 5	30,017	52°	52°	49°	49°	45°	63°	47°	N. W.	N. W.	Evaporation during the month .. .. .. 0,870.	Nil.
2	29,077	51°	29,740	52° 5	60°	50°	53°	49°	66°	42°	Calm.	N. W.		Nil.
3	29,734	50°	29,785	52°	53°	47°	52°	45° 5	52° 5	42°	S. W.	S. W.		Nil.
4	30,130	49°	30,175	51°	56°	50°	51°	45°	63° 5	40°	S. W.	S. W.		Nil.
5	30,399	48° 5	30,360	50°	54°	48°	52°	45°	65°	36°	S. W.	S. W.		Nil.
6	30,453	47°	30,392	49° 5	47°	44°	50°	46°	51°	35°	S. W.	S. W.		Nil.
7	30,465	48°	30,403	50° 5	48°	44°	53°	47°	54°	49°	N. W.	N. W.		Nil.
8	30,452	48°	30,374	50°	50°	46°	55°	50°	58°	30° 5	Calm.	N. W.		Nil.
9	30,305	48°	30,181	51°	52°	48°	60°	52° 5	70° 5	34°	,,	N. W.		,110
10	29,931	52°	29,774	53°	54°	52°	54°	52°	57° 5	46°	N. W.	N. W.		1,172
11	29,714	53° 5	29,762	55° 5	56°	53° 5	55° 5	51°	56° 5	48°	S. W.	N. W.		,122
12	29,694	53°	29,774	54°	53°	50°	51°	48°	56°	46°	N. W.	N. W.		,012
13	29,985	51°	29,889	52°	52°	46°	51°	49°	53° 5	36°	N. W.	S.S.W.		Nil.
14	29,921	52°	30,010	52°	51°	48°	53°	48°	55°	36°	N. W.	N. W.		Nil.
15	30,349	48°	30,285	51°	46°	42°	53°	46°	53°	33°	S. W.	N. W.		Nil.
16	30,251	47° 5	30,095	51° 5	47°	43°	58° 5	51°	58° 5	38° 5	N. W.	N. W.		Nil.
17	29,886	51°	29,771	53° 5	54° 5	51°	54°	52°	62° 5	38°	Calm.	N. W.		,612
18	29,764	53° 5	29,781	54° 5	54°	51°	57°	51°	59°	48°	,,	S. E.		,159
19	30,327	50° 5	30,382	54°	52°	45°	57°	51°	57° 5	45°	,,	N. W.		Nil.
20	30,695	51°	30,646	54° 5	52°	47°	56° 5	51°	56° 5	39°	,,	N. W.		Nil.
21	30,739	51°	30,626	53° 5	47°	44°	57°	51°	57°	37°	,,	N. W.		Nil.
22	30,612	52° 5	30,476	51° 5	54°	49°	56°	49°	56° 5	45° 5	S. W.	N. W.		Nil.
23	30,304	51°	30,160	55°	51°	46°	60°	55°	60°	40°	Calm.	N. W.		Nil.
24	29,969	54° 5	29,875	57°	59°	53° 5	61° 5	56°	62°	40°	W.N.W.	N. W.		Nil.
25	30,055	56° 5	30,040	58°	60°	54° 5	61°	55°	61°	40°	N. W.	N. W.		Nil.
26	29,967	56°	29,863	58°	57° 5	53° 5	60° 5	55°	60° 5	51°	N. W.	N. W.		Nil.
27	29,972	55°	30,213	56°	57°	48°	57° 5	50°	59° 5	45° 5	N. W.	N. W.		Nil.
28	30,470	53°	30,370	55° 5	55° 5	49°	60°	50° 5	60° 5	37°	Calm.	N. W.		Nil.
29	30,370	54°	30,259	56° 5	57°	51°	63°	54°	63°	37°	N. W.	N. W.		Nil.
30	30,293	55°	30,663	59° 5	57° 5	52°	67°	59°	69° 5	37° 5	Calm.	Calm.		,018
Mean..	30,139		30,114		53°	48°	56°	50°	59°	40°			Total....	2,205

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF OCTOBER, 1846.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	Nine, A.M. Wet.	Three, P.M. Dry.	Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Lowest.	WINDS. 9 A.M.	3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	30,048	59°	30,112	60°	62°	54°	63°	53°	68°	37°	S. W.	N. W.	From the 1st to 12th...... } ,420	Nil.
2	30,104	57°	30,014	59°	55°	48°	61°	54°	61°	45°	N. W.	N. W.		Nil.
3	30,037	55°	29,861	58°	52°5	47°	61°	55°	61°	40°	N. W.	N. W.		,846
4	29,560	57°	29,598	59°	57°	53°	62°	54°	63°	40°	N. W.	N. W.		,006
5	29,807	57°	29,882	58°	58°	54°	61°	51°	62°5	40°	N. W.	S. W.		Nil.
6	29,891	55°	29,768	56°5	54°	49°	57°	52°	59°5	46°	N. W.	N. W.		,006
7	29,904	56°	30,060	57°	59°	50°	58°	48°	62°	40°	N. W.	S. W.		Nil.
8	30,366	54°	30,262	56°	53°	47°	58°	50°	58°	42°	E.S.E.	N. W.		,516
9	29,805	55°	29,786	58°	57°	54°	63°	55°	63°	49°	W.N.W.	E.S.E.		,156
10	30,035	55°	29,939	58°	57°	50°	61°	53°	62°	42°	Calm.	N. W.		,224
11	29,754	55°	29,696	56°	53°	50°	56°	51°	62°	41°	,,	Calm.		,144
12	29,996	54°	30,102	55°	52°	46°	57°	49°	57°	38°5	,,	,,		Nil.
13	30,347	53°	30,329	55°	56°	49°	59°	52°	59°	39°	,,	S. W.	From the 12th to 31st...... } ,790	Nil.
14	30,472	55°	30,450	57°	58°	51°	58°	52°	58°	39°	S. W.	N. W.		Nil.
15	30,487	57°	30,377	59°	58°	52°	63°	55°	62°	49°	N. W.	N. W.		Nil.
16	30,377	56°	30,262	59°	54°	49°	60°	54°	62°	49°	N. W.	N. W.		Nil.
17	30,079	58°	29,932	61°	61°	55°	68°	61°	68°	49°	N. W.	N. W.		Nil.
18	29,989	61°	30,013	61°	63°	57°	64°	58°	68°	49°	Calm.	S. W.		,264
19	30,340	58°	30,023	59°	57°	51°	62°	55°	60°	47°	S. W.	S. E.		Nil.
20	30,373	58°5	30,254	60°	61°	54°	61°	55°	62°	47°	Calm.	N. W.		Nil.
21	30,128	59°	29,951	62°	64°	58°	76°	67°	76°	47°	,,	N. W.		Nil.
22	29,936	63°	29,899	65°	68°	63°	71°	66°	74°	47°	,,	N. W.		,024
23	29,735	64°	29,823	64°	64°	58°	65°	55°	74°	47°	N. W.	N. W.		Nil.
24	29,865	60°	29,834	61°5	58°	51°	64°	55°	64°	45°	N. W.	N. W.		,012
25	30,102	59°	30,060	62°	60°	53°	64°	56°	65°	41°	N. W.	N. W.		Nil.
26	30,073	61°	29,926	63°	63°	56°	72°	62°	72°	51°5	N. W.	N. W.		Nil.
27	29,709	62°	29,603	65°	67°	61°	68°	62°	75°	51°	Calm.	N. W.		,318
28	29,583	63°	29,517	63°	60°	56°	63°	54°	68°	56°	N. W.	N. W.		Nil.
29	29,467	60°	29,374	62°5	61°	54°	64°	55°	66°	45°	N. W.	N. W.		,009
30	29,688	59°	29,798	61°	60°	51°	61°	52°	62°5	51°	S. W.	S. W.		Nil.
31	30,028	58°	30,051	60°5	60°	52°	62°	55°	63°	40°	N. W.	N. W.		Nil.
Mean..	30,003	57°8	29,953	59°7	58°7	52°6	62°6	55°	64°4	45°		Total..	1,210	2,555

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF NOVEMBER, 1846.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation observed at different periods during the month.	Rain fallen in inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine, A.M. Dry.	Nine, A.M. Wet.	Three, P.M. Dry.	Three, P.M. Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	30,260	60°	30,226	62°	59°	54°	61°	58°	65°	48°	N. W.	N. W.		Nil.
2	30,334	60°	30,263	63°	59° 5	54°	66°	60°	68°	49°	N. W.	N. W.		Nil.
3	30,259	62°	30,175	65°	66°	59°	72°	64°	73°	52°	Calm.	N. W.		Nil.
4	30,213	64°	30,122	66°	65°	59°	77°	66°	78°	53°	,,	N. W.		Nil.
5	30,198	67°	30,140	69° 5	73°	65°	82°	71°	82° 5	52° 5	,,	N. W.	,140	Nil.
6			30,066	71°			81°	72°	83°	53°	,,	N. W.		Nil.
7	29,900	67° 5	29,776	70° 5	67°	62°	75°	68°	83°	53°	,,	N. W.		,024
8		65°	29,970	69°	64°	55°	74°	61°	76°	51°	N. W.	N. W.		Nil.
9	30,019	65°	29,943	66° 5	66°	58°	69°	59°	72°	48°	Calm.	N. W.	,300	Nil.
10	29,834	64° 5	29,868	66°	64°	55°	74°	62°	72° 5	50°	N. W.	N. W.		Nil.
11	29,927	65°	29,927	66° 5	65°	57°	70°	61°	72°	50°	N. W.	N. W.		Nil.
12	29,830	64°	29,739	65°	65°	58°	68°	62°	71° 5	49°	Calm.	N. W.		,480
13	29,739	67° 5	29,685	69° 5	76°	68°	72°	65°	81°	59°	,,	N. W.		,348
14	29,803	64°	29,732	65°	60°	57°	62°	60°	68°	58°	,,	N. W.		,624
15	29,891	67°	29,891	67° 5	66°	59°	68°	62°	68°	59°	,,	N. W.		,012
16	30,099	63°	29,984	60° 5	58°	54°	53°	50°	58°	53°	,,	S. W.		Nil.
17	29,659	59°	29,702	63°	58°	51°	67°	59°	67°	56°	,,	N. W.		,984
18	30,006	62° 5	29,959	64° 5	66°	58°	71°	62°	71°	48°	N. W.	N. W.		Nil.
19	29,939	65°	29,803	68°	72°	64°	78°	72°	79°	48°	Calm.	N. W.		,384
20	29,746	65° 5	29,717	66° 5	61°	61°	64°	62° 5	78° 5	48°	S. W.	N. W.		,219
21	30,103	63°	30,195	63° 5	60°	55°	63°	57°	79°	48°	S. W.	S. W.		Nil.
22	30,603	62° 5	30,563	63°	60°	53°	64° 5	59°	65° 5	46° 5	S. W.	S. W.		Nil.
23	30,681	60° 5	30,562	63°	59° 5	54° 5	66°	61°	67°	46° 5	S. W.	N. W.		Nil.
24	30,435	60°	30,302	61° 5	61°	57°	63°	61°	67°	46° 5	S. E.	S. E.		Nil.
25	30,061	63°	29,921	65°	70°	66°	69°	67°	70°	46°	S. E.	S. E.	,680	Nil.
26	29,770	65°	29,770	66° 5	66°	64°	69°	66°	70°	63°	N. W.	N. W.		,036
27	30,162	65° 5	30,121	67° 5	66°	62°	71°	65°	72°	52°	Calm.	Calm.		Nil.
28	30,127	65° 5	30,040	70°	68°	62°	81°	71°	81°	57°	,,	S. W.	,060	Nil.
29	30,090	72°	29,947	74° 5	77°	70°	85°	73°	86°	63°	,,	Calm.		,072
30	29,825	69°	29,747	71°	72°	66°	68°	65°	85°	65°	,,	,,	,160	,036
Mean..	30,057	64°	29,993	66°	65°	59° 5	70°	63°	73° 5	52°		Total..	1,340	3,219

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF DECEMBER, 1846.

DATE.	Nine o'clock. Barometer	Nine o'clock. Attached Therm.	Three o'clock. Barometer	Three o'clock. Attached Therm.	External Thermometer. Nine, A.M. Dry.	External Thermometer. Nine, A.M. Wet.	External Thermometer. Three, P.M. Dry.	External Thermometer. Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	Winds. 9 A.M.	Winds. 3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29,999	68°5	30,023	69°5	68°	59°	72°	65°	72°5	54°	N. W.	N. W.	,030	Nil.
2	30,052	67°	29,901	67°5	66°	60°	69°	62°	69°	58°	N. W.	N. W.	,040	Nil.
3	29,746	66°	29,700	68°	65°	59°	72°5	61°	73°	54°	N. W.	N. W.	,065	,048
4	29,727	61°	29,727	63°5	57°5	54°	61°	55°	71°	47°	N. W.	N. W.	,050	Nil.
5	29,894	60°	29,877	62°5	58°5	53°	65°	60°	71°	47°	N. W.	N. W.	,045	Nil.
6	30,161	65°	30,108	68°	64°	57°	75°	66°	75°	51°5	N. W.	N. W.	,080	Nil.
7	30,159	63°5	30,084	68°	63°	59°	71°	65°	71°	55°	N. W.	N. W.	,060	Nil.
8	30,307	63°5	30,307	67°	63°	60°	68°	62°	69°5	50°	Calm.	S. W.	,030	Nil.
9	30,309	65°	30,217	70°	67°	62°	76°	66°	73°	57°5	,,	N. W.	,060	Nil.
10	30,175	72°	30,007	73°	72°5	68°	83°	73°	83°	62°	,,	N. W.	,070	Nil.
11	29,987	75°	29,905	77°	79°	71°	88°	85°	88°5	61°	,,	N. W.	,100	Nil.
12	29,892	76°5	29,796	79°	75°	71°	87°	74°	87°	67°	,,	N. W.	,050	,138
13	29,716	72°	29,716	71°	71°	68°	68°5	63°	72°	61°	N. W.	N. W.	,030	,168
14	29,890	66°	29,890	67°5	62°	60°	65°	61°	65°	56°5	Calm.	S. W.	,030	1,488
15	29,936	63°5	29,883	66°	63°5	59°	68°	63°	68°	89°	,,	N. W.	,030	,066
16	29,468	63°	29,430	63°	65°	61°	58°5	56°	65°	50°	N. W.	N. W.	,040	,216
17	29,747	60°	29,747	63°	63°	58°	66°	61°	66°	50°	N. W.	N. W.	,050	,012
18	29,562	67°	29,508	64°	66°	64°	68°	63°	68°5	52°5	N. W.	N. W.	,060	,144
19	29,455	59°	29,455	61°	57°	54°	64°	62°	64°	49°	N. W.	N. W.	,070	Nil.
20	29,617	58°5	29,703	64°	63°	60°	70°	65°	71°	49°	N. W.	N. W.	,050	Nil.
21	29,943	60°5	29,943	65°5	66°	60°	74°	63°	75°	57°	N. W.	N. W.	,060	Nil.
22	29,926	61°	29,743	70°5	70°	62°	82°5	69°	83°	51°	N. W.	N. W.	,100	Nil.
23	30,072	63°5	30,090	67°	67°	56°	74°	63°	74°	53°	S. W.	N. W.	,070	Nil.
24	30,187	63°5	30,187	67°5	68°	60°	75°	63°	76°	55°	N. W.	N. W.	,070	Nil.
25	30,064	65°	29,882	71°	70°	63°	81°	76°	82°	62°5	N. W.	N. W.	,070	Nil.
26	29,756	68°	29,654	67°	70°	62°5	71°	61°	80°	49°	N. W.	S. W.	,090	,012
27	29,906	62°	29,906	61°	63°5	55°	71°	62°	80°	49°	N. W.	N. W.	,040	Nil.
28	29,855	62°	29,855	66°5	64°	58°	76°	66°	77°	52°	S. W.	N. W.	,060	Nil.
29	29,887	64°	29,843	73°	68°	63°	76°	72°	77°	57°	Calm.	N. W.	,080	Nil.
30	29,894	65°5	29,899	70°	68°	64°	83°	73°	83°	56°	,,	N. W.	,080	Nil.
31	30,026	67°	29,948	71°5	73°	68°	86°	75°	87°	56°	,,	N. W.	,080	,102
Mean..	29,913	65°	29,868	67°5	66°	60°5	73°	65°	74°5	54°		Total..	1,840	2,394

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*** *It is requested that all communications for the Tasmanian Society and Tasmanian Journal may be addressed to the Secretary,* Mr. RONALD C. GUNN, *Launceston, Tasmania.*

Vol. III.], JULY. [No. III.

THE

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OF

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1847.

THE

TASMANIAN JOURNAL

OF

NATURAL SCIENCE.

JULY, 1847.

Art. XVI. *Account of the Exploring Expedition into the interior of New South Wales.* By Sir T. L. Mitchell, Surveyor General.

(From the Hobart Town Courier.)

We lay before our readers two despatches from Sir Thomas Mitchell, recently published at Sydney in a Government Gazette Extraordinary, as forming an interesting and important supplement to the previous researches of Dr. Leichardt. The objects of these two expeditions, though tending to the same general result, were somewhat different in detail. The purpose of Dr. Leichardt was to reach Port Essington, and to establish the practicability of an overland communication with that embryo settlement. This he fully accomplished. The aim of Sir Thomas Mitchell was less specific, being rather to "observe accurately" and "note exactly," than to push his explorations loosely in extent. One more direct object proposed, however, was to ascertain the division of the Northern and Southern Waters; and in this primary purpose, to use his own words, "the result exceeded his most sanguine expectations."

The country thus opened up appears to be rich in the extreme and prolific in abundance;—"well-watered pastoral regions, of greater extent than all those occupied at present by the squatters"—"verdant plains, whose luxuriant pasturage surpassed in quality as it did in extent, anything of the kind he had ever seen"—"downs and plains sufficient to supply the whole world with animal food"—and one district which "seemed to be the finest region on earth." Through all this land of promise, Sir Thomas's party found or formed "a good cart road," thus rendering future access ready and inviting. "One link only" was wanting, at the date of his last despatch, in the chain of his discoveries, and this he hoped to complete on his return.

As might be expected, the despatches, written in haste, and under every inconvenience, furnish but a very imperfect sketch of the movements, incidents, and success of the expedition. Now that the party has returned, all defects and omissions will, probably, be speedily supplied; and Sir Thomas will, doubtless, fulfil the promise given in his last despatch, to draw up such plans "as may greatly facilitate the *immediate and permanent occupation of the country*, and the extension through it of a thoroughfare to the Gulf of Carpentaria, to which the direct way is thus laid open."

It would be vain now to speculate on the immense results to which these exploratory expeditions may lead; tending, as they do, to establish the accuracy of the prophetic vision that sees, in the present British settlements on the continent of Australia, the germs of a vast and opulent empire.

[COPY.]

Colonial Secretary's Office,

Sydney, 7th December, 1846.

His Excellency the Governor has been pleased to direct that the following despatches from Sir T. L. Mitchell, reporting the progress made by the expedition, under his command, in exploring the Overland Route to Port Essington, be published for general information.

By his Excellency's command,

E. DEAS THOMSON.

No. 1.

Camp at the head of the River Salvator, in long. 147° 25′ 40″ E.; lat. 24° 50′ 17″ S.

9th September, 1846.

Sir,—Before setting out on the last branch of my exploratory operations, I feel it my duty to report to your Excellency the progress made in that duty to this time, by the expedition sent into the interior under my command.

The heat was excessive, and water so very scarce in the channel of the River Bogan, that I was obliged to abandon that route; and it was only with great difficulty, and after considerable delay, that the party could be conducted to the River Darling. Throughout the month of January, Farenheit's thermometer stood frequently at 117°; in the shade was seldom below 100°; and I found, on a ride down the Bogan, that there was no water in its channel for forty miles below Nyingen. The intense heat killed all our kangaroo dogs, and most of the party were attacked with opthalmia; our draught oxen were also so much distressed (the loads having been also made heavier at Buree than I had intended) that some of them fell dead on the journey, and I was obliged to halt for two weeks at the ponds of Cannonba, between the River Macquarie and the Bogan. During that interval, some refreshing rain fell, after which I examined Duck Creek, but found no water in it; and Mr. Kennedy subsequently ascertained (for I had myself opthalmia) that we could only hope to reach the Darling by the marshes of the Macquarie.

On the 12th February, we left the ponds of Cannonba, and travelled along the left bank of the Macquarie, opening out a cart road along the western limits of the marshes through a country very favourable for cattle stations. We found the channel of the river continuous, in muddy ponds throughout the marshes; and I have to express my obligations to Mr. Kinghorne for the information he afforded me, and for sending with us an aboriginal native, who guided us beyond the region of reeds.

We made the junction of the Macquarie with the Darling in long. 147° 33′ E., lat. 30° 6′ 11″ S., but I found that a few miles higher (at the station of Mr. Parnell, jun.) there was a good ford across the River Darling (or Barwan, the aboriginal name, there in general use). I accordingly crossed the river at Mr. Parnell's station, and the superintendent sent with us two aboriginal natives, who guided us in a very straight direction, and over a fine open country, to the Narran Swamp, which we reached at twenty-six miles from the Darling. These guides would have gone further, had not the intense heat, the extreme weakness of our cattle, and the passage of the swamp occasioned delay. I there, however, received a despatch from Commissioner Mitchell, enclosing a map, and affording me much useful information respecting the rivers in the country before us. The Narran River terminates in the swamp; and in tracing that river upwards, or northward, we found it full of water, and increasing in size and importance as we ascended, until we came upon the Balonne, in long. 148° 25′ E., lat. 28° 35′ 38″ S. Along the banks of the Narran, the grass is of the very best description. *Panicum lævinode*, and *Anthistirium Australis* (barley grass and kangaroo grass of the colonists) growing on plains or in open forests, very available, in every respect, for cattle stations. But the seeds of the *Panicum lævinode* constitute the chief food of the natives, who bruise these seeds between stones and bake the dough into cakes. As I advanced, these natives fell back on the main river, where the assembled body received our party very kindly.

The banks of the Balonne Minor seem to be thickly peopled. The head of the tribe met us seven miles from it, and afforded me much assistance in finding a way for our carts amongst the numerous lagoons. Others guided us across to the Culgòa, which river we also crossed in long. 148° 21′ 25″ E., lat. 28° 31′ 19″ S. From that point I travelled to the Balonne, with the intention of proceeding northward along its right bank. That great river is there at its maximum, and is only inferior to the Murray in breadth and depth. Lower down it separates into various channels,—the first branch being the Culgòa, falling into the Darling about thirty miles above Fort Bourke,—the remainder, or Minor Balonne, again spreads its waters into the Narran, the

Bokhara, the Ballandoola, and the Birec; the latter three, I believe, again unite, and fall into the Darling forty or fifty miles above Fort Bourke. The Narran seems a wonderful provision of nature for the supply and retention of water in a dry and parched country. The division of the main river into others already mentioned is no less so—irrigating thus from one principal channel extensive regions of rich earth beyond the Darling; while the surplus, or overflow, instead of passing, as in common cases, to the sea, is received in the deep channel of the Narran, and thereby conducted to that extensive reservoir where, on rock or stiff clay, and under ever-verdant polygonum, it furnishes an inexhaustible supply for the support of animal life. Nor is this beautiful net work of rivers confined to that side of the Darling. The marsh of the Macquarie receives only ordinary floods to be retained in a somewhat similar manner to those in Narran Swamp. The great floods of that river overflow the fern plains to the westward above Mount Harris, fill the ponds of Cannonba and of Banargill, which then uniting carry a current into the Bogan, which river sends a branch called the Barrawarry northward into the country between it and the Darling, flowing parallel to the latter river at a distance of about seven miles. Below Mount Harris the Macquarie again overflows into Duck Creek (the "Marra" of the natives), which may be considered the channel, or a channel of that river in high floods. Cannonba and Duck Creek on one side seem therefore analogous on a smaller scale to the various branches of the Balonne on the other.

Tracing the Balonne upwards I found the country on its banks well covered with good grass; and we encountered only a small proportion of scrub. Some of the reaches were so broad, deep, and extensive, that I could not suppose this river contained only the waters of the Condamine, and I therefore expected to meet with some tributary from the north-west. On arriving at a natural bridge of rock, in long. 148° 46′ 45″ E., lat. 28° 2′ S., I selected a position commanding access to the other bank, with the intention of forming there a depôt for the rest and refreshment of the bullocks, then unable to go further; while I, with a smaller party, examined the country to the north-west. I first made a reconnoissance north-west by compass, and found in that direction, at the end of thirty miles, a poor, sandy, unpromising country. Returning to the depôt camp, I proceeded on the 23rd of April up the river, with a party of ten men and the light carts, leaving the remainder in charge of Mr. Kennedy, at St. George's Bridge, with instructions to follow me in one month. I did not ascertain satisfactorily the point of junction of the Condamine with the Balonne, as what I saw in long. 148° 52′ N., lat. 27° 47′ 57″ S., might have been only an ana-branch; neither did I see that of the "Cogoon," a small tributary from the north-west, which we followed up through a beautiful country, until it led me amongst hills where I could, by trigonometrical observations and back angles, survey more extensively, and be sure of the longitude. From a tree on the Balonne, in long. 149° E., lat. 27° 20′ S., open downs were discovered to the eastward, extending to the horizon, and in all probability watered by the Condamine. From Mount Abundance, in long. 148° 40′ E., lat., 26° 39′ 30″ S., I again perceived that the fine open country in which I then was, extended eastward as far as the eye or telescope could reach, and that it was watered by a river from the northward, distinctly marked by the smoke of natives' fires. That river was still the "Balonne" according to the natives, and from Mount Bindango I was able to intersect the summits of the isolated range in the centre of that splendid region, placing it in long. about 149° 2′ E., and in lat. 26° 23′ 32″ S. To mark the epoch of this discovery, I named it on my map the Fitz Roy Downs, and the range in the midst of them I distinguish as the Grafton Range; and should your Excellency's name not be Fitz Roy, I shall be content to be able to pay such a mark of respect to the late Governor of New Zealand.

The little river "Cogoon," which I had followed up, contained water in ponds almost to its sources, which arise between the three isolated mountains of Abundance, Bindyego, and Bindango —the latter being connected by a low neck of grassy downs, with small knolls of trap rock, to one of the masses of coast range in which the Balonne appeared to have its source. Northward from Bindango other waters fall to the north-west, and I perceived in the remote distance one gap in a tabular sort of rocky country, through which I hoped the water-course would lead; but I was disappointed in following it down, for this promising little river (the "Amby" of the natives) turned to the southward of west, and I found in the gap only a convenient pass for our carts to the interior country; it was, however, a very remarkable opening, in which were several conical hills, on which grew many strange shrubs, and one of the hills consisted of basalt. I named this St. George's Pass, in hope it may yet become a point on an important line of route.

The country through which this pass led consisted in general of sandstone, where the tops of cliffs were distinguishable from the northward by the luxuriant grass upon them—a rather unusual feature in a sandstone country. Southward, and back from the pass, much good open forest land appeared around as the prevailing characteristic. There is, however, a tribe of natives bent on mischief in that neighbourhood.

In the country beyond, I found another channel running north-west, and in it one pond, where I wished to encamp; but on my ride forward next day I discovered that my party was upon the only water the little river contained, and that even its channel disappeared in a rich and extensive grassy flat. Just then some smoke arose in the woods before us, which revived my hopes of finding water; and on renewing my search I came upon a river fully as large as the Darling, following to the south-west. Subsequent extensive reconnoissances made thirty miles to the westward and eastward, convinced me that the course of this river (the "Maranoa" of the natives) was not more favourable for the chief object of our journey than it had at first appeared. I found, indeed, to the westward and northward of the Sandstone Ranges, a well diversified country, with abundance of grass, some water, and finely shaped hills in groups, and also detached cones. But the river, leaving that lower country, forced its way amongst rocky cliffs, where its course was traceable by the open ground along its banks to be steadily south-west, and receiving, of course, the river "Amby," which had turned also in the same direction.

Mr. Kennedy, with the main body of the party, joined me on this river on the 1st of June, and the very sandy nature of the country before us, and the weakness of our draught oxen, determined me again to proceed in advance with a small party, relying chiefly on the horses; but this time I endeavoured to carry with me sufficient provisions to preclude the necessity for the party to be left at the depôt following me further; I determined to trace the river upwards, keeping the right bank, that I might fall in with and follow up any tributary from the north-west; from various elevations, within thirty miles of the depôt camp, I had intersected many summits of lofty masses to the eastward, and also those of a line of cones, the general direction of which ran nearly westward, and from these I could extend my survey beyond.

I left the depôt camp on the 4th June, taking with me Mr. Stephenson, ten men, all the horses, three light carts, a dray, and the best team of bullocks, with four months' provisions, leaving with Mr. Kennedy sixteen men, all the bullocks, and the remainder of the drays and provisions. I found that two tributaries joined the Maranoa from the west, but they arose in subordinate sandstone ridges, and contained little water; then, in seeking again the main channel, I found it dry and full of sand; water being more readily found in the sandstone gullies, which then enclosed the river, than in the main channel. I then set out on an extensive reconnoissance to the northward, and ascending Mount Owen (one of the cones in the range already mentioned), I perceived that the main channel of the Maranoa came through this range from mountains beyond it. The most lofty part of these mountains was remarkable for its extreme flatness, and having since intersected its salients from many points in my route so as to determine its true place, I have named it Buckland's Table Land. Beyond Mount Owen, I fell in with another river falling north-west, in the midst of sandstone cliffs and gullies, but I soon found that it turned south-west, leading through fine open plains into a lower interior country.

Continuing my ride north-west, while my party were still refreshing the horses in a grassy gully overlooking the Maranoa, I again found a chain of volcanic summits connected with the mass of table land, which I named (finding none of the aborigines there) Hope's Table Land. Between it and the still higher range towards the coast, lay a very broken sandstone country, which was difficult to pass through with carts; but when I had at length discovered, beyond Hope's Table Land, the head of another promising river falling to the north-west, we soon found a way, through which my indefatigable party led the carts and bullock team without the least damage. Mount P. P. King, a pointed volcanic cone, long. 147° 37′ 40″ E., lat. 25° 9′ 10″, is near the head of that river, which we followed down until it turned, as all the others had done, to the south-west, and I was again obliged to halt and take a long ride to the northward, where another chain of summits extended westward, nearly under the 25th parallel of latitude. Beyond that range, whose summits are all of trap-rock, I found deep sandstone gullies; and in following down one of these, I reached an extensive grassy valley, which terminated on a reedy lake in a more open country. The lake was supplied by springs, arising in a swamp at the gorge of the valley, which supported a flowing stream of the purest water. This stream spread into the extensive reedy lake, and, to my surprise, was absorbed by it, at least so as to escape through some subterraneous outlet, for the channel of the river in which the lake terminated was dry. The country is adorned by hills of the most romantic form, presenting outlines which surpass in picturesque beauty the fairest creations of the painter. Several pyramids mark the spot where the springs were first discovered (and whence I now write). Lower down, appear over the woods, isolated rocks, resembling ruined castles, temples, and gothic cathedrals. Others have apertures through them, and the trees being also very varied and graceful in form and rich in colour, contribute so much to the beauty of the scenery, that I have been induced to distinguish the river and lake by the name of a painter. Returning to the party, we soon brought the carts and dray down the sandstone cliffs to the banks of the Salvator, and pursued that river downwards until I discovered, which was soon obvious, that its course turned to the eastward of north; consequently that we were upon a river falling to the eastern coast.

We lost two days in vainly endeavouring to pass to the westward, through dense brigalow scrub; but on a ride which I next took north-westward, I was more successful, for after forcing my way through ten miles of scrub, I came to what seemed to me the finest region on earth: plains and downs of rich black mould, on which grew in profusion the *panicum lævinode* grass, and which were finely interspersed with lines of wood which grew in the hollows, and marked the courses of streams; columns of smoke showed that the country was too good to be left uninhabited; and, in fact, on approaching the nearest river channel, I found it full of water. This river I named the Claude, in honour of the painter of quiet pastoral scenery, and to the downs and plains so favourable to flocks and herds, I gave the name of the Mantuan Downs and Plains. I returned to the party on the Salvator, crossed that river with it in lat. 24° 31′ 47″ S., and conducted it, cutting our way through ten miles of scrub, to the banks of the Claude. These two rivers join at a considerable distance lower down, and form the Negoa—a river which, according to the natives, pursues a north-east course to the sea, and therefore, probably, has its estuary on the shores of Broad Sound or its vicinity.

We were obliged to make a bridge for the passage of our carts across the Claude, and then we crossed a plain, upon which grass grew almost as thickly as it grew in Australia Felix; then another stream, also full of water, was crossed, and we ascended undulating downs on which fragments of fossil wood were abundant in a very rich soil. Beyond these (the Mantuan Downs) a range of broken summits appeared, and was certainly ornamental, but which we found to be only the upper part of a very intricate and difficult sandstone country, wherein the beds of the gullies were at a much lower level than the Downs and Plains. I endeavoured to penetrate to the westward of these, but found the country on that side quite impervious, and we next descended by an open gently declining valley to the head of a creek falling north-west; this creek soon took us into the heart of the sandstone gullies, so that we could only proceed by keeping its sandy bed. Unwilling to continue such distressing work (for the cattle especially), as it soon became evident that this too belonged to the basin of the Negoa, I went up a valley coming from the west, and followed it until I could reach the crest of the range, which was possible only by climbing with hands and feet. From it I saw to the westward rocky ravines, as impassable as those on the River Grose, in the mountains west of Sydney; I found it, therefore, most expedient to continue down Balmy Creek (so called from the very fragrant shrubs found there), until it reached a more open country, through which we might pass to the north-west. Mr. Stephenson next day saw from a rocky height an open country to the north-west, and I lost no time in extricating the party from the bed of Balmy Creek. We found a very favourable outlet from that difficult country by a pass, in the gorge of which stood a rock so much resembling a tower, that at first sight few would believe it the work of nature only. The glen we then entered (named, from the tower at its entrance, Glen Turret) was very extensive, contained abundance of good grass, and was bounded on the east and west by very broken top ranges; to the northward, the view was over a more distant country.

Ascending the most northerly summit of the range on the west, (and which I named Mount Mudge,) I perceived the rise of a river in some ravines falling north-west, and that the very lowest part of the whole country lay in prolongation of its course. I could also distinctly trace a connexion between the Mudge Range and other mountain masses to the eastward, which connecting feature separated the basin of the Negoa from that of the river, which I hoped would lead north-west. My first camp on the Belyando was in long. 147° 17′ E., lat. 24° S. The course of the river continued north-west to so great a distance, that when it at length turned to the north and north-east, we had traced it across two parallels of latitude; indeed to lat. 21° 30′ S., or two degrees within the tropics. Your Excellency may imagine with what disappointment I then discovered that this river which has brought us so far, instead of leading to the Gulf of Carpentaria, was no other than that which Mr. Leichardt had called "the Cape," a river from the west.

I then ascertained that we were still on the seaward side of the division of the interior waters, or rather that the Eastern Coast Range, hitherto supposed to extend from Wilson's Promontory to Cape York, is only imaginary; while the estuaries of two important rivers, affording easy access from the eastern coast to the rich plains of the interior, are realities which have remained undiscovered. That there was no feature deserving the name of a Coast Range to the westward of the Belyando was but too evident from the absence of any tributaries of importance; the sandy channels of water-courses from that quarter having had no effect in changing the course or character of the river, which last was very peculiar and remarkable, especially in its habit of spreading into several chains of ponds, surrounded by brigalow scrub, apparently a provision of nature for the preservation of surface water, resembling the net work of rivers in the south. On the banks of one of these tributaries we found some trees seen by us no where else. One was a true fig tree, having small leaves, and with the fruit fully developed and ripening; the water abounded with the harlequin fish, identical with those in the Maranoa.

I lost no time in retracing my steps back to this camp, with the intention of renewing my search for the River Carpentaria from three remarkable points of the range just behind; in returning, I was able to perfect our track as a line of road cutting off circuitous parts, and avoiding the difficult passage in the bed of Balmy Creek, and other obstacles, so that a tandem might now be driven to the furthest point marked by our wheels. I ought to mention here that I have found the Syphon barometer by Mr. Burton of Paris, and recommended to me by Colonel Mudge, of great utility in these researches, affording the only means of judging of the relative height of the various ranges; thus I ascertained, when far up the Balonne, that we were but little higher than the bed of the Darling; that the Narran has scarcely any inclination at all; that the Belyando at the lowest point attained by me was not 600 feet above the sea; and, in the present case, that the range under the parallel of 25° S., is the highest we have crossed extending into the western interior; our route across it is in long. 147° 23′ E., where the mean height above the sea exceeds

2,000 feet; yet this we were only made aware of by the extreme cold, or by the barometer, for there is nothing in the appearance of the country to lead to such conclusion; on almost every clear night, Farenheit's thermometer fell to 9°, and occasionally at 4 A.M. the mercury was as low as 7°.

The height of this spinal range, throwing off to the south-west all rivers south of it, and the course of the Belyando northward, indicating an impulse so far in that direction, reduce the probability that the waters falling from that portion of it, still further westward, form a river running to the Gulf almost to a certainty, while the field of exploration has been so much narrowed, that I am resolved to make another attempt to solve the question; therefore, although my draught animals can be driven no further without having some time to rest, and my stock of provisions is nearly exhausted, I intend to set out to-morrow morning on this interesting excursion, with two men and Yuranigh, an aboriginal native, who came with me from Buree. I leave no more horses fit for work when I take two laden with provisions.

Our route has been measured by Mr. Kennedy, with the chain, from Cannonba camp to his present position on the Maranoa, and I have extended a trigonometrical survey beyond Mount Mudge to some hills within the tropic. I have numbered these camps, where the country was really good, and marked them by Roman numerals, deeply cut in trees, commencing from the Culgòa northward; the lowest on the Belyando being LXIX; this, whence I write, XLIV. By this means I hope our survey will be found practically useful in the future occupation of the country.

Whatever may be the result of the further exploration contemplated, I have the satisfaction to be able to assure your Excellency that this party has opened a good cart road through well watered pastoral regions of greater extent than all those at present occupied by the squatters; and, strange as it may seem to persons but [little] acquainted with the interior of this country, that since the exploring party crossed the Darling, it has never suffered any inconvenience from heat or want of water. I have found in Mr. Kennedy a zealous assistant. Mr. Stephenson has ably performed his duties, especially as surgeon; and the conduct of all the men deserves my approbation; but that especially of the party with me has been admirable.

We have had no collision with the aborigines, although parties of them on different occasions visited my party at the camp during my absence; very significantly declared, brandishing their spears or clubs, that the country was theirs, and making signs to my men to quit and follow me. On such occasions the firmness and forbearance of my party have been such as to discourage any attempts of further annoyance.

I have the honour to be,
Sir,
Your Excellency's most obedient, humble servant,
T. L. Mitchell,
Surveyor-General.

To His Excellency the Governor
of New South Wales.

No. 2.

Camp on the River Balonne, in long. 148° 46′ 45″ E., *lat.* 28° 2′ S.

9th November, 1846.

Sir,—The three remarkable summits of high land to which I alluded in my last despatch, are three volcanic cones, which I named Mounts Pluto, Hutton, and Playfair. These form an obtuse angled triangle, and the longest side being towards the west, I hoped to find in the neighbourhood a branch of high land extending north-west, forming a division of the waters, the discovery of which I found necessary before I could hope to discover rivers running in that direction. I take leave to add, that this was the chief object of the present journey, as it was of my journey in 1831. No person had seen that interior country, nor the waters properly belonging to the basin of Carpentaria; I have now the satisfaction to inform your Excellency that the result has exceeded my most sanguine expectations.

I crossed a range of clay ironstone which extends northward from Mount Playfair; it is covered with dense scrubs, and in it I found sources of the Warrego, a river flowing south-west. On the western side I followed down the head of a river falling north-west, which, from its magnitude and the fine forest country along its banks, promised well; but the bed was full of sand and quite dry, and after pursuing its course a whole day, I found it to turn towards the south, and at length even to the east. Passing the night by this river (without water), I left it, calling at the Nive, and hastened back next morning to where I had seen a gap in a westerly range, connected with that to the northward, and arrived by sun-set near the gap, in a valley, where I found lagoons of water and green flats in the midst of brigalow scrub. This was in long. 146° 42′ 25″ E., lat. 24° 50′ 35″ S.

On ascending the range early next morning, I saw open dawns and plains with a line of river in the midst, the whole extending to the N. N. W. as far as the horizon. Following down the little stream from the valley in which I had passed the night, I soon reached the open country, and during ten successive days I pursued the course of that river through the same sort of country, each day as far as my horse could carry me, and in the same direction, again approaching the Tropic of Capricorn. In some parts the river formed splendid reaches, as broad and important as the River Murray; in others, it spread into four or five channels, some of them several miles apart; but the whole country is better watered than any other portion of Australia I have seen, by numerous tributaries arising in the Downs. The soil consists of rich clay, and the hollows give birth to water-courses, in most of which water was abundant. I found, at length, that I might travel in any direction and find water at hand, without having to seek the river, except when I wished to ascertain its general course and observe its character. The grass consists of panicum, and several new sorts, one of which springs green from the old stem. The plains were verdant; indeed, the luxuriant pasturage surpassed in quality, as it did in extent, anything of the kind I had ever seen. The myal tree and salt bush *(acacia pendula* and *salsolæ)*, so essential to a good run, are also there.

New birds and new plants marked this out as an essentially different region from any I had previously explored; and although I could not follow the river throughout its long course at that advanced season, I was convinced that its estuary was in the Gulf of Carpentaria: at all events, the country is open and well watered for a direct route thereto. That the river is the most important of Australia, increasing as it does by successive tributaries, and not a mere product of distant ranges, admits of no dispute; and the downs and plains of Central Australia, through which it flows, seem sufficient to supply the whole world with animal food. The natives are few and inoffensive. I happened to surprise one tribe at a lagoon, who did not seem to be aware that such strangers were in that country: our number being so small, they seemed inclined to follow us. I crossed the river at the lowest point I reached, in a great southern bend, in long. 144° 34′ E., lat. 24° 14′ S., and from rising ground beyond the left bank I could trace its downward course far to the northward. I saw no callitris (pine of the colonists) in all that country; but a range, showing sandstone cliffs, appeared to the southward, in long. about 145° E., lat. 24° 30′ S. The country to the northward of the river is, upon the whole, the best; yet in riding ninety miles due east from where I crossed the southern bend, I found plenty of water, and excellent grass; a red gravel there approaches the river, throwing it off to the northward; ranges, extending N. N. W., were occasionally visible from the country to the northward.

The discovery of this river, and the country through which it flows, was more gratifying to me, after having been disappointed in the courses of so many others. The Cogoon, the Maranoa, the Warrego, the Salvator, the Claude, the Belyando, and the Nive, are nevertheless important rivers; and a thorough investigation of the mountain ranges in which they originate, will enable me, I trust, to lay before your Excellency such a map of those parts of Australia as may greatly facilitate the immediate and permanent occupation of the country, and the extension through it of a thoroughfare to the Gulf of Carpentaria, to which the direct way is thus laid open. With a deep sense of gratitude to the Almighty, and loyalty to my Gracious Sovereign, I named the river watering the best portion of the largest island in the world, the Victoria, and hastened back to my party on the Salvator. I reached that camp on the 8th ultimo, having been absent about a month, found the cattle and horses refreshed, and in condition for pursuing our route homewards. In nine days we reached the depôt camp, where I left Mr. Kennedy with the heavy drays and cattle, and received the agreeable intelligence that, during the long period in which that party had been stationary, the natives had given no trouble; that the men were all well, and the old cattle in good condition. I had straightened the route in returning, so that it is now a most convenient road, well watered by permanent supplies.

Mr. Kennedy's enquiries amongst the natives led to a very important discovery which we have since made, namely, that the Maranoa turns south about thirty miles below where he had his camp, and joins the Balonne only a day's journey above the spot whence I write. We have explored and surveyed the Maranoa downwards, thus avoiding, in travelling by it, parts of the old route where we feared that ponds formerly small would be now dried up. We have also discovered on the banks of this river much rich pastoral land, and about 26° 30′ S. open downs resembling on a smaller scale those on the Victoria; and whether the vast extent of intervening country may not admit of a direct passage across from these to the central downs, without crossing the Plutonic Ranges, remains to be ascertained during a season when the water-holes are better filled. Into that country the channels of the Warrego and Nive turned when I had to leave them; much native smoke arose there; and I regret that I cannot now explore the course of these two rivers.

The survey of the Maranoa forms a line permanently supplied with water and grass from this camp to the farthest limits I have reached; and directly in prolongation of my road across the Hawkesbury and Hunter, intended originally to have been made to Liverpool Plains. One link only is wanting to complete the chain; it is from this natural bridge on the Balonne to the furthest point reached by me in my journey of 1831, a distance of about seventy miles; and I hope to find the country in that direction passable for this party in its way homewards.

I have the honor to be, Sir,
Your Excellency's most obedient, humble servant,
T. L. Mitchell,
Surveyor-General.

To his Excellency the Governor
of New South Wales.

Art. XVII. *Account of the Exploring Expedition from South Australia into the interior of New Holland.* By Captain Sturt.

(From the South Australian Gazette.)

The recent publication of Sir Thomas Mitchell's despatches, renders an account of the expedition of Captain Sturt of more interest, perhaps, at this moment, than it would have been at any previous time. The strong contrast these two journeys exhibit—the smooth and uninterrupted progress of the one, through a smiling country, and the painful efforts of the other; in a trackless and inhospitable desert; the comparatively temperate region Sir Thomas Mitchell traversed, and the burning fiery tracts over which Captain Sturt wandered; the constant prosperity of the first, in the abundance of water, that was everywhere found, and the paralysing detention of the other, at one point, for more than six months, from the total failure of that vital element on the widely-spread desert into which he had advanced; the pleasurable nature of the service to the Surveyor-General of New South Wales, and its ceaseless anxiety to the Explorer of the Murray—form, we think, points of difference as opposite as black from white, or light from darkness. It is with feelings of pleasure, therefore, that in so early a number of our paper for the year 1847, we are enabled to lay before our readers such a narrative of Captain Sturt's Expedition as, we trust, will satisfy the public mind, since it has been furnished by

Captain Sturt himself, with the ready concurrence of his Excellency the Governor :—

No one, who was present on the occasion, (says Capt. Sturt), will forget the breakfast given to me and to my companions, on the 10th of August, 1844—the day on which the main body of the expedition destined to attempt the central penetration of the Continent, left Adelaide for the interior. I did not take my final departure until the 15th of the month, when, having been joined by Mr. John Browne, who accompanied me as medical officer, I proceeded with him and my assistant, Mr. Poole, to Gawler Town. Before I commence any detail of our proceedings, however, it may be necessary for me to state, for the information of my readers, that my instructions directed me to gain the meridian of Mount Arden, or that of 138°, with a view to determine whether there was any chain of mountains connected with the high lands seen by Mr. Eyre to the westward of Lake Torrens, and running into the interior from S.W. to N.E. I was ordered to push my way to the westward, and to make the south the constant base of my operations. I was prohibited from descending to the north coast; but it was left optional with me to fall back on Moreton Bay, if I should be forced to the eastward. Whether I performed the task thus assigned to me, or wavered in the accomplishment of it; whether I fell short of my duty, or yielded only to difficulties against which human efforts are unavailing, the world will be enabled to judge from the perusal of the brief memoranda I have here thrown together. That I found no fine country is to be regretted; however, I was not sent to find a fine country, but to solve a geographical problem. My own desire and ambition were to extend my investigations over the province of South Australia, as far as my instructions would permit, and to strike the centre of the Continent; by the first, to benefit the province to which I am attached; and by the last, to do that which any man would be justified in venturing his life to perform. I can only say, that when I determined on turning homewards, with my mind perhaps depressed by latent malady and constant disappointment, and my strength weakened by exposure and want, it appeared to me that I had done all that man could have done. Now, under the influence of restored health, I feel that I did far too little.

It was wisely left to me by the Secretary of State to pursue such course into the interior as I deemed best. A north course from Mount Arden was pointed out to me; but the basin of Lake Torrens presented an insurmountable obstacle in that direction. I had given the subject the fullest consideration, and from all I gathered from the natives of the Murray, I was led to hope that the Williorara, or Laidley's Ponds, was a hill stream, and that I should find an easier passage into the interior by running up the Darling and tracing the Williorara upwards, than at any other point, and on that I determined. Accordingly, on the 19th of August, the expedition mustered at Moorundee, at which place Mr. Eyre had been anxiously expecting our arrival. Knowing the great importance of native guides, he had been at infinite pains to secure for us the services of two of the most influential men on the river—Nadbuck and Camboli.

The expedition left Moorundee on the 21st of August, under the charge of Mr. Poole, and was followed by myself and Mr. Eyre, with Tenbury, the native constable at Moorundee, on the evening of Saturday, the 24th. The nights, at this season of the year, in the valley of the Murray, were cold and frosty, but the noon-day temperature was delightful. On Sunday, the 25th, we passed the Great Bend of the Murray, and I found myself treading the ground over which, in 1839, I had so anxiously ridden in search of a lost companion, who perished in the lonely brushes between the river and the hills. I need not say that I allude to the fate of Mr. Bryan, nor would I re-kindle vain regrets in the breasts of those who most felt his loss; but it will be satisfactory to them to think that he never fell into the hands of the natives; for Tenbury, to whom any event of the kind would most assuredly have been communicated, and who perfectly recollects Colonel Gawler's visit to the Great Bend, assured me that neither had the poor lad been seen by any of the natives either alive or dead. It is more than probable, therefore, that his remains found as undisturbed a resting place as if they had been deposited in the grave. Assuredly, if we may presume to hope for the destiny of mortals from what we have known of them on earth, my young and amiable friend is now happy with his Saviour and his God.

I have observed that Tenbury, the native constable of Moorundee, accompanied Mr. Eyre and myself when we left it. This fine and intelligent man amused us with sundry anecdotes, as we rode along, and told us that, when a boy, he remembered a flood in the Murray, the water of which reached up to and covered the higher levels on which we were journeying. He stated that no rain fell, and that the weather had been unusually fine. That the blacks did not know whence the waters came; but that they same from a great distance. I was led to infer that this event, from the suddenness of it, was independent of the ordinary and yearly floods that take place in the Murray, and that it was the effect of distant and heavy rains. As regards the periodical rise and fall of the Murray, that is, I think, regulated by the melting of snows on the Australian Alps; the river commencing to rise in July, and attaining its maximum height, about 16 feet above its ordinary level, in January. As it gradually rises, it fills the back lagoons and creeks, replenishing them with fish of every kind, and resuscitating myriads of cray-fish, that have lain dormant under the flats. The natives of the Murray look to this periodical overflow with as much anxiety as did ever the Egyptians to the overflow of the Nile; to the first as to the last it is the bountiful provision of a bountiful Providence.

We overtook Mr. Poole at noon of August the 26th, and on the 31st reached Lake Bonney, at which place we remained until the 3rd September, on which day we resumed our journey up the river; and on the 7th encamped at the junction of the Rufus, having that little channel upon our left, and Lake Victoria in our rear. It was here that the blacks received that punishment which their unprovoked aggression, in this instance, brought upon them, by the accidental combination of circumstances which brought the police, expressly ordered out for that purpose, to the scene of action, where Mr. Robinson's party had had three days hard fighting. The natives suddenly found themselves between two fires, and being wholly routed, lost upwards of 40 men, whose bones now rest under a large mound of earth that was pointed out to me by several of the natives, who were made orphans by that severe chastisement, but who do not seem to cherish any feelings of revenge towards the people who had made them fatherless. From this point, to the regret of all the party, Mr. Eyre returned to Moorundee. I parted with him with increased regret, not only as a friend for whom I had the sincerest esteem, but under a deep sense of all we owed to him for his disinterested exertions, and the generous liberality with which he supplied us out of his own stores, with everything that he thought would be useful to us. I was detained in the neighbourhood of the Lake for some days, awaiting the return of Mr. Browne from a journey on which I had sent him with my stockman, Flood, and a native, Putcanti, the same who was wounded and captured at the affair on the Rufus, and who, handcuffed as he was, threw himself from the cliffs at the Great Bend into the river in attempting to make his escape: a bold deed, that none but a savage would have ventured to do. The subsequent kind treatment he received had reconciled him to those whom he once regarded as his enemies, and he now acted as guide to Mr. Browne, who I despatched to the eastward to examine the Ana-branch of the Darling, and to ascertain how far the back waters of the Murray extended up it. During Mr. Browne's absence we had heavy rain for two days. He returned on the 13th; but we did not leave Lake Victoria until the 15th, when we resumed our journey; and on the 18th, turned from the Murray northwards; the junction of the Ana-branch, or ancient channel, of the Darling with that River, being in lat. 34° 4′ 30″ S., and in long. 141° 53′ E. We had found, as I had anticipated, an abundance of grass on the flats of the Murray, although we had to keep wide of the stream, in consequence of the flooded state of the lagoons. We crossed the Ana-branch fifteen miles above its junction with the Murray, and then passing an east course traversed barren sandy plains, separated by long lines of low and dreary scrub, chiefly composed of cypress, eucalyptus dumosa, and fusani. As the sun was setting we arrived at the Darling. His level beam illuminated the flats, which, covered with young grass and reeds, had the most vivid green. There was scarcely any water in the channel of the Darling; but the grass existed to its edgedown banks, as regular in their slope as any fortification. Graceful, but not large trees, drooped over them, like willows, and the scene was admired by the whole party.

We had been informed by the natives of Lake Victoria, of the massacre of a party of overlanders, at the lagoons of the Darling, near Williorara; and this report was confirmed by a tribe of thieves, whom we found at the head of the Ana-branch. I felt it necessary, therefore, to take additional precautions in my advance up the river, and made such dispositions as to prevent the possibility of surprise. In consequence of this rumour, however, I was anxious to hurry on, but the nature of the ground over which we had to travel, necessarily impeded my progress. The flats in the immediate precincts of the river still wore a beautiful and verdant appearance, each succeeding one looking still more like a grassy lawn; but the outer flats were perfectly bare, and thinly scattered with box trees. The soil was rotten, blistered, and full of holes, so numerous and so close together, that it was impossible to avoid them; so that the poor animals were shaken to pieces by the heavy fall of the drays into the deep fissures traversing the flats, and the labour was so great that our journeys were necessarily short. These flats are more extensive than those of the Murray; but whether, at any time, they wear the same luxuriant appearance as those nearer the stream, I will not take on myself to say; they were uniformly bounded by sandy desert, portions of which were covered with low and stunted bush. As I have already observed, when we first came on the Darling, there was scarcely any water in it; and its current was so very feeble that it could hardly be said to maintain one. Some few days after our arrival on its banks, Mr. Browne and I were looking at it, where its breadth was so small that we could almost have jumped across it. We observed, however, on this occasion, that the waters seemed to be propelled by some back impulse. There was grass and bark floating on it, and other forerunners of an approaching fresh, though neither did I or Mr. Browne anticipate the result. That evening the Darling scarcely deserved the name of a stream. On the following morning, it was an impetuous and headstrong river, foaming along and carrying everything away before it. In four days, it had risen 16 feet above its previous level; it then rose more gradually. But, whence came this mass of waters? Muddy and sudden, it appeared to me that they might be thrown into the river through the medium of the Williorara, and that this flood might have been caused by rains in the hills, towards which we were approaching; for I could hardly think that they came from the basins of the Darling, from which we were, at least, 500 miles distant. Be that as it may, the river continued to rise, though not with the same rapidity. On the 8th of October, we had advanced to within 16 miles of Williorara, but looked out in vain for the hills Sir Thomas Mitchell had seen in the neighbourhood. The river had risen bank-high, and as we advanced up it, we observed that the lagoons had been successively filled, and that some of the flats were under water. On the 9th, about 2 p.m., Mr. Poole saw a low range, with two cones, bearing N.W. by N., but his view of them was very indistinct. There was also a line of gum trees, extending to the N. W., and a solitary signal smoke, rising in a dark column above the horizon of that depressed interior, bore due west of him. Our intercourse with the natives of the Darling was uninterrupted and friendly. We saw one tribe of remarkably handsome men; and generally, I think, the natives of the Darling are so. Whenever we came in the territory of a numerous tribe, our guide and friend, Nadbuck, was peculiarly anxious that we should not take them by surprise, but approach with the same precaution and deliberation with which they approach each other.

On the 10th, we started early on a course a little to the westward of north, which we changed to a due north course, on gaining the summits of a sandy table-land, from which we had a more distinct view of the range, now bearing N. 10° E. by compass, but they were still too distant for us to determine their character. About 2 p.m. we descended from this higher ground to a low flat of polygonum, growing on a cold whitish clay without a blade of grass upon it, and almost immediately afterwards found ourselves on the banks of the Williorara. A strong current was running into it from the river, and I saw at once, that instead of being a mountain stream, it was merely a back-water. The floods, therefore, which had swollen the Darling, evidently came from some more distant point. We were obliged to turn back to the river for feed for the cattle, and ultimately encamped near the mouth of the Williorara, Sir Thomas Mitchell's last camp on the Darling bearing about N. 22° E , distant 2¾ miles. The reader will judge our disappointment on finding our hopes thus annihilated of being able to make our way into the hilly country. So far from the Williorara affording any facility, we were now informed by the natives that it was merely a channel of communication between the river and the Lakes Cawndilla and Menandiche, the former of which being to the south-west of us, we were in a bight. The reports of the natives of the distant interior was most discouraging. They, one and all, seemed to have an absolute dread of it ; they said there was neither water or grass there; that we should find no wood to make a fire; that the rocks would tumble upon us, and that we should all die.

The course of the Darling, however, from this point, in long. 142° 26′, and lat. 32° 26′, following it upwards was nearly N.E. As such a course would necessarily take me out of that in which I was desirous of going, I at once determined, notwithstanding these discouraging reports, to strike for the hills as soon as I should have ascertained something more of the nature of the country between us and them. On the 11th, I sent Mr. Poole to the range (which I no longer doubted being the southern extremity of Scrope's Range) with Mr. Stuart and a native of the place. We had had some warm days and hot winds as we came up the Darling, and had entirely lost the frosty mornings that used to brace us for the mid-day sun. But on our arrival at Williorara, we had some cold weather. The boiling point was 112. The thermometer stood at 66—the wind at S.W.—and with this a light rain with some thunder. I was now anxious to move the camp out of the corner into which we had been drawn; and with a view to ascertain whether there was any feed for the cattle near Cawndilla Lake, and how far the back waters of the Darling had passed up the Williorara, I sent Mr. Browne on a reconnoissance with Nadbuck on the morning of the 12th, who returned in the afternoon with information that the waters had not yet reached the basin, and that there was a sufficiency of grass all round it. Mr. Poole did not return to the camp until the 15th, there having been a good deal of light rain during his absence. He reported to me that the hills were about 28 miles distant, and that they extended to the north—that from their summit he observed numerous ranges to the N.W. as a medium point, with a large body of water, amidst which they rose like islands; but in this particular Mr. Poole had been deceived, as many a one has been before him, by the mirage. He further informed me, that the country intervening between him and the ranges was flat, and to appearance grassy, but that he could not see anything like a river on it. On the 16th we commenced the measurement of a base line to connect the different hills with the river. Mr. Browne on the same day swam the river with a native lad, Topar, who, as a boy, had witnessed the unhappy affair between Sir Thomas Mitchell and the natives in 1836, and who took him to the last camp of that officer on the Darling, which bore and was distant from our camp as I have stated. The position did credit to Sir Thomas Mitchell's military skill. On the 17th, I moved the party over the sand hills, along which we were measuring; crossed the head of Cawndilla just as the floods were entering it, and encamped again on some rising sandy ground forming the right bank of the Williorara. We were at this time attended by about 60 natives, who behaved very well, although, on our first arrival, the remembrance of former injuries aroused angry feelings. Our friend Nadbuck, however, soon pacified them, and our kindness to their women and children secured their good offices whenever we required them. One of the tribe, however, stole one of our flags from its station on the sand hill. As we had treated the natives with great kindness, we showed much displeasure at this robbery, and intimated to them that unless the flag was returned they should have nothing more from us. The consequence was that the flag was brought back, and much good was the result of this decision on our parts. I now determined on going myself, personally, to examine the country reported by Mr. Poole. Extreme heat had succeeded the cold rain we had had, and the thermometer now ranged between 100 and 113 in the shade—nearly double what it had been a few days before. On the 21st I left the camp with Mr. Browne, two men, and Topar, the same native I have already mentioned. Before I take a final leave of the Darling, however, which we must now be considered to have done, I would observe that I was not the first who had gained the banks of the Williorara, my worthy friend Mr. Eyre having been there before me, although unconscious of the fact. Nadbuck, however, who accompanied him, showed us the tracks of his horses, and told us that the channel was then dry.

The day preceding that of our departure from the camp was one of most terrific heat, but the succeeding morning proved cool and agreeable. At a quarter of a mile from the camp, we crossed the little ridge which separates the Lakes of Cawndilla and Menandiche, and descended into the flats of the latter, whence we soon rose to plains of great extent, partly intersected by brush, but for the most part open. These we crossed on a course of 157° to the west of south. Their soil was a mixture of red sand and clay; nor were they in their character and productions unlike the plains of Adelaide, there being no deficiency of grass upon them, although salsolaceous plants were mixed with it. The trees were low, and consisted of a new casuarina and a new species of capparis, a fine specimen of which I had previously found in a scrub near Oxley's Table-land. At about nine miles, we changed our course to 135° to the W. of S., and continued upon it for the remainder of the day. The further we advanced, the worse the country became, covered with atriplex and rhagodia, and the plains had large patches of bare red ground, the surfaces of which were baked and dry. At twenty-six miles, we ascended a sand-hill, from which we descended to and crossed a creek, with a dry and gravelly bed, coming from the hills, and apparently falling into the low country to the westward. After crossing the creek, we still held our course of 135° to the W. of S. for a bluff in the range, towards which we were rapidly approaching, and at 4½ miles were conducted by our guide to a well, under a gum tree. This we were obliged to clean out for a scanty supply of water, the bed of the creek being still gravel and sand with all the appearance of a mountain torrent. Topar called this well, at which we slept, Murnco-Murnco; but as the horses had fared badly, we started early on the following morning, to reach another well, in which, he assured us, there was plenty of water, and we certainly found more than in the first, although little enough. We kept on the proper right bank of the creek, with the ranges to our left, and a barren, stony, undulating ground between us and them. Some undulations in front of us assumed a more regular form, and fragments of quartz and conglomerated rock cropped out of the ground. At five miles on our former course, Topar showed us a well that was worthless, but soon after led us to the one he had spoken of, and which, certainly, was better than either of the others. Whilst at breakfast, we saw a smoke in the creek towards the hills; on seeing which, nothing could exceed the irritable impatience of our guide to communicate with the natives; but they had decamped before we got to the place, and Topar insisting upon it, that there was no more water in the creek, turned from it to the N.E. From the conduct of this young stripling, I began to have suspicions of him, and, therefore, determined on taking the helm into my own hands; however, just at the time, a smoke again ascended from the creek, when Topar was just as impatient to return to it. We again missed the natives, however, but found a fine pond of beautiful water, from which, it was clear, Topar had purposely led us. On the following day, we ascended the ranges, but did not find them so rugged as we had been led to anticipate. From the summit, we saw a plain to the west, surrounded by hills, but no indications of a creek or any cheering object. I therefore returned to the water-hole, and passed a second night at it. The next morning, I resolved, against Mr. Topar's expostulations, to run the creek up; in doing which, we passed several water-holes that were slightly brackish, and at length found that we had risen to a level with the plain we had overlooked from the summit of the range, the day before. The channel of the creek, greatly diminished in size, trended to the west, and Topar almost cried, in his endeavours to dissuade us from pursuing it. His alarm, from our first entrance into the hills, had been remarkable. He said he should be crushed to death, and literally trembled from head to foot. Yet—will the reader believe?—we were at that moment, when he vociferated that there was no more water in the creek, within 100 yards of a beautiful pond, at which I afterwards encamped. We gave him his own way, on his assuring us that he would lead us to plenty of water, and, under his guidance, we turned to the north. We passed a remarkable iron-stone range, on which the needle deviated 43° to the E. of N. The iron ore laid in a ridge and in immense blocks along the spine of the hill, bearing N. and S., and it was the finest and most beautiful I have ever seen. On the heated face of the rock, without a particle of soil, a new plant, of a nature not to be preserved, was growing. A little before sunset, we turned somewhat to the eastward, and soon afterwards arrived at a pass, leading out of the ranges to the plains we had crossed. Entering this pass, Topar showed us a little pond of green water, under the rocks, wholly unfit to drink. I was now, however, indifferent to his treachery, since, having found a pond to which I felt justified in removing the party, and from which I could explore the western interior with more advantage, I had determined on returning to the camp; and accordingly, on the following morning, followed down the pass for about a mile, but as it then bent to the eastward, I crossed a small range, and, traversing the plains, halted for the night on a sandhill about 35 miles from Cawndilla. We were suddenly roused at an early hour of the morning, by a violent gust of wind from the south-west, that carried away every light thing we had; nor do I remember, even in Canada, having ever suffered so intensely from cold as on that day. The wind literally pierced us through and through, and we arrived at the camp more dead than alive. It was in consequence of this that Mr. Topar, who I intended to have treated with a good flogging, escaped unpunished; no young rascal ever deserved such a correction more richly.

On the 27th, I sent Flood, with two men and the light cart, to enlarge the wells at Carnapaga—the principal well Topar had shown us—for the convenience of the cattle, and followed myself, with the party, at 8 a.m., having detached Mr. Poole to the hills he had already visited, to verify his bearings. I halted during the heat of the day, and reached the little sandhill near the creek at midnight, where I found that the horse team had knocked up. On the following morning, I pushed on with Mr. Browne, to superintend the digging of a large tank there, but the animals had great difficulty in getting to it. We pushed on, however, after breakfast, and reached the pond at which I intended to establish the camp at 6 p.m., and there pitched our tents. The 29th was a day of intolerable heat, although the thermometer stood only at 81°, and the barometer at 28° 7′ 10″. On the 30th I sent Mr. Poole with Mr. Stuart, to take back-bearings, and went myself to examine the plain and creek beyond the Pass, and it was then that I discovered Topar's further treachery, for I entered on a nice clear pond of water, to which I immediately moved the party preparatory to my again leaving it. We were there surrounded on every side by hills, and our tents were pitched under some beautiful acacia trees. We were now also fairly left to our own resources. We had left all living streams behind us; and in the exercise of judgment and caution, had to trust to an all-wise Providence. We had many anxious considerations, seeing that our path was so soon beset with difficulties. With a view to increasing our means in the event of our being unable to find water, I had had the bacon emptied out of one of the tin boxes in which it had been packed, and had converted it into a tank, capable of holding a tolerable supply of water. On the 5th of November, I sent Flood with Lewis and Sullivan, with this tank full of water and nine breakers, to pursue a course of 140° to the W. of S., until I should overtake him. My intention was to have deposited this tank at 30 or 40 miles, and to have sent the cart back for a fresh supply of water against our return; but, unfortunately, the ground was very rocky, and the jolting of the cart burst the tank just as Mr. Browne and I came up, and all we could do was to give the horses a good drink. The soil of the plain, from the camp, was red sand and clay, covered with salsolæ and grass, in widely-distributed tufts. We had intended crossing the main range on the bearing I had given to Flood; but, on reaching it, found the attempt would be impracticable; we, therefore, went to the south, and turned, at four miles, to the north-west, up a valley, bearing due west from the camp. Pursuing our way up this valley along the dry and sandy bed of a mountain torrent—it being a branch of the creek we had turned —into the hills, we crossed a tributary, and pushing on till sunset, halted on the main branch, without water. On the 6th, we ascended a lofty hill, but our view was unsatisfactory. Other ranges opened out beyond those we were crossing, and nothing was to be seen of the country beyond them. It appeared to dip to the west, but the ranges continued to extend a great way to the north. I had directed Flood to follow the stream, and to cross the range in his front at its head, under an impression that we might soon strike the opposite fall of waters, as we luckily did, but following it up for several miles, and seeing no hope of water in its sandy bed, we struck away to the west; but were suddenly brought up by steep precipices of sandstone. I then turned for the valley through which the creek ran, and striking it low down, to the N.E. of where we had abandoned it, found it greatly enlarged in size, but still with a fine dry bed of sand. We soon afterwards entered a narrow defile, with steep rocky hills on either side, and after an anxious search, found a little bright pool of water, not two feet long, under a rock; but we soon enlarged it, and obtained the most delicious water we tasted during our long and anxious journey. Pursuing our course down the defile, on the following morning, we were soon stopped by large rocks of granite traversing the head of the creek, in the deep holes of which there was still water remaining. I then sent Mr. Browne and Flood on a-head, to look for a pass; but they returned, unsuccessful, in the evening. I therefore sent them out the next day, in an opposite direction, remaining myself in the pass with Morgan. On this occasion, Mr. Browne, whose intelligence and prudence were equally valuable to me, was more successful, and under his guidance we, the next day, descended to those plains, the opposite extremity of which we were never destined to reach, but on which our sojourn was as fearful an imprisonment and as severe a trial as it ever fell to the lot of man to bear. At the base of the ranges we turned to the north for the mouth of the gulley, down which we had been unable to proceed, and there finding water, stopped for the night. The direction of the ranges was due north and south, and as we regarded them from the plains, they looked like a dark wall stretched across the land. The outlines of the hills were generally rounded; there were no cones, nor were the hills themselves of very great elevation; still they seemed to extend to a great distance northward, and distant hill tops were visible to the north-east. From the Rocky Gulley we continued our journey on a bearing of 342°, and thus gradually increased our distance from the hills. We traversed stony plains, but thinly covered with salsolaceous plants; and, about sunset, descended to softer ground, and made for a line of gum trees, under which we found the dry and gravelly bed of a creek. The indications of water, however, were sufficient to induce us to dig for it, when we got a fair supply, both for ourselves and our horses, and laid down, well satisfied with the result of our day's journey. On the following morning, we again proceeded on our former bearing, and were glad to find the precincts of the creek were both grassy and open. Appearances, indeed, justified our anticipations of improvement; but these were soon destroyed, for, soon afterwards, we entered a low scrub, on breaking through which, we had to cross low ridges of sand, crowned with pine trees. These ridges were running nearly north-east and south-west, and were separated by narrow flats of red clay with bare patches on them. Neither on these, nor on the sandy ridges, however, was there any deficiency of grass; on the contrary, although thin, it was of luxuriant growth; and we looked momentarily for water, from the fact of there being so many birds in the bushes; we terminated our journey, however, without finding any, and tethering the horses, took up our station on one of the ridges for the night. The country continued the same in character for about twenty miles beyond this point—an abundance of green grass covering the lower part of the sand hills and portions of the flats, but no water was to be found. At the distance of twenty-five miles, I stopped with the carts—the horses having had a severe day—but directed Mr. Browne, with Flood, to ride on until dark in a direction a little to the west of that on which we had been riding, in the hope that they might see some change. At sunset I turned back, and leaving a quart of water for Mr. Browne, at the place at which we parted, regained the spot at which we slept at midnight; and as the horses were beginning to suffer from the great heat that prevailed, I continued my retreat in the morning towards the creek, in the bed of which we had found water. The day had been fervently warm, with a violent hot wind from the north-west, which came in gusts. Clouds began to collect, and distant thunder was heard, but no rain fell. Mr. Browne came up in the evening, having seen no change in the country. As far as he went the sand ridges extended; the only difference he observed was that the pine trees grew more thickly upon them. Thus it appeared that this remarkable feature of the interior commenced so low down as lat. 30° 40′ 8″ S., although at that point it had not the formidable aspect it bore still deeper in the desert. It was evident, however, from our failure in this attempt to penetrate to the N.W., that it would be necessary to keep nearer the hills, where the chance of finding water would be greater, and I therefore determined on returning to the camp, and sending Mr. Poole, with fresh horses, along their base, in the hope that he would find some larger supply of water than it had been my fortune to discover. As the night had been, so the morning was, most tempestuous, and the heat intense, in consequence of which we remained stationary; it was evident, however, from the aspect of the sky, that some change of weather might be expected, and in the evening we had a few drops of rain; it was not, however, until the day we returned to the Rocky Gully that rain regularly set in. It was on the 16th of November, 1844, that the sky darkened over us, and the flood-gates of heaven were opened upon us. Every summit of the range was shrouded in a misty mantle, and the thunder rolled along the vallies with the sharp crack of near artillery. The dry and arid desert, from which we were retiring, sparkled in the light of waters, and the appearance of the interior was changed.

Anxious to take back bearings, I ascended the hills, but only partially succeeded in my object, for shower after shower enveloped us, as we rose from one hill to another; yet I gazed with delight on the war of the elements, believing that it was the harbinger of success. At an elevation of 1200 feet, Mr. Browne and I found large rounded boulders, such as are on the sea shore, protruding from the soil, on the summit of a hill we had just ascended. On the 19th we reached the camp, and on the 21st Mr. Poole left with Mr. Browne, who expressed a desire to go out again on this excursion. On the 22nd the weather moderated, and the wind, which had fluctuated between N.W. and S.W., flew to the N.E. On the 23rd I struck the tents, to cross the ranges with the drays, and on the 29th encamped with the whole party at the Rocky Gully. I hence sent Flood, with two men, to dig tanks in the creek in which we had made the well, and shortly afterwards followed him, and there determined to remain stationary, and await the return of Mr. Poole, to whom I had given instructions to proceed to the N.W. as far as he could, and since there was now surface water to enable him to pass the point to which I had gone. By this advance I shortened Mr. Poole's homeward journey about 70 miles. On the 2nd of December he returned, just as I had begun to be anxious about him, for little or no surface water was now to be found. He had gained lat. 29° 52′, and had terminated his excursion at a chain of small lakes connected with each other by narrow sandy channels. These lakes were also in shallow sandy basins, and contained salt water. About 18 miles to the westward of him were three remarkable peaks, and beyond them a lofty and broken chain of hills. The water covered the centre of the basins, and the chain of lakes appeared to continue to the north. Mr. Poole had travelled mostly through the same kind of country I have already described, until he got into the neighbourhood of these lakes, when it became more open, and just as they descended to the lower ground they stood as it were on the rim of a basin, looking down into it, the ground gradually sloping to the edge of the lake. Mr. Poole subsisted entirely on the surface water left by the recent rains, excepting that near the lake he found some water in a small creek. He had had great difficulty in regaining the camp, in consequence of the rapidity with which the water had dried up; and certainly deserved my best thanks for his exertions on this long and trying journey.

Mr. Poole's survey of the N.W. interior satisfied me still more that a westerly course (the one I desired to take as soon as circumstances would permit) was not yet open to me, for notwithstanding the copious rain we had had, it was evident I should have to proceed with great caution. I had not at that time any fear as to our retreat being cut off, but it admitted of great doubt whether or not I should be forced up the Darling; although I would never suffer my own mind to dwell on such a contingency. It was evident, however, that we should now have cautiously to feel our way. Prior to the return of Mr. Poole, I sent Flood to the north, in search of water, but he was unsuccessful. On the 5th I again sent him out with Mark, desiring him to return immediately if he should find water in any quantities, our supplies being very precarious where we were. In the mean time another base line was measured to correct any errors in our bearings. On the 7th Flood returned, having struck a fine little creek with an abundance of water in it, to which it was his opinion we could move without risk. On the 9th, therefore, we struck the tents, and reached our destination early on the 10th. Flood was quite right in his estimate of this pretty little spot. The creek was narrow but deep, and the water-hole was overhung by thick gum trees, so that it was the prettiest spot on which we had sojourned. The grass was really good about it, and I felt that here we might rest for a time; and to show Flood that I appreciated his services on this occasion, I called the creek, "Flood's Creek." But although in a place of present security we had no time to pause. It was surprising to see the rapid disappearance of moisture and the decrease of the largest water-holes. The country to the N.W. being impracticable; on the 11th I sent Mr. Poole and Mr. Browne to the north, with instructions to keep near the ranges, so as to have the greater chance of intercepting any water-fall. On the 13th, I myself proceeded to the eastward to examine the lower country between me aud the Darling, from which we were now distant 200 miles, crossing the nearer ranges, on the summit of which I found a small hole of water, between some rocks. I traversed an extensive plain—partly of flooded and partly of sandy soil. I proceeded towards a high rounded hill, the highest of the group to which it belonged; and halted for the night 42 miles from the camp, without water. At twenty miles beyond this, we entered a sandy pine forest, through the mazes of which we wound our way for 15 miles, amidst dead trees of all kinds. The sand continued to the very foot of the hill, and pine trees were growing in its ravines; taking it altogether, a more hopeless, inhospitable country cannot be imagined. On gaining the summit of the hill, an elevation of 2000 feet, we looked in vain for a break in the dark and gloomy brush that surrounded it on every side. There was a third line of hills to the eastward, apparently similar in formation to that on which we stood; but there was no prominent peak upon it. The rock formation was a close compact sandstone, traversed by veins of quartz. Fragments of this rock were scattered over the hill which was exceedingly bare; a few stunted bushes of rhagodia being alone visible. A few casuarinæ were also growing on the summit of this eminence, but nothing else. There was no mistaking the nature of the country between us and the Darling; nor did I see a hope of finding water in the miserable brush which covered the country in the direction of that river, therefore determined on returning to the camp, and halted at sunset to rest the horses; but pushing on again at 3 a.m., I was fortunate in arriving at a small puddle of water in a creek about 10 a.m. It was in this dense and perishing forest that we first experienced the excessive heat, which we subsequently felt in traversing other brushes of the same kind. At this time the heat was daily increasing, the thermometer being seldom under 99; often up to 112 in the shade, the midnight temperature being 86 and 90. Yet every thing round about us wore a green and fresh appearance, nor were the cereal grasses yet ripe. On the 25th, Christmas Day, Mr. Poole and Mr. Browne returned. They had been as high as latitude 29° 14′, and had crossed several creeks, but had not observed any improvement in the country; and although they had seen abundance of water, it appeared to them doubtful how far it would be safe to trust to it. Mr. Poole informed me that the ranges were gradually declining in height, and that they were in isolated groups, and no longer continuous; but I had anticipated that such would sooner or later be found to be the case, and therefore never built on their continuing to any great distance.

Having well weighed the information Mr. Poole gave me, as to the nature of the country to the north, I determined on losing no time in pushing forwards; but the weather was so overpowering that I hesitated moving whilst the wind continued in its then quarter, as we should have to travel more than 50 miles with the cattle without water, and that, too, partly through a pine forest. In the first place, I sent Flood along the line on which we were to go, if possible, to find water; but he returned on the third day, without having tasted a drop from the time he left us. A cooler wind coming from the south, about 3 p.m., on the 28th, I ordered the tents to be struck; and trusting Mr. Poole to lead on the party, myself rode to a prominent hill in the range, from the summit of which we could see the long line of drays toiling over the heated plains. Overtaking Mr. Poole and Mr. Browne, at sunset, we halted until the moon rose, when we again moved on and travelled all night. As the day dawned, more distant objects became visible, and the line of the horizon cleared; and Mr. Poole recognising one of the hills under which the creek was, to which he was leading us, took a bearing of it, and went on with some more confidence. We had during the night travelled over barren stony plains and low brush, but occasionally on a better soil; but about 9 a.m., we entered a sandy scrub, and shortly afterwards found ourselves ascending a pine ridge. I was in hopes that these unfavourable appearances would soon cease, since Mr. Poole had informed me that we should not altogether escape the line of the pine forest; but the farther we advanced the more numerous did we find the ridges of sand, and the heavier the pull for the cattle. We were pressing on with considerable difficulty when Mr. Poole discovered that he had been deceived in the morning light, and had taken the bearing of a hill to the westward of that he intended, in consequence of which he had led us deeper into the forest than we had imagined, and all hope of immediate escape from it vanished. Under such circumstances, I thought best to send Mr. Poole with the horses and sheep on a-head, to ensure them water as soon as possible, whilst I myself should remain with Mr. Browne to assist the bullock drivers. It was to no purpose that they urged the poor animals up one ridge; their descent to another was immediate, and they fairly cried over their troubles. I now double-lapsed the teams, leaving three drays behind; and hoping that we should get on, but the fearful heat rendered it impossible. The sun had nearly set, and we were still toiling in that dark brush without a chance of escape. At Mr. Browne's suggestion, therefore, I unyoked the cattle altogether from the drays, and leaving a certain number of men with them, pushed on for the creek with the cattle under Mr. Browne's guidance. About 9 a.m., we broke through the pine scrub, and got on hard plains, on which we rounded up the bullocks till the moon should rise. At 11 p.m., she appeared above the horizon, when we roused the animals, and pushed on. They were, however, exceedingly weak, and two dropped, and were left behind. Mr. Browne had preserved a very straight line, and about 2 a.m., we found ourselves on the creek, and soon afterwards joined Mr. Poole, who had halted on the bank of a muddy lagoon, there being no water in the creek itself. On leaving the men with the drays in the pine forest, I had ascertained that the quantity of water they had was sufficient for their use until I should send more; but as I was aware of the improvidence of men under such circumstances, I lost no time in sending Morgan for the empty casks, and for something for ourselves to eat. He ought to have returned in the course of the evening, but did not make his appearance until late on the following day, when he came without anything, and stated that on his return, he had stopped to let the horses feed, but unfortunately he fell fast asleep, and the horses strayed away, so that he was obliged to leave their loads behind. I was exceedingly provoked at this, but there was no help for it. I directed Flood to go for the things Morgan had left; and on his return had the strongest of the cattle collected; and at 6 p.m., with Flood and Mark, started myself, with a fresh supply of water, for the men at the drays. The sheep, unable to keep pace with Mr. Poole, had followed the cattle tracks, and were at this time safe. At 9 p.m., on the last day of the year 1844, we rounded up the cattle once more on a plain, and kindled a line of fire round them: we patiently waited the appearance of the moon, but she rose amidst heavy clouds, and it was midnight before we could push on. We reached the drays at 9 a.m. of the 1st of January, and I found that the men had already begun to despond; however, they made up for this forgetfulness of themselves by subsequent exertions; and redeemed their character by their efforts to get the drays out of the hobble in which they were. Having seen them start, and being satisfied that the animals would be sufficiently strong to pull them out of the forest, I rode on in advance, being anxious to regain the creek. The fearful nature of the day, obliged us to walk the horses; nor do I remember, during the subsequent periods of this trying and doubtful journey, much as we were afterwards exposed, having suffered as I did on this occasion. The drays did not come up till the following morning, when it became necessary to rest the animals before they were sent for the remainder. An extract from my journal of that date will perhaps give the reader a better idea of our position at that time than anything I can say: "Thursday, Jan. 2. The drays reached the creek at 3 this morning—both men and bullocks worn out. I had hoped that they would have got out of the pinery before sunset yesterday, but they did not. The men assure me the sand was so insufferably hot that the poor animals could not endure it. The men had the upper leather of their shoes burst as if by fire, and Lewis had his back most severely blistered. The dogs lost all the skin off the soles of their feet, and followed the team with difficulty. One of them, old Fingal, has remained behind to perish." He was found dead on the track on the 4th, when I sent Flood for the remainder of the drays. The water in the lagoon, at which we halted, was very bad, and to it Mr. Browne and Mr. Poole attributed the indisposition under which both laboured at this time. The weather was intolerably hot, the thermometer never under 94, rose daily in the shade to 112 and 120, nor could we fly anywhere for shelter. Wells dug in the creek gave us a purer element to drink; but from the sun we had no retreat. Immediately to the eastward of us the Main Range terminated, and there was a broad opening between, and some other ranges still more to the north. The line of forest through which we had forced our way passed through to the eastward. We thus, for a time, lost sight of the hills; but on the 10th they were again visible. On the 9th we struck the tents, and once more pressed forward over barren stony plains; and on the 11th we halted on a creek (one of these Mr. Poole and Mr. Browne had crossed on their recent journey, and in which there was a considerable quantity of water). The fall of this creek was to the eastward, and it promised well, both upwards and downwards. There being abundance of grass in its neighbourhood I determined on remaining some few days at this point; and in the interval to examine the country to the north; ascertain how far the hills continued, and the character of the interior beyond the point to which Mr. Poole had gone. Although there was water in the creek on which the camp now rested, I had no hopes of its lasting very long; it behoved us, therefore, ere it should be too late, to find some more abundant supply. The great difficulty of advancing in such a country as that in which we now were had been severely felt by me; and in consequence of the length of time it had occupied, I had thought it advisable to reduce the allowance of flour. On the 14th I left the camp with Mr. Poole and Mr. Browne, Flood, Joseph, and Mark. Mr. Poole accompanied me for the purpose of conducting the party to any water we should find, whilst I continued my investigations; but as we were unsuccessful in our search for it, he returned with Mark to the camp on the morning of the third day. I had, however, requested him on his way back to examine some stony ranges to our left, and amongst them he found that supply of water on which we subsisted for six months, and which alone enabled us to keep our station in the heart of a desert. In the meantime, ignorant of this important discovery, I traced the creek upwards from the camp, passing a tributary which joined it about three miles coming from the hills I have mentioned, and forming what has since been called the Depôt Creek. We found an abundance of grass hereabouts; but beyond the immediate bed of the creek, barren stony plains extended. Leaving Mount Poole to our left, we halted the first night on the creek we were tracing, without water; the numerous water-holes Mr. Poole and Mr. Browne found in it not a fortnight before, having disappeared, and not a sign of moisture now remaining. Crossing some loose plains northwards, on the following morning, we arrived on the banks of another creek running to the southward of east, through a gap in a long range in that direction. The bed of the creek we had just left was of pure sand and gravel; that of the second creek was of clay, and in it we found plenty of water, but it was thick and discolored. We saw many pigeons on the plains on either side of this creek, and in journeying down it, stopped for the night at a little lagoon not far from its left bank. We had now gained the extreme point to which Mr. Poole and Mr. Browne had gone on their recent excursion. From the lagoon, Mr. Poole turned back for the camp, whilst we proceeded to the north, for a remarkable group of hills I was anxious both to ascend and to examine. Crossing the creek, we traversed barren stony undulating ground, gradually rising as we advanced. Again crossing a small tributary creek, in which there was also water; we rode over plains, on which there was an abundance of grass in tufts, and in the midst of which there were bare patches of soil where gypsum was in the progress of formation, the hills themselves were perfectly bare of timber, they projected into the plain at an angle of 35°, like head lands, and were altogether different from the ranges we had hitherto seen.

From the summits of one of these points we could mark the course of the creek, along the banks of which we had approached the hills far to the E.S.E. To the eastward low ranges, similar to those on which we were, were visible; but from that point round to the north-west horizon was hid from the view by high ground. There were two peaks to the N.N.W., to which I proposed going, and from which I hoped to gain a view of the distant interior. From this station we descended to another about six miles distant, passing through a gap in the hills that here were separated from the main group. These detached hills had perfectly flat tops, of soil and productions similar to those on the plains below. They were fast crumbling away under the hands of Time, and the scene at their base resembled the ruins of a fair city, whose stone edifices had been shattered to pieces by an earthquake. All the fragments of rock (a hard close sandstone) had been split into parallelograms of rock, were lying at the base of each hill like the rubbish at the bottom of a breach. These hills, as I have observed, differed from the ranges we had passed in all respects; and in their appearance form a remarkable contrast with them. From our second station we observed the faint course of a creek, leading towards the two peaks we had noticed from our first station; and on tracing it down we arrived at a tolerably sized pool of water, at which we halted for the night, the peak being still some miles distant from us. On the following morning we crossed stony plains, and leaving the creek, which appeared to have spread over, there turned a little to the westward, soon afterwards ascended one of the peaks. The appearance of the hills at this, their northern termination, was similar to their southern end—the same mouldering and projecting points, and the same broken detached and flat-topped islands. From our position, this formation seemed to extend to the eastward, the hills gradually declining in altitude until they fell to the level of the plains. To the W.N.W. a boundless dark scrub extended, but to the N.N.W. there was a swell above the horizon line, made by some low undulating hills. There was the smoke of a solitary fire to the S.W., but the desert appeared to be otherwise uninhabited. Without a ray of hope to cheer us on, we descended a narrow valley between the peaks and the main hills, and encamped without water on the side of a grassy creek, just where the valley opened out into the plains. On the following morning, as soon as we cleared the hills, we turned to the eastward, in the hope of striking some creek falling to the north, and at noon reached a small channel in which there were two, what might truly be called, puddles of water; they were the last dregs remaining after the recent rains. The one was putrid and unfit for use, but the other was still good. From this place we must have scared away a native and his family, since we found a newly-erected hut on the eastern side of the creek, from which they could only just have fled, since the prints of men's and children's feet were quite fresh upon the ground. I now determined on making for the low hills we had seen bounding the N.W. horizon, in the hope that even so slight an elevation might disclose some change of country to us; but, as from the appearance of the creek I had no hope of finding water in it lower down, or in the dense brush between us and the hills, I thought it prudent to give the horses rest for the remainder of the day, and to start for the hill, now distant 35 miles, early on the following morning. This we accordingly did, and to our surprise, at six miles, came upon a little sheet of water, both more durable and better than that which we had left. From this we again drove the poor native and his family. He had hardly finished his hut, and decamped in such a hurry that he left everything behind him. Anxious to communicate with him, and regretting the circumstances of his escape, I fastened my own knife with a large glittering blade to the top ofhis spear, and stuck it into the ground close to the hut, in hopes that, seeing we intended him no harm, he would not fly from us on our return; but we found that he had been during our absence for his things, a part of which he removed; but the knife appears to have alarmed him still more, as it was evident that the moment he saw the knife he ran away without taking anything else. We passed his hut, however, and after penetrating through some low brush, crossed a small plain, and shortly entered a sandy scrub. This continued for about two miles, when the country became, like that we had traversed to the north-west on first crossing the barren range, high sandy ridges, or dûnes, alternating with long narrow flats, only with this difference, that the pines seemed to have ceased, and to have been replaced by a red banksia. It was not until after the sun had set, that we reached the hills. On approaching them we found the country more open, and the fall apparently to the eastward; but nothing could exceed the heat of the brush during the day. The line of the horizon was still clear when we reached the summit of the hill, but we looked in vain for a distant peak or elevation. The sea of scrub was unbroken. It spread around us on every side, without a ray of hope upon it. We had, just as we neared the hill, crossed a little grassy flat, to which I now returned, and on which we slept. The position of these hills was in long. 141° 4′ 33″ east, and in lat. 28° 35′ 10″ south. They were composed of the same quartz or sandstone of which the last hills were formed; but they rose from the plain with a slight undulation, and were consequently rounded in shape, instead of having sides so abrupt as those I have described. Any attempt to penetrate beyond this point would have been unavailing, in such heat as that to which we were exposed; the horses would not have endured the privation. I thought it right, therefore, to return to the ranges, and to try the country to the E.N.E. On our way back through the brush it was more intolerably hot than the day before: there was a strong hot wind blowing, and the air was so rarified that we could hardly breathe it. Arrived at the base of the hills, we turned to the E.N.E., as I had proposed; but we rode for a whole day without finding water; indeed the insignificant creeks falling into the plains, had a length of scarcely more than a mile. The hills decreased rapidly to the eastward; the brush closed in upon them, and a hopeless region again lay before us. It had not been my object on this journey to make any protracted excursion. I had rather been desirous of finding some more desirable supply of water than that on which we had to depend. We had, during the time we had been out, such fearful proofs of the rapid absorption and corruption of the water in the creeks, and the uncertain tenure of any we had yet discovered, that I now became anxious as to the safety of the party as regarded its supply of water. I was too well aware of the treacherous nature of the soil and climate in which I was, to trust to appearances; and I felt that we were in the most precarious situation, and placed under most doubtful circumstances; the practicability of our retreat itself being doubtful. From this point, therefore, I hurried back, and reached the camp on the 24th of the month, having been absent 10 days.

(To be continued.)

Art. XVIII. *Algæ of Tasmania.* By W. H. Harvey, M.D., &c.

(Concluded from page 159.)

(*From the London Journal of Botany, September,* 1844.)

SERIES II. MELANOSPERMEÆ or FUCOIDEÆ.

Tribe 8. Sporochnoideæ, *Grev.*

45. Sporochnus *radiciformis*, Ag. (Fucus radiciformis, *Turn. t.* 189.)
George Town, V. D. L., *R. Gunn, Esq.*, 1284, 1293.

Tribe 9. Dictyoteæ, *Grev.*

46. Stilophora *australis*, Harv.; fronde cartilaginea, filiformi, alterne bi-tripinnatim ramosa; ramis primariis elongatis, indivisis; secundariis tertiariisque laxe insertis, simplicissimis, strictis, acutis, basi attenuatis; verucis ellipticis, sparsis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1318.—A single imperfect specimen marked with a query is all that I have seen (n. 1318 is *Pol. cancellata*), but this is sufficient to establish a perfectly distinct new species. This specimen, which consists of the upper portion of a frond, is 6 inches long, and half a line in diameter, solid, cartilaginous, with a percurrent stem, much branched alternately; the branches and their divisions not strictly distichous, though nearly so. Branches long, simple, patent, alternate or secund, laxly set with alternate elongated simple ramuli, which bear a third and probably occasionally a fourth series similar to themselves. All the ramuli more or less tapering at base, and very acute, or acuminate at the apices. Warts of fructification rather laxly scattered over the branches and ramuli, depressed, exactly elliptical. Colour olive green.

SERIES III. CHLOROSPERMEÆ or ZOOSPERMEÆ.

Tribe 10. Ulvaceæ, *Ag.*

47. Ulva *latissima*, L.
George Town, V. D. L., *R. Gunn, Esq.*, n. 1275.
48. Enteromorpha *compressa*, Grev.
George Town, V. D. L., *R. Gunn, Esq.*, n. 1289.

PROCEEDINGS OF LEARNED SOCIETIES.

ROYAL GEOGRAPHICAL SOCIETY.

March 23, 1846.—Mr. G. W. Earl's memoir, 'On the Tribes of the North Coast of Australia,' was continued.—The natives of the North coast are not only less known to us than those of the other coasts of the island, but possess a peculiar interest, from their proximity to the Indian Archipelago. A circle, says Mr. Earl, drawn round Port Essington, at a distance of 500 miles, would inclose almost an equal number of distinct tribes. The good understanding which existed between the colony and the natives in its vicinity, induced parties of warriors and their chiefs to come from the remote interior to visit the whites; and in the month of April, when the Macassar prahus congregate at Port Essington, there may be seen, besides the tribes of Australia, people from many of the islands of the archipelago. Mr. Earl, however, in the present memoir, confines his observations to the natives of Australia who inhabit the coast from the Cobourg Peninsula towards the east. Certain general characteristics are observable among all the tribes of this part of Australia. Thus their skin is invariably embossed with raised cicatrices. The septum of the nose is generally pierced among the men, and clothing is disregarded, except by way of ornament: they paint their bodies. Their mode of treating the dead differs, however, from that in use among the tribes of other parts of the country. They leave the bodies wrapped in the bark of the tea tree till nothing remains but the skeleton, which is then removed to the general cemetery, or placed in the hollow trunk of a decayed tree. They are divided into three castes. They have some superstitions similar to those of the Indian Islanders, while others are like those which pervade Australia. In the Cobourg Peninsula there are four distinct communities, of which the most powerful occupies the southern coast and the islands of Van Diemen's Gulf, the upper part of the harbour of Port Essington being also in their possession. In the mountain range there is a very numerous tribe called "Marigianbirik;" beyond them we know nothing, nor have we much accurate knowledge respecting the tribes distributed between Jalakuru and the Gulf of Carpentaria. With the Yaako or Croker Island tribe, our acquaintance is of older date than with the others; the Raffles Bay settlement in 1827, was within their territory. These are described as most forbidding in appearance, and little better in disposition. Fear of the whites, however, secured their good behaviour. The Yarlo and Syi tribes resemble each other in general characteristics, though their dialects are totally dissimilar. They are a better looking people than the Croker Islanders, and from the beginning showed great partiality for the English. The Bijnalumbo tribe possess a superior physical organization, and indeed Mr. Earl is inclined to think there has been some infusion of Polynesian blood among the aborigines of this part of Australia. Of the four dialects spoken by the tribes of the Cobourg Peninsula, one only appears to differ from those spoken in other parts of New Holland, and this difference consists only in the words almost invariably ending in a vowel. This, however, seems only accidental. The consonants *s* and *f* are rejected throughout the Australian dialects, as is also the *h* aspirate. With the single exception mentioned above, two-thirds at least of the words end in a consonant, and often a double consonant, as "alk," "irt," &c. The nasal *ng* is very common. The natives of the coast, from frequent intercourse with the Macassar Trepang fishers, have picked up a good deal of their language, which is a dialect of the Polynesian; and as they spoke in this *patois* to the English on their first arrival, these latter, from ignorance, made vocabularies of it, taking it for the native language of the tribes. From these considerations, Mr. Earl proceeds to treat of the great inland tribe, and enters into details which we cannot give here, of the origin and progress of our intercourse with them. This community in the interior are much more numerous and better organized than the coast tribes. One great chief, dignified by the title of "Rajah," has controul over several large communities, each having its own chief. They live on the spontaneous produce of the country, which is abundant. They collect a wild grain, pound it between stones, and make it into cakes, which they bake in the ashes of their fires; this, with yams and the root of a nut, called Marowaït, constitute their chief vegetable diet. The yams overspread the whole face of the country. Their manner is calm and dignified. They paint themselves on great occasions from head to foot, with a kind of red ochre, and hang before them tassels made of the fur of the opossum. The women wear an apron of matting, about two feet deep and three feet wide, thus evincing a sense of decency not common among the aborigines of Australia. Their weapons are spears and darts, headed with lozenge-shaped pieces of quartz, or slate, very regularly formed. The Womera, or throwing-stick, is also used by them, and is of great length. Their hair, which is fine, is adorned with parrots' feathers or opossums' fur, and makes a very neat appearance. They are treated with great deference and attention by the coast natives. Mr. Earl looks upon these people as a kind of mixed race between the Polynesian and the aborigines, who much resemble the Papuas of New Guinea. The memoir then goes back to the Jalakuru tribe, which, though occasionally residing on the coast, generally occupies the uplands near the termination of the hill range of the Cobourg Peninsula. This tract of country is called Merkilellal. It is open and fertile, and is traversed by a chain of small lakes. The wild yam is very abundant. The natives are hospitable, and through their means a favourable intercourse may be established with the tribes in their neighbourhood, as they are very willing to accompany exploring parties. The tribe or tribes of the Goulburn Islands do not differ materially from those of the Cobourg Peninsula. In personal appearance they rather resemble the Croker Island natives, and are a fickle and vindictive race. They are very troublesome to the Trepang fishers. No information could be obtained by Mr. Earl about the distribution of tribes upon the coast between Goulburn Islands and the northernmost horn of the Gulf of Carpentaria. It seems the people here reside generally in the uplands, and only come down to the coast to barter with the Trepang fishers. The people of Arnham Bay are described as numerous and powerful, and very formidable when hostile, so say the Macassars. They are remarkable for their bulky forms and fine chests; their lower extremities, however, are not well formed, having the curved shin:

their features are coarse, and the nose broad and flat, but the general expression pleasing. All the males above 12 years old were circumcised. The western side of the Gulf of Carpentaria is well peopled; but beyond this, as far as the head of the gulf, the natives are few and scattered. Mr. Earl says he has observed, that on the north coast of Australia the population bears a striking proportion to the quantity of *vegetable* food, to procure which the natives take great trouble, while they do not seem to be near so partial to animal diet.

May 25, 1846.—In the great room of the Society were displayed two elaborately coloured Maps, each being twenty-five feet long, of Van Diemen's Land and the south-eastern angle of Australia, by Count Strzelecki.

June 22, 1846.—A paper was read, relating to the currents of the ocean, as shown by a bottle thrown overboard from the *Erebus*, by Sir J. C. Ross. At 8 p.m., on the 4th April, 1842, in 53° 59′ S., and 60° 47′ W., Sir James threw into the sea five bottles, as was his frequent practice during the voyage. These bottles were made to float at different depths, by being loaded with different weights of dry sand. The deepest would, of course, be more influenced by the current than by the prevailing winds; the lightest, on the contrary, would be carried forward more by the wind than by the currents; those floating at intermediate depths would serve to show more nearly the joint effects of both. The vicinity of Cape Horn was considered by the captain an eligible position for one of these experiments. These details were given by Sir J. Ross to Sir R. I. Murchison; who having seen, in the *Scotsman* newspaper, the account of a bottle picked up at Cape Liptrap, at the southern extremity of Australia, in September, 1845, wrote to Sir J. Ross on the subject. The bottle, picked up at Cape Liptrap, contained a paper which identified it as one of those so thrown overboard; and from its having no sand in it, was doubtless the lightest. It must, says the captain, have been hurried forward on its course to the eastward by the strong westerly winds which blow in that parallel of latitude—with much greater force than, and with almost equal constancy as, do the trade winds of the equatorial regions in the opposite direction. The bottle, in its course, will have travelled nearly along the track of the ship in 1840. It must have taken the longer route, and travelled over a distance of 9,000 miles, even if it made no detours. "Supposing," says the *Scotsman*, "that the detours did not exceed 1,000 miles, and that the bottle had newly reached the strand at Port Phillip when discovered—as the time spent in the voyage was 3½ years, or 1,270 days, it follows that the current had moved at the rate of about *seven miles per day*."

Nov. 9, 1846.—Extract from a letter from Colonel Helmersen was read, who observes that the remarkable similarity between the Australian mountains and the Ural—they being alike in direction, height, and geognostic character—leaves no doubt on his mind that auriferous and platiniferous sands will be found in the former, as they exist in the latter; and strongly recommends researches with a view to their discovery. The same features are also observed in Borneo, whence gold and platina have for years been extracted.—*Athenæum.*

ROYAL INSTITUTION OF LONDON.

Feb. 6, 1846.—Prof. Owen "On the Geographical Distribution of Extinct Mammalia."

The Professor announced his purpose to develope the law or principle on which mammals are, and have been, distributed over the surface of this planet. [A mammal was described as being characterized by a hairy skin, quick respiration, and, therefore, a temperature usually higher than that of the surrounding atmosphere, and by bringing forth living young.] He stated that recent researches had led him to defined views on the following subjects:—1. *Comparative development as between mammals of the Old and New World.* 2. *Peculiarities of mammalian distribution in Australia and the neighbouring islands.* 3. *Probable final causes of several instances of this development.* 4. *Inquiry whether the extinct species of mammals were localised like the present races.*

Thus,—1. *On the comparative mammalian development in the New and Old World of geographers.* The Professor stated, that in the Old World mammals reached their highest type. Among other illustrations of this truth, he contrasted the lion and the royal tiger of Asia and Africa with the puma and jaguar of America; the large and useful camel with the feeble vicugna. The most remarkable of the herbivorous and pachydermatous animals, as the giraffe and the antelope in the former class, and the elephant, rhinoceros, hippopotamus, babroussa, horse, djiggitas, zebra in the latter, are peculiar to the Old World. With respect to the rodent animals, water-rats, hares, rabbits, tailless hares, are only found in the Old World. The beaver is, indeed, represented by an American species, but this is distinct from the beaver of the Danube. The monkeys of the Old World are equally distinguishable from those of the New. In the latter we find the prehensile tail, the wide and approximated nostrils, and the absence of an opposable thumb on the hand.

Prof. Owen proceeded, 2ndly, to *notice the peculiarities of mammalian distribution in Australia and the neighbouring islands.*—In this tract of the globe all the animals are distinguished by two remarkable peculiarities, one positive and the other negative: (*a*) all are organized to carry about their young, from a very early period of embryonic life, in a portable pouch; and (*b*) none have attained a high degree of development. The largest marsupial carnivora are the *Thylacinus* and *Dasyurus*, which are respectively of the size of the dog and the wild cat.

3. *Probable final causes of several instances of this development* were then adverted to. Thus, the marsupial inhabits a country liable to long-continued drought, and where the indigenous animals are consequently compelled to make long journeys in search of water; were it not for the arrangement enabling the marsupial to carry its young with ease from one place to another, the races would probably become soon extinct. The prehensile tail of the American marsupial, as well as of the porcupine, kinkajous, ant-eaters and monkeys of the New World, have reference to their arboreal life in the huge forests in which these creatures live. Then, to prevent mischievous effects from the decomposition of vegetable matter in countries where it is so luxuriant, decaying plants furnish food to *Termites* and other

insects, which, in their turn, support a peculiar genus of quadrupeds, the *Myrmecophaga* (or ant-eaters). In closing this part of his subject, the Professor noticed the armour-like, osseous skin of the armadillos, which live at the foot of trees, and are, therefore, extremely liable to blows from falling boughs, &c.

In other parts of the world, where vegetation is abundant, the quadrupeds related with it are generically distinct from those of South America. This adaptation of species to locality having impressed itself strongly on his mind in regard to the present globe, the Professor stated, that he early applied himself to inquire whether—4. *The extinct species of mammals were localized like the present races.*—For this purpose he formed a full and correct catalogue of the fossil remains of mammals in our island. He then gave a rapid sketch of the successive races of the extinct mammals, as they have been traced by the fossils in the ascending series of strata in England and Scotland. The first examples of this class are found in the limestone slate of Stonesfield, at the base of the middle oolite. These fossils were remains of small insectivorous, and probably marsupial, quadrupeds, associated with remains of beetles, vegetable fossils, shells, and fishes allied to the *Cestracion.* These recall many of the characteristic features of actual organic life in Australia. During the long period which followed the formation of the Stonesfield slate, and which has permitted the subsequent, successive, and gradual accumulation of enormous masses of sedimentary rocks, viz. great oolite, cornbrash, forest marble, Oxford clay, calcareous grit, coral rags, Kimmeridge clay, Portland stone, Wealden, gault, greensand, chalk, no trace of a mammalian fossil has been found. In England we first obtain evidence of that class of animals in the debris of some continent, poured out by vast rivers upon the surface of the chalk, forming masses 1000 feet in depth – the Plastic and London clays. Here are remains of great *Tapiroids,* as *Lophiodon* and *Coryphodon,* and smaller pachyderms, like peccaries—*Hyracotherium.* Here, with boa constrictors, are turtles, sharks, fossil palms, and other forms of tropical vegetation. At the same period there were alternating freshwater and marine deposits in continental Europe, filling up a vast excavation of chalk, called the Paris basin, and forming the foundations on which that city is built, analogous to the clays on which London stands. Here Cuvier first discovered and described the *Anoplotherium*, *Palæotherium*, and *Chæropotamus*.

The Professor then briefly noticed the existence of similar calcareous freshwater and marine deposits in the Isle of Wight, and adverted to the discoveries of Mr. Allen and Mr. Pratt. It was, however, remarked, that little is gained by comparison of eocene and existing mammals, excepting so far as these indicate a great change in the distribution of earth and sea, and an accompanying alteration of climate. With the last layer of eocene deposits, we lose in England every trace of the peculiar mammals of that period. A vast series of geological operations took place, from which the miocene strata resulted, before this country was again in a condition to sustain other mammalian races. Of these intermediate operations, and of the contemporary mammals, we have only the evidence of continental geology. We have in this country traces of one species of mastodon, found in the miocene crag-deposits of Norfolk. In process of time, when this island had become the seat of freshwater lakes, in which molluscous shells were deposited, and during the changes which converted lakes into river-courses, there were in these deposits, and in contemporaneous local drifts, remains of mammalian fauna: the mastodon had disappeared; but, of the *Ungulata*, were traces of mammoth, rhinoceros, hippopotamus, urus, bison, bos, *Megaceros*, *Strongyloceros*, *Hippelephas*, reindeer, roe, horse, ass, wild boar;—of the *Carnivora*: lion or tiger, *Machairodus*, leopard and cat—hyæna, bears, wolves and foxes, badger, otter, polecat, weasel;—of the *Insectivora*: bats, moles and shrews, *Palæospalax* (large shrew mole, now extinct);—of *Rodentia*: beavers, rats and mice, lagomys (*Trogontherium*, extinct);—of *Cetacea*: cachelot, narwhal, grampus, whales.

The Professor then demonstrated, by the following proofs, that these remains had not been brought hither by any sudden and transient convulsion, but were relics of animals which had lived and died in this island in successive generations. 1. Vast numbers are found in tranquil freshwater strata. 2. The condition of the bones is not as if they had been triturated by the violence of waves, but their processes are perfect, and their outlines sharp and well-defined. 3. The great proportion of antlers proved to have been naturally shed, and these of different stages of growth, to the fossil bones of the deer, proves, beyond question, that generations of this animal must have passed their existence here. 4. The *Coprolites*, and other phænomena of Kirkdale Cavern, described by Dr. Buckland. Anticipating the question—how so many races of quadrupeds, now extinct, could have found their way hither—Prof. Owen gave a brief outline of the geological and zoological evidence, that England once formed a part of the continent from whence they came. The British Channel is, geologically speaking, of recent formation. At the time when England became an island, it is probable that the *mammoth*, rhinoceros, hippopotamus, &c., became extinct. This, though at a geologically recent period, was long before any historical records existed.

Prof. Owen adverted then to Dumarest's arguments in confirmation of this opinion, derived from the specific identity of the wolf and the bear of France, with the same animals historically known to have once infested our island; and he maintained that the races of some of our most familiar animals were coeval with the *mammoth*: two species of bats, mole, badger, otter, fox, wild cat, mouse, hare, horse, red deer, roe; and, on the continent, the reindeer, beaver, wolf, *Lagomys*; the aurochs of Russia, identical with an animal of the same kind in England. In the New World the same correspondence is singularly illustrated by the coincidence of the peculiarly zygomatic process and the dentition of the megatherium with that of the still living sloth. The *Armadillo* of South America is also similar to the high fossil *Glyptodon*. North America had its peculiar species of mastodon; but, being connected with South America at its apex, and with Asia, by frozen seas, at its base, in accordance with this geographical condition, it was found that the mammoth of the Old World had migrated from the north, and the megatherium from the south, and that both had met in middle temperate regions of that continent. The fossil mammals of the newer tertiary period of

Australia belong to the marsupial genera *Kangaroo, Phalanger, Dasyurus,* wombat, &c., peculiar to the same country at the present day, but represented by species as big as the rhinoceros. A more remarkable example of the concordance of the existing and last extinct races of warm-blooded animals was afforded by the small peculiar and wingless bird (*Apteryx*) of New Zealand, and the extinct gigantic birds (*Dinornis*) from the superficial deposits of the same island. No remains of fossil quadrupeds have yet been found in New Zealand; and this country possessed no marsupial or other species of aboriginal quadruped when discovered by Captain Cook. From these and similar facts, the Professor drew the conclusion, that *the same peculiar forms of mammal quadrupeds and terrestrial birds were restricted to the same natural provinces at the later tertiary period as at the present day.* And as a corollary, *that the same general disposition of the larger bodies of land and sea then prevailed as at this time.* On the other hand, in carrying back the comparison of recent and extinct quadrupeds to the earlier tertiary period, indications were obtained of extensive changes in the relative position of land and sea, and, consequently, of climate; and that the deeper we penetrate the earth, or, in other words, the further we travel in *time* for the recovery of extinct mammals, the further we must travel in *space* to find their existing analogue. The *Tapir* of Sumatra or South America is the nearest living analogue of the eocene *Lophiodon*;—and the marsupial insectivores of Australia have, of all known animals, the nearest resemblance to the fossil *Phascolotherium* of our English oolites.—*Athenæum.*

LINNÆAN SOCIETY.

Nov. 18, 1845.—Dr. Lankester exhibited specimens of a *Fucus* sold in the London shops under the name of "Australian Moss," of which he also furnished a brief notice. On referring to Sir W. J. Hooker, Dr. Lankester obtained for it the name of *F. stiriatus*, Turn.; but a comparison with a specimen in the Linnæan Herbarium marked *F. stiriatus*, by Mr. Turner himself, and with Mr. Turner's description in the 'Historia Fucorum,' has induced Dr. Lankester to regard the Australian Moss as distinct. He believes it to agree better with *F. spinosus*, L. It is brought from Swan River, where it grows on rocks washed by the sea, and is composed principally of Lichenin, a form of starch which also constitutes the bulk of such gelatinous plants as Iceland Moss, Carrageen Moss, Ceylon Moss, and the *Gelidium* used by the *Hirundo esculenta* in the formation of its nest. Its dietetical and medicinal qualities strongly resemble those of the Carrageen Moss (*Chondrus crispus*, Lyngb.)

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE:

Sixteenth Meeting, at Southampton, September, 1846.

Geological Section.—'Sketch of the geological structure of Australia,' by J. B. Jukes.—This document was chiefly drawn up from the author's own observations during four years, in which he had opportunity, as naturalist of H. M. S. *Fly*, of seeing the greater part of the Australian coast. Along the eastern coast there is one continuous line of hills, extending from Bass's Straits to Cape York in Torres Straits, a distance of 2,400 miles; beyond which it is prolonged in rocky islands up to the coast of New Guinea. This chain has a granitic axis, flanked by metamorphic and palæozoic rocks in the south, as described by Count Strzelecki. From Port Bowen, in lat. 22° 30′, the author's own observations commenced. The coast everywhere consisted of schists, porphyries and basalts; at Cape Upstart granite occurred, and was extensively developed on the coast to the northward, and far into the interior, forming hills 4,000 feet high. North of Cape Melville, the granite almost disappeared; and instead, great masses of porphyry with feldspathic, quartzose and metamorphic rocks composed all the headlands and islands. This line of coast appears to cut obliquely through a chain having granite for its axis, flanked by porphyries and metamorphic rocks. On the south-east coast, the crest of the main chain lies 70 or 100 miles from the shore, leaving a considerable space, which is occupied by stratified rocks, consisting of palæozoic shales, sandstones, &c. The same rocks are found on the western flank of the chain, in the district of Port Phillip, and its coal-beds exist at Western Port. On the south-east coast granite shows itself in the bed of the Bogan, just before it enters the Darling, and in the upper parts of the Glenelg. South of the Murray, it forms the north and south ranges of the Pyrenees, the range of Mount Byng, &c. The great mass of the Grampians, more than 4,000 feet high, is composed of sandstone similar to that of Sydney; south of which are a number of volcanic cones and vast sheets of lava. Over all the lower parts of the country, from Port Phillip to the Murray, is spread a great tertiary formation, abounding in shells, echinoderms and corals. At Cape Jervis, South Australia, the rocks consist of mica-slate, gneiss and clay-slate; and at Adelaide, of coarse chlorite schist, and about Gawler Town blue clay-slate prevails. Veins of copper and lead abound in the varions ranges. The interior appears to consist everywhere of tertiary clays and sandstone; which also form the coast, for 600 miles, from Streaky Bay on the east to Mount Ragged on the west of the Great Bight. About Mount Ragged granite is again seen; and frequently forms hills to the west, whose bases are concealed by the tertiary. From King George's Sound, an elevated district runs northward at least 250 miles, consisting of granite, metamorphic rocks, gneiss, &c. Between this district and the sea, is a low plain, 20 miles wide, of recent tertiary rocks, which extend northward to the islands forming the western boundary of Shark's Bay, forming the whole western coast of the Swan River Colony. Along the north-west coast from Shark's Bay to Dampier's Land is a vast tract of flat country, scarcely raised above the sea level, and fronted by dunes of sand. Between Collier's Bay and Cambridge Gulf is a great promontory of stratified sandstone like that of Sydney. The next portion of the coast described from personal observation is that at Port Essington, which consists of a red or white ferruginous sandstone, horizontally stratified. This formation seems also to extend round the whole Gulf of Carpentaria, as far as the Victoria River. The sandstone abounds in ferruginous concretions, which sometimes compose its entire mass, which then looks like the refuse of an iron-furnace, or part of a lava-stream. These masses form the headlands and projecting points of the cliffs. On account of their similarity to the tertiary sandstones of Port Phillip, the author infers their similarity in age. In concluding, the author remarks the parallelism of all the known mountain chains in Australia, the majority being N.N.E., and S.W., and none varying more than two points from north and south. He also cites the opinion of Capt. Sturt, that one vast desert plain stretches from the great Australian Bight to the Gulf of Carpentaria; and observes that the only great extent of country unaccounted for, is on the north-west side, where the range between Cambridge Gulf, and Buccaneer's Archipelago may rise into some importance in the interior.—*Athenæum.*

ENTOMOLOGICAL SOCIETY OF LONDON.

August 7, 1843.—Mr. Saunders exhibited a specimen of the Australian genus *Cilibe*, which had been captured alive in a garden near London.

April 1, 1844.—The following memoir was read:—

"Continuation of a memoir containing descriptions of New Holland *Cryptocephalides.*" By W. W. Saunders, Esq., F.L.S. &c.

Div. 2. *Lateral margins of thorax dentate or uneven.*

PRIONOPLEURA, W. W. S. *Head vertical; eyes reniform; antennæ as long as or longer than the body, filiform, with the six terminal joints somewhat more robust than the others; thorax subquadrate, with the lateral margins dentate or rugose, and the disc with elevated spaces; scutellum quadrate, elevated behind; elytra rugose.* Type Cryptocephalus rugicollis, Gray.

Subdivision 1. *Elytra with longitudinal elevated ridges more or less distinct.*

Sp. 1. Prionopleura bifasciata, Hope MSS. *Head rufous-brown, black above; antennæ black, with the 2nd, 3rd, and 4th joints varied with rufous; thorax rufous-brown, with a black central longitudinal patch, and two lateral lunate ones* *of black; scutellum black; elytra rufous-brown, deeply punctured with eight somewhat elevated longitudinal ridges, and two broad black transverse bands; femora black, rufescent at base; tibiæ rufescent, with the apex black; tarsi black.* Length 3-10ths of an inch.—Hab. New Holland. Mus. Hope.

Sp. 2. Prionopleura crucicollis, Boisduval. *Head chesnut-brown, with a black frontal fascia; thorax rufous-brown, with a transverse black band, produced in front and behind into a short cross; scutellum black, shining; elytra deep rufous-brown, coarsely punctured with five distinct and three less distinct longitudinal ridges, with three short longitudinal black patches at the base, and an irregular transverse black central band less rufous brown; femora with a black streak.* Length 3-10ths of an inch.—Hab. New Holland and Van Diemen's Land. Mus. Hope and Westwood.

Sp. 3. Prionopleura Hopei, W.W.S. *Deep rufous brown; head with a black band and spot; antennæ rather longer than the body; thorax black, with a narrow rufous-brown margin; scutellum black; elytra deep rufous-brown, deeply punctured with eight slightly elevated ridges and two black patches at the base, and a transverse central fascia.* Length 22-100ths of an inch.—Hab. Van Diemen's Land. Mus. Hope and Westwood.

Sp. 4. Prionopleura Crux nigra, Hope MSS. *Dark rufous-brown; antennæ with the terminal joint black; thorax with a transverse black central band produced in the middle both before and behind, forming a cross; elytra with nine longitudinal ridges, the five nearest the suture well-defined, with a narrow longitudinal black streak on the shoulders, and a sickle-shaped patch near the suture extending nearly to the middle of the elytra, and then curving in a transverse direction to the outer margin.* Length ¼th of an inch.—Hab. New Holland. Mus. Hope.

Sp. 5. Prionopleura flavocincta, W. W. S. *Head rufous-brown, with a transverse black mark on the hind part of the forehead; thorax bright rufous-brown, with a broad transverse central band, dilated in the middle into a diamond shape; scutellum dark brown; elytra minutely punctured with nine distinct, somewhat elevated ridges, deep rufous-brown crossed by a broad orange band, margined with a black line on each side.* Length 2-10ths of an inch.—Hab. New Holland. Mus. Hope.

July 1, 1844.—The following memoirs were read :—

"Descriptions of new species of *Buprestidæ* from New Holland." By the Rev. F. W. Hope.

Sp. 1. Chrysodema gigas, Hope. *Viridis, thorace ferè quadrato rugoso-punctato, elytris quadricostatis marginibusque externis elevatis, tarsisque infra flavis.* Long. lin. 19, lat. lin. $6\frac{1}{2}$.—From Swan River.

Sp. 2. Stigmodera signaticollis, Hope. *Flava, thorace viridi-violaceo, utrinque flavo-maculato, elytris tribus fasciis violaceis, pedibus viridibus.* Long. lin. 14, lat. lin. 6.—From Swan River.

Sp. 3. Stigmodera Mitchellii, Hope. *Flava, thorace olivaceo-æneo, marginibus croceis, fossulâ utrinque parùm distinctâ, elytrisque violaceis et quatuor fasciis flavis ornatis, corpore infra cyanea, pedibusque concoloribus.* Long. lin. $11\frac{1}{2}$, lat. lin. 5.—From Swan River.

Sp. 4. Stigmodera sanguinosa, Hope. *Ænea, thorace nigricante, elytris sanguineis, punctis viridibus fortiter excavatis, corpore infra aurato-æneis griscisque pilis obsito, pedibus antennisque cupreis.* Long. lin. 10, lat. lin. 4.—From Swan River.

Sp. 5. Stigmodera hæmatica, Hope. *Sanguinea, capite atro-æneo, thorace in medio nigro-maculato, corpore infra san-*

guinoso pectore, pedibusque cyaneis. Long. lin. 15, lat. lin. 6.—From Swan River.

Sp. 6. Stigmodera Parryi. *Brunneo-rubra, thorace æneo rubroque colore variegato, elytris brunneo-rubris, corpore infra eroso-punctato et æneo, pedibusque concoloribus.* Long. lin. 14½, lat. lin. 6.—From New Holland.

Sp. 7. Stigmodera cyanura, Hope. *Flava, thorace viridi nitido, maculâ flavâ parvâ utrinque positâ, elytris flavis, apicibusque latè cyaneis, corpore infra flavo viridique colore variegato.* Long. lin. 11, lat. lin. 4½.—From Swan River.

Sp. 8. Stigmodera Hoffmanseggii, Hope. *Violacea, thorace æneo, elytris purpurascentibus striatis, apice subserratis, humeris flavo-maculatis fasciisque duabus concoloribus ornatis, corpore infra chalybeo-violaceo, pedibusque æneis.* Long. lin. 9, lat. lin. 4.—From the neighbourhood of Swan River.

Sp. 9. Stigmodera perplexa, Hope. *Ænea, thorace nigricante, elytris flavis tribus fasciis atro-violaceis signatis, corpore infra atro-æneo, pedibus concoloribus.* Long lin. 7, lat. lin. 3.—From Western Australia.

Sp. 10. Stigmodera assimilis, Hope. *Violacea, thorace olivaceo-æneo, elytris tribus fasciis flavis, corpore infra purpurascente, pedibus concoloribus.* Long. lin. 5½, lat. lin. 2.—From Port Phillip.

Sp. 11. Stigmodera Adelaidæ, Hope. *Purpurascens, thorace flavo-marginato, disco viridi crebrissimè punctulato, elytris violaceis et decem-maculatis, corpore infra flavo, pedibus violaceis.* Long. lin. 5, lat. lin. 2.—From the settlement at Adelaide.

Sp. 12. Stigmodera purpurea, Hope. *Purpurea, thorace lateribus flavo-marginatis, elytrisque violaceis et octo maculis notatis, corpore infra flavo et violaceo.* Long. lin. 4, lat. lin. 1½.—Received by Mr. Gould from Western Australia.

Sp. 13. Stigmodera hilaris, Hope. *Æruginosa, clytris miniatis, humeris viridibus maculisque aliis concoloribus per discum positis, corpore infra læte virescente.* Long. lin. 3, lat. lin. 1.—From Port Phillip.

Sp. 14. Stigmodera Saundersii, Hope. *Atra, elytris miniatis, ad basin 4-maculatis, maculâ mediâ rotundatâ nigrâ apicibusque nigris.* Long. lin. 5, lat. lin. 2.—Lately sent by Mr. Fortnum from the Adelaide settlement.

Sp. 15. Buprestis albivittis, Hope. *Ænea, thorace punctulato lateribus externis albis, elytrisque æriis, vittâ albidâ laterali notatis.* Long. lin. 12½, lat. lin. 4.—Inhabits Van Diemen's Land.

Sp. 16. Buprestis pyritosa, Hope. *Igneo-cuprea, thorace flammanti punctato, elytris subviolaceis maculis fasciisque duabus aureis notatis, pedibusque viridibus.* Long. lin. 5, lat. lin. 2.—From Western Australia.

Sp. 17. Buprestis verna, Hope. *Viridis, capite cupreo-æneo, thorace elytrisque aurato-virescentibus et punctatis, corpore subtùs roseo-cupreo et pubescenti, pedibusque concoloribus.* Long. lin. 4½, lat. lin. 1½.—Sent by Mr. Fortnum from Adelaide.

Sp. 18. Buprestis Porteri, Hope. *Cuprea, capite obscurè æneo, scutello aureo, corpore subtùs aurato-æneo et pubescenti.* Long. lin. 3, lat. lin. 1—From the vicinity of Port Phillip.

Sp. 19. Buprestis Helenæ, Hope. *Nigro-ænea, thorace concolore, maculis quatuor irregularibus elytrorum, corpore subtùs æneo, pedibus concoloribus.* Long. lin. 6½, lat. lin. 3.—From Swan River.

Sp. 20. Buprestis lanuginosa, Hope. *Affinis præcedenti: nigro-violacea, thorace cupreo, elytris maculis tribus aurantiacis marginibus apicibusque sanguineis, corpore subtùs æneo lanugine albidâ obsito.* Long. lin. 6½, lat. lin. 3.—Received from Captain Roe of the Swan River settlement.

Sp. 21. Chrysobothris Australasiæ, Hope. *Nigro ænea, thorace pallidiori colore æneo, elytris nigricantibus, punctis duobus baseos fortiter impressis et alteris in medio cupreo-auratis, corpore subtùs æneo, lateribus sublanuginosis.* Long. lin. 6, lat. lin. 2½.—From Swan River.

Sp. 22. Anthaxia Fortnumi, Hope. *Cyanea, thorace concolori, lateribus aurato-punctatis, elytris ad scutellum aurato-fulgentibus maculâ irregulari aureâ post humeros locatâ, corpore subtùs violaceo, pedibus concoloribus.* Long. lin. 3, lat. lin. 1.—This is, I believe, the first notice of a true *Anthaxia* being found in New Holland.

Sp. 23. Anthaxia Adelaidæ, Hope. *Nigro ænea, thorace cupreo-æneo subtilissimè punctato, elytris nigricantibus violaceoque colore tinctis, corpus infra atro-æneum, antennis pedibusque concoloribus.* Long. lin. 1¼, lat. lin. ½.—Inhabits Adelaide.

Sp. 24. Acmæodera nodosa, Hope. *Nigra, thorace nodoso et tuberculato, elytris flavis maculis minutis variis variegatis, corpore infra atro-nitido, pedibusque concoloribus.* Long. lin. 4, lat. lin. 1½.—Received from Captain Roe of Swan River.

Sp. 25. Acmæodera melanosticta, Hope. *Atra, thorace nigro-nodoso, elytris flavis maculis variis atris variegatis, corpore infra concolori.* Long. lin. 2½, lat. lin. ½.—From Swan River.

Sp. 26. Agrilus purpuratus, Hope. *Purpureus, thorace concolori, lateribus angulis anticis luteis, elytris purpurascentibus, corpore infra albidis maculis notato.* Long. lin. 4, lat. lin. 1.—From Moriatta, captured by Mr. Fortnum.

Sp. 27. Agrilus assimilis, Hope. *Purpureus, capite æneo punctulato flavisque capillis ornato, thorace ad angulos anticos aureo-maculato, elytrisque purpurascentibus, corpore infra æneo, lateribus annulorum abdominis subpilosis.* Long. lin. 4, lat. lin. 1.—From Western Australia.

Sp. 28. Agrilus auro-vittatus, Hope. *Affinis* Agrilo purpurato, Hope, *at minor. Purpurascens, capite aurato punctato,* *thorace lineâ longitudinali mediâ aureâ, binisque aliis ad latera positis, elytris cupreo-purpureis vittâ suturali auratâ in singulo conspicuâ, corpore infra æneo, pedibus concoloribus.* Long. lin. $2\frac{3}{4}$, lat lin. $\frac{3}{4}$.—Received from Moriatta.

Sp. 29. Agrilus pistacinus, Hope. *Totum corpus supra et infra viride punctatum, antennis saturatiore colore inquinatis, caput ferè rotundatum, thorace angulis posticis rectè acutis, elytra ænea crebrissimè punctulata, corpus infra viride sericie albida obsitum, pedibus concoloribus.* Long. lin. 2, lat. lin. $\frac{1}{2}$ —From the Adelaide settlement.

Sp. 30. Cisseis 14-notata, Hope. *Affinis* C. stigmatæ, Laporte. *Atro-violacea, thorace concolori, lateribus roseo-cupreis, elytrisque obscuris, 14 punctis flavis notatis.* Long. lin. $3\frac{1}{2}$, lat. lin. $1\frac{1}{4}$.—From Swan River.

Sp. 31. Cisseis Spilota, MacLeay MSS. *Viridi-ænea, thorace quatuor punctis albis notato, elytrisque variis minutis maculis ornatis, corpore infra æneo.* Long. lin. $5\frac{1}{2}$, lat. lin. $1\frac{3}{4}$.—From New Holland.

Sp. 32. Ethon signaticolle, Hope. *Affinis* E. bicolori, Laporte, *at longior. Violaceum, thorace aureo nitido binis albidis punctis notato, elytris violascentibus punctis variis albis per discum aspersis.* Long. lin. $4\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.—From the vicinity of Port Essington.

Sp. 33. Ethon roseo-cupreum, Hope. *Totum corpus supra cupreum et punctatum, capite foveolato, elytris læte cupreis et iridescentibus, corpus infra æneum, lateribus abdominis albido colore irroratis, pedibus concoloribus.* Long. lin. 3, lat. lin. $1\frac{1}{4}$.—From Moriatta.

Sp. 34. Ethon cupricolle, Hope. *Nigro-æneum, thorace cupreo-aurato binisque minutis foveis albis notatis, lateribus concoloribus, elytris atris et punctis duodecim albidis notatis, corpore infra viridi et nitido, segmentis abdominis utrinque albo-punctatis, pedibusque viridibus.* Long. lin. $2\frac{1}{2}$, lat. lin. 1.—From Moriatta.

Sp. 35. Ethon. æneicolle, Hope. *Ænescens, thorace viridi-æneo foveis dorsalibus albidis binis impresso, lateribus concoloribus, elytris nigricantibus albo-punctatis et subtomentosis, corpore infra viridi, segmentis abdominis utrinque albo-punctatis pedibusque viridi-æneis.* Long. lin. $2\frac{3}{4}$, lat. lin. 1.—From Adelaide.

Sp. 36. Ethon Gouldii, Hope. *Æneum thorace cupreo-æneo fortissimè punctato, lateribus externè lineâ elevatâ æneâ conspicuis, elytris iridescentibus æneis, colore violaceo sparsim aspersis, maculis duabus obscuris post scutellam positis, corpus infra æneum punctatum, pedibus concoloribus.*—Long. lin. 4, lat. lin. $1\frac{1}{4}$ —From Port Essington.

Sp. 37. Stigmodera Stricklandii, Hope. *Flava, thorace olivaceo-æneo marginibus croceis, elytris atro-violaceis, parte dimidiatâ anteriori flavâ, maculâ violaceâ in singulo ad latera positâ, fasciâque flavâ ante apicem binisque punctis rubro-miniatis in angulo apicis locatis, corpore infra viridi, ultimis abdominis segmentis croceo colore inquinatis.* Long. lin. 10, lat. lin. $4\frac{1}{2}$.—From Moriatta.

July 1, 1844.—"Descriptions of some new exotic *Reduviidæ.*" By J. O. Westwood, F.L.S.

Ploiaria bispinosa, Westw. *Albida, prothorace in medio valdè constricto, posticè dilatato et bituberculato; scutello spinis duabus brevibus acutis erectis; hemelytris pone medium intus dilatatis irregulariter fusco-guttulatis venis albis; segmentis abdominis lateribus angulato-productis; pedibus fusco multo annulatis et pilosis.* Long. corp. hemelytris clausis, lin. $5\frac{1}{2}$.—Hab. Nova Hollandia. Adelaide, D. Fortnum. Mus. Hope.

June 1, 1846.—Mr. Westwood exhibited specimens of the Manna produced by insects brought from Mount Tabor by Lieut. Wellstead, and of the insect itself, *Coccus manniparus*, brought from Arabia by Dr. Ehrenberg; and specimens of the Womela, an analogous secretion formed on the leaves of the Eucalypti in

New Holland by a minute *Psylla*, specimens of which, as well as of its beautiful parasitic *Encyrtus*, were exhibited. Mr. Gould had informed Mr. Westwood that for several months during the past year, the Womela had formed a great portion of the food of the natives in New South Wales.

ZOOLOGICAL SOCIETY OF LONDON.

(Continued from page 152.)

March 25, 1845.—Mr. Gould exhibited seven new Birds from Australia, which he characterized as follows:—

CUCULUS OPTATUS. *Cuc. corpore superiore cæruleo-griseo; pogoniis internis primariarum fasciis latis albis ornatis; remigibus saturatè violaceo-brunneis; apicibus subalbidis, serie macularum oblongarum albarum alternatim ordinatâ; corpore subtùs albo, fasciis nigris.*

The whole of the upper surface slaty grey; inner webs of the primaries broadly barred with white; tail-feathers dark violet-brown, with a row of oblong spots of white placed alternately on either side of the stem, and slightly tipped with white; the lateral feathers have also a row of white spots on the margin of their inner webs; chin and breast light grey; all the under surface buffy white, crossed by bands of black; irides, bill, and feet, orange.

Total length, 13 inches; bill, $1\frac{1}{4}$; wing, $7\frac{3}{4}$; tail, $6\frac{1}{2}$; tarsi, $\frac{3}{4}$.

Hab. Port Essington, Australia.

Remark.—Closely allied to the Common Cuckoo (*Cuculus canorus*) of Europe.

CUCULUS INSPERATUS. *Cuc. capite, gulâ, et corpore superiore cæruleo-griseis; aliis, dorsoque nitidè viridescentibus; caudâ brunneo-viridi singulâ plumâ apice albo, et marginibus pogoniorum interiorum ordine macularum albarum triangularium ornatis; parte subscapulari tectricibus caudæ inferioribus, crissoque rufis; corpore subtùs rufo-tincto-griseo.*

Head, throat, and all the upper surface dark slate-grey; back and wings glossed with green; tail glossy brownish-green, each feather tipped with white, and with a row of triangular-shaped white marks on the margins of the inner webs; primaries and secondaries with a patch of white on their inner webs near the base; edge of the shoulder white; under surface of the shoulder, vent and under tail-coverts rufous; the remainder of the under-surface grey, washed with rufous; bill black; feet olive.

Total length, $9\frac{1}{4}$ inches; bill, 1; wing, $6\frac{1}{2}$; tail, 5; tarsi, $\frac{5}{8}$.

Hab. New South Wales.

Remark.—Nearly allied to *Cuculus cineraceus* of Vigors and Horsfield.

Cuculus dumetorum. *Cuc. capite, uropygio, colloque saturatè cæruleo-griseis; alis, caudâ dorsoque metallicè brunneis; apicibus remigum leviter albis; pogoniis interioribus serie macularum triangularium parvarum ornatis; pectore griseo, rufo-tincto.*

Head, neck, and rump, dark slate-grey; back, wings, and tail, bronzy-brown; tail-feathers slightly tipped with white and with a row of small triangular-shaped spots on the margins of their inner webs; breast grey, washed with rufous; under surface of the shoulder, flanks, vent, and under tail-coverts deep rufous; irides brown.

Total length, $8\frac{1}{2}$ inches; bill, $\frac{7}{8}$; wing, 5; tail, $4\frac{1}{2}$; tarsi, $\frac{1}{2}$.

Hab. Port Essington, Australia.

Remark.—Nearly allied to *Cuculus insperatus.*

Sphenœacus gramineus. *Sphen. vittâ supra oculos albâ; corpore supernè brunneo; mediâ plumarum saturatè brunneâ; subtùs griseo; lateribus crissoque cervinis; mediâ parte singulæ plumæ pectoris lineâ minimâ saturatè brunneâ ornatâ.*

Stripe over the eye white; all the upper surface brown, the centres of the feathers being dark brown; secondaries brownish black, margined with buff; tail pale reddish brown, with dark brown shafts; under surface grey, passing into buff on the flanks and vent; each feather of the breast with a very minute line of dark brown down the centre; bill and tarsi fleshy brown.

Total length, $5\frac{1}{4}$ inches; bill, $\frac{5}{8}$; wing, $2\frac{1}{4}$; tail, $2\frac{5}{8}$; tarsi, $\frac{3}{4}$.

Hab. Van Diemen's Land and the southern coast of Australia generally.

Pachycephala glaucura. *Pach. capite, loris, spatio infra oculos, et latâ maculâ semilunari trans pectus saturatè nigris; gulâ, intra maculam nigram, albâ; nuchâ posteriore, lineâ angustâ apud latera pectoris pone semilunam nigram, et corpore inferiore flavis; caudâ griseâ; tectricibus caudæ inferioribus albis vel subflavis.*

Head, lores, space beneath the eye, and a broad crescent-shaped mark from the latter across the breast, deep black; throat within the black, white; back of the neck, a narrow line down each side of the chest, behind the black crescent, and the under surface yellow; back and wing-coverts yellowish-olive; wings dark slate-colour, margined with grey; tail entirely grey; under tail-coverts white, or very slightly washed with yellow; irides reddish brown; bill black; feet dark brown.

Total length, 7 inches; bill, $\frac{5}{8}$; wing, 4; tail, $3\frac{5}{8}$; tarsi, 1.

Hab. Van Diemen's Land.

Nearly allied to *Pachycephala gutturalis*, but distinguished by a shorter bill and by the colouring of the tail, which is entirely grey.

Cysticola campestris. *Cyst. capite ferrugineo-rubro, dorso tectricibusque alarum brunneo-griseis; singulis plumis corporis superioris fasciâ longitudinali saturatè brunneâ ornatis; caudâ rufo-brunneâ, plumis duabus mediis latâ maculâ nigrâ juxta apices; corpore subtùs pallidè cervino.*

Head rusty red; back and wing-coverts brownish grey, all the feathers of the upper surface with a broad stripe of dark brown down the centre; wings blackish brown, the primaries margined externally with rusty red, and the secondaries edged all round with brownish grey; tail reddish brown, all but the two centre feathers, with a large spot of black near the tip; all the under surface pale buff.

Total length, 5¾ inches; bill, ⅝; wing, 2⅜; tail, 2¾; tarsi, ¾.
Hab. Australia.

Remark.—For the loan of this new species I am indebted to the kindness of H. E. Strickland, Esq.

CALAMODERPE LONGIROSTRIS. *Cal. vittâ pallidâ, supra oculos cervinâ; corpore supernè rufo, subtùs saturatè cervino; mento albido.*

Faint line over the eye fawn-colour; all the upper surface reddish brown, becoming more rufous on the upper tail-coverts; primaries and tail dark brown, fringed with rufous; chin whitish; all the under surface deep fawn-colour; irides yellowish brown.

Total length, 6½ inches; bill, 15-16ths; wing, 3; tail, 3; tarsi, 1.

Hab. Western Australia.

May 13, 1845.—Description of a new species of *Mitra*, by Lovell Reeve, Esq.:—

MITRA FORTICOSTATA. *Mitr. testâ abbreviato-ovatâ, spirâ subterritâ; anfractibus supernè angulatus, infra angulum longitudinaliter costatis, costis solidis fortissimis, distantibus, basim versus subobsoletè granosis; nigerrimo-fuscâ; columellâ quadriplicatâ.*

Conch. Icon., *Mitra*, pl. 30. f. 238.

Hab. New Holland.

Resembling *Mitra ficulina*, but of a much more solid and angular structure.

May 27, 1845.—Mr. Gould exhibited to the Meeting four new species of Birds from Australia, which he characterized as follows:—

ARDEA (HERODIAS) PICATA, *Ard. capite snperiore, occipite, plumis occipitalibus, corpore superiore, caudâ, alisque cæruleo-nigris; mento nuchâ, pectore, et quibusdam plumis a pectore dependentibus albis.*

Upper part of the head, occiput, occipital plumes, the whole of the plumage of the body, wings and tail, bluish slaty black;

chin, neck, chest and some of the lanceolate feathers dependent therefrom white; some few of the lanceolate feathers on the neck and breast have one web white and the other web bluish slaty black; the remainder of these lanceolate feathers are the same colour as the body; irides yellow; bill, legs and feet greenish yellow. In young specimens the whole of the under surface is white.

Total length, 17 inches; bill, $3\frac{1}{4}$; wing, 10; tail, $3\frac{1}{2}$; tarsi, $3\frac{1}{4}$.

Hab. Port Essington.

Colluricincla parvula. *Col. corpore superiore, caudâ, alisque olivacco-brunneis; subtùs pallidè cervinâ; medio plumarum gulæ et pectoris vittâ latâ brunneâ ornato.*

All the upper surface, wings and tail olive-brown; a faint line over the eye and the chin white; all the under surface pale buff, the feathers of the throat and breast with a broad stripe of brown down the centre; irides dark brownish red; bill blackish grey; tarsi bluish grey.

Total length, 7 inches; bill, 1: wing, 4; tail, $3\frac{1}{4}$; tarsi, 1.

Hab. Port Essington.

This is the smallest species of the genus yet discovered.

Melithreptus melanocephalus. *Mel. toto capite, gulâ, et maculâ similunari apud latera pectoris saturatè nigris; corpore supernè flavo-olivaceo pectore albo.*

The whole of the head and throat, and a similunar mark on either side of the chest, deep glossy black; all the upper surface yellowish olive, becoming brighter on the rump; wings and tail brownish grey, with lighter margins; breast white; remainder of the under surface greyish white; bill black; irides reddish brown; feet brown; bare skin over the eye pearly white, slightly tinged with green.

Total length, $5\frac{1}{4}$ inches; bill, 9-16ths; wing, 3; tail, 2 5-8ths; tarsi, $\frac{3}{4}$.

Hab. Van Diemen's Land.

Hemipodius scintillans. *Hem. corpore supernè pallidè castaneo, singulis plumis fasciis latis brunneo-nigris or-*

natis; marginibus plumarum cinereis; intra margines lineis angustis nigris et albis ornatis; tectricibus alarum et tertiariis pallidè castaneo-rubris balteis irregularibus ziczac fasciatis; interspatiis balteorum cinereo-albis; mento genisque albis maculâ semilunari brunneâ ad apicem singulæ plumæ; pectore et corpore inferiore pallidè cervino-albis; plumis pectoris ordine macularum saturatè grisearum ad marginem ornatis.

Upper surface light chestnut-red, all the feathers crossed by broad bars of brownish black and margined with grey, within which are two narrow lines of black and white; wing-coverts and tertiaries light chestnut-red, crossed by irregular zigzag bars of black, the interspaces margined externally with greyish white; chin and sides of the face white, with a narrow crescent-shaped mark of brown at the tip of each feather; sides of the breast chestnut, each feather tipped with white, within which is an indistinct mark of deep black; chest and under surface pale buffy white, the feathers of the chest with a row of dark grey spots on each margin, giving that part a speckled appearance; primaries brown, narrowly edged with white; irides reddish orange; feet yellow; bill horn-colour.

Total length, male, 5 inches; bill, 11-16ths; wing, $3\frac{1}{4}$; tarsi, 11-16ths. Female, 6 inches; bill, $\frac{3}{4}$; wing, $3\frac{1}{2}$; tarsi, $\frac{3}{4}$.

Hab. Houtmann's Abrolhos, off the western coast of Australia.

Remark.—Like the rest of the genus, the male is much inferior in size to the female. The species is very nearly allied to, but much smaller than, *Hemipodius varius.*

June 10, 1845.—Mr. Gould laid upon the table a series of Terns, and characterized a new species:—

STERNA GRACILIS. *St. summo capite et nuchâ posteriore saturatè nigris; lateribus nuchæ et parte inferiore seriacco-albis; pectore et abdomine leviter rosaceis; rostro carnicolore, apice brunneo-nigro; pedibus aureo-fuscis.*

Crown of the head, nape and back of the neck deep black; sides of the neck and all the under surface silky white, with a blush of rosy red on the breast and abdomen; back, wings and tail light grey, becoming darker on the primaries; irides brownish red; bill flesh-colour, except at the tip, where it is washed with blackish brown; feet orange red.

Total length, 13 inches; bill, $2\frac{1}{8}$; wing, $8\frac{1}{2}$; tail, $6\frac{1}{2}$; tarsi, $\frac{3}{4}$.

Hab. Houtmann's Abrolhos, off the western coast of Australia.

(To be continued.)

MINUTES OF THE TASMANIAN SOCIETY.

January 13, 1847.

Read the following extracts from a letter from Dr. E. C. Hobson, dated Melbourne, Port Phillip, 13th October, 1846, addressed to Mr. Ronald C. Gunn.

"With this you will receive a piece of fossil resin from the limestone of Point Nepean. It burns freely with an aromatic odour not unlike that from the resin of the Kauri (Dammara) Pine of New Zealand.

"The other day a bottle which had been thrown overboard from the unfortunate ship *George the Third*, about 60 miles S. of Van Diemen's Land, in 1835, was found in the bay of Port Phillip, about sixteen miles from Melbourne. Whether this bottle has been floating about ever since, or has been for some time buried in the sand, and only exhumed by the late strong southerly gales, I know not, but that it was found there is no doubt. Another bottle was found near Cape Liptrap, which had been thrown overboard by Sir James C. Ross, from H.M.S. *Erebus*, in lat. 53° 59′ S. long. 60° 47′ W. The first is singularly curious in the fact of the bottle hitting the very narrow entrance into Port Phillip Bay."

Mr. Gunn observed upon the first part of this letter that a very similar resin is found in sandstone at Macquarie Plains, a few miles above New Norfolk, in Van Diemen's Land. The indestructibility of resin by the ordinary action of water, or the weather, would tend to preserve it in many situations, in a fossil state, for vast periods. Few of the present Tasmanian *Coniferæ* yield resin in large quantities.

Mr. Ronald C. Gunn read notes of a botanical excursion to Lake St. Clair, and to the summit of Mount Olympus. The estimated height of the latter is about 5000 feet above the sea level. Mr. Gunn observed that the vegetation on the east and west sides of the Lake were very different and distinct. On the east side the principal trees are *Eucalypti*, with an underwood of *Banksia*, *Casuarina*, a dwarf sp., *Persoonia*, *Hakea lissosperma*, *Coprosma nitida*, &c., and the thickets were comparatively open; whereas, on the west side a dense mass of dark green vegetation consisting of *Fagus Cunninghami*, *Weinmannia australis*, 70 or 80 feet high, *Carpodontos lucida*, *Athrotaxis*, *Cupressoides*, *Microcachrys tetragona*, *Richea pandanifolia* *Cenarrenes nitida*, and many plants of similar habits grew down to the water's edge, and threw their branches far over it, rendering even landing no easy matter; the *Fagus* constituting the largest tree, except in a few situations where *Eucalypti* occurred.

At the base of Mount Olympus, which rises precipitously from the lake, the rock is a coarse sandstone, which continues from the level of the lake to about 700 feet up. The stratification is nearly horizontal, and the direction of the mountain range is nearly N. W. and S. E. He had no opportunity of showing the dip, but as streams of water fell over the upper ledge of the sandstone in almost one continuous sheet for miles, he presumed it to be towards the eastward. Immediately after rising over the sandstone, masses of loose basalt occurred, the lower part covered with vegetation, but much of the upper part barren and the blocks loosely thrown together as they fell from the top of the mountain. The summit of Mount Olympus is itself columnar basalt—vast numbers of the columns overturned, and many more, near the cliffs, diverging from the perpendicular. On the summit he observed *Podocarpus alpina* and *microcachrys tetragona?* clinging close to the rocks. *Eurybia ledifolia?* was in full flower. Amongst the new or rare plants at that elevation were a new one in *Cruciferæ*, a prostrate *Epilobium* in patches, *Gaultheria antipoda*, and a species of *Grammitis* growing in large patches in the holes between the rocks. A large mass of snow was on the top at this time, and would probably remain all the summer. Nearly all the mountains surrounding Lake St. Clair seemed to be of nearly the same elevation, and apparently of similar structure. Immediately below the summit occurs a new species of *Fagus* closely resembling *F. Antarctica*, and like that forming a low (probably deciduous) shrub, 5 to 8 feet high, and growing in large patches. The weight of the winters snows had pressed down the branches of this as well as all the neighbouring plants. Associated with this *Fagus* were *Athrotaxis selaginoides*, *Podocarpus alpina*, *Orites revoluta*, *Cystanthe sprengelioides*, *var. alpina*, and other alpine plants.

Specimens of the various plants collected were exhibited, as also a quantity of *resin* from the *Microcachrys tetragona.*

Mr. R. C. Gunn produced a fine specimen of Pumice, obtained by the Rev. Henry Jones, of H. M. S. *Castor*, from the River Wanganui, New Zealand; it is found in the sand, in the river bank some distance above the entrance of the river, evidently brought down by the stream from the volcanic mountain Tongariro. Mr. Gunn also exhibited a specimen of the Pumice which is occasionally washed ashore upon the islands in Bass's strait, and from the similarity of structure and appearance, Mr. Gunn thought it probable that these latter pieces came from New Zealand, and that they indicated a westerly direction in the current of the ocean.

W. H. Breton, Esq., drew the attention of the members to the following extract from the "Proceedings of the British Association for the advancement of Science, held at Southampton, in September, 1846," as published in the Hampshire Advertiser, recently received.

"THE TASMANIANS, a paper, by R. H. Davies, Esq., was read, (published in the *Tasmanian Journal*, vol. ii, page 409) on the above race, who command so much interest as having been extirpated from their country, and sent to Flinder's Island, within these few years. It contained some curious information respecting this race; for instance, the writer stated that he had seen an unweaned infant smoking a pipe, and that a woman would eat from fifty to sixty eggs, larger than a duck's, at one meal.

"The Chairman (Dr. R. G. Latham) stated, that among them there were to be found traces of four distinct languages, and that they were altogether distinct in race from the people of Australia.

"A conversation arose on the reading of this paper, as to the effect of that climate on the digestive organs.

"Mr. Ogilby stated it to be no uncommon circumstance for an individual, at a single meal, to eat 12 lbs. of meat, and wash it down with a gallon of train oil. These were, however, only occasional gorges.

"Dr. King stated that he had himself, while in that climate, eaten as much as 10 lbs. at a single meal."

Mr. Breton observed that Mr. Ogilby must surely have meant his remarks to apply to the aborigines of some other country, as those of Tasmania never had the opportunity of obtaining *train oil*. Nor could he admit that the climate is more conducive to increase of appetite than that of any other country, though unquestionably the labouring classes consume a large quantity of animal food as compared with the same classes in Britain. It must, however, be borne in mind that animal food is more easily obtained in Van Diemen's Land.

Lieut. M. C. Friend, R.N., produced a striated cube of *Sulphuret of Iron,* from King's Island, Bass's Straits, obtained by him from a sealer.

Some specimens of a very curious *Polype*? obtained by Mr. Gunn at low water off the rocks at Brown's River, 8 miles south from Hobart Town, were exhibited. They bore externally a very close resemblance to the fossil *Encrinites*, as usually figured, having a strong flexible stem, 3 to 6 or 7 inches long, which enabled the animal to be moved about by every wave.

A bat, differing from the two commonest species, obtained at Penquite, was exhibited by Mr. Gunn.

The Secretary drew the attention of the members to a statement published in the *Gardeners' Chronicle*, Oct. 3, 1846, that the *Solanum laciniatum*, or kangaroo apple of New Holland, had been affected by the potatoe disease in England.

February 10, 1847.

Read the following memorandum from Dr. W. R. Pugh relative to the state of the cargo of the barque *Rookery*, which consisted of copper ore from New Zealand :—

" I visited the barque *Rookery*, upon her arrival at this port from Sydney. The cargo I was informed consisted of about 180 tons of copper ore, from which considerable anxiety had been occasioned. The ore had become heated shortly after the vessel left Sydney, and the temperature appearing to increase daily, until the time of my visit, had induced the captain to make for this port, apprehensive that serious consequences to the vessel would ensue. On descending to the hold, I was shown a body of pyritic ore, occupying the centre of the vessel to an extent of about fifteen feet in length, and reaching to within about four feet of the beams. No other cargo was on board; the ore was carefully protected by billets of wood and wool bagging from contact with any part of the vessel; and neither leakage nor any other cause, independent of the inherent property of the cargo, could be found to offer an explanation of the circumstances into which I was requested to inquire. The temperature of the hold was 70° of Fahrenheit, and the surface of the ore gave indication of a very slight elevation above the surrounding air. On removing from about nine inches to one foot of the ore, the temperature was found to be 90°; and on extending the examination to a depth of two feet three inches, the thermometer stood at 133°. I had still a body of ore, of upwards of eight feet in thickness, and, judging from the circumstances above stated, concluded that a much greater heat than I had registered was present in the mass. The removal of the ore from the vessel as speedily as possible was decided on. During my visits to the vessel, while discharging the ore, I was careful to examine the appearance presented at the several depths; and, although I was unable to obtain by the aid of the thermometer evidence of a greater heat than 166°, indications of a much higher temperature were not wanting; the wool bagging near the centre of the heap was charred, and almost reduced to a state of tinder; the gum resin, of which a considerable quantity was mixed with the ore, had also been melted with the heat. I am perfectly satisfied, from the opportunities afforded me in the course of this inquiry, that no vessel can with propriety proceed to England with this ore as a portion of her cargo. If she reach her destination, it must be from a happy concurrence of circumstances rarely to be looked for in so lengthened a voyage. The quality of the ore makes its transmission the more difficult, containing as it does nearly a third of its weight of sulphur, exposed to decomposition from a great variety of agencies, and every change through which it may pass giving origin to heat sufficient to prove the focus of a destructive fire. Had the *Rookery* been so unfortunate as to receive her wool cargo at the port at which the copper ore was shipped, her destruction was certain. The absence of other cargo allowed the heat generated in the mass to be rapidly diffused, and thus the temperature was restrained within the limits of combustion."

Specimens of the ore were exhibited.

W. H. Breton, Esq., exhibited a siliceous fossil obtained by him from Fingal, which appeared to be part of the root of a monocotyledonous plant.

The Secretary read extracts from various letters from His Excellency C. J. La Trobe, Esq., Edward Curr, Esq., and Dr. E. C. Hobson, relative to an animal called *Bunyip*, stated to inhabit the deep ponds and water-holes in the rivers of Australia Felix, and much dreaded by the aborigines, but of which no authenticated specimen had ever been seen by any European. A concise account of the general result of the various aboriginal statements, as furnished by these gentlemen, is given by Mr. Gunn at page 147 of the last number of the *Tasmanian Journal.*

February 24, 1847.

Mr. Ronald C. Gunn exhibited a skull which he had received from Edward Curr, Esq., of Melbourne. It was found by Mr. Athol Fletcher on the bank of the river Murrumbidgee, and some of the aborigines stated it to be that of a *Bunyip*. A description of this skull by Mr. James Grant will be found at page 148 of the last number of the *Tasmanian Journal*.

Read extract from a letter from Dr. E. C. Hobson to Mr. R. C. Gunn, dated 8th February, 1847, who states:—"I have just returned from Point Nepean, and hasten to give you a short sketch of what I saw. Point Nepean rests upon a trappean formation, which becomes visible about two miles from Cape Schank. The oldest limestone is highly crystalline, indeed it is a tolerably good marble in some places. This is next to the trap. Immediately over this marble occur the remains of an ancient forest, with the stems and roots of the trees in situ, and highly crystalline. Over these stems and roots is a layer of boulders of about a foot thick; then follows soft sandstone, varying from twenty to one hundred feet in thickness, with its stratification in all directions, such as would be produced by the action of varied currents in an obstructed sea, and which may be seen in miniature as caused by the winds on our sandhills, wherever a section is exposed to view. Over this thick bed of diagonally stratified soft sandstone occurs another fossil forest with its roots and stems in situ, as in the lower one. This upper one is evidently of a more recent date, and the lime is amorphous, and not crystalline. Over this again occurs a boulder deposit as over the preceding, and this boulder stratum is the first you come to on penetrating the surface at Point Nepean. I have been able to trace this formation for upwards of sixty miles round Port Phillip bay; and I have little doubt but that these forests, which were submerged, buried under boulders and sand, and subsequently upheaved, to be again submerged and upheaved as I now see them, also occurred where the bay now is; for in heavy gales pieces of fossil wood and resin are driven on shore at places where none are to be seen on the coast. I shall at some early date throw these crude observations of mine relative to this most interesting locality into some form."

March 10, 1847.

Lieut. W. H. Breton, R.N., exhibited two specimens of a curious *Crinoidean* from the limestone at Fingal, received by him from F. L. Stieglitz, Esq. Mr. Breton observed that it was different from any form with which he was acquainted, or which he had ever seen figured. One specimen was 10½ inches long by 1 1-20th inch broad, and without any visible tapering at either end. Fifteen pairs of opposite off-sets, or arms, branched out at right angles at about every half inch, the largest of these smaller offsets being 1¼ inch long with a width of 3-10ths of an inch. The other specimen was 5½ inches long, 1 1-20th inch broad, with nine pairs of opposite off-shoots, as in the preceding. Associated in the rock were *Encrinital* plates, *Spirifer subradiatus*, *Fenestella ampla*, and other fossils characteristic of this formation in Tasmania. It is probable, however, that this *Crinoidean* is of the same species as Count Strzelecki, in his "Physical Description of New South Wales and Van Diemen's Land," states to occur in a similar formation near Marlborough, although he merely states "Crinoidal Columns" without giving any generic name.

Mr. Breton also produced two plovers, which had been shot the day before at Paterson's Plains, near Launceston, and observed that it was an unusual locality for them.

Lieut. M. C. Friend, R.N., read a paper "On the decrease of the aborigines of Tasmania." He alluded in it to the peculiar views of Count Strzelecki, as given at pages 346-7, of his "Physical Description of Australia" relative to the cause of that decrease; and Lieut. Friend, having recently visited the Aboriginal Establishment at Flinders' Island, quoted two instances which came under his notice whilst there, and which militated against the correctness of Strzelecki's view. One, a black woman, named Sarah, who had formerly four half-caste children by a sealer with whom she lived, has had since her abode at Flinders' Island, where she married a man of her own race, three black children, two of whom are still alive. The other, a black woman named Harriet, who had formerly, by a white man with whom she lived, two half-easte ehildren, and has had, since her marriage with a black man, a fine healthy black infant, who is still living.

A Meteorological Register, kept at the Port Office, George Town, was also shown.

Dr. W. R. Pugh exhibited a fine specimen of sulphate of alumina from the alum slate formation of Ben Lomond, V.D.L.

Mr. Breton exhibited a speeimen of malachite from South Australia.

March 24, 1847.

Read Sir T. L. Mitchell's aceount of his Journey into the north-western interior of New South Wales. Published in the present Number of *Tasmanian Journal.*

April 7, 1847.

Read Captain Sturt's Journal of his explorations in the interior of New Holland from South Australia. Vide present Number of *Tasmanian Journal.*

April 21, 1847.

Read extracts from a letter from Dr. E. C. Hobson, Melbourne, wherein he mentions having recently dug up at Mount Macedon an almost perfect jaw of the *Diprotodon*, Owen; also an immense number of jaws, teeth, and bones of at least three speeies of kangaroo. Specimens of many of these bones were exhibited to the members by Mr. Gunn, who obtaiued them from Dr. Hobson. Dr. Hobson also stated that, on recently comparing some wombat skulls in his possession, he found that both *Pascolomys Vombatus*, Leaeh, and *P. latifrons*, Owen, were indigenous to Port Phillip; and he observed that, although the former is quoted as a native of Van Diemen's Land and the latter of South Australia, that it is probable both will be found in South Australia, as he has now proved that they both exist at Port Phillip; and he suggests that it should be aseertained whether both species may not also inhabit Tasmania.

C. S. Henty, Esq., gave a very full and interesting account of the habits, manners, and customs of the aborigines of Portland Bay district, where he had resided for some months, and had had frequent opportunities of observing them.

May 5, 1847.

The reading of Captain Sturt's Journal resumed and concluded.

June 2, 1847.

W. Archer, jun., Esq., was elected a member.

Joseph Milligan, Esq., produced specimens of Galena, which occurs in thin seams in the mountain limestone about six miles below the ford on the River Franklin, near Macquarie Harbour. Mr. Milligan observed that it may probably occur in richer seams more to the north.

Mr. Milligan exhibited an extensive suite of specimens of the fossils peculiar to the mountain limestone near Macquarie Harbour. Beds of flint occur in layers in this limestone. He also described a tufaceous formation in a cave on the banks of the river Gordon, in which were imbedded vertebræ of the wallaby, and numerous specimens of the existing land shells. Over the place where these occurred there was a hole in the roof of the cave, one hundred feet overhead, down which the animals and shells must have dropped.

Dr. W. R. Pugh produced a specimen of Mercury stated to be found in a spring on the farm occupied by Mr. Tooth at Bagdad. Dr. Pugh was of opinion that the mercury was from some instrument which had been at some time broken in the cask which was at present used as a receiver for the water from the spring.

The Secretary announced that a Society had recently been established at Melbourne, under the auspices of His Honor C. J. Latrobe, Esq., upon similar principles and with corresponding objects to the Tasmanian Society; and that it was most probable the results of their labours in that most interesting country would be published in the *Tasmanian Journal.*

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF JANUARY, 1847.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	Nine, A.M. Wet.	Three, P.M. Dry.	Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 A.M.	WINDS. 3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29,828	68°5	29,686	70°	66°	64°	71°5	66°	74°	65°	Calm.	S. W.	,030	,972
2	29,625	70°	29,701	72°	72°5	68°	76°	67°	77°	56°	"	S. W.	,060	Nil.
3	30,009	63°	29,937	67°	60°	55°	70°	62°	77°	56°	"	N. W.	,020	,012
4	29,811	65°	29,724	69°	71°	63°	73°	64°	77°	56°	N. W.	N. W.	,050	,030
5	29,482	65°	29,538	67°5	67°5	62°	73°	63°	77°	49°	N. W.	N. W.	,070	Nil.
6	29,824	61°5	29,824	66°	63°5	55°	71°	61°	71°	57°	N. W.	N. W.	,080	Nil.
7	29,763	64°	29,646	69°	67°	59°	77°	66°	77°	62°5	N W.	N. W.	,070	,018
8	29,418	68°	29,686	69°	70°	64°	73°5	64°	77°5	46°	N. W.	N. W.	,100	Nil.
9	30,172	60°5	30,144	65°5	63°	55°	73°	65°	73°	49°	Calm.	N. W.	,070	Nil.
10	29,979	61°5	29,798	68°	65°	69°	72°	66°	76°	52°	N. W.	N. W.	,100	Nil.
11	30,027	61°	30,074	64°	61°	56°	67°	62°	77°	45°	N. W.	N. W.	,060	Nil.
12	30,217	61°	30,102	65°	68°	58°	74°	64°	75°	56°	S. W.	N. W.	,060	Nil.
13	29,843	65°	29,745	72°	71°	64°	79°	69°	80°	55°5	N. W.	N. W.	,080	Nil.
14	29,914	67°	29,918	72°	72°	64°	82°	70°	82°	55°5	N. W.	N. W.	,070	Nil.
15	30,108	67°	30,054	72°	71°	63°	82°	71°	82°	56°	S. W.	N W.	,060	Nil.
16	29,938	67°	29,837	70°	69°	65°	76°	67°	80°	55°	N. W.	N. W.	,050	Nil.
17	29,754	72°	29,682	76°	73°	69°	82°	72°	82°	54°	Calm.	N. W.	,120	Nil.
18	29,774	68°	29,755	74°			82°5	73°	85°5	58°	"	N. W.		Nil.
19	29,696	68°	29,637	75°	71°	67°5	77°	70°	77°	54°	"	N. W.		Nil.
20	29,637	68°	29,784	73°	77°	70°	77°	62°	77°	54°	N. W.	N. W.	,090	Nil.
21	29,915	69°	29,915	71°5	67°	59°	78°	62°	78°	54°	N. E.	N. W.	,080	Nil.
22	29,915	71°	29,932	73°	69°	63°	79°	68°	79°	62°	N. E.	N. W.	,070	Nil.
23	29,938	73°	29,939	82°	73°	66°	84°	71°	84°	62°	Calm.	N. W.	,060	Nil.
24	29,790	71°	29,758	70°	72°	64°	68°	60°	75°	54°	N· W.	N. W.	,090	Nil.
25			29,800	68°	64°	54°	68°	58°			N. W.	N. W.	,060	,054
26	29,940	71°	29,902	69°	62°	52°	74°	60°	74°	54°	N. W.	N. W.	,080	Nil.
27	29,879	65°	29,835	69°	65°	58°	74°	63°	74°	53°	N. W.	N. W.	,080	Nil.
28	29,921	71°	29,921	69°	66°	56°	73°	62°	73°	54°	N. W.	N. W.	,090	Nil.
29	29,940	63°5	29,851	67°5	64°	57°	72°5	63°	72°5	54°5	N. W.	N. W.	,080	Nil.
30	30,115	64°	30,115	68°	67°5	59°	75°	65°	75°5	54°5	N. W.	S. W.	,080	Nil.
31	29,997	65°5	29,911	67°5	67°	62°	71°5	64°	72°	59°5	N. W.	N. W.	,060	Nil.
Mean..	29,868	66°	29,843	70°5	67°5	61°	75°	65°	77°	55°		Total..	2,170	1,086

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF FEBRUARY, 1847.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	EXTERNAL THERMOMETER. Nine, A.M. Wet.	EXTERNAL THERMOMETER. Three, P.M. Dry.	EXTERNAL THERMOMETER. Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 A.M.	WINDS. 3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29,979	64°	29,979	62°5	64°5	59°	71°	64°	71°	56°	S. W.	N. W.	,070	Nil.
2	30,099	64°	30,051	67°5	68°	63°	72°	63°	74°5	54°	Calm.	N. W.	,060	Nil.
3	29,986	64°	29,853	69°	68°5	61°	78°	66°	78°	56°	"	N. W.	,080	Nil.
4	29,839	66°	29,764	70°	69°	62°	78°	68°	78°5	59°	"	Calm.	,060	,024
5	29,833	66°5	29,833	69°	66°5	60°	71°	62°	71°5	55°	S. W.	S. W.	,060	Nil.
6	30,047	64°	30,047	66°	64°	57°	69°5	61°	69°5	53°	S. W.	S. W.	,060	Nil.
7	30,163	64°5	30,163	66°	66°	60°	72°	66°	72°	55°5	S. W.	S. W.	,060	Nil.
8	30,163	65°5	30,093	67°5	69°	65°5	74°	65°	75°	59°	S. W.	S. W.	,050	Nil.
9	30,093	67°	30,003	69°5	69°5	63°	73°	65°	77°	59°	Calm.	N. W.	,060	Nil.
10	30,003	68°	29,945	70°5	71°	64°	76°	64°	77°	59°	"	S. W.	,080	Nil.
11	30,228	66°	30,228	68°5	62°	55°	72°	64°	64°5	62°	S. W.	N. W.	,070	Nil.
12	30,324	67°5	30,229	70°	70°	62°	75°5	66°	70°	62°	N. W.	N. W.	,080	Nil.
13	30,083	67°5	29,896	71°5	66°	62°	76°	69°	74°	60°	N. W.	N. W.	,050	Nil.
14	29,856	69°5	29,845	71°	72°	63°	74°	62°	77°	49°	Calm.	N. W.	,090	Nil.
15	29,983	65°	29,867	68°	62°5	55°	70°	60°	71°5	58°	"	N. W.	,100	Nil.
16	29,705	66°5	29,705	67°	67°	58°	70°	59°	70°	49°	N. W.	N. W.	,080	Nil.
17	29,922	63°5	29,922	67°	64°	58°	70°	58°	72°5	49°	N. W.	N. W.	,070	Nil.
18	29,993	63°5	29,878	67°5	63°	56°	73°	63°	74°	58°	Calm.	N. W.	,080	Nil.
19	30,001	65°	30,001	67°	63°	56°	74°	54°	70°	62°	"	N. W.	,050	Nil.
20	30,060	67°5	30,000	71°	69°	62°	76°	66°	77°5	63°5	"	N. W.	,050	Nil.
21	30,096	70°	29,982	73°5	72°5	67°	85°	72°	85°5	64°	"	N. W.	,090	Nil.
22	30,211	71°	30,211	75°	73°	63°	78°	69°	82°5	62°	S. W.	N. W.	,070	Nil.
23	30,211	71°	30,060	72°5	68°5	62°	75°	64°	81°	60°	S. W.	N. W.	,050	Nil.
24	29,975	72°	29,925	75°	81°	70°	81°	71°	87°5	67	Calm.	N. W.	,080	Nil.
25	30,040	73°	29,972	73°5	76°5	67°	84°	72°	83	61°5	"	N. W.	,080	Nil.
26	29,914	71°	29,791	73°5	75°5	67°	84°	74°	84°	66°5	"	S. W.	,050	Nil.
27	29,664	72°	29,463	73°5	69°	66°	80°	71°	84°	54°	"	N. W.	,070	,042
28	29,828	66°	29,841	69°	68°	63°	72°	68°	72°	43°	"	S. W.	,080	Nil.
Mean..	30,010	67°	29,912	69°5	68°5	61°5	75°	65°5	75°5	57°5		Total..	1,930	,066

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF MARCH, 1847.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	EXTERNAL THERMOMETER. Nine, A.M. Wet.	EXTERNAL THERMOMETER. Three, P.M. Dry.	EXTERNAL THERMOMETER. Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 A.M.	WINDS. 3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29,887	59°	29,791	65°	59°	55°	69°	60°	70°	48°	Calm.	N. W.	,060	Nil.
2	29,708	60°	29,785	63°	64°	57°	63°	57°	70°	43°5	N. W.	S. W.	,050	Nil.
3	30,025	60°	29,896	64°	55°5	53°	66°	62°	70°	44°	N. W.	N. W.	,060	Nil.
4	29,896	63°	29,799	66°5	62°	59°	74°	70°	74°	44°	Calm.	N. W.	,040	,072
5	29,785	65°	29,654	65°	61°	61°	63°	63°	74°	43°5	"	S. W.	,010	3,108
6	29,318	64°	29,374	66°	61°5	61°5	65°	64°	74°	43°	N. W.	S. W.	,030	.342
7	29,718	64°	29,781	66°	59°5	59°	65°	64°5	65°	52°	S. W.	S. W.	,030	.006
8	30,055	63°	30,055	66°	59°	58°	69°	67°	69°	56°	S. W.	S. W.	,030	Nil.
9	30,118	65°	30,019	67°	62°	54°	68°	60°	70°	58°	S. W.	N. W.	,060	Nil.
10	29,970	65°5	29,882	69°	66°5	63°	74°	65°	72°	59°	N. W.	N. W.	,040	,012
11	29,691	66°	29,466	68°	68°	62°	72°	69°	72°	53°5	N. W.	N W.	,070	,576
12	29,232	64°5	29,387	65°	59°	54°	62°	58°	62°	46°	N. W.	S. W.	,060	Nil.
13	29,665	60°	29,603	63°	54°5	51°	64°	57°	64°	50°	N. W.	N. W.	,040	Nil.
14	29,758	62°	29,758	64°	61°5	57°	63°	58°	63°	57°	N. W.	N. W.	,040	,024
15	30,049	63°	30,102	65°5	63°	59°	69°	63°	70°	55°	N. W.	N. W.	,050	Nil.
16	30,186	64°	30,088	68°	65°5	63°	78°	75°	78°	61°	Calm.	N. W.	,090	Nil.
17	30,000	67°	30,075	68°	68°	62°	66°	55°	66°	46°	N. W.	S. W.	,050	Nil.
18	30,222	61°5	30,222	64°	60°	55°	64°	60°	65°	54°	S. W.	N. W.	,060	Nil.
19	30,294	62°5	30,294	65°5	62°	58°	68°	62°	69°	51°	Calm.	N. W.	,040	Nil.
20	30,377	63°	30,312	67°	62°	58°	68°	62°	69°	56°	"	N. W.	,050	Nil.
21	30,188	65°	30,017	67°	63°	60°	67°	61°	69°	57°	N. W.	N. W.	,040	,102
22	29,769	65°	29,769	65°	60°	56°	64°	58°	65°	47°	N.N.E.	W.	,050	Nil.
23	30,007	60°	30,007	63°5	58°	52°	64°	55°	64°	49°	Calm.	N. W.	,040	Nil.
24	30,178	60°	30,103	63°	58°	53°	63°	57°	61°	52°	"	N. W.	,050	Nil.
25	20,103	60°	30,036	62°	56°5	53°	62°	57°	63°	55°	S. W.	S. W.	,030	.012
26	29,906	60°	29,757	61°5	58°	55°	61°	59°	62°	57°	S. W.	S. E.	,020	,240
27	29,434	61°	29,434	63°5	60°	57°	62°	58°	62°	53°5	S. W.	S. W.	,020	Nil.
28	29,649	62°	29,649	60°	61°	58°	67°	60°	69°	52°	Calm.	S W.	,040	Nil.
29	29,949	61°	29,949	64°	59°	56°	64°	60°	67°5	53°	"	S. E.	,030	Nil.
30	29 949	61°	30,067	65°	62°	56°	64°	56°	64°	47°	S. E.	S. E.	,060	Nil.
31	30,243	67°	30,243	65°	55°	50°	60°	54°	60°	41°	Calm.	S. E.	,040	Nil.
Mean..	29,849	62°5	29,818	65°	61°	56°5	66°	60°5	67°5	50°5		Total..	1,380	4,494

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF APRIL, 1847.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	Nine, A.M. Wet.	Three, P.M. Dry.	Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Lowest.	WINDS. 9 A.M.	WINDS. 3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	30,243	54°	30,138	60°	51°	48°	62°	56°	63°	45°	Calm.	N. W.	,020	Nil.
2	30,012	56°	30,012	59°5	54°5	52°	62°	57°	62°	51°	,,	N. W.	,030	Nil.
3	30,082	57°5	30,009	62°	55°5	53°	63°	58°	63°	51°	N. W.	N. W.	,030	Nil,
4	30,009	58°5	30,009	62°	57°5	53°	63°	60°	63°	52°	N. W.	N. W.	,040	Nil.
5	30,267	58°5	30,267	65°	54°	52°	60°	54°	60°	49°	Calm.	N. W,	,020	,003
6	30,067	58°	29,992	60°	54°	52°	62°	58°	62°	52°	,,	N. W.	,010	,006
7	29,992	58°5	29,909	63°	55°	54°	66°	63°	67°	55°	,,	N. W.	,020	,018
8	29,909	62°	29,600	65°	61°	60°	66°	63°	66°	53°	,,	N. W.	,030	,018
9	29,600	61°	29,831	64°	60°	56°	64°	62°	65°	46°	N. W.	N. W.	,060	Nil.
10	30,290	57°	30,290	59°5	54°5	52°	58°	55°	58°	50°	S. W.	S. W.	,030	Nil.
11	30,290	57°	30,105	61°	55°	52°	61°	56°	64°	55°	S. W.	S.	,020	,132
12	30,070	62°5	29,807	63°	64°	62°	62°	60°	64°	58°	N. W.	N. W.	,010	1,056
13	29,669	61°	29,669	63°	60°	57°	63°	60°	63°	54°5	S. W.	N. W.	,010	,312
14	29,825	60°	29,825	62°	57°	55°	62°	58°	62°	52°	Calm.	N. W.	,030	,084
15	30,177	58°5	30,209	60°	54°	52°	58°	55°	58°	50°	,,	Calm.	,020	,006
16	30,425	58°	30,425	61°	56°	54°	62°	58°	62°	49°	,,	S. W.	,010	Nil.
17	30,333	57°	30,210	60°	54°5	50°	62°	60°	62°	54°	,,	S. W,	,010	Nil,
18	30,031	60°	29,837	62°5	60°	58°	65°	63°	65°	59°	N. W.	N. W.	,010	1,284
19	29,282	62°	29,386	62°	59°	57°	62°	58°	62°	40°	N. W.	N. W.	,020	,300
20	30,042	54°	30,042	57°	49°	47°	56°	54°	56°	41°	Calm.	N. W.	,020	Nil,
21	30,273	52°5	30,273	56°	49°5	47°	57°	52°	57°	38°	,,	N. W,	,010	Nil.
22	30,273	50°	30,273	55°	45°	43°	55°	52°	55°	44°	,,	S. W.	,005	Nil,
23	30,156	52°	29,974	55°	48°	47°	56°	51°	56°	44°	,,	Calm.	,010	Nil.
24	29,555	52°	29,555	56°5	50°	48°	56°	55°	61°	49°	N. W.	N. W.	,010	,234
25	29,409	54°	29,409	58°	52°	50°	58°	54°	58°	49°	N. W.	N. W.	,020	Nil.
26	29,409	56°	29,443	57°	57°	53°	57°	52°	51°	40°	N. W.	N. W.	,030	Nil.
27	29,869	51°5	29,869	54°	49°	46°	50°	47°	52°5	36°	S, W.	S. W.	,015	Nil.
28	30,182	48°	30,182	51°	44°5	42°	50°	47°	49°	42°	S. W.	S. W.	,010	Nil,
29	30,182	51°	30,100	52°	49°	47°	52°	48°	52°	37°	S. W.	S. W.	,010	Nil.
30	30,100	48°	29,967	52°	46°	44°	54°	52°	55°5	47°	S. W.	S, W.	,010	,009
Mean..	29,998	55°5	29,953	59°	57°	51°	59°5	55°5	59°5	48°		Total..	,580	3,462

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF MAY, 1847.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine, A.M.		Three, P.M.							
					Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	29,657	53°	29,521	56°5	55°	53°	55°	54°	55°	38°	N. W.	N. W.	,010	,144
2	29,897	49°	29,897	53°	44°	42°	52°	50°	52°5	41°	N. W.	N. W.	,010	,792
3	29,743	50°	29,614	55°	49°	48°	56°	54°	60°	49°	Calm.	N. W.	,020	,051
4	29,485	58°	29,485	57°5	60°	58°	59°	54°	62°	55°	N. W.	N. W.	,030	Nil.
5	29,387	58°	29,387	58°5	59°	57°	56°	50°	50°	44°	N. W.	N. W.	,030	,072
6	29,763	52°	29,842	54°	49°	47°	52°	47°	52°	39°	N. W.	N. W.	,030	Nil.
7	29,980	48°5	29,896	54°	46°	44°	55°	51°	56°	45°	N. W.	N. W.	,020	,240
8	30,032	51°5	29,960	55°	50°	45°	56°	52°	57°5	48°	N. W.	N. W.	,010	,120
9	29,327	56°	29,375	54°	55°	52°	52°	46°	52°	45°	N. W.	N. W.	,040	,036
10	29,611	51°	29,611	53°	50°	47°	55°	49°	55°	41°	N. W.	N. W.	,040	Nil.
11	29,809	51°5	29,809	55°	50°	48°	56°	54°	57°	50°	Calm.	N. W.	,010	,036
12	29,848	56°			56°	54°			61°	53°	N. W.	N. W.	,020	,072
13	29,729	56°	29,729	55°	54°	52°	51°	48°	54°	33°	N. W.	N. W.	,020	Nil.
14	30,241	45°	30,241	50°	35°	34°	48°	46°	48°	34°	N. W.	N. W.	,010	,006
15	30,460	45°	30,460	48°5	39°	37°	49°	47°	50°	32°	S. W.	S. W.	,010	,006
16	30,460	43°	30,460	47°	34°	33°	48°	45°	48°	33°	Calm.	S. W.	,010	Nil.
17	30,712	45°	30,712	48°	42°	40°	50°	48°	52°	38°	,,	Calm.	,010	Nil.
18	30,140	46°	29,977	50°5	41°	42°	54°	52°	54°	44°	S. W.	,,	,010	,084
19	29,763	51°	29,763	53°5	52°	50°	53°	52°	53°	41°	Calm.	N. W.	,010	,096
20	29,851	49°	29,851	51°	44°	42°	51°	48°	53°	44°	,,	N. W.	,010	,270
21	29,575	54°	29,575	55°	53°	52°	54°	52°	54°	38°	N. W.	N. W.	,010	,048
22	29,924	48°	30,016	50°	42°	40°	48°	43°	48°	34°	N. W.	N. W.	,015	Nil.
23	30,179	44°5	30,179	48°	39°	37°	50°	47°	50°	31°	Calm.	Calm.	,005	Nil.
24	30,345	42°	30,345	47°	34°	33°	49°	43°	49°	31°	S. W.	S. W.	,010	Nil.
25	30,452	40°	30,452	45°	36°	34°	47°	44°	48°	33°	Calm.	Calm.	,010	Nil.
26	30,452	41°5	30,452	45°	35°	34°	49°	47°	50°	34°	,,		,010	Nil.
27	30,515	45°	30,515	49°	42°	40°	50°	48°	50°	37°	,,		,010	Nil.
28	30,562	45°	30,562	48°	40°	39°	51°	46°	51°	39°	,,		,010	Nil.
29	30,430	48°	30,430	51°	46°	44°	53°	51°	53°	39°	,,		,010	Nil.
30	30,384	47°	30,384	49°	45°	43°	47°	45°	47°	42°	,,		,005	Nil.
31	30,204	47°	29,975	47°	43°	42°	45°	44°	50°	43°	,,		,005	,600
Mean..	30,029	48°5	30,015	51°	45°5	44°	51°5	48°5	52°5	40°5		Total..	,460	2,673

THE

TASMANIAN JOURNAL

OF

NATURAL SCIENCE.

JANUARY, 1848.

ART. XIX. *Account of the Exploring Expedition from South Australia into the interior of New Holland.* By Captain STURT.

(Continued from page 208.)

(*From the South Australian Gazette.*)

I FOUND on gaining the tents that my fears as to the supply of water in the creek had been but too well grounded. The pond I had left was dry, and Mr. Poole had sunk a well in the middle of the creek, from which he obtained sufficient for the people, the cattle watering at a larger pool lower down to the S. E. of us. The information, however, that he gave me of his discoveries on the Stony Range relieved my mind of all present anxiety; but, before I moved the party, I again sent him, with Mr. Stuart, my draftsman, to examine the creek more particularly; and Mr. Poole's report being very favourable, we moved to the Rocky Glen on the 27th, and encamped close to a fine serpentine sheet of water, about a quarter of a mile in length. There was not much grass in the immediate neighbourhood of the camp, but there was an abundance of feed lower down the creek, and amongst the slaty hills to the westward of us. The Depôt Camp, in lat. 29° 40′ 14″ S., and long. 141° 30′ E., was established on the 27th January, and the tents were not again struck until the 14th of July following, making a detention of 161 days. We had little idea, however, when we sat down in that lonely wilderness, that we were to suffer so severe a trial. Had we been so, few of us, perhaps, would have had strength of mind to have sustained it. Mr. Poole, however, had not over-estimated the value of the spot to us. There was an abundant supply of water in the Glen, sheltered from the rays of the sun by high rocks, even supposing the pool at which we were encamped had run dry; but, although not 40 feet broad, it was 17½ feet deep, and about a quarter of a mile in length. Besides this, there was a lagoon, at which the cattle watered, but it was shallow, and was soon exhausted. The sources of this, to us, important creek, were to the westward of us, on large and open plains, that were elevated considerably above the desert country beyond them. In its progress to the eastward, it passed through a defile in the Slaty Range close to us, and at about a mile below the camp, joined a much larger creek from the north, on the dry character of which I have already remarked. Independently, however, of the Slaty Range through which the Depôt Creek passed, we had many hills in view. Of these, the Red Hill, afterwards called Mount Poole, on which I erected a pyramid of stones, and which bore 328° from the camp, distant four miles; and the Black Hill, were the most remarkable. The rock formation of the Black Hill was horn-slate, resting on a siliceous rock, common to the slate formation. Mount Poole rested on sandstone, the rock itself being a whiter stone, aluminous. The plains were generally bare or covered with salsolæ and atriplex, there being glass in the hollows of water-courses or on the sides of creeks only. The course of the creek was defined by gum trees, and low shrubs of acacia and others were scattered over the ground. Not only in the creek, where the trunks of trees were lodged high in the branches of the trees growing there, and the immense quantity of debris left in the creek itself, but over the whole of this region there were the marks of violent and terrific floods. The high water mark was far on the plains behind us; and when such a state of things exists, the lower country must present the appearance of a sea. It is evident, however, that these floods are very transitory, but they must, nevertheless, be sudden and dangerous; and there can be no doubt that if it had been our fate to have experienced an event of the kind, we should have seriously suffered; nor was it unfrequently that I contemplated the probability of such an occurrence in reference to the precarious ground we occupied.

At this point, however, we were safe, as far as our supply of water went; and it only remained for me to examine the country without loss of time, in order to gain a position still more favourable to the exploration of central Australia. On the 2nd Feb. I sent Flood to the north-west in search of water, but he returned on the following day unsuccessful. On the 5th I left the camp with Mr. Browne to trace the main creek to its termination; and if possible, to communicate with the natives—Mr. Poole having seen a number migrating down it on a former occasion. After a ride of 30 miles we found that the creek terminated in extensive grassy plains; but before spreading over these it had a long, narrow, deep channel of water, darkly shaded with trees, which contained water for a long time after water had vanished from every part of the country excepting the Depôt Creek. These plains, if nearer Adelaide, would form several beautiful cattle stations; although their being occasionally flooded might be of temporary inconvenience. The natives I fell in with on this excursion were few in number, and timid in manner; but they did not avoid us. At this time both I myself and my officers first felt the effects of scurvy; pains of various kinds, spongy gums, pieces of flesh hanging from the roof of the mouth, and other symptoms of that terrific and horrid disease. I knew not the cause of my suffering; but on speaking to Mr. Browne I became aware of the fact; but as I had not partaken of salt meat in any quantity, had indeed been abstemious in its use, I was at a loss to conjecture why I should have been attacked. However, so it was, that we were all three attacked, Mr. Poole being worse than either myself or Mr. Browne. I had been dissatisfied with the result of my recent journey to the north with Mr. Browne, and was anxious to ascertain more distinctly the character of the interior beyond the parallel of 28°. To satisfy myself on this head and to search the country over for water to the N.W., I left the camp on the morning of the 8th, with Mr. Stuart, Flood, and Joseph. My object was to gain the most distant water in the little creek beyond the hills, the second from which we had driven the native, and from it to take the light cart with as much water as one horse could draw. I hoped, although it was doubtful, that I should still find water in that shallow basin, and I proposed leaving Mr. Stuart to trace in the hills more fully, and Flood to look after the horses during my absence. Arrived at the point, I found that there was water, but it was all but gone. Muddy, and smelling most offensively, as well as having a mucous taste, from the destruction of animalculæ in it. However, we had no choice to make, no time to hesitate, as the water, bad as it was, would not hold out many days longer. We filled our casks, and a small box I had brought for the purpose; and I hoped, that with proper management we should gain lat. 27° 30′, if not a higher point to the north, which course I took up, thus leaving the little hills Mr. Browne and I had ascended considerably to our left. I had only Joseph with me, but in order to spin out our supply of water as long as possible, we were obliged to limit ourselves as well as the horse, to which we gave six gallons a-day. But in three days he gave indications of suffering, and it was evident that he would not do much with so little. The intense heat of the sun, and the strain of pulling over the ridges of sand we were obliged to cross, entirely overpowered him, and I saw with regret, before we had gained the parallel of 28° that we should not get much further; we were under such circumstances in lat. 28° 8′. The country there had become one of pure sand. There were no flats between ridges, but a succession of hollows, although the line of the ridges was distinct. Grass was but scanty, but the ground was otherwise matted over with spinifex, the sharp points of which were equally distressing to ourselves and to our horses as we walked through it. I was at length obliged to abandon the horse, and after tethering him to a bush, for there were no trees, round which there were a few tufts of grass, I started with Joseph to walk as far as we could, or until I judged that we had, at all events, crossed the 28° parallel. Standing on the raised point of a sandy ridge our view was still limited, nor was there any apparent change of country at hand. The view was as disheartening and as barren as can be imagined. Sand was the universal soil, spinifex the almost unbroken covering of the land, excepting that here and there a weakly melaleuca spread out its branches. I found myself obliged to turn back as little satisfied as with my former excursion, and in great doubts whether I should ever get my poor horse back to the water hole: fearful, too, that the water might all have evaporated, I was still obliged to limit him, as I knew it would be out of his power to gain the water in the hills if we were improvident. Happily we got to our destination without any accident, and managed to bale up enough for poor Rodney; but neither was Mr. Stuart nor Flood at the place. When we resumed our journey on the following morning we observed the mud we left fast settling into a consistency.

As we rode over the hills this second time, we observed some gum trees to our left, which had escaped my notice and that of Mr. Browne when we passed the same way. I desired Mr. Stuart and Flood to go up to them during my absence, as they were always a happy omen. Not finding either of them at the place at which we separated, I knew they must have found water somewhere else, and I accordingly struck away for the trees, and there found them anxiously awaiting our return, and very comfortably established by a waterhole, that, although diminished and indeed almost exhausted, must not very long before have been deep. The water, though muddy, was good, and here, on the following day—Sunday, 16th—I gave myself a day of rest. The water-hole on which we now depended, was in the bed of the creek, which I had thought spread over the flats to the eastward; but on a closer examination, Mr. Stuart found that it picked up again, and ran to the westward. It had attained a tolerable width, and Flood, who had been some miles down it, assured me it was well deserving further examination. The direction in which it seemed to lead was also favourable to my views of examining the interior to the N. W., and I therefore at once resolved on a journey down it, leaving Joseph with the jaded horse I had had in the desert, to recruit themselves. I started with Mr. Stuart and Flood on the 17th. The creek led us contrary to my expectation, rather to the south of west; but at 28 miles we came to two fine water-holes, which some natives had only just quitted. Sandy ridges occasionally abutted on the creek, but so far it was generally bounded by plains similar in soil and productions to those of the Darling. About a quarter of a mile below these ponds, the creek spread over a large and grassy plain, surrounded on all sides by sand hills, and to the westward by scrub. The channel of the creek was entirely lost on the plain, but we recovered it in the N.W. angle, and followed it through a narrow, well-wooded valley, for eight miles, when we were brought up by a bank of white clay, over which it is evident the superfluous waters fell into and inundated a beautiful and grassy plain on the other side of it; but nowhere could we find water after we left the ponds at which we had slept. It was to no purpose that we tried the country round. There was not a channel of any kind beyond the Grassy plain to form a creek, and the surface water had long before been dissipated, and deep holes in the creeks had dried up, and were now hard and cracked. The heat at this time was terrific. We could not keep our feet in our stirrups, nor, at noon, was it possible to move. The wind invariably blew from E.S.E., with a deep purple haze to the west, and going round with the sun, blew hard at 12, but moderated at sunset. The gusts of heated air that we sometimes felt were enough to wither every thing; and indeed the vegetation and trees sufficiently attested the heat of the surface soil, since all were denuded of leaves near the ground, and had tops like umbrellas. In turning back I felt assured that there was no water at an attainable distance to the N. W. from where I was—lat. 29° 6′, long. 141° 5′ 15″—the position of the Grassy Plain. We had therefore, during our search for water, passed into the province of South Australia, and cut its eastern boundary about lat. 29° 3′ 30″. The day we regained the pond at which I had left Joseph, Flood was obliged to ask me to pull up and allow him to take shelter from the intense heat of the sun; and I accordingly did so, although truly there was no shade, for he might as well have stood under a sieve as under one of the hakeas, the only bush to be seen. The horses also suffered greatly, and were so drowsy and weak that they could hardly hold up their heads, but slept whilst we halted. We reached our journey's end about 5 p.m., when the thermometer, under the shade of a large tree, at six feet from the ground, stood at 133° and in the sun at 157° On a former occasion it had risen, when Mr. Browne and I were to the north, to 131° in the shade, and 152° in the sun; yet we did not feel this tremendous heat so much as might have been expected. We had now had three months of dry weather, nor did there appear to be any prospect of rain; still, we had other points to try before I could persuade myself that we were to consider ourselves as prisoners at the depôt until it should please God to release us from that solitary dungeon. Giving myself two or three day's rest after my return to the depôt, I again left it, with Mr. Browne, to try the country to the E. and N. E. of me; but after a journey of more than 100 miles to the east, we were forced back in consequence of the total absence of water, from as miserable a country as man ever traversed. It was one vast plain after we had passed the lower water in the creek. Large bare shallow basins, and the dry beds of salt lagoons, with numerous salsolaceous productions, and no grass, were the predominant features of the sterile region then between us and the Darling. The sandy ridges even were preferable to it.

On our return to the camp, we found Mr. Poole very unwell. He had indeed been getting worse and worse every day. Mr. Browne, however, did not complain, and for myself the only remains of scurvy in me now appeared to be occasional headaches and swelled gums. But Mr. Poole was obliged to use a stick, and suffered great pain in his limbs. I had taken the horses out so much that I was now obliged to give them the rest my impatience grudged them; but it was clear they would not endure much more; and the serious and reiterated remonstrances of Flood obliged me to show some consideration for them. On the 21st of April, however, I thought they were again fit for work, and once more left the camp, with Mr. Browne, for the westward; but our journey was one of exposure and privation only. We found, it is true, a puddle of mud in a hole in a small creek we were tracing down, but I could not drink, and I really wonder how Mr. Browne did, for it fell over the edge of our panikins like clotted cream. On this occasion we tried to gain the shores of Lake Torrens, but failed in doing so, our journey not extending to more than 70 miles from the depôt. We traversed a country totally destitute of water, composed, as usual, of alternate narrow flats and sandy ridges, but saw no pine trees on them; the general timber—if so bushes might be called—being hakea, banksia, casuarinæ, and acaciæ of various kinds. It was on this journey that two beautiful parrots flying over the country, at dusk, pitched close to our fire, no doubt fancying that water was near; but none was there for them, and they soon again took wing and flew away. I now began to give up all hopes of being able to push on until we should have rain; and yet I could not bring myself to believe that we were indeed shut up and powerless of exertion. Yet, day after day, week after week, and month after month, passed away in hopeless inactivity. Anxiously and eagerly did we watch the clouds settling on the Mount Serle range, and a single thunder peal was sufficient to rouse us to exertion, and to send us towards the hills in the vain hope that a stray shower might have fallen within reach of us. To add to our regret, Mr. Poole now became a cripple, and on the 25th of April took to his bed, from which he never rose again. Our greatest comfort at this time was an underground room we had made close to the creek, the temperature of which was eight or ten degrees cooler than in any other position. But even here, it was almost impossible to map, so quickly did the water dry in the brush. Gradually, however, we settled down, and the routine of the camp went on with all regularity. Gradually, too, every thing green disappeared from our neighbourhood, and the cattle were reduced to eat the bushes and trees, so that at last the view from our camp was one of the most barren description. In order to keep the men employed, and, as it is generally said, out of mischief, I set them to raise a mound of stone, in the shape of a pyramid, on the summit of Mount Poole; and I little imagined, whilst I was so employed, that I was rearing his monument. He lies within view of that rude pyramid, which it will take time long to destroy.

During the first month of our sojourn at the depôt the heat was intolerable; yet the sheep throve well, and weighed more than when we got them, but there was a stop to any growth of their wool, as well as our own hair, which crackled like a cat's back, and became perfectly dry and crisp.

Day after day I watched the water in the creek sink; inch by inch it lowered, until from a depth of 17 feet it was only 2¼. In another month, if rain had not fallen, the channel would have been as dry as the plains on either side of it. But I looked upon this —which, if we had had no other supply to rely upon would have been fearful to contemplate,—without emotion, and was truly thankful to Providence for having directed our steps to a place of permanent safety; the only one that burning and trackless desert possessed.

It may not be necessary for me to specify the numerous journeys undertaken during our long and lonely stay at the depôt. The months of May and June flew over our heads, and yet no rain fell. The sky was generally clouded at the full of the moon; but the queen of night chased them from before her with most singular power. I have seen a dense mass of clouds rise simultaneously with the moon at opposite points in the heavens; and I have seen them gradually driven back until the sky has presented an unsullied blue, and the intense moonlight injurious to the vision more than the fiery glare of the sun at noonday. About the beginning of June I first entertained the idea of dividing my party, and sending Mr. Poole home with six of the men. I saw that for months past we had been consuming our provisions, and that unless I did so I should not have enough to extend my investigations. There were many circumstances that rendered it a painful task for me to communicate my intentions to Mr. Poole, and in the weak state in which he was it naturally subdued him. He saw the necessity of the measure, however, and in anticipation of rain, I had had every thing prepared for his departure. I had a tilt fixed to one of the drays, and a swing cot with props. I gave Mr. Poole the selection of his own men; had their rations measured out, and every thing held in readiness for the immediate departure of the party so soon as I should feel myself justified in allowing them to proceed on their homeward route. During our stay at the depôt the mimimum cold was 24°, a point much lower than I had known it at Adelaide; thus then there was a difference of 133° between the extremes of summer heat and winter cold, the former having been 157°. The mean of the thermometer during the months of December, January, and February, was 102°, 104°, 101°; the wind during these months blowing from the E.S.E. in the morning, and going round with the sun. The month of July—that of our liberation—set in without any appearrance of rain; nor was it until the 13th that denser clouds than usual loaded the sky. At this time Mr. Poole had been removed from his tent to the underground room, in which we had had a chimney built for his comfort. The first drops of rain fell on him as he was carried to it; and it was with intense anxiety that one and all now looked to the weather, and prayed for that rain which could alone relieve us from a position so trying as that in which we had so long been placed, and enable us once more to take the field.

It will readily be believed that our detention at the depôt was severely felt by us all. If I say that no rain fell from the 16th of November, 1844, to the 13th of July, 1845, I should be incorrect; rain certainly fell on two or three occasions, but never in such quantities as to saturate our tents. I began to fear, indeed, that the heartless region in which we were was subject to periodical droughts; and that it had been, as I now feel satisfied it was, our misfortune to penetrate the desert at the commencement of one of these visitations. I saw one of my companions rapidly declining in health, and suffering most acute pains. I saw my men consuming their provisions in idle repose, and the water sinking daily and steadily inch by inch. So circumstanced that

I could neither advance nor retreat; my sojourn at the depôt was one of ceaseless anxiety and sorrow. I had one object in view—the penetration of Central Australia—I was bound to this, both by my instructions, and my own earnest desire; and I would not have turned aside from such a pursuit to traverse the finest country under heaven, so long as I retained strength and hope. It was not to keep round the borders of a desert that I was sent out, but to make my way into the heart of a mighty continent, to penetrate to a spot which I firmly believe was never trodden by the foot, either of civilized or uncivilized man, and which none but the ambitious will now ever attempt to gain. I did my utmost to achieve that which would have done me honor: but I failed. Nevertheless, I should have rejoiced if fertile regions had been in my path, and if under the guidance of Providence I could have opened out new prospects of advantage to the Australian colonies.

It remains for me to detail the events that took place just preceding and subsequently to the breaking up of the Depôt. I had, whilst the men were idle, employed them in chaining towards the creek I had traced, on my return from my second journey northwards, at the extremity of which I had determined to fix my second Depôt, when I should move. We had connected our camp with the Darling, by careful bearings as we advanced up the country; but I foresaw that on resuming our labours we should soon lose the means of continuing them. Revolving in my mind the direction in which I should go in the event of the fall of rain, it appeared to me that I could not do better than push for the N.E. angle of Lake Torrens. I hoped, indeed, that I should find it connected with some more central body of water, the early discovery of which would facilitate my future operations. Under any circumstances, I should be making to the point I wanted to gain, the 138th meridian, through the centre of the Province of South Australia. Having decided, then, on this step, I thought it desirable to connect the eastern with the western surveys by some more satisfactory process than lunar observations, and so to fix approximately, at all events, the distance between the Darling and Lake Torrens. It was with this in view that I employed the men with the chain; and by supplying them with water from the Depôt, they were enabled to complete thirty miles, on a bearing of 105° from the camp. On the 12th the sky darkened over, the wind flew round to the N.N.W., and a misty rain fell, and continued for some time. It was during this that Mr. Poole was carried from his tent to the under-ground room. Towards evening the rain ceased, and I feared it would pass away; nor can I describe my feelings at that anxious moment. I watched the clouds and saw them break, but they closed again; the wind kept to its point, and a steady rain set in. For two days it fell with ceaseless regularity. The ground became saturated, every hollow filled, and waters were rippling down every gully. Now then was the time. How did I not thank my God for extending his bounty to us at last! I no longer hesitated breaking up the camp. I directed the home returning party to be prepared on the morning of the 16th. On that morning Mr. Poole was lifted into his stretcher, which the generous attention and anxiety of Mr. Browne had made comfortable. His dray was lined with sheep-skins, and covered with blankets. I had given him the choice of the men, and of the team that was to draw him, and I hoped he would reach Adelaide in safety. The evening before we separated I sent for Mr. Browne, and told him that, calling to recollection the conditions on which he accompanied me, I was aware how injurious our detention had been to him; that I knew he ought to be on his return, to look to his own interest, not about to recommence a journey that might terminate as unfortunately as it had commenced; and, therefore, felt it my duty to give him the option of returning with Mr. Poole; but he would not desert me. I then begged of him to accompany Mr. Poole the first day, which I knew would be his worst, and I was anxious to ascertain how he bore movement. About nine o'clock the dray was brought to the entrance of the underground room, to which he had so lately been removed. Our poor companion was reluctant to be conveyed to it, and in truth it was a distressing occasion for us all. Deposited in his bed, I went to bid him adieu, and we were both of us affected at separating; but I cheered him with the hope of returning to meet us, when we should have finished our labours, and I watched the party as it left the camp as long as it continued in sight. The events of the day had made it too late for me to move; besides I had told Mr. Browne that I would wait for his return, so that I remained stationary. On the 17th the horses, which had always been at hand, were nowhere to be found, and caused a temporary delay; nor had I cleared the creek when Mr. Browne overtook me, and I learnt from him, with real satisfaction, that he had left Mr. Poole tranquil and reconciled to his return, and that he had every hope of him.

I now sent on a light party with Mr. Piesse and Mr. Stuart to continue the chaining, so as not to cause delay, and we moved on; but the ground was so heavy that I only gained five miles. It was dark, but Mr. Browne and I were still up, when we heard a horseman approaching the tents. He stopped at that of our servant, and asked if I was in bed, he was informed that I was not; and in turn was asked what had brought him back—for it was the lad I had sent to wait personally on Mr. Poole—" Why (he replied) Mr. Poole is dead." Mr. Browne and I started on our feet; and on enquiring learnt that he had died suddenly at 3 p. m. that same afternoon, and it was clear, on a view of his features, that internal hemmorrhage had been the sudden and immediate cause of his death. This melancholy event checked my advance. I resolved on depositing Mr. Poole's remains at the Depôt, for which purpose I recalled the chainers, and once more collected the party. The mournful ceremony of his interment was a fitting close to our sojourn, at a spot which, on looking back to it, bears not one single pleasing recollection. Mr. Poole's death obliged me to nominate Mr. Piesse to the charge of the home returning party, with whom I reluctantly parted, for a more zealous, anxious, and careful person could not have been employed by me, or one to whose rigid attention to the stores, and earnest desire to make himself useful, I was more indebted. The two parties separated at Mr. Poole's grave—the one turned its back upon the desert, the other advanced still further into it. The valleys from the hills soon opened out into plains, as we increased our distance from them; and on the second day we were toiling over sandy ridges, and found it impossible to advance more than ten miles a day. On the 28th we had cleared sixty-one miles, and were higher up in point of latitude than Mount Hopeless. I therefore determined to alter my bearings, on which the measurement was carried on to 75° to the west of south; and whilst I was engaged fixing the depôt in its new position, Mr. Browne, who was ever ready to assist me, went with Mr. Stuart and the chainers. Having pitched the tents on a little sand-hill, on which there were several native huts, and directed a stockyard to be erected, and a garden to be prepared; and having also given such instructions as I thought necessary, I left the camp on the morning of the 30th with Flood, and overtook Mr. Browne on the evening of the 1st of August. We saw and communicated with several parties of natives, availing themselves of the surface-water left by the recent rains, the only occasions on which these lonely deserts can be traversed, to capture the jerboa, which inhabit the sand ridges in thousands. One man had no less than eighty in his bag, of this beautiful little animal, all of which he and his companion devoured at a single meal.

We travelled over high sandy ridges, separated as usual by long narrow flats running longitudinally N.N.E. and S.S.W., so that they were now running in a more northerly direction. On the 2nd we passed through a terrible country and over ridges of sand that in the distance looked like brick walls. No trees were to be seen, and but little vegetation of any kind. We halted at eleven and a half miles, and from a neighbouring hill sighted some very distant and lofty ranges to the S.S.W. The country had become barren beyond description, and resembled the most barren neighbourhood of the sea. On the 4th we crossed a salt-water creek, coming from the north, with deep holes of dark blue water, as strong as brine, and at a quarter of a mile from it a little creek of fresh water, the only one we did cross in chaining 131¾ miles, the distance we had chained on the 5th, when we were suddenly stopped by the broad, shallow, dry and sandy bed of a great lake; for on gaining the summit of a bank, beyond which the country had appeared very depressed, this cold and barren feature lay before us. The bank had been gradually washed down by heavy rains, and sloped to the margin of the lake, if such it might be called. It extended southwards beyond the range of vision, but turned to the west in a northerly direction, as Mr. Eyre has given the turn to Lake Torrens. It was about twelve miles broad. The country on the other side seemed to be wooded, and beyond the wood there was a deep hollow.

The N.W. extremity of this basin bore 283°, the southern 158°, from where we stood. The ranges I have mentioned, from the same place, bore respectively 198°, 188° 40′, and 182°; and a flat-topped nearer range, more to the west, 231°. After surveying the ground, Mr. Browne and I descended into the basin, but failed in crossing it, as it was soft mud. There was but little surface salt; but large nodules of clay, into which the torrents had cut deep grooves, evidenced the heavy nature of the floods in that dreary region. "It is impossible (I say in my journal of the 4th August) to convey in language any idea of the appearance of this basin or the country round it. Its desolate barrenness, dreary monotony, and its denuded aspect are wholly indescribable." Failing in my attempt to cross the lake, I tried to turn it, but could not; and finding that the country to the N.W. was impracticable, after due examination, I determined on leaving it in its loneliness and returning to the camp. I measured a base line to connect the ranges with our previous measurements. Our latitude was 27° 15′ S.; our longitude, by account, was 139° 50′ E., variation 4° 50′ E. The country looked worse as we returned to the camp than on our advance, and we really were rejoiced at the sight of the grassy plain on the northern extremity of which I had established the depôt. I now made preparations for a more extensive exploration of the interior to the N.W. I had a stockade built for the safety of the party during my absence, and everything being in readiness for our departure, I left the camp on the 14th August with Mr. Browne, Flood, Joseph and Lewis, taking fifteen weeks' provisions in the light cart. I was sorry to observe, however, that the horses were far from strong, although apparently in good condition, and that it would be necessary to be very careful with them. No rain had fallen since the 16th July, and all the surface-water on which we had subsisted on our recent journey was gone. We travelled eighty-six miles over sandy ridges and flats, such as I have already described, before we struck a creek with a fine sheet of water in it, and such as I could not have dreamt of finding in so level a country. We had only passed two shallow pools of water in the above distance, at both of which I deemed it prudent to dig pits, to accumulate the water and prevent its speedier evaporation over an extended surface. It was not always that these wells proved serviceable; but once, if not oftener, they saved the party, I will not say from perishing, but from great suffering. The creek we had now discovered was of great promise; the sheet of water in it was so broad that the wild fowl sat unconcerned at our presence upon it, and it was 150 or 200 yards in length. I had determined on a course of 340°, a course that would gradually have taken me to the centre of the continent, and was that which appeared to me to be the best on which I could carry out the objects of the expedition. The creek we had struck evidently came from the north. There were two huts on its banks, and the claws of crayfish near them. Anxious to examine it more closely, I halted under some gum trees, where there was some good feed for the horses, and detached Mr. Browne with Flood, directing the former to trace the creek upwards, and to ascertain if it supported its appearance. This he did; but as, on his return, he informed me that at seven miles he lost its channel on a large plain, and its character seemed doubtful, I did not turn from my course to follow it further, but, crossing its bed on the following morning, traversed extensive plains, bounded by sand-hills, and subject to inundation. As Mr. Browne had found the country to the north very low and open, so we now found it to the westward. We now struck four creeks successively, all having water and grass in their beds, though the former was thick and muddy. All these creeks came from the N.E., but we invariably lost them, after a short course, on some extensive plain. But the fact of creeks of great size, such as these, existing in a country so unlikely to give birth to such features, was matter of infinite surprise to me. They occurred at intervals of 10 or 20 miles apart, the intervening country being open plains, with occasional sandy ridges; and, looking at them from any height, they appeared to be a succession of shallow basins, occasionally filled with water. The soil of these plains was partly alluvial, like the soil of the Darling flats, and there was a mixture of productions upon them.

Had the country continued as we thus found it, we should have had but few difficulties to struggle with; but, even here, where water was for the time abundant, we had frequent opportunities of seeing the natives greatly distressed for the want of that life-sustaining element. The last creek we struck had several pools of water in it, but they were so thick and muddy that we passed them, and at length came to a deep pond of clear green water, that at once convinced us it was brackish, and so we found it, but not disagreeably so; so we stopped at it for the night; and Mr. Browne, arming himself with a pin-hook and line, caught some silver perch of no great size, but very acceptable to us. Yet it was matter of surprise how these fish could have got into so isolated a position; none of the other ponds contained anything but tadpoles and animalculæ. This, however, was a mystery that was subsequently revealed. Immediately below the pond, the channel of the creek was lost on an extensive polygonum flat. We crossed it however, and, at a mile, ascended a confused mass of sand hills and clay, from which we descended to a country black with samphire and salsolaceous plants, in the midst of which, and directly in our course, was the white and glittering bed of a dry salt lagoon. Crossing this, and entering a low barren scrub, we passed under a belt of gum trees, and suddenly found ourselves on the outskirts of extensive grassy plains, similar to those on which I had established the depôt, and owing their existence I should think, most probably as it did, to the overflow of the last creek we had passed. Striking across these plains, which had a belt of trees round them, backed by sand ridges, we surprised some native women gathering seed, and had a long parley with them. Asking them where we should find water, they pointed in the opposite direction to that in which I wished to go, and showed extreme anxiety to persuade us that there was no water in any other. However, I persevered in my course, and on reaching the extremity of the plain, came upon two huts, before which some little urchins were playing, who bolted under cover the moment they saw us. Here then was the cause of uneasiness manifested by the women; but their children were in no danger from us, we would not have harmed a hair of their heads. Near the huts there was a pool of water, but it contained so little that I searched the neighbourhood before I decided on stopping at it for the night —so loath was I to deprive the poor natives of it; but I could find none elsewhere, and one of my men being ill I was obliged to pull up. The women soon afterwards came to the huts, at which there was also a very old man. In the afternoon the lord of the manor made his appearance. He was splendidly painted, and was armed with spear and helemar, and was exceeding wrath at our having taken possession of his water-hole. He ordered us away; and told us that he would go and rouse his tribe and kill us all; but seeing, I suppose, that his threats made no impression he sat down and sulked. I admired his courage however, and after giving him time to cool, went to make him a present from the camp, to which I had returned, but he had left his habitation with all his tribe, and we saw no more of him. In the morning our horses drained the little pool, and we pursued our journey through an open box-tree forest, with grass. There were some extensive grassy plains upon our right, and there was an improvement in the country, that was an earnest of something better. But whatever hopes we encouraged were speedily destroyed. We soon broke through the forest, and saw a wall of sand before us. Again we ascended and toiled over successive ridges, higher and more formidable than any we had encountered; and over the steep points of which our horses could hardly draw the cart. At 20 miles we halted in a little valley, in which there was some grass, but no water; but Mr. Browne fortunately discovered a glimmering light in a valley at some distance from the summit of a ridge, and going down to it found water, but it was too late to move down with the men.

In the morning, however, we had our wants early relieved, and

I thought it prudent to halt here for a day. Our position here was in lat. 27° 4′ 11″ S., and long. 139° 5′ 35″ E. I felt it necessary to halt, not only for the sake of the horses, but to examine the country in which a singular change had taken place. The lofty sand ridges I have mentioned suddenly terminated on an immense stony plain that occupied the whole of the western horizon. They jutted into it like head lands into the sea, and their bright red summits against the dark surface of the plain produced a stormy effect, such as when sand hills near the sea are backed by dark clouds. The Stony Desert, as I shall call this gloomy region, extended beyond the range of vision from the loftiest ridge we ascended. It was of a dark brown hue, the stones with which it was covered being coated with oxide of iron. In the direction in which we were about to cross it there was not a herb nor a tree to be seen, neither was there an object on which to take bearings to guide us over it. Far to the eastward there were a few trees, but between us and them the desert was herbless. How far we should find it to the opposite side we could not guess, but the horses evidently required rest before we could venture with them unshod over that adamantine plain. During the day the men amused themselves rambling about, and Lewis discovered a beautiful sheet of water, embosomed in low gum trees, some little distance from us.

On the 27th we commenced our journey over the desert, having to trust entirely to our compass bearings—like a ship at sea—since the horses left no track behind them. We found the ground covered with stones of generally equal size, similar to the parallelograms on the sides of the northern ranges; they had been rounded by attrition, and were of the same rock as those mouldering hills, and were laid smooth and even on the surface. There were but few inequalities, but the whole desert was exceedingly depressed. At 30 miles we halted for the night on a patch of sand, on which there were a few tufts of grass. At 10 miles, on the following morning, we descended some three or four feet only, to a belt of polygonum, extending along the edge of the stones, and separating the desert from another region of a very different character, but apparently of equal extent. This was an earthy plain, almost as herbless as the one we had crossed. It presented the appearance of a boundless ploughed piece of land, on which waters had settled and subsided. With a clear and unbroken horizon before us we continued to wander over this singular region, which was intersected by little channels for draining off its waters, the fall apparently being to the N. E. A short time before sunset some hills, elevated from their true position by refraction, appeared above the N.W. horizon, the bearing of which we took. Shortly afterwards we had a small clump of trees at a great distance before us, and finding, on coming up to them, that they were growing on the bank of a small creek, we halted for the night, and short-tied our horses up to them. In the morning the hills we had seen again rose above the horizon, but gradually sank as the sun rose. Now, however, they bore north of us, and as there was no visible termination to the plain in any other direction I made for them. We could not judge from the aspect of these hills, whether they were sand-hills or of more solid material. Anxiously we gazed at them through the telescope, but could not make out their character. I had hoped that we had passed the worst of the interior, and that on the northern side of the deserts we should have a change of country—but we were doomed to disappointment. On reaching the hills we found that they were sand ridges, similar to those we had already encountered. Here on this side of the desert, and with an open interval of more than 50 miles between them, they preserved the same line of bearings, shooting up into the interior beyond the range of vision, and succeeding each other, both to the eastward and westward, in endless succession. We had already struggled over them for nearly 300 miles—that is to say, from 31° to the 27° of latitude; but here again they rose before us in terrible array. Keeping at the base of one of them on the former bearing of 340°, we ultimately crossed it, and made for a little smoke that was rising in the open box-tree forest before us; but although we moved silently we found the natives had fled. About sunset we struck the dry channel of a large creek, the fall of which it was utterly impossible to determine. It was clothed with couch-grass, and I momentarily expected to find water; but in tracing it we came upon a native well, that at once destroyed my hopes. It was of great dimensions and depth, and paths leading to it from every point of the compass, shewed how valuable a treasure it was. The woods rang with the cry of birds that sought its dark recess for the life sustaining element it contained: and whose notes were strange to us, who had been traversing deserts as silent as the grave. There was, however, but little water in the well, and it was slightly brackish. Here we slept; and in the morning, after draining up all the water, just sufficient for the two weakest horses, we proceeded on our journey, passing a village of 19 huts of unusual construction. Several had three compartments—a main one, and two others opening into it from the back; but these huts had not been occupied for several months, and it was evident that the natives only resorted to them and the well, when they collected the gum tree seeds in the forest. From this point we traversed an earthy plain, so rent by solar heat, so full of deep holes and yawning chasms, that it was with difficulty we crossed it. Some of the fissures were from 8 to 10 feet deep, and the earth fell into them with a rumbling sound. At the farther extremity of this plain, which was seven miles in width, we came upon a creek, in which, after much search, we found a shallow pool of water, and halted at it. Here several of the horses were taken ill, and I lost one, Rodney.

From this point we traversed plains little better than the one I have just described, until we again got amongst sandy dunes, and suffered so severely from the want of water, that I feared we should have to bear back. Anxious, however, to push on, I turned to the north, running for more than fifty miles along a high sandy ridge, that was continuous the whole way. In that distance we found the muddy remains of two ponds, by which we were enabled to get on; and at 50 miles we struck a creek, which revived hope and kindled joy in all our hearts. We came on this beautiful creek in lat. 25° 43′, and long. 138° 44′, and ran it up with uninterrupted success to lat. 25°9′15″, and long. 138°6′10″. The lower part of it was broad, and its bed was full of grass, between large but not deep pools, or rather sheets of water; but as we approached its sources these fine appearances diminished, the channel contracted, and the water became discoloured. The fall of the creek was from north to south, or nearly so, towards the stony desert—an evident proof that we had crossed the lowest part of the interior thereabouts. But however promising the creek was, it ran through a barren inhospitable flat, nor was grass to be procured any where but in its bed. The flat was bounded on either side by high sandy ridges, covered with spinifex, excepting at their summits, which were perfectly bare, and from them it was like looking over a sandy sea, so like waves did the ridges succeed each other. In lat. 25° 9′ the creek makes a sudden turn to the north-east; and in order to shorten our journey we cut across the angle, and mounting a small hill, saw a lagoon of clear water beneath us, occupying the bed of a creek from the north-east, which we took to be a tributary to that on which we had been. We knew from the colour of the water that the lagoon was brackish, and so we found it. I therefore crossed the channel close to it, and amidst the grass Mr. Browne gathered two stalks of millet, the only tropical production found during the expedition. In hopes that we should find the main creek in the trees before us, I struck to the westward over a considerable extent of grassy land; but we passed from under the trees to plains of great extent, on which salsolaceous plants alone were growing. Nor could we see the slightest sign of the creek line of trees; but travelling on till after sun-set halted under a sand-hill without either water or grass. On the following morning I detached Mr. Browne to the west, still thinking that the creek might be in that direction, whilst I led the party to the north. He soon rejoined me, however, with intelligence that he had been stopped by a salt-water creek about three miles to our left. Here there was a change of country, as unexpected as it was disheartening, many changes we had already experienced, but each succeeding one seemed to be for the worse.

(To be continued.)

Art. XX. *On the Osteology of the Marsupialia. Comparison of the Skulls of the Wombats of Continental Australia and of Van Diemen's Land, whereby their specific distinction is established.* By Professor Owen, F.R.S., F.Z.S., &c.

(*Extracted from Trans. Zoological Society*, Vol. III.)

In my former memoir on the Osteology of the Marsupialia*, the value, in the determination of the species of Marsupial Animals, of their osteological characters, and more especially of those derivable from the structure of the cranium, was attempted to be demonstrated: it is well exemplified by the subjects of the following observations.

Skins of Wombats have been transmitted both from Australia and Tasmania, and may be seen in the National and Society's museums and in some of those abroad; but no observation has been made and recorded, to my knowledge, of any exterior character by which two species of the genus *Phascolomys* could be accurately recognized.

In fact, all the stuffed specimens of full-grown animals present nearly the same size, shape and colour; and as the few discernable differences may have been produced or exaggerated by accidental shrivelling and distortion of flexible parts in the drying and preparation of the skins, I shall here limit myself to the indication of those characters which are permanently impressed on the hard internal osseous frame-work.

It will be, unquestionably, of importance to the naturalist to compare closely the living Wombats of Australia, especially those from the southern province, with those from Van Diemen's Land. Hitherto the living specimens that have been exhibited in the menagerie of the Zoological Society have all been transmitted from Tasmania.

I have selected the skull of the largest of these Tasmanian Wombats (*Phascolomys Vombatus*, Auct.) to compare with the skull of a Wombat transmitted by Governor Grey, from South Australia, whereby the following differences, which prove their specific distinction, will be sufficiently obvious.

They are of equal size, but the skull of the specimen from South Australia is broader in proportion to its length. In this

* Zoological Transactions, vol. ii. 1841, p. 379.

continental species, which I propose to call *Phascolomys latifrons*, the upper incisors present a transverse semi-oval or rather reniform section, the convex enamelled surface being directed forwards and outwards: this surface is feebly striated longitudinally: the opposite or concave surface is impressed by a shallow longitudinal groove. The entire incisor is more curved than that of the *Phascolomys Vombatus*; *i. e.* it describes the larger segment (nearly one half) of a smaller circle. In *Phasc. Vombatus* the outer or enamelled surface of the upper incisor is indented by a shallow longitudinal groove, as well as the opposite side, which is the most convex transversely. The entire incisor describes about one-fourth of a larger circle. The lower incisors are narrower in *Phasc. latifrons*, and trihedral; the enamelled anterior or under surface is flat; the outer surface longitudinally impressed, and almost devoid of enamel. In *Phasc. Vombatus* the lower incisors are also trihedral, but the outer surface is convex and enamelled; the entire teeth, and the symphysis of the jaw supporting them, are relatively larger. The first lower molar (premolar) is relatively larger, the last relatively smaller in *Phasc. latifrons*.

In this species the intermaxillary part of the skull is higher in proportion to its width, less convex externally. The nasal bones are relatively broader, forming the whole upper surface of the anterior third of the skull in *Phasc. latifrons*. The inter-orbital part of the skull is relatively much broader in *Phasc. latifrons*, and is produced on each side into a well-marked supra-orbital ridge and post-orbital process, both of which are almost obsolete in *Phasc. Vombatus*. The temporal fossæ are not bounded, as in *Phasc. Vombatus*, by two nearly parallel and remote longitudinal ridges, but are continued by a convex, rather irregular tract, to near the middle of the upper region of the cranium.

A very remarkable feature in the skull of the *Phasc. latifrons* is the supra-tympanic cell excavated beneath the base of the zygoma: this cell in *Phasc. Vombatus* is transversely oblong, simple, one inch by half an inch in size; in *Phasc. latifrons* it extends inwards one inch and a quarter, and expands to an antero-posterior diameter of one inch and a half, and a vertical diameter of one inch, having an oblong outlet nearly one inch in length and half an inch in depth, slightly contracted in the middle.

This difference in the size of the supra-tympanic cell is obviously not the effect of age, as the skull of the *Phasc. Vombatus* compared is that of an old animal with strong temporal ridges.

In *Phasc. latifrons* the articular surface for the condyle of the lower jaw is broader and less convex; the anterior boundary of the zygomatic space is less angular; the palatal surface of the intermaxillaries is deeper; the curve of the lower border of the lower jaw is much deeper; the coronoid process (ib. *cr*) is higher and narrower, and the post-symphisial depression is almost obsolete.

The geographical distribution of Australasian Marsupialia is shown in the following Table:—

SPECIES OF MARSUPIALIA.

Peculiar to		Common to both.
Australia.	Van Diemen's Land.	
Dasyurus Geoffroyi.	Thylacinus cynocephalus.	Dasyurus viverrinus.
hallucatus.	Dasyurus ursinus.	Perameles obesula.
Phascogale crassicaudata.	maculatus.	Phalangista Cookii.
macroura.	Phascogale leucopus.	Macropus major.
murina.	minima.	Phascolomys Vombatus.
albipes.	Swainsoni.	
leucogaster.	Perameles Gunnii.	
flavipes.	Phalangista nana.	
apicalis.	fuliginosa*.	
calura.	Hypsiprymnus (Bettongia) cuniculus.	
penicillata.	Macropus (Halmaturus) Billardieri.	
Myrmecobius fasciatus.	(Halmaturus) Bennettii†.	
Chœropus castanotis.		
Tarsipes rostratus.		
Perameles Bougainvillei.		
myosurus.		
fasciata.		
nasuta.		
macroura.		
lagotis.		
Acrobata pygmæa.		
Petaurus Ariel.		
breviceps.		
sciureus.		
australis.		
taguanoides.		
Phalangista Neillii.		
concinna.		
canina.		
xanthopus.		
vulpina*.		
Hypsiprymnus (proper). 1 species.		
(Bettongia),4 species.		
(Potorous), 3 species.		
Macropus (Heteropus), 4 species,		
(Lagorchestes),4 species.		
(Halmaturus),16 species.		
(proper), 3 species.		
Phascolomys latifrons.		

* *Phal. vulpina* and *Phal. fuliginosa* may prove varieties of the same species.

† Mr. Waterhouse, from whose excellent "Natural History of Mammalia" the species are cited, regards this as a variety of the *Halmaturus ruficollis* of Australia.

The mere record of species, irrespective of their relations, as it is the fundamental, so it is the lowest labour in zoological science. The present addition to the genus *Phascolomys* gives us a better insight into its typical characters, by showing the extent and kind of the variations in the skulls of two existing species. The geographical relations of the *Phascolomys Vombatus* and *Phasc. latifrons* will be interesting and suggestive, if further researches should prove the first to be restricted to the island of Tasmania, and the second to the continent of Australia.* With regard to other Australasian species of Marsupialia, the number that is common to Australia and the neighbouring island of Tasmania is remarkably small, as will be seen by the preceding table.

With regard to the extensive tribe *Poëphaga (Macropodidæ* and *Hypsiprymnidæ)*, certain subgeneric groups have particular localizations. Thus *Potorous*, *Heteropus*, and *Hypsiprymnus* proper are peculiar to continental Australia. Certain well-defined genera are also restricted in their present geographical range, as shown in the following Table:—

GENERA OF MARSUPIALIA.

Peculiar to		Common to both.
Australia.	Van Diemen's Land.	
Myrmecobius. Chœropus. Tarsipes Acrobata. Petaurus. Phascolarctus.	Thylacinus. Sarcophilus (Dasyurus ursinus, Auct.).	Dasyurus. Phascogale. Perameles. Phalangista. Hypsiprymnus. Macropus.

But it was not always so. Fossil remains of extinct species of *Thylacinus* and *Sarcophilus* have been found in the ossiferous caverns of Australia. The extinct continental species of *Phascolomys*, which I have called *Phasc. Mitchelli*, much more closely resembles the Tasmanian *Phasc. Vombatus*, in the form and degree of curvature of the upper incisors, than it does the *Phasc. latifrons*. I have recently obtained evidence from the post-

* It will be seen by reference to the minutes of the Tasmanian Society, in our last number, under date April 21, 1847, that our indefatigable and zealous friend Dr. E. C. Hobson, of Melbourne, has already ascertained the existence at Port Phillip of both species of Wombat.—*Ed. Tasm. Journ.*

pliocene deposits of the district of Melbourne, through the kindness of my friend Dr. Hobson, of an extinct Wombat, a true *Phascolomys*, at least four times as large as either of the known existing species.

Fossil remains of more gigantic extinct forms of Marsupialia (*Diprotodon, Nototherium*) are described in my 'Odontography*' and 'Catalogue of Fossil Mammalia in the Museum of the Royal College of Surgeons†.' These genera have hitherto been found only in Australia; they combined some characters now peculiar to *Macropus* and *Phascolomys*.

Art. XXI. *On the Skull now exhibited at the Colonial Museum of Sydney, as that of the "Bunyip:"*‡ *In a Letter to the Editors of the "Sydney Morning Herald."* *By* W. S. Macleay, Esq., F.L.S., F.Z.S., &c.

Gentlemen,—The Honorable the Speaker at the Legislative Council having on Friday last kindly placed in my hands for examination the portion of a skull, which has been sent to him by Mr. Edward Curr, of Port Phillip, as that of the so-called *Bunyip* or *Kine Pratie*, I am induced to offer the following account of it to the public, the more particularly, as another and still more extraordinary skull in my possession offers very considerable means for throwing light on the subject. An inscription on the skull sent up to Sydney from Port Phillip states, that it was found in 1846, on the Lower Murrumbidgee, by Mr. Atholl T. Fletcher. It is in some degree artificially patched up, and very imperfect; there being no under jaw and no lower intermaxillary bone or incisors to the upper jaw. The upper part of the frontal and parietal bones are also deficient, as well as the sphenoidals. It is said to have been found bloody, and marks of gnawing teeth are visible round the upper part of it, which is wanting. Part of the membranes and ligaments still remain attached, so that this cranium far from being fossil is quite fresh.

* Vol. I. 4to, p. 394. † 4to, 1845, pp. 291—323, pl. 6—10.

‡ This is the same skull described by Mr. James Grant at page 148 of the present volume of the *Tasmanian Journal*.—*Ed.*

On a first inspection it seems very anomalous, differing from the skulls of all known *Mammalia*, and gives us the notion of some bird such as the Emu or Ostrich; which is owing to the breadth between the eye-orbits, which are close to the molars of the upper jaw, and also owing to the great development of the occiput. This last is so extensive as to present somewhat the form of the skull in Man and other animals of the order *Primates*, rather than the truncated occipital form of that of *Mammalia* in general.

The extreme fragility and lightness of the cranium, and the sharpness of the crowns of the molars, which are only milk teeth, shew that the animal was quite young, if not a fœtus. These first molars, which are three on each side, are exactly those of a young foal, having that fifth and subtriangular crown between their inner crescents which distinguishes the genus *Equus* from the *Ruminantia* and all other quadrupeds. The animal was therefore like the horse, graminivorous. The maxillary bones are exactly those of a horse, and the infra-orbital foramen, is situated in the same way with relation to the eye and jaw. The post-orbitary apophyse of the frontal bone closes in the case of the orbit behind, by forming a junction with a corresponding apophyse of the zygomatic arch. This is a character among the *Ungulata* of the *Ruminating* animals as well as of the horse; and the shortness of the nasal bones, and the extension of the occiput remind us somewhat of certain of the camel tribe, more particularly the *Auchenia*, or Peruvian Llama, which is known to make a distant approach in affinity to the *Solipedes*. But in the immense development of the frontal and parietal bones, the elevation of the frontals, and in the depression of the jugals, so low as almost to touch the molars, this skull differs from that of the ordinary horse, and every other mammiferous animal whatever.

I have however, I repeat, in my possession the skull of a fœtus of a mare which was found floating on the river Hawkesbury, in the year 1841. This skull was prepared by the lamented late Dr. Stewart, and he has made drawings and notes of it, which I intend before long to publish, with his other observations on various branches of natural history. Now the great elevation of the cranium, and the extraordinary development of the frontal, parietal, and occipital bones, are even more remarkable in this foal's head than in the animal from the Murrumbidgee. The grand distinction between the two skulls is, that while in this the occular orbits are as far as possible apart, almost touching the molars, in the Hawkesbury skull the eyes converge so as to unite and form one circular orbit in the middle of the forehead, the animal being thus a true Cyclops. This most astonishing structure is occasioned by the nasal bones being totally wanting, by the inter-maxillaries being reduced to a mere rudimentary tubercle, and by the single orbit in the forehead being formed below by the junction of the lacrymals, and above by that of the post-orbitary apophyse of the frontals—all enormously developed, for the purpose of filling up the vacancy occasioned by the want of the nasal bones. In the Murrumbidgee skull, the bones that are deficient in the other one are here excessively developed, so as to force the eyes down on the upper jaw. I am thus inclined to consider it to be likewise the skull of a mis-shapen foal or fœtus of a mare; its peculiar monstrosity consisting in the eyes being located in a manner exactly opposite to that which prevails in the Hawkesbury foal. This is monstrous by extreme convergency of the eyes, the Murrumbidgee foal by the extreme divergency of the same organs. I argue for this skull being a *lusus naturæ*, on the ground of its being absolutely identical in some respects with that of a foal, while in others it is totally different from the cranium of all known *mammalia;* and naturalists will here recollect the Linnean apophthegm, "*Natura non facit saltus.*" Besides, I may advance another proof of the animal having been mis-shapen or imperfect, in the fact of there being no super-orbitary foramen, such as exists in the horse and ruminantia. The excessive development of the hinder part of the cranium is the result also of the malformation of the bones of the face, as we see in the Hawkesbury monster.

If the Murrumbidgee skull should eventually be proved to belong to a distinct species, this new animal must be placed between the horse and the llama, only close to the horse. But I do not imagine that, even then, it can be identical with the so-called Bunyip, of which so many unintelligible accounts have been given in the Sydney papers; for the Bunyip is said to be a solitary aquatic animal, whereas this skull must have belonged to a solipede, which, if full-grown, would have delighted in grass, dry land, and the society of its own species. In my judgment, however, the animal is not new, and this skull, when compared with the one from the Hawkesbury, only serves to show the extreme limits between which all monstrous variation of the place of the eyes in the horse can possibly occur.

I have the honour to be,
Gentlemen,
Your obedient servant,
W. S. MACLEAY.

Elizabeth Bay, 5th July, 1847.

Art. XXII. *On the Huon Pine, and on Microcachrys, a New Genus of Coniferæ from Tasmania; together with remarks upon the Geographical Distribution of that Order in the Southern Hemisphere.* By Joseph Dalton Hooker, M.D., R.N., *Botanist to the Antarctic Expedition.*

(*From the London Journal of Botany*, Vol. IV.)

Long as the Island of Tasmania has been colonized by Europeans, its noblest trees, and those too belonging to that most readily recognized and important Natural Order (the "*Pines*"), have, until quite lately, been little understood by Botanists. Whilst the continent of Australia was known to possess numerous species of *Callitris* and *Podocarpus*, and New Zealand has been celebrated as yielding a remarkable proportion of *Coniferæ*, Tasmania was generally supposed to produce much fewer of these most useful trees. Such, however, is not in reality the case; for the island in question is now proved to contain a greater number of species in proportion to its area, and these of more peculiar forms than any other country. The fact of their having so long remained unknown, or at least unrecorded, is mainly owing to the individuals of each species being either very few in number, or else remarkably local, and consequently confined within narrow areas; and further, to the want of an intelligent class of natives, such as inhabit New Zealand, who may direct the man of science, or the settler, to what tradition and experience have taught the aboriginal inhabitant to value in his savage state. Many of the species, also, are limited to the more remote and almost inaccessible parts of the island; only bearing flowers after attaining a considerable size; and they are not easily procured in a state fit for examination. Such is eminently the case with the *Huon Pine:* it is confined to the western and southern parts of the colony, growing in dense forests, or amongst mountains covered with a vegetation the most difficult to penetrate. It has been seen by few Europeans, save the wood-cutter or the convict; itself being the only inducement for a botanist to visit that tempestuous and rainy quarter of Tasmania. Mr. Gunn, to whom the botany of this part of the globe is so greatly indebted, and to whose zeal and perseverance we owe the discovery of nearly one half of its *Coniferæ*, never found the *Huon Pine* in its native state;* and of the three men of science who have done so, Sir J. Franklin, Mr. Backhouse, and Mr. A. Cunningham, the latter alone has been able to procure fructification, and that but imperfect.

Next to the *Huon Pine*, the species called the *Celery-topped* or *Adventure-Bay Pine*, is the best known to the colonists, as well as the most widely diffused; and until these very few years, none other was described by botanists. It is the *Podocarpus aspleniifolia* of its discoverer, Labillardière, the distinguished naturalist and historiographer of D'Entrecasteaux's voyage.

The *Oyster-Bay Pine*, a species of the widely distributed Australian genus, *Callitris*, is the only other coniferous plant commonly known amongst the colonists of Tasmania. It is true that a large district in the interior is called the *Pine*-marshes; and a river given off from it bears the same name; but, unless a species of *Athrotaxis* which I procured in its bed, at a

* A large collection of specimens in fructification has been sent to Dr. Hooker by Mr. Gunn since the publication of this paper.—*Ed. Tasm. Journ.*

considerable distance from its source, and far from the locality of the Pines themselves, can be considered as a voucher for the vegetation of the marshes in question, we must confess ourselves still ignorant of any plant so abundant as to have suggested an appellation for an area perhaps as large as Middlesex, though in an island smaller than Ireland.

In 1825, Mirbel's Paper on the *Geographical Distribution of the Coniferæ* appeared, in which Mr. Brown enumerated, besides many other new individuals of this Order, two from Tasmania: the *Podocarpus alpina*, Br., which inhabits the summit of Mount Wellington, and *Callitris Australis*, Br., or the *Oyster-Bay Pine*. These, with the *Podocarpus aspleniifolia* of Labillardière, were the only *Coniferæ* known to grow in this island, until the collections of the late lamented Mr. Lawrence arrived, containing a species of *Podocarpus*? which has been seen by no subsequent Botanist. In 1810 Mr. Cunningham gathered the *Huon Pine* in an imperfect state, and from his specimens the fructification will be here described. Lastly, in 1833, Mr. Gunn discovered no fewer than three species of the genus *Athrotaxis*, and another *Pine* belonging to a new genus to be here described (*Microcachrys*, nob.); since which he has added a second *Callitris*, increasing the number of *Coniferæ* from four to ten. *Athrotaxis* was founded by the late Professor Don,* on two of Mr. Gunn's plants contained in Dr. Lindley's herbarium.

Before proceeding to an enumeration of the Tasmanian *Coniferæ*, I may be allowed to offer a few remarks on the distribution of that Order in the southern portion of our globe, seeing it has been so greatly augmented since the publication of Mirbel's valuable Memoir.†

One of the most striking features of the *Coniferæ* in the Southern Hemisphere is their general dissimilarity to those of the Northern. Yet, although the genera be fewer in number, they have an equally wide range; while their species, though bearing a larger proportion to the genera, are confined within much narrower limits. Thus, out of the ten genera, and between fifty and

* Don in Linn. Trans. v. 18, p. 171.

† Vide Mirbel, in Memoires du Museum. v. 13, p. 38.

sixty species, scattered over the surface of the globe south of the Equator, *Athrotaxis* and *Microcachrys*, (Hook. fil.) are the only two that are restricted to a single locality. Of the first of these there are but three species, all limited to an area not greater than Yorkshire. *Araucaria*, on the other hand, of which there are five known species, has them very widely dispersed, only one country, Australia, presenting two of them.

Although some uncertainty still exists respecting the kinds of *Coniferæ* inhabiting the vast tracts of the Cape Colony, and the rarely visited mountains of Chili and Patagonia, those of Australia and New Zealand are now so well understood, that the following notices may be considered as probable approximations to their actual distribution.

I. ARAUCARIA,* *Juss.* This genus includes five known species, each with a remarkably narrow range, thoughtoget her they form a widely diffused genus: 1. A. *excelsa*, Aiton, the *Norfolk Island Pine*, is probably confined to that island; one of the Australian species (A. *Cunninghami*) which had been supposed the same, having proved very distinct from it, and the New Caledonian one not being fully authenticated. 2. A. *Bidwilli*, Hook. (in *Lond. Journ. of Bot.* v. 1, p. 503, t. X.) is a noble and recently-discovered tree of the Brisbane Mountains, near Moreton Bay, New Holland. 3. A. *Cunninghami*, Aiton, the *Moreton Bay Pine*, grows on the shores of the waters of the same country. 4. A. *imbricata*, Pavon, the "*Banksian*" or "*Chili Pine*," is confined to the Chilian Andes, between the parallels of 37° and 46°. 5. A. *Brasiliensis*, the *Brazilian Pine*, is indigenous on the mountains of South Brazil, in the neigbourhood of Rio de Janeiro, and is more abundant in the province of St. Paul's (as I was informed in that country). It is not improbable that the species, stated to have been found in New Caledonia by Cook, may prove distinct from any of the above.

* This genus has lately been broken up into two; the first containing the Brazilian and Chilian species, for which the name *Araucaria* has been reserved: to the other, which includes the A. *Cunninghami* and A. *excelsa*, Salisbury's name of *Eutassa* is given. The A. *Bidwilli* would belong to *Araucaria*, as thus limited. The validity of these genera has hardly been acknowledged by Botanists.

II. Dammara, *Lam.* 1. D. *australis*, Lamb. the *Kaudi*, *Cowdie*, or *Kauri Pine* of New Zealand, grows on the mountainous regions in the Northern Island of that group. Mr. Hinds, in his description of the vegetation of the Fejee Islands, mentions a species said to exist there. (Vide *Lond. Journ. Bot. v.* 1, *p.* 671.)

? III. Juniperus, *L.* 1. *J. uvifera*, is described by Don as a native of Cape Horn. This, however, must be considered a very doubtful species. A second is mentioned by Mirbel, J. *Capensis*, Lam.

IV. Thuja, *L.* This genus, in the Southern Hemisphere, belongs almost exclusively to South America. 1. T. *Chilensis*, Hook, (T. *cuneata*, Dombey mss. ? T. *Andina*, Pœppig,) grows on the mountains of S. Chili, Valdivia, &c. 2. T. *tetragona*, Hook. is the famous "Alerse" of Chili and of the Island of Chiloe.* 4. T. *Doniana*, Hook. is a native of the northern island of New Zealand.

? V. Cupressus, *L.* 1 C. *Africana*, Mill. mentioned also by Mirbel, is probably a species of the following genus.

VI. Pachylepis, *Brongn.* Three species are enumerated by Brongniart, who founded this genus.† 1. P. *Commersoni*, from Mauritius. 2. P. *cupressoides*, and 3. P. *juniperoides*, both from the Cape. The latter is doubtful, and perhaps not distinct from the former. Besides these there is another Cape plant in the Hookerian Herbarium, named *Callitris stricta*, Schlect. mss. (Drège); but as the scales of this genus vary much in form with age, I could not pronounce the imperfect specimens distinct. Dr. Wallich has sent another *Pachylepis* from South Africa certainly distinct from P. *cupressoides*, which may however be the C. *stricta*.

VII. Callitris, *Vent.* Of this genus there are probably at least twelve or fifteen individuals in Australia. The North African C. *quadrivalvis*, is still retained in *Callitris*, by M. Brongniart, who removes the S. African species to *Pachylepis*. I am, however, inclined to think that the forms from these three widely separated localities will eventually prove to belong to one and the same genus. Spach more recently breaks up *Callitris* into three

* London Journal of Botany, v. 3, p. 144, t. III.

† Ann. Sc. Nat. v. 30, p. 176.

genera, confining that name to the original N. African plant, and applying Mirbel's name of *Frenela* to the Australian species.

VIII. Athrotaxis, *Don.* Founded on two Tasmanian plants, 1. A. *selaginoides*, and 2. A. *cupressoides;* to these another has been added, 3. A. *laxifolia*, Hook. (Ic. Plant. t. 573).

IX. Microcachrys, *Hook. fil.* vid. infra, comprising a single species, discovered by Mr. Gunn in the interior of Tasmania.

X. Podocarpus, *L'Hér.* The most extensive of all the southern genera of *Coniferæ*, upon which Mr. Bennett has published an excellent dissertation.* There are three species from Australia, 1. P. *elata*, Br. 2. P. *spinulosa*, Br. 3. P. *ensifolia*, Br.;—and two from Tasmania, 4. P. *alpina*, Br., 5. P. *Lawrencii* (vid. infra). Six inhabit the New Zealand Island, 6. P. *spicata*, the *Mai* or *Matai*. 7. P. *ferruginea*, Don, the *Miro* or *Maira*. 8. P. *Totarra*, Don, the *Totarra*. 9. P. *dacrydioides*, A. Rich., the most abundant of the New Zealand species in the neighbourhood of the Bay of Islands, "*Kaikatia*" of the natives. 10. P. ? *biformis*, Hook. 11. P. *nivalis*, Hook. (Ic. Plant. t. 582), this is possibly a variety or alpine state of the P. *Totarra*. In Chili there are also several species, perhaps not less than three: 12. P. *Chilina*, Rich.; this, and two others, are in the Hookerian Herbarium. There are two Brazilian, and lastly, three Cape species, of this genus, making about thirty southern species in all.

XI. Dacrydium, *Banks*; a much rarer genus than the former. 1. D. *cupressinum*, Sol. the *Dimou Pine* of New Zealand. 2. D. *colensoi*, Hook. (Ic. Plant. t. 548), from the same island. 3. D. *laxifolium*,† n. sp.; also from New Zealand. 4. D. *Franklinii*, Hook. fil., the *Huon Pine ;* vide infra.

* Plantæ Javanicæ rariores, p. 40.

† Dacrydium *laxifolium*, Hook. fil.; caulo humili fruticoso, ramis prostratis laxo ramosis gracilibus, foliis undique insertis sparsis patentibus linearibus obtusis coriaceis supra concavis supremis imbricatis ovatis multo brevioribus dorso carinatis, fructibus terminalibus solitariis erectis.

Hab. New Zealand, near the summit of Tongariro, *Mr. Bidwill*, (No. 5), *Colenso*, (No. 60).

Whether or not the present be an alpine form of some larger species, I am unable to say. It is marked by Mr. Bidwill, as "Rima," from which I suppose that gentleman considered this plant to be a state of the D. *cupressinum* ; but it is a wholly different species from that, in no way resembling what might from analogy be assumed as the mountain form of that tree. I am indeed more inclined to suppose it a strictly alpine species, like the *Podocarpus alpina*, Br. of Tasmania, which is known only as a small mountain plant. The leaves of the present are very lax on the stem, like those of a *Sedum*, patent and more flaccid than is usual amongst the *Coniferæ* ; the largest are not above two lines in length, convex or keeled below, and more or less concave above ; they are contracted at the base and not decurrent on the branches : those at the apices are much smaller and closely imbricated. The whole length of our specimens of the entire plant, which are very good, does not exceed a span. The fruits are abundant, terminal, and erect.

XII. Phyllocladus, *Rich.* 1. P. *aspleniifolia*, Rich. "*Celery-topped Pine*" of Tasmania, and 2. P. *trichomanoides*, Don, the "*Tauehaha*" of the New Zealanders.

From the above list it will be seen that four genera are peculiar to the Southern Hemisphere, *Araucaria, Phyllocladus, Microcachrys*, and *Athrotaxis*. Three others have their maximum to the south of the tropics, *Callitris, Podocarpus*, and *Dacrydium*. *Dammara* has one species in each hemisphere. *Thuja* is equally divided between the two; whilst *Juniperus* and *Cupressus* are barely, if at all, represented, except perhaps the latter by *Athrotaxis*.

If we divide the regions which these *Coniferæ* inhabit into four, namely, Australia, New Zealand, South America, and South Africa, it will appear that they are very unequally diffused, and that their relative abundance is not regulated by the extent of surface, which might be expected to be the case with a group composed of peculiarly local species. Only one of the genera is peculiar to them all, *Podocarpus*, it is in all respects the most widely diffused genus of *Coniferæ*, as it is one of the most extensive. *Araucaria* comes next, being found in three of the regions, Australia, New Zealand,* and South America. *Thuja* has been detected in two only, America and New Zealand; *Callitris*, including *Pachylepis*, in Australia, and Africa; *Dacrydium* and *Phyllocladus* in Australia and New Zealand. *Juniperus* is confined to America, if indeed it really exists in the southern hemisphere, and *Athrotaxis* and *Microcachrys* to Tasmania.

In conclusion, I shall arrange the genera in the order of their relative abundance in the countries specified above.

1. Australia is by far the richest, containing, as it does, seven genera, and probably twenty-six species, thus: *Callitris* 12, *Podocarpus* 6, *Athrotaxis* 3, *Araucaria* 2, *Microcachrys* 1, *Dacrydium* 1, *Phyllocladus* 1. It also exhibits the most striking coniferous vegetation, and is the only country possessing any two peculiar genera.

II. New Zealand contains of *Podocarpus* 6, *Dacrydium* 3, *Thuja* 1, *Phyllocladus* 1, *Dammara* 1, *Araucaria* 1; six genera

* I include Norfolk Island in the New Zealand division.

and thirteen species. In *Phyllocladus* and *Dacrydium* it partakes of the Flora of Australia, and in *Thuja* that of America.

III. America; *Podocarpus* 4, *Thuja* 2, *Araucaria* 2, *Juniperus* 1;? four genera and eight or perhaps nine species.

IV. Africa; *Podocarpus* 2, *Callitris (Pachylepis)* perhaps 3, *Juniperus* 1;? three genera and six species; the affinity to the *Coniferæ* of Australia, through *Callitris*, is manifest.

From this it appears that the number of species increases in proceeding to the westward from the African continent in the southern hemisphere; and in another point of view, Australia may be considered the centre of their development, as they are not only most abundant there, but the forms of New Zealand on one side, and of Africa on the other, resemble more those of Australia than those of America, or one another.

The Tasmanian species of *Coniferæ*, so far as is at present known, are peculiar to that island, and more local there than in any other part of the globe. If *Pachylepis* be regarded as a subgenus only of *Callitris*, then this island has representatives of all the genera peculiar to the southern hemisphere, except *Araucaria;* besides possessing the only two that are not common to two of the regions enumerated above. I have before considered Tasmania as part of the Australian region; but if we go to compare it with the vast country lying to the north, it will be found still more peculiar in its coniferous vegetation, as a part of that tract, than the latter as a whole was shown to be; for whilst Australia has only three of the genera, Tasmania has six.

Although, in a measure, anticipating the "*Flora of Tasmania*," for which ample materials are in my possession for publication, under the authority of the British Government, I shall here offer a few remarks on the different species of that island, before proceeding to describe the noblest of them all, the *Dacrydium Franklinii*, or *Huon Pine.*

1. Callitris, *Vent.*

This genus, which was divided by Mr. Brongniart into two, has been further modified by Spach, who separates from both the North African C. *quadrivalvis*, for which alone Ventenat's name of *Callitris* is retained. The differences between these are excellently displayed by Spach, in the "Suites à Buffon" (Hist. Nat. des Végét., v. 11, p. 345), though I should not attach the same importance to them as does that acute observer. The numerous scales of the Australian group are certainly a remarkable character. Yet that number and their relative size are so variable as considerably to diminish their value as a diagnostic mark. The ternary arrangement of the seeds, much dwelt upon by Brongniart, as typical of the Australian form, is a striking and prominent character in our *Cape* species, whose seeds are hardly winged. The tuberculated receptacle is not constant in the Australian species, nor are the scales of the cones always alternately smaller. The wings of the seeds differ much in size, some being quite as broad as those of *Callitris* or *Pachylepis*; the seeds themselves are not always osseous; one species of the latter genus having the seed much more osseous than any Australian *Callitris*, and almost wingless. I have not been able hitherto to detect any difference, except that they bear three anthers or pollenthecæ, between the male amenta of *Callitris* and *Pachylepis*, though Brongniart suggests that such may exist. The leaves of the Cape species are sometimes decussately opposite, and regularly so throughout a great part of the branches; those of the northern plant are arranged in fours, and of the Australain in threes. The latter is the most remarkable number amongst *Coniferæ*, and is accompanied with two cotyledons, which is also the case in one species of the Cape *Pachylepis*. The pollen grains in *Callitris*, *Frenela*, and *Pachylepis*, are small, spherical, transparent, perfectly smooth spheres, with an irregular, darker nucleus; in a young state they appear more flattened, resembling disks, and are larger. The two Tasmanian species belong to Brongniart's genus *Frenela*, its most evident character lies in the ternary arrangement of the leaves. Spach rightly supposes that these, in a young state, are acicular, like those of *Thuja*, *&c.*,

1. C. *australis*, Br.; strobilis glomeratis solitariisve breviter pedunculatis globosis (magnitudine coryli avellanæ), valvis lignosis crassis late ovatis valde obtusis v. sub-acutis lævibus v. longitudinaliter rugosis, receptaculo vix rugoso, columna centrali

brevi tricruri vel nulla, seminibus osseis late ovatis alarum marginibus membranaceis.

"Oyster-Bay Pine," *incolarum*.

HAB. Tasmania, on the east coast; *Mr. Backhouse; Gunn*, n. 543. Flinders' Island, Bass' Strait; *Backhouse*.

Were it not for the noble suite of specimens sent by Mr. Gunn, under the same number, I should certainly have been led to make at least two species of this, so different is the character of its extremes. The cones when mature are either smooth or much corrugated, their angles acute or blunt, the colour pale grey and shining, or brown and opaque; in the centre of the cone there is generally an elevated woody body, with three divergent arms, one opposite each of the smaller scales, these sometimes fork again; in other cases this is reduced to a single short style, or may be wholly wanting; it appears formed of three abortive, confluent ovaria. The seeds vary much in size, and in the shape and breadth of their wings.

This species forms a large tree (according to Mr. Backhouse) 50-70 feet high, and 6-9 in girth, sometimes giving a peculiar feature to the landscape from its pyramidal form. Mr. Gunn states its height to be 25-30 feet, and its trunk a foot in diameter, whence there may be another species yet undescribed.* I have never seen much use made of the wood, which is alleged not to be durable. It is very fragrant; and, according to Mr. Backhouse, obnoxious to bugs.

2. C. *Gunnii*, Hook. fil.; strobilis subsolitariis v. glomeratis breviter pedunculatis ovatis, valvis lignosis linearibus obtusis v. subacutis dorso convexis lævibus v. longitudinaliter rugosis, receptaculo lævi, columna centrali brevi simplici v. tricruri v. nulla, seminibus late ovatis osseis ala plerumque brevissima.

"Native Cypress," *incolarum*.

HAB. Tasmania, South Esk River, *Mr. Gunn* (n. 542).

Mr. Gunn says this species forms a small tree, 6-10 feet high, called the "*Native Cypress*." It is very distinct from the former,

* In Mr. Backhouse's "Narrative of a Visit to the Australian Colonies," in mentioning the vegetation of Oyster Bay, he enumerates the *Oyster Bay Pine*, and also the *Callitris pyramidalis* among the native trees of that locality; from which remark, and the discrepancy between his own and Mr. Gunn's dimensions of the timber, it is more than probable that there are three Tasmanian species of *Callitris*.

especially in its ovate, generally larger, but very variable cones, and the harder, narrower, and unwinged seeds.

2. Athrotaxis, *Don.*

Mr. Don's excellent description of this genus is published in the 18th volume of the *Linnæan Society's Transactions;* the character is not, however, complete, owing to the absence of perfect specimens. The embryo, which was wanting, I have found to be enclosed in a rather thin coat of albumen; it is stout and cylindrical, occupying nearly the whole length of the seed, and furnished with two cotyledons, which Mr. Don rightly presumed it would possess. The A. *laxifolia,* Hook., is the only other known species, A. *tetragona* proving, on examination of its fruit, to belong to a different and new genus, *Microcachrys* (nobis). The pollen of *Athrotaxis* is, like that of *Callitris,* formed of transparent spheres, generally, if not invariably, depressed, with a central, more opaque nucleus; in the young plant it is larger, much more depressed, and hence discoid.

1. A. *selaginoides,* Don, *in Linn. Trans. v.* 18, *p.* 172, *t.* 14; *Hook. Icones Plant. t.* 574.

Hab. Tasmania, Falls of the Meander River, *Gunn.* n. 368.

The seeds represented in the "*Icones Plantarum*" probably belong to the following species, in this that organ is nearly orbicular, deeply notched at the apex and base, the wings broad and membranous.

2. A. *cupressoides,* Don, *l. c. p.* 173, *t.* 13, *fig.* 2; *Hook. l. c. t.* 559

Hab. Tasmania, Pine River, Lake St. Clair, *Gunn.* n. 365.

The seed of this species is smaller than that of the last, broadly ovate, or somewhat deltoid, with thick spongy wings, formed of two membranes, inclosing the seed in their centre; the latter is also smaller than, but quite similar to, that of A. *selaginoides.* The only native living specimen of this tree, which I have seen was in the bed of the Pine River, down the course of which it had been washed, and, grounding, had formed the nucleus of a small island; it was about 15 feet long, and though prostrate, quite alive, having shot up several erect branches, to the height of 8 or 10 feet, covered with a lively green foliage, and bearing abundance of fruit. Mr. Gunn describes it as growing at Lake St. Clair to the height of 25-30 feet, with trunks 18 inches to 2 feet in diameter; one very old one, hollow in the centre, measured 15 feet round, at 3½ feet from the ground, from whence it tapered rapidly upwards.

3. A. *laxifolia, Hook. Ic. Plant. t.* 573.

Hab. Tasmania, Falls of the Meander River, *Gunn* (n. 369).

Some doubt was expressed in the "*Icones Plantarum*" of the validity of this species, neither the flowers nor fruit being known. Another specimen, with cones, received from Mr. Gunn, seems to establish its claims to specific distinction. The cones are nearly the size of those of A. *selaginoides*, with the seeds smaller and of a different form, being (including the wings) broadly oblong, their sides parallel, and the base and apex emarginate; the wings are thick, and formed of two membranes inclosing a spongy substance, as in A. *cupressoides*, but they are broader above than in that plant; the embryo is altogether like that of the two former. The leaves are as represented in the "*Icones Plantarum*," in fewer series, shorter, smaller, and more lax than in A. *selaginoides*.

3. Microcachrys, Nov. gen.

Flores in ramis diversis monoici. Masc. *Amenta* terminalia, ovata. *Squamæ antheriferæ* unguiculatæ, peltatæ. *Antherarum* thecæ 2, divaricatæ, globosæ. *Pollen* trigonum, trinucleatum. Fœm. *Amenta* decurva v. cernua, oblonga. *Squamæ* laxe imbricatæ, patentes, ovatæ, concavæ, naviculares. *Ovula* ad basin squamarum solitaria. *Strobilus* e squamis divaricatis foliis subconformibus sed minoribus patentibus, apicibus acuminatis recurvis, medio concavis. Semina solitaria, erecta, omnino nuda, squama submajora, ovata, compressa; testa scariosa, membranacea, hyalina.—Arbuscula *procera*, 15 ad 25 *ped. alta, facie verosimiliter* Cupressi, *sed foliis* Dacrydii. Folia *in plantis junioribus quadrifariam inserta, in senioribus, imbricata, ramo appressa, rhombeo-ovata, dorso carinata.* Amenta *ad apices ramulorum plurima;* mascula *erecta, sub* 2 *lin. longa, cylindracea;* fœminea *curvata, cernua, repandula, e squamis* 8-10 *formata.*

1. Microcachrys *tetragona*, Hook. fil.; Athrotaxis tetragona, *Hook. Ic. Plant. t.* 560.

Hab. Tasmania, on the banks of Lake St. Clair, abundant, *Gunn* (366.)

This genus is distinguished from *Athrotaxis* by the very different form and structure of its amenta, which are not broader than the branches; by the solitary, exposed seed; and by the hyaline membranous testa surrounding it. From *Cupressus* the same character will also separate it. The pollen is of a different form from that of either of those genera, and the foliage also.

4. Podocarpus, *L'Hérit.*

1. P. *alpina*, Brown, *in Mirbel, Essai sur la Géographie des Conifères in Mém. Mus. d'Hist. Nat. v.* 13, *p.* 75. *Bennett, in Plant. rar. Jav. p.* 40.

Hab. Tasmania, on the summit of Mount Wellington and near Marlborough, in the elevated central parts of the island, *Gunn* (n. 226.)

This is one of the few species of *Coniferæ* which, excepting the *Junipers*, never attains the size even of a shrub. It is allied to the P. *Totarra* of New Zealand, but is a very distinct plant. The Marlborough specimens are larger than those from Mount Wellington. In the former habitat it grows at about 3000 feet above the sea, and near the summit of the latter mountain at 4000 feet. The pollen-grains of all the *Podocarpi* which I have examined, except P. *dacrydioides*, namely those of P. *Totarra*, P. *ferruginea*, and the present, are, as Mr. Bennett describes in his able paper, of a curved oval form, with dark granular extremities. Of P. *dacrydioides* I have seen only very old and perhaps mutilated grains, which were certainly trigonous with three opaque nuclei, very much like those of *Microcachrys*.

2. P.? *Lawrencii*, Hook. fil.; foliis laxis subdistichis patentibus linearibus utrinque attenuatis pungentibus.

Hab. Tasmania, *Lawrence*, n. 218.

This is a very distinct species, though possessing neither flower nor fruit. Still the habit and appearance are altogether like P. *spinulosa*, Br., and the woody tissue presents a single series of minute glandular dots. The twigs are slender, the leaves nearly half an inch long, slightly curved, about two lines broad, of a pale green, somewhat glaucous underneath.

I have been anxious, so far as materials exist for that purpose, to record in this Natural Order the names of those individuals who have done most for the Botany of this island. Since the days when Mr. Brown collected his extraordinary herbarium, and first brought to light a host of Tasmanian plants in the "Prodromus Floræ Novæ Hollandiæ," there has been no more successful Botanist for the time than the late Mr. Lawrence, who commenced forming a herbarium of the whole island, a work which Mr. Gunn has almost concluded.

5. PHYLLOCLADUS, *Rich.*

1. P. *aspleniifolia*, Rich.; Podocarpus, *Lab. Nov. Holl. t.* 221. "*Celery-topped*" or "*Adventure Bay Pine*" of the colonists.

HAB. Tasmania, in the mountainous and humid parts of the colony.

This elegant tree, like its New Zealand congener, seldom exceeds 50-60 feet in height; the trunk is slender and quite erect, very useful for small masts. The bark is also used to tan leather with, for which purpose it is well adapted. The pollen-grains of this species are similar to those of P. *trichomanoides;* they are less curved, much broader than in *Podocarpus*, and also flatter and more transparent.

6. DACRYDIUM, *Sol.*

1. D. *Franklinii*, Hook. fil.; ramis cum foliis tetragonis ramosissimis, foliis parvis cruciatim oppositis ramo appressis rhombeo-ovatis subacutis dorso carinatis, amentis fœmineis terminalibus curvatis cernuis v. pendulis 5-7 floris, fructibus laxe spicatis minimis, squama parva, squamula fructifera concava antice fissa, semine parvo erecto elliptico-compresso subdrupaceo

"*Huon Pine*" of the Colonists.

HAB. Tasmania, Huon River; *Gunn*, n. 1248; Macquarie Harbour, *Mr. A. Cunningham.*

This is certainly the most interesting and valuable tree of Tasmania; but it has been seen by few scientific persons. Mr. Cunningham's specimens are very imperfect, consisting merely of the ends of branches, about four inches long, much divided in a fasciculated manner. The ultimate divisions, which are exceedingly numerous, are about one quarter of an inch long and a line in diameter, very brittle, and covered with the leaves. The latter are quadrifariously imbricated, less than half a line in length, dark-green, and shining when dry, acutely keeled at the back, having a depression on each side of the keel. The spikes of fruit are inconspicuous, at the apices of the branchlets, either drooping or curved downwards, about one line long, consisting of a central axis or stalk, which gives off 6-8 horizontal scales or bracts; the latter are ovate, plane or concave on the upper surface, and very convex or rounded beneath; upon each is situated a shallow cup (the fruit-bearing scale) open towards the axis of the spike, formed in the old and dried specimen of two membranes, with an interposed hollow; the edges of this cup are obscurely crenated, and turned rather outwards, and they surround the base of the seed. The majority of the seeds of Mr. Cunningham's specimens are in a very bad state; the most perfect are broadly ovato-oblong, or somewhat elliptical, compressed from back to front, the sides rather acute or blunt, the apex notched, with a small tubercle in the notch; the outer coat was probably fleshy, but now shrivelled, and contains a loose hard nut, attached at its base and apex to the outer withered coat, and containing an erect seed of the same shape as the seed, fixed by the base, and with a black apex; the testa is very thin and delicate, the albumen fleshy and apparently copious, with a central hollow for the embryo, which was not seen in those very unfavourable specimens, but is probably very small; the whole length of the seed is under half a line; most of them appear abortive, and many contain the larva of a small coleopterous insect, which is probably deposited before the closing of the foramen, and which feeds on the albumen, perhaps the embryo also, which was never found.*

* In one respect, namely, the maturation of many seeds at the apex of each fruit-bearing branch, this species differs remarkably from any of its congeners, and from *Podocarpus.* The plurality of the ovuliferous scales, and their arrangement on an axis, in all respects

Mr. Cunningham remarks of it, that it forms a tree of irregular growth at Macquarie Harbour, from 60-70 feet high, and 6-24 in circumference.

Mr. Backhouse, in his valuable ms. notes in our possession, (and he is one of the few scientific persons who have seen this plant) says of it, that "it forms a noble tree, growing in swampy places, of a widely pyramidal form; the branches rather droop, and the ultimate ones are pendent, like those of *Cypress* or *White Cedar;* the trunk attains a height of about 100 feet, and is from 22-26 in girth. The wood burns briskly, giving out a pleasant aromatic smell; it is close-grained, valuable for ship-timber, and all purposes to which pine-wood is applied, and may be obtained in logs 40-50 feet long." Mr. Cunningham's specimens do not present any of the pendulous branches; such are, however, sent by Mr. Gunn; they are nearly two-feet long, and covered with longer and more slender and flaccid twigs than the others.

The most interesting account of the Huon Pine that I have ever seen, was written by my friend Mr. Lemprière, to whom I am indebted for much kindness, shown during a short visit I made to him, in company with Sir John and Lady Franklin. In Mr. Lemprière's account of Macquarie Harbour,* he says:

"The *Huon Pine* unites great beauty to extensive utility. It attains the height of seventy feet; in circumference it seldom exceeds fifteen. It grows in a pyramidal form, extending its limits to a great distance, when smaller branches droop, something in the same manner as the Weeping Willow; the colour of the foliage is rich green. The *Huon Pine* affords an excellent substitute for deal; and is, indeed, in many respects superior to

analogous to that of the ordinary strobilus, and particularly similar to that of *Microcachrys*, is a further confirmation of the view Messrs. Brown and Bennett have taken of the place of the *Podocarpi* and *Dacrydia* in the Nat. Order *Coniferæ*. They remove them from the *Taxineæ*, and associate them with the *True Pines* (vid. Brown and Bennett in Plant. rar. Jav. p. 37). The arrangement of the female inflorescence in the form of a strobilus being the ordinary one amongst *Coniferæ*, the *Huon Pine* may in this particular be regarded as the most fully developed of the little group, including *Phyllocladus*, *Podocarpus*, and *Dacrydium*, to which it belongs. D. *Colensoi*, to which the present bears a considerable resemblance, produces also several terminal female flowers, but one only ever arrives at maturity. *Phyllocladus* has often several mature seeds; but the foliaceous nature of the parts very much marks the resemblance of its inflorescence to an ordinary strobilus, which is sufficiently evident in *Dacrydium Franklinii*.

* *Tasmanian Journal of Natural Science, &c.*, v. ii. p. 110. It were much to be desired that a similar organ to the *Tasmanian Journal*, for recording the valuable and otherwise lost knowledge possessed by the colonists, were established in some of our other colonies.

that wood. For ship's decks and interior, for boat-building, and innumerable other purposes, its qualities are unequalled.

"Huon pine forms the principal article of export from Macquaric Harbour: two thousand eight hundred and sixty-nine logs were collected in one year (1827) from different spots in the vicinity of the settlement, principally from the Gordon River. Sometimes the timber was found at some distance inland; in that case, a road was made to the water-side, by felling the intermediate trees, and placing the trunks transversely across the road, so as to form ways over which the pine logs, cut to proper sizes, were rolled into the river with hand-spikes or levers. The next process was to fix a hundred or more of these logs together, in the form of a raft, the outside logs being attached to the centre ones by iron chains. The raft was towed to the settlement by a launch or two. Sometimes in bad weather the chains gave way, and the logs drifted about in every direction. Such accidents always occasioned much trouble; and indeed it seldom happened that the whole number of logs was recovered. When the raft arrived at the settlement, the unfortunate prisoners' severest task began: for they had to wade to their middles for hours at a time with hand-spikes, to roll the timber up. The logs were piled in stacks, sometimes thirty feet high. Whenever the men were so employed, the Commandant used to allow them to receive a small quantity of spirits. We recollect seeing one of these logs which measured twelve and a half tons. The best of the logs were shipped to Hobart Town; some were cut up by the sawyers, of whom there were constantly nine or ten pairs at work, into boards, also for Hobart Town; the remainder were either reserved for use in the settlement, or, if too short, or otherwise objectionable, they were thrown in to fill up the quays and other places. Many a log have I seen thus employed, which would now be of the greatest service in the Government timber-yards, but at that time they were considered of little or no value. Gum, myrtle, and other woods, which would not float, were brought to the settlement two at a time, lashed one to each side of a large launch. There is also a tree which grows on Philip's Island, called the 'Hard Wood,' which would answer many of the same purposes for which *Lignum Vitæ* is now used. *Huon Pine*, however, is the staple commodity of Macquarie Harbour, and no doubt, if thrown open to the public, would not only enrich speculators, but prove a general benefit to the colony: it is a wood much sought after for its quality, and is far superior to the pine imported from New Zealand; and for many purposes to the cedar of New South Wales. Although an immense draught on the stock of *Huon Pine* at Macquarie Harbour took place during the time that the settlement existed, there remains sufficient to supply the whole colony for years to come. I am informed by Mr. Hoy, late master-shipwright at Macquarie Harbour, and now filling the same important situation at Port Arthur, and who was the last person to leave the place, that from ten to twelve thousand tons might be obtained within one mile of the waterside, and a considerable part of that within one-half the distance. As a proof of the capabilities of Macquarie Harbour, we would state, that during the period (about seven years) Mr. Hoy filled the situation of master-shipwright at the settlement, the following work was performed in the dockyard alone.

"The brig *Cyprus* was rebuilt. The brigs *Tamar, Isabella, Frederick, Adelaide*, averaging about one hundred and thirty tons each, were built; also the barque *William the Fourth*, of two hundred tons; the cutters *Charlotte, Clyde*, and *Shamrock*, of about fifty tons each; the schooners *Penelope, Shannon, Badger, Kangaroo, Industry*, of about twenty-five tons each; twenty-two launches, of from five to ten tons each; forty-six small boats. Previous to Mr. Hoy's arrival, the brig *Derwent*, schooners *Sorell* and *Despatch*, sloop *Opossum*, lighter *James Lucas*, and several launches and whaleboats had been built. This does not include the boats for the use of the settlement, repairs to sundry vessels, &c.

"I have no doubt that, could an individual, or a company, obtain from Government a lease of Macquarie Harbour, for a certain period, say seven years, to engage in procuring timber, and at the same time building a few vessels, such as are most required in the colony, it would be found a most lucrative undertaking.

"I have been favoured by Mr. Hoy, who, in addition to great experience in his profession, possessed much practical knowledge, with the following calculation. He adds, that he is of opinion, that twelve months' work, agreeably to the subjoined calculation, could be obtained at King's River alone, independently of what might be procured higher up the river:

		£	s.	d.
Maintenance, &c., of eight sawyers and twenty-two labourers for twelve months		547	0	0
Saws, files, axes, wedges, &c.		250	0	0
Freight of ten cargoes, at an average of one hundred tons each		1500	0	0
Total		2297	0	0
36,000 cub. feet of pine, at 2*s.* 6*d.* per foot	£4500			
140,000 superficial ditto, at 4*d.* per foot	2333	6833	0	0
Profit		4536	0	0

"So valuable was the *Huon Pine* in Hobart Town, that in 1827 the Commandant was informed by Government, that it was more profitable to send supplies of that wood up, than to build vessels. Good oars are made at the settlement; trenails were also shipped in great quantities."

I am much gratified in being able to attach the name of the late excellent Governor of Tasmania to so remarkable a tree, and one, too, quite peculiar to that island, and belonging to a most interesting Natural Order. The services of Sir John Franklin as an officer, a traveller, and man of science, are too well known and appreciated to require comment here; but to his zealous co-operation in all the objects of the Antarctic Expedition, to the kindness shown by him, Lady Franklin, and their family, towards the officers of the *Erebus* and *Terror*, and to the unwearied zeal and unexampled liberality of both those enlightened individuals in forwarding the cause of science in that colony, it behoves me in duty and in gratitude to record my obligations.

Art. XXIII. *Exports of Produce from Van Diemen's Land to Great Britain for the Season* 1846—7.

(Compiled by Mr. C. H. Goldsmith, of Launceston.)

Articles.		Launceston.	Hobart.	Total.
Wool	bales	*8,267	†7,961	16,228
Wheat	bushels	67,809	16,069	83,878
Flour	tons	60½		60½
Sperm Oil	tuns		644¾	644¾
Black Oil	tuns	23	880	903
Whalebone	tons		41⅓	41⅓
"	bundles	27		27
Head Matter	casks	16		16
Tallow	casks	‡148	92	240
Leather	bales	4	135	139
Hides	casks	7		7
"	number		1,310	1,310
Horns	number	2,280	11,449	13,729
Bones	tons	1⅓	13	14⅓
Hair	bales	1		1
Seal Skins	bundles	1		1
Kangaroo Skins	packages		2	2
Flax	cwts.	21	2	23
Bark (from *Acacia dealbata*)	tons	368¾	50¾	419½
Wattle Gum {from *Acacia dealbata* and *Acacia molissima*}	packages		3	3
Paliog	number	700	900	1,600
Trenails	number	4,800	3,244	8,044
Gum Logs (*Eucalyptus sp.*)	number	34		34
Gum Planks "	number	300		300
Black Wood (*Acacia melanoxylon*)	pieces	178		178
Black Wood Staves "	number		1300	1,300
Potatoes	casks	6	8	14
Honey	casks		1	1
Curiosities	cases	7	18	25
Excluding sundries of small value, and articles exported not the produce of V. Diemen's Land.				
Ships carrying the above	number	11	11	22
" "	tonnage	4,106	4,448	8,554

* Less from New South Wales, 1403 bales. † Less from New South Wales, 331 bales.
‡ Less from New South Wales, 47 casks.

Miscellanea.

On the Extinct Mammals of Australia, with Additional Observations on the genus Dinornis *of New Zealand.* By Prof. Owen.

In a previous report Prof. Owen had demonstrated the former existence in Australia of two genera of Marsupial animals, rivalling in size the rhinoceros and hippopotamus of the old continent. Since the reading of his first report, Prof. Owen had received three molar teeth belonging to the upper jaw of the Diprotodon; the crown of each tooth was divided into two principal transverse ridges like those of the lower jaw, and the enamel presented the wrinkled and punctate surface peculiar to the genus. With these was found a large scalpriform incisor, whose bevelled cutting edge showed that it worked upon a similar tooth in the lower jaw. The Diprotodon, therefore, had molars like the kangaroo; but, instead of the two large incisors in the lower jaw being opposed to six smaller in the upper, as in the kangaroo, it had two large incisors above as well as below, agreeing in form and structure, and relative size, with those of the Wombat. Prof. Owen considered himself justified in concluding that the Diprotodon combined the characters of Phascolomys with those of Macropus, exhibiting both upon a gigantic scale, and constituting one of those links in the chain of being which the course of time has broken and destroyed. Prof. Owen also stated that a large collection of bones of the Dinornis had been obtained from a new locality by Mr. Percy Earle. This collection contains four of the species of Dinornis already described, including the three most remarkable for gigantic stature. One of these, with a stature nearly equalling the ostrich, presents in all the bones of its leg double the thickness in proportion to their length, and must have been the strongest and most robust bird in proportion to its size that ever existed. Of the gigantic species, vertebræ, ribs, and an almost entire sternum, most resembling that of the Apteryx, have been obtained. The Rev. Mr. Williams has also transmitted the cranial portion of a skull related in size to the *Dinornis struthoïdes*, manifesting many peculiarities and a striking resemblance to the same part in the Dodo and Apteryx.—*Proceedings Brit. Association, Cambridge.*

A new genus of Sea-Snake from Port Essington.—By J. E. Gray, F.R.S.

The snake here described formed part of the extensive collection brought home by Mr. Jukes, the naturalist to H.M.S. *Fly*. It is remarkable as having the compressed shape, the short blunt head, the peculiar lunate valvular nostrils on the upper surface of the nose, the small superior eyes, the head-shields, and the compressed tail of *Hydrus*, but differs from it in having large polished smooth keelless scales, and the broad band-like ventral shields of the vermiform terrestrial snakes (*Elaphina*). In this respect it agrees with the genus *Aipisurus*, but it is at once distinguished from that genus by the ventral shields being broader in proportion and acutely keeled along the middle line, and by having the head-shields of *Hydrus;* in fact it is exactly intermediate between the genus *Hydrus* of *Hydridæ* and *Aipisurus* of *Elaphina* in *Colubridæ*. It may be called HYPOTROPIS.

Scales large, smooth, six-sided; head short, truncated in front; nasal large, with the lunate nostrils in the middle of their hinder part; crown shields small, superciliary numerous, labial shield high, loreal none; throat scaley; ventral shields broad, band-like, folded together and keeled in the middle, notched behind at the keel; tail compressed, covered with large broad six-sided smooth scales.

Hypotropis Jukesii. Olive, yellowish below.

Hab. Sea, near Darnley Islands. "Merad sand-bank, while at anchor, May 1845."

Smelting by Electricity.—The lately patented process of smelting copper by means of electricity, says the *Morning Herald*, is likely to effect a change that will be quite prodigious. It produces in less than two days what the old process required three weeks to effect. And the saving of fuel is so vast, that in Swansea alone the smelters estimate their annual saving in coals at no less than five hundred thousand pounds. Hence it is clear that the price of copper must be so enormously reduced, as to bring it into use for a variety of purposes from which its cost at present excludes it. The facility and cheapness of the process, too, will enable the ore to be largely smelted on the spot. The Cornish mine proprietors are anxiously expecting the moment when they can bring the ore which lay in the mine yesterday into a state to be sent to market to-morrow; and this at the very mouth of the mine. In Australia, also, the operation of this discovery will be of the utmost importance. Ten thousand tons of copper ore were sent from Australia to England last year, to be smelted at Swansea; and the result was only 1,600 tons of copper. But Australia in future will smelt her own copper, by a thirty-six hours' process; saving all this useless freight of the 8,400 tons of refuse—and saving also the cost of the old and expensive process. In a very few years Australia will send to market more copper than is now produced by all the rest of the world. But if our future penny-pieces are to bear any proportion to the reduced cost and value of the metal, they must be made of the size of dinner plates.—*Athenæum, May*, 1847.

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY OF LONDON.

Continued from page 230.

July 8, 1845.

Mr. Gould exhibited to the Meeting five new species of Mammals:—

MUS LINEOLATUS. *M. vellere longo, molli fusco-cinereo corpore subtùs cinerascenti-albo indistinctè flavo-lavato; auribus mediocribus extus pilis nigris posticè cinerascentibus vestitis; pedibus albis; caudâ albâ suprà nigrisccntibus.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin..	5	4
——— *caudæ*....................	4	5
——— ab apice rostri ad basin auris..	1	2
——— *auris*	0	$7\frac{1}{2}$
——— *tarsi digitorumque*	1	$2\frac{3}{4}$

Hab. Open plains, Darling Downs, New South Wales.

Fur long and very soft; the hairs of the back of a deep slate-grey, with the exposed portion of a dirty yellowish hue, and the points black; long interspersed black pointed hairs are abundant on the back, and give a deep general tint to that part; sides of the body greyish yellow, under parts grey-white, faintly suffused with yellowish; the hairs on these parts of a deepish grey, excepting at the point; hairs of the moustaches rather small and black; eye encircled with black; ears of moderate size and well-covered with minute hairs; those on the outer side except black, on the hinder part, where they assume a greyish white tint, like those on the inner side of the ear; feet rather small and white; the fore ones greyish at the wrist, and the tarsi indistinctly suffused with yellowish; tail about equal in length to the head and body, well-clothed with smallish hairs, which do not perfectly hide the scales; those on the upper surface chiefly brownish black, slightly pencilled with whitish in parts; on the sides and under part white.

Mus gracilicaudatus. *M. vellere longo molli cinerascenti-fusco; corpore subtùs albo, indistinctè flavo-lavato; auribus parvulis pilis obscuris plerumque obsitis; pedibus sordidè albis; caudâ fusco-nigrâ, subtùs sordidè albâ.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	5	0
——— *caudæ*	3	5
——— ab apice rostri ad basin auris	1	2½
——— *auris*	0	5
——— *tarsi digitorumque*	1	1

Hab. Oakley Creek, Darling Downs, east coast of Australia.

This species greatly resembles the *Mus lineolatus*, but differs in having the ears smaller, and clothed internally with dusky hairs instead of white; the incisor teeth rather broader; the tarsi smaller; the fore-feet much smaller; the tail more sparingly clothed with hairs, which are of a less pure white on the under side, and the darker hairs of the upper surface extending somewhat on to the sides of the tail, and in not presenting that strongly marked line of separation between the colouring of the upper and under surface. The fur is rather less soft, less tinted with yellow on the upper parts, and more so on the sides of the body.

Mus albocinereus. *M. vellere longo permolli, pallidè cinereo, in dorsum pallidè fusco tincto; corpore subtùs, caudâ, pedibusque albis; caudâ suprà indistinctè nigro penicillatâ; auribus mediocribus pilis albescentibus vestitis.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	3	9
——— *caudæ*	3	6
——— ab apice rostri ad basin auris	1	1½
——— *auris*	0	5½
——— *tarsi digitorumque*	0	10

Hab. Moore's River, in the interior of Western Australia.

This mouse is rather larger than the *Mus musculus*, and considerably stouter in proportion; has the head large, the ears moderate; the tail nearly equal to the head and body in length; the tarsi very slender; the fur very long and soft, and its general hue pale ashy grey; on the hinder part of the back a slight brownish tint, produced by a very fine and indistinct pencilling of dusky or pale greyish yellow; the lower part of the sides of the body and the whole of the under parts white, but not quite pure, having a faint greyish hue; the head grey-white, pencilled with black; the sides of the muzzle white; the ears well-clothed with minute greyish white hairs; the feet white, and if we except some scattered blackish hairs on the upper surface, the tail also white.

HAPALOTIS MURINUS. *Hap. vellere permolli, corpore suprà pallidè flavo, nigroque penicillato, lateribus corporis flavis; gulâ abdominis, caudâ, pedibusque albis; caudâ suprà indistinctè nigro penicillatâ; auribus magnis, subovatis, pilis minutis albis vestitis.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	5	6
——— *caudæ*..........................	3	9
——— ab apice rostri ad basin auris	1	3
——— *auris*	0	10
——— *tarsi digitorumque*	1	0⅜

Hab. Plains near the Namoi, New South Wales.

This animal is remarkable for the extreme softness and delicate colouring of its fur, which on both the upper and under parts of the body is of a slate-grey tint next the skin, but on the under parts of a pure white colour externally, except on the mesial line of the abdomen, where there is a slight yellow tint; on the upper parts and sides of the body the exposed portions of the hairs are of a delicate ochreous yellow, but on the back there is a considerable admixture of black, the points of the hairs being of that colour; ears rather large and nearly of an oval form, tolerably well-clothed with small hairs, of a white colour, excepting on the fore-part of the outer surface, where they assume a dusky greyish hue; tail nearly equal in length to the body, tolerably well-clothed with hairs, but not so thickly as to hide the scales; these hairs, though short, are longer, more numerous and much less harsh than is usual in the true Rats; on the sides and under part of the tail they are pure white, and on the upper surface some are white and others blackish, but chiefly white on the apical portion; sides of the muzzle white; hairs of the moustaches moderate, black at the root, but greyish at the point.

PODABRUS MACROURUS. *Pod. cinereus nigro penicillatus; lateribus corporis flavescentibus, guld, abdomine pedibusque albis; capite suprà lineá nigrâ longitudinali notato; oculis nigro cinctis; auribus mediocribus intus pilis flavis, extus nigrescentibus obsitis; caudâ crassissimâ ad apicem attenuatâ, pilis minutis, suprà nigro flavoque variegatis, subtùs albescentibus, vestitâ.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	3	9
——— *caudæ*..........................	3	2
——— ab apice rostri ad basin auris	1	0½
——— *auris*	0	5
——— *tarsi digitorumque*	0	8½

Hab. Open Plains, Darling Downs, New South Wales.

Fur very soft, and both on the upper and under parts of the body of a slate-grey colour next the skin; general hue of the upper parts of the body ashy grey, much pencilled with black; on the sides of the body there is but little of the black pencilling, and hence the general hue is paler; and on these parts, as well as on the sides of the head, is a faint yellow tint; under parts of the body white, very indistinctly suffused with yellow on the mesial portion of the abdomen; between the white of the under parts and the greyish hue of the sides of the body is a narrowish space of an almost uniform pale yellow hue, and the same tint is observable on the outer side of the legs; feet white, obscurely tinted with pale yellow; on the upper surface of the head is a mark, narrow on the muzzle, but becoming expanded behind, which is almost entirely black, and immediately around the eyes the hairs are also black; ears of moderate size, their posterior margin nearly straight, clothed internally with small pale yellowish, and externally with black hairs, excepting on the hinder part, where they are pale; tail very thick at the base (about 3½ lines in diameter), becoming gradually slender to the apex, and clothed throughout with very minute hairs, between which the scaly skin is visible; those on its upper part and sides partly black and partly yellow, and on the under surface dirty white. The specimen described is a male.

July 22, 1845.

Mr. Gould exhibited to the Meeting three new species of Birds from Australia:—

STRIX TENEBRICOSUS. *Str. disco faciali fuliginoso-griseo, circum oculos multo saturatiore; corpore superiore fusco-nigro purpureo splendente, singulis autem plumis maculâ albâ ad apicem ornatis; alis caudâque ejusdem coloris sed pallidioribus; corpore inferiore fusco-nigro, stramineo lavato.*

Facial disk sooty grey, becoming much deeper round the eyes; upper surface brownish black, with purplish reflections and with a spot of white near the tip of each feather; wings and tail of the same hue, but paler; the feathers of a uniform tint, without bars; tail-feathers faintly freckled with narrow bars of white; under surface brownish black, washed with buff, and with the white marks much less decided; legs mottled brown and white; irides dark brown; bill horn-colour; feet yellowish.

Total length, 16 inches; bill, $1\frac{3}{4}$; wing, 12; tail, $5\frac{1}{2}$; tarsi, 3.

Hab. The brushes of the river Clarence, New South Wales.

COLLURICINCLA RUFOGASTER. *Col. omni corpore superiore, alis, caudâque olivaceo-brunneis; gulâ pallidè stramineo-albâ fusco-striatâ corpore inferiore ferrugineo-rufo.*

All the upper surface, wings and tail olive-brown, with the exception of the inner webs of the primaries, which are dark brown; throat pale buffy white, streaked with brown; all the under surface rusty red; irides black; bill and feet fleshy-brown.

Total length, $7\frac{1}{2}$ inches; bill, $1\frac{1}{8}$; wing, $3\frac{3}{4}$; tail, $3\frac{1}{2}$; tarsi, $1\frac{1}{8}$.

Hab. The brushes of the Clarence River in New South Wales.

DONACOLA FLAVIPRYMNA. *Don. capite cervino; dorso alisque castaneo-brunneis; corpore inferiore stramineo; tectricibus caudæ superioribus cerinis; tectricibus caudæ inferioribus nigris.*

Head pale fawn colour; back and wings light chesnut-brown;

under surface buff; upper tail-coverts wax-yellow; under tail-coverts black; tail brown.

Total length, $4\frac{1}{2}$ inches; bill, $\frac{1}{2}$; wing, $2\frac{1}{4}$: tail, $1\frac{3}{4}$; tarsi, $\frac{3}{4}$.

Hab. The north coast of Australia.

Prof. Owen communicated his observations on the living *Echidna* exhibited at the Menagerie of the Society in May, 1845. The animal when received at the Gardens was active and apparently in sound health. It was placed in a large but shallow box, with a deep layer of sand on one half of the bottom; the top covered with close cross-bars. The animal manifested more vivacity than might have been expected from a quadruped which, in the proportion of its limbs to the body, as well as in its internal organization, makes the nearest approach, after the Ornithorhynchus, to the Reptilia. In the act of walking, which was a kind of waddling gait, the body was alternately bent from one side to the other, the belly was lifted entirely off the ground, and the legs, though not so perpendicular as in higher mammals, were less bent outwards than in Lizards. The broad and short fore-paws were turned rather inwards; the hind-feet had their claws bent outwards and backwards, resting on the inner border of the sole. The animal was a male, and the tarsal spur, smaller and sharper than in the Ornithorhynchus, projected backwards and outwards, almost hidden by the surrounding coarse and close hair. The small eyes gleamed clear and dark; the ball was sensibly retracted when the animal winked, which it did frequently. It commenced an active exploration of its prison soon after it was encaged. The first instinctive action was to seek its ordinary shelter in the earth; and it turned up the sand rapidly by throwing it aside with strong strokes of its powerful fossorial paws, and repeating the act in many places, until it had assured itself that the same hard impenetrable bottom everywhere opposed its progress downwards. The animal then began to explore every fissure and cranny, poking its long and slender nose into each crevice and hole, and through the interspaces of the cross-bars above. To reach these, it had to raise itself almost upright, and often overbalanced itself, falling on its back, and recovering its legs by performing a summerset. I watched these attempts of the animal to escape for more than an hour, and it was not until it had got experience of the strength of its prison that the Echidna began to notice the food which had been placed there.

This consisted of a saucer of bread and milk and some meal-worms. The milk was sucked or rather licked in by rapid protrusion and retraction of the long red cylindrical tongue. The tongue came more than once in contact with the larvæ, which were sometimes rolled over by it, but no attempt was made to swallow them.

The moist dark end of the nose felt cold to the touch. The temperature of the animal at the cloaca was 85° Fahr., or nearly ten degrees lower than that of the anus of a rabbit.

The Echidna offered little resistance when seized by the hind-leg and lifted off the ground, and made not the slightest demonstration of defending himself by striking with his hind-spurs. The only action when irritated was to roll itself into a ball, like a hedgehog—the bristles being then erect. This was the position chosen for sleep; but our Echidna showed little of that sluggishness which the French naturalists ascribe to their live specimen on ship-board (Voyage de la Favorite, p. 159).

The blood-discs manifested the true mammalian type, in their number, size, and form. They were flat, circular, averaging 1-3200th of an inch diameter. A few large ones were rather less than 1-3000th. The smallest was 1-3500th.

The circular form of the blood-discs of the Echidna was noticed by Dr. John Davy in some blood of that animal which had been transmitted to him in brine from Van Diemen's Land. More satisfactory observations had been made by Dr. Hobson and Mr. E. Bedford on the recent blood of both the Ornithorhynchus and Echidna. I have cited these observations in my article "Monotremata" (Cyclop. of Nat. Hist.). They show that the blood-discs of the Ornithorhynchus are likewise discoid, circular, and about 1-3000th of an inch in diameter; and the observations now made on both ovoviviparous genera demonstrate that the Monotremata resemble the other Mammalia in the form, proportional number, and florid colour of the blood-discs, which correspond in size with those of the Armadillo and the Quadrumana, but are larger in proportion to the size and weight of the body than in the larger apes and the human species.

The Echidna having died unexpectedly a short time after its arrival, has afforded a favourable opportunity of investigating certain obscure parts of its anatomy, the results of which Prof. Owen would communicate at some future opportunity.

August 12, 1845.

"Description of a new species of *Murex*." By L. Reeve, Esq.

MUREX TRIFORMIS. *Mur. testâ trigono-ovatâ, crassiusculâ, transversim liratâ et corrugatâ, tuberculis duobus aut pluribus inter varices; trifariam varicosâ, varicibus laminato-fimbriatis, supernè excavato-sinuatis; ferrugineo-fuscâ; aperturâ ovatâ, supernè sinuatâ.*

Hab. New Holland.

This shell, which Mr. Sowerby thought to be a variety of the *Murex acanthropterus*, is of a rude solid structure and dark rusty brown colour.

October 14, 1847.

"On the genus *Anous*, Leach (*Megalopterus*, Boie)." By John Gould, Esq., F.R.S., &c.

There is no family of birds more generally diffused over the globe than the Terns, and certainly no group of the Natatorial Order less understood, or which would more amply reward the studious investigation of the scientific ornithologist. The present short paper is limited to some species of the genus *Anous*, for the purpose of describing three or four new ones, rather than aiming at any thing like a complete monograph of even this little group. It will not, however, detract from the interest of the paper, if I give a list of the species with which I am familiar, and reserve to some future time the completion of the subject. Upon the present occasion I shall exhibit five well-defined species; a sixth, of which I am not aware that an example exists in the museums of this country, is figured in the 'Planches Coloriées' of M. Temminck. They are—

1. ANOUS STOLIDUS: *Sterna stolida*, Linn.; *Gavia fusca*, Brehm; *Anous niger*, Steph.

2. Anous leucocapillus, nov. sp. *A. vertice et nuchâ albis; loris, et partibus circumocularibus, intensè nigris; omni inferiore corpore alisque fuliginosis, necnon occipite, dorso, et caudâ, sed cinereo tinctis.*

Crown of the head and nape of the neck white; lores and space surrounding the eye deep black; near the posterior angle of the upper and lower eyelids a small patch of white; breast, all the under surface, and the wings deep sooty black; back of the neck, back and tail the same, slightly tinged with ash; bill black; feet brownish black.

Total length, 14 inches; bill, $2\frac{1}{4}$; wing, 9; tail, 5; tarsi, $\frac{7}{8}$; middle toe and nail, $1\frac{1}{2}$.

Hab. North coasts of Australia.

3. Anous melanops, nov. sp. *A. vertice et nuchâ pallidè cinereis; dorso saturatè griseo; maculâ ante oculum, alterâque minore post oculum intensè nigris.*

Crown of the head and back of the neck light ash-colour, passing into deep grey on the mantle and back; immediately before the eyes a large patch, and behind a smaller one, of jet-black; posterior half of the lower and a smaller space on the upper lash snow-white; throat, fore-part of the neck, and all the under surface deep sooty black; wings and all the upper surface of the same colour, but rather browner; bill black; tarsi and toes brownish black.

Total length, 12 to 13 inches; bill, $2\frac{1}{4}$; wing, $8\frac{3}{4}$; tail, 5; tarsi, $\frac{7}{8}$; middle toe and nail, $1\frac{1}{2}$.

Hab. Very abundant during the breeding season on the Houtman's Abrolhos, off the western coast of Australia.

Remark.—This species, although very nearly allied to, is distinct from the *Anous tenuirostris* (*Sterna tenuirostris*, Temm.) of Western Africa, from which it may at once be distinguished by the black marks before and behind the eye, of which no trace is represented in M. Temminck's figure in the 'Planches Coloriées'; neither is this conspicuous mark alluded to in his description. It is just possible that this may be the species described by M. de la Fresnaye in Guerin's Magazine, under the generic name of *Procellosterna.*

4. Anous tenuirostris: *Sterna tenuirostris*, Temm. Pl. Col. 202.

5. Anous cinereus, nov. sp. *A. capite, collo, et corpore inferiore argentato-albis; parvâ plumarum lineâ oculum circumeunte nigrâ ad rostrum, ad nucham albâ; dorso, alis, caudâque lætè griseis; secondariis ad apices albis.*

Head, neck, and all the under surface silvery greyish white; round the eye a narrow ring of feathers, the anterior half of which is deep black and the posterior half white; back, wings, and tail light grey; secondaries tipped with white; bill black; tarsi and toes brownish black; interdigital membrane yellowish.

Total length, 11 inches; bill, $1\frac{1}{2}$; wing, 8; tail, 5; tarsi, $1\frac{1}{8}$; middle toe and nail, $1\frac{3}{8}$.

Hab. The north-eastern coasts of Australia.

Syn. *Pelecanopus pelecanoides*, Brit. Mus. Coll. Part iii. p. 180.

6. Anous parvulus *A. toto corpore cinereo-griseis; parvo plumarum annulo oculum cingente, parte anteriore nigrâ, posteriore albâ.*

The whole of the plumage ashy grey, being somewhat lighter on the head and neck than on the other parts of the plumage; round the eye a narrow ring of feathers, the anterior half of which is black and the posterior half white; bill black; tarsi and toes brown.

Total length, $9\frac{1}{2}$ inches; bill, $1\frac{1}{4}$; wing, $6\frac{1}{2}$; tail, $4\frac{1}{4}$; tarsi, $\frac{7}{8}$; middle toe and nail, $1\frac{1}{4}$.

A single specimen forms part of the collection of the Zoological Society, to whom it was presented by F. Debell Bennett, Esq., who procured it at Christmas Island, in the South Seas. It may be distinguished from all the other species by its small size and delicately-formed bill.

Mr. Gould then exhibited two new birds from New South Wales:—

Podargus plumiferus. *Pod. plumis nares tegentibus, quæ sunt in cristæ formam erectæ, nigro-fusco et albo alternatim fasciatis; mediâ gulâ et pectore brunneo-albis, fusco minutè maculatis, nec aliter colli pectorisque lateribus, nec corpore* *subtùs, nisi singulis plumis lineâ saturatè fuscâ in medio, et duabus maculis quadratis ad apicem, ornatis.*

Feathers covering the nostrils, which are erected into a tuft, alternately banded with blackish brown and white; all the upper surface mottled brown, black and brownish white, the latter predominating over each eye, where it forms a conspicuous patch; the markings are of a similar but of a larger kind on the wings, and on the primaries and secondaries assume the form of bars; tail similar but paler, and with the barred form of the markings still more distinct; centre of the throat and chest brownish white, minutely freckled with brown; sides of the neck and breast and all the under surface similar, but with a dark line of brown down the centre and two large nearly square-shaped spots of brownish white near the tip of each feather; bill and feet horn-colour.

Total length, 20 inches; bill, $2\frac{3}{8}$; wing, $9\frac{1}{2}$; tail, 10; tarsi, 1.

In another specimen the markings are altogether of a much darker hue, particularly on the under surface, where the light markings are less distinct and more chestnut.

Hab. The brushes of the Clarence and MacLeay rivers of New South Wales.

Remark.—This species differs from all its Australian allies by the more lengthened form of the tail and the conspicuous tuft of feathers which spring from the fore-part of the head, and it is from this character the specific name has been taken.

PLATYCERCUS SPLENDIDUS. *Plat. capite, colli lateribus, et medio pectore, coccineis; genis albis; dorso inferiore, et tectricibus caudæ superioribus pallidè viridibus; lateribus pectoris, et abdomine splendidè flavis; crisso pallidè viridi.*

Head, sides of the neck, and centre of the breast scarlet; cheeks white, faintly tinged with blue; feathers of the back and scapularies black, broadly margined with gamboge-yellow; lower part of the back and upper tail-coverts pale green; on the shoulder a patch of black; wing-coverts pale blue; primaries black, with the exception of the basal portion of the external web, which is rich deep blue; two central tail-feathers dark green at the base, passing into deep blue on the apical half of the external web, and tipped with black; the next on each side is black on the internal web, green at the base of the external web, blue for the remainder of its length, and slightly tipped with white; the remainder of the tail-feathers are deep blue at the base of the external, and black at the base of the internal web, the remaining portion of both webs being pale delicate blue, passing into white at the tip; sides of the breast and the abdomen bright gamboge-yellow; vent pale green in some, in others pale bluish green; under tail-coverts scarlet; irides dark-brown; bill horn-colour; feet mealy brown.

Total length, 12 inches; bill, $\frac{5}{8}$; wing, 6; tail 7; tarsi, $\frac{3}{4}$.

Another specimen, probably immature, has the general colour similar, but has the head and breast pale yellow, interspersed with scarlet feathers.

Hab. Darling Downs, New South Wales.

Remark.—Very nearly allied to, but a more beautiful species than, the *Platycercus eximius*, from which it differs in the extent of the scarlet on the breast, which in this species merely occupies the centre, while in the former it forms a broad band across the breast; the rump also is of a paler green.

GEOLOGICAL SOCIETY OF LONDON.

February 24, 1847.

A PAPER was read by J. Jukes, Esq., 'On the Palæozoic Formations of New South Wales and Van Diemen's Land.' The author began by stating that the county of Cumberland, in which Sydney is situated, is composed of palæozoic rocks of great thickness; and he described, in detail, a section from Liverpool, at the level of the tidal waters of the George's River, to Wollagong,—a distance of 38 miles to the south. The strata, which are greatly inclined, and repose conformably on each other, are as follows, in descending order:—1. Black and brown slabs, containing fragments of vegetable matter and fishes (?), at least 300 feet thick. 2. White and yellow sandstones, containing no fossils: of great thickness, not less than 700 or 800 feet. 3. Alternating slabs and sandstones, 400 feet thick. 4. Coal measures, with thin seams of coal, 200 feet thick. 5. Compact sandstone, with calcareous concretions; containing *Stenopora crinita, Producta rugata,* three species of Spirifer, Orthonota, N.S., Pleurotomaria, and Bellerophon, N.S., &c. The author expresses his belief that there are newer, as there are certainly older, beds in the vicinity than these last-mentioned sandstones. The author next described the east and south-east of Tasmania; consisting of horizontal beds of sandstone, with subordinate beds of limestone and slate, of a thickness of 2,500 feet at least; abutting against, if not capped by, a mass of columnar greenstone, which rises 1,700 feet above the sandstones. The limestone contains fossils of palæozoic forms; some of them specifically identical with those of Wollagong. Lastly, the author mentioned the occurrence of two patches of tertiary limestone, containing a Helix, a Bulimus, and leaves.

PHARMACEUTICAL SOCIETY, LONDON.

Notice of a Poisonous Leguminous Plant from Swan River, Australia.* By T. R. C. Walter, Esq.

(From the Pharmaceutical Journal, January, 1847.)

December 9, 1846.—The plant under notice, when at its full growth, attains to a height of three or four feet. It is usual for the natives to burn the pastures every two years, and this shrub is then burnt to the ground; but it shoots up with the next rains, at which time it is very injurious to the farmer's stock, its young and tender shoots being probably more tempting, and less easily distinguished, than those of the full-grown plant. The blossoms are also frequently eaten by animals, and are, I think, the most poisonous part; for the greatest number of sheep are lost from the poisonous effects of this plant at the period of its inflorescence.

When the seeds fall on the ground, the wild pigeons greedily feed and fatten on them. If the crops of these pigeons, containing the seeds, be eaten by dogs, they die; yet the pigeons themselves, when dressed, are good food, and at that season are eaten in large numbers by the settlers. The flesh of sheep and cattle that have died from eating the plant is poisonous, if eaten

* Supposed to be a species of *Gompholobium.*—Ed. *Tasm. Journ.*

raw by dogs; but when cooked, either by boiling or roasting, it ceases to be poisonous.

A very small quantity of the plant is sufficient to kill a sheep. A bullock requires more, in proportion to its greater strength. Horses, so far as is known, are not affected by it: at least this is the prevailing opinion, although it is disputed by some of the settlers.

Soon after a sheep has eaten of the plant, it assumes a wild appearance, holds its head high up, stares about it, then runs round in a circle, and drops down dead, foaming at the mouth.

Horned cattle, after eating it, have a dull appearance, with a languid eye. They appear to be in much pain, and lay down and die.

Copious bleeding, with strong doses of castor oil and Epsom salts, have effected cures in some cases.

With sheep the best treatment has been found to be, to fold them, or shut them up in a close yard, so closely packed, that they can hardly move, and to keep them thus, without food, for thirty-six hours.

Report of Experiments made to ascertain the action of the foregoing Poisonous Plant. By Dr. Algernon Frampton.

I ascertained, in the first place, that the leaves contain a volatile principle; for having added some water and distilled, I obtained a colourless liquid having a strong nauseous odour, somewhat resembling that of senna, as it seemed to me, and possessing a faint fatty sickly taste; but although I distilled the same liquid two or three times from successive fresh portions of the leaves, I neither succeeded in separating any volatile oil, nor in obtaining it in a state of sufficient concentration to produce any effect upon the rabbits to which it was administered. I look upon this, however, as merely a negative result, and think it possible that this plant, like tobacco, may contain a poison of a volatile as well as one of an opposite nature.

A decoction of half an ounce of leaves was made and evaporated in a water-bath to about five drachms. This extract was quite fluid, of a dark-green colour, of a somewhat bitter and astringent taste, and had a strong smell, but quite different from that of the distilled liquid. A portion of this decoction was poured down the throat of a doe rabbit almost full grown, and it was supposed to have swallowed about a drachm and a half or two drachms. When set down it seemed feeble and giddy, made one or two ineffectual efforts to raise itself on its hind legs against the side of the box in which it was placed, but fell; then sat on all-fours, seemed weak and unsteady, and in five minutes was lying on its side insensible, the respiration going on feebly, but neither much accelerated nor at all gasping—the pulsations of the heart were also feeble. It lay in this state for a few minutes; the action of the respiratory muscles and of the heart became rapidly weaker, and ceased altogether in about ten minutes from the administration of the poison. Except one slight retraction of the head there was no convulsive movement whatever; and there was no evacuation either of the bowels or bladder. The limbs became quite stiff in the course of an hour. On examining the stomach twenty-four hours after death, it was found full of food, and softened at its larger extremity, but without any appearance of inflammation; the lungs and other contents of the chest and abdomen appeared healthy. A portion of a decoction like that last used was given to another rabbit at twenty minutes before ten o'clock, a.m., on the 27th Sept., 1845; after which it seemed dull and panted violently, but did not exhibit any paralysis or weakness. After half an hour it appeared well, except that it continued somewhat dull and refused food; and was in much the same condition on two or three subsequent occasions when it was seen. At a little after three, while a servant was in the place in which it was kept, it suddenly sprung forward, screaming at the same time, and when I saw it shortly afterwards it was lying on its side, with the pupils of the eyes dilated, the limbs relaxed, and respiration very feeble, as in the last case; and it died at a quarter past three, p.m., or about five hours and a half after taking the poison.

On examining it eight hours after death, the surfaces of all the abdominal viscera were found moist, and some serous fluid was in the abdomen, the liver appeared somewhat gorged and the kidneys slightly so. The stomach contained a good deal of food, and the colon was full of a dark-green pulpy mass; but though the stomach and colon were examined throughout, no signs of inflammation or congestion were discovered in any part of them: the only change was some softening of the mucous membrane at the cardiac extremity of the stomach, supposed to be cadaveric. In the chest the lungs were found to collapse on opening that cavity, and appeared healthy, except a portion of the upper part of the left lung, which was of a deep red, and completely solidified. The heart felt firm, both auricles were filled with firmly coagulated blood, and in both it was of the same dark colour; the right ventricle was quite empty, the left contained only a small clot continuous with that in the auricle.

To another rabbit about a third part of a thin extract, made from six drachms of the stalks of the plant, was given at half-past nine, a.m., of the 10th of October. The animal had been kept without food for the previous twenty-four hours; it seemed at first dull, but showed no sign of pain or stupor, of debility or paralysis. In the course of an hour it had taken food, and then, and on two or three subsequent occasions, when it was seen it appeared quite well, with the exception of being rather less lively than before. It was seen for the last time at half-past four, p.m., of the same day, and my impression was that it had escaped unharmed, yet on the next morning at nine it was found dead and quite cold and stiff.

The stomach and colon were full of food, the liver was very much gorged with blood, and the kidneys slightly so; the surfaces of the abdominal viscera were moist as in the former case; the lungs collapsed readily and were quite healthy; the heart contained dark coagulated blood in both auricles, that in the left being quite as dark and somewhat more abundant than that in the right.

In making the above experiments, I had the advantage of the assistance of Mr. Curling.

The short time in which the poison proved fatal in the first experiment may be accounted for by the readiness with which the rabbit swallowed, causing it to have a considerably larger dose; and the symptoms observed agree well with the description given by Mr. James Drummond, in his account of the effects produced upon the cattle in the country where the plant grows wild, where he says, "the finest and strongest animals are the first to perish: breathing seems difficult: they stagger, fall, and die." It was remarked also in some experiments mentioned by him, that animals poisoned with this plant did not the less surely die because they ate, and appeared quite unaffected for some time after taking it. He states, that ten sheep and goats which ate of the plant all died in from three to five hours—a period approaching very nearly to that of the duration of poisoning in the second experiment mentioned above.

Many circumstances lead to the negative inference that the poison is devoid of any acrid or irritant property; purging is not mentioned by Mr. Drummond as one of the symptoms observed, and it did not appear to be present in any of the rabbits; the fullness of the stomach and colon after death, and the absence of any signs of inflammation within those organs go far to prove that they could not have suffered from any irritating agent. I may add, that the operation of the poison seemed unaccompanied by pain, and that when tasted it produced no sensation of acridity either on the tongue or in the fauces.

That the poison has no effect in preventing coagulation of the blood is evident from the clots found in both auricles after death. The state of the heart observed in the two more protracted cases appears to me somewhat remarkable. In these the ventricles on both sides were found firmly contracted and empty, or very nearly empty, while the auricles, both left and right, were distended with blood, which had the same venous character in both. The equal distention of the two auricles, as well as the uncongested state of the lungs themselves, seems to show that the blood was freely transmitted through those organs, yet the identity of its colour on both sides of the heart indicates a want of the natural oxygenating influence; unless it be thought that the time which elapsed between the death of the animal and the examination of its body, was sufficient to allow of arterial blood in the left auricle assuming the darker colour of venous blood.

Bibliographical Notice.

Discoveries in Australia. By Capt. J. L. Stokes, H.M.S. *Beagle*, 1837—1843.

In our Journal for July, 1843 (No. vi. p. 55), a notice will be found of the Australian discoveries of the *Beagle*, commanded by Capt. Stokes, R.N., which may in some measure have prepared our readers to receive with interest the publication of the full details of this important voyage, in 2 vols. 8vo., which came out in the course of last year under the authorship of Capt. Stokes himself. The work is important, as the last and newest link in the chain of Tasmanian maritime discovery, which, commencing from the voyage of Capt. Abel Jansen Tasman two hundred years ago, has continued with various intermissions down to the present day.

The Australian chart is still in course of construction, and at the present moment no portion of it calls more loudly for the attention of the British surveyor than that in which Tasmania is comprised. We have been occupants of the island for almost half a century, and still there are numerous points laid down in false latitude and longitude upon the ordinary charts in use. It may be of no great importance to a landsman to blunder the latitude of his farm; but what are we to say to the flagrant errors discovered by the *Beagle* on the northern and eastern shores of our island? and what of those errors which are known to exist, though their amount is still uncertain, in the laying down of the western coast? To this day we have a strong impression that no man can be said to know the true position of that salient landmark, South-west Cape; and, though the *Beagle's* authority is at present culminant in favour of latitude 42° 36′, five miles north of its old reputed position, we should much prefer an observation taken *in situ*, by a really experienced observer, as the only safe way of dispensing with the numerous conflicting authorities which have gone before. Capt. Stokes farther assures us, that up to the period of his visit there were points upon our coast (which, by the way, have been passed by hundreds of vessels backwards and forwards for many years) as far out of position as three and even nine miles, and this too in the dangerous neighbourhood of Banks's Strait. A landsman has possibly no reason to fear that the future result of these inaccuracies will ever tend to embarrass his title, or to place him and his location three, or from that to nine miles out at sea, as the case may be; but the Tasmanian mariner, who has no fixity of tenure to protect him like his fellow-adventurer on dry land, may often have to realize the opposite alternative, and find himself as many miles too near the shore, embarrassed, perhaps, by difficulties enough without the supervention of a treacherous companion in shape of an erroneous chart issued from the British Admiralty. The authorities, however, will be blamed by no one who has any idea of the extreme difficulty of avoiding the introduction of errors in the first instance, and of expunging them when once introduced. What enterprize, what patience, what days and nights of anxious vigilance, what mastery of mechanical and mathematical skill, what profuse expenditure of means, such as British wealth alone can command, and British energy apply, must all be combined in the construction of one single line of the complicated details of those charts which proceed from the Hydrographer's Office. One of the most perplexing difficulties in the formation or amendment of a chart is the choice of authorities where they conflict. We have before us two charts of Tasmania. One was copied in the year 1744, from a map inlaid upon the floor of the Stadt-house at Amsterdam. The other was issued by the British Admiralty in 1844, and is the newest thing of its kind. The only point of Tasmania in the former chart, ascertained by an actual observation *in situ*, is a point in Frederik Hendrik Bay, south of Maria Island, which was fixed by Tasman in 1642. Yet who would have supposed that Tasman's transient glimpse should prove, after the lapse of centuries, to have an error less in amount and less mischievous in tendency than that which appears in the chart of 1844? Though generally ascribed to M. Flinders, the eastern coast of Tasmania in this chart would rather appear to be a rifacciamento of observations by D'Entrecasteaux, Furneaux, Cook, Baudin, and others.

Our reference to Tasman's chart reminds us to correct a misconception to which some observations in our number for July, 1845, might give rise, where (p. 321) the first publication of this chart is ascribed to the English captors of Batavia.

We shall make no further remarks on the present state of the chart of Tasmania than to declare our sincere satisfaction at the recently-expressed intention of Lieutenant-Governor Sir William Denison to prosecute an amended survey of the island, under the immediate auspices of the local government, and our hope that the instructions issued to the officers employed may prove worthy of the present state of modern science, and may, if possible, be published for the sake of directing inquiry upon this topic. The *mundus novissimus* of Australia is at this moment the best-illustrated of the regions of the earth in the department of natural history and physical description, thanks to the exertions of Count Strzclecki and the ornithologist Gould; and we trust that the same distinction may be in store for it at the hands of those to whom the new map of Tasmania is about to be entrusted.

The excellent spirit which breathes through the pages of Capt. Stokes' work, his zeal and industry, his thorough relish for the pursuits of the explorer, and his watchful ardour in the due fulfilment of his commission, all uuite to relieve, though they cannot wholly remove the fact, that, apart from the mere charm of novelty, the shores of Australia are not among the most interesting objects of maritime research. A sandhill once in two hundred miles relieves the level desolation of one portion of the coast; a river, partaking rather of the nature of a gigantic and uncertain torrent than of a regularly flowing and useful stream, is with difficulty detected in another portion; the scanty population which haunt the shores but seldom betray their presence to the voyager, except to take cruel and inhospitable advantage of his unprotected moments, and would appear on the most interesting occasions of contact with their European visitors to be lost in an unreasoning apathy. One chapter in Capt. Stokes' book makes us feel still more perceptibly, by contrast, the somewhat untractable nature of his subject. It is that which has been contributed from the pen of Capt. Owen Stanley. No sooner are we transported from the northern shores of Australia to the islands of the Arafura Sea than the whole face of things begins to brighten, amusing novelties teem on every side, the silence of the desert is exchanged for a succession of sights and sounds which excite our involuntary interest, and we feel that we are once more within the precincts of that oriental world which has still some store of undiscovered wonders for European voyagers, after three hundred years of almost constant investigation.

The vast unmanageable block which forms the continent of Australia contrasts very remarkably with the features of that other portion of the earth's surface which lies immediately to the north. Taking a section of the same length and breadth as comprises Australia, we find it chequered by a thousand islands, and divided by innumerable seas and channels. The scanty forest of Australia is exchanged for the rankest vegetation, the boundless plains for bold volcanic disruptions. What will be ultimately the relations of the inhabitants of this vast archipelago with those of the Australian main, it is impossible now to foretell, nor whether Australia or India is destined to exert the most important influence in this direction hereafter. We must turn from the tempting speculation to the subject more immediately in hand.

However devoid of interest the shores of the Australian continent may be, and those shores more especially which have been last examined, the bold coasts of Tasmania cannot be subjected to such an imputation. Those massive tiers which traverse the island from north-west to south-east are for the most part first seen by the English voyager where they descend with a precipitous declivity into the depths of the ocean upon the southern coast. Two of these vast chains, opening further to the eastward, form that noble entrance from the south which leads through the waters of Storm Bay and the Derwent far into the bosom of the country. The sunny shores of the eastern districts, with their castled cliffs and rocky islands, were not closely examined by the *Beagle*, though much needing investigation; but on the north little or nothing has been left unfinished. There the chief portion of Capt. Stokes' Tasmanian labours were expended; and the difficulties of Bass's Strait may now be considered at an end, so far as charts can aid the sailor. The western coast still demands the labours of the explorer and surveyor, to whom its unsheltered and precipitous front, and the prevalence of westerly winds sweeping over a boundless ocean, offer no very attractive prospect.

As Capt. Stokes has not confined himself wholly to the coasts of Tasmania, we may be permitted to follow him into the interior, where he saw and describes in a concise and graphic manner a memorable scene of social ruin and distress such as can never, we trust, again recur. Without entering at large into the discussion of his supposition that it was owing to the mistaken penal arrangements of the defunct probation system, we may observe that even the imagined pressure of moral evil may form a most serious aggravation of the fits of alternate excitement and depression to which the economical relations of every newly-peopled colony appear to be subject.

The earth, the air, and the sea, would all appear to combine in marking out the future destiny of Tasmania as the *officina gentium* of the southern world. Her soil demands the diligence, her climate secures the vigour, her surrounding seas invite the enterprize of her own inhabitants, to an extent beyond any of the neighbouring countries. Inferior to most in her natural capacity for the varied products of these southern climes, she is second to none in the capability of preserving to the human race the enjoyment of its highest energy and development. Her airy hills and plains are deficient in the profuse vegetation elsewhere met with; but to this very circumstance we owe the enjoyment of a Mediterranean sun without a Mediterranean malaria. Nor need there be any apprehension that future inhabitants will lose those physical qualities of strength and hardiness which have been introduced from the temperate regions of the European world. Should the lower districts of the island of Tasmania prove to possess a too stimulating climate, the upper districts of the lake country are yet in reserve, and are capable of supporting many thousands and tens of thousands of a highland population, when once the lower district has received its natural complement of occupiers.

Where a few lakes appear on the present map, hundreds in reality exist, scattered over that great natural platform whose rough and undulating surface occupies the western portion of Tasmania. Raised from 2000 to 3000 feet above the level of the rest of the island, its average temperature is equivalent to that of a country lying in 52° south latitude, and its climate derives a temperate and humid character from the influence of the Southern Ocean, to which it is completely exposed. Fostered but not relaxed by the genial sun of these favoured latitudes, the human race bids fair to attain a degree of physical energy which will exercise the happiest influence upon its social and intellectual developments.

J. P. G.

MINUTES OF THE TASMANIAN SOCIETY.

August 4, 1847.

Read a paper entitled "Some account of the country between Lake St. Clair and Macquarie Harbour (V.D.L.)." By Mr. J. E. Calder, Government Surveyor. Communicated by Lieut. Kay, R.N.

Read "Meteorological Observations, more especially with reference to the fall of rain in New South Wales." By the Rev. W. B. Clarke, M.A., F.G.S., &c.

Read a "letter from W. S. MacLeay, Esq., addressed to the editors of the *Sydney Morning Herald*, on the skull exhibited at the Colonial Museum of Sydney as that of the 'Bunyip.'" (Published in the present number of the *Tasmanian Journal*.)

Dr. W. R. Pugh drew the attention of the members to a series of experiments, published in the London *Pharmaceutical Journal*, on a poisonous plant which had destroyed many sheep, cattle, and horses at Swan River. (For particulars see page 312 of the present number of this Journal.)

Mr. R. C. Gunn stated that the poisonous plant of Swan River alluded to was described in Sir W. J. Hooker's *London Journal of Botany* to be a *Gompholobium* (of the nat. ord. *Leguminosæ*), and in that work (vol. i. p. 93, &c.) there were some interesting letters dated in 1841 on this subject from Mr. James Drummond, the zealous Swan River botanist. Mr. Gunn observed that as great numbers of cattle had died on both sides of the river Tamar near the sea without any visible or known cause to which their deaths could be attributed, these might have arisen from their eating an indigenous species of Gompholobium (*G. latifolium*, Sm.) which is abundant in the pasturage of those neighbourhoods. He suggested that in experimenting upon the properties of our Gompholobiums, it would be as well to extend the inquiry into the properties of the allied genera, *Aotus*, *Sphærolobium*, and *Oxylobium*, which also abounded in the same quarter, and might exert prejudicial effects on cattle feeding upon them.

Dr. Pugh exhibited some specimens of Serpentine from Glen Dhu, near Launceston, and Graphite from West Head, River Tamar.

C. S. Henty, Esq., exhibited several very perfect specimens of a fossil *Spatangus* from a recent marine limestone formation west of Portland Bay; also some curious nodules of iron-ore from the Darling Range, Swan River.

A large specimen of Thylacinus Harrisii was exhibited by W. H. Breton, Esq., which he had recently obtained from Auburn, Macquarie River. It was a male, and its dimensions were as follow:

	Ft.	In.
Nose to insertion of tail	3	10½
Length of tail	1	8
Height of shoulder from the ground............	1	10¼
Girth round the body behind the shoulder	2	0¼

Dr. Pugh mentioned that the barometer at the Royal Magnetic Observatory, Hobart Town, on 22d July, 1847, was as low as 28.566; the weather being at the time fine.

C. S. Henty, Esq., stated, with reference to his previous observations on the habits of the Black Swan, as published in the Minutes of the Tasmanian Society, July 2, 1845, that the Swans at Srathmore had as usual returned (about a month or six weeks ago) to lay their eggs and breed, after an absence of several months.

August 18, 1847.

Read a paper "On the Geology of Point Nepean, Port Phillip." By Dr. E. C. Hobson, of Melbourne. (See p. 240) Dr. Hobson observes:—

"The narrow strip of land bounding Port Phillip on the south, and separating the waters of Bass's Strait from that bay, and terminating in Point Nepean, consists of stratified calcareous sandstones, limestones almost as soft as chalk, beds of vegetable mould, and a base of basaltic rock. The surface is one succession of abrupt hillocks and depressions such as are seen in the ordinary sea dunes, excepting that Point Nepean is covered with a dense vegetation of trees and grass. The most interesting feature in the structure of this point of the coast is the existence of two fossil forests, the one above the other, the trees standing erect where they grew. The oldest is seen in some places above high-water mark; and in others it passes downwards, and is hidden either by the sea or talus of sand from the cliffs. The trunks and roots are converted into a hard compact crystalline limestone as hard as marble; the roots extending themselves into a chocolate-coloured vegetable mould in which they appear to have grown. The stumps are embedded in a pretty hard sandstone, which is composed of fine siliceous grains and finely-comminuted shells cemented by a calcareous matrix. The unbroken line these fossil trees present is singularly interesting, there being no fault in the whole I have examined. The sandstone inclosing the trees is very irregular in its stratification, exhibiting precisely the structure of a bar or sand-bank, if consolidated into rock. The size of the largest trees I have seen are from eighteen inches to two feet in diameter. The characteristic structure of the wood is entirely lost; but from the irregularity of the trunks, and the number and size of the roots I think there can be little doubt of their exogenous character. Above these stumps and between them and the upper fossil forest there is in many places a deposit of sandstone, calcareous boulders, and loam of upwards of one hundred feet. The upper line of trees are in situ, and stand erect where they grew; they are more friable than the lower ones, and exhibit the woody character less distinctly. The roots and stems are for the most part decorticated, but in a few there are some coarse markings not unlike the rough bark of the Casuaraceæ. The broken extremities of the stumps in some places protrude through the grass and underwood, and are nowhere covered by more than a few feet of sand and vegetable loam, which would indicate their submergence did not extend over a long period.

"The most superficial stratum consists of limestone as white and soft as chalk, which it resembles in some of its zoological characters, viz. in the existence of nodules of flint which inclose spicula of sponges, sharks' teeth, the spines of a large cidaris, great numbers of a forameniferous shell, resembling the genus lenticulina, several species of terebratula, cellepora, and the fossil claws of crustaceans. Other forms will, no doubt, be brought to light when a more careful examination is made of the superficial stratum. This upper deposit appears to have been formed under more tranquil circumstances than the lower beds of sandstone, which from the comminuted character of the broken shells that enter into its composition indicate the action of a boisterous sea.

"The changes that appear to have taken place in the level and form of the land on this part of the coast are, first, the existence of a sand bank, which was gradually raised above the sea level, and subsequently covered by a dense vegetation. This land again subsided until it became covered by the sea, and after a considerable lapse of time (indicated by the amount of detritus accumulated) was elevated, another generation of plants flourished upon it, and it was again submerged. The land was a third time raised to its present height, upon which the luxuriant trees now existing grow. The emergence of the land on its last elevation appears to have gone on more rapidly towards Point Nepean, which would place an island in mid-channel, and account for the size and character of the trees, which on this more elevated and apparently older portion consists of large *Euculypti* and *Acacia dealbata?* which do not grow betwixt Point King and Cape Schank, where the vegetation consists of *Casuarina quadrivalvis*, *Banksia* of three species, *Acacia melanoxylon?* and another smaller species *Bursaria spinosa*, and some other shurbs; there is but one *Eucalyptus* tree on the whole ten miles. We know generations of plants, as well as of animals, are progressive and give place to new ones; this may solve the problem of the non-existence of Eucalypti over ten miles of country and their sudden appearance on the extremity of the Point.

"From carefully examining the coast, I have no doubt but that these fossil forests extended over a considerable portion of the Bay of Port Phillip and Bass's Strait, an opinion which is borne out by the fact that after heavy gales pieces of fossil wood and resin are driven on shore in the Bay. I have traced this fossil forest as far as the heads of Western Port, and have observed it in several localities on the shores of the Bay, and I have also been informed that the same kind of fossil trees are seen at Cape Liptrap to the eastward, and on the coast beyond the Glenelg to the west."

September 2, 1847.

Captain Owen Stanley, R.N., and Captain C. E. Stanley, R.E., were elected members.

Read a paper "On the Osteology of the Marsupialia." By Professor Owen. Vide page 271 of the present number of the *Tasmanian Journal*. Mr. Gunn observed with reference to this paper that it would be desirable to ascertain whether the two species of *Wombat* may not exist in Van Diemen's Land, as Dr. Hobson had satisfactorily ascertained that both inhabit Port Phillip. Perhaps the Wombat found in such vast numbers on the plains and lower country about the St. Patrick's River, &c., may prove to be distinct from the one found usually amongst rocks and stones in elevated situations.

Read extracts from a letter from Professor Owen to Mr. Ronald C. Gunn, wherein he expresses an anxious desire to obtain an impregnated *Platypus* or *Echidna* preserved in spirits. Also the brains of the *Thylacinus* and *Dasyurus* (Devil of the colonists), with a view to making out the internal structure. A skull broken open and immersed in strong spirits would give the required opportunity. Mr. Gunn expressed his hope that some of the members would aid him in procuring these desiderata for that eminent comparative anatomist Professor Owen.

Lieut. M. C. Friend, R.N., exhibited a series of fossil shells from the secondary limestone at the Black Brush collected by Dr. W. R. Pugh.

A fine specimen of that curious crustacean, *Ibacus Peronii* obtained by the Rev. J. Garrett from a fisherman, who stated that he caught it on the coast a little to the east of George Town, was exhibited by Mr. James Grant. It was 5½ inches long and 3½ inches wide at the widest part of the carapace.

Mr. James Grant mentioned having seen swallows *(Hirundo nigricans*, Viell.; *H. pyrrhonotus*, Vig. & Horsf.; *Collocalia arborea*, Gould.) this day for the first time this season. They usually appear at Launceston about 1st September.

Lieut. W. H. Breton, R.N., observed that he had been informed that Snipes (*Gallinago Australis*, Lath.; *Scolopax Hardwickii*, Gray) had been seen early in August; their usual time of arrrival being about 1st September.

September 15, 1847.

Read some additional particulars relative to the poisonous leguminous plant at Swan River, and a specimen of it was exhibited by Mr. Gunn; also specimens of the *Gompholobiums* of Tasmania.

Dr. James Grant exhibited two very curious species of *Shark*, and a *Diodon*, obtained by the Rev. J. Garrett in the river Tamar at Whirlpool Reach.

Dr. Grant also exhibited a specimen of Carboniferous slate, closely resembling Graphite, stated to have been obtained from the east coast.

September 29, 1847.

John Helder Wedge, Esq., was elected a member.

Read extract from a letter from His Honor C. J. Latrobe, Esq., dated 23rd September, addressed to Mr. R. C. Gunn, as follows:—

"I can add little about the *Bunyip!* beyond this, that I am more and more convinced that there are two large nondescript animals to be found in our waters; that of which our blacks give a description being quite distinct from that which appears to frequent the waters and lakes more to the north. A third animal of which glimpses have been seen occasionally in the waters directly communicating with the sea is, I have no doubt, a *Seal*. I send you two sketches of the animal described by our blacks, and these coincide in the main with those which I have seen delineated by the tribes north of Mount Macedon. No. 1 was sketched upon the sand in front of Capt. Lonsdale's cottage, and though ten or twelve feet long was still said by the *artist* not to be quite as large as life. A few days after, being at the native police station, Dandenong, I made some inquiries amongst the older natives, and No. 2 is the animal drown by one of them. I send you the original. The two sketches certainly are intended to pourtray the same animal. It is pretended that before the Europeans arrived the river Yarra near Melbourne possessed many of them. We will catch one yet, if it does exist."

His Honor Mr. Latrobe also forwarded to the Society the Monthly Meteorological Registers kept at Melbourne for the year 1846, and which possess much interest and value.

C. S. Henty, Esq., stated that snakes were out at an unusually early period this season, having been seen in the beginning of September. He also observed that he had killed some as late last season as the end of April.

Very brilliant *Aurora Australis* was seen on Monday night, 27th instant, by several of the members.

October 20, 1847.

Read a paper "On the Landslips which have recently occurred on the west bank of the River Tamar, Van Diemen's Land." By Lieut. M. C. Friend, R.N., F.R.S., &c.

Read a pamphlet "On the Specific Gravity of Sea-water in different parts of the North and South Atlantic Oceans, and in the South Pacific, near the Western Coast of South America." By Captain Phillip P. King, R.N., F.R.S., &c. (Printed for private distribution.)

Read a paper published in the Sydney Morning Herald 28th September, 1847. "Comparison of the Geology of Russia with that of Australia."

The Secretary read the following Analysis, by Mr. Thomas Anderson, of Edinburgh, of the Salt from the lakes Westward of Geelong, Port Phillip :—

Chloride of Sodium (common salt)	99 654
Sulphate of Soda	·104
Chloride of Magnesium	·052
Insoluble residue	·190
Lime	a trace
	100·000

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF JUNE, 1847.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine, A.M.		Three, P.M.							
					Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	29,617	49°5	29,517	51°5	50°	49°	51°	50°	52°	42°	Calm	Calm		,192
2	29,594	49°	29,594	50°	44°	42°5	50°	48°	50°	39°	Calm	Calm		Nil.
3	29,745	48°	29,745	49°	46°	44°	50°	48°	50°	30°	Calm	S.W.	,010	Nil.
4	29,621	42°	29,535	45°	36°	34°	44°	42°	44°	28°	Calm	S.W.		Nil.
5	29,545	39°	29,545	42°5	30°	29°	42°	40°	42°	27°	Calm	S.W.		Nil.
6	29,683	39°	29,683	42°	32°	30°	43°	41°	43°	27°	Calm	Calm	,020	Nil.
7	29,939	37°	29,939	41°	30°	30°	42°	41°	42°	29°	Calm	S.W.		Nil.
8	29,939	39°	29,939	41°	33°	30°	42°	40°	42°	31°	Calm	Calm		Nil.
9	30,044	40°	30,044	42°	35°	33°	41°	40°	41°	33°	Calm	S.W.	,010	Nil.
10	30,150	41°	30,150	43°5	36°	34°	49°	46°	49°	36°	Calm	S.W.		Nil.
11	30,205	48°	30,205	45°	40°	38°	46°	44°	46°	31°	S.W.	S.W.		Nil.
12	30,186	42°	30,109	43°5	34°	32°	44°	42°	44°	35°	Calm	S.W.	,010	Nil.
13	30,152	43°	30,048	45°	40°	38°	46°	44°	50°	40°	Calm	Calm		,168
14	29,729	45°	29,580	47°	50°	48°	47°	45°	51°	40°	N.W.	N.W.		1,152
15	29,391	46°	29,391	47°	42°	41°	47°	44°	47°	37°	N.W.	N.W.	,030	,006
16	29,686	44°	29,686	46°	39°	38°	47°	46°	50°	30°	N.W.	N.W.		,912
17	29,263	47°	29,488	49°	50°	50°	46°	44°	55°	37°	N.W.	N.W.		,054
18	29,581	48°	29,565	50°	47°	46°	50°	50°	50°	42°	N.W.	N.W.	,020	,384
19	29,565	48°	29,492	51°	45°	43°	55°	52°	55°	44°	Calm	N.W.		,456
20	28,930	51°	28,829	52°	53°	52°	53°	52°	53°	44°	Calm	N.W.		,084
21	29,370	50°	29,459	50°	47°	44°	50°	48°	50°	35°	N.W.	N.W.	,030	,006
22	29,769	46°	29,769	47°	37°	35°	50°	47°	50°	37°	Calm	N.W.		,012
23	30,032	47°	30,032	47°	41°	39°	43°	41°	42°	33°	Calm	Calm		Nil.
24	30,032	44°	29,985	47°	35°	33°	44°	42°	44°	33°	Calm	Calm	,010	Nil.
25	29,985	45°	29,948	46°	40°	39°	40°	38°	50°	37°	Calm	Calm		Nil.
26	30,107	45°	30,107	47°	38°	37°	45°	43°	45°	32°	Calm	N.W.		Nil.
27	30,018	43°5	29,903	44°	35°	32°	40°	38°	40°	33°	Calm	Calm	,020	,036
28	29,744	43°	29,684	45°	40°	38°	46°	45°	45°	39°	Calm	Calm		,672
29	29,684	45°	29,684	47°	40°	39°	45°	45°	47°	37°	Calm	N.W.		,084
30	29,632	45°	29,512	47°	38°	36°	48°	47°	48°	38°	Calm	N.W.	,010	,888
Mean..	29,764	44°	29,738	46°	40°	38	46°	44°	47°	35°		Total. ..	,170	5,106

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF JULY, 1847.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	EXTERNAL THERMOMETER. Nine, A.M. Wet.	EXTERNAL THERMOMETER. Three, P.M. Dry.	EXTERNAL THERMOMETER. Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 A.M.	WINDS. 3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29,420	45°	29,420	47°	40°	38°	45°	44°	45°	34°	Calm	S.E.		,060
2	29,420	44°	29,539	45°	38°	37°	47°	45°	47°	33°	Calm	S.W.	,020	,030
3	29,905	44°	29,905	45°	40°	37°	44°	42°	44°	32°	S.W.	S.W.		Nil.
4	30,121	42°	30,056	43°	32°	30°	40°	39°	40°	30°	Calm	S.W.		Nil.
5	30,056	40°	30,056	43°	32°	30°	45°	44°	46°	30°	Calm	S.W.	,010	Nil.
6	30,131	40°	30,131	41°5	30°	29°	45°	43°	45°	30°	Calm	N.W.		Nil.
7	30,131	43°	29,968	45°	40°	38°	47°	45°	47°	38°	Calm	N.W.		Nil.
8	29,836	44°	29,732	46°	42°	40°	48°	46°	48°	40°	Calm	Calm	,010	Nil.
9	29,587	45°			42°	40°	°		42°	40°	Calm	Calm		Nil.
10	29,587	45°	29,587	48°	42°	40°	47°	46°	47°	38°	Calm	Calm		,096
11	29,827	46°	29,827	47°5	40°	38°	50°	47°	50°	40°	Calm	Calm	,010	,012
12	30,044	47°	30,044	48°	40°	39°	48°	46°	48°	34°	Calm	Calm		Nil.
13	30,044	44°	30,044	46°	35°	33°	47°	45°	47°	35°	Calm	Calm		Nil.
14	29,971	45°	29,827	47°	42°	42°	49°	47°	49°	42°	Calm	S.W.	,010	,648
15	29,722	47°	29,657	49°	47°	45°	50°	47°	53°	38°	Calm	Calm		,156
16	29,762	45°	29,665	46°	38°	36°	44°	43°	44°	35°	Calm	Calm		,348
17	29,665	43°	29,573	46°	38°	37°	48°	46°	50°	37°	Calm	N.W.	,010	,252
18	29,545	44°	29,340	48°	38°	37°	50°	39°	52°	38°	N.W.	N.W.		,960
19	29,194	52°	29,124	56°	50°	48°	52°	49°	52°	44°	N.W.	N.W.		,312
20	29,138	49°	29,214	54°	45°	44°	50°	47°	50°	36°	Calm	Calm	,010	,012
21	29,156	46°	29,156	54°	40°	38°	50°	47°	52°	38°	Calm	N.W.		,066
22	29,156	47°	28,969	53°	38°	36°	49°	48°	49°	37°	Calm	N.W.		1,164
23	28,722	49°	28,724	52°	48°	46°	48°	47°	48°	40°	N.W.	N.W.	,020	,006
24	29,042	47°	29,042	50°	44°	43°	48°	45°	49°	40°	N.W.	N.W.		,858
25	29,292	48°	29,380	49°	46°	45°	46°	44°	46°	33°	N.W.	N.W.		Nil.
26	29,674	44°	29,330	46°5	34°	33°	45°	43°	48°	35°	N.W.	N.W.	,030	,552
27	29,366	47°	29,459	52°	46°	43°	53°	49°	54°	40°	N.W.	N.W.		Nil.
28	29,625	48°	29,502	50°5	46°5	46°	50°	47°	52°	34°	N.W.	N.W.		,090
29	29,671	47°5	29,671	49°	38°	36°	47°	43°	48°	32°	Calm	Calm	,030	Nil.
30	29,935	45°	29,969	48°	33°	32°	49°	46°	49°	33°	Calm	N.W.		Nil.
31	30,108	45°	30,108	50°	38°	36°	48°	46°	48°	32°	Calm	N.W.	,010	Nil.
Mean	29,672	45°5	29,600	48°	40°	38°5	47°5	45°	48°	36°		Total. ..	,170	5,622

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF AUGUST, 1847.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine, A.M.		Three, P.M.							
					Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	30,061	44°	29,917	46°	35°	34°	50°	46°	50°	35°	N.W.	N.W.		Nil.
2	29,701	44°5	29,610	48°	42°	38°	53°	47°	52°	41°	N.W.	S.E.	,020	Nil.
3	29,741	47°	29,804	52°	46°	44°	50°	49°	51°	39°	Calm	Calm		,120
4	29,904	48°5	29,843	52°	39°	38°	50°	47°	50°	40°	Calm	N.W.		Nil.
5	29,818	49°	29,783	54°	44°	43°	54°	52°	54°	37°	Calm	Calm	,030	Nil.
6	29,783	45°	29,610	48°	40°	38°	43°	43°	49°	38°	Calm	Calm		,516
7	29,643	46°	29,667	50°	40°	40°	48°	47°	50°	36°	Calm	Calm		,012
8	29,728	44°	29,524	49°5	40°	36°	50°	47°	54°	37°	Calm	N.W.	,010	,708
9	29,426	45°	29,390	49°	38°	38°	48°	45°	48°	37°	Calm	N.W.		,048
10	29,772	43°	29,782	48°	38°	36°	50°	47°	51°	36°	Calm	N.W.		Nil.
11	29,980	45°	29,927	49°	45°	44°	50°	49°	50°	46°	Calm	N.W.	,020	,222
12	29,941	50°	29,941	57°	50°	48°	56°	52°	56°	45°	N.W.	N.W.		,024
13	30,059	51°5	29,946	58°	52°	51°	55°	52°	55°	48°	N.W.	N.W.		,012
14	29,805	51°	29,805	51°	49°	48°	53°	48°	53°	37°	N.W.	N.W.	,080	Nil.
15	30,083	46°	30,075	52°	42°	40°	52°	48°	52°	42°	N.W.	N.W.		Nil.
16	30,157	49°	30,128	52°	48°	47°	54°	51°	55°	44°	N.W.	N.W.		,060
17	30,163	50°	30,010	52°5	48°	48°	54°	50°	54°	46°	Calm	N.W.	,040	,312
18	29,755	52°	29,813	52°	51°	50°	52°	48°	56°	35°	N.W.	N.W.		Nil.
19	30,216	45°	30,095	52°	38°	36°	54°	50°	54°	36°	Calm	N.W.		,012
20	29,657	51°	29,461	52°	50°	48°	52°	51°	52°	37°	N.W.	Calm	,040	Nil.
21	29,762	46°	29,766	52°	42°	41°	50°	47°	50°	31°	N.W.	N.W.		,168
22	30,131	45°	30,137	55°	37°	35°	53°	48°	53°	34°	Calm	N.W.		Nil.
23	30,137	47°	30,056	54°5	36°	35°	53°	50°	53°	35°	Calm	N.W.	,050	Nil.
24	30,206	41°	30,192	52°	40°	38°	52°5	47°	53°	40°	Calm	Calm		Nil.
25	30,303	43°	30,335	52°	43°	42°	52°	48°	52°	36°	Calm	Calm		Nil.
26	30,370	43°	30,291	53°	43°	40°	53°	48°	53°	42°	Calm	Calm	,050	Nil.
27	30,262	48°	30,135	61°	48°	47°	61°	54°	54°	48°	Calm	N.W.		,030
28	29,967	51°	29,730	51°	50°5	48°	51°	50°	53°	44°	N.W.	E.N.E.		,168
29	29,825	50°	29,737	52°	50°	49°	51°	49°	53°	36°	N.W.	N.W.	,050	,060
30	30,101	48°	30,159	48°	48°	46°	56°	50°	56°	41°	Calm	N.W.		Nil.
31	30,238	53°	30,202	56°	43°	47°	56°	52°	56°	44°	N.W.	N.W.		Nil.
Mean	29,925	47°	29,809	51°9	44°	42°3	52°	48°7	52°6	39°5		Total..	,390	2,472

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF SEPTEMBER, 1847.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine, A.M.		Three, P.M.							
					Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	30,277	52°	30,255	58°	52°	50°	58°	53°	58°	44°	N.W.	N.W.		Nil.
2	30,406	52°	30,411	56°	52°	50°	56°	54°	56°	45°	Calm	N.W.	,050	Nil.
3	30,592	48°	30,592	54°	48°	45°	54°	50°	56°	48°	Calm	N.W.		Nil.
4	30,592	54°	30,474	58°	54°	52°	58°	53°	58°	46°	N.W.	N.W.		Nil.
5	30,345	51°	30,131	62°	51°	48°	62°	56°	62°	47°	Calm	Calm	,060	Nil.
6	30,208	51°	30,138	57°5	51°	48°	57°5	55°	57°5	46°	Calm	Calm		Nil.
7	30,104	55°	29,972	55°	54°	51°	62°	58°	62°	42°	Calm	N.W.		Nil.
8	29,874	48°	29,780	63°	48°	46°	63°	56°	63°	47°	Calm	N.W.	,050	Nil.
9	29,711	55°	29,649	54°	55°	53°	54°	50°	55°	39°	N.W.	N.W.		,400
10	29 878	45°	29,888	52°5	45°	44°	52°5	48°	53°	39°	N.W.	Calm		,072
11	29,988	55°	29,988	59°	55°	54°	59°	55°	59°	45°	Calm	S.W.	,070	Nil.
12	30,385	49°	30,405	52°	49°5	36°	52°	45°	52°	32°	S.W.	S.W.		Nil.
13	30,484	44°	30,438	55°	44°	38°	55°	48°	55°	35°	Calm	N.W.		Nil.
14	30,456	53°	30,409	55°	48°	46°	55°	50°	55°	44°	Calm	N.W.	,040	Nil.
15	30,463	51°	30,400	58°5	51°	48°	58°5	50°	59°	47°5	Calm	N.W.		Nil.
16	30,446	52°5	30,247	57°	52°5	50°	57°	53°	57°	49°	Calm	N.W.		Nil.
17	30,054	57°	29,962	60°5	57°	55°	60°	55°	60°	51°	Calm	N.W.	,100	,072
18	29,933	57°	29,874	61°	57°	55°	61°	52°	61°	45°	Calm	N.W.		Nil.
19	30,062	57°	30,035	61°	56°	52°	61°	55°	61°	44°	N.W.	N.W.		Nil.
20	30,025	55°	29,924	58°	55°	51°	58°	54°	60°	36°	N.W.	N.W.	,100	Nil.
21	30,192	51°	30,110	57°	51°	47°	57°	50°	57°	43°	N.W.	N.W.		Nil.
22	30,212	59°	30,212	62°	59°	55°	62°	57°	63°	42°	N.W.	N.W.		Nil.
23	30,128	53°	29,930	55°	53°	50°	55°	52°	55°	44°	N.W.	N.W.	,080	,144
24	30,112	53°5	30,091	58°5	53°5	51°	58°5	50°	59°	45°	Calm	N.W.		Nil.
25	29,953	52°	29,947	56°	52°	50°	56°	48°	56°	36°	N.W.	N.W.		Nil.
26	30,388	50°	30,304	56°	50°	45°	56°	48°	57°	39°	N.W.	N.W.	,110	Nil.
27	30,122	57°	29,972	58°	57°	52°	58°	50°	60°	52°	Calm	N.W.		,096
28	29,753	57°	29,750	56°	57°	54°	56°	50°	57°	46°	N.W.	N.W.		,444
29	29,796	52°	29,730	55°5	51°	48°	55°	48°	55°	39°	N.W.	N.W.	,090	Nil.
30	29,816	51°	29,845	52°	51°	46°	52°	46°	52°	39°	Calm	N.W.	,020	Nil.
Mean	30,158	52°5	30,095	57°1	52°3	49°	57°3	51°9	57°6	43°2		Total..	,770	1.228

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF OCTOBER, 1847.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
					Nine, A.M.		Three, P.M.							
	Barometer	Attached Therm.	Barometer	Attached Therm.	Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	29,914	50°	29,913	60°	50°	46°5	60°	52°	60°	48°	Calm	N.W.	,070	Nil.
2	30,072	52°	30,041	59°	52°	48°	59°	52°	59°	38°	Calm	S W.		Nil.
3	30,280	55°	30,194	61°	55°	48°	61°	54°	61°	47°	Calm	Calm	,060	Nil.
4	29,910	54°	30,018	56°	54°	49°	56°	47°	58°	44°	S.W.	S.W.		Nil.
5	30,263	63°	30,193	60°	58°	51°	60°	52°	60°	42°	S.W.	S.W.	,100	Nil.
6	30,185	53°	30,105	62°	53°	49°	62°	54°	62°	47°	S.W.	S.W.		Nil.
7	30 093	58°	30,085	66°	58°	53°	66°	58°	66°	42°	N.W.	N.W.	,060	Nil.
8	30,281	57°	30,227	66°	57°	52°	66°	58°	66°	47°	Calm	N.W.		Nil.
9	30,224	54°	30,102	73°5	54°	52°	73°5	63°	74°	46°	Calm	Calm	,100	Nil.
10	29,907	60°	29,833	63°5	60°	56°	63°5	57°	64°	50°	Calm	N.W.		Nil.
11	30,018	60°	29,987	63°5	60°	54°	63°5	56°	64°	50°	N.W.	N.W.	,100	Nil.
12	30,094	62°	30,094	64°	61°	55°	64°	60°	64°	48°	N.W.	N.W.		Nil.
13	30,195	60°	30,180	62°	60°	51°	62°	53°	62°	42°	S.W.	S.W.	,100	Nil.
14	30,032	52°	29,873	58°	52°	48°	58°	52°	60°	40°	N.W.	N.W.		Nil.
15	30,337	54°5	30,358	62°	54°5	48°	62°	54°	62°	40°	S.W.	N.W.	,080	Nil.
16	30,379	53°	30,237	59°	54°	50°	59°	52°	60°	44°	N.W.	N.W.		Nil.
17	30,136	54°	29,955	63°	54°	50°	63°	54°	63°	54°	N.W.	N.W.	,090	,036
18	29,657	65°	29,764	65°	65°	58°	65°	63°	65°	45°	N.W.	N.W.		Nil.
19	30,159	56°	30,169	60°	56°	50°	60°	53°	60°	46°	N.W.	N.W.	,060	,786
20	30,291	55°	30,169	57°	55°	51°	57°	53°	57°5	52°	Calm	N.W.		,168
21	29,815	54°	29,752	57°	54°	52°	57°	55°	57°5	48°	Calm	N.W.	,040	,444
22	29,841	56°	29,840	58°	56°	53°	58°	53°	58°	42°	Calm	N.W.		,072
23	30,044	50°	30,026	59°	50°	47°	59°	53°	59°	47°	N.W.	Calm	,100	Nil.
24	30,103	59°	29,984	60°	59°	53°	60°	53°	60°	50°	N.W.	N.W.		Nil.
25	29,942	58°	29,942	61°	58°	54°	61°	57°	62°5	44°	N.W.	N.W.	,060	Nil.
26	29,975	57°	29,858	63°5	57°5	55°	63°5	56°	63°5	53°	Calm	N.W.		Nil.
27	29,807	59°	29,853	65°5	60°	55°	65°5	58°			Calm	S.W.	,070	,300
28			29,988	57°			57°	55°	67°	51°	N.W.	S.W.		,276
29	29,631	53°	29,611	57°	53°	51°	57°	54°	61°	49°	Calm	S.W.	,050	Nil.
30	29,878	61°	29,878	69°	61°	56°	69°	56°	73°	55°	N.W.	N.W.		
31	29,926	61°	29,837	67°	61°	56°	73°	58°	73°	56°	N.W.	N.W.		,132
Mean	30,047	56°5	30,002	61°7	56°4	51°7	61°9	55°	62°7	46°9		Total. ..	1,140	2,214

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF DECEMBER, 1847.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	EXTERNAL THERMOMETER. Nine, A.M. Wet.	EXTERNAL THERMOMETER. Three, P.M. Dry.	EXTERNAL THERMOMETER. Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 A.M.	WINDS. 3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29,493	54°	29,613	51°	56°	51°	57°	54°	57°	42°	Calm	S.W.	,040	,084
2	30,012	52°	30,000	56°	57°	53°	66°	64°	67°	44°	Calm	N.W.	,060	Nil.
3	30,281	54°	30,281	57°	64°	57°	66°	57°	66°	48°	Calm	N.W.	,070	Nil.
4	30,338	55°	30,239	59°	66°	58°	76°	66°	78°	53°	N.W.	N.W.	,070	Nil.
5	30,213	68°	30,173	62°	72°	64°	85°	68°	85°	54°	Calm	N.W.	,100	Nil.
6	30,445	59°	30,348	62°	69°	60°	78°	68°	80°	52°	Calm	N.W.	,090	Nil.
7	30,297	58°5	30,100	66°	69°	61°	86°	64°	90°	57°	Calm	Calm	,100	Nil.
8	30,090	60°	30,036	65°	70°	52°	87°5	70°	87°	61°	Calm	Calm	,080	Nil.
9	30,039	62°	29,992	65°	77°	68°	89°	73°	90°	60°	Calm	Calm	,130	Nil.
10	30,018	63°	29,951	67°	77°	70°	88°	74°	90°	60°	Calm	N.W.	,090	Nil.
11	30,055	65°	29,974	66°	76°	68°	81°	69°	84°	62°	Calm	N.W.	,070	Nil.
12	29,878	63°	29,798	66°	72°	66°	84°	72°	84°	66°	N.W.	N.W.	,080	Nil.
13	29,770	62°	29,822	62°	69°	65°	68°	66°	72°	62°	Calm	N.W.	,030	,192
14	29,948	62°	29,896	64°	72°	68°	73°	68°	75°	62°	Calm	N.W.	,040	,240
15	29,700	61°	29,643	63°	67°	65°	79°	68°	69°	59°	Calm	N.W.	,030	,030
16	29,806	59°	29,775	61°	64°	60°	68°	60°	72°	54°	N.W.	N.W.	,060	Nil.
17	29,736	57°	29,572	59°	60°	58°	67°	63°	67°	60°	N.W.	N.W.	,020	,132
18	29,329	59°	29,366	59°	62°	57°	63°	57°	67°	51°	N.W.	N.W.	,050	,192
19	29,408	56°	29,643	56°	62°	56°	60°	54°	60°	48°	N.W.	N.W.	,060	Nil.
20	29,760	55°	29,825	57°	58°	52°	63°	56°	64°	44°	N.W.	N.W.	,050	Nil.
21	30,074	53°	30,049	58°	58°	53°	68°	61°	69°	48°	Calm	N.W.	,060	Nil.
22	30,087	56°	29,987	59°	67°	60°	70°	65°	73°	58°	N.W.	N.W.	,060	Nil.
23	29,833	58°	29,763	63°	73°	66°	80°	71°	84°	55°	N.W.	N.W.	,090	,112
24	29,677	58°	29,544	61°	63°	59°	75°	68°	82°	64°	Calm	S.W.	,070	,216
25	29,577	61°	29,685	63°	68°	60°	73°	68°	72°	54°	N.W.	N.W.	,080	Nil.
26	29,964	60°	30,000	62°	70°	63°	77°	65°	78°	56°	N.W.	N.W.	,070	Nil.
27	30,014	59°	29,933	62°	66°	60°	74°	66°	66°	58°	N.W.	N.W.	,040	Nil.
28	29,673	61°	29,737	64°	75°	68°	83°	73°	84°	54°	Calm	N.W.	,110	Nil.
29	30,012	59°	29,952	64°	65°	58°	79°	70°	82°	62°	Calm	N.W.	,060	Nil.
30	30,047	60°	29,946	65°	68°	64°	80°	70°	81°	61°	Calm	N.W.	,080	Nil.
31	29,800	60°	29,594	65°	67°	63°	84°	75°	85°	66°	Calm	N.W.	,100	Nil.
Mean	29,915	59°	29,882	61°	63°8	60°7	78°2	65°9	76°4	55°9		Total. ..	2,140	1,198

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF NOVEMBER, 1847.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	EXTERNAL THERMOMETER. Nine, A.M. Wet.	EXTERNAL THERMOMETER. Three, P.M. Dry.	EXTERNAL THERMOMETER. Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 A.M.	WINDS. 3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29,696	55°	29,880	57°	62°	57°	66°	56°	66°	49°	N.W.	N.W.	,090	Nil.
2	30,285	54°	30,096	57°	60°	54°	68°	57°	68°	53°	Calm	S.W.		Nil.
3	29,925	54°	29,742	56°	57°	54°	65°5	62°	66°	57°	Calm	S.W.	,080	1,170
4	29,510	55°	29,569	67°	59°	57°	65°	60°	65°	43°	N.W.	N.W.		Nil.
5	29,634	52°	29,634	54°	54°	50°	64°	47°	57°	40°	N.W.	N.W.	,080	Nil.
6	30,023	50°	30,010	54°	57°	50°	60°	52°	60°	42°	S.W.	S.W.		Nil.
7	30.110	52°	30,034	56°	59°	53°	65°	56°	66°	51°	N.W.	N.W.	,100	Nil.
8	29,772	53°5	29,565	52°	62°	56°	61°	59°	62°	45°	N.W.	N.W.		,072
9	29,795	52°	29,820	55°	57°	52°	63°	54°	64°	50°	N.W.	N.W.	,160	Nil.
10	29,825	53°	29,845	56°	59°	54°	67°	57°	67°	48°	N.W.	N.W.		Nil.
11	29,925	53°	29,944	56°	57°	53°	67°	56°	67°	43°	Calm	N.W.	,120	Nil.
12	30,183	53°	30,175	56°	61°	54°	66,°	56°	70°	45°	Calm	N.W.		Nil.
13	30,235	53°	30,100	58°	60°	56°	73°	62°	73°	48°	Calm	N.W.	,120	Nil.
14	29,860	55°	29,816	59°	67°	63°	69°	68°	64°	52°	Calm	N.W.		Nil.
15	29,616	57°	29,400	60°	63°	62°	73°	70°	73°	49°	Calm	N.W.	,140	Nil.
16	29,870	55°	29,780	57°	59°	55°	58°	55°	64°	49°	Calm	N.W.		Nil.
17	29,898	55°	29,918	59°	64°	59°	66°	60°	67°	46°	N.W.	N.W.	,130	Nil.
18	29,984	55°	29,822	57°	60°	56°	69°	66°	69°	46°	Calm	N.W.		Nil.
19	29,355	56°	29,418	56°	62°	60°	62°	51°	62°	51°	N.W.	N.W.	,110	,438
20	29,563	54°	29,735	56°	59°	56°	63°	60°	63°	49°	N.W.	N.W.		Nil.
21	30,024	55°	30,008	57°	62°	58°	64°	63°	65°	54°	N.W.	N.W.	,110	Nil.
22	29,985	56°	29,938	58°	63°	60°	67°	63°	67°	54°	N.W.	N.W.		,066
23	29,765	56°	29,767	59°	63°	60°	71°	68°	72°	45°	N.W.	N.W.	,140	Nil.
24	29,928	55°	29,856	59°	61°	57°	68°	64°	71°	54°	Calm	N.W.		Nil.
25	29,917	55°	29,940	60°	69°	61°	72°	69°	74°	52°	Calm	N.W.	,110	Nil.
26	30,023	57°	29,944	59°	64°	58°	71°	67°	72°	49°	N.W.	N.W.		Nil.
27	29,998	57°	29,941	60°	67°	64°	74°	68°	74°	54°	Calm	N.W.	,130	Nil.
28	29,780	57°	29,680	57°	60°	58°	59°	58°	65°	56°	Calm	N.W.		,192
29	29,764	57°	29,772	59°	65°	60°	66°	60°	70°	49°	Calm	Calm	,090	Nil.
30	29,737	55°	29,513	57°	57°	53°	62°	58°	62°	45°	N.W.	N.W.		,036
Mean	29,866	54°5	29,822	57°4	60°9	56°7	65°8	60°	66°8	48°6		Total. ..	1,760	1,974

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*** *It is requested that all communications for the Tasmanian Society and Tasmanian Journal may be addressed to the Secretary,* MR. RONALD C. GUNN, *Launceston, Tasmania.*

Vol. III.] JULY. [No. V.

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OF

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1848.

THE

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OF

NATURAL SCIENCE.

JULY, 1848.

Art. XXIV. *Account of the Exploring Expedition from South Australia into the interior of New Holland.* By Captain Sturt.

(Continued from page 270)

Feeling satisfied that I could not expect anything favorable in the neighbourhood of this creek, running parallel to it as I was then doing, for its course was directly north and south, I was resolved on crossing it, and turning to the west pushed on through a country of alternate sand hill and valley (the former being covered with spinifex, the latter with samphire, and the beds of salt lagoons). At last, from an elevated point, we saw the creek winding its way through a dark plain, like a great serpent, as white as snow. Every reed upon its banks bristled as if hoar frost had settled on it, and even the water was hidden from our view by a thick coating of salt. The mud being too soft for us to cross, we ran up this creek northwards, and at about two miles passed over it and proceeded to the N.W., crossing a large plain bounded, in the direction we were going, by a long ridge or dune of sand traversing our course, that is to say, running from east to west, contrary to the usual lay of those remarkable deposits. On gaining the summit of this ridge the view extended over a country, the dip of which was again to the north. There were innumerable lines of dunes shooting out parallel to each other from it, having a narrow valley between them, with a line of acacias, of a species never found near water, occupying the centre. Taking down one of these vallies, we pushed on our weary animals till sunset, when it became necessary to halt; but the country had become one of pure sand. Both valley and dune were covered with spinifex and mesembryanthemum, so matted together as scarcely to be forced through. There was a bright red streak on the summit of each dune, on which the sun's last rays fell with singular effect. To the eastward and to the westward the dunes were in regular succession, as I have before remarked, like the waves of the sea; nor could we have penetrated in either of these directions. Northwards we could see to a distance of full twenty miles, the dunes running parallel to each other on the same line of bearing—342°—as at first. There was something appalling in the view which it is impossible to describe, but which was strongly felt by us all. I believe men never gazed on a scene of such absolute hopelessness, or one of so desperate a character. We were obliged to fasten our horses to stunted shrubs, as there was nothing for them this second night, either to eat or to drink, and it became a matter of painful necessity to me to fall back on the creek which had so unexpectedly failed us. There was indeed no alternative, for the horses were completely exhausted, and were scarcely able to get to water. We advanced on this occasion to lat. 24° 40′, and long. 138°, the meridian I had been directed to gain. In a few days more and we should have been in the centre of the continent; as it was, we gained the meridian of Mount Arden, but 525 miles higher up to the north than that hill. It is not probable, therefore, that any range of mountains can exist in the direction supposed, or that the high lands seen by Mr. Eyre to the N. W. of Lake Torrens extend very far into the interior in a north-easterly direction. We had followed up the desert for more than 500 miles, and at the point from which we turned it appeared to be as far from terminating as when we first entered upon it. I fell back upon the creek, however, not with the intention of abandoning the attempt to penetrate further, but to try the country at different points from a fixed station. It was, however, to no purpose that we did this. In whatever direction we went we were forced back, at the eleventh hour, to the only place of security; and after repeated and useless journeys—after traversing a country in which every breeze raised a cloud of salt to fill our eyes, and in which no change for the better could be looked for, and with both men and horses exhausted, I was obliged to give up the point, and resolved to sit down and await the fall of rain whatever the consequence might be. But there were other considerations which subsequently induced me to change that resolution. I had long grieved to see Mr. Browne suffering, and that too silently, from the fearful malady which had so long before attacked us. Too generous to complain, too high spirited to yield, he continued to render me the most valuable assistance to the last; but what his firmness enabled him to conceal in his waking hours, he could not hide from me when in sleep. I expected every morning to hear that, like Mr. Poole, his limbs had stiffened, and that those fatal symptoms had begun to show themselves which would have been the forerunners of his death. Thus far we had journeyed together, nor had a hasty expression escaped either of us towards the other, even under the most trying circumstances. Mr. Browne's attention to Mr. Poole had been such as to make me most sincerely regard him, and I could not bear the idea of leaving him also in that lonely desert. My men, moreover, as I have stated, were all knocked up, nor could I hope that they would stand much greater exertion. We were now more than 400 miles from the depôt; but I resolved to hurry back, and, if possible, to get Mr. Browne to enter into an arrangement by which I might yet retrieve our bad fortune, and realise the expectations with which I had commenced this journey. It was to send him back to Adelaide with all the men, but Mr. Stuart, Morgan, and Mark—to spare me all the provisions he could, and leave me to work my way across the desert. I accordingly turned back, but it was with difficulty we regained the camp.

Our journey from the creek to the stony descent was full of risk; and had it not been that a small quantity of water still remained in the creek, at which we lost one of our horses, we should not have got the others back in safety; so that it was by the goodness of Providence, rather than our own prudence, that we ultimately reached the stockade on the first of October, after an absence of seven weeks, during which we had ridden more than 900 miles. Not anticipating any objection on the part of Mr. Browne to the arrangement I contemplated, I had prepared letters for Adelaide on my way back, and on the third day after our return sent for him to speak to him on the subject then nearest my heart. Proposing to him that he should return home with a portion of the men, I observed that he would only be obeying orders and doing that which Mr. Poole had done. That having volunteered this service, it was incumbent on me to use every exertion in my power to execute it; that my credit was at stake, whereas he had nothing to fear, and that it was therefore needless for him to expose himself to fresh disappointments and sufferings. I assured him that if I had a hope of finding a good country, of making a discovery that would be a credit to me, I would not ask him to return, but would rejoice that he shared the credit with me. Our provisions are now running short (I said), and it is only by such another separation of the party that I can still retain sufficient to make myself useful. I have undertaken this, you well know, (I added) for the good of my family; but what right shall I have to urge my claims on my countrymen when I shall have done nothing. But Mr. Browne would not see things in this light. He had determined to stick to my side through good fortune or misfortune, and would not desert me to perish in that miserable wilderness. He would do anything I asked but that which his feelings told him would be wrong, or with which his conscience would afterwards reproach him. He would remain behind if I was not satisfied with the efforts I had made, and that I could again go out, but that he would not turn his back upon me and leave me without the hope of relief, if misfortune overtook me. The reader will perhaps imagine better than I can the feelings under which this conversation took place, and if either Mr. Browne or myself betrayed any weakness they will make a generous allowance for it. Mr. Browne continued firm, in consequence of which I abandoned my intention, but directed Mr. Stuart, Morgan, and Mark, to hold themselves in readiness to leave the camp on the 6th of the month, with ten weeks' provisions. Before we parted I arranged with Mr. Browne that if he should be forced to retreat from his present position from any necessity, an event which I foresaw, he should bury a bottle with a letter in it for me under a marked tree, and that before he finally broke up the camp to dig a hole in the centre of the creek to retain the water, if it should fail, as long as possible. Having given my poor horses six days of rest I again left the camp, and, for the third time turning into the tracks I had twice trodden before, made the best of my way to the first creek, to which I have already alluded. There being no water in any other direction I was obliged to that course, from which I intended to run due north into the interior, for it had struck me that the Stony Desert was the channel in which the waters of the interior collected, whether to run off or gradually to evaporate, it was impossible to say. It appeared to me that it was the bed of a former current, which, with irresistible force, had broken through the sand dunes and created the broad gap its surface occupied. In such case it was obvious, that if I tried still more to the eastward, I should necessarily come upon it again. Moreover, being nearer the bottom of the Gulf of Carpentaria, than any other part of the coast, I thought that, by pursuing a northerly course I should ascertain whether any hills existed between me and the great northern inlet. I state these particulars that the reader may be aware of the objects I had in view in this my second attempt to cross the desert interior.

I was glad, on my arrival at the first creek, to find that there was yet an abundance of water in it. I looked upon it as the point to which I could fall back in case of necessity, and I left it in confidence and hope. We traversed plains of great extent, through a country just such as Mr. Browne had described. The plains were subject to flood, and were bounded by low sand-hills. We were still riding on when the sun set, having failed in our search for water; and I pulled up on a small flooded flat, on which, between the polygonum bushes, there was a little grass. Near to us there was a small sand-hill, to which I went in the dusk of the evening. From it I saw a dark line of trees traversing the country from the eastward to the north-west, but whether it was brush or a belt of gum trees I could not decide. Still, I encouraged hopes that that dark line might conceal a water-course, more especially as I caught the sound of the natives' cooee in that direction. When morning dawned, I again ascended the little hill, from which I now clearly saw a broad belt of gum trees, flanked on either side by immense plains, crossing the country from the east to north-west, and it was evident these trees were gum trees so that we were now full of hope. Beyond the N.E. horizon, but very distant, there was apparently a lofty and rugged chain of mountains; and, as I gazed on the scene, I thought I had at length found an outlet from the fearful region in which I had so long been wandering. I made straight for a high part of the wood, and at three miles entered under the shade of an open box-tree forest; and at half a mile found myself on the banks of a magnificent water-course. Flooded gums of great size were growing on its banks, and the paths of the natives, as large and as well-beaten as a footpath in England, led from one angle to the other of it. My heart bounded with joy as I led my horse into its grassy bed, and saw him profit by our good fortune. Having taken breakfast, we crossed the creek for a little hill the bearing of which I had taken, in order to take bearings of the distant ranges, and on descending from it to the north, found myself on the banks of another creek still larger than the first, (the one by which the plains I had crossed are laid under water), and which was evidently an arm of it. The natives had not long before fired the grass in its bed, and it was springing up most beautifully green. A large sheet of water, the extremity of which I could not see, was to the eastward of us; and I could not resist the entreaty of Mark to let the horses have the benefit of a day's rest at this place. We accordingly unsaddled and unloaded the horses, and sat down on a sloping bank, watching the poor animals feeding around the margin of the water.

I had found the country so dry, and the creek we had thus discovered was so fine a feature, that I hesitated pushing any farther to the north, but thought of tracing the creek to the hills, from which I had no doubt it came, although the direction of the belt of trees was somewhat to the south of east. In the afternoon, however, we had a thunder-storm that lasted, with some violence, for more than half an hour, and left a quantity of surface water in the hollows on the plains. Hoping that if I now pushed on into the interior I might reach some other creek before the surface water should be wholly evaporated, and knowing that I could prosecute my examination of the creek when I returned, I, the next morning, crossed it, and taking a course due north, traversed plains of light sandy soil, and somewhat more elevated than the flooded plains, for thirty-six miles, when I halted at a small puddle of rain water for the night, having kept the creek almost all day on my left. Here we dug our first well to collect the water as before, but there was so little that I did not anticipate any advantage from this labor. On the following morning we rode for about eight miles over a similar country, when the sand dunes once more made their appearance, and we kept on the summit of one for more than six miles, having the dry beds of salt lagoons on either side of us. Riding on till after sunset, we at length came to the termination of the ridge, and saw a large white plain before us, which I did not dare to cross in that uncertain light. I therefore halted, and by the light of the moon we dug our second well at this place. The plain which had appeared of such doubtful character, was of firm surface, although it was evidently soft at times. From it we again ascended sandy ridges, and rode along them till noon, when we came to a pretty lake about fifteen miles in circumference. It was evidently very shallow, from the line of poles standing in it used by the natives for taking wild fowl; but I was doubtful as to the quality of the water. Descending to it, we found it half salt and half fresh, but putrid, and wholly unfit to drink. The bottom was soft sand and mud, and the smell from the lake was very offensive; nor could we by digging procure better water. Traversing the western shore of the lake, I ascended a high and abrupt dune of red sand to my left. From it I saw another similar lake to the eastward, backed by a very low country. Northward, there was also a low track of white sand, into which I did not think it prudent to venture; whilst to the west and south-west the view was limited by high ridges or dunes of red sand.

At this point we were in lat. 27° 8′ 5″, and long. 140° 10′ 55″. My progress to the north appeared to be so doubtful over the heated and glittering desert there, that I turned a few degrees to the westward to avoid the low and burning sands I had noticed; and late in the evening arrived at a little puddle of water, having thus far kept within the influence of the thunder-storm. I halted at this puddle for the night, but there was so little water that I did not seek to preserve it. I was now about ninety-six miles from the Great Creek, and had only found a few isolated puddles, on which, with every precaution, I could place no dependence. It was therefore absolutely necessary to find some more durable supply of water before I could venture much farther. Ascending a ridge of sand shortly after mounting my horse, I observed extensive grassy plains to the S.S.W. of me, which I had no doubt formed the termination of the large creek; for on crossing that creek I had left it on my left, trending to the N.W.; but it had struck both me and Mr. Stuart that it came up to the north in an extended semicircle. That it would fall short of or enter the Stony Desert I felt satisfied, supposing the Stony Desert to be what I imagined it was; but on entering the grassy plains I had seen, and for which I immediately made, as being the most likely place to find water, I saw that they were of great extent, and fully equal to the reception of the superfluous waters of the creek, large as it was. After a long and anxious search we found a little narrow muddy channel, hid by long grass, near a native's hut, in which there was some cool and clear water, which I entertained no doubt would last for a fortnight or more. Thankful for this discovery, I turned to the north once more, and pushed on, soon getting amongst sand hills rather than sandy ridges or dunes. I halted in lat. 20° 49′ 9″, and long. 139° 47′, at a small sheet of water, though the feed was poor; and here we dug our third and largest pit. I had remarked before we halted that the country was undergoing a change; and on the following morning this impression was confirmed. Soon after starting, we espied the dry bed of a salt lagoon, then ran along a high sandy ridge, which terminating suddenly, about noon, we found that we had reached the borders of the Stony Desert, unaltered in a single feature. As before, it occupied the western half of the horizon; nor was there a single object on its dark and gloomy surface on which the eye could rest. It was not without a feeling of horror that I looked upon this dreary waste, on which my companions gazed with utter amazement. I descended to it however, and, trusting entirely to our compass bearings, soon found myself advanced some distance upon it. It appeared to be taking a direction more to the N.E., but I was not satisfied as to the fact. At seven miles we sighted the pointed top of a sand-hill not far out of our course, for which I turned, and I reached it at five miles, thus making the breadth of the desert from the point at which we struck it twelve miles. This sand-hill extended longitudinally to the N.N.W., so that to avoid the stones I ran along its base, and ultimately halted at a small puddle of water just enough for the horses to drink at once. The Stony Desert was on our right, so that when I pushed on the following morning I still kept the base of the sand-hill, but at six miles ascended and rode along the top of it. At two miles from where we had slept, however, we were lucky in falling on a little channel of water similar to that on the grassy plain, at which the horses took a good drink, and we replenished our little kegs. We now journeyed on with greater confidence, as I had no doubt we should find water on our return to this place, even if we allowed ten days or a fortnight to elapse. Riding along the sand-hill, we had large plains on either hand, bounded also by sand-hills, beyond which we could see nothing. At thirty-three miles I halted in a little valley where there was some green grass, which I hoped the horses would relish, but they partook sparingly of it. In front of us, to the N.N.W., there were some low dark hills visible as if covered with scrub, and they were distant some ten or twelve miles. Continuing down the valley when we resumed our journey, I found that it opened on the Stony Desert, over the rugged surface of which we were once more obliged to lead our limping animals, from whose dry hoofs large splinters flew as they struck them against the stones. As we approached the elevations I have noticed, from which a little creek fell into the plain with a hopeless sandy bed, we observed that they were merely ridges or dunes of sand covered with stones similar to those on the plain below. Ascending the highest point, I cast my eye round the horizon, which was as even as that of the ocean, excepting to the N.E., where the sand-hills we had crossed rose above it; but they were like an island in the midst of that gloomy sea. I have refrained from making any observations on the weather at this time, but it was fearfully hot, and the gusts that came upon us were enough to wither us. We were exposed to the sun's first and last rays; for we had no shelter to which to fly, and the extreme heat caused both ourselves and our animals to feel unusual lassitude. I was now about forty-seven miles from the last water we had passed, and we were in a situation that demanded my most serious consideration. Should I push on or retrace my steps? I was now in lat. 25° 54′ S., and in long. 139° 22′ 30″ E.—advanced about fifty miles into the most dreary region man ever traversed. From the point on which I stood I could see farther to the north than our horses could possibly gain unshod as they were, over ground now become rougher than before, since large sharp fragments of rocks, driven by the force of waters apparently into the ground when soft, were mixed with the small rounded stones, and the whole plain presented the aspect of a wild sea-beach. If I pressed on, and should not find water, I felt I should lose every horse I had, and that in such case great suffering would overtake us. On the other hand, I knew that if I now turned back it would be virtually to abandon the great enterprise. I should be doing injustice to Mr. Stuart and my two men, Morgan and Mark, if I did not state that they expressed the utmost readiness to follow me wherever I should determine to go. I could not, however, shut my eyes to the critical posture of our affairs, and the uncertainty, even as it was, of our being able to effect our retreat to the creek. Long and hesitatingly I sat on that burning hill, but I ultimately resolved to turn for the nearest water. At sunset we reached the valley where we had slept, and I there gave the horses an hour to eat; but they collected round me as I sat under a tree, and the poor animal I rode pulled my hat off to attract attention. I had often watered them before, and was the only one of the party who had been constantly out with them; but on this occasion I had nothing wherewith to relieve their wants. Only one of them fed a little; he was an ugly cross-grained brute; and we had not proceeded from this point more than ten miles when he made a stop, rolled to and fro, and falling heavily on his side, expired without a struggle. We continued to travel all night to get the horses to water as soon as possible, but we were obliged to halt about 2 a.m. At 4 we again mounted our horses, and I pushed on, with Mr. Stuart, to the little channel at which I expected relief; but, on reaching it, no water any longer remained. A soft mud occupied the bottom of the channel, in which Mr. Stuart made holes for the water to filter into, and thus just moistened his lips. The men came up whilst we were looking for water. They had left the colt behind, but at no great distance, and had fortunately stumbled on a little pool that contained water sufficient to allay their thirst, but not to give the horses; and they had drank it all, thinking we also had plenty. Our search for a further supply would most probably have been unsuccessful, if it had not been for the appearance of a pigeon which, flying rapidly past us, pitched at some distance from us in a little grass; and there we found a little pool of a few feet only in circumference; but it contained sufficient water to enable me to give the horses a day of rest; yet I went with Mr. Stuart to the north east, in the hope that we might see some changes; and it was with difficulty we found our way back to our solitary camp. On the 25th I crossed the remaining twelve miles of the Desert, and gained our third well, but the water was putrid in it, and was unfit either for ourselves or our horses. We had therefore to depend on that in the little channel in the grassy plain, at which we arrived on the following day, just in time to drain it. Another day, and at the rate at which it had evaporated it would have been dry. As it was, it gave us sufficient to allay our thirst, and we left it earnestly hoping that we might find water in one or both of the pools we had yet to pass between us and the creek, a distance of ninety-two miles. Indeed, unless we did, I did not know how we should get our horses safe to it. We started on this anxious journey at early dawn on the morning of the 27th. Our horses were worn out with fatigue, and absolutely weary, reeling under us as if about to fall. Cutting off an angle in our former route we crossed a larger portion of the grassy plains I have mentioned as being at the termination of the large creek. That these extensive levels, covered with a kind of grass, which the cattle do not seem to relish, but which affording an abundance of seed are as wheat-fields to the natives, receive the superfluous waters of that creek I have not the slightest doubt. It must, indeed, either have fallen into the Stony Desert or fallen short of it; and as on the course on which I ran from the lake, I must have intersected it had it continued, I cannot but conclude that its termination is such as I have stated it to be. It is the peculiar character of the rivers and creeks of the interior to exhaust themselves in marshes, or by overflowing some great level. A little before noon we saw the lake far to our left, and at 5 p.m. gained our second or centre well, but it was perfectly dry. As the sun set we again mounted our horses and rode slowly on without a hope of finding water in the only remaining well, thirty-six miles from the creek. The moon was in the wane, and we had not her light. Time would not admit of our resting; we, therefore, lit a small lamp, and by its feeble light retraced our steps, in the dead of the night, over the dunes and flats, one of us walking in front with the lamp in his hand. At 3 a.m. we neared the well, and morning was just beginning to break when we recognised the ground on which we had slept, and rode up to it; we saw there was a glittering light in the well as we approached it, which in the dusk we could not distinctly make out; but Stuart, who was the first to examine the well, called out "Water, water." This welcome information enabled me to pull up, and we rested until 8 o'clock. We obtained four buckets of water from this well, which, without doubt, was the saving of all our horses. We reached the creek at 10 p.m., when the night had set in; but two of the horses fell and were left behind, although we recovered them in the morning. Those only who have traversed such deserts as those I have been describing, can imagine the feelings of the traveller when he reaches a place of safety. It is as his home to the school-boy—as the harbour to the mariner—as a reprieve to the criminal—as an escape from death to life—so we felt it; and so feeling it, did I acknowledge the goodness of that all pervading Power, whose Eye had been upon—whose Hand had guarded—and whose Providence had saved us. I might have laid down calmly to sleep, but if more immediate causes of anxiety ceased, distant ones rose before me. Again had I been driven back from the wilderness. Still did the drought prevail, and daily was the country getting drier and drier. I felt assured that if rain did not fall in a month Mr. Browne would be forced to retreat, and that I myself should be cut off from all hope of rejoining him. I was now about 130 miles from the stockade with only one water-hole intervening, and, large as that was, it was doubtful how long it would stand against the excessive heat which now prevailed. Yet I had done nothing worthy the occasion, and had still some few weeks provisions to spare, with which I now purposed prosecuting my examination up the creek, and of the mountain ranges to the north-east. To lose no time I started eastwards on the 29th Oct., but did not go more than six miles. Before I went I hid all my superfluous stores and instruments in a thick rhagodia bush. We had seen several natives, but I did not anticipate that their quick eye would detect my treasure; and I was too glad to relieve my suffering animals of a pound even of their loads. Our progress up the creeks was in all respects gratifying. Splendid sheets of water from six to eight miles long; a cheerful open grassy forest, varying in breadth from half a mile to a mile, repaid us for the lonely and inhospitable desert from which we had returned. The only drawback to my hopes of this creek's originating in the hills was its course, which was far to the south of east. We shortened our journeys by running on the broad paths of the natives, parties of whom we now daily saw. On the 31st of October we passed some low stony hills on the proper right bank of the creek, and on the 2nd of November we had gained more than eighty miles. About noon we approached a sheet of water less surrounded than usual by trees. The colour of the water at this place led me, as on a former occasion, to conclude that it was brackish, and so on tasting we found it to be. At about six feet from the margin there was a border of fine weeds. Between the two we saw thousands of small fish, similar to those we had taken in the little water-hole to the westward, swimming about, and it appeared as if this reservoir was held sacred by the natives. The next sheet of water was so strongly impregnated with brine that no animals could live in it. Immediately above this the water of the creek was sweet and good, but a great change took place in it. Large melaleuca for a time grew on its banks; but at length few trees were to be seen. The line of hills receded to the north-east, and the channel of the creek split into many minor branches. There was one satisfactory result, however, from the discovery of the brackish sheet of water I have mentioned, since it was confirmatory of the westerly fall of that part of the interior lying between the 139th and 142nd meridians, a point I was most anxious to ascertain: since there could now be no doubt whence the floods came, by which the plains were inundated, and the creeks filled, which Mr. Browne and I had formerly crossed. We were one day riding along the bed of the creek, when we saw a single native before us cutting young saplings, to whom we called out not to alarm him by our too near approach, but he heard us not. At length we got pretty near to him, and again called, but to no purpose. He took the branches he had collected, threw them over his shoulder, and was walking away without having observed us, when suddenly we crossed his path. The figure of horror and amazement he presented was absurd. Down dropped his sticks, and with outstretched arms he began to shout as loud as he could. I then dismounted, and telling Mr. Stuart to do the same, we both sat down, and by degrees the native's fears subsided, and we had some conversation with him. Asking him if the natives had canoes, he put himself into the posture of a man propelling one, and made the motion. He then pointed to the north, and swept the horizon with his arm from north to east, when he repeated his first motion, as if intending to intimate that waters were between those two points, on which the natives used the canoes. He pointed to E.S.E. as the direction of the creek, and clearly intimated that it did not go beyond a certain point. On the 4th we had stony elevations to our right at about a mile distant from the creek, similar to those we had passed to our left, and beyond those there were enormous grassy plains bounding the horizon. We had had a difficulty in keeping the channel of the creek, and on the proper left bank of it the native paths, hitherto so broad and so useful, ceased. We could not see the range I have mentioned, which would there have borne north-west from us. We were here in lat. 27° 49′ 14″ south, and long. 141° 51′ east; the point at which we struck this fine creek being in lat. 27° 8′ south, and long. 140° 11′ east. The country south of us was dark and scrubby, thence to E.N.E. and north extensive grassy plains; the grass being similar to that on the grassy plains near the lakes.

Just before we left the creek to ascend these hills, we had seen a large pool under some gum trees, and on descending were returning to it, when we observed a body of natives, whose paths we had entirely lost, approaching us. I therefore went to meet them, and on getting near them dismounted, on which they all sat down to receive us. There were two who appeared to exercise authority; both powerful men, and one of them about six feet two inches in height. They were painted red, but were not otherwise disfigured. They really cried, and the tears rolled down their cheeks when we came up; but the others, who sat behind them, were mostly lads, and laughingly pointed their fingers at the two chiefs, as if to tell us their crying was a farce, and we really could hardly preserve our gravity. These men told us that there was no water to the east or south, that the only water was to the north-east, and that to get to it we should have to cross the creek and go along a path. The two leaders, to whom I made presents, accompanied us to point out the way; and as they had given us to understand, so immediately on crossing the creek we got on a broad path, leading direct to the north-east; it thus appearing the natives did not frequent the other side. The two natives still continued to accompany us as we rode along; and at about a mile and a half the taller native stopped at a hut, and introduced us to his father, an old and venerable patriarch. His son had evidently taken us under his charge. In a distance of little more than eight miles he led us to five tribes, who collectively might have numbered between fifty and sixty, men, women, and children. Each was encamped at a separate water-hole; the water in which was horribly muddy; but from each tribe we received an invitation to stop for the night, but I continued to ride on—somewhat it appeared to me, to the annoyance of my guide. However, when we left the last tribe, he and his companion set off at a run, and disappeared over a sand-hill, about a quarter of a mile in front of us. In the meantime the horses became tired, and one of my men, Mark, became seriously indisposed, and I therefore determined on pulling up at the first water. I had been watching the movements of the natives, and felt satisfied that the sand-hill concealed something unusual from our view; and although not altogether, I was in part prepared for what it did conceal. Our appearance on the crown of the hill was met by a loud shout from a body of more than three hundred natives on the flat immediately below. It has seldom fallen to the lot of any traveller to witness a more interesting scene. I sat looking at the dark forms before me for some little time before I rode quietly down the hill, when I dismounted, and giving my horse to Morgan, with Mr. Stuart walked into the midst of the natives. Although wholly unarmed, and evidently well-disposed, it was yet a moment for me to have all my eyes about me, and as I went to the natives I observed a small mound, on which four or five trees were growing, and on this at the distance of forty feet from the native encampment—which occupied a rise of ground—I determined to sleep. We were received very kindly; men brought troughs of water to ourselves, and held them for the horses to drink out of, and they pointed out a hut for us to occupy, but I intimated my intention of sleeping under the trees, to which they gave a ready assent; nor did they, when we left to unpack the horses, come near us until we had arranged our little camp. A body of them then came to us, and out of sixty-nine who I counted round me I do not think one was below my stature—five feet ten inches. They were a fine, frank, merry race, without a blemish or mark of any unseemly cuts on their bodies, or deficiency of teeth. Firewood being scarce, two of them brought us a supply of it, and at sunset they retired to their camp and left us to ourselves. These people assured us that there was no water to the eastward, and that the creek commenced in the great grassy plains. They explained this with their fingers and arms, as emblematical of many small channels forming a large one, and they observed that the waters had all gone to where we had come from, meaning the bottom of the creek. They had a long argument as to the existence of water to the N.W., but ultimately told us there was none. We could not make them understand a canoe, nor could we learn from them that a large body of water or hills were anywhere near us.

The camp of the natives at night was a beautiful spectacle; the gentle rise of ground on which it stood had a line of fires all along it, the light of which fell on the dusky forms of the men as they walked about, and on the bough-made huts around. The women kept up an incessant hammering, pounding the grass seeds for cakes between two stones, and the effect, altogether, was like the working of a factory. About eleven this noise ceased—the camp was hushed—and had we not been aware of it we should not have known that we were so near so many people. In the morning we took leave of the natives, and passed on to the plains, but we were obliged to turn back. The ground, blistered and light, was unfit to ride on. Our horses sank to the chest at every step, and I was obliged, as soon as I had satisfied myself that there was no apparent sign of water to the eastward from that point, once more to make for the creek. Indeed, my horses were incapable of further exertion. I had left one behind me that had worn his hoofs down to the quick, and could not drag one leg after another; and the rest limped and staggered along so much that it was painful to ride them.

About fity miles from the point at which we first struck this creek, and on its right bank, we crossed a tributary creek coming from the north, which I did not doubt would lead me into the hills if I followed it up, more especially as we could see what we fancied to be their outer line in the direction from which it came. Arrived at this creek, on our return, I turned up it, but found nothing but disappointment. At nine miles we passed a gap in what we had taken to be the outer line of hills. The ground we travelled over was herbless, and pure sand with sharp pointed rocks buried in it. The bed of the creek was perfectly level and gravelly, and the waters evidently rushed with great violence through the pass at times. A few trees were growing under shelter of the hills, and amongst them a shrub I had previously found to the eastward of the Darling, with a long yellow tassel. We found the hills to be accumulations of sand and stone, and on ascending one about four hundred feet recognised the fanciful form of the broken ranges we had seen—thus distorted by refraction from the place where we first struck the creek. A desolate valley and a dry water-course were before me to the north, and beyond them a succession of the same sandy hills as that on which I stood. I therefore felt it impossible to persevere, and returning to the creek reached the point from which I started on the 9th.

It may appear to many of my readers that this creek might have existed still farther to the eastward than the point to which I went, that is to lat. 27° 56′, and long. 142°, or nearly so. It may certainly exist beyond the grassy plains, but I do not think that it does. Those plains were sufficiently extensive to give birth to such a creek, when we consider the heavy character of the torrents that fall in those regions. I do not think that our knowledge of the country to the eastward, favors the idea that it has a long course, but I will not assert the contrary. I describe the features of the country as I saw them, and give the best opinion my poor judgment can form of them; but, with regard to this creek, which certainly was a principal discovery, I would observe that I do not fancy that it can be connected with any of the rivers recently discovered to the eastward of it. The largest of those rivers was abandoned in lat. 24° 14′ and long. 144° 35′, 256 geographical miles from the most eastern extremity of Cooper's Creek. That river was there running to the north, Cooper's Creek being the distance I have mentioned to the S.S.W. of it, had a westerly course. It does not, therefore, appear to me that the two can be connected, and I think that an inspection of their relative positions on the map will bear me out in this observation. Again, it will be borne in mind that I twice essayed to cross the Stony Desert, which I struck a second time more than a degree from the first point, and that there it had certainly an increased breadth, and appeared to trend gradually round to the north-east, opposite the lowest part of the Gulf of Carpentaria. The large river discovered on a recent expedition was 350 miles to the eastward of that part of the Stony Desert from which I turned the second time, and about 430 geographical miles from where I turned with Mr. Browne, and more than 550 miles from the bottom of the Gulf of Carpentaria. Whether the Stony Desert continues to any distance I cannot say, but my opinion is that it does, and that, as the lowest part of the interior, it receives all the waters falling inwards from the coast. Whether those waters are gradually lost by evaporation, or that they are carried to some still undiscovered sea, remains to be proved; but as it is difficult for others to elucidate these things, I have thought myself called upon to throw every light I can on the probable character of the interior. All I can say is, that after having traversed a desert for 400 miles and failed to reach its northern limit, and after having found that it continued unaltered for four degrees of longitude, I cannot hope that it speedily closes in either to the east or west. The reader will be able to judge of these things as well as me, although he may not have given the subject the same anxious consideration. The researches of Dr. Leichardt will throw much light upon it, and my best wishes and most earnest prayers for his safety and success are his. It is the generous in heart, the persevering in difficulty, and the brave in danger, who merit both our admiration and respect, and such I am told he is and I believe him to be.

When I reached the point of the creek from which I started on this last excursion, I felt my strength leaving me. I could not rise as I used to do into my saddle, nor could I lift logs without losing my breath. From the 17th of July to that moment I had ceaselessly labored. A few days only excepted, I had been constantly on horseback, and had braved the sun's rays from the earliest dawn to his setting. I had had little to eat, bad water to drink, and great anxiety of mind; and if I had not possessed a good constitution, I should have suffered long before I did. Be that as it may, I now began to feel the effects of long exposure and want; but when I came to reflect on what I had done, I had well-nigh resolved on braving the season, and staying where I was until rain should fall to enable me to cross the desert, which I never would have re-crossed. I asked Mr. Stuart (whose faithful services I would gladly reward if I could), and the two men who accompanied me, Morgan and Mark, if they would run such risk with me, and received from all three an assurance that they would stick to me to the last. But when I considered the precarious situation of Mr. Browne and his generous devotion; when I considered that he would never leave the desert until every hope of my return should have died within him, and that then his retreat homewards would be cut off, and he would either perish with his men, or have to stay another summer at the old depôt, I determined to sacrifice every selfish feeling, and return to the stockade. We therefore prepared for leaving the creek, and I went with Mr. Stuart to the rhagodia bush, to see if our stores were safe. I should have stated that we had found a body of natives that were not disposed to be friendly, and I feared that they had "sprung our plant"—to use a colonial expression. As we approached the bush we saw a bag outside, and made sure that all our things were gone; but nothing else had been touched; and we discovered at last that a native dog had smelt the oil in the small lamp, and had dragged the bag from under cover. I left every thing I could behind me, to lighten the horses' loads for the forty miles journey they had before them, and on the morning of the 11th of November we left Cooper's Creek on our return to the stockade. We got slowly on, but reached the first creek an hour after sunset. There was a smaller pond of water about seven miles from the large sheet of water I have described, but in this I had no hopes any water would now remain; happily, however, we found sufficient for our use; and at this pond we stopped all night. Starting at dawn on the following morning for the farther water, with the intention after giving our horses a good drink (the last they would have for 86 miles), of pushing on for the stockade; but on arriving at it, the sheet of water on which I had placed my dependance was gone, and a little mud only remained. The morning, even at sunrise, had been fearfully hot, so that the horses required water, and we dug a trench for them to drink it as it filled. About ten, a most withering blast, before which the leaves fell in showers from the trees, and the vegetable kingdom seemed to shrink, came upon us. I cannot describe the awful heat that prevailed as the wind rose almost to a hurricane. We crept behind the trees, while the horses turned their backs to it, and were unable to hold up their heads. It was impossible to stir. It was here that my thermometer, graduated to 127, burst in the shade, from the expansion of the mercury in the bulb—a fact no other traveller, I believe, has ever had to record. But I was astonished that we existed in such a temperature as that to which we were at this time exposed —in the direct rays of the sun certainly not less than 150 degrees daily. As the sun set on the evening of this fearful day we had thunder and rain, but we could have counted the drops, so few and so widely apart did they fall. We left the creek at dawn on the morning of the 13th, being eighty-six miles distant from the camp. We gave the horses rest at sunset for two hours, and then pushed on. I had secured a gallon of water for the first horse that might fall, and had again lightened all their loads. At midnight we had got on tolerably, when Bally, a favorite horse I had got from Mr. Waterhouse, fell. We gave him the water, and threw away his pack. Thus relieved, he crawled on a few miles farther, when he again dropped. It then struck me to ride on with Mr. Stuart to the camp, and to send a dray out with water. Accordingly, telling the men to come on slowly, I left them, and rode on, for the fourth time, along our old tracks. At sunset we descended into the plain, and looked to the little hill on which the tents had stood, but it was unoccupied. The stockade was silent and deserted, and only the signs of the past now remained. Mr. Browne, as his letters informed me, had been reluctantly forced to retreat, and had taken his way to the old depôt, distant seventy-two miles. The cause of Mr. Browne's having been thus obliged to retire was the putrid turn the water had taken, and the consequent illness of the men from dysentery. However, both we ourselves and our horses were too much exhausted to move again immediately. The want of drays sealed the fate of poor Bally, who was left on a small stony plain, where he died on the following day, for although I had little hope of saving him, I sent Morgan with my own horse and a leathern bottle of water to relieve him. The men came up at midnight, having seen our fire. They had been obliged to leave the colt behind, but the poor animal crawled on afterwards. We reremained here three days, during which it was intensely hot, while we had scarcely anything to eat, and the water we had to drink was bad enough. On the second day, I had severe pains in the heels of my feet, as if I was standing on rounded stones. These pains increased so much that I feared if I remained longer at the stockade I should be unable to ride to the depôt; I determined, therefore, to lose no time in pushing on, and at 5 p.m. of the evening of the 19th, leaving Morgan and Mark with orders to follow me at the same time the next day, and promising that I would send them a supply of water, I left with Mr. Stuart, and struck into the track the drays had made.

At nine o'clock on the following morning we had left the Sandy Desert behind us, and were rapidly approaching the hills; but we did not reach the tents until 3 p.m., after a ride of twenty-two hours. Great was the astonishment of the party, and sincere the pleasure of Mr. Browne, at seeing us again; for they had great doubts of our safety. I was also rejoiced to find that rest had in some measure restored him to health, and that the pains of which he complained had subsided. It was now my turn to suffer. Long-continued and severe riding caused a muscular action when I dismounted at the tents that almost threw me on my face; and on the following morning I was unable to stir. Gradually my sinews contracted, my muscles became rigid, my skin changed color, and I lay on my stretcher a helpless cripple. Had we been in a place of security or out of our troubles, I should not have cared for this; but we were full of uncertainty as to our ultimate escape from the fearful region in which we still were. There was no time for relaxation or repose, for the natives had informed Mr.

Browne that if we remained at the depôt many days longer we should lose all water on our way back. Sending a dray with some casks to meet Morgan and Mark, I next desired Flood to go to the muddy water-hole and creek, at which, it will be remembered, we had stopped on breaking through the pine forest—distant more than forty miles, but in which I had little hope that any water now remained. Nor was he fortunate on this occasion. It had long been dry. On his return he said there was not a vestige of moisture in it. I then sent him to the eastward, thinking that I might work my way round; but he returned equally unsuccessful from that quarter. The country was all dry; and indeed the state of it was sufficient to prove this. A complete check had been given to the growth of vegetation by the long absence of rain. Where herbs and grasses had at the same season on the former year been ripening for seed, not a blade of anything had, this year, sprung from the ground: and where the creeks teemed with animal life before, and the plains were covered with pigeons, then breeding, not a living creature was now to be seen. The heat increased upon us every day; a heavy gale was constantly blowing; and the air was filled with fine impalpable dust that gave the atmosphere a lurid appearance; and our matches falling on the ground, immediately took fire. It appeared that we should have to give up all hopes of escape; but despair, I believe, lent energy to our thoughts, and after long deliberation Mr. Browne and I hit on a plan, by which we trusted to open the door to our escape—we proposed to kill a bullock and to fill his hide with water. To send this supply in a bullock dray as far as it was possible on the road to Flood's Creek, and there to leave it. It was next arranged that Mr. Browne should take the cart with 36 gallons of water, and using that in the bullock hide, should go on as far as he could with the cart. Supposing that the bullocks took their load thirty miles farther, there would be a distance of little more than fifty miles for him to travel to the creek. We agreed, therefore, that when he abandoned the cart he should give his horse half the water he might possess, and then ride the remainder of the way, leaving a supply of water for his return. It appeared to us both that there would be no danger in this. A bullock was accordingly shot, and his skin, containing 150 gallons of water, sent in advance. Mr. Browne left me on the 28th Nov., with Flood, who was to remain with the cart after he should leave it. He left me full of hope on this doubtful journey, and was absent for eight days, during the whole of which time the weather was most oppressively hot—as I have described it to have been. The very elements seemed to have combined to punish us for having resisted their power so long. The reader will judge how anxiously the days passed during which Mr. Browne was away. Helpless on my mattress I counted the hours as they slowly passed, and those eight days appeared to me to have a month's length. But on the eighth day a cart was seen clearing the scrub on the road homewards, and every eye but my own was fixed upon it. Gradually it neared the tents, and Mr. Browne at length appeared, and gave me the glad tidings that water still remained in Flood's Creek, but that it would not hold out many days longer, and that what little remained was as black as ink. "We must make haste (he said) or we shall not succeed." But it was a difficult journey we had to perform, and one full of risk. Where should we again find water? It would be necessary to send on from Flood's Creek to the rocky glen; and if no water should be obtainable there, our difficulties and distress would be the greater. However, we had to trust to Providence, and determined to run all risk. Four more bullocks were shot and their skins prepared. The boat and our heavier stores were abandoned; and on the 7th of December we left the depôt at sunset, with 600 gallons of water on the drays. We had 276 miles to travel from the depôt to the Darling. The evening on which we started was most oppressively hot. We commenced our journey at 5 p.m.; the night closed in upon us, but we did not dare to rest. At noon on the 8th, we had gained the muddy lagoon and creek, at which we had stopped after pushing through the pine forest; and here we offered the bullocks some water to drink, but they would not touch it. At four we again started, keeping more to the eastward, in order to avoid as much as possible the sandy forest, in which we had once been so perplexed, following the line Mr. Browne had judiciously taken on his recent journey, with a view to avoiding the same distressing road. When we again stopped to rest the bullocks, they drank sparingly of the water, notwithstanding that it smelt strongly ; but I do not think they would ever have reached their destination if the wind had not shifted and a misty rain fallen, which did nothing more than wet the herbage. It was enough, however, to refresh the cattle, and was not the only instance we had had of the watchful superintendence of that Providence, by whose goodness we were ultimately permitted to overcome the difficulties by which we were surrounded. The second night closed in upon us, but not with the exhausting heat of the previous night, and the animals, under the influence of a cooler temperature, stepped out, as if they knew the point at which they would have relief.

We shortened our journey some eight or ten miles by the new line we took; but were obliged to halt when the moon set, as it was then too dark for us travel. At 6 a.m., of the 9th, however, having given the men time to breakfast, we again moved on; and at half-past two halted for a short time, being then twenty-six miles from Flood's Creek. At six p.m. I left Mr. Browne in charge of the party, and being fatigued pushed on the cart, and reached our destination at midnight. The teams came up at 3 p.m. of the 10th. Thus this, our first stage, took us two days and three nights; but we brought every animal safe on. Both men and animals, however, required rest after such a journey, and I consequently halted on the 11th. But at this anxious moment, when we were still 160 miles from the Darling, I could not indulge either Mr. Browne or Flood, I sent them on about one o'clock to ascertain if there was still water in the rocky glen, distant forty-nine miles. I started to follow them on the 12th, and met Mr. Browne on his return. He had, as I had anticipated, found abundance of water in the rocky gully, which we reached at 3 a.m. on the 14th. Resting here all that day, we started on the following day to ascend the ranges, and by three o'clock had left the desert behind us. On the 17th we encamped at Coonbarella Pass, at one of the brackish water-holes, all the others being dry; and from that overlooked the plains of the Darling. We had found a large tribe of natives, but they did not in any way annoy us. We were here 66 miles from Cawndilla, and hitherto everything had favored our retreat, but both men and animals now began to feel the effects of constant travelling and want of rest. We left the pass on the 19th at 8 a.m., and proceeding down the creek stopped for two hours at Cannapaga; but the water at that place was all gone. Stopping for an hour at dusk on the sand-hill near the creek, to enable the men to take some refreshments, we travelled all night by the light of a signal lamp, carried by one of the men in front of the drays. At break of day we were within eighteen miles of Cawndilla, but the bullocks were completely worn out, and progressed slowly. We were keeping our old tracks, when we were suddenly stopped by a barrier across it, and were attracted by the sight of a piece of paper nailed to a tree. This was to inform us of the presence of Mr. Piesse on the Darling, with a party for our relief. He stated that he had made several attempts to obtain intelligence of us, but had failed. Further on, he added, we should find letters, and a cask of water, which he had sunk in the ground, under an impression that even so small a supply would be of use to us, since the natives he had, with difficulty, induced to go in search of us, (he himself having received the most positive orders on no account to go beyond Cawndilla), had returned to him almost dead from the want of water. But those tidings, which repaid us for past toil and danger, were that our families and friends were well. We reached our old encampment on the Williorara at 10 a.m., but that channel was dry, if I except a small stinking puddle, the only one that remained. Into this the cattle dashed with frantic vehemence, when they came up a few hours after my arrival; but we were still six or seven miles from the place at which Mr. Piesse was encamped, nor could I venture to move until the following morning, when the two parties joined. I should be doing an injustice to Mr. Piesse if I did not express the sense I entertained of his manifest anxiety for our safety, and his prudent measures to ensure it. It is impossible, indeed, that any man could have been more prudent or more anxious in the exercise of the trust reposed in him.

We were fourteen days making this retreat, seven of which we travelled day and night. Unable myself to take an active part in it, the brunt of this fell on Mr. Browne; nor is it to be supposed that he exerted himself as he did with impunity. He reached the Darling worn out with fatigue, but unbroken in spirit, and no man better deserved the rest that awaited him on his reaching the Darling than did he. To Mr. Stuart, who succeeded Mr. Poole, I am also greatly indebted for his zeal and attention on all occasions. He, like myself, suffered severely; but he was ever ready to be of use.

It may not be necessary for me to weary the reader by any account of our progress down the Darling homeward. I urged Mr. Browne to leave me at Laidley's Ponds as I was then better in health, but he would not so long as he thought I might require his assistance. He left me two days before we reached Lake Victoria. We parted as those should part who have mutually assisted each other in difficulty and danger, and I trust and believe that the friendship we contracted in the desert will only terminate with our lives.

It only remains for me to make a few observations on the results of this expedition, the details of which have hitherto been almost personal. Such observations appear to me to be the more necessary, because the position of a recent traveller, in reference to the line I took, seems to me to be understood by very few. It would, however, have been a difficult task for me to have conveyed my own impressions to the reader, if I could not have been assisted by the accompanying diagram, in which the relative positions of myself and the Surveyor-General of New South Wales are clearly marked. It will have been observed, that on leaving the Williorara, I crossed a range of mountains, if such those we crossed may be termed, the breadth of which, at that place, was about 25 miles. From these mountains we descended at once to that inhospitable region from which we never escaped. The principal features of the interior are the sandy ridges or dunes, by which it is traversed from south to north, and the great Stony Desert. That the whole region traversed was once submerged, there cannot, I think, be a doubt. Its salsolaceous productions, its sea-level, its want of trees of any size or growth, excepting on the banks of the creeks, sufficiently attest this; but whether the sandy ridges were thrown up simultaneously, or were successively formed by the joint effect of winds and a gradually retiring sea, or of winds alone, it is impossible to say. When I first crossed the Stony Desert, it appeared to me to have been the bed of a former current; and I felt satisfied that that conclusion was just when I crossed it at another point more than a degree from the first, and noticed the strong proof it exhibited of waters having at one time or other swept over it with irresistable fury. When we first observed the sandy dunes, their general direction was N.E. by N., but they gradually came round to, and settled at eighteen degrees to the west of north, or N.N.W. nearly, and preserved that bearing with undeviating regularity for more than 300 miles. They occasionally ran for ninety miles without any break in them, nor am I aware that any disturbance occured in them, without some obvious cause. They occurred in lines rising parallel to each other, at greater or less distances apart, and were divided from each other by long narrow flats. If these remarkable accumulations of sand were raised by winds, they must have been the prevailing winds, and their present form should indicate such an origin; but there was very little difference in their ascent on either side, although, generally speaking, their faces were more abrupt to the east than to the west, but not more than the known prevalence of south-west winds would account for. That the Stony Desert is the lowest part of the interior which the expedition traversed, was demonstrated from the fall of waters being from the north after we had crossed it. But, if I except Cooper's Creek, the fall of which was to the N.W., although a minor branch of it inundated the country to the west, we had no direct proof of any fall of waters into the Stony Desert from the south. All the creeks we saw fell short of it; and it was in itself so extremely level that it was impossible to determine the inclination, or rather the declination of its bed. As far as I could judge of it from where I left it, the Stony Desert appeared to extend to the N.E. with an increased breadth; and I am led to conclude that it stretches up nearly to the Gulf of Carpentaria, and receives the waters of every river that has strength to reach it. But it is the character of the streams of this continent (its inland streams I mean) to terminate in marshes, or to exhaust themselves by spreading over some grassy level or other. I have found, too, in the course of my experience, that its creeks rise as suddenly as they terminate; and that a concavity of any size is sufficient in this country, where the rains occasionally descend in torrents, to accumulate waters, the weight and impetus of which would be sufficient to cut out channels of such size as would justify the belief that it was a river; and although I will not take upon myself to say that it does not exist beyond the boundless plains to which I traced it up, I think that Cooper's Creek has such an origin. If that creek were nearer it would be a most valuable feature in the interior; as it is, it is worthless.

I trust I shall not be considered presumptuous in stating, that in a geographical point of view the results of this expedition have been as complete as if it had passed over the richest lawns. If I did not gain the heart of the continent, no one will refuse me the credit of having taken a direct course for it. My distance from that hitherto mysterious spot was less than 200 miles. In ten days I should have reached the goal, and my task would have been accomplished, if rain had fallen when I was at my farthest north. It was a point from which, without rain, I could not move. It was not, however, permitted me to do that which I so ardently desired. I failed—not, I hope, from any want of energy on my part, but because Providence did not vouchsafe to me on this great occasion the success that had attended my former efforts. Had I found such a river as the Victoria, I would have clung to it to the last; but those alone will really know the nature of the country into which I penetrated who shall follow me into it.

For myself, I can only say that I would not hesitate again plunging into those dreary and inhospitable regions to be the first to place my foot in the centre of this vast territory, and finally to raise the veil which still shrouds its features, even although, like those of the veiled prophet, they should wither the beholder.

Art. XXV. *On the Landslips which have recently occurred on the west bank of the River Tamar, Van Diemen's Land.* By Lieut. M. C. Friend, R.N., F.R.S., &c.

The great interest that has been recently created by the numerous landslips on the banks of the River Tamar, by the serious consequences that have already resulted from them, and the painful anticipation of still greater and more fearful ravages, has induced me to examine into the cause of these destructive phenomena of the soil in the localities in question, and if possible to suggest some remedy for an evil which, if not prevented, is likely to ruin several houses, and render useless much of the land that has been cleared at a great expense of time and labour.

The first appearance of these moves—at least, that which first attracted my attention—was in the year 1833, on a farm at Pleasant Hills, then belonging to Mr. T. L. Bickford, which was one of the first cultivated; and about the same time I observed a similar effect in a field belonging to a man named Lachlan White, near Freshwater Point, which was also broken up at an early period. Since that time, as improvements have advanced, the landslips have multiplied, and in some recent cases the extent of the mischief has been most serious.

The soil on the west bank of the Tamar, which has been and is most liable to these accidents, is composed of decomposed trap rock, resting on yellow clay, with occasional patches of ochrey clay and pipe-clay, below which is the greenstone rock formation. The bank slopes at a considerable angle from the river, varying of course in the different farms.

At Rosevear's Point, where by the descent of the soil the whole feature of the hill has been altered, the motion seems to have been deeply seated, as even the large gum trees (*Eucalypti*), forming the landmarks by which the boundaries of the farms are defined, have been removed many yards down the hill, in that direction which presents the greatest facility of descent.

On examination I found the land at this place to be deeply fissured, some of these openings being many yards deep, and several feet wide at top, the smaller ones occasionally holding water, which was in general extremely turbid, caused by the clay of which the subsoil of the hill was composed; deep hollows were also to be often met with apparently caused by the perpendicular sinking of the land, consequent upon the moving of the subsoil; in other cases, which were the more general, the land slipped down the inclined plane towards the river, until it met with resistance from firmer ground in its way or at the base, when it either abruptly rose, or, by its momentum of descent, insinuated itself between the fundamental rock and the superficial soil, forcing the latter above its usual level into irregular hillocks, but of a very unstable character. In other cases, as at Freshwater Point, the residence of Mr. Wm. Griffiths, the disengaged mass of earth descends to the beach (the lowest moving stratum being a pipe-clay), which at a short distance below its surface is composed of greenstone, the prevailing rock on the bank of the river. In this instance the lower land is upraised by the moving stratum forcing itself, as already mentioned, beneath the soil at the water's edge, so as to cause a fence erected on this lower land to be lifted up in some parts many feet. The devastation at this beautiful point of land has been most lamentable, the slipping and sinking of the superficial soil having taken with it all the large and valuable fruit trees that were planted either on it or in its way, and threatens with ruin a large brick building erected on the brow of the hill a little above where the landslip has taken place.

It is remarkable that the eastern bank of the Tamar has not suffered, except in very few slight instances, from this destructive agent. This may be accounted for in several ways—viz., the land is less precipitous; the surface has been less disturbed so as to permit the absorption of water; and lastly, the greenstone rock lies much nearer to the surface—often projecting above it—thus offering a permanent barrier to the moving of the ground; as in no case have I found the rock in any way affected.

I have no difficulty in attributing these landslips to the natural consequences resulting from breaking up the surface soil by cultivation, whereby the rain, instead of running over the hard compact native turf, penetrates the soil, now open for the reception of whatever water may fall upon in, and percolates through the ground until it meets with the argillaceous substratum. The clay becomes saturated, forming a semi-fluid slippery paste, and thus the superincumbent earth, losing its firm subterranean support, naturally slips downhill wherever the angle is sufficiently great, taking with it trees, houses, fences, or whatever may be upon it. I am the more confirmed in this opinion, from the circumstance that it bas taken place only where the surface of the ground has been broken up above or *at* the place of mischief, either by ploughing or by taking up the trees by the roots, when the excavations formed by this latter process become receptacles for water, and produce a similar effect. This is exemplified at Marion farm (the residence of Mr. Meara), Spring Bay, and still more strikingly about a mile and a half below, in which the effects of recent cultivation is more apparent from the greater steepness of the land.

A remedy is not so easily suggested, and I fear nothing is left to the proprietors of these farms with a view to the prevention of the evil in future, but to form deep drains *above* the land to be cultivated or broken up, so as effectually to carry off the whole of the rain that may fall above it on the hill-side, in the most direct line to the river, without running over the lower lands;—where, however, lands must necessarily be cultivated, they should in addition be well drained, both by *under* and *surface* drains. In cases where any valuable house or plantation of trees may be already situated on the brow of a steep descent, I would suggest the surface should be left intact; or, if already broken up, that it should be immediately laid down in close permanent pasture and well rolled, so as to permit the rain to remain on it as short a time as possible. The deep drain above, which I bave already recommended, forming an additional precaution.

I think it unnecessary to multiply my observations on this subject, as the evil is necessarily under the immediate eye of those who most suffer by it, but I strongly recommend the antidote to be applied as soon as possible, as by its nature the mischief must assuredly increase.

George Town, 15th October, 1847.

Art. XXVI. *A List of Birds which frequent the upper portion of the River Goulburn, in the district of Port Phillip, New South Wales.* By Mr. John Cotton, C.M.Z.S.

[The following list is furnished by Mr. Cotton as only an approximation to a complete catalogue. No doubt several species have not yet come under his observation, but the list, as far as it goes, will he believes be found to be tolerably correct. We shall be glad to receive similar lists from other parts of Australia.—*Ed. Tasmanian Journal.*]

Raptores.

1	*Falco hypoleucus*	White breasted falcon
2	—— *melanogenys*	Peregrine falcon
3	—— *tinunculus*	Kestrel
4	—— *cinereus?*	Ash colored falcon
5	*Ieracidea berigora*	Brown hawk
6	*Accipiter torquatus*	Sparrow hawk
7	*Astur Novæ Hollandiæ*	White hawk
8	—— *palustris*	Marsh hawk
9	*Aquila fucosa*	Wedge tailed eagle
10	————	A white tailed species with the tarsus naked
11	*Haliaëtus leucogaster*	Fish hawk
12	*Buteo melanosternon*	Black breasted buzzard
13	*Athene strenua*	Hawk owl
14	—— *boobook*	A small brown owl

Insessores.

15	*Podargus humeralis*	Great goatsucker
16	*Ægotheles Novæ Hollandiæ*	Lesser goatsucker
17	*Acanthylis caudacuta*	Swift
18	*Hirundo pyrrhonotus*	Swallow
19	—— *Ariel*	Martin
20	*Dacelo gigantea*	Laughing jackass
21	*Todiramphus sacer*	Hermit kingfisher
22	*Alcyone Australis*	Three toed kingfisher
23	*Merops ornatus*	Bee-eater

24	*Acanthorhynchus dubius* ..	Cobler's awl
25	——— *tenuirostris*	Brush or spine bird
26	*Meliphaga Australasiana*..	Saw setter
27	——— *Novæ Hollandiæ*	Jew bird
28	——— *chrysotis*	Yellow-eared honeysucker
29	——— *chrysops*	Warbling honeysucker
30	——— *leucotis*........	White-eared honeysucker
31	——— *penicillata*	Green honeysucker
32	*Zanthomyza phrygia*	Warty-faced honeysucker
33	*Anthochæra rodorhyncha*..	Rosy-billed honeysucker*
34	——— *mellivora*	Lesser wattle bird
35	——— *carunculata* ..	Wattle bird
36	*Entomyza cyanotis*	Blue-faced honeysucker
37	*Tropidorhynchus corniculatus*	Trumpeter
38	*Glyciphila sp.*	
39	*Hæmatops lunulatus*......	Black-cap honeysucker
40	*Myzantha garrula*	Old soldier
41	——— *melanophrys* ..	Bell bird
42	*Climacteris scandens*	Tree creeper
43	——— *sp.*	
44	*Sittella chrysoptera*	Yellow-eyed nuthatch
45	*Malurus cyaneus*	Superb warbler
46	*Stipiturus malachurus*	Emu wren
47	*Cysticola exilis?*	Reed wren
48	*Acrocephalus sp.*	
49	*Acanthiza pusilla*........	Brown warbler
50	——— *chrysorrhœa*....	Yellow rump warbler
51	——— *nana*..........	Dwarf warbler
52	*Sericornis citreogularis*....	
53	*Petroica phœnicea*	Red-throated robin
54	——— *multicolor*	Black-throated robin
55	——— *fusca*	Dusky robin
56	*Ephthianura albifrons*....	White fronted epthianura
57	*Praticola anthoïdes*	

* This species is nearly allied to Gould's "Acanthogenys rufogularis," but the base of the bill is rose colour instead of orange.

58	*Anthus insidens?*	Tree pipit
59	——— *pallidus*	Ground pipit
60	*Cincloramphus cruralis* . .	Longshank pipit
61	*Psophodes crepitans*.	Crested scrub bird
62	*Cinclosoma punctatum*. . . .	Spotted thrush or ground dove
63	*Menura superba*	Lyre tail pheasant
64	*Grallina bicolor*	Pied grallina
65	*Seisura volitans*	Flutterer
66	*Rhipidura flabellifera*	Fan tailed flycatcher
67	*Tyrannula sp.*	Tyrant flycatcher
68	*Muscicapa macroptera*. . . .	White throat or dusky flycatcher
69	——— *bicolor*	Pied flycatcher
70	*Myiagra plumbea*.	Plumbeous flycatcher
71	*Artamus sordidus*.	Wood swallow
72	——— *superciliosus*	
73	*Graucalus melanops*.	Caterpillar eater
74	——— *melanotis*	
75	*Eopsaltria Australis*	Yellow-breasted thrush
76	*Pachycephala gutturalis* . .	Black-crowned thrush
77	——— *pectoralis*. .	Orange-breasted thrush
78	——— *fusca*	Dusky thrush
79	*Turdus Australasianus* . .	Australian song thrush
80	——— *sp.*	A grey thrush
81	*Pardalotus striatus*	Red spot pardalote
82	——— *punctatus*	Diamond bird
83	*Falcunculus frontatus*	Crested shrike tit
84	*Vanga destructor*	Butcher bird
85	*Barita* ?. .	Shrike crow
86	*Coronica strepera*.	
87	*Cracticus tibicen*	
88	*Fregilus leucopterus*.	White winged chough
89	*Ptilonorhynchus holosericeus*	Satin bower bird
90	*Fringilla temporalis*.	Red rumped finch
91	*Amadina Lathami*	Spotted grosbeak
92	*Palæornis Barrabandi*. . . .	Green leek parrakeet
93	*Plyctolophus galeritus*. . . .	White cockatoo

94	*Callocephalon galeatum* . .	Gang-gang
95	*Calyptorhynchus funereus*	Black cockatoo
96	*Trichoglossus concinnus* .	Green parrakeet
97	——— *pusillus* . . .	Lesser ditto
98	——— *hæmatodus* .	Blue mountain parrakeet
99	*Platycercus Pennantii* . .	Crimson broadtail
100	——— *scapulatus*	
101	——— *eximius*	Rose hill parrakeet
102	*Nanodes venustus*	Blue banded ground parrakeet
103	——— *pulchellus*	Blue faced ditto
104	*Cuculus cinereus*	Grey cookoo
	RASORES.	
105	*Peristera chalcoptera*	Bronze winged pigeon
106	*Coturnix pectoralis*	Stubble quail
107	——— *Australis*	Brown quail
108	*Hemipodius varius*	Painted quail
109	*Otis Australasianus*	New Holland buzzard
110	*Dromaius Novæ Hollandiæ*	Emu
111	*Œdicnemus grallarius* . . .	Stone plover
	GRALLATORES.	
112	*Lobivanellus lobatus*	Spurwinged lapwing
113	——— *minor?*	Lesser ditto
114	*Ægialitis nigrifrons*	Dotterel
115	*Rallus brachipus*.	
116	——— *pectoralis*	
117	——— *minor*	
118	*Botaurus Australis*	Bittern
119	*Nycticorax Novæ Hollan.*	Night heron
120	——— *Caledonicus* . .	Nankeen bird
121	*Ardea Pacifica*	Common heron
122	——— *solitaria?*	White necked heron
123	——— *Antigone*	Native Companion
124	——— *alba*	White heron
125	*Recurvirostra rubricollis* .	Red necked avoset
126	*Scolopax Australis?*	Snipe
127	*Fulica sp.*	Coot
128	*Porphyrio bellus*	Porphyry bird

NATATORES.

129	*Bernicla jubata*	Wood duck
130	*Casarca Tadornoïdes*....	Mountain duck
131	*Cygnus atratus*	Black swan
132	*Anas superciliosa*	Black duck
133	—— *punctata*	Mountain teal
134	*Nyroca Australis*	A white eyed duck
135	——— *fusca ?*	A brown duck
136	*Biziura lobata*	Musk duck
137	*Podiceps Nestor*........	Grebe
138	*Phalacrocorax hypoleucus*	Cormorant
139	——— —— *leucogaster*	White bellied ditto
140	*Pelecanus*	Pelican

March, 1848.

ART. XXVII. *Comparison of the Geology of Russia and Australia.*

[THE following article appeared in the *Sydney Morning Herald* newspaper, of 28th September, 1847, and we have no hesitation in transfering it to our pages, although the author is unknown to us.—*Ed. Tasm. Journal.*]

GEOLOGY—COMPARISON OF RUSSIA AND AUSTRALIA.

As various geologists have discovered certain physical and geological relations between the phenomena of Russia and of this country, it may be useful to state what are the peculiar characteristics of the former country; and this can be no better accomplished than by an analysis of the Report upon the Geology of Russia, not long ago laid before the Geological Society of France by Mons. E. De Verneuil, one of the associates of Sir R. I. Murchison and Count A. Von Keyserling, in the exploration of that vast territory. The following remarks not comprehended between brackets are, therefore, an abridgment in some degree of De Verneuil's observations.

In a geological point of view, there is a striking contrast between the flat and nearly level regions constituting Russia Proper, and the mountains which separate it from Siberia. Over a vast area in Russia, except in the country along the Donetz, the older rocks, which are very loosely aggregated and crumbling, occupy a horizontal position, and have undergone very little metamorphic change or elevation. On the contrary, in the Ural the most violent dislocations have tilted, folded, and reversed the palæozoic formations. The limestones are indurated and discoloured; clays and friable sandstones give place to argillaceous schists and greywacke, and are only traceable by their fossil contents.

In Scandinavia, which necessarily enters into comparison with Russia, the lowest Silurian rocks repose on gneiss or the more ancient schists which are denominated *azoic*, from the destitution of organic remains, the lowest Silurians being unconformably superimposed, and designated by Professor Sedgewick *protozoic*.

The Silurian system, as developed in Sweden and Russia, is naturally divided into two periods geologically distinguished. The inferior ranges upwards to the calcareous rocks of Gothland; the superior, which is not greatly developed in Russia, save in the Ural, embraces the Gothland rocks, which are the representatives of the English Wenlock and Ludlow beds.

Near St. Petersburgh the Devonian system, charged with its peculiar fishes, many identical with those of the old red sandstone of Scotland, and associated with mollusca analogous to those of the Devonians on the Rhine, the rocks of which latter country also bear fishes identical with some in Russia, succeed to the inferior division of the Silurian system.

The Devonian formations are enormously developed in Russia. It separates the carboniferous formation of Donetz from that of central Russia, and reaches towards the Teman Mountains and the Frozen Ocean, presenting in these far northern regions the same character it has on the Baltic and in the province of Valdai. In the Ural Mountains its type is different. Its epochs are distinctly two; the upper beds consist of red marl, enclosing fish, and the lower of limestones bearing goniatites, and underlaid by schists analogous to those of Nassau and the Hartz.

The carboniferous formation consists also of two natural divisions. In the north and centre of the country it is composed of beds of freestone, and black argillaceous beds containing a little coal, here and there surmounted by light or occasionally magnesian, limestones. In the south, it has been much dislocated, and contains beds of good workable coal, alternating with grey compact limestone, charged with marine fossils.

[Geologists cannot fail to recognise in this description a great resemblance to the character and conditions of the carboniferous system of New South Wales. The upper series seems to find a parallel in the Sydney sandstones and Cowpasture shales and calcareous grits, and the lower bears resemblance to the coal beds of the Hunter and Illawarra, which alternate with fossiliferous beds, passing into limestone, as at Wollongong, Harpur's Hill, &c.]

Above the carboniferous system is laid the great series of deposits called the Permean system, which occupies in the government of Perm and the neighbouring districts an area larger than France. They abut on the flanks of the Ural, but do not penetrate the interior of that chain; the first upheaval of which must have occurred before their deposition, and at the end of the carboniferous epoch. Conglomerates with fossilised wood, and disseminated copper are abundant. Limestone and gypsum occur in beds at the base; freestone conglomerates at the upper part. The equivalent of these beds in other parts of Europe are the *Rothetodte liegende*, *Kupferschiefer*, *Zechstein*, and the *Gres de Vosges*; but as the type is not the same, this series in Russia is designated the Permean system.

The *triassic* formation is not much developed in Russia; but the *bunter sandstein* seems to occur in Orenburg and Vologda.

The *Jurassic* formation occupies several basins of considerable extent; but the lias and Oxford oolites are absent.

The *Cretaceous* formation is found only on the south of the Devonian axis, which traverses the centre of Russia. It occurs in great force south of Simbirsk, but not to the north of that government; extending into Crimea. In this immense territory the beds of white limestone, with silex, &c., cause it to be compared with the cretaceous beds of the North of Europe, but exhibit a dissimilarity from the type assumed in Southern Europe, Africa, and Asia, called the Mediterranean type.

[None of these formations, from the Permean to the Cretaceous, both inclusive, appear to have been yet discovered in Australia, unless indeed the carboniferous beds pass upwards into Permean. Should it eventually be found that the latter do not represent any of our deposits, it will of necessity follow that the greater part of the area now occupied by Australia must have been above water during the whole period in which the above-mentioned formations were being deposited in the northern hemisphere; and that considerable portions of the area were then submerged during the tertiary and diluvian epochs, and have since risen (as attested by raised beaches and other phenomena,) to the present level above the sea.]

The *tertiary* formations occupy a most extensive area in Russia. The great eocene and miocene groups are divided by the granitic axis which extends from Volhynia to Donetz, the former deposits occurring to the north. The southern group is connected with Transylvania and Austria.

A much greater development of tertiary beds occurs in the general area between the Aral and Caspian seas, hence called "*Aralo-Caspian*" deposits. It appears that the whole of this territory, extending to the western shores of the North Sea, was formerly occupied by an enormous inland basin, having no communication with the Mediterranean or the ocean. The Aral and Caspian seas are the relics of this once vast inland mass of waters, But whither have they receded, to leave but the present comparatively small portions of them? And how is it, that the rocks then deposited are now from 200 to 300 feet above the level of the existing waters. The only explanation is, that this part of Russia was subjected to vertical movements of elevation, but not to much horizontal derangement, the consequence of which was the submergence of great part of Russia during the tertiary and diluvian epochs.

The Mediterranean is now connected with the Black Sea, and this connection has given an oceanic character to the fauna of the latter, very different from that of the Aralo-Caspian territory. The shores of the Black Sea are of the pliocene age, but there is no species of the fossil shells of that formation identical with living species in the Black Sea, whereas the fauna of the Caspian is very similar to that of the peculiar Aralo-Caspian beds. After the drainage of the Aralo-Caspian basin, the depression of the Caspian was not immediately but gradually produced; since shells now living in its waters are found at variable heights in the Kalmuck Steppes. These relics define very distinctly the ancient shores of the ancient mass of waters.

[This great deposit and its peculiar features seems also to be represented in New South Wales, by the great plains to the westward of the Dividing Ranges. The Liverpool Plains and other similar areas appear to have been formerly occupied by inland waters which are now drained off; the alluvial deposits from which are found to contain shells of living species, together with the bones of gigantic animals of genera yet existing.]

The tertiary and older deposits in Russia are covered in the northern governments by transported blocks which cover the country for 600 miles south of their origin, which, there is no doubt, was in Scandinavia and Finland. These drift blocks cannot have been occasioned as some authors would believe, by *glaciers;* but it is probable, they are due to *icebergs* floating southwards, when Scandinavia and Russia in Europe lay still beneath the sea. The Ural must have been elevated previous to this; because its drift is all *local* and not transported; and if the latter were due to *glaciers*, there ought to have been abundant blocks on the Ural.

This latter chain ranges through eighteen degrees of latitude, deviating but little from the meridian. Its highest elevation is from 5000 to 6000 feet.

The axis is composed in general of talcose schist or chlorite and quartzite, which are referred to the Silurian system. The granites of this chain are more recent, and have burst through the eastern dislocations. Rich metallic veins and alluvial gold, together with gold in veins of quartz, are common. On the west side the order of the rocks is best developed, but on the eastern igneous slopes the miner is best repaid by ores.

[Now we have here a third striking resemblance to the condition of the Blue Mountain ranges, which in Australia run rudely in a general line, not far from the meridian, through 30 degrees of latitude, in Tasmania and New Holland and New Guinea, having their highest points at an altitude of from 5000 to 6000 feet above the sea; with an axis of chloritic and talcose schist, and quartzites, with occasional limestones of Silurian age, in which occur metallic ores and gold in veins of quartz. Moreover granitic rocks of a comparatively younger age break through them.

As on the flanks of the Ural, the carboniferous formation reposes, so in this country occurs the very same order of deposits.

It is therefore highly probable, that besides the lead and copper which exist in the Blue Mountain ranges, auriferous sands will be found in the rivers flowing from them. Indeed, gold occurs not only in the veins of quartz which traverse the schist, but in the black striated cubes of pyrites so common in the Bathurst country. Nor ought there to be any astonishment, if hereafter it be discovered that *platinum* also exists in New South Wales. In respect of all other phenomena, the dividing ranges of New Holland are similar to the Ural, with the exception that the slope in this hemisphere is to the west, and the escarpment edges of the deposits to the east, and let it be observed that the general direction of the South Australian mineral ores, is nearly, if not (on the large scale), actually parallel with the greater chain to the eastward. New South Wales will, probably, on some future day, be found wonderfully rich in metals.

So far as has yet been ascertained, the drift of the Ural mountains seems to have its parallel in that of Australia, which is all *local*, and much of it fluviatile, deposited at the ancient mouths of the present rivers, when the country was at a lower level. Such is the undoubted origin of the gravel beds of the Penrith and Windsor districts. The phenomena pointed out by Captain Sturt render it far from improbable that the interior depressed area of Australia is of similar character to the great Aralo-Caspian country.

From facts communicated to the Geological Society, Sir R. I. Murchison has already adopted the same view as the present, respecting the probable mineral wealth of Australia. He has even gone so far, in a letter addressed to Sir C. Lemon, and which is published in the last number of the *Philosophical Magazine*, as to advise that a person well acquainted with the washing of mineral sands, be sent out to Australia, speculating on the probability of auriferous alluvia being abundant, and he suggests that such will be found at the base of the western flanks of the dividing ranges.] ⊕

Art. XXVIII. *Exports of Grain and Flour from Van Diemen's Land.*

(Compiled from the Government Gazette.)

			Launceston.	Hobart Town.	Totals.
1839	Wheat	bushels	78,763	59,357	138,120
	Oats	"	32,674	5,566	38,240*
	Barley	"	6,215	11,335	17,550
	Flour	tons	1,130	669	1,799
1840	Wheat	bushels	50,125	39,302	89,427
	Oats	"	69,994	11,300	81,294
	Barley	"	11,441	12,410	23,851
	Flour	tons	1,833¾	997	2,830¾
1841	Wheat	bushels	43,186	35,845	79,031
	Oats	"	27,986	591	28,577
	Barley	"	8,119	4,560	12,679
	Flour	tons	1,832¾	980	2,812¾
1842	Wheat	bushels	100,728	14,930	115,658
	Oats	"	49,554	1,208	50,752
	Barley	"	9,032	1,740	10,772
	Flour	tons	2,265	1,162	3,437
1843	Wheat	bushels	236,953	14,615	251,568
	Oats	"	64,430	1,531	65,961
	Barley	"	10,007	3,573	13,580
	Flour	tons	1,831¼	857¼	2,688½
1844	Wheat	bushels	272,941	15,521	288,462
	Oats	"	38,526	3,295	41,721
	Barley	"	8,006	1,225	9,231
	Flour	tons	1,844	1,127¾	2,971¾
1845	Wheat	bushels	188,805	25,396	214,201
	Oats	"	27,177	2,294	29,471
	Barley	"	15,142	4,551	19,693
	Flour	tons	1,316¾	644	1,960¾
1846	Wheat	bushels	369,722	65,249	434,971
	Oats	"	31,136	5,166	36,302
	Barley	"	7,785	12,332	20,117
	Flour	tons	2,067	1,482¾	3,549¾
1847	Wheat	bushels	397,176	32,845	430,021
	Oats	"	29,534	2,014	31,548
	Barley	"	2,582	18,710	21,292
	Flour	tons	2,573	1,112	3,685

* Exported subsequent to 2nd May, 1839.

Art. XXIX. *Statistics of the Port of Launceston, Van Diemen's Land, for* 1847.

(From the Launceston Examiner.)

EXPORTS.	Value.		
	£	s.	d.
Goods—			
Apothecary	139	0	0
Apparel and slops	2,901	0	0
Arms and ammunition	73	0	0
Bark, 396¾ tons	890	0	0
Books and stationery	204	0	0
Bran, 3,670 bushels	474	0	0
Butter and cheese, 178 packages	781	0	0
Carriages and carts	1,433	0	0
Canvas and bagging	1,141	0	0
Curiosities, natural, 18 packages	120	0	0
Earthenware and glass	327	0	0
Flour, 2,611 tons	27,363	0	0
Furniture	2,294	0	0
Fruit, 3,694 packages	4,014	0	0
Grain—			
Barley, 2,582½ bushels	496	0	0
Oats, 31,693½ ditto	5,295	0	0
Wheat, 394,520 ditto	77,691	0	0
Haberdashery and hosiery	2,295	0	0
Hay, 22¾ tons	102	0	0
Ironmongery and hardware	3,444	0	0
Live stock—			
Cattle, horned, 8	98	0	0
Horses, 489	6,255	0	0
Sheep, 1,711	1,042	0	0
Malt, 1,013 bushels	399	0	0
Malt liquor	1,739	0	0
Oil and head matter, 39 tons	780	0	0
Oilman's stores	986	0	0
Potatoes	3,311	0	0
Provisions, salt	196	0	0
Skins and leather, 162 doz.	1,410	0	0
Spirits—			
Brandy	3,173	0	0
Geneva	462	0	0
Rum, B.P.	2,637	0	0
Ditto, foreign	103	0	0
Sugar	1,815	0	0
Tallow, 183 casks	984	0	0
Tea	432	0	0
Timber	5,510	0	0
Tobacco and cigars	3,152	0	0
Whalebone, 14 cwt.	150	0	0
Wine	1,269	0	0
Wool	121,009	0	0
Unenumerated	4,816	0	0
£	293,194	0	0

IMPORTS.	Value.		
GOODS—	£.	s.	d.
Apothecary	588	10	0
Apparel and slops	13,730	5	0
Arms and ammunition	680	0	0
Books and stationery	2,623	1	0
Boots and shoes	1,125	0	0
Butter and cheese	729	16	5
Canvas and bagging	10,650	16	8
Carriages	25	0	0
Cottons and linens	15,734	0	0
Coals	673	0	0
Coffee and cocoa	1,258	3	11
Deals and oars	—	—	—
Earthenware and glass	6,365	10	0
Furniture	426	10	0
Grain, flour, seeds	409	0	0
Haberdashery and hosiery	15,200	0	0
Hats and caps	2,125	10	0
Hops	1,587	16	6
Ironmongery and hardware	14,612	10	0
Instruments, musical	343	0	0
Live stock	7,728	11	0
Malt liquor	6,487	0	0
Millinery	1,908	0	0
Oilman's stores	8,055	9	11
Provisions, salt	1,265	3	0
Rice	416	11	0
Rope and twine	2,694	7	0
Saddlery and harness	372	0	0
Soap and candles	1,725	10	0
Salt	772	15	9
Silks	3,227	0	0
Spirits—			
Brandy	6,679	5	0
Geneva	1,523	0	0
Rum, B.P.	5,661	0	0
Ditto, foreign	134	0	0
Whisky	190	0	0
Cordials	10	0	0
Sugar, refined	4,069	6	6
Ditto, raw	11,307	16	9
Timber	1,803	18	9
Tea	4,978	18	0
Tobacco and cigars	4,103	15	0
Whalebone	100	0	0
Wine	6,756	4	6
Wool	4,284	5	0
Woollens	4,137	12	6
Unenumerated	10,254	3	8
£	189,531	14	4

Imports for the Quarter ending 5th January, 1848.

From—	Value. £	s.	d.	Duty collected. £	s.	d.
Great Britain	56,927	11	0	4,481	8	4
New South Wales	9,421	0	9	1,471	15	8
South Australia	709	5	0	162	16	3
New Zealand	888	0	0	18	3	0
Mauritius	—	—	—	195	6	11
China	3,137	8	4	332	1	5
Manila	424	0	0	48	18	6
Singapore	108	7	0	16	5	3
Cape of Good Hope	688	13	0	56	12	0
United States	—	—	—	145	4	0
	£72,304	5	1	£6,928	10	3

Exports for the Quarter ending 5th January, 1848.

To—	£	s.	d.
Great Britain	38,098	0	0
New South Wales	24,506	1	9
South Australia	2,852	0	0
New Zealand	2,901	0	0
Mauritius	6.952	0	0
	£75,309	1	9

Re-capitulation of Imports aad Exports for 1847.

IMPORTS.	Value. £	s.	d.	Duty collected. £	s.	d.
Lady Day Quarter	42,256	8	6	5,976	6	10
Midsummer „	33,887	14	8	7,481	9	6
Michaelmas „	41,083	6	1	6,037	14	4
Christmas „	72,304	5	1	7,928	10	3
£	189,531	14	4	£26,424	0	11

EXPORTS.	£	s.	d.
Lady Day Quarter	113,226	7	3
Midsummer „	63,805	16	5
Michaelmas „	40,952	5	0
Christmas „	75,309	1	9
	£293,293	10	5

SHIPPING.

Entered Inwards. From—	No.	Tons.	Crew.
Great Britain	9	2,860	
British Colonies	219	22,849	
Foreign States	4	1,142	
Total	232	26,851	Men.. 1,946
Entered Outwards.			
Great Britain..................	13	4,813	
British Colonies................	227	25,109	
Foreign States	1	163	
Total	241	30,085	Men.. 2,128

Arrivals and Departures during the year 1847.

ARRIVALS.	Males.	Females.	Children.	Total.
Lady Day Quarter	191	26	7	224
Midsummer „	202	35	9	246
Michaelmas „	182	40	36	258
Christmas „	181	48	14	243
Grand totals	756	149	66	971
DEPARTURES.				
Lady Day Quarter	520	122	73	715
Midsummer „	711	152	95	958
Michaelmas „	703	123	63	889
Christmas „	584	158	103	809
Grand totals	2,482	555	334	3,371

Return of the quantity and value of Grain, Flour, Bran, and Malt, Exported from the Port of Launceston, during the year 1847.

Description.	Quantity.	Value. £
Wheat .... Bushels	394,520	77,691
Oats .... „ ..	31,695	5,295
Barley .... „ ..	2,582	496
Malt .... „ ..	1,013	399
Bran .... „ ..	3,670	464
Flour .... tons	2,611	27,363
	Total . . .	£111,708

Art. XXX. *Notes on the Palæozoic Formations of New South Wales and Van Diemen's Land.* By J. Beete Jukes, M.A., F.G.S.

[From the Quarterly Journal of the Geological Society, Vol. iii.]

The Palæozoic Rocks of the neighbourhood of Sydney, New South Wales.

The county of Cumberland, in which the city of Sydney is situated, and parts of the adjacent counties, are composed almost entirely of a palæozoic formation of great thickness and extent. The principal materials of this formation are certain shales and sandstones, with a few associated beds of coal. In the close of the year 1845 I made a short excursion across a portion of this district, in company with the Rev. W. B. Clarke. We carried with us a mountain barometer, and by taking the means of the two sets of observations made in going and returning, got such an approximate estimate of the heights of the ground and the thickness of the rocks, as to enable us to construct a section with a sufficient approach to accuracy to be relied on for any present purpose. This section runs from Liverpool (a town just at the head of the tidal waters of George's River, which falls into Botany Bay) by a slightly winding line, first S.S.W. for about twenty miles, through Campbell Town to Appin, and then about S.S.E. for about eighteen miles to Wollongong in the Illawarra district. Wollongong is on the coast about forty-five miles to the northward of Sydney.

From Parramatta by Liverpool to Campbell Town the country is low, gently undulating, and composed almost entirely of black and brown shales, with a few thin interstratified beds of sandstone in their lower portion. From Campbell Town to Appin the country rises into bolder undulations, and on approaching the latter town thick beds of sandstone show themselves creeping out from beneath the shales. Beyond Appin nothing but this thick-bedded sandstone was to be seen for many miles, the ravine of the Cataract river showing precipices 200 feet high entirely composed of it. It rose very gradually in a wide gently sloping plateau, furrowed in every direction by innumerable winding and precipitous ravines, and covered by a forest of gum-trees, till on approaching the coast it ended in an abrupt escarpment 1200 feet above the sea. This bold escarpment stretches from the sea-cliffs of Bulli obliquely into the country, and sweeps round the valley of Illawarra, uniting towards the south with some lofty ranges which come out of the interior of the country, and which are, according to Mr. Clarke, composed of volcanic and other igneous rocks. In descending this escarpment between Mount Kerar and the Hat Hill of Captain Cook, we get the lower beds coming out from beneath the sandstone. These consisted of alternations of thick beds of shales and sandstone, with some conglomerate, shales with beds of coal, and lastly, of some beds of compact sandstone with calcareous concretions. These latter beds rose from the foot of the hills into a gently undulating country about the town of Wollongong. To the southward these latter rocks were cut off by a strong band of igneous rocks, principally greenstones, forming a tract of country two or three miles wide, to the southward of which again were other sandstones of a dull red color; but our time did not permit of our working out their relations with any approach to accuracy. I will now briefly describe this section in an ascending order, and glance at the extension of the rocks over the adjoining district, and at the position in which they now repose.

5. The lowest group of rocks, the Wollongong sandstones, are commonly thick-bedded, fine-grained, and either dark grey or reddish brown. They are often slightly calcareous, and contain many concretionary calcareous nodules, from two inches to two feet in diameter, which when broken open commonly disclose a fossil shell. Beds two or three feet in thickness often exhibit concentric bands of color, or sections of spheroidal coats, and the rock has more or less a tendency to decompose along these colored coats. This concretionary structure in one place exhibited itself on a much larger scale. A portion of the beds, twenty feet high by thirty feet long, and consisting of six or eight beds, exposed in the face of a cliff, showed on each side the colored edges of concentric coats enveloping the whole mass. The lines of lamination of the beds passed through the enveloping coats without

alteration. The coats were not more than a foot thick altogether, and peeled off as they decomposed, leaving the mass described above as a solid nucleus.

These Wollongong sandstones contained a few fragments of fossil wood and shells and corals, identified by our Curator, Mr. Sowerby.

Fossils of Wollongong.

Stenopora crinita.	Pachydomus ovalis (*P. globosus*, Morris, not Sowerby).
Producta rugata.	Orthonota, sp. nov.
Spirifer subradiatus.	Pleurotomaria Strzeleckiana.
——— Stokesii.	Bellerophon contractus, *MSS.* sp. nov.
——— avicula.	
Pachydomus carinatus.	

At Wollongong these beds dipped to the N. and N.N.W. at a slight angle, and in following them along the coast in that direction, as we rose on to the higher beds and approached the coal, the sandstone became charged with great quantities of fossil wood. In the level sheets of rock left by the tide at low water, great fragments of black fossil wood, with smaller chips scattered about, were exposed in the lighter-colored sandstones, with their edges rounded and worn, and having been evidently drift-wood before they were enclosed in the rock. So like were they to common drift-wood on a beach, that I could hardly help fancying them so, until their hard siliceous substance and the difficulty of extracting them from the sandstones proved the contrary. The total thickness of these sandstones, as seen by us, was about 300 or 400 feet.

4. The coal-measures that show themseves in the cliffs, on the north part of the Illawarra district, are but very insignificant, the total thickness of the whole beds containing the coal not exceeding 200 feet. The actual thickness of the coal-seams themselves we did not ascertain, but from all we saw and heard of them, they must be but unimportant beds in an economical point of view. Abundance of black silicified wood strewed the road where it crossed these coal-measures, and I have no doubt whole trees might be extracted with comparatively little cost and trouble.

3. Of the alternations of shales and sandstones above the coal, I can say nothing more, than that Mr. Clarke recognised them as

resembling beds he knew in the valley of the Hunter, to the northward, which had the same position with regard to the coal. They were about 400 feet in thickness.

2. The thick mass of sandstone above them was called by Mr. Clarke provisionally "the Sydney sandstone." It consists of very thick beds of white and light yellow sandstones, in some places fine-grained, at others coarse, and containing small quartz pebbles. Lithologically it resembles the millstone-grit and the sandstones of the lower coal-measures of the north of England. Its beds are parted occasionally by thin bands of shale and contain no organic remains, so far as is known. Its thickness is fully 700 or 800 feet.

1. The upper shales contain a few small fragmentary vegetable impressions and bits of leaves, and I believe also some fossil fish. Their thickness must be at least 300 feet, but may be much more. The most conspicuous member of this series in the country around Sydney is No. 2, the Sydney sandstone. The districts composed of it are always rocky and barren, with a level or gently sloping outline when viewed from a distance, but when traversed are found to be eaten into or furrowed in every direction by innumerable ravines. These have almost invariably steep if not perpendicular sides, with projecting and overhanging ledges of rock. They are narrow in proportion to their length and depth, the latter often very great, and when the sandstone rises any height above the sea, becomes enormous*. The same character still continues however even below the sea-level, as it is this which gives their peculiar form to the harbours of Port Jackson and Broken Bay, with their many long winding narrow arms bounded by precipitous rocky cliffs.

The upper shales, as might be expected, form a country with very different characters, namely gently undulating plains and round-topped lumpish hills. This is shown in all the district between Parramatta and Emu Plains, Windsor and Campbelltown.

In a good physical map, such as Sir T. Mitchell's map of New

* See Mr. Darwin's description of two of the most celebrated valleys of this kind on the slope of the Blue Mountains (Darwin's Journal). Mrs. Meredith also describes them in her account of New South Wales.

South Wales, these characters become so distinctly marked, as to enable us to give at once a rough approximation to the boundary of the countries occupied by the two kinds of rock.

By this aid and by the description given me by the Rev. W. B. Clarke, joined to my own cursory observations, I am enabled to state that the country lying between Campbelltown, Parramatta, Windsor, and the Nepean River, forms a flat basin, being composed of the upper shales, from beneath which the Sydney sandstone rises out in every direction. To the westward this sandstone rises with a gradual slope high on to the range of the Blue Mountains, with the inferior rocks and the coal-measures exposed in the depth of some of its gullies. To the north it rises into a widely-spread rocky district, from beneath which come out the coal-beds now worked at Newcastle on the river Hunter. To the south, as already described, it rises into the sandstone ranges, the escarpment of which overlooks the Illawarra district, the inferior coal-measures being again exposed below it. Towards the east it rises with a very gradual slope, but before it has attained any considerable elevation is cut off by the sea, which, as before explained, has penetrated into its winding gullies in this portion and formed the harbours of Port Jackson and Broken Bay.

The city of Sydney stands, I believe, just on the uppermost beds of the Sydney sandstone, near the passage of that mass of rock into the upper shales. Considerable beds of shale are indeed to be seen around the town, resting on and interstratified with the sandstones. If this be correct, the beds of coal are about 1100 or 1200 feet below the city of Sydney, and still deeper at the town of Parramatta and in the central portion of the county of Cumberland.

The series of rocks now described are by no means set forth as representing the whole palæozoic formations of New South Wales. There are very probably higher beds than the upper shales here mentioned, as there are certainly much lower beds than the Wollongong sandstones. The limestones of the Yass country will probably be found to be below the whole of the rocks mentioned in this paper.

As a general observation, I would remark on the perfect conformability of the whole series of rocks here described and their gradual transition from one into the other. They evidently form part of one great and continuously deposited formation.

From a collection transmitted by Mr. Clarke to the Woodwardian museum of Cambridge, I have been permitted, by the kindness of Professor Sedgwick, to select the following fossils in addition to those already mentioned. They come chiefly from the valley of the Hunter; the vegetable remains from the coal-measures at Newcastle; but I do not know the precise geological or geographical locality of the other fossils.

Plants.

Glossopteris Browniana.
Vertebraria indica.
Pecopteris australis.
Phyllotheca australis.

Animals.

Favosites gothlandica.
One species of Crinoides, apparently related to Platycrinus.
A form belonging to the Radiata, and resembling an Echinoderm.
A small Trilobite.
Two new species of Spirifer.
Two species of Leptæna.
A Terebratula.
A Eurydesma.
An Inoceramus.
A Pleurotomaria.
And a Conularia.

2. *On the south-eastern portion of Tasmania.*

The two principal rock-masses of the south-eastern portion of Tasmania are a very massive rudely columnar greenstone, and the sandstone of the palæozoic formation. The igneous rocks vary from a crystalline dark greenstone, through fine-grained basalts, to a coarse cellular trap or scoriaceous lava-like pumice. The sandstones contain interstratified beds of clay, shale, and loose sand, as also of limestone and coal.

From the want of a good physical map on a sufficiently large scale, and of time for a detailed examination of the country, I am unable to draw any section of any portion of Tasmania, or even to give an accurate and positive description of the order of superposition of the stratified rocks, or of their relations with the igneous rocks.

The interior of the country is rugged and broken, with many ranges of hills running in various directions, and the coast-line is indented by a multitude of bays, harbours, and channels, penetrating into the land with much irregularity. To the difficulty thus arising from the external features of the country, is added that resulting from great complexity in its internal structure. The sedimentary and the igneous rocks are so interlaced and entangled one with the other, and their apparent relations at the surface so different in different localities, that nothing but a careful and minute survey, laid down on maps of a large scale, will ever be able thoroughly to elucidate them.

A. *The valley of the Derwent River.*

Along the S.W. side of the valley of the Derwent runs a bold range of flat-topped hills, of which one of the principal promontories is Mount Wellington, rising immediately behind Hobarton to a height of 4200 feet above the sea. The upper portion of this range is composed of massive greenstone, often forming rude columns of great size, frequently as much as ten feet in diameter. The lower slope of this range, and much of the country forming the opposite side of the valley, is composed of the palæozoic rocks. These lie generally in a nearly horizontal position, and I believe *abut horizontally against the greenstones;* but as I never found a clear section near the junction of the two, I cannot positively say that they do not pass under them,—that the greenstones of the hill-tops are not a thick capping resting on the palæozoic formation. In ascending Mount Wellington from Hobarton we first pass over a great thickness of white and yellow sandstones nearly horizontal; above these are shales and thin beds of limestone, likewise horizontal; over which again other sandstones are found. These rocks occur to a height of 2500 feet above the sea, and apparently form a solid mass of that thickness at least. Above this point greenstone alone is to be seen, forming a mass 1700 feet thick at least. Its total thickness depends of course, on the undecided question, of whether it be a capping to the palæozoic rocks, or what I believe is much more probable, a solid mass with the sedimentary beds resting against its sides.

Both the sandstones and limestones are quarried at several points. At Mr. Hull's limestone quarries at Tolosa, about four miles from Hobarton, I found dark grey limestone, sometimes compact, sometimes finely laminated, with fragments of shells and corals. The beds of limestone were about two feet thick, and in one place were some beds of soft brown sandstone interstratified with thin beds of limestone. These sandstones were scarcely consolidated, and fell to pieces on being taken from the quarry. They often contained fossil shells, both Spiriferi and Productæ, quite perfect in appearance, but so much decomposed as not to bear extraction, falling into white powdery fibrous carbonate of lime. I procured from other parts of these quarries the following fossils:—

Corals.

Stenopora Tasmaniensis.	Fenestella internata.
——— informis.	——— fosula?
Fenestella ampla.	Caryophyllæa.

Mollusks.

Producta rugata.	Spirifer Stokesii.
——— brachythærus.	——— Vespertilio.
Spirifer subradiatus.	——— avicula.
——— Darwinii.	Pecten squamuliferus.
——— Tasmaniensis.	——— Limæformis.

A few miles above New Norfolk, the banks of the Derwent showed cliffs consisting of alternations of sandstone with black and brown shales, producing a precise resemblance to parts of the English coal-measures. Much fossil wood, apparently parts of large trees, lay in these rocks.

Similar rocks to these were frequently observed in the cuttings of the road-side as far as Oatlands in the centre of the island, and they almost invariably lay in positions so nearly approaching horizontality, that their dip was not appreciable to the eye. Still their continuity did not appear to extend unbroken over any large district, as not only were dykes and other masses of intrusive trap rocks frequent, but solid ridges of crystalline greenstone often intervened, and evidently cut off one portion of the palæozoic rocks from the other.

In the immediate vicinity of Hobarton there were places, as near Stoke, and at the mouth of the valley of Risdon, where the palæozoic rocks had evidently been tilted up and altered by masses of trap rock, which could be traced to have a perfect passage from compact tabular or amorphous basalt into hills of solid crystalline greenstone.

In other places quarries were opened in sandstones of the palæozoic age, forming small patches either embosomed in greenstone, or resting upon it. About a mile from a place called Ralph's Bay Neck, on the S.E. side of North Bay, I found a cliff where the sandstones were shown clearly to be posterior to the igneous rock. In this case a dark, rudely columnar trap rock ended in a succession of small cliffs and terraces in one direction, upon which terraces and against which little cliffs rested the sandstone perfectly undisturbed, and evidently in the position in which it had been originally deposited.

A parallel instance was observed in the cliffs a little to the eastward of the entrance of Port Arthur.

It appears then that there are masses of greenstone both of more ancient and more modern date than the palæozoic rocks.

At Macquarie Plains, about ten miles above New Norfolk, there is a large exhibition of igneous rock, which from its cellular character seems certainly to have flowed as lava in the open air. It forms a mass of considerable thickness, as shown in the brooks and ravines, and appears to have been gradually accumulated by successive accessions of melted matter. I infer this from the fact of its including fossil trees, apparently in the position of growth, which seem to have been enveloped while living in the lava.

There are two small patches of tertiary travertinous limestones: one mentioned by Mr. Darwin, and found in the outskirts of Hobarton, where it appears to have been tilted by the intrusion of an adjacent mass of trap; another in a little cove called James's Bay, about three miles above Hobarton, on the opposite side of the Derwent. It rests here nearly horizontally, and is but little elevated above the level of the sea. A Helix and a Bulimus, and the leaves and portions of the stems of several plants, have been found in each locality.

Fossils from James's Bay.

Plants, unnamed: one figured by Morris.
Helix.
Bulimus.

There are very thick masses of gravel, consisting of pebbles as large as the fist, accumulated on the sides of the Derwent River, at some places, and Count Strzelecki mentions great accumulations of loose sand, from beneath which he procured a large Cypræa.* This was at Newtown, a short distance from Hobarton.

B. *Norfolk Bay and Tasman's Peninsula.*

The principal mass of Tasman's Peninsula appears to be columnar greenstone, forming the highest and most rugged of its hills, the gigantic perpendicular cliffs of Cape Pillar and Cape Raoul, and the intermediate shores round the entrance to Port Arthur. Just to the eastward of the mouth of that harbour, a mass of the sandstone of the palæozoic formation, a quarter of a mile across and 200 feet high, may be seen resting against these perpendicular cliffs of columnar greenstone with its beds quite horizontal and apparently unaltered.

Point Puer, one of the projections inside the port, is composed of a white compact, rather argillaceous sandstone, which among others contains the following fossils :—

Producta rugata.
Spirifer subradiatus.
—— crassicostatus, *MSS.* sp. n.
—— Stokesii.
—— Vespertilio.
Pterinea macroptera.
Orthonota compressa.
Allorisma, *n. s.*
Pachydomus carinatus.
Pecten squamuliferus.

Eagle Hawk Neck, the connecting link of Tasman's and Forrester's Peninsulas, is one of the celebrities of Tasmania, on account of the peculiar jointed structure of its rocks, forming what is called "the tessellated pavement." The rock is a very hard, brittle, fine-grained and compact grey sandstone or gritstone, lying in a horizontal position. It occasionally contains pebbles of granite, porphyry, or quartz rock. The rocks abound in fossils, especially at the south point of Pirate's Bay. Among others I collected fine specimens of the following :—

Fenestella internata.
Producta rugata.
Spirifer crebristriatus.
—— Darwinii.
—— avicula.
Spirifer subradiatus.
—— Vespertilio.
Platychisma Oculus?
Pachydomus carinatus.

* The large *Cypræa* (*C. eximia*) described by Count Strzelecki, was found at Franklin Village, near Launceston, and not at New Town.—Ed. *Tasmanian Journal.*

On the opposite side of Norfolk Bay is a small peninsula, about three miles across, in which is a large convict-station called The Mines. The mass of this piece of land consists of sandstone with some trap, but immediately at the back of the station is a small colliery. A bed of coal of slight thickness and extent is here worked. The following was the shaft-section, as given me by the overseer:—

	Yards.
"Ironstone" (a fine-grained trap rock) - -	20
Sandstone - - - - - - - -	20
Sandstone and shale - - - - - -	10
Coal - - - - - - - - - -	1½

This coal, which in the deepest part is about seven or eight feet thick, rises pretty rapidly in every direction from that point, and as it rises, it thins out to about two feet. It thus forms a small basin, not half a mile across, and its outcrop is everywhere covered by beds of loose sand. A little beyond its outcrop on the sea-shore was the following section:—

	Yards.
Trap (in small prismatic pieces) - - - - -	7
Sandstone, formed of grains of some trap rock -	18
Sandstone, soft and rather shaly - - - -	6
Shale and bind - - - - - - - -	2
Coal - - - - - - - - - -	0½

Near this spot they had bored to a farther depth of nearly 100 yards, and passed through one twenty-inch coal; but the rest of the mass was almost entirely sandstone. I got from these coal-measures fossil plants, among which were *Pecopteris Australis*, a Sphenopteris, and a Zeugophyllites.

There are other places in Tasmania where coal is worked, but they are chiefly detached and isolated spots separated by greenstone ridges one from the other. I was not able to visit any other of these localities, but I should fear that the beds of coal in Tasmania are comparatively insignificant in an economic point of view, that the true coal-measures of the country have no great thickness, and that the seams of coal contained in them are but partial, thickening and thinning out perhaps along the same horizontal lines, and thus forming limited cakes rather than regular persistent beds.

C. *East Coast of Tasmania.*

Rocks of the palæozoic formation, chiefly sandstones, are found at various points of the eastern coast, but greatly broken and obscured by the usual greenstone ranges and local exhibitions of other trap rocks. In Maria Island are limestone quarries which I did not visit, but from which I procured fossils, among which were some of the large Pachydomi, of precisely the same species as those from Wollongong in New South Wales.

At Spring Vale, about ten miles above Great Swan Port, is a patch of palæozoic rocks, not more than a mile or two in extent, forming a low gently undulating ground surrounded by hills of igneous rock. No section is exhibited, but blocks of the rock protrude through the soil. It is a fine compact quartz rock, charged with the usual fossils of the formation in great abundance. The rock reminded me strongly of the quartz rock of the Lickey Hill. The fossils of this locality were—

Fenestella ampla.
Producta rugata ?
Spirifer radiatus.
——— Darwinii.
——— Tasmaniensis.
Spirifer Stokesii.
——— crassicostatus, sp. nov.
——— three others.
Stem of a Crinoidal animal.

Art. XXXI. *On the jaw of the* Diprotodon Australis, *and its dental formula.* By Edmund C. Hobson, M.D.*

(With a Plate.)

The fossil remains of the *Diprotodon Australis* have hitherto been found in so detached and mutilated a condition as to render the dental formula of this huge marsupial little better than conjecture. This desideratum has, however, been to a certain extent supplied by the half of an inferior maxillary bone recently discovered in the tertiary lacustrine deposits of Mount Macedon (Port Phillip).

* It is with feelings of the deepest regret we have to announce that since the receipt of this paper (the last from his pen) its very talented author died at Melbourne, at the early age of thirty-four.— Ed. *Tasmanian Journal.*

From the imperfect development of the teeth, and the sharpness of the transverse ridges of enamel, which exhibit but slight indications of wear, it would appear that the individual was a young animal. The condyle, coronoid, and angular processes are broken off, but the entire body of the jaw remains, with an incisor and four molars *in situ;* completing the number of teeth which the jaw at the age of the specimen was capable of containing.

The alveolus of the incisor extends beneath, and slightly to the inside of the first and second molars, the inner wall of the jaw being slightly dilated to give room to the fang and pulp of this great tooth. About half an inch from the orifice of the socket of the incisive tusk the first molar is implanted by two fangs, half an inch long; this tooth is one-fourth the size of the next molar, and its two transverse ridges instead of running nearly parallel, as in the other molar teeth, converge, and very nearly touch at the lingual side of the tooth: the talons at the base of the transverse ridges are very small, the anterior one being almost imperceptible.

The second molar is four times the size of the first, and its transverse ridges and talons are well marked; its place in the jaw is to the outside, and opposite the termination of the deep socket of the incisor tooth.

The second, third, and fourth molars are well marked, and increase progressively from before backwards, the last being eight times larger than the first, and was evidently only in process of development when the animal died; and in all probability had not pierced the gum. The fangs are wanting, the dentine had not been secreted, and the pulp cavity, formed by two hollow wedges of crusta and enamel, alone remains.

As the plane of the grinding surfaces of the molar teeth forms a very acute angle with the base of the jaw, the anterior molars would be worn to a considerable extent before the posterior could be used.

The dental formula of the Diprotodon is probably—

Incisors $\frac{2}{2}$, canines $\frac{0}{0}$, molars $\frac{4-4}{4-4}=20$.

Melbourne, Nov. 30, 1847.

Art. XXXII. *Remarks to accompany Mr. Calder's Paper on the country lying between Lake St. Clair and Macquarie Harbour.** By Lieut. Kay, R.N., F.R.S, Director of the Magnetical Observatory, Hobart.

Macquarie Harbour is, to the best of my belief, laid down on Frankland's map of Van Diemen's Land, from a survey by Capt. Philip P. King, of the Royal Navy (whose distinguished reputation as a marine surveyor, admits no doubt of its accuracy) to within very much smaller limits, than the estimation of the distance between Marlborough and Macquarie Harbour, by Mr. Calder, would seem to imply. Whatever method may have been employed in deciding the longitude of Cape Sorell by King, the probable error could not exceed ten miles; and he is the only authority that I am aware of for any portion of the western coast of Tasmania, except Flinders' running survey in December, 1798, which was made under the most disadvantageous circumstances. In a narrative of the cruize of the *Norfolk* sloop, which vessel had been lent to Flinders by Governor Hunter (for the express purpose of passing through Bass's Strait to the westward†, and then to return to Port Jackson by the south end of Van Diemen's Land), he expressly mentions that a time-keeper—an instrument so essential to accuracy in nautical surveys—it was impossible to obtain. After examining the principal groups of islands in the strait, and some parts of the northern coast of Van Diemen's Land, especially Port Dalrymple, he was, on the 9th December, 1798, off the Hunter's Islands, and remarks in his journal, that on rounding their northern extremity, "a long swell was perceived to come from the S. W., such as we had not been accustomed to for some time; and although it was likely to prove troublesome, and perhaps dangerous, Mr. Bass and myself hailed it with joy and mutual congratulation, as announcing the completion of our

* The large portion of the *Tasmanian Journal* lately devoted to Captain Sturt's Journal, and to other articles on the geography of Australia, has obliged us to delay the publication of Mr. Calder's account of the country lying between Lake St. Clair and Macquarie Harbour, Van Diemen's Land (read at a meeting of the Tasmanian Society 4th August, 1847); but the observations of Lieutenant Kay, R.N., which accompanied it, are of such interest as to induce us to give them insertion at once, in the present number, ithout the context to which they refer.—Ed. *Tasmanian Journal.*

† Bass's Strait had only been discovered the same year.

long wished for discovery of a passage into the Southern Ocean." On the 10th, Flinders rounded Cape Grim, and made considerable progress to the southward, naming Mount Norfolk after his little sloop, as he skirted the coast. On the 11th December, two more small mountains were seen, supposed by Flinders to be the same as seen by Tasman, on discovering the land, November the 24th, 1642, and they were therefore named by the former Mount Heemskerk and Mount Zeehaan, after Tasman's ships.

Here he *overlooked Macquarie Harbour*, although his journal does notice a rather deep bight, where he thought it probable there might be some opening; but from the direction and strength of the wind there was too much danger in bearing away for its examination. Still running along the land, on the evening of the same day he discovered and named Point Hibbs; and, after fixing its latitude by his run from the noon observation, hauled off on a wind, at 8 o'clock.

The next morning, the 12th, he closed the land early; passed a point which merited the name of Rocky Point, and another which was named Point St. Vincent, and succeeded in obtaining two sets of lunar distances, the *only observations* for longitude which Flinders obtained on the west coast. The breeze dying away in the evening, drifted the sloop towards an opening round Point St. Vincent; but when day broke on the 13th, the current had set them (owing to the continued calm all night) ten miles to the southward. "This circumstance," Flinders says, "and a breeze, which arose at north, precluded me from examining the opening, as I had intended." It will thus be perceived how Flinders passed Port Davey without examination, and which was not discovered until some years afterwards by Mr. Kelly, the pilot. On December 13th, Flinders rounded the south-west cape, which he places in lat. 43° 32′ S., but owing to adverse winds, and time occupied in examining Norfolk Bay, he did not reach the Derwent until the 23rd.

It is not necessary to trace his cruize any farther. My object in doing so thus far, has been to point out what were the means which Flinders possessed for making correct astronomical determinations, of such portions of the western coast as a hasty running survey could have afforded opportunity. He was but three days on the western coast, and only *once* was able to obtain observations for longitude; but from his acknowledged abilities as an observer, and nautical astronomer, it is not probable that the longitude he has assigned to the principal points of the coast, near to the spot where his observations were obtained, could be very much in error. At noon, on the 12th December (the day on which his lunars were obtained), Rocky Point bore N. 3° W., six or seven miles; thus leaving little difficulty in determining *its* longitude: and the coast from Rocky Point to Cape Sorell, at the entrance of Macquarie Harbour, runs nearly north and south. I cannot therefore agree with Mr. Calder's view as to the *large amount* of error, which he considers to exist in the longitude of the coast near Macquarie Harbour.

It is however unquestionable that Frankland's map is full of errors, in the astronomical positions of the principal headlands, and the recent survey of H.M.S. *Beagle*, on the north coast, from which I will take a few examples, confirms the statement. It is surely a reproach, that after 40 years of colonization, the *latitude* (to say nothing of the longitude) of the most important points in the island should be in error, in some cases more than six miles. I will first quote one example, viz., the S.W. Cape, a headland for which all ships must steer, who propose to visit the Derwent, when coming from the southward or westward:

Furneaux..	March 9th, 1773..	placed it in..	43° 34′,	S.
Cook......	Jan. 24th, 1777..	„	..43° 32½′,	„
Flinders ..	Dec. 13th, 1798..	„	..43° 32′	„
Stokes	Feb. 25th, 1842..	„	..43° 35′,	„
		Mean of all....	43° 33′,	

Frankland's map places it 43° 41′, eight miles further south! South Cape is similarly in error. Had the error been the other way it is impossible to forsee what might have been the consequence to ships running in thick blowing weather, with night coming on, and anxious to get hold of the land before dark; or trusting to their reckoning and the accuracy of the chart, running boldly for the cape at night, without having previously made the land.

The north coast is quite as faultily laid down. Three of the most prominent headlands will be sufficient to show how much error exists; presuming, as I have every right to do, that Stokes' determinations in the *Beagle's* survey are correct.

		Stokes, 1842.	Frankland's Map.
Cape Grim......	is placed in..	40° 40′......	40° 47′
Cape Portland ..	„	..40° 43½′	40° 48′
Eddystone......	„	..40° 59′......	41° 03′

Again, the Observatory at Hobart is in 42° 52′ 13″, and that parallel of latitude drawn on Frankland's map, runs considerably to the northward of New Town. But it is needless to multiply examples; sufficient have been given to show the necessity that exists for a correct chart of Tasmania, more particularly of the coasts and harbours, and of the eastern coast especially, where a safe shipping port is much required. I consider Spring Bay to be one of the finest harbours in the colony; and if its approaches and anchorage were carefully surveyed and sounded, it might prove of much service. It is about six miles wide at the entrance, between the north end of Maria Island and the main, with a depth of water varying from 14 to 5 fathoms, and if better known would probably be resorted to by shipping in want of refreshment, instead of their going round by Cape Pillar and working up Storm Bay to the Derwent against strong westerly winds. If the attention of the government could be directed to this quarter, it would be found desirable to open a road to Spring Bay from the main line between Hobart and Launceston; which would immediately make it a shipping port for all exports on the eastern coast. It would also be in much request with vessels bringing stock to market from the neighbouring colonies, as by avoiding the passage round Cape Pillar, (by far the worst part of the voyage at all seasons), the animals would be landed in much better and more wholesome condition than they possibly can be after days of tossing about off the above named cape,* in a very often fruitless

* A gentleman, a considerable importer of stock for the market, informed me lately, that in two trips only, he had lost twenty-four oxen and forty sheep, from the effects of the heavy sea off Cape Pillar. The voyages were most successfully performed up to that point, and had it been practicable to land the animals at Spring Bay, and drove them overland to Hobart, they would have been landed in good condition. This is but ono amongst many instances.

attempt to reach the Derwent. I mention these points merely to illustrate the value of Spring Bay as a safe and convenient harbour; the speedy formation of a town, if it were once resorted to by shipping, and the extreme salubrity of the climate on the east coast, would be sufficient attraction, whenever population increases by respectable immigration, to induce many to turn their steps in that direction; and it is the only harbour worthy of the name between Capes Pillar and Portland. Shelter for small craft may indeed be found during westerly gales in Fortescue and Pirate's Bays, as well as Great Swan Port, but the latter is very shoal, and in S. and S.E. gales a heavy sea sets in.

A road has already been formed through the fertile plain watered by the South Esk, commencing at Avoca and terminating with the sea at Falmouth; but the attempt to magnify the little shelter afforded by an out-lying rock off the coast at the latter place, into possessing the capabilities of a harbour, is chimerical in the extreme, as no coasting vessel of any dimensions could lay there even during the swell which the ordinary sea breeze sends in. The road alluded to is however extremely valuable, in opening the line of communication with an extensive and fertile district; and giving greater facility for the transit of produce for shipment to either of the ports of Hobart or Launceston, than is possessed by any other district in the colony. A road formed to Spring Bay would do the same, with the advantage of a good and safe harbour for shipping at its termination.

Miscellanea.

DR. HOOKER'S BOTANICAL MISSION TO INDIA.

The increased and increasing patronage which the Government of this country affords to science is a subject of high satisfaction to all naturalists. This patronage is peculiarly evinced in the liberality with which the treasures contained in the British Museum, and those in the Royal Gardens of Kew, are rendered available to the public good. In connection with the latter establishment, we have to announce that one of the most enthusiastic votaries of botany, whose name stands at the head of the present article, has just quitted this country to further its interests. Dr. Hooker, having brought his "Flora Antarctica," part of the results of a previous voyage, to a close, has been appointed by H. M. Government to investigate the vegetable productions of India, and especially of the Himalaya mountains; and as a treaty is now in progress of negotiation between the British powers in Hindostan and the Chinese, with reference to the boundaries of Thibet, it is possible even the latter interesting region may be visited by Dr. Hooker in the course of his journey. It is with a view to this object that the distinguished Humboldt addressed Dr. Hooker in a letter, which though entirely of a private nature, we think not unsuited to the pages of a Journal of Natural History:

"Que je suis heureux d'apprendre, mon excellent ami, que vous allez pénétrer dans ces belles vallées de l'Himalayah, et méme au-delà vers Ladak et les plateaux du Thibet, dont la hauteur moyenne, non confondue avec celles des cîmes qui s'élèvent dans le plateau même, est un objet digne de recherche! Comme j'apprécie cette noble ardeur qui vous fait entreprendre une nouvelle expédition hazardeuse, après avoir étédans celle du Pôle Austral qui a été si glorieusement conduite. Votre aimable lettre du 5 Septembre m'a trouvé un peu indisposé. J'ai habité le parc de Sans Souci pendant l'absence du Roi, et un violent refroidissement m'a forcé de rentrer en ville. Mon départ pour

Paris a été retardé, et j'ai pu corriger ici les derniers feuillets du 2nd volume du Cosmos qui va paraître sous peu. J'attends demain le retour du Roi et de la Reine, et je pourrai vers le 4 Oct. me mettre en route pour passer deux ou trois mois à Paris. Je commence à me consoler de l'injustice qu'on vous a faite de ne pas vous donner la chaire d'Edinbourg, car, d'après l'étendue et la variété du savoir que je vous connois, vous êtes appelé à rendre d'éminens services non seulement à la géographie des plantes, mais aussi à toutes les branches de la météorologie, comme à la géologie des formations. Vous avez l'avantage que vos vues se sont agrandies, que vous avez le goût (le sentiment) de la précision.

" Je félicite, au nom de cette partie des sciences physiques à laquelle toute ma vie a été vouée, les membres du grand Corps de l'Amirauté et les ' Commissioners of Woods and Forests' du choix qu'ils ont fait, de la protection qu'ils vous accordent, et dont vous êtes si digne par vos connaissances, par la vivacité et l'ardeur de votre caractère, par la constance d'un dévouement si désintéressé ! Je me reporte volontiers, dans mes souvenirs, vers ces conversations si instructives pour moi, pendant que j'avais le plaisir d'habiter une même maison avec vous à Paris: j'ai pris des notes presque sous votre dictée et j'aime à les trouver dans mes cahiers. Heureux avantage de la viellesse qui en a si peu ! Votre excellent père s'était chargé de la publication des mes plantes Cryptogames des Cordillères, et voilà le fils que je puis saluer comme un jeune ami, qui a vu les éruptions de l'Erébus, et qui va voir ce qui a fait le rêve de ma vie prête à finir.

" N'oubliez pas de m'écrire, mon cher ami, à Paris avant d'entreprendre ce magnifique voyage. Je suis avide de vos Gallapagos, mais je voudrais bien aussi que vous jettiez pour mon instruction quelques notes géographiques sur un papier, simplement quelques noms des plantes d'Europe ou d'Amérique, *Phanérogames*, non introduites par l'homme et trouvées avec certitude dans l'hémisphère austral, *non Américain*. Dites-moi aussi un mot sur votre *Cœlebogyne ilicifolia*, que Jussieu nomme une *Euphorbiacée*. Le miracle des graines muries sans étamines, continue-t-il ! Qu'en pensez-vous ?

" Comment fixer votre attention sur des objets spéciaux, lorsque, comme vous, on connoit les problèmes qu'ils s'agitent.

" Hauteurs auxquelles cessent de certaines familles de plantes.

" Le caractère de Flore Sibérienne, est-il, vers Cashemer et Ladak, si général qu'on le prétend?

" Jusqu'à quelle hauteur ya-t-il des poissons dans les lacs? Comparer les espèces et les rapporter.

" Etre bien attentif à la température du sol à différentes hauteurs.

" Se servir de sondes à cet effet, comparer les températures du sol entre les tropiques à 18 pouces, à 2 pieds de profondeur (Boussaingault) avec la profondeur de 20 ou 30 pieds plus au Nord.

" Eclaircir le problème de la hauteur des neiges perpétuelles à la pente méridionale et à la pente septentrionale de l'Himalayah en vous rappelant les données que j'ai réunies dans le troisième vol. de mon Asie Centrale.

" Je ne puis croire à l'uniformité et à l'ennui des Gneiss, Micaschistes, ou formations Siluriennes de l'Himalayah.

" Faire plus d'attention aux formations Porphyriques, au Grünstein, aux Amygdaloïdes (?) aux Basalts (?) de la chaîne.

" Si l'on est assez heureux de traverser la grande Cordillère de Kouenlun pour arriver à Yarkand, en remontant vers les sources de Chajouh affluent de l'Indus, être bien attentif au *peu* de hauteur de la plaine qui envoye les eaux à l'est, par le Tarem au Lac Lop.

" Des hauteurs barométriques ou, s'il le faut absolument, des degrés d'eau bouillante, seroient bien précieuses à déterminer dans la plaine à l'est de Yarkand.

" Variations horaires du Baromètre dans les plateaux et dans l'Himalayah même.

" Observations psychométriques pour en comparer les résultats avec l'énorme sècheresse que j'ai éprouvée dans les steppes de Sibérie.

" Températures des sources des cavernes.

" Les Insectes vont-ils moins haut que les plantes?

" Je cesse pour ne pas vous ennuyer de choses que vous savez mieux que moi.

" Agréez vous-même, mon excellent ami, et votre respectable père Sir William, l'expression renouvellée de ma haute et affectueuse considération. Mes amitiés à votre spirituel ami Mr. Darwin dont tous les travaux me charment.

"ALEXANDRE HUMBOLDT.

"à Berlin le 30 Sept. 1847.

"Je n'ai pas le tems de relire mon griffonage : je vais examiner jusqu'à quel No. je possède votre belle Flore."

The most important assistance, in exploring the botany of Northern India, is promised to our traveller by His Excellency the Governor-General, Lord Dalhousie, and by the Court of Directors of the Honourable India Company. After spending about twelve months in this undertaking, Dr. Hooker's instructions are to return in 1849 to Calcutta, and thence proceed to Singapore and Borneo.

At the latter island, the valuable aid of His Excellency, Mr. Brooke, and the protection afforded by H. M. S. *Meander* (commanded by the Hon. Capt. Keppel, to which ship Dr. Hooker will be attached as supernumerary medical officer), will enable Dr. Hooker to fulfil the designs of the noble and enlightened First Lord of the Admiralty, Lord Auckland, who directs that he shall pursue his botanical researches and draw up a report on the vegetable productions of the British settlement of Labuan, and such parts of Borneo as can safely be explored. It is especially his object to ascend, if possible, the great mountain of Keeny Baloo, supposed to be 14,000 feet in height. Dr. Hooker embarked at Portsmouth, on the 11th of November, in H. M. steam-frigate *Sidon*, which conveys His Excellency Lord Dalhousie, to Alexandria, *en route* for Calcutta, and he may be expected to arrive there towards the latter end of this month (December). Two or three months will probably be devoted to investigating the plains of Bengal, and particularly the fossil vegetable remains in the coal formations of Burdwan ; and then Dr. Hooker will journey northward, perhaps to Sikkim ; but his exact route must considerably depend upon circumstances which it is impossible yet to foresee.—*London Journal of Botany, Dec.* 1847.

ON THE FOSSIL PLANTS OF THE CARBONACEOUS STRATA NEAR SYDNEY, AUSTRALIA; BY PROFESSOR SEDGWICK.

The cliffs on the coast near Sydney exhibit a series of strata which have been compared with the Devonian rocks of England; they dip from the north, and from the south, towards Sydney, where, in the central and newest portion of the section, beds of coal and numerous fossil plants have been found; the carbonaceous beds are not separated from those below by want of conformity, or any great change of mineral character. A large series of the fossil plants has been transmitted to the Cambridge Museum, by the Rev. W. B. Clarke, and these have been examined by Mr. M'Coy, and the results reviewed by Dr. Hooker. It appears that out of fifteen species, ten are new and five have been already described. With the exception of one species, all are peculiar to Australia: this one is the *Glossopteris Browniana*, of the Indian coal fields. Of the genera, some are common to the European oolites and coal formations (*Pecopteris*, &c.); but none of the genera peculiar to the coal (such as *Stigmaria*) have been found. One most remarkable genus, *Vertebraria*, is common to the Australian and Indian strata. The whole group, and especially the genera *Gleichenites* and *Phyllotheca*, are more nearly related to the existing Flora of New Holland than the plants of any other portion of the world.—*Proceedings of the British Association for the Advancement of Science*, 28*th June*, 1847, *as reported in the Athenæum.*

SOME OBSERVATIONS ON THE SKULL OF PHASCOLOMYS VOMBATUS. BY J. E. GRAY, ESQ., F.R.S., &C., &C.

In the collection at the British Museum there are three skulls which agree with Prof. Owen's character of *Phascolomys Vombatus*, as described in vol. iii. of the Zool. Soc. Transactions: that is to say, they have only slightly curved upper cutting teeth, short noses, &c. Two were sent from Van Diemen's Land by

Mr. Ronald Gunn, and one from New South Wales was presented by my late friend and admirable botanist, Mr. Allan Cunningham, F.L.S.

The specimens from Van Diemen's Land are much smaller (the largest being 6 in. 4 lines long), and more depressed and truncated behind, and have two moderate-sized oblong holes in the hinder part of the palate. The specimen from New South Wales is one inch longer, and has two large triangular holes in the end of the palate. All the three specimens differ in the size of the teeth, and especially in the size and relative position of the upper cutting teeth.

1. The least of the Van Diemen's Land skulls has rather small grinders, but the upper cutting teeth are small, compressed, rather diverging from each other, forming an angle in front, and only touching each other at the truncated inner edge. The crowns of these teeth are 5 lines long and $2\frac{1}{2}$ lines wide. The lower cutting teeth are small, with a roundish crown.

2. The other Van Diemen's Land skull, which is rather larger in all its measurements, has larger grinders. The cutting teeth are much larger: the upper large, oblong, diverging from each other, forming together a segment of a circle in front, and only touching each other by the inner edge. The crowns of these teeth are $5\frac{1}{2}$ lines long and $3\frac{1}{2}$ lines wide.

3. The skull from New South Wales has the teeth very like those of the small Van Diemen's Land specimen, but rather larger. The upper cutting teeth are considerably larger and rather more triangular, but in the same angular position.

It is desirable that more of these skulls should be compared, to determine whether these are only individual variations, or that there are more than one species confounded under this name. I am inclined to the former view; but if this is the case, it shows that the skulls and teeth do not present such good specific characters as many zoologists are willing to believe.—*Annals and Mag. of Nat. History, July*, 1847.

DISCOVERY OF THE EGGS OF THE MOA, OR DINORNIS, OF NEW ZEALAND.

An interesting discovery has lately been made by Mr. Walter Mantell, of Wellington, New Zealand. In an exploring tour in search of the remains of the colossal ostrich-like birds, which once inhabited New Zealand, and whose bones occur in the alluvial sand and silt of the rivers. Mr. Mantell discovered imbedded with the bones fragments of their eggs. The specimens which he has transmitted to his father, Dr. Mantell, are portions of very large eggs, which in their general aspect resemble those of the ostrich, but differ in their markings, and relative thickness and size. The edges of these fragments are, for the most part, water-worn; the external surface is marked by short, interrupted, irregular linear grooves variously disposed in different specimens—probably indicative of specific distinctions. They are altogether unlike the small circular pits on the shell of the ostrich. From the small degree of convexity, even of the largest fragments, it is obvious that they belonged to eggs of considerable magnitude. Among the bones collected by Mr. Walter Mantell (amounting to 700 or 800), and now on their way to England, are portions of several skulls and mandibles. The latter will be an important addition to our knowledge of the nature and affinities of the original; for no vestiges of that part of the skeleton have previously been obtained. Although the state of preservation of the bones and the egg-shells proves that they are not, geologically speaking, of great antiquity, and renders it probable that the last of their race may have existed contemporaneously with the human race, yet Mr. Mantell could obtain no trustworthy evidence to warrant the conclusion that any living *Moa* had been seen by the present inhabitants or their immediate progenitors. The circumstance of the natives knowing the bones to belong to birds, and distinguishing them by the name of *Moa*, or sacred bird, long ere they had been examined by Europeans, and when they would not have been aware of the existence of any birds larger than their own small *apteryx*, is, however, considered by Mr. Walter Mantell as confirmatory of the native traditions, that they abounded in former times, and were hunted by the natives for food.—*Athenæum for September*, 1847.

ON A NEW SPECIES OF DAWSONIA.

Dr. R. K. Greville describes in the Annals of Natural History for April, 1847, a new species of *Dawsonia*, which he has called *D. superba*, stated to have been received from D. A. C. G. Augustus Erskine, Australia. Dr. Greville describes this beautiful moss, as " fully fourteen inches high, the *leaves* are an inch in length, linear-subulate, less rigid than in *D. polytrichoides*, and spreading in a more lax manner, spinuloso-dentate, but only toothed at the back of the nerve near the apex. At the lower extremity the very wide membranaceous sheath is of a fine purplish pink colour. *Seta* three-fourths of an inch in length. *Capsule* with the operculum, resembling that of *D. polytrichoides*, but twice as large."

This species seems to be identical with one sent by me to Sir Wm. J. Hooker in 1837, and subsequently to Dr. Robert Brown, who named it in a letter, *D. longifolia*. If it is the same, the writer found it abundantly growing in patches on the ground under fern trees (*Dicksonia antarctica*), in the forest between Emu Bay and the Hampshire Hills, Van Diemen's Land; but as Mr. Erskine resides at Port Phillip, it is probable that his specimen was found in some of the dense forests which exist to the eastward of Melbourne, where a somewhat similar vegetation prevails.—*Ronald C. Gunn.*

PROCEEDINGS OF LEARNED SOCIETIES.

GEOGRAPHICAL SOCIETY OF LONDON.

April 12, 1847.

A PAPER was read 'On Wine-growing in New South Wales,' by Mr. John Hector.—It would appear that the cultivation of the vine promises beneficial results to the settler, not only as regards the manufacturing of wine for the consumption of the colonists themselves, but also as leading to its eventual exportation to England. Neither is the cultivation to be regarded solely in reference to the production of wine; but in the drying of the fruit for the supply of raisins and in the manufacture of brandy and vinegar large profits may be relied on. According to Mr. Hector's calculations, it appears that the cost price of a farm at the present time of 240 acres—namely, 40 acres fit for planting as a vineyard and 200 acres of forest—would be from £200 to £250—but which he puts down at £300; that the cost of bullocks, horses, carts, ploughs, harrows, and other necessary implements, together with twelve months' supply of tea, sugar, and other stores, including contingent expenses, would amount to £200; that the expenses of maintaining the required labourers for four years, the wear and tear, and other outgoings, would average £200 a-year for four years—giving, as a total of capital required, £1,300. This calculation has, however, been made on the supposition that the vineyard would yield no returns during the whole of the four years; whereas, in consequence of the rapid growth and early maturity of the vine in the climate of New South Wales, enough wine would probably be made in the third year to defray the expenses of that year. After the fourth year, the quantity of wine obtainable varies from 200 to 1000 gallons per acre—and on rich land and under judicious management approaches much nearer to the latter than to the former quantity. This colonial wine has hitherto found a ready sale at from 5s. to 8s. per gallon; and Mr. Boydell finds no difficulty in disposing of the whole produce of his vintage at 5s. Considering, however, that a time will come when wine will be plentifully produced in the colony, Mr. Hector assumes its value to be only 2s. per gallon—the present price of colonial beer. The result would be as follows:—40 acres of vines producing 400 gallons per acre at 2s. the gallon, £1,600. Deduct, annual expenses, £200; expenses for vintage, £100; interest on capital, at 8 per cent., £100.—leaving a clear annual profit of £1200. Mr. Hector observes, in conclusion, that should the wine prove too light for the English market, the grower possesses an easy and cheap remedy, the law permitting the distillation of brandy for the purpose of mixing with the wines, and thereby imparting to them strength and fulness.—*Athenæum.*

ZOOLOGICAL SOCIETY OF LONDON.

October 28, 1845.

"Description of a new species of *Murex*," by L. Reeve, Esq.

Murex turritus. *Mur. testâ trigono-ovatâ, liris convexis subnodosis irregularibus confertis undique cingulatâ, tuberculo unico inter varices, trifariam varicosâ, varicibus peculiariter laminato-frondosis, frondibus erectis, lateraliter convexis; lutescente livido-olivaceo hic illic saturatiore tinctâ.*

Hab. North Australia; Ince, R.N.

The entire surface of this interesting new species is encircled with very close-set convex ridges, each terminating on the varices in an erect frond, connected together at the side so as to form a continuous laminated frill extending from the suture to the base. From Mr. Cuming's collection.

A paper entitled "Déscription de quelques nouvelles Nérites Fluviatiles, du cabinet de H. Cuming, Esq.," par C. A. Récluz, was then read: The following are Australian.—

II. Serratæ. B. *Ovatæ vel ovato-oblongæ.*

Nerita Zelandica. *Ner. testâ ovato-oblongâ, ventricosâ, tenuiusculâ; anfractibus 3-4 supremis sæpiùs derosis, infimo subsuturâ horizontaliterque compresso; nigrâ lineis ravidis longitudinalibus angulato-flexuosis creberrimis pictâ, interdum lutescente supernè et infernè latè fasciatâ; columellâ subcompressâ, croceâ, margine denticulatâ et in medio vix arcuatâ; labro tenui, margine sordidè rubente, intus lacteo ac parùm incrassato.*

Hab. New Zealand: on stones in mountain-streams.

Alt. 19-20, lat. 18-19, conv. 12 mill.

Néritine intermédiaire entre la *Nerita turrita*, Chemnitz, et la *Nerita communis*, Quoy et Gaimard (*Neritina sinensis*, Beck, *ex fide propria.*) Elle est toujours d'une texture plus mince que ces dernières, presque fragile, autrement colorée et constante dans ses caractères.

III. Spinosæ (*Clithon*, Montfort, Leach). C. *Muticæ.*

Nerita Doingii. *Ner. testâ parvâ, globoso-ovatâ vel subglo-*

bosâ, parùm obliquâ, tenuiusculâ; anfractibus 1½-2 *obliquè rugulosis, transversim et sub lente creberrimè ac obsoletè striolatis; aperturâ viridulâ; columellâ ferè planâ, margine denticulatâ et in medio subarcuatâ; labro tenui, semicirculari.*

Var. a. *Testâ lineolis longitudinalibus undulatis nigris et luteis creberrimè pictâ.*

Var. b. *Testâ ut in var.* a, *et zonis lutescentibus plus minusve numerosis cinctâ.*

Hab. Hanover Bay, North Australia. Collected by Mr. T. E. Doing, R.N.

Alt. 9⅓, lat. 10, convex. 7 mill.

Les stries longitudinales sont en forme déridés dans la moité supérieure du dernier tour et s'affaiblissent sur l'autre moitié au fur et à mesure qu'elles avancent vers sa basse; les transversales sont très fines, pressées et ne se montrent complètement que sous la loupe.

November 25, 1845.

A paper was read containing "Descriptions of thirty-six new species of *Helix*, belonging to the collection of H. Cuming, Esq." by Dr. L. Pfeiffer; of which the following are Australian :—

Helix Incei, Pfr. *Hel. testâ umbilicatâ, depresso-globosâ, solidulâ, striatâ, sub epidermide pallidè fulvâ albâ, fasciis angustis castaneis cingulatâ; spirâ elevatâ, acutiusculâ; anfractibus* 7 *vix convexiusculis, ultimo circa umbilicum mediocrem, pervium sub-compresso; columellâ arcuatâ; apeturâ perobliquâ, lunato-ovali; peristomate albo, tenui, intus sublabiato, margine dextro vix expanso, basali reflexo, columellari in laminam triangularem dilatatâ, umbilicum semitegente.*

Diam. 38, alt. 28 mill.

b. *Minor, epidermide castanea, fasciis indistinctis, anfractu ultimo basi flavo.*

Diam. 32, alt. 21 mill.

From North Australia, collected by Lieut. Ince, R.N.

Helix pelodes, Pfr. *Hel. testâ umbilicatâ, subglobosâ, tenuiusculâ, striatâ et minutè granulatâ, rubello-fuscâ; spirâ* *brevi, obtusiusculâ; anfractibus* 6 *convexiusculis, ultimo inflato, anticè breviter descendente; umbilico mediocri, pervio; aperturâ lunato-orbiculari, intus margaritaceâ; peristomate expanso, saturatè carneo, margine columellari perdilatato, fornicatim reflexo.*

Diam. 31, alt. 20 mill.

From the north coast of Australia: found under decayed leaves (Lieut. Ince, R.N.)

HELIX LEPTOGRAMMA, Pfr. *Hel. testâ umbilicatâ, globosâ, tenui, striatâ lineis impressis, concentricis, confertis, sculptâ, carneo-albidâ supernè fasciis* 3-4 *angustis, rufis ornatâ; anfractibus* $4\frac{1}{2}$ *convexiusculis, ultimo inflato, anticè breviter descendente; aperturâ vix obliquâ, rotundato-lunari, intus concolore; peristomate albo, simplice, beviter expanso, marginibus callo tenuissimo diffuso junctis, columellari valdè dilatato, albo, nitido, reflexo, umbilicum angustum semi-occultante.*

Diam. 17, alt. 13 mill.

From Cygnet Bay, North Australia (Lieut. Ince, R.N.).

HELIX GILBERTI, Pfr. *Hel. testâ umbilicatâ, depressâ, distinctè striatâ, minutissimè granulatâ, tenui, pallidè corneâ, lineâ rufâ ad suturam cinctâ; anfractibus* $4\frac{1}{2}$ *convexiusculis, ultimo basi convexo; umbilico mediocre, pervio; aperturâ rotundato-lunari; peristomate simplice, recto, margine columellari parùm dilatato, reflexo.*

Diam. 16, alt. 9 mill.

From Darling Downs, East Australia (Gilbert).

HELIX SPLENDIDULA, Pfr. *Hel. testâ latè umbilicatâ, depressissimâ, pallidè olivaceo-corneâ, nitidâ, striatulâ, lineis concentricis, magis minusve distinctis obsoletè reticulatâ; spirâ planâ; suturâ profundâ; anfractibus* $3\frac{1}{2}$ *subplanulatis, celeriter crescentibus, ultimo lato; umbilico lato, perspectivo; aperturâ obliquâ, lunato-ovali; peristomate simplice, acuto, marginibus conniventibus, dextro obliquè descendente, antrorsum subarcuato.*

Diam. $8\frac{1}{2}$, alt. $3\frac{1}{3}$ mill.

Hab. East Australia, near Torres Strait (Lieut. Ince, R.N.)

MINUTES OF THE TASMANIAN SOCIETY.

March 29, 1848.

Mr. RONALD C. GUNN announced to the Society the lamented death, at the early age of 34, of Edmund Charles Hobson, M.D., which event took place at his villa, near Melbourne, Port Phillip, on 4th March instant, after an illness of four days.

Dr. E. C. Hobson was a native of Tasmania, studied for some years under Dr. James Scott, R.N., Colonial Surgeon at Hobart Town, from whom he acquired much and varied information, and then visited England to complete his studies, where he obtained the regard and esteem of Professors Owen and Grant, and other eminent men in London. After visiting Paris, and various parts of France and Germany, he returned to Van Diemen's Land in 1838, where he commenced practice as a general Practitioner at Hobart Town.

In 1839 Dr. Hobson, in association with two or three gentlemen of congenial tastes, and under the auspices of His Excellency Sir John Franklin, our then estimable Governor, founded the Tasmanian Society for the advancement of Natural Science in Australia, which society still flourishes, and publishes the *Tasmanian Journal.*

In 1840, he had an attack of fever at Hobart Town, which seriously injured a constitution which had been previously debilitated by repeated attacks of bronchitis, and obliged him to seek the warmer climate of Port Phillip, as being more favorable to one in his impaired state of health. There, as in Van Diemen's Land, his amiable and kind disposition attracted towards him the love of the poor, as it also conciliated and won the affections of the rich, and by both he was universally beloved.

Whilst in London he married Miss Adamson, daughter of an extensive merchant, by whom he has left three sons and one daughter, all very young. In Mrs. Hobson he found a most amiable and worthy partner, who not only fulfilled the duties of a wife and mother in the most exemplary manner, but aided him materially in his scientific pursuits by her great skill in drawing.

A paper by Dr. Hobson, on the *Callorynchus Australis*, appeared in the first number of the *Tasmanian Journal*, and his subsequent papers and observations on the blood globules of the *Ornithorhynchus paradoxus* (quoted by Professor Owen in the Cyclo. of Anat. and Physiol. Art. *Montremata*); on the fossil Bones of the *Diprotodon*, *Kangaroos*, &c. at Mount Macedon, Port Phillip; on the Geology of Point Nepean, and other parts of Port Phillip, &c., are too well known to the readers of this journal to require farther comment, and his labours have been fully appreciated aud acknowledged by Professor Owen, and others.

Besides possessing an admirable knowledge of his profession, he was well versed in comparative anatomy, geology, and botany, although the two former claimed the preference in his attentions; but the writer of this sketch is largely indebted to him for numerous most interesting plants, collected by him during his various excursions at Port Phillip, as also for various botanical observations on different districts of that colony.

As one of the founders of the Tasmanian Society, and one of its most able and zealous members and supporters, his memory will be long and fondly cherished by all who pursue science in Australia.

Read a paper "On the jaw of the *Diprotodon Australis*, and its dental formula." By the late Dr. E. C. Hobson. It was accompanied by a beautiful drawing from the pencil of Mrs. Hobson. (Vide page 387 of the present number of the *Tasmanian Journal.*)

Read a letter from J. E. Calder, Esq., announcing that he had picked up on 28th February last, at Eagle Hawk Neck, (Pirates Bay side) twenty-nine specimens of *Janthina fragilis*, (common Oceanic Snail) with the animals in them. Mr. Calder's letter was accompanied by specimens.

C. S. Henty, Esq., exhibited numerous specimens of *Bullæa aperta*, *Trigonia margaritacea*, *Cleidothærus*, and other mollusks obtained by him at George Town.

W. H. Breton, Esq., exhibited a large suite of specimens of fossil wood, in the form of lignite, obtained in sinking a well about two miles north of Launceston, on the George Town road. Also the impression of a bivalve shell allied to *Unio*, and several seeds resembling those of an Acacia obtained from the same locality.

Mr. R. C. Gunn mentioned that Joseph Milligan, Esq. had recently informed him that he had seen a turtle washed upon the eastern shore of Flinders' Island, Bass's Strait, and that he had also heard of turtles washed ashore on the eastern coast of Van Diemen's Land.

Mr. Gunn exhibited a beautiful specimen of a *Trilobite* received from Mrs. E. C. Hobson. It is only the posterior portion, and measures 1 8-10th inch in length, and 1 2-10 inch broad in the broadest part. It was found about 25 miles up the river Yarra, Port Phillip, embedded in an argillaceous rock, and is apparently of the genus *Asaphus?*

Numerous specimens of a rolled matted fibrous substance washed upon the beach at the Great Forrestier River, north coast of Tasmania, were exhibited by Mr. Gunn. The masses varied in size from one inch to five or six inches in length, by about half an inch to an inch in diameter, tapering off at both ends. Mr. Gunn expressed an opinion that they were formed from the fibres of decayed or decomposing leaves of *Zostera marina* matted and rolled together by the action of the sea. Several beds of seaweed embedded below the level of high water occur in that locality.

The Secretary announced having received from His Honor C. J. Latrobe, Esq., the series of Meteorological Tables, kept at Melbourne during 1847.

April 12, 1848.

Read "A list of Birds which frequent the upper portion of the River Goulburn, in the district of Port Phillip, New South Wales." By Mr. John Cotton, C.M.Z.S. (Printed at page 361 of the present number of the *Tasmanian Journal.*)

Mr. Ronald C. Gunn mentioned that he had recently ascended the mountain called Row Torr, (Mount Arthur of some maps) situated a few miles N.E. of Launceston, elevated 4,300 feet above the sea, (Stokes' Chart of Bass's Strait) and found the rock on the summits highly magnetic; so that the N. point of a compass when placed on different parts indicated from 20° west of the true north to 90° east of that point. Mr. Gunn had observed similar results on the peaks of the western mountains, (vide *Tasmanian Journal*, vol. ii, p. 391) and expressed an opinion that all the elevated points of the mountains of Tasmania which are composed of greenstone would be found highly magnetic also.

Mr. Gunn exhibited numerous specimens of the leaves of Eucalypti which had the epidermis and parenchyma removed by insects, leaving the beautiful network of veins admirably shewn in the same manner as is sometimes artificially done by maceration.

April 26, 1848.

C. S. Henty, Esq., exhibited a very extensive and beautiful series of the algæ of Tasmania, collected by him at George Town during the summer.

May 10, 1848.

Read a paper by W. H. Breton, Esq., "on a species of Tasmanian *Sphæria*, growing from a caterpillar, found at Franklin Village, near Launceston." (Described at page 77, vol. iii. *Tasmanian Journal.*) Mr. Breton illustrated his paper by numerous specimens, and also produced specimens of the Moth of the Caterpillar, which bears this peculiar fungus.

Mr. R. C. Gunn produced specimens of a species of *Comatula* found under the stones at low water in the sea, near George Town.

Mr. R. C. Gunn exhibited numerous specimens of fossil wood found embedded in a very hard siliceous conglomerate, at Formosa, Lake River.

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF JANUARY, 1848.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	EXTERNAL THERMOMETER. Nine, A.M. Wet.	EXTERNAL THERMOMETER. Three, P.M. Dry.	EXTERNAL THERMOMETER. Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 A M.	WINDS. 3 P M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29,600	62°	29,618	66°	66°	58°	84°	73°	88°	55°	N.W.	N.W.	,100	Nil.
2	29,758	62°	29,669	63°	76°	66°	82°	74°	82°	62°	N.W.	N.W.	,090	,360
3	29,381	62°	29,545	62°	64°	62°	66°	62°	66°	47°	N.W.	N.W.	,050	Nil.
4	29,944	57°	29,983	59°	59°	53°	68°	60°	68°	47°	S W	S.W.	,070	Nil.
5	30,[illegible]47	56°	29,909	59°	65°	57°	70°	60°	75°	53°	Calm	N.W.	,050	Nil.
6	29,760	58°	29,654	60°	66°	60°	71°	66°	72°	49°	W.W.	N.W.	,080	Nil.
7	29,922	58°	29,866	60°	65°	57°	73°	61°	75°	53°	Calm	N W.	,080	Nil.
8	29,930	59°	29,829	62°	72°	64°	77°	68°	79°	58°	Calm	N.W.	,090	Nil.
9	29,725	59°	29,583	62°	68°	63°	79°	68°	79°	56°	N.W.	N.W.	,080	Nil.
10	29,566	59°	29,628	60°	65°	59°	72°	65°	78°	51°	N.W.	S.W.	,070	Nil.
11	30,[illegible]67	58°	30,080	61°	67°	60°	72°	64°	74°	57°	S.W.	N.W.	,080	Nil.
12	30,156	60°	30,[illegible]95	63°	72°	64°	75°	66°	77°	57°	S.W.	N.W.	,070	Nil.
13	30,100	60°	30,008	64°	70°	66°	83°	73°	85°	61°	Calm	N.W.	,070	Nil.
14	30,[illegible]08	60°	30,005	65°	67°	62°	84°	78°	84°	66°	Calm	N.W.	,080	Nil.
15	30,0[illegible]7	63°	30,[illegible]95	65°	73°	64°	74°	63°	79°	54°	S.W.	N.W.	,120	Nil.
16	30,327	60°	30,250	63°	69°	60°	73°	65°	73°	59°	N.W.	N.W.	,060	Nil.
17	30,029	60°	30,[illegible]	63°	68°	64°	77°	70°	78°	58°	N.W.	N.W.	,060	Nil.
18	29,891	60°	29,787	63°	71°	64°	78°	70°	85°	55°	Calm	N.W.	,100	Nil.
19	30,149	60°	30,120	62°	69°	60°	76°	67°	78°	53°	S W.	S W.	,080	Nil.
20	30,172	58°	30,030	60°	65°	58°	68°	62°	77°	65°	S.W.	S.W.	,070	,456
21	29,783	60°	29,[illegible]9	61°	65°	64°	72°	68°	72°	57°	N.W.	N.W.	,030	1,236
22	29,730	59°	29,823	62°	67°	62°	74°	66°	74°	52°	N.W.	S.W.	,060	Nil.
23	30,116	58°	3[illegible],[illegible]88	62°	65°	60°	73°	67°	76°	60°	N.W.	N.W.	,060	Nil.
24	29,980	60°	29,888	61°	69°	64°	72°	66°	72°	58°	Calm	N.W.	,060	Nil.
25	29,7[illegible]3	59°	29,736	63°	6[illegible]°	60°	76°	70°	74°	58°	Calm	N.W.	,080	Nil.
26	29,852	60°	29,837	63°	68°	60°	73°	64°	73°	60°	N W.	N.W.	,060	Nil.
27	29,338	60°	29,907	62°	69°	60°	74°	62°	75°	52°	N.W.	S.W.	,070	Nil.
28	30,092	57°	30,020	60°	62°	52°	69°	60°	69°	56°	S.W.	S.W.	,040	Nil.
29	29,851	57°	29,739	58°	62°	55°	62°	60°	69°	47°	S W.	S.W.	,070	,288
30	29,762	55°	29,715	58°	57°	53°	65°	55°	65°	48°	S.W.	N.W.	,030	Nil.
31	29,692	54°	29,665	61°	61°	57°	67°	60°	69°	51°	N W.	N.W.	,090	Nil.
Mean	29,908	59°	29,867	61°7	66°6	60°2	73°5	65°6	75°4	55°4		Total. ..	2,200	2,340

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF FEBRUARY, 1848.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
					Nine, A.M.		Three, P.M.							
	Barometer	Attached Therm.	Barometer	Attached Therm.	Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	29,962	55°	29,960	62°	61°	55°	68°	60°	68°	55°	Calm	S.W.	,060	Nil.
2	30,031	60°	29,930	59°	67°	60°	66°	60°	67°	55°	Calm	N.W.	,060	Nil.
3	29,784	58°	29,685	61°	66°	62°	72°	62°	72°	45°	N.W.	N.W.	,100	Nil.
4	29,904	55°	29,889	60°	56°	50°	65°	56°	65°	46°	Calm	S.W.	,050	Nil.
5	30,122	55°	30,040	60°	60°	54°	69°	59°5	69°	50°	S.W.	N.W.	,070	Nil.
6	30,140	56°	30,100	61°	66°5	58°	86°	74°	66°	56°	S.W.	N.W.	,090	Nil.
7	30,160	58°	30,067	60°	66°	59°5	72°	64°	86°	60°	N.W.	N.W.	,080	Nil.
8	30,162	60°	30,061	64°	65°	60°	79°	68°	79°	55°	Calm	W.W.	,070	Nil.
9	30,096	59°	30,033	63°	68°	62°	83°	68°	83°	63°	Calm	N.W.	,080	Nil.
10	30,217	61°	30,207	65°	74°	67°	85°	72°	86°	63°	Calm	S.W.	,090	Nil.
11	30,428	62°	30,345	67°	72°	66°	85°	70°	86°	59°	Calm	N.W.	,090	Nil.
12	30,308	62°	30,157	67°	67°	60°	86°	72°	86°	60°	Calm	N.W.	,070	Nil.
13	30,012	62°	29,886	65°	69°	62°	86°	74°	88°	63°	Calm	N.W.	,090	Nil.
14	29,958	62°	29,846	65°	68°	62°	72°	68°	76°	66°	Calm	N.W.	,060	Nil.
15	29,678	62°	29,612	65°	68°	64°	72°	62°	73°	48°	N.W.	N.W.	,070	Nil.
16	29,842	57°	29,864	60°	61°	52°	66°	55°	66°	46°	S.W.	S.W.	,080	Nil.
17	30,188	55°	30,138	60°	59°	51°5	72°	61°	72°	50°	S.W.	N.W.	,060	Nil.
18	30,200	55°	30,126	60°	61°	55°	69°	62°	70°	58°	Calm	N.W.	,050	Nil.
19	30,120	57°	30,024	60°	62°	58°	73°	65°	73°	61°	Calm	N.W.	,040	Nil.
20	30,005	59°	29,944	62°	63°	60°	75°	66°	75°	60°	Calm	Calm	,050	} 48 hours
21	30,072	58°	30,084	59°	60°	57°	62°	60°	62°	52°	Calm	S.W.	,030	} ,727
22	30,242	55°	30,213	58°	59°	54°	64°	58°	65°	54°	S.W.	S.W.	,040	Nil.
23	30,254	55°	30,173	58°	58°	54°	61°	58°	64°	55°	S.W.	S.W.	,030	Nil.
24	30,103	56°	30,033	58°	64°	59°	67°	61°	63°	49°	S.W.	S.W.	,050	Nil.
25	29,984	55°	29,918	58°	61°	57°	70°	63°	70°	57°	S.W.	S.W.	,030	Nil.
26	30,034	57°	30,034	62°	67°	63°	73°	68°	77°	61°	S.W.	S.W.	,060	Nil.
27	30,185	58°	30,150	63°	64°	59°	74°	66°	74°	52°	S.W.	S.W.	,050	Nil.
28	30,270	56°	30,200	61°	62°	56°	71°	62°	71°	48°	S.W.	S.W.	,060	Nil.
29	30,265	50°	30,199	61°	62°	57°	74°	65°	75°	53°	S.W.	S.W.	,070	Nil.
Mean	30,090	57°7	30,031	61°5	63°9	58°2	73°1	64°1	74°1	55°1		Total...	1,830	,727

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF MARCH, 1848.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in Inches.	Rain fallen in inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine, A.M.		Three, P.M.							
					Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	30,162	56°	30,044	61°	61°	58°	72°	63°	72°	57°	Calm	N.W.	,050	Nil.
2	29,949	57°	29,805	68°	61°	59°	70°	67°	70°	55°	Calm	S.E.	,030	1,026
3	29,924	57°	30,000	60°	63°	58°	67°	60°	67°	50°	N.W.	N.W.	,040	Nil.
4	30,145	55°	30,105	60°	60°	55°	71°	64°	71°	57°	Calm	N.W.	,050	Nil.
5	30,268	58°	30,241	60°	64°	60°	68°	62°	69°	58°	Calm	N.W.	,040	,027
6	30,307	58°	30,242	60°	66°	61°	69°	63°	70°	54°	Calm	N.W.	,020	Nil.
7	30,160	56°	30,038	60°	63°	60°	71°	64°	71°	55°	Calm	S.W.	,060	Nil.
8	30,099	57°	30,088	61°	65°	58°	72°5	63°	73°	55°	S W	S.W.	,030	Nil.
9	30,293	57°	30,240	61°	63°	59°	74°	66°	74°	56°	S.W.	S.E.	,060	Nil.
10	30,233	57°	30,087	60°	63°	58°	68°	62°	69°	60°	S.E.	S W.	,030	Nil.
11	29,931	57°	29,789	60°	62°	60°	70°	67°	71°	62°	Calm	S.W.	,030	,099
12	29,632	60°	29,542	61°	68°	67°	69°	67°	70°	58°	Calm	Calm	,030	,456
13	29,738	57°	29,598	60°	59°	59°	68°	64°	68°	59°	Calm	Calm	,030	,042
14	29,502	59°	29,443	59°	65°	62°	62°	59°	63°	54°	N.W.	N.W.	,030	,144
15	29,893	56°	29,991	57°	61°	58°	60°	56°	61°	51°	S.W.	S.W.	,030	,192
16	30,062	53°	29,995	55°	54°	52°	58°	55°	59°	51°	Calm	Calm	,030	,132
17	29,964	54°	29,879	57°	55°5	54°	63°5	60°	65°	55°	N.W.	N.W.	,020	,003
18	29,838	56°	29,827	58°	65°	61°	65°	62°	69°	61°	N.W.	N.W.	,040	,036
19	29,827	57°	29,803	58°	61°	60°	65°	63°	65°	59°	N.W.	N.W.	,040	,024
20	29,858	57°	29,768	58°	61°	61°	65°5	63°	66°	52°	N.W.	N.W.	,010	,012
21	29,910	56°	29,241	57°	61°	56°	64°	57°	65°	45°	N.W.	N.W.	,060	Nil.
22	29,958	53°	29,831	56°	56°	54°	63°	57°	63°	50°	N.W.	N.W.	,040	Nil.
23	29,952	53°	29,977	58°	58°	55°	66°	60°	66°	55°	Calm	N.W.	,050	Nil.
24	30,000	55°	29,964	59°	63°	58°	70°	63°	70°	52°	Calm	N.W.	,060	Nil.
25	29,935	56°	29,821	59°	64°	59°	71°	65°	71°	58°	N.W.	N.W.	,070	Nil.
26	29,838	58°	29,880	60°	69°	62°	71°	66°	74°	52°	S.W.	N W.	,100	Nil.
27	29,731	55°	29,599	59°	60°	56°	68°	61°	68°	43°	N.W.	N.W.	,040	Nil.
28	29,837	53°	29,875	57°	58°	53°	64°	58°	64°	45°	N W.	N.W.	,050	Nil.
29	29,975	52°	29,942	56°	54°	50°	65°	60°	65°	52°	N.W.	N.W.	,020	Nil.
30	29,878	55°	29,768	56°	60°	58°	61°	60°	64°	55°	N.W.	N.W.	,030	,018
31	29,933	55°	29,939	57°	58°	55°	66°	60°	66°	49°	Calm	N.W.	,050	Nil.
Mean	29,959	55°9	29,905	57°9	61°3	57°9	67°	67°8	67°7	54°		Total...	1,270	2.211

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF APRIL, 1848.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine, A.M.		Three, P.M.							
					Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	29,987	55°	29,964	57°	62°	58°	68°	60°	69°	55°	N.W.	N.N.W	,020	Nil.
2	30,011	56°	29,935	58°	62°	58°	67°	63°	68°	55°	N.W.	N.W.	,020	Nil.
3	30,070	56°	30,125	57°	60°	58°	65°	60°	65°	47°	N.W.	S.W.	,050	Nil.
4	30,302	53°	30,233	56°	53°	50°	65°	60°	65°	52°	S.W.	N.W.	,030	Nil.
5	29,967	55°	29,833	57°	62°	59°	66°	61°	66°	58°	N.W.	N.W.	,020	,006
6	29,775	57°	29,737	58°	63°	58°	66°	60°	67°	48°	N.W.	N.W.	,040	Nil.
7	29,610	54°	29,532	55°	54°	52°	57°	50°	58°	45°	S W	Calm	,010	,120
8	29,923	52°	29,941	55°	54°	53°	65°	60°	68°	42°	Calm	N.W.	,020	Nil.
9	29,947	52°	29,867	55°	58°	56°	65°	60°	66°	53°	Calm	N.W.	,040	,096
10	29,860	55°	29,814	56°	62°	55°	64°	58°	65°	55°	Calm	N.W.	,030	,108
11	29,507	56°	29,511	55°	61°	58°	58° 5	52°	59°	44°	N.W.	N.W.	,050	,096
12	29,778	50°	29,794	52°	51°	47°	57°	50°	61°	50°	N.W.	N.W.	,040	Nil.
13	29,889	55°	29,923	56°	61°	57°	64°	58°	64°	53°	N.W.	N.W.	,030	Nil.
14	30,137	55°	30,090	56°	61° 5	58°	65°	60°	65°	55°	N.W.	N.W.	,030	Nil.
15	30,068	55°	29,957	56°	60°	58°	62°	59°	62°	44°	N.W.	N.W.	,030	,006
16	29,950	51°	29,958	53°	52°	47°	55°	48°	58°	34°	N.W.	S.W.	,040	Nil.
17	30,070	47°	30,020	52°	47°	43°	55°	50°	55°	46°	Calm	Calm	,040	Nil.
18	30,001	50°	29,952	53°	54°	52°	59° 5	55°	59° 5	53°	N.W.	N.W.	,020	,420
19	29,895	53°	29,960	55°	56° 5	56°	61°	55°	61°	40°	N.W.	S.W.	,020	Nil.
20	30,350	49°	30,389	53°	49° 5	46°	59°	54°	59°	38°	Calm	N.W.	,030	Nil.
21	30,478	47°	30,405	52°	47°	46°	61°	56°	61°	45°	N.W.	N.W.	,030	Nil.
22	30,347	49°	30,227	52°	47°	46°	63°	56°	65°	47°	Calm	S W.	,020	Nil.
23	30,073	54°	30,058	55°	65°	59°	65°	59°	65°	54°	N.W.	N.W.	,030	Nil.
24	30,009	54°	30,043	55°	60°	56°	60°	55°	60°	38°	N W.	S.W.	,040	Nil.
25	30,267	48°	30,196	52°	48° 5	46°	58°	51°	58°	45°	Calm	S.W.	,020	Nil.
26	30,137	52°	29,975	54°	57°	55°	65°	59°	67°	55°	Calm	S.W.	,020	Nil.
27	29,897	55°	29,909	56°	64°	60°	68°	62°	68°	52°	W.	S.W.	,050	Nil.
28	30,047	53°	29,977	56°	55° 5	54°	65°	60°	69°	52°	Calm	Calm	,020	Nil.
29	29,989	54°	29,955	56°	57°	56°	65°	60°	65°	53°	Calm	N.W.	,030	Nil.
30	30,032	53°	30,009	54°	55°	52°	60°	53°	60°	46°	S.W.	N.W.	,050	
Mean	30,012	52° 8	29,976	54° 9	56° 6	53° 6	62° 4	56° 8	63° 2	48° 4		Total...	,920	,852

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF MAY, 1848.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine, A.M.		Three, P.M.							
					Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 A.M.	3 P.M.		
1	30,043	50°	29,939	53°	50°	47°	58°	53°	58°	50°	Calm	S.W.	,015	,018
2	29,863	53°	29,831	55°	58°	57°	60°	58°	60°	49°5	Calm	S.W.	,020	Nil.
3	29,902	50°	29,976	53°	53°	50°	57°	53°	58°	48°	S.E.	Calm	,020	Nil.
4	29,949	52°	29,870	55°	58°	55°	63°	58°	63°	45°	N.W.	N.W.	,030	Nil.
5	30,059	50°	30,015	52°	49°5	48°	54°	52°	54°	49°	S.	Calm	,010	,540
6	29,882	51°	29,740	52°	50°	50°	55°	54°	55°	48°	S.W.	S.W.	,010	,636
7	29,628	51°	29,753	53°	53°	52°	59°	54°	60°	40°	S.W.	N.W.	,010	Nil.
8	30,049	47°	30,109	51°	46°	44°5	57°	52°	57°	37°	Calm	Calm	,030	Nil.
9	30,224	47°	30,148	50°	48°	45°	54°	49°	54°	41°	Calm	S.W.	,040	Nil.
10	29,981	48°	29,870	50°	48°	46°	53°	49°	53°	40°	S.W.	Calm	,020	Nil.
11	29,810	47°	29,762	50°	48°	45°	54°	50°	54°	42°	Calm	S.W.	,030	Nil.
12	29,880	47°	29,950	49°	48°	45°	49°	45°	49°	33°	Calm	S.W.	,040	Nil.
13	29,969	44°	30,897	47°	39°	38°	50°	46°	50°	37°	Calm	Calm	,010	Nil.
14	29,877	45°	29,748	48°	47°	41°	53°	50°	53°	42°	Calm	N.W.	,010	,834
15	29,500	48°	29,578	49°	49°	46°	50°	45°	50°	38°	N.W.	N.W.	,040	Nil.
16	29,827	45°	29,760	48°	41°	39°	49°	47°	52°	42°	Calm	N.W.	,010	,084
17	29,529	50°	29,433	49°	52°	50°	50°	48°	52°	34°	N.W.	N.W.	,005	,576
18	29,785	45°	29,798	47°	42°	40°	51°	47°	54°	40°	Calm	N.W.	,010	Nil.
19	29,763	46°	29,744	49°	43°	40°	54°	48°	54°	33°	Calm	N.W.	,010	Nil.
20	29,985	45°	29,969	47°	45°	42°	50°5	47°	50°5	35°	Calm	Calm	,005	Nil.
21	30,056	43°	30,014	47°	39°	38°	53°	50°	53°	39°	Calm	S.W.	,005	Nil.
22	29,917	47°	29,730	50°	52°	50°	55°	50°	55°	45°	W.	N.W.	,005	,768
23	29,660	50°	29,765	51°	53°	53°	55°	52°	56°	43°	N.W.	N.W.	,005	,210
24	30,021	49°	29,973	50°	49°	48°	54°	51°	54°	40°	Calm	N.W.	,010	,036
25	30,083	48°	30,090	49°	51°	49°	55°	51°	55°	33°	Calm	N.W.	,005	Nil.
26	30,091	43°	30,149	47°	37°	36°	50°	47°	50°	31°	Calm	S.W.	,005	Nil.
27	30,007	43°	29,714	47°	38°	36°	49°	48°	50°	38°	S.W.	S.W.	,002	,708
28	29,850	47°	29,833	48°	50°	47°	54°	53°	54°	49°	N.W.	N.W.	,005	,075
29	29,721	49°	29,581	49°	51°	49°	52°	47°	52°	46°	N.W.	N.W.	,008	,312
30	29,431	47°	29,405	46°	46°	44°	47°	44°	47°	45°	S.E.	S.E.	,010	,630
31	29,848	46°	29,987	46°	45°	43°	47°	42°	48°	30°	S.E.	S.E.	,005	Nil.
Mean	29,877	47°5	29,874	49°5	47°6	45°5	53°2	49°6	53°6	40°9		Total...	,440	5,427

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF JUNE, 1848.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine, A.M. Dry.	EXTERNAL THERMOMETER. Nine, A.M. Wet.	EXTERNAL THERMOMETER. Three, P.M. Dry.	EXTERNAL THERMOMETER. Three, P.M. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 A.M.	WINDS. 3 P.M.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	30,157	41°	30,145	47°	40°	38°	53°	48°	53°	40°	N.W.	S.E.	,020	Nil.
2	30,374	46°	30,347	47°	46°	40°	53°	48°	53°	33°	Calm	Calm	,010	Nil.
3	30,464	43°	30,389	45°	39°	38°	48°	46°	48°	39°	Calm	Calm		Nil.
4	30,310	45°	30,185	46°	44°	42°	52°	50°	52°	40°	Calm	N.W.	,020	Nil.
5	30,120	48°	30,040	49°	52°	50°	54°	52°	55°	33°	Calm	S.W.		Nil.
6	30,275	42°	30,245	45°	35°	33°	47°	45°	47°	33°	Calm	Calm	,020	Nil.
7	30,196	45°	30,052	52°	43°	42°	52°	48°	52°	43°	Calm	W.S.W		,300
8	29,744	48°	29,740	48°	49°	48°	51°	47°	52°	31°	N.W.	N.W.	,020	Nil.
9	29,978	44°	29,983	45°	34°	32°5	46°	42°	46°	34°	Calm	Calm		Nil.
10	30,108	42°	30,081	48°	39°	36°	46°	42°	46°	31°	Calm	S.W.	,040	Nil.
11	30,231	43°	30,177	46°	43°	41°	52°	47°	52°	31°	N.W.	N.W.		Nil.
12	30,260	41°	30,189	44°	34°	33°	47°	44°	49°	30°	Calm	Calm	,030	Nil.
13	30,165	41°	30,067	42°	35°	34°	46°	44°	46°	34°	Calm	Calm		Nil.
14	30,044	43°	29,991	44°	41°	40°	47°	43°	47°	38°	Calm	S.W.	,010	Nil.
15	29,981	43°	29,895	44°	41°	40°	46°	44°	46°	41°	N.W.	S.W		,168
16	29,825	45°	29,784	46°	44°	43°	51°	50°	51°	45°	Calm	S.W.	Nil.	,612
17	29,765	46°	29,768	48°	51°	50°	53°	51°	54°	38°	S.W.	S.W.		,048
18	29,939	45°	29,882	47°	41°	40°	51°	50°	53°5	41°	Calm	S.W.	,010	,468
19	29,848	49°	29,827	50°	53°5	50°	54°	53°	54°	47°	S.W	S.W.		,144
20	29,664	48°	29,609	51°	50°	48°	50°	49°	53°	43°	S.W.	S.W.	,020	,288
21	29,710	47°	29,875	45°	45°	44°	49°	45°	49°	35°	Calm	Calm		,006
22	30,002	42°	29,800	46°	36°	34°	51°5	50°	52°	35°	Calm	N.W.	,010	,156
23	30,156	43°	30,184	45°	42°	39°	47°	42°	47°	38°5	Calm	N.W.		Nil.
24	30,265	44°	30,210	47°	44°	41°	48°	44°	48°	41°	N.W.	N.W.	,040	Nil.
25	30,147	45°	30,066	47°	44°	42°	50°	48°	51°	42°	S.W.	S.W.		Nil.
26	30,105	45°	29,967	47°	43°	42°	50°	48°	50°	37°	Calm	N.W.	,010	,024
27	30,223	44°	30,229	45°	39°	37°	47°	45°	47°	38°	Calm	Calm		Nil.
28	30,510	44°	30,347	45°	40°	38°	50°	49°	50°	38°	Calm	Calm	,010	Nil.
29	30,275	44°	30,191	46°	39°	39°	51°5	49°	52°	39°	Calm	N.W.		,006
30	30,152	47°	30,090	48°	50°	50°	52°	50°	53°	38°	N.W.	N.W.	Nil.	,048
Mean	30,096	44°5	30,044	46°5	42°5	40°8	49°8	47°1	50°2	37°8		Total...	,270	2,268

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**** It is requested that all communications for the Tasmanian Society and Tasmanian Journal may be addressed to the Secretary,* Mr. RONALD C. GUNN, *Launceston, Tasmania.*

III.] JANUARY. [No. VI.

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JANUARY, 1849.

ART. XXXIII. *Some account of the country lying between Lake St. Clair and Macquarie Harbour.* By Mr. J. E. CALDER, Government Surveyor. Communicated by Lieut. KAY, R. N.

IN November, 1840, I left Hobart, accompanied by seven men, for the purpose of examining the tract of country lying between Lake St. Clair and Macquaric Harbour, and arrived at Marlborough on the 2nd December. At this site of a future township all further trace of a road to the westward ceases, (I speak of 1840), and I found it necessary, before moving my provisions forward to the lake, to mark and clear a track for this purpose. I reached St. Clair on the 8th December.

Lake St. Clair,* the source of the Derwent river, is a beautiful sheet of water; perhaps the finest in the island. It is nearly encompassed by high basaltic mountains; and as these dip

* First visited by the party under Mr. Surveyor General Frankland, in 1835. I have lost the notes I kept during the journey with him; so cannot fix the precise date of the visit, but it was between the 10th and 15th February. The Lake had been seen before by Mr. Sharland, from a distant hill.

beneath its surface with great steepness, we may infer that, ere the base of the great heights which stretch along either shore meet, the lake has acquired an amazing depth. In an excursion I once made upon it in a boat, I took all the fishing lines I could collect, which enabled me to make a sounding-line of twenty-one fathoms, without reaching the bottom. In rowing along its western shore, (at the base of Mount Olympus), I found this line of no use at 40 yards from the margin, so rapidly did its depth increase. The lake is singularly situated amongst mountains and forests, so that from no point of approach is the traveller made aware of its existence, till he finds himself placed nearly on the beach; and a person passing a little to the southward might easily miss it. Several handsome mountain streams flow into it, which escaping in one body from the lake, form the river Derwent. A few ducks and black corvorants, with now and then a pair or two of black swans, may be found here, but it is little resorted to by water fowl. The elevation of the lake is, according to Strzelecki, 3239 feet. Its length appeared to me about 8 miles, its breadth not more than one, except at the south end. Its distance from Hobart is about 106 miles.

The track to Macquarie Harbour crosses the Derwent about a mile below the point where it issues from the lake; the bridge being a large tree lying across the first rapid of the river. During the next fourteen miles, the road is generally bad, and impassable to any but foot travellers; the first two or three miles of this distance being extremely stony. The following seven are traced across a marshy country, also impracticable to any but pedestrians. Strips or patches of dry forest land occur in the swamp in many places, amongst which I in vain attempted to wind the road to keep on firm ground. These patches are often mere islands as it were, in the midst of a vast morass. The forest ground is sterile, and produces but little grass. The marshes are free from trees, very wet, their soil apparently good, and frequently intersected by small runs of water flowing through deep channels. Very little grass is to be met with in the country westward of the lake; and I fear the prevailing herbage will be found unfitted for pasture.

The plant* which predominates here, (as also on the vast plains of the south-western quarter of the island) grows in large tufts, and bears its seeds on a long thin stalk, in a small round head much resembling that of the onion, only not larger than a musket ball. This is mixed with rushes and low shrubs, common in fenny situations. Little that would afford sustenance to our domestic animals, is to be found here. Every thing is coarse and bitter. In travelling through the western and south-western districts, (especially the latter), if we are struck with the vast extent of open land we there discover, the level portion of which alone perhaps exceeds a million acres, our surprise is increased to find, that on so prodigious an extent of surface, there exists scarcely a bladc of grass, or a particle of useful herbage.

The first marshes west of Lake St. Clair, are not very inferior; and they have lately becn rented from the government by some gentlemen who send large flocks of sheep during the summer months to depasturc upon them.

Leaving these swamps the track winds up to the summit of a very high hill, not difficult of ascent from Lake St. Clair, but excessively so as mounted from the Macquarie Harbour, or western side. Its height is stated by Strzelecki at more than 4,000 feet above the sea, while the river which nearly touches it at its western base is given by him at about 2,100 feet, which proves the actual height of the hill, as ascended from the westward, to be nearly 1,900 feet. Desirous of bestowing on it a name which might convey an idea of its steepness, and the difficulty of climbing to its summit, I called it Fatigue Hill; preferring a descriptive, to a mere complimentary style of nomenclature. I observe it has since received, from Count Strzclecki, thc name of Mount Arrowsmith.

The herbage here is the same, or nearly so, as that of the country already described, and its eastern slopes are destitute of timber. The view from this eminence is most extensive, and very fine; limited to the westward by the peaks of the Frenchman's Cap, and to the northward by the Eldon range, and the black and boundless forest of that quarter. From this commanding site,

* This plant is the *Gymnoschœnus adustus, N. ab E.*—Ed.

the character of the western country may be well estimated. It is frequently open in the valleys, and on some of the secondary hills. On the mountain sides large forests are invariable. A wilder prospect than that seen from hence can scarcely be imagined; for in almost all directions, the landscape ends in groups of broken mountains. These generally form the back-ground—the last visible land of the picture. The greater portion of the surface lying between, is so thrown up into hills, as to impart to the country generally an appearance of wonderful irregularity of surface, which however presents on examination extensive levels: over some of these I traced the track to Macquarie Harbour.

Having descended the long slopes of Fatigue Hill, we landed at the bottom in a small plain, which Sir John Franklin afterwards named Wombat Glen. On a low wooded rise we found, in the last stages of decay, several articles which indicated that a party of runaway convicts from Macquarie Harbour, had, many years ago, passed this way. They were placed in the hollow of a fine old tree, which had been the means of preventing their entire destruction. They consisted of an old yellow jacket, a pea jacket, a blanket, and a pair of boots; and on searching about we found a large gimblet, a hammer, and a broken iron pot. Several trees had been marked. Having passed this plain, the road enters a deep myrtle* forest, in which it continues for three miles. In this forest we first met the Franklin River, a large and rapid stream, of which I shall again have occasion to speak. For the present I contrived to avoid crossing it with the track I was marking out, but was not so fortunate as to escape this necessity, when I had got 40 miles nearer Macquarie Harbour. But here our track necessarily passes another stream, which I most unexpectedly encountered, and to which I therefore gave the name of the Surprise. It is not large or rapid, and is easily crossed by trees lying over it; it joins the Franklin. The soil of this forest is light, but good. Emerging from it, we enter a narrow plain about a mile and a half long, called Painter's Plain. Its general

* The *Myrtle* tree spoken of by Mr. Calder, throughout this article, is the *Fagus Cunninghami*.—Ed.

character may be given in the words,—poor, wet, and unsound. The herbage is as usual with that of the open land of this quarter, mixed with tea-tree.*

In the midst of this plain we found two natives' huts, very recently abandoned, a circumstance which was indicated by several portions of Kangaroo flesh, which were found here, being still only half decayed. The huts were made of bark, and at the time when we fell in with them, were sufficiently compact to afford good shelter. On the bark that covered them, were some extraordinary charcoal drawings; one representing two men spearing an animal, which from its erect posture was, I presume, meant for a kangaroo; though the artist, by a strange oversight, had forgotten the animal's tail, and had made the fore legs about twice as long as the hinder ones. There was also an outline of a dog, and an emu, really not badly done; and some other designs, the exact meaning of which I was not able to make out. I left these rude specimens of the arts to the mercy of the elements, which I afterwards found had respected them less than I had done, for on a visit some months after, I found the rude wig-wams of these last of the aborigines of Tasmania were blown down, and the sketches obliterated.

From Painter's Plain we again entered another myrtle forest, about a mile wide, on a moderate hill. The road then passes over the largest and most important plain between the River Derwent and Macquarie Harbour. I at first called it the Valley of the Frenchman, from its proximity to the Frenchman's Cap mountain; but I afterwards named it the Valley of the Loddon, from the beautiful river that drains it. This is formed by three streams, each 12 or 15 yards wide. It flows over a gravelly bottom, with very moderate velocity, and finally enters the Franklin. Unlike the majority of our rivers, it is not a brawling mountain torrent, dashing over cataracts and waterfalls, but has all the gentleness of the course of an English stream. I called it the Loddon from a fancied similarity to that stream. On its banks there is a little good land; a narrow strip on either branch, in all not much more

* *Leptospernum Sericeum.*—Ed.

than a square mile; which is mostly covered with a grove of handsome myrtle trees. A few acres of grass are also found here. This is all the passable land in the valley, which extends over a surface of several thousand acres. The western portion is level, as far as the base of the Frenchman's Cap; the eastern swells into steep, but not high sand-hills. The soil of this valley (with the exception previously noticed), is indifferent, alternating between a grey sand and a white gravel; the latter composed of pebbles of quartz. It is wet and often unsound. I may here notice that in crossing some low hills that lie at the southern or western (I cannot now recollect bearings very correctly) extremity of the plain, we were led into another open valley of considerable extent, which I called Pine-tree Valley. The track to Macquarie Harbour does not lead near it, nor is it seen from any part of it, and I merely mention it now to record its existence. In crossing from the Valley of the Loddon to Pine-tree Valley, I had further evidence of the existence of natives, for in passing across the low hills which divide the valleys, I found an excellent spear, which I afterwards left with Mr. Clark, of Marlborough.

Quitting the valley of the Loddon, and taking the route for Macquarie Harbour, the surface, for nine out of the next fourteen miles, is extremely rugged, and particularly unfavourable for travelling. Indeed Macquarie Harbour is a very unapproachable place from the land, travel to it as we may. The mountain range of the Frenchman's Cap, lying in the way, and shooting out its great spurs in every direction, leaving little choice as to the direction of a road. In whatever way we attempt to reach the harbour, in any thing like a direct manner, we are met by some inferior arm of this mountain mass, to scale which is inevitable. High, steep, and difficult of passage, are the hills which lie on the line for about five miles after leaving the valley of the Loddon, and they are covered with a very heavy forest, often a dense and scarcely pervious jungle. These heights constitute a great limb of the Frenchman's Cap, and which crossed, we descended into an open valley of several miles in length. This I called Lachlan Plain. It lies in a south-westerly direction, and is extremely barren, exceeding in this respect every thing we had passed. The soil of the valley is a coarse grey sand and gravel, the latter largely preponderating. The herbage it produces, is that usual on the plains of the western districts. It is traversed by several brooks which come down from the Frenchman's Cap, and united, form a considerable stream, called by Lady Franklin the Henslowe. There is a remarkable over-hanging rock in the valley named Christmas Rock, as here myself and five men passed Christmas day, 1840. Eight or ten persons may find comfortable accommodation in this lodging house.

On the night of the 24th December, 1840, a fearful storm of lightning occurred here. It was for a long time unaccompanied by either rain or thunder; and the flashes, which succeeded each other at very short intervals, were singularly vivid; showing plainly at each recurrence, the rugged outline of the wild landscape around us. As we were watching the storm from our rocky fortress, we witnessed a most unusual occurrence. The recent hot weather had parched the herbage of the plain to perfect dryness, and a flash, more tremendous than any that had preceded, suddenly set it in a blaze. We were beginning to be a little alarmed for the security of our position in the tenement we occupied, which was surrounded by dry herbage, mixed largely with dry brushwood, but were shortly afterwards relieved from our apprehensions by a copious shower of rain extinguishing the fire.

I shall not be considered to digress, when I mention that I had completed a passable track as far as the top of the ridge of the Frenchman's Cap, in all about 50 miles from Marlborough, where I first commenced work, when I received a summons, recalling me to Hobart. I did not return to the western districts until the next season.

At the close of 1841, I was sent to complete the track to Macquarie Harbour, and had cut it three miles beyond the Franklin, (about 75 from Marlborough), when, my provisions beginning to fail me, I returned to Hobart. I proceeded again directly, with large supplies and two men by water, to Macquarie

Harbour, in the *Breeze* schooner of 29 tons. Having arrived there I started over land, and after three days hard travelling, from the point where the Franklin River unites with the Gordon, (the whole distance being through a vile scrub) I joined my men, and in a short time cut a track to a navigable point of the Gordon, about 10 miles above its confluence with Macquarie Harbour. The *Breeze* was moored at the termination of the path, and on the 21st April following, Sir John and Lady Franklin, and party, reached her, after a tedious and most fatiguing journey, made on foot, during a succession of storms, very adverse to bush travelling.

To return to my description of the country beyond Lachlan Plain. A wide tract, occupied by high, clear, and barren hills, immediately succeeds. I was desirous of continuing my route to Macquarie Harbour, by taking a W.S.W. direction across these eminences; but this idea I was constrained to abandon, by the peculiar difficulties of this abrupt country. I tried to lead the road across at several points, but was thwarted by the intervention of a tremendous ravine. I called these hills collectively Deception Range, from the frequency with which I was foiled, or deceived in my attempts to lead the path across them. This locality presents no other view but that of a sterile wilderness, and scenes of frightful desolation. The great ravine, which bounds Deception Range to the westward, is very deep; I dare say 2000 feet; is far too steep for travelling, and not to be crossed without excessive fatigue and risk. In a fit of desperation to reach Macquarie Harbour, instead of the Gordon, at a navigable part, I twice got to the bottom of this hideous defile, but was at last forced to relinquish the idea of a direct course, and to retrace my steps to Lachlan Plain; utterly disgusted with the adventure. A large and furious torrent flows through it, which, collecting all the water that falls on a wide extent of mountainous country, emerges from the glen a large and beautiful river. I called it the Franklin.

Finding no point at which Deception Range could be crossed without extraordinary difficulty, I was obliged to content myself with terminating my labours at some navigable point of the Gordon. With this intention I turned to the southward from

Lachlan Plains, through a valley filled with heavy myrtle forests, and mixed with the closest jungles of sassafras,* blackwood,† fern‡ trees, &c., &c. So close is the underwood of the western forests that my party never on an average cut more than a third of a mile a day through it; and, even then, nothing but a mere foot track was opened; but it must be stated that we were greatly impeded by the difficult task of carrying forward provisions from our depôt at Lake St. Clair, now 40 miles distant; a task which fell wholly on ourselves, the swampy and scrubby country west of the Lake rendering it unfit for horses. Another obstacle to our progress, was the tempestuous weather we experienced in this quarter, even in the middle of summer, (December 1841, January 1842). The first 6 miles of the track, after quitting Lachlan Plain, passes through a dark and densely wooded glen, to which my men gave the not inapt name of Glow-worm Forest, from the multitude of sparkling lights emitted, either from luminous fungi, or putrescent substances, an appearance I have frequently observed elsewhere in similar situations, and which was now mistaken for glow-worms. Nothing can be worse to the traveller than this part of the track. It is always unpleasant, sometimes precipitous, and the surface generally muddy—at least after rains, which in this stormy quarter are very frequent, the country appearing to enjoy something like an immunity from drought. After travelling for about a couple of miles through this forest, the steep and gigantic hills which hitherto encompassed Lachlan Plain, close in on either hand, and meet, leaving no level surface in the valley; and the handsome stream which flows in this Tartarean hollow, which I called the Acheron, often occupies the entire bottom. At the point where the bases of these great eminences meet, the bed of the rivulet suddenly sinks, and the water pours over a precipice of some twenty feet, forming a beautiful cascade, to which Lady Franklin gave the name of Bagota. This is a very interesting spot, and the most apathetic traveller would scarce refrain from stopping here to gaze at the picturesque, but circumscribed scenery. I was at first rather puzzled how to get the track

* Atherosperma moschata. † Acacia melanoxylon. ‡ Dicksonia antarctica, Labill.—Ed.

past this waterfall, as it monopolizes the entire bottom of the valley —the hills on either hand rising with great acclivity. I however managed it by a rude flight of stairs, formed of the trunks of fern-trees, which I contrived to fasten to the steep slope of the hill with stakes. The Acheron has to be frequently crossed on temporary bridges in this forest. After a course of about twenty miles, during which it becomes a good sized stream, it enters the Franklin.

Proceeding through Glow-worm Forest, it was found at one place altogether impracticable to continue in the bottom of the valley. To lead the track along the steep hill-sides, which slope down to the Acheron, became therefore inevitable; and it was necessary for the security of those travelling this part of it, to fix stout hand-rails on the lower side of the path, for a distance of a quarter of a mile. A long and very steep ascent, has to be mounted ere escaping the defile of the Acheron.

Emerging from this ravine, we crossed a miserable plain of about 1,500 acres, composed of the very poorest of grey sands, largely mixed with quartz gravel, and producing neither a blade of grass, nor a particle of useful herbage. It is encompassed by bare white-looking hills of unsurpassed sterility, from which circumstance it was called the White Hill Plain. Our route for the next two miles led across this worthless tract, the last part of which brought us to the summit of a clear hill, overlooking, in the direction of Macquarie Harbour, a vast extent of black forest land; the monotony of which is unrelieved by either the bold or fine scenery, which in Van Diemen's Land so often presents itself, even where the general character of the landscape is uninteresting. At this point the picture is inconceivably forbidding and gloomy.

Leaving the White Hill plain, we entered an immense forest which stretches to the coast, presenting, only occasionally, small and most unfertile open spaces. The principal timber of this quarter is the myrtle, which in the western districts seldom indicates good land. The soil producing them is sometimes tolerable, but by no means usually so; while that of all the plains, west of Fatigue Hill, is invariably poor, except a small plot on the Loddon river. I called the great forest, which extends from hence to Macquarie Harbour, the Black Forest, from its sombre appearance as seen from the clear hill at the end of the White Hill plain. A steep and long descent has to be encountered when entering it, at the base of which is an insignificant plain, which is speedily traversed, and we again found ourselves amongst myrtles, growing closely together, and the spaces between them filled with a scarcely pervious thicket. A walk of four or five miles further, over a series of low undulations, brought us to the bank of the Franklin river, where we had to cross it. This is a beautiful stream, of considerable width, depth, and rapidity. Its banks are mostly high, and often perpendicular, overhung with handsome myrtles, and many fine pines;* the branches of the latter (like those of the willow) often drooping to its surface in a manner which much contributes to the beauty of the stream. Some large gum (*eucalyptus*) trees, which are rather unusual in the western districts, are found about here. This spot is about fifty-two miles from Lake St. Clair.

There is nothing in the journey to Macquarie Harbour, which at first induces so much surprise, as the vast height at which the drift-wood of this river is observed to be lodged in the trees on the banks: viz. at least 30 or 40 feet above its summer level. The great height to which the Franklin rises, is, however, to be accounted for from the fact that it drains a very mountainous region, doubtless often deeply covered with snow; which being quickly melted during the rapid alternations of temperature, so common in Van Diemen's Land, a vast volume of water is suddenly poured into its channel; it is difficult to believe that any storms of rain, however long continued, could so greatly swell the river. Nothing but a winter's accumulation of snow, hastily converted to water, by a sudden change of temperature, could produce this effect.

Another very remarkable feature in this river is, the extraordinary contraction of width it undergoes, exactly where it falls into the Gordon. At that place it appears less in magnitude, than at

* *Dacrydium Franklinii*, Hook.; or Huon Pine of the Colonists.—Ed.

the foot of Fatigue Hill,—60 miles inland, perhaps 100 following its sinuosities.

I regarded the discovery of pine trees here as most fortunate, as they greatly contributed to the further success of my labours, and to the after journey of Sir John Franklin's party. This is one of those rivers which, from its large volume of water, and the slippery nature of the bottom, are seldom to be forded. To secure therefore its easy passage, we constructed a large pine raft, on which we crossed at pleasure. Whatever inconveniences we had to contend with, and they were neither few nor slight, when cutting our way through these remote and dense forests, we were never stopped by rivers, which would have been the case had there been no pine trees, the only floating timber the woods of this quarter of the island furnish; the dead trees of these sunless jungles being always water-logged, and the green wood sinking like a stone.

Shortly after passing over this stream, the road is led up another of those huge hills so frequent on the route to the western coast; passing at the same time through three weary miles of forest land. We then crossed the last open space or plain which occurs on the journey, from which circumstance I called it the Western Plain. Its extent is inconsiderable; its quality worthless. From this high and barren field, as we look back, we descry, far inland, the Prince of Wales' Mountains, so named by Sir John Franklin on the occasion of his crossing this place. The long well-defined and serried outline of these beautiful mountains, constitute for many miles, the last visible land of the quarter they are in; and in beauty or grandeur are not exceeded by anything that even the western portions of Van Diemen's Land present. Lady Franklin gave the name of the Cracrofts to some high woody peaks near at hand, and on the right.

It is here necessary that I should state that, for the next three quarters of a mile, after quitting the western plain, the path was never cleared; and should any person make the journey by the route I marked, it will behove him, when he arrives here, to proceed with the utmost caution, and not to fancy that in so short a distance he cannot lose himself, for he may depend upon it that nothing is more easy, and even probable, in these bewildering jungles, which are often most baffling even to experienced bush-travellers. The uncut portion is a most desperate tea-tree scrub; and should the traveller go astray here, the chances are against his recovering his way. It was while I was engaged in clearing this piece, that I received a hasty note from Sir John Franklin's Aid-de-Camp, directing me to return immediately to Lake St. Clair with my party, to accompany His Excellency on his journey across the country described in this paper. Beyond this place, the track was again well opened to the Gordon; a further distance of about 9 miles, (in all about 66 from Lake St. Clair). It is a very hilly tract, of little value, covered with a myrtle forest, and a close thicket. The path we cut from Marlborough, terminates at a navigable point of one of the largest and most beautiful of the Tasmanian rivers, the Gordon, about ten miles above the point where it is received by that great estuary, Macquarie Harbour.

During my many wanderings across the western districts, I remarked with no little surprise, that I scarcely ever saw any animals, and very few birds, in all the wide extent of country described in this paper. For about 32 weeks I was constantly travelling backwards and forwards,—to the right and the left, and I believe that during all this time, neither myself nor any of the men, saw ten kangaroos, or a greater number of wombats. It is true I never sought for them, as I kept no dogs. There are native cats* in the woods—or, at least, our provisions often suffered from some such marauders. I never met with any ducks, quail, snipe, or swans, west of the Derwent; nor many parrots or crows, and very few pigeons,—perhaps two or three of the latter in all. We saw more black snakes than any thing else, and it is to be observed that here, as elsewhere where they live undisturbed, they are far from being timid.

I make no pretensions to a knowledge of botany, so I shall not

* *Dasyurus viverrinus*, Geoff.—Ed.

affect to describe the trees and shrubs of these districts generally. But I cannot help noticing the cabbage palm,* a handsome shrub, pre-eminent for beauty and elegance, and common to every jungle, from those of Mount Olympus to Macquarie Harbour. The *Blandfordia*† is also common.

According to Mr. Frankland's chart of Van Diemen's Land,—indisputably the best yet compiled,—the distance between the two points (Marlborough and Macquarie Harbour) is, in a direct line, about 52 miles. To me this has been always unaccountable. By the circuitous track that I marked, the distance is at least between 80 and 90 miles, (the latter rather than the former). I am willing to admit that it is by no means direct, but even after making reasonable allowances, and large deductions, I must express my belief, that a person travelling direct from Marlborough, would not reach Macquarie Harbour in 52 miles. It appears to me that Van Diemen's Land extends somewhat further to the west than the charts lead us to suppose; in other words, that it is a larger island than it is represented to be. When I went round to Macquarie Harbour by water, I amused myself with taking the bearings of various points on the south coast; and though I possess no memoranda of the observations I then made, (not having recorded them) I well recollect that they all tended to confirm the belief that the west coast is (at any rate in some parts) incorrectly represented.

To question the accuracy of the work of such a surveyor as Flinders, would be presumptuous; did we not know that his surveys of the west coast of V. D. Land were (from some cause which I now forget) very hastily made. That they were made under circumstances unfavourable to correct observation, must be apparent from the fact, that he passed Port Davey without seeing it. That Flinders should have overlooked Macquarie Harbour, is not so much to be wondered at, as the entrance is extremely

* *Richea pandanifolia* Hook. fil. is the plant here alluded to. A figure of it is given at page 72 of the present vol. *Tasmanian Journal.*—Ed.

† *B. grandiflora.*—Ed.

narrow; but this is not the case with Port Davey, which is one of our largest harbours.

[The observations of Lieutenant Kay, R.N., written to accompany this paper, have already appeared at page 389 of this volume of the journal, to which we refer.—Ed. *Tasm. Journal.*]

Art. XXXIV. *On the Fossil Botany and Zoology of the Rocks associated with the Coal of Australia.* By Frederick M'Coy, M.G.S. & N.H.S.D. &c.

[*From the Annals and Magazine of Natural History, No.* 132, *September,* 1847.]

The following paper has been drawn up from an examination of specimens collected by the Rev. W. B. Clark and sent to the Rev. Prof. Sedgwick, who kindly allowed the writer to make this use of them.

The species will be first noticed, and the new forms described, after which some observations will be offered on the relative ages of the Australian coal-fields, from a comparison of their organic remains with each other, and with those of other countries; premising that the extent of our materials enables this to be attempted in a more extended and precise manner than heretofore, and that several of the new forms described are calculated to throw much light on the fossils of our own country.

In this first part of my paper I wish to express my obligations to the Rev. Prof. Henslow and Mr. Babington for the kindness with which they allowed me the use of their herbaria on all occasions when I found it necessary to work out for myself points of structure in recent plants, neglected by botanists and omitted in their works, but which are of the highest importance in the investigation of fossil plants. To the facilities afforded by the former for my examination of the New Holland plants growing in the houses of the Cambridge Botanic Garden, I am mainly indebted for the maturing my views of the affinities of the genus *Phyllotheca*.

PLANTÆ.

Class Acrogens. *(Al. Lycopodales.)*

Ord. Marsileaceæ (?).

Vertebraria (Royle).

This genus has been proposed by Prof. Royle in his "Illustrations of the Botany of the Himalaya Mountains" for two species of fossil plants from the supposed oolitic coal-field of Burdwan, but without any description or definition. Similar bodies are not uncommon in the shales and clays of the Australian coal-fields; but although the genus is noticed by Unger in his "Conspectus Floræ Primordialis," and Mr. Morris has noticed its occurrence in this district, no botanist has as yet given any descriptive account either of the genus or species; and so obscure are the relations to other forms, that doubts have even arisen as to what part of the plant the radiated cylindrical fossils might be supposed to represent, and how its parts should be named. A distinguished botanist has suggested to me that the cylindrical fossil might be considered a stem, the axis being the pith, the radiating divisional lines the medulary rays, and the intervening cuneiform masses the wedges of wood. I have carefully considered this opinion, but find it impossible to adopt it, from the ease with which the transverse fractures take place, and the perfection of the surfaces produced, as it is obvious that such numerous and perfect divisional planes, as we observe at right angles to the axis, would be incompatible with the above view. On the whole, after a careful study of the specimens at my disposal, I feel disposed to view the genus as closely allied to *Sphenophyllum*, in which we have a jointed stem surrounded by verticillate whorls of from six to twelve wedge-shaped leaves with dichotomous veins; and in this light *Vertebraria* becomes intelligible, for I have clearly ascertained the existence of the dichotomous neuration on each of the wedge-shaped divisions of the transverse planes, which will, according to this view, represent the surface of a whorl of verticillate leaves, and we may consider therefore the main difference between *Sphenophyllum* and *Vertebraria* to consist in the greater approximation of the whorls of leaves in the latter, the internodes being so very short that the whorls of leaves are brought in contact, or nearly so. I might therefore provisionally characterise the genus as follows :—

Gen. Char. Stem slender, surrounded by densely aggregated whorls of verticillate, cuneiform leaves, having a dichotomous neuration.

To the above we might add, that the number of leaves in a whorl depends on the species, and that from the whorls being so close as nearly to touch each other, the fossils have the appearance of lengthened cylinders, breaking readily in a horizontal and vertical direction—the former coinciding with the surfaces of the leaves, the latter coinciding with the vertical prolongations of the lines separating the leaves of each whorl—the former producible in indefinite number at distances of about a line from each other, the latter having only a small definite number depending on the number of leaves in a whorl. The leaves themselves are flat, rather thick, dilated at the tip in such proportion that there is no space left between the edges of the adjacent leaves.

It is very possible that together with *Sphenophyllum* these may have been freshwater aquatic plants allied to the recent *Marsilea*, in which we see a quaternary arrangement of cuneiform leaves with dichotomous veins, but the affinity is not very strong. The Australian species seems distinct from either of those occurring in the Indian beds, by the smaller number of leaves in the whorl, which is perfectly constant in all the examples I have seen. I would propose to name and characterise our species as follows :—

Vertebraria australis (M'Coy).

Sp. Char. Leaves constantly eight in each whorl.

The fragments are of various lengths, but with a pretty uniform diameter of about seven lines. The radiating dichotomous veins are never strongly marked, apparently from the original softness of the texture of the leaf; in many cases we observe between them an obsolete concentric plication, probably from the same cause, and which may explain the nature of certain vertical striæ visible on the perpendicular fracture, crossing the horizontal lines which mark the edges of the leaves.

This species is abundant in the whitish shales and clays of Mulubimba, N. S. Wales.

(*Al. Filices.*)

Ord. Gleicheniaceæ.

Gleichenites odontopteroides (Mor.) sp.

Syn. *Pecopteris odontopteroides* (Mor.) in Strzelecki's N.S. Wales.

Having obtained a finely preserved frond of this plant distinctly forked in the manner of *Gleichenia*, I have removed it from *Pecopteris*, in which it was placed by Mr. Morris, and transferred it to the order *Gleicheniaceæ* without hesitation; and taking the verbal characters of Göppert's genus *Gleichenites*—" Frons dichotoma pinnata. Fructificatio hucusque ignota,"—I think there can be no objection to placing it in that genus, although very distinct from his two species *G. artemisiæfolius* and *G. critmifolius*. I might also suggest its relation to the Lias and Keuper genus *Heptacarpus*, with some of the German species of which it generically coincides.

In the sandstone of Clark's Hill, N. S. Wales.

Ord. Neuropterides.

Odontopteris microphylla (M'Coy).

Sp. Char. Bipinnate; pinnæ alternate, oblique, narrow, about three lines wide and two inches long; pinnules alternate, oblique, slightly connate at the base, obtusely elliptical, their length only equalling the width of their base; no midrib, secondary neuration indistinct.

The only *Odontopteris* approaching this elegant species by its alternate pinnæ and very short connected pinnules is the *O. Schlotheimii* (Br.), from which it is distinguished by the smaller size, much narrower and more oblique pinnæ, and by the pinnules being proportionally smaller and elliptical instead of broadly rounded. The latter character also separates it from the so-called *Pecopteris Desnoyersii* (Br.) of the 'Oolithe à Fougères' of Mamers, Sarthe.

Common in the fine sandstone of Clark's Hill, N. S. Wales.

Otopteris, Lind. and Hut.

With Messrs. Lindley and Hutton I use this term for those pinnated plants, the leaves of which agree with *Cyclopteris* in their neuration. Some of these forms were originally described by Lindley and Hutton (Fossil Flora) as *Cyclopteris,* under the impression that the rachis was a rhizoma; Brongniart (Prodrome and Hist. des. Végétaux Foss.) gives several of them as *Neuropteris,* apparently neglecting the important character of want of midrib. Göppert confounds both the simple and compound fronds in his *Adiantites* (Syst. Fil. Foss. in Nova Acta Acad. Cæs. Leop. Cur. Nat.) and Unger does the same under the head *Cyclopteris* (Chloris Protogæa). I have however thought it desirable to use the term for the pinnate species for which it was proposed, and thus retain *Cyclopteris* for the simple, entire fronds, in accordance with the original view of Brongniart.

Otopteris ovata (M'Coy).

Sp. Char. Frond pinnate; rachis very thick, slightly flexuous; leaflets little longer than wide, ovate, pointed; upper lobe of the base nearly twice the size of the under, the contracted, thickened base set obliquely on the rachis; veins fine, divaricating, very frequently dichotomizing, nearly equal, but fasciculated at the base.

The fasciculation of the nerves at the base resembles that of the *Cyclopteris flabellata.* The regular, short, semi-elliptical form of the leaflets distinguishes this from the other species of the genus. The average length of the leaflets in the examples I have seen is about 8 lines, width 7 lines, width of rachis 1½ line. Occurs in the hard siliceous flags of Arowa, N. S. Wales.

Cyclopteris angustifolia (M'Coy).

Sp. Char. Leaf linear, lanceolate, eight or nine times longer than wide; sides straight, nearly parallel, pointed above, contracted to a lengthened petiole below; nerves equal, those of the middle third of the frond nearly parallel, straight, rather closer than those of the sides, which gradually divaricate towards the margin at a very acute angle; all the nerves dichotomise at irregular intervals, and those of the sides occasionally anastomose and are connected by a few transverse bars.

In this curious plant we have, as it were, a connecting link between the genera *Cyclopteris* and *Glossopteris*, for although the specimen I have drawn only exhibits the middle portion of the frond, yet I have ascertained that the form is precisely that of a narrow *Glossopteris*, being elliptical or pointed at the apex, and tapering gradually to a lengthened petiole at the base, and still further agreeing in the occasional anastomosing of the lateral veins, and their being connected, though rarely, by transverse bars; yet it is impossible to refer it to that genus from the want of the strong, characteristic midrib, the place of which is occupied by numerous dichotomous nerves of nearly the same thickness as those of the sides; I am therefore obliged to refer it to *Cyclopteris* from a consideration of its more important characters, although differing remarkably in form from the other species of the genus as above restricted. The portion figured, of the middle of a frond, measuring 3½ inches in length, and 9 lines wide at the base, only tapers 2 lines.

This species seems common in the gray shale of Guntawang, Mudgee, N. S. Wales.

Ord. Sphenopterides.

Sphenopteris lobifolia (Mor.)

Common in dark brown shale, Mulubimba, N. S. Wales.

Sphenopteris alata (Br.) sp.

Of large size in the fine gray sandstone of Mulubimba, N. S. W.

Sphenopteris hastata (M'Coy).

Sp. Char. Bipinnate; pinnæ long, acutely lanceolate, with a broad alate margin; pinnules elliptical, obscurely undulato-dentate, having three obsolete lobes on each side; nerves bipinnate, two branches reaching each lobe of the margin.

The lengthened oval form, slightly indented margin, and simple neuration of the pinnules fully distinguished this from any published species of the genus. The average length of the pinnæ is about 1½ inch, width 4 lines, average length of leaflets 3 lines.

Not uncommon in the shale of Mulubimba, N. S. Wales.

Sphenopteris germanus (M'Coy).

Sp. Char. Bipinnate; pinnæ oblique, alternate elongate, ovate, with a narrow membranous margin; pinnules oval, deeply pinnatifid; lobes very oblique, elliptical, generally three on each side, and the apex of the pinnules three-lobed; nerves bipinnate, three branches reaching the margin of each lobe.

It is extremely difficult to distinguish this species from the *Pecopteris Murrayana* of the Yorkshire oolitic coal-fields, with which it is nearly identical in form and neuration. The oval outline of the pinnules is the most obvious character, contrasting with the trigonal, wide-based leaflets of the English plant; this, together with their more oblique setting on the rachis, more oblique, narrow and deeply-cleft lobes, and the decurrent, narrow, alate margin to the straight rachis, will I think be sufficient to distinguish the species.

In the shale of Mulubimba, N. S. Wales.

Sphenopteris plumosa (M'Coy).

Sp. Char. Bipinnate; pinnæ curved, elongate, narrow, plumose, with a scarcely alate margin to the rachis; pinnules close, oblique, ovate, pointed, deeply cleft into about four oblique mucronate lobes on each side, exclusive of the largely trilobed apex; nerves strong, much-branched, so that about six branches reach the margin of each of the lobes of the lower side, and seven to each of those of the upper margin.

The number of lobes of the leaflets and complexity of the neuration will readily distinguish this species. The average length of the leaflets 5 lines.

Rare in the shale of Mulubimba, N. S. Wales.

Sphenopteris flexuosa (M'Coy).

Sp. Char. Bipinnate; pinnæ very long, with a strongly flexuous naked rachis; pinnules large, moderately oblique, unequal, ovate, sides cut into two very large obtusely rounded lobes on each side, apex trilobed; nerves strong, much-branched, seven branches reaching the margin of each lateral lobe, and three going into each of the three lobes of the apex.

This strongly-marked species is not sufficiently allied to any published form to render a comparison necessary. The average length of the leaflets is about 8 lines, width 4 lines.

In a brown bed of clay, Mulubimba, N. S. Wales.

Ord. Pecopterides.

Glossopteris Browniana (Br.).

I think I recognise both the Indian and Australian forms of this species (vars. *a.* and *b.* of Brongniart) in nearly equal abundance among the specimens examined, and some of the fronds are of a size far exceeding any hitherto published, some of them being six inches wide, which in the proportion of the small, perfect examples would indicate a frond of more than two feet in length. I believe I have ascertained the rhizoma of this species, which is furnished with ovate, clasping (or at least very convex) subcarinate scales, having a divaricating reticulated neuration, resembling that of the perfect frond, but much less strongly marked; these scales are of a large size, some of them being nearly an inch in length, and terminating at the apex in a long flat linear appendage, about one line in width, which occasionally gives off small, lateral, flat, membranous branches nearly at right angles; the whole perfectly resembling (except in size) the rhizomal scales of *Acrostichium*, *Laromanes* and *Hymenodium*, as figured by M. A. Fée in his beautiful "Mémoire sur la Fam. des Fougères," and when combined with the great similarity in form, habit, and neuration, would warrant us in presuming a strong affinity to exist between these genera.

Abundant in the soft reddish shales of Jerry's Plains, and also in the black shales and white clay beds of Mulubimba, N. S. W.

Glossopteris linearis (M'Coy).

Sp. Char. Leaves very long, narrow, with nearly parallel sides; midrib very large; secondary veins fine, forming an angle of about 50° with the midrib, anastomosing occasionally from the midrib to the margin.

It is only with the *Glossopteris angustifolia* (Br.) from the Indian coal-fields of Rana-Gunge, near Rajemahl, that this long, parallel-sided frond could be confounded, and it is distinguished easily from that species by the fineness of the neuration, which is as remarkably delicate as that of the other is coarse; the neuration of the *G. angustifolia* is also distinguished by its great obliquity, forming an angle of about 30° with the midrib, while the nerving of the present species is not more oblique than that of the *G. Browniana* or *G. Nilsoniana*. In this species also, from the anastomosing being continued up to the margin, it results that the nerves are little closer at the margin than at the middle of the leaf, while in the *G. angustifolia* the anastomosing is confined to the central portion, and the dichotomising goes on to the margin, where in consequence the neuration is finer and closer than towards the midrib. None of the specimens are perfect at the extremities, the largest being three inches long and seven lines wide at the basal fracture, and diminishing about two lines in that length towards the distal end, being about eight lines wide in the middle. Disconnected fragments show that the base diminishes insensibly to a lengthened petiole, as in the *G. Browniana*, and that the apex is elliptical and pointed.

Very abundant in the gray shale of Wollongong; not uncommon in the hard siliceous schists of Arowa, N. S. Wales.

Pecopteris? tenuifolia (M'Coy).

Sp. Char. Bipinnatifid (?); pinnules and rachis very slender each about half a line wide; pinnules very long, oblique, linear, apparently simply united to the rachis by their entire base, one very strong midrib running throughout; secondary nerves unknown.

If this be truly a *Pecopteris*, it is distinct from all others by its very narrow, linear leaflets. The only plant I have seen at all resembling it is the *Zamites obtusifolius* from the shale of the oolitic coal-fields of Blackheath, Richmond, United States, exhibited some weeks since by Mr. Lyell to the Geological Society. The specimens alluded to of this latter plant seem imperfectly preserved, but still show, on some portions of the pinnules, a neuration running parallel with a strong midrib. This great midrib seems to me incompatible with *Zamites*, so that although I point to the resemblance between the American and Australian plants, I prefer placing the latter provisionally in *Pecopteris*, as I have seen no trace in my imperfectly preserved specimens of a parallel neuration; and even if it should hereafter be found to exist, I conceive it would be necessary to form a new genus, intermediate in form, neuration, and (I think) mode of attachment of the pinnules to the rachis, between *Zamites* and *Pecopteris*, for the reception of those two plants.

One specimen has occured in the fine sandstone of Clark's Hill, N. S. Wales.

Class Endogens. (*Al. Palmales.*)

Ord. Palmaceæ.

Zeugophyllites elongatus (Mor.).

Common in the shales of Mulubimba, N. S. Wales.

Class Exogens. (*Al. Amentales.*)

Ord. Casuarinaceæ (?).

Phyllotheca (Br.).

M. Brongniart, in his "Prodrome," founds this genus for a single species, the *P. australis*, of which he mentions having a large number of well-preserved specimens, which he describes as "des tiges simples, droites, articnlées, entourées de distance en distance par des gaînes appliquées contre cette tige, comme dans les *Equisetum*, mais terminées par de longues feuilles linéaires, qui remplacent les dents courtes des gaînes des Prêles. Ces feuilles sont, ou dressées, ou plus souvent étalées, et même réfléchies ; elles sont linéaires, aiguës, sans nervure distincte, au moins deux fois plus longues que la gaîne. Les gaînes ellesmêmes présentent de légers sillons longitudinaux, qui disparaissent vèrs la base, et qui semblent correspondre à l'intervalle des feuilles, comme les sillons des gaînes des *Equisetum* correspondent à l'intervalle des dents. La tige, dans l'espace qui sépare les gaînes, paroît lisse ; mais sur des fragmens de tiges un peu plus grosses, qui appartiennent probablement à des individus plus âgés de la même plante, on voit des stries régulières, presque comme sur les Calamites." While, on the other hand, Messrs. Lindley and Hutton in their "Fossil Flora" (article *Hippurites gigantea*) state, that having examined specimens communicated by Dr. Buckland (from whom also Brongniart received his), they found Brongniart's description inaccurate, and that the leaves, instead of springing from the edge of the sheath, arise immediately from the stem, and having in addition to the whorl of distinct leaves "a sheath originating within them and closely embracing the stem, to which it gives the appearance of the barren shoots of an *Equisetum*, with its whorls of slender branches on the outside of a toothed sheath." Unger, in his "Chloris Protogæa," referring both to Brongniart and Lindley and Hutton, defines the plant as "Caulis simplex, rectus, articulatus vaginatusque. Folia verticillata linearia, enervia contracta v. expansa, vaginas articulorum strictas circumdantia." Mr. Morris, I believe the latest writer on this plant, closely follows Brongniart in his observations on its structure.

I have now stated what I believe to be all the published information regarding this very interesting form, and as it has not been hitherto figured, and the published accounts are contradictory among themselves, and none of them as I find strictly applicable to the plant, it may be interesting to detail some of the observations I have been enabled to make on those specimens which have come under my notice.

I find in the whitish clay beds of Mulubimba a profusion of plants having cylindrical jointed stems, the joints surrounded by sheaths, and the free edge of each sheath terminating in a whorl of long, linear leaves. Here we have all the essential characters of *Phyllotheca,* but beyond this there is no agreement with the descriptions of those few botanists who have seen the plant. And here I may be permitted to state, that from the number of specimens which I have examined with great care, there remains not a doubt on my mind of the accuracy of Brongniart's view of the relation of the whorls of leaves to the sheaths: I have traced them distinctly in every instance as arising from the free edge of the sheath, and lying either straight, inclining obliquely outwards, or, as is most commonly the case, completely reflexed, and their occurrence in this position may have deceived Messrs. Lindley and Hutton as to their real connexion with the sheaths; for when the long slender leaves are completely reflexed and pressed in a reversed position against the sheaths, broken specimens may easily have their inferior mistaken for their superior extremities; and if when in this position the leaves be supposed to point upwards, they will really have the appearance of originating as an independent whorl of leaves *outside of the base of the sheath*, as described in the 'Fossil Flora.' This double arrangement would be so anomalous, that it is the more important to have the means of ascertaining the true relation of those parts in accordance with Brongniart's original view.

Brongniart describes the stem as smooth, and I find the specimens before me apparently divisible into two groups, one having the stem smooth, the other having it coarsely sulcated longitudinally, as in *Calamites*. All the botanists alluded to agree in describing the stem *Phyllotheca australis* as simple;—*all the sulcated stems* I have seen are simple, but a number of the smooth or slightly striated stems are distinctly branched, and in a manner quite distinct from *Equisetum*. In *Equisetum*, if we view with most botanists the sheaths as produced by the mere lateral union of the leaves, and thus representing the foliage of other plants, we have the extraordinary character of the branches arising, not as axillary buds originating immediately above and within the base of the leaves, but originating *below* the joints and external to the sheaths. This is not the case with the fossil before us, in which the branches originate directly over the joints, and are therefore within and axillary to the sheaths, which may thus, with their appendages, be considered as true leaves, and having the same relation to the branches as in ordinary plants. This character is of such importance, that the resemblance of *Phyllotheca* to *Equisetum* is proved by it to be of the most trifling nature, and that there can be no real affinity between them. On the other hand, when compared with *Casuarina*, the affinity seems to me to be exceedingly strong, although botanists have not, I believe, hitherto so considered it. The *Casuarinæ* are exogenous weeping trees, with slender cylindrical branches, their shoots regularly jointed, longitudinally sulcated, and surrounded at the joints with toothed sheaths as in *Equisetum*; while the branches originate either in a verticillate or irregular manner immediately above the joints and within the sheaths, showing a perfect agreement with the above-mentioned *Phyllotheca*. But a still more interesting and important proof of the relation of those plants to *Casuarina*, and removing them still farther from *Equisetum*, is to be found in their mode of inflorescence, of which I have fortunately noticed a fragment among the specimens at my disposal. The specimen alluded to is a portion of a branch, with the joints more approximate than on other parts of the plant, their length being scarcely equal to their diameter; the sheaths are the exact length of the internodes, and fringed on their upper margin with a dense little whorl of (I think two-celled) anthers, agreeing very closely with *the male flowers* of *Casuarina stricta* and allied species, with which (being in flower at this time in the houses of the Cambridge Botanic Garden) I have been enabled to compare it as advantageously as the state of preservation of the fossil would allow. The fructification of *Equisetum* is entirely different, forming a dilated, club-shaped mass at the end of the branches or at the extremity of a particular stem. The *Phyllotheca australis* is described as having the sheaths closely applied, to the stem, the leafy appendages twice the length of the sheaths, without midribs, and having the naked portion of the stem between the sheaths smooth. Of the two species which I have seen this would best agree with the branched one, which however has a midrib, although not a very prominent one. The species which agrees with the definition in being simple-stemmed, differs in having the sheaths very loose or infundibuliform, and so long as to extend the entire way from one joint to the next, so as to leave no bare space of the stem visible; the leaves are very long and have a strong prominent midrib, and the stem when deprived of the sheaths is seen to be always coarsely sulcated. Under these circumstances the obvious course seems to be to modify the definition of the genus so as to include the two species under consideration, and to characterise them as distinct species. If the supposed affinity with *Equisetum* were borne out, I should probably have considered the loose-sheathed, simple-stemmed plant as the fertile shoot, and the branched stems with small tight sheaths as the barren shoots, following the analogy of some of our best-known recent species of *Equisetum*; but having seen that they are constructed in an essentially different manner, we cannot do better than as I have proposed. I may then briefly characterize the genus and species as follows:—

Phyllotheca.

Gen. Char. Stem slender, jointed, simple or branched; branches springing from above the joints, not arranged in the same plane; surface smooth or longitudinally sulcated; articulations surrounded by sheaths, the free edge of which terminates in long narrow leaves, having a more or less distinct midrib. Inflorescence arranged in whorls near the extremity of certain branches

I have only too add to the above characters, that the ridges of the sulcated stems do not alternate at the joints in the regular manner of *Calamites*, nor is there any trace of the peculiar tubercles so generally seen in that genus (an additional proof, if such were wanting, that Brongniart's original explanation of those tubercles being connected with the vascular system of the sheath is not the correct one, for here we have enormously developed sheaths and no tubercles). The verticillate whorls of leaves, whenever I have seen them perfectly expanded, seemed always elliptical as in *Annularia*, the leaves of two opposite points of the circumference being considerably longer than the rest. The genus is distinct from *Annularia* by the great developement of the sheath or connected base of the leaves, and by the branches being inconstant, and when present, not being arranged in pairs in the same plane.

Phyllotheca australis (Br.)

Sp. Char. Stem simple, smooth or slightly striated; sheaths tight, shorter than the internodes, terminated by narrow leaves, double the length of the sheaths, without distinct midrib. *(Condensed from Br.)*

Phyllotheca ramosa (M'Coy).

Sp. Char. Stem branched, smooth or slightly striated; sheaths half the length of the internodes; leaves thin, linear, flat, twice to three times the length of the sheath, with a very fine indistinct midrib.

This beautiful plant has the branches weeping or hanging downwards as in *Casuarina*, about half the diameter of the stem; they do not arise from every joint, but they do nearly; I am uncertain whether more than one spring from any one joint. Most of the stems are perfectly smooth, being striated only at the articulation, while others have a delicate lineation down the internodes; the first I imagine to be stript of their bark, and the latter to retain it; and here again we have another proof of the stronger affinity of our fossil to *Casuarina* than to *Equisetum*, for I find by examining the living *Casuarinæ* that the lineation of the surface goes no deeper than the bark, while the elevated lines on the surface of *Equisetum* are only the edges of strong septa going towards the central hollow, and the flat spaces between those lines are only the superficial coverings of tubular hollow spaces between the aforesaid septa, so that destroy the surface of *Casuarina* and you render the stem smooth—destroy the surface of *Equisetum* and you only increase the coarseness and strength of the sulcation. I may also add (in accordance with this view) that age or size has no connexion with this lineation of the surface, as is suggested by M. Brongniart in the last few lines of the quotation from his work at the head of this subject, for I find some of the largest stems perfectly smooth and the smallest occasionally striated. The sheaths are rather coarsely striated, and terminate in thin, flattened leaves, the midrib of which is scarcely discernible. In the weeping or downward curved branches the leaves are completely reflexed so as to point upwards, and according to the position of the stem, are either reflexed, expanded, or lying straight up against the stem. The stems vary from 3 to 7 lines in diameter.

Common in the white soft shale of Mulubimba, N. S. Wales.

Phyllotheca Hookeri (M'Coy).

Sp. Char. Stem simple, coarsely sulcated and ridged longitudinally; sheaths very large, loose, subinfundibuliform, each sheath extending from one articulation to the next, so as to conceal the stem; leaves about twice the length of the sheaths, thick, narrow, and with a strong, prominent midrib.

This species is easily known from the two former by its great loose sack-like sheath, completely concealing the stem, its long, thick, strongly ribbed leaves, and by its stem when stripped of its sheath being coarsely and regularly sulcated, precisely as in the *Calamites Cistii.* Although abundant I have never seen a trace of a branch. Some of the flattened stems attain a width of two inches.

Common in the sandstone of Clark's Hill, in the siliceous schists of Arowa, and in the shales at Mulubimba, N. S. Wales.

[To be continued.]

Art. XXXV.—*Statistics of Van Diemen's Land for* 1844—1846. *Compiled from Official Records in the Colonial Secretary's Office, and published by order of the Lieut.-Governor,* 1847. By James Barnard, Esq.

Table No. 1 is a comparative statement of the net revenue of Van Diemen's Land for the years 1844, 1845, and 1846; the respective amounts being £167,022 9s. 3d., £143,375 8s. 11d., and £127,821 11s. 1d. At first glance these totals appear unsatisfactory; but, when the items are examined, the result is highly cheering. Coupling the "ordinary" with the "extraordinary," a decrease is shown of 14 per cent. in 1845, and of 24 per cent. in 1846, as compared with 1844: but it must be observed, that a prominent item in that year was—"Loans, £50,000," lessened in 1845 to £32,000, and in 1846 to £6000. In the "ordinary" revenue, however, chiefly arising from the Customs, it is gratifying to notice an increase of 10 per cent. in 1846 over the two preceding years,—having advanced from £89,926 16s. 9d. to £98,420 5s. 6d.: for it must be borne in mind that this increase is not attributable to the 15 per cent. *ad valorem* duties (which did not come into operation until the month of April, 1847), but is due to the steady augmentation of trade, and the revival of colonial prosperity.

Table No. 2 exhibits the public expenditure for the same period, forming an appropriate counterpart to the first table. The aggregate for 1844 is £160,629 15s. 9d.; for 1845, £138,753

7s. 8d.; and for 1846, £122,776 11s. 7d.; showing a decrease of 14 per cent. in 1845, and of 24 per cent. in 1846, as compared with 1844. The chief reduction has been in the Civil Establishment, which is 26 per cent. less in 1845, and 29 per cent. less in 1846 than in 1844.

The next seven tables (No. 3 to 9) develope the progress that has been made in the commercial relations of the colony.

No. 3 shows the number and tonnage of vessels, British and foreign, that have arrived and departed during the past three years; and although the arrivals from Great Britain are much fewer in number than for the antecedent period,—a circumstance readily accounted for by the suspension of transportation, and the absence of prison-ships from our shores,*—still it is satisfactory to notice the progressive increase of the trade with the British colonies. On this subject also it is gratifying to be enabled to remark, that the jealousy heretofore manifested at the rising prosperity and growth in population of the neigbbouring Australian colonies has gradually yielded to more enlarged views; and the conviction is at length entertained that, instead of regarding them in the light of rivals, and as competitors with our settlers, we must see in them only our natural customers with whom to exchange the surplus products of the colony. Our intercourse with the United States has much declined since 1843, contrary to the sanguine expectations that were formed, that it would become more extended by that liberal measure of the legislature, which admitted American whalers into our harbours without payment of port dues and charges.—The trade with foreign states, less upon the whole than for the previous three years, shows a gradual revival since 1844.

No. 4 sets out the value of the imports and exports, each averaging about (but now exceeding) half a million sterling annually. The imports slightly predominate, betokening however no unsound or unhealtby condition of things, as the balance of trade must have been more than restored by the large commis-

* This was written before the arrival of the body of exiles gave indication of the revival of the system by the British government.

sariat and military expenditure connected with the convicts and the troops. This agrees with the actual nature of the commercial transactions of the three years under consideration,—for during this period a visible improvement has taken place—money has been plentiful at a low rate of interest*—there have been but few failures—credit and confidence have generally prevailed—and a large amount of capital has been put in circulation in buildings of a superior class. Great activity also has been displayed in ship-building,—not only of small craft for the inter-colonial and coasting trade, but of vessels of larger burthen, at both ports, for trading with the mother country. This evidence of colonial energy and enterprise must be hailed with the most lively satisfaction, as many springs of industry are connected with its successful prosecution; besides turning to profitable account the valuable timber of our island, so admirably adapted to naval purposes.

In looking over tables Nos. 5 and 6, which detail the various articles imported and exported during 1845 and 1846, we shall be led into a useful course of inquiry if we trace out the sound rule for estimating the effects of foreign imports upon colonial prosperity. It is doubtless sound policy to encourage native industry as far as practicable, by promoting the consumption of our domestic manufactures, and by fostering the laudable enterprise of all who are striving to add to our staple productions. But it must, at the same time, be understood, that there is a natural and proper limit to the prosecution of such undertakings; and it is simply this—that the colonial manufacturer must sell upon terms not less favourable, as to price and quality, than does the importer; the colonial made articles must be in every respect as good and cheap as those imported. The tendency of high prices being always to check the natural demand, and consequently to limit the natural consumption, therefore, if he cannot meet his foreign competitor in the market, whether by the adoption of some more economical process, or by being content with a less rate of profit, or from the demand being inadequate, the sooner

* When this was written money was only six per cent. at the banks.

such a manufacture is abandoned the better. Nor is any entitled to complain of the rigid application of this rule, or justified in calling for public support except upon the conditions specified; for if, on the one hand, the low rate of interest, the immense accumulation of capital, the low price of labour, and the perfection of machinery, secure such advantages to the English manufacturer as apparently to defy competition,—and successfully so, of course, in very many British staples; on the other hand, they are counterbalanced by heavy shipping and other expenses, together with frequently the previous cost of import of the raw material, from which the colonial manufacturer is exempted. The interest of the consumer must be paramount to every other consideration; and his only shield against excessive prices is the keenness of competition. Every extra shilling taken from the purchaser of an article is so much misspent; he has so much less to circulate in other ways, and it becomes a general loss.

While it is the interest of the producer to narrow competition, it is the interest of the consumer to enlarge it; and the advantage of consumers is clearly the advantage of the country at large: for every man is a consumer, even the producers themselves, who, though they may be desirous of preventing competition in their several walks, must yet wish for it in all other species of commerce. It is by free and open competition alone that extravagant prices and exorbitant profits are restrained, and that the public are supplied with commodities as cheap as the producer can afford to sell them.

The reciprocal interests of all are best consulted by rigid attention to this rule. Independently of the value of our trade to the mother country,—which is only a fair exchange for the facilities afforded to us for our exports,—our commercial interests benefit by the imports, which, under the restrictions suggested, are an essential function to the progress of a community, besides adding largely to the sum of its comforts. Occupation is thus afforded for a colonial marine; and numerous incidental sources of employment spring out of the various branches of trade concerned.

Having established a safe criterion by which to judge, the perusal of the list of imports suggests the reflection that much has yet to be done by the colonists themselves: for while it comprises many leading articles that must necessarily be derived from home and foreign sources for some time to come, yet there are many that might be produced to a much greater extent than heretofore, and others that might be advantageously enrolled amongst our colonial manufactures.

In the list of those imports for which we must (for a time at least) be dependent upon external markets may be enumerated—

Woollen Cloths	Carpets	Sugar
Silks	Floor-cloths	Rice
Haberdashery	Arms and Ammunition	Currants
Prints and Calicoes	Medicines	Raisins
Hardware	Brushes and Combs	Spices
Iron	Paper and Books	Maize
Porcelain & Earthenw.	Musical Instruments	Oranges
Glass	Tea	

In the list of those domestic manufactures and productions which might be extended,—in fact, some of which should be wholly produced—may be mentioned—

Ale and Beer	Casks	Iron and brass work
Apparel and Slops	Cedar (should be replaced by Pines & other woods)	Machinery (partly)
Bacon and Hams		Millinery
Baskets	Furniture	Mustard
Blacking	Glass and Earthenware	Parchment
Beef and Pork	Glue	Pork
Boots and Shoes	Harness	Rope and Twine
Butter and Cheese	Hats and Caps	Soap
Candles and Tallow	Hides, Skins, & Leather	Starch
Carriages and Carts	Hops	Vinegar

In the list of those articles of manufacture which might be advantageously adopted in the colony may be named—

Straw Hats & Bonnets	Toys and Brushes	Woollens
Quills	Sheep-skin Trowsers	Mustard
Gloves	Blankets	Salt
Glass	Turnery	Pickles
Paper	Spirits	Home-made Wines

The chief obstacle to surmount in realizing these commercial reforms is the *vis inertiæ* of indifference in the first instance, as well as the positive disfavour and prejudice with which colonial experiments are regarded. It seems to be assumed that colonial taste and skill cannot stand the test of comparison with what is of British fabrication; just in the same way as our own countrymen at home were accustomed to view articles of foreign manufacture as eclipsing their native productions, however intrinsically superior they might be.

Tables 10 and 11 show the operations of the Survey department, in the sale of waste lands. Free grants of course there have been none; and the sales have been very trifling. It is somewhat singular that while the average price per acre of the country allotments has increased from 7s. 7½d. in 1844 to £1 2s. 2¼d. in 1846, the very reverse has been the case with the town and suburban lots, which have decreased in a similar ratio from £18 7s. 11d. to £6 17s. 9d. per acre. A statement of the quantity of crown land under lease for depasturing stock would have been interesting; it being understood to amount to a large quantity, and to produce a considerable revenue.*

Table 12 exhibits the number of acres in cultivation, with the nature of each crop; and table 13 states the average price of produce. The results of both are highly cheering; for while the first table records a large progressive increase in quantity, the last in most instances shows a higher price to have been realised for produce in 1846 than in the two antecedent years, thus setting at rest the fears as to a market being found to keep pace with extended cultivation.

Table 14 is the census of the number of horses, cattle, and other live stock in the colony. With the exception of sheep, which, notwithstanding the decimation of their numbers by the butcher, show a steady increase, there is much fluctuation observable in the several annual totals. The data afforded in the next table (No. 15), for judging of the consumption of sheep and cattle in the colony, are imperfect; and the return is therefore of little value. The average price paid by the Commissariat for fresh meat throughout the island appears, by table 16, to have varied from 2d. and 4-16ths to 2d. and 7-16ths per lb.

Table 17 is a return of the Licenses granted for the sale of wine, beer, and spirits; and the result, however productive to the revenue, must occasion serious apprehensions in a moral point of

* The quantity of land so leased has been since ascertained to amount to 1,210,000 acres in 1847.

view. The number of wholesale dealers is 41, and of retailers, 364, one-half of whom hold licenses within the district of Hobart. The obvious tendency of so disproportionate a number of public-houses beyond the legitimate demands of the community, is to demoralise the population, and to counteract every reformatory effort; and in this colony especially, where so many persons owe their expatriation primarily to drunkenness from frequenting similar houses at home, it is beyond measure cruel to expose them to such forcible temptations. Latterly, however, some check has been given to the unlimited issues of licenses. The extent of this monstrous evil will appear more glaring with the aid of certain statistics. Thus there are within the territory 8 public-houses to 1 baker, 3 to 2 butchers, 5 to 1 grocer; one house out of every 20 is licensed for the sale of strong drinks; and there is one public-house to every 166 of the TOTAL population, male and female, adults and children, free and bond.

Tables 18 and 19 furnish various particulars of the Post Office department; from which it appears that in 1846 there were 47 post offices, with an extent of 619 miles of post-roads, and employing 76 persons. In that year 179,745 letters, and 208,173 newspapers, were sent from Hobart, and 150,487 letters received there. The income was £5,572 9s. 9d.; and the expenditure, £6,317 1s. 8d.

Table 20, the return of Pensions, requires no particular comment.

The next group of tables (21—29) relate to the Population, upon the return of 1842; but we have the benefit of the recently taken census upon which to ground our remarks and comparisons. The total population, including the military and the aborigines, is stated at 70,164, or an increase of 11,262, or 19 per cent. upon the previous return. There is a decrease of 674 in the class of free emigrants, and of 2,158 in the number of convicts in government employment; while there is an increase of 5,631 (or exactly half the total) in the class of free born in the colony, and of 1647 in those who have become free. There is an addition of 2,246 to the ticket-of-leave holders, and 3,768 to the passholders in private service. The military also show an increase of 815 souls:

while the aborigines have lost 13 from their previously scanty numbers—being now a remnant of only 15 males and 23 females!

Comparing, then, the free and convict population at the periods of 1842 and 1847, the account stands thus:—

FREE CLASS.

1842.	Males ..	21,972		1847.	Males ..	25,361	
	Females ..	15,116			Females ..	18,331	
			37,088				43,692

or difference of 6604, being an increase of nearly 18 per cent.

CONVICT CLASS.

1842.	Males ..	17,632		1847.	Males ..	20,687	
	Females ..	2,700			Females ..	3,501	
			20,332				24,188

or difference of 3856, being an increase of 19 per cent.

The military and aborigines are excluded in this calculation.

Deducting from the above totals of the "free," those who have emerged from the convict class, it stands thus:—

1842.			1847.		
Males	21,972		Males	25,361	
Have been convicts	7,912		Have been convicts	8,832	
		14,060			16,529
Females	15,116		Females	18,331	
Have been convicts	1,960	13,156	Have been convicts	2,687	15,644
		27,216			32,173

The increase being 18 per cent.

With respect to the industrial occupation of the people, we obtain some striking and useful results; and as the details cannot but be interesting, we subjoin them in parallel columns:

	1842.	1847.	Increase per cent.	Decrease per cent.
Landed proprietors, bankers, merchants, and professional men	1,846	1,502	..	19
Shopkeepers	802	1,172	46	..
Mechanics and artificers	3,720	5,584	50	..
Shepherds	879	1,098	25	..
Gardeners, stockmen, and farm labourers	9,870	11,693	18	..
Domestic servants	4,577	4,839	6	..
Unenumerated	27,067	38,291	40	..
	47,661	64,179	..	..

This comparison, it will be perceived, is grounded upon the aggregate increase of 34 per cent.

Under the head of "Religion" also some valuable information may be elicited by a comparative view of the progress of the various denominations :—

	1842.	1847.	Increase per cent.	Decrease per cent.
Church of England	34,861	44,490	27	..
Church of Scotland	3,797	4,552	20	..
Wesleyans	2,263	2,566	14	..
Other protestant dissenters	1,920	2,186	14	..
Church of Rome	4,492	9,904	120	..
Jews	297	452	52	..
Mahomedans and pagans	31	29	..	6
	47,661	64,179	..	..

The census concludes with the number of houses, which are 4963 built of stone and brick, and 5224 of wood, or a total of 10,187. The increase is 2558, or 33 per cent., upon the census of 1842, well keeping pace with the progress of population; and judging from the superior style of buildings now generally adopted—some of which will vie both in architectural pretensions and extent of accommodation with European taste—together with numerous substitutions of good solid houses of brick and stone for wooden huts and unsightly skillings, we have visible indications of a large addition having been made to the domestic comforts of every class in the community.

Tables 31 and 32 are returns of the cases of insanity treated at the New Norfolk Asylum during 1845 and 1846, from which it appears that that distressing malady is rather upon the increase. In 1845 there were 169 persons (56 being free and 113 convicts) under treatment; of which number 19 were discharged cured, and 14 died. In 1846, the total number was 204 (69 free, and 135 convicts), of whom 22 were discharged cured, 4 improved, and 1 unimproved, with 12 deaths. The proportion of insane persons in the convict class exceeds those of the free by fully 100 per cent. No. 33 exhibits the returns from H. M. Colonial Hospitals of the number and variety of diseases treated, and of the deaths during the same period. In 1845 there were 3160 cases treated of the various ills that flesh is heir to, of which 229 proved fatal; and in 1846 there were 2770 cases, or a decrease of 12 per cent., and 178 deaths, or a corresponding decrease of 24 per cent.

Table 34 is a return of the roads, bridges, and culverts, &c., executed by the colonial government within the period; Table 35 is a useful list of the principal manufactories and trades in operation, 51 in number; and No. 36 specifies the rate of wages to plasterers, bricklayers, carpenters, painters, masons, and joiners, at the average of 5s. 6d. per diem, and to quarrymen at 3s.

Table 37 is a statement of the places of public worship, with the extent of accommodation afforded by the respective churches and religious denominations, and of the expenditure from the colonial treasury connected therewith during the three years; and No. 38 details particulars of the Government Schools under the Board of Education, which in 1846 were 23 in number, and had under tuition 1511 pupils (961 boys and 550 girls) at the cost of £3446 7s. 7d., or £2 5s. 7d. each.

The next four tables (39—42) are highly important as indicative of the amount of crime in Van Diemen's Land. The convictions for crimes against the person exhibit a decrease in 1845 of 50 per cent. as compared with 1844, and a further decrease of 8 per cent. for 1846. The convictions for crimes against property have also remarkably decreased, the number being in 1844, 321; in 1845, 291; and in 1846, 175,—or 10 and 45 per cent. respectively, as compared with the first-named year. The executions have also been fewer since 1844; there having been in that year 16, in 1845, 13, and in 1846, 8,—exclusive of the 12 who paid the last penalty of the law at Norfolk Island.

Tables 41 and 42 contain a classified list of the various offences brought under the cognizance of the police, with the punishments awarded. While the offences of convicts average about the same, a diminution of 28 per cent. is shown in the number of those committed by free people in 1846 as compared with 1845. It is lamentable to remark, however, the prevalence of drunkenness among the free population; for notwithstanding that 1846 exhibits a decrease upon 1845 in this offence of 21 per cent. among the free, and the enormous increase among the convicts of 131 per cent., still in this very same year, to their disgrace be it recorded, there were more convictions for this besetting vice among the free!

Table 43 is a return of the civil process issued out of the Supreme Court; and betokens a considerable reduction to the extent of one-half, in the proceedings of that court. The result is satisfactory in a social point of view, as evincing a growing disinclination to enter upon lawsuits, and must also be taken as evidence of improvement in the commercial transactions of the colony. A tabular statement will best show the decrease referred to:—

	Summonses	Actions brought.	Actions tried.	Declarations filed.	Judgmts. on cognovits.	Executions Fi. fa.	Executions Ca. sa.	Cognovits.
1844	717	753	34	192	135	198	63	36
1845	426	462	29	113	76	114	26	16
1846	340	390	40	106	54	95	11	8

The return of process out of the Court of Requests, (Table 47) also shows a falling off in the amount of its business; viz.—

	Summonses.	Fi. fa.	Ca. sa.	Actions brought.	Actions tried.
1844	3868	540	587	1868	2461
1845	3109	497	629	3109	1791
1846	2337	541	177	2337	1507

Table 44 informs us that there are 8 prisons, and that they are capable of containing 682 prisoners, including separate cell-rooms for 148; and that in 1846 there were 53 confined for misdemeanors, and 95 for felony, of whom 60 were tried, and 88 untried at the date of the return. The employment of 528 only, out of 2274 confined during the year referred to, was hard labour; the cases of sickness were 203, or about 9 per cent., the greatest number under treatment at one time being 23; and no case of death occurring since 1844. Much of this extreme healthiness must be ascribed to the judicious regulations as to cleanliness and diet.

From table 45 we learn that in 1845 there were 450 orphans under education at the Queen's Orphan Schools, and 399 in 1846; and of these numbers 49 and 50 respectively were children of free parents, and their expense borne upon colonial funds. During 1845, 27 were apprenticed, and 101 discharged to friends; and in 1846, 49 put apprentice, and 76 discharged. In the latter year 7 deaths are recorded, a rather large proportion.

Table 46 is a return of the assets and liabilities of all the banks, with the exception of the Derwent Bank, which refuses to allow any statement to be published. There is great steadiness in their monetary operations; and they seem to justify the confidence reposed in their liberality and prudence. The total amount of bullion in their coffers at the close of 1846 was £286,543 7s. 6d., of bills of exchange, &c., £900,346 17s, 1d.; their aggregate liabilities, on the other hand, being £53,209 5s. for notes in circulation, and £399,938 13s. 11d. for deposits. Since the publication of these returns the banks have raised the rate of discount from 6 to 8 and 10 per cent.; evidently attributable to the rise in the value of money in the English market.

Table 48, completing the series, is a return of the cost of pauperism to the colony; the amounts paid by the treasury being £5391 19s. 9d. for 1844, £3122 12s. 4d. for 1845, and £2954 3s. 2d. for 1846. Large as is the amount, it constitutes but a fraction of the heavy expense of supporting the paupers of the colony; for, in addition to numerous charitable societies and church collections, many streams of private benevolence are constantly flowing, and the sympathy of the humane is seldom left unexercised without an appeal for relief in some urgent case of want or woe. It is much to be wished that in this city, as in Launceston, there should be established some general and comprehensive charitable institution adapted to the varying exigencies of distress in all its multifarious shapes.

Art. XXXVI. *A List of* 262 *new Insects found in Tasmania, and described in Wagner's Archives for* 1842.

The student of Tasmanian entomology is often at loss to tell whether or not an insect, which he is induced to regard as a new discovery, has been already described; and if described, where he must look for its characters. It would perhaps be doing a great service to the many collectors at present in the field, and would no doubt greatly increase their numbers, if the specific characters of the insects, already recorded as indigenous, were from time to time given in the pages of this journal, collected from the different and widely scattered volumes in which they have appeared; and thus being brought together, and grouped according to their orders, they would form a stimulus to further research. We have commenced by giving below a list of no less than 262 new insects described by the celebrated German coleopterist Erichson in Wagner's Archives for 1842. Of these three-fourths, it will be perceived, are Coleoptera or Beetles, a very numerous order in Van Diemen's Land, especially in one of its families, the Curculionidæ or Snout Beetles; and some of its species are very beautiful, as are those of the family Buprestidæ.

Although only sixteen species of Orthoptera appear in the subjoined list, yet it is in reality very numerous in species, and the paucity of individuals described must have arisen from these insects taking up more room in collections, and consequently fewer have been sent to Europe.

Strangely enough no Lepidoptera are described, although our nocturnal kinds are both numerous and beautiful, and fully make amends for our deficiency in diurnal species.

Before commencing the list it will perhaps be useful to name some of the works in which descriptions of our Tasmanian insects are to be found. In Leach's "Zoological Miscellany" are some excellent plates of three or four of Butterflies, of some of our Orthoptera, and a few of the other orders.

In the five volumes of the "Entomological Magazine" many of our Coleoptera are described by Westwood and Newman, and the latter gentleman has continued his description of new species in the "Entomologist." Walker has described several Chalcidida among the Hymenopterous order, collected by Darwin and others in the "Annals of Natural History." G. R. Gray has figured one or two of our species; and lastly Hope, Sanders, and Westwood have occasionally given the characters of Tasmanian insects in the "Transactions of the Entomological Society of London."

T. J. E.

COLEOPTERA.

Carabici ....Calosoma Schayeri, Scopodes boops, Plochionus australis, Calleida pacifica, Cymindis curtula, inquinata; Harpalus verticalis, promptus, vestigialis; Pterostichus prolixus, coracinus, sollicitus; Anchomenus marginellus, ambiguus; Euleptus sericeus, Dyscolus australis, dilatatus; Lestignathus cursor

Dytisci ....Eunectus helvolus

Stsphylini ......Aleochara speculifera

Buprestidæ......Stigmodera virginea, Melobasis hypocrita, prisca

Elateridæ ......Crepidomenus fulgidus, decoratus, tæniatus; Lacon, 1 species; Monocrepidius, 6 species; Melanoxanthus, 1 species; Pristilophus, 1 species; Acroniopus, 4 species

Cyphonidæ......Cyphon australis

Lycidæ ....Porrostoms, 4 species; Anarhynchus scutellaris

Telephoridæ ....Cantharis nobilitata

Melyrides ......Attalus abdominalis

Ptiniores.........Ptinus exulans, Apate collsris, Lymexylon australe

Silphales........Catops australis

Histeres ....Saprinus incisus

Dermestini......Megatoma morio, Trogoderma riguum

Byrrhii ....Microchætes scoparius, Limnichus australis

Hydrophilidæ.....Cercyon dorsale

Copridæ ....Onthophsgus, 6 species

Aphodiidæ ......Aphodius erosus

Trogidæ ....Trox australasiæ

Dynsstidæ ......Pimelopus porcellus, Cheiroplatys mælius

Melolonthidæ....Cryptodus anthracinus (Cr. tasmannianus Westw. Ent. Soc?)

Opatridæ........Cestrinus, 2 species

Tenebrionidæ....Upis angulatus, Tenebrio, 3 species

Cossyphidæ......Cilibe peltata

Helopiæ ....Adelium, 3 species; Olisthœna, 1 species; Titæns, 2 species

Disperialæ ......Ulodes verrucosus

Mordellones ....Mordella promiscua

Salpingidæ ......Salpingus hybridus

Anthicidæ ......Anthicus strictus, vinctus

Curculionidæ ....Anthribus, 1 species; Tropideres, 2 species; Rhinotis, 1; Rhynchites, 1; Eurhynchus, 2; Amisallus, 1; Aterpus, 2; Pelororhinus, 1; Rhinaria, 1; Steriphus, 1; Amycterus, 2; Nothrodes, 1; Mandalotus, 4; Orthorhinus, 2; Erirhinus, 1; Notionomus, 1; Cryptoplus, 1; Meriphus, 1; Diapelmus, 1; Cryptorhynchus, 8; Acalles, 3; Cyllorhamphus, 1; Melanterius, 3; Rhyncolus, 2; Tomicus, 1; Cryphalus, 1

Colydii..........Pycnomerus fuliginosus; Latometus pubescens; Ditoma interrupta

Cucujipes ......Platisus fuscus; Brontes, 2; Dendrophagus, 1; Silvanus, 1

Longicornes ....Macrotoma australis; Mecynopus cothurnatus; Stenocorus præcox; Meropachys sericans; Phacodes personatus, Zygocera canosa; Illæna exilis

Chrysomelinæ ..Paropsis, 12 species; Chrysomela, 4 species; Colaspis, 3; Halticus, 3; Arsipoda, 1

Erotylidæ ......Thallis, 3; Phalacrus brunneus

Coccinellidæ ....Coccinella, 1; Scymnus, 3; Corylophus, 2

Endomychidæ ..Daulis cimicoides

Lathridii ....Lathridius costatus

Pselaphidæ......Batrisus australis

ORTHOPTERA.

Forficulidæ......Forficula ruficeps, pacifica

Blattidæ ....Periplaneta melanaria, atrata, aterrima; Blatta trivittata, B. marcida

Achetidæ ......Gryllotalpa australis

Locustidæ ......Agrœcia lateralis; Xiphidium bilineatum; Gryllacris ambulans

Acridites........Truxalis viatica; Mesops pedestris; Acridium ambulans; Calliptamus bajulus; Tetrix argillacea

HYMENOPTERA.

Ichneumonidæ ..Ichneumon petitorius, licitatorius, promissorius; Cryptus variegator; Ophion fuscicornis

Braconidæ ......Helcon indultor

Evanidæ ....Megalyra rufipes

Bembecidæ......Bembex furcata

Thynnidæ ......Thynnus olivieri (of which Myzine aptera Ol. is the female) T. senilis, fervidus, humilis; Ariphron bicolor

Mutillariæ ......Mutilla soluta, blanda

Formicariæ......Formica, 4 species; Ambyopone australis

Apiareæ ....Prosopis alcyonea; Hylæus familiaris; Andrena chalybeata, infima

DIPTERA.

Culicidæ	Culex australis
Tipularideæ	Magistocera pacifica
Tabanidæ	Tabanus exulans, gregarius, gentilis
Leptidæ	Thereua venusta
Dolichopidæ	Psilopus ingenuus
Stratiomydæ	Odontomyia stricta
Syrphidæ	Eristalis vesicularis
Muscaridæ	Rutilia speciosa
Pupipara	Ornithomyia nigricornis

HEMIPTERA.

Pentatomidæ	Cydnus australis, sepulchralis; Asopus nummularis; Cimex incultus; Atelocerus labidus, grandicornis; Rhynchocoris ligata
Coreidæ	Hypselopus incarnatus
Lygæites	Lygæus mutilatus; Pachymerus lacertosus, torquatus, nigroæneus
Capsineæ	Phytocoris varicornis
Aradiedæ	Aradus australis
Reduvini	Isodermus planus; Dicrotelus prolixus; Nabis geniculata; Pirates fuliginosus; Arilus australis; Emesa juncea
Galgulidæ	Mononyx suberosus
Cicadiedæ	Aphrophora albicincta; Eurymela bicincta
Stridulantes	Cicada torrida
Psyllidæ	Psylla luteola, subfasciata

ART. XXXVII. *The Carboniferous formation of New South Wales.**

THE public attention has been drawn, at intervals, to the existence and abundance of coal in New South Wales; and an idea has been adopted by some of the community, that the colony is, in that respect so prolific, that land containing it is not on that account particularly valuable. In one instance, it has been alleged, that a considerable estate, known to be full of this

* This article is extracted from the *Sydney Morning Herald* newspaper of Nov. 14, 1848.

mineral, was not deemed worthy of notice as security by parties who are willing enough, in general, to obtain possession of land, or any other property, on advantageous terms. Others, however, think the statements which have been made respecting the carboniferous formation are exaggerated, and that there is not so great an abundance of mineral fuel in the colony as has been asserted.

The object of this notice is not to debate that question, which has already been sufficiently illustrated by the occasional observations of explorers; in the journals of Mitchell, Sturt, Leichardt, King, Stokes, and Jukes; and in contributions to the Geological Society of England, and to the Tasmanian Society. But especially, in the report of the select committee of the legislative council of New South Wales in 1847, an inquiry was instituted into the details of the question; full extracts from the evidence relating to which were published afterwards in the columns of the *Herald*.

The particular object now in view, is not to revise that evidence, but to place before the general reader some further information connected with the subject, so far as relates to a portion of the evidence of one of the witnesses examined by the committee; and this because, independent of any satisfaction arising from confirmation of an opinion from without, there are other reasons which may make an abstract of fresh matter acceptable to some, who take a wider view of the question than that opened by commercial relations. There must be many, who caring little or nothing for coal beyond its culinary use, are still interested in any clear development of the physical age and conditions of this great country.

In the answer to the 8th question put by the Coal Inquiry Committee to the Rev. W. B. Clarke, occur these words, alluding to certain fossils found in or under the carboniferous beds of New South Wales: "I do not mean to imply that they are on the exact horizon of the greater part of the carboniferous formation of Europe, for I believe them to be *as old as, if not older than, the lowest beds of that formation.*"

In order to test the truth of this opinion, at variance with that of some who have imagined that New South Wales is a country of recent geological age, and not one of the oldest countries of the globe, Mr. Clarke sent home to England a collection amounting to more than four thousand specimens of rocks and fossils, of which the zoological remains were collected by himself, and the botanical partly by himself, and partly by the Rev. C. P. N. Wilton. These specimens were transmitted to the Rev. A. Sedgwick, Professor of Geology in the University of Cambridge (in the Woodwardian Museum of which University they are now placed), and were submitted to examination and anatomical comparisons by Mr. F. M'Coy, Professor Sedgwick's assistant, and a geologist of considerable eminence.

The result of Mr. M'Coy's examination will furnish matter for the subsequent remarks; but as affirming the general truth of the opinion expressed before the Coal Inquiry Committee, the following passage from Mr. M'Coy's account may be taken as conclusive.

"In the underlying rocks I have been able to determine 83 species of animal remains, of which 14 are *Zoophyta*, 3 *Crinoidea*, 4 *Crustacea*, 25 *Brachiopoda*, 24 *Lamellibranchiata*, 6 *Gasteropoda*, 4 *Pteropoda*, *and* 3 *Cephalopoda* (including *Bellerophon*). Of these 4 genera and 32 species are figured and described as new. Those 83 species belong to 39 genera, all of which (with the exception of the genera *Tribrachyocrinus*, *Pachydomus*, *Notomya*, and *Eurydesma*—new forms at present only known in Australia) are abundant in the carboniferous rocks of Britain, many of them not being found in any higher series, and several of them not being known in any older deposits; so that the age, even if *we only look to the genera of the fossils*, is clearly limited to the carboniferous period; but when we descend to the critical examination of species, we find so extraordinary and unexpected an amount of agreement between these beds and the similar shales, sandstones, and impure limestones *forming the base of the carboniferous system* in Ireland, that it is impossible not to believe them to be *nearly in the same parallel*, and there is equal difficulty in imagining them to be either younger or older than those deposits. Of these species, no less than eleven are believed to be positively identical, on the most careful comparison of the Australian and

Irish specimens, and nine more are so closely allied that it has been found impossible to detect any difference of character, but which, either from imperfect preservation or want of sufficient specimens to display all the characters, have not been specifically identified."

Thus, then, Mr. M'Coy's examination confirms the singular fact, that the rocks of Wollongong and Black Head, Harper's Hill, Raymond Terrace, Dunvegan on the Paterson, Glendon, &c., are of the exact geological age of the lowest part of the mountain limestone of Europe; and that, at that period, this part of what is now the Pacific Ocean swarmed with the identical species which also occupied the waters of those parts of the sea now called the Atlantic and German Oceans, in which the carboniferous formations of Britain and Ireland were deposited.

So far, then, the geological examination of New South Wales has been satisfactory.

But there are some points connected with the Australian coal fields, which, though equally curious, are not so easily disposed of: and these require a more particular investigation.

The botanical casts in the coal beds of New South Wales, do not seem to justify the conclusion drawn by Mr. M'Coy, Mr. Bunbury, and Dr. Hooker, from the fossils *supposed* by those gentlemen to be *invariably* below the coal beds. They argue, that as the fossil plants have a nearer resemblance to those of the supposed coal fields of India, and of the true oolitic coal fields of Europe, therefore, though the zoological fossils lead to the inference above mentioned, the fossil flora seems to imply, that a "wide geological interval occurred between the consolidation of the fossiliferous beds which underlie the coal, and the deposition of the coal measures themselves; and that there is no real connexion between them, but that they belong to widely different geological systems, the former referable to the *base of the carboniferous system, the latter to the oolitic*, and neither showing the slightest tendency to a confusion of type." In this opinion, however, it is alleged by other geologists, Mr. M'Coy has been misled; and since it was put forth, specimens have been sent from this country to Europe, collected from the quarries near Raymond Terrace, which exhibit the zoological fossils and leaves of the Newcastle ferns in the same blocks of stone.

Here, then, there *is* confusion of the supposed types, and the most direct proof that these fossils, however apparently differing, are of the same age. M. de Strzelecki has stated a similar fact, respecting the rocks at Spring Hill, in Van Diemen's Land, belonging to the Jerusalem coal field, which is now known to be of the same age as that of Newcastle. Similar facts may be noticed in other parts of New South Wales, as, for instance, in the neighbourhood of Mount Wingen, and along the Page, as well as at Black Creek on the Hunter, where coal occurs below the beds charged with the peculiar fossil shells.

To occupy space here with the discussion of this point is needless. It will receive the fullest investigation elsewhere. But for the present it may suffice to say, that although the fossil flora of Australia, unlike its fossil fauna, is more near in resemblance to that of the oolitic beds of Europe, than to that of the true carboniferous rocks, there is no greater discrepancy than now exists between the vegetation of Australia and that of Europe; and it would be curious indeed if the land exhibited the traces of species identical with those of the land of ancient Europe, when it is known that no terrestrial phenomena of that kind are as ubiquitous as those phenomena which depend upon the existence of persistent oceanic temperature. It is well known that living species abound in the waters of Port Jackson, which are more readily comparative with oolitic than with any other fossils, and that some of our living plants and animals are equally comparative with types from the oolitic flora and fauna (though no traces occur in the coal beds); but no one would presume from these facts to declare, that the present Australian era is oolitic and not recent.

Some of the plants in the Australian coal fields are more like those that now inhabit Australia than those of any other country, and the inference seems, therefore, to be that Australia *always* had, even in the most ancient times, a peculiar flora, which has been modified, but not altogether changed.

The inference, then, from the discrepancy between the fossil fauna and fossil flora, is not sufficient to do away with other inferences, derived from the succession of strata, the order of deposits, and that most conclusive phenomenon exhibited in the instance of the zoological and botanical species under review in the same identical blocks of stone.

For the present this subject will be deferred, but, after the production of the following references, those who are interested in the question may be satisfied that whatever anomalies the Australian coal fields present, there is nothing, in fact, to contradict the conclusions deducible from the examination of the ancient fauna.

In the anniversary address of the president of the Geological Society, in February, 1848, Sir H. T. de la Beche, reviewing the progress of Australian geology, recapitulates the observations of Mr. J. B. Jukes, and states, respecting the points in dispute: *As a general fact perfect conformability of the whole series and a gradual examination of their divisions into each other were observed.* In his address the president also refers to another paper by Mr. Jukes, who infers, "that Australia became elevated above the sea so as to have been *dry land* at the close of *the oolitic period.*" "This forms," says Sir Henry, "a subject of interest for further investigations, and it will be remembered, that in his communication Mr. Beete Jukes considered the upper and lower series to graduate into each other, an opinion apparently participated in by the Rev. W. B. Clarke."

It may be said that it is a mere matter of scientific speculation, and one in which commercial interests are not involved; but this is in some degree erroneous, for, it is believed, that the oolitic coal beds have never supplied a sufficiency of good or workable coal, whereas the Australian coal agrees in all distinguishing characteristics with the old coal of Europe, and is in too great abundance to allow any conclusions of the kind objected to to be drawn from it. Moreover, it is a characteristic, though striking fact, that the newer formations are *rare* in the southern hemisphere, and are almost altogether limited to the northern countries.

Be this as it may, the question is one of great interest to all who are concerned in the physical history of the southern hemisphere, and on their account this notice will be followed by a brief recapitulation of such of the fossil plants and animals as have been satisfactorily determined.

W. B. C.

Art. XXXVIII. *Abstract from a Meteorological Journal kept at Port Stephens, New South Wales, during the years* 1843, 4, 5, 6, *and* 1847. By Captain Philip P. King., R.N., F.R.S., &c.

The following meteorological observations were made at Port Stephens, New South Wales, in latitude 32° 40′ 3″ S., and longitude 152° 2′ 7″ E. The situation being at the head of the Port, about eleven miles from the entrance, but close to the beach, and elevated above the high-water mark 46 feet. The instruments, of which a description is subjoined, were registered with much care every day, with very few omissions, at the hour of nine o'clock in the forenoon, of noon, and of three o'clock in the afternoon.

The thermometer, a standard, was suspended about six feet from the ground in a tin cylinder, pierced with holes to admit a free current of air, whilst the bulb was effectually sheltered from the sun's rays and the surrounding radiation. The bulb of the wet thermometer, which was fixed close to the standard, was kept moist by a simple process, so that any remarkable difference was readily detected.

The self-registering thermometers were also suspended close to the standard thermometer.

The barometer was made by Mr. Troughton, and I have reason to believe it to be a very good instrument. The bulb of its attached thermometer, being bent inwards so as to be in contact with the tube, indicated the temperature of the column; and the zero of the scale was adjusted as necessary according to the indications of an ivory float. The diameter of the tube being 0·282 inch, the correction for capillarity is +·016 inch. By a comparison made with two mountain barometers, of Newman's construction, which had previously been compared with the Royal Society's barometer, it stood ·0505 inch lower than the Royal Society's barometer; so that the reduction to that standard has been made, as also the reduction to the half-tide level.

The rain gauge and evaporating dish were placed together, sheltered from the sun's rays by a roof supported by brick pillars, so that the latter was completely exposed to the state of the atmosphere, and gave results as near as instruments of this kind could be expected to give: being placed together, and of the same size and shape, their results were at least proportionate to each other. During the first three years of the period, the evaporation was registered at each of the hours of observation; but for the last two years, only at nine o'clock in the morning, by which the daily evaporation was ascertained.

From the table the following results have been ascertained:—

Temperature.—For the whole period the maximum and minimum temperatures were respectively 108° and 35°, being a range of 73°. The greatest annual range occurred in the year 1845; viz., 72°5, whilst during the previous year it only measured 52°7.

The hottest month was January, the thermometer ranging between 107°5 and 60°; the coldest month, July, the thermometer at from 75° to 37°.

The difference between the dry and wet thermometers was greatest in the month of November, and least in June; the former being 6°1, the latter 1°7.

Supposing that the hour of nine in the forenoon gave the mean temperature, the monthly mean temperatures are as follow:—

January	74.4	July	52·9
February	74·1	August	54·4
March..	71·5	September	60·1
April	65·2	October	65·4
May	58·6	November	72·7
June	52·9	December	73·4

Whence the mean annual temperature is 64°63.

The Pressure of the Atmosphere.—For the whole period the barometric column ranged between 30·603 inches and 29·231 inches; the former pressure taking place in the month of July, 1846, and the latter in July, 1847; the difference being 1·372 inches. The greatest annual range occurred in the year 1846, and the least in 1845; the former being 1·338 inches, the latter 1·090 inches: the greatest monthly range during the whole period was (July, 1846) 1·338 inches; the least, (March, 1846) 0·490 inch. The pressures in the tables have all been reduced to the temperature of 32°, but not for capillarity, nor reduced to the level of the sea.

The diameter of the tube of the barometer being 0·282 inch, the correction for capillarity is + ·016. Compared with the barometer belonging to the Royal Society at Somerset House it stood ·0505 inch lower than the Royal Society's barometer.

The average pressure for nine a.m., noon, and three p.m., will be respectively—

Nine a.m., pressure		29·9667
Correction for capillarity	+	·016
Reduction to level of sea, viz. 46 feet ..	+	·0525
		30·0352

Noon, pressure		29·9381
Correction for capillarity	+	·016
Reduction to level of sea, viz. 46 feet ..	+	·0525
		30·0066

Three p.m., pressure		29·9024
Correction for capillarity	+	·016
Reduction to level of sea, viz. 46 feet ..	+	·0524
		29·9708

Atmospheric Tide.—For the whole period the mean atmospheric tide was 0·0643 inch; the mean maximum occurring in the month of November, ·0776 inch, and the mean minimum in June, ·0435 inch.

Evaporation.—The mean annual evaporation was 38·112 inches, or 3·035 inches more than the fall of rain. From nine a.m. to noon the mean daily evaporation measured 0·0197 inch; from noon to three p.m., 0·0257 inch; and from three p.m. to nine a.m. the following morning, 0·0623 inch. The greatest monthly evaporation occurred in the month of November, and the least in June.

Rain.—The mean annual fall of rain was 35·077 inches. January being the wettest, and October the driest month.

Winds.—The prevailing winds are easterly, and predominate most during the months of September to end of January. During the winter months, between May and August, dry and cold westerly winds are very frequent. The south wind is more frequent than the north wind throughout the year in the proportion of 3 to 1.

Miscellanea.

NEW BIRDS OF NEW ZEALAND.

Extracts were read from a letter from Mr. F. Strange, on the Ka-ka-po of New Zealand (*Strigops habroptilus*, G. R. Gray). It appears that this nocturnal parrot, of which there are but three specimens in Europe, resorts in the day time to burrows formed under roots of trees or masses of rock. Its habitat is the west side of the Middle Island, and its food fern roots and the outer covering of flax leaves. Mr. Strange has obtained evidence of the existence of a second species of Kivi (*Apteryx*), known to the sealers as the Fireman: its eggs are described as nearly as large as the emu's, laid in a burrow, and, like those of the kivi, dirty white; its height is said to be three feet. This bird may prove to be in reality a *Dinornis*.—*Proceedings Zoological Society, April* 13, 1847.—*Athenæum, No.* 1020.

ABSTRACT from a Meteorological Journal kept at Port Stephens, New South Wales, during the Years 1843—1847.

Month.	Year.	Temperature. Mean Max.	Temperature. Mean Min.	Evap.	Rain.	IX. A.M. Temp. Air.	IX. A.M. Dry-Wet.	IX. A.M. Pressure.	IX. A.M. Evap.	IX. A.M. Wind C.	N.E.–N.W.	N.E.–S.E.	S.E.–S.W.	S.W.–N.W.	Noon. Temp. Air.	Noon. Dry-Wet.	Noon. Pressure.	Noon. Evap.	Noon. Wind C.	N.E.–N.W.	N.E.–S.E.	S.E.–S.W.	S.W.–N.W.
January	1843	78·9	66·1	1·333	1·298	74·9	6·4	29·9030	·080	0	4	11	8	5	75·7	6·8	29·8840	·032	0	1	19	10	0
	1844	..	66·3	3·571	9·876	74·1	4·1	29·8595	·068	3	6	9	8	4	74·8	4·6	29·8182	·023	1	3	16	9	0
	1845	83·1	65·6	4·169	3·376	74·1	3·7	29·8680	·078	7	2	6	11	5	76·3	4·9	29·8470	·026	1	1	15	8	4
	1846	86·9	67·5	5·116	1·317	76·9	5·5	29·8188	..	13	2	7	4	5	79·5	6·2	29·8173	..	1	1	16	9	4
	1847	81·1	68·8	3·606	6·674	71·9	2·1	29·7687	..	8	1	7	10	5	76·1	3·1	29·7569	..	1	0	15	12	3
		82·5	66·9	4·052	4·508	74·1	4·4	29·8496	·075	6	3	9	8	5	76·5	5·1	29·8305	·027	1	1	16	10	2
February	1843	76·5	65·8	3·240	5·483	73·1	5·6	29·9360	·063	0	6	14	3	4	75·8	6·3	29·9200	·024	0	1	19	4	3
	1844	..	63·4	2·847	1·252	72·4	3·6	29·9340	·071	8	2	5	7	4	73·7	5·1	29·9220	·016	0	1	17	6	1
	1845	80·6	61·9	3·066	3·181	73·	3·4	29·8220	·059	8	1	3	8	7	75·5	4·5	29·7970	·021	2	2	11	9	0
	1846	86·8	67·4	6·000	0·410	77·	6·3	29·8530	..	5	7	4	6	6	80·6	8·1	29·8313	..	2	5	12	5	4
	1847	87·8	67·9	2·186	6·562	74·9	3·15	29·8745	..	11	6	1	6	1	77·1	3·96	29·8423	..	2	4	8	10	3
		82·9	65·9	3·508	3·378	74·1	4·4	29·8837	·061	6	4	5	6	5	76·5	5·6	29·8625	·021	1	3	14	7	2
March	1843	73·3	63·9	2·819	3·592	71·	4·4	30·0010	·048	0	8	6	4	13	73·1	6·3	29·9930	·015	0	3	18	7	2
	1844	76·4	63·4	3·652	3·022	72·6	4·9	29·9220	·080	12	4	1	3	11	74·4	6·0	29·9060	·021	3	3	11	5	9
	1845	79·3	62·7	3·598	1·204	70·8	3·1	29·9390	·067	12	2	4	5	8	74·3	5·2	29·9210	·025	3	1	14	9	4
	1846	80·2	65·4	4·520	0·749	72·7	3·67	29·9162	..	11	4	0	9	7	75·4	8·1	29·9130	..	1	3	16	11	0
	1847	78·2	64·7	3·554	3·022	70·4	3·06	29·8767	..	9	5	1	4	12	74·3	4·9	29·8473	..	2	5	5	11	4
		77·5	61·	3·589	2·318	71·5	3·8	29·9563	·061	9	5	2	5	10	74·3	5·5	29·9335	·020	2	3	13	9	3
April	1843	69·	60·8	2·596	2·180	65·2	3·4	30·0790	·055	0	12	3	2	13	68·3	5·6	30·0590	·017	1	9	5	4	10
	1844	70·1	54·4	3·013	0·418	61·8	3·7	29·9430	·085	5	1	0	2	20	65·8	6·0	29·9140	·023	3	1	3	8	13
	1845	71·6	58·3	2·417	8·836	64·1	1·9	30·0300	·049	9	1	1	1	17	68·1	3·7	30·0370	·013	9	2	3	13	3
	1846	75·9	61·3	1·200	1·964	67·9	3·9	29·9930	..	10	1	1	5	13	71·2	5·2	29·9622	..	2	1	8	12	7
	1847	70·2	60·3	2·184	3·334	66·6	2·4	29·9736	..	7	4	1	1	17	69·6	3·5	29·9409	..	6	3	7	7	6
		71·4	59·	3·062	3·347	65·2	3·4	29·9065	·063	6	4	1	2	16	68·7	4·8	29·9712	·018	4	3	5	9	8
May	1843	61·8	51·2	1·636	3·819	58·9	1·8	30·1690	·052	3	4	1	0	23	64·1	3·4	30·1470	·010	4	3	2	4	18
	1844	66·2	51·4	1·831	3·031	58·4	1·3	30·1470	·039	5	2	0	1	21	62·7	2·1	30·1320	·009	10	1	2	4	11
	1845	65·8	54·	2·229	4·228	58·8	1·6	29·9440	·044	5	2	0	1	23	62·2	2·7	29·9230	·015	8	0	4	4	15
	1846	66·1	51·	1·170	0·670	58·4	3·4	29·9798	..	4	2	0	1	25	60·	5·4	29·9433	..	8	2	2	2	17
	1847	64·9	53·9	2·087	5·019	58·3	1·4	30·0581	..	5	1	1	0	22	62·7	2·3	30·0265	..	10	0	2	2	16
		65·4	52·9	2·403	3·954	58·6	1·9	30·0616	·038	1	2	1	0	25	62·2	3·2	30·0352	·011	8	1	2	3	15
June	1843	59·7	49·2	1·747	3·421	54·1	2·1	30·0330	·013	5	3	0	0	22	58·9	3·7	29·9900	·012	6	2	1	1	20
	1844	60·2	46·7	2·130	3·041	52·9	1·44	30·0820	·016	6	1	1	3	19	57·1	2·2	30·0560	·010	7	0	5	1	16
	1845	60·6	47·8	2·393	8·580	52·7	1·6	30·0820	·050	7	2	0	1	20	57·6	2·8	30·0070	·012	4	1	0	2	23
	1846	61·4	49·04	1·950	3·816	53·6	1·6	30·1525	..	5	2	0	0	23	57·7	2·6	30·1232	..	5	2	1	6	16
	1847	57·9	45·9	2·800	0·909	51·5	1·6	29·8857	..	7	2	0	0	21	54·4	3·4	29·8252	..	7	0	1	1	21
		60·	47·7	2·104	3·953	52·9	1·7	30·0316	·046	6	2	0	1	21	57·1	2·9	30·0063	·011	6	1	2	2	19
July	1843	59·	48·6	2·259	0·984	53·9	3·1	29·9600	·016	6	6	0	0	19	58·3	4·6	29·9520	·013	5	1	1	2	19
	1844	59·8	41·9	2·255	2·434	52·1	1·54	29·9760	·047	5	3	0	4	14	56·4	2·8	29·9480	·013	9	4	1	0	16
	1845	61·4	49·1	1·915	2·798	53·8	1·4	30·1270	·013	7	4	1	0	19	57·7	2·8	30·0890	·018	8	5	1	1	15
	1846	60·	46·8	2·452	1·047	51·9	1·9	30·1185	..	8	2	0	1	20	56·9	3·1	30·0623	..	11	0	0	4	16
	1847	57·7	46·	3·167	1·487	53·2	2·3	29·7810	..	1	1	0	0	26	56·2	3·6	29·7336	..	4	1	0	2	21
		59·6	46·5	2·410	1·630	52·9	2·04	29·9799	·015	6	3	0	1	19	57·1	3·4	29·9505	·014	7	2	1	3	18
August	1843	59·2	48·	2·236	5·587	54·7	3·1	30·0490	·041	3	2	5	0	21	58·5	4·8	30·0040	·014	8	0	8	1	11
	1844	63·1	48·	2·409	3·951	58·1	1·7	29·9730	·049	6	3	2	4	16	59·3	2·9	29·9460	·042	3	3	1	7	16
	1845	63·6	48·1	3·226	1·432	52·6	3·0	29·9730	·050	8	3	0	1	19	60·	4·1	29·9460	·013	5	3	1	4	18
	1846	61·	46·9	2·321	3·121	53·1	2·5	30·0482	..	6	6	0	1	18	57·2	3·6	30·0334	..	9	3	0	3	16
	1847	60·5	48·8	2·670	0·909	55·2	1·7	30·0351	..	10	1	0	2	18	59·4	2·9	29·9990	..	10	2	3	7	9
		61·5	47·9	2·573	3·001	54·1	2·4	29·9894	·051	6	3	1	1	18	58·9	3·7	29·9531	·013	7	2	3	5	14
September	1843	62·8	49·7	3·082	3·935	60·3	5·2	29·8370	·060	4	3	1	2	19	61·2	7·0	29·7980	·017	3	2	4	4	17
	1844	67·6	50·9	2·588	2·508	59·8	2·5	29·9600	·051	7	2	1	2	18	61·3	3·9	29·8990	·018	4	1	5	7	13
	1845	66·1	51·9	1·915	3·704	61·9	3·3	30·1770	·068	7	6	1	3	10	61·4	4·3	30·1460	·019	5	3	10	5	2
	1846	65·9	52·2	2·166	3·828	59·7	2·2	30·1343	..	10	2	5	6	7	61·8	3·8	30·1077	..	4	6	9	9	2
	1847	64·1	50·6	2·542	0·998	58·9	5·8	29·9208	..	18	2	2	3	5	62·8	8·8	29·8575	..	6	2	13	6	3
		65·3	51·1	2·592	2·855	60·1	3·8	30·0576	·056	9	3	2	3	12	63·5	4·5	30·0240	·018	4	1	8	6	6
October	1843	69·	55·2	3·615	1·664	65·3	5·1	29·8670	·082	3	3	4	7	13	68·2	6·8	29·8710	·026	3	2	9	9	5
	1844	73·3	54·6	3·169	2·832	64·7	2·7	29·9170	·078	5	5	2	7	12	67·5	4·2	29·9290	·021	3	1	10	8	9
	1845	73·1	56·4	3·328	0·782	65·8	3·9	30·0050	·072	5	4	1	[illegible]	[illegible]	[illegible]	5·8	30·0170	·026	1	1	13	9	7
	1846	74·1	59·2	3·501	1·958	66·6	3·4	30·0436	..	8	2	6	8	7	70·1	4·8	30·0100	..	0	1	14	10	6
	1847	70·7	55·8	3·894	0·890	64·6	3·4	30·0155	..	10	1	5	8	7	67·5	4·5	30·0039	..	2	2	16	10	1
		72·	56·2	3·461	1·519	65·4	3·8	29·9858	·074	6	3	4	8	9	68·1	4·9	29·9634	·024	2	2	12	9	1
November	1843	78·7	62·2	4·480	0·402	75·	7·8	29·8870	·112	3	1	1	7	8	75·5	8·1	29·8610	·069	0	1	11	8	3
	1844	78·5	58·9	3·747	2·851	69·9	4·0	29·8700	·062	6	1	1	11	8	71·4	4·7	29·8300	·027	3	2	10	10	5
	1845	83·4	62·9	5·351	1·825	74·	6·8	29·8160	·101	0	1	1	7	9	77·	7·9	29·7880	·034	0	6	8	7	1
	1846	81·5	64·3	4·008	3·530	73·5	3·6	30·0098	..	8	0	18	2	2	74·8	4·5	29·9874	..	0	0	25	5	0
	1847	76·9	61·9	3·522	1·404	71·2	4·3	29·8951	..	5	4	7	12	2	71·3	5·6	29·8485	..	1	1	19	7	2
		79·8	62·2	4·222	2·002	72·7	5·3	29·8955	·093	4	3	7	8	6	71·6	6·1	29·8632	·033	1	2	15	7	3
December	1843	77·8	63·4	1·874	1·087	73·8	5·9	29·9240	·085	2	6	13	6	4	75·	6·3	29·9040	·035	0	2	22	6	1
	1844	78·7	61·8	3·954	2·965	70·8	3·8	29·9890	·081	6	5	6	13	2	72·2	4·4	29·9650	·029	0	2	11	13	1
	1845	81·9	65·7	3·407	3·379	73·2	3·7	29·8310	·070	1	8	12	5	2	75·6	4·1	29·8120	·022	1	0	18	7	1
	1846	82·8	65·3	3·600	2·058	73·6	3·4	29·9228	..	3	3	11	11	3	75·1	3·6	29·8434	..	0	1	19	10	1
	1847	80·5	63·9	4·768	0·271	75·6	7·5	29·9602	..	5	6	13	3	3	77·8	8·3	29·8723	..	0	2	23	4	1
		80·3	64·	4·133	1·952	73·4	4·8	29·9134	·079	4	5	11	7	3	75·2	5·4	29·8733	·029	1	2	19	8	1

Month.	Year.	III. P.M. Temp. Air.	III. P.M. Dry-Wet.	III. P.M. Pressure.	III. P.M. Evap.	III. P.M. Wind C.	N.E.–N.W.	N.E.–S.E.	S.E.–S.W.	S.W.–N.W.	Temperature. Max.	Temperature. Min.	Pressure. Highest.	Pressure. Lowest.	Therm. Range.	Barom. Range.	Difference of Pressure, 9 A.M., 3 P.M.
January	1843	77·2	8·3	29·8460	·042	2	1	19	7	1	107·5	60·5	30·136	29·620	47·	0·516	·0570
	1844	77·4	5·2	29·8179	·027	0	5	13	11	0	89·7	62·2	30·144	29·522	27·5	0·622	·0416
	1845	77·2	5·3	29·7970	·036	1	2	18	7	0	99·	60·	30·154	29·576	39·	0·578	·0740
	1846	79·7	6·1	29·7636	..	1	1	19	5	2	102·8	60·5	30·118	29·484	42·3	0·634	·0852
	1847	76·02	2·06	29·6896	..	0	0	16	11	3	100·7	61·5	30·079	29·411	39·2	0·668	·0791
		77·1	5·6	29·7828	·035	1	2	17	8	1	107·5	60·	30·454	29·411	47·5	0·743	·0668
February	1843	75·7	7·7	29·8820	·032	0	4	18	3	2	98·7	60·	30·168	29·450	38·7	0·718	·0540
	1844	73·7	5·3	29·8880	·027	0	0	17	7	1	88·2	60·2	30·197	29·495	28·	0·702	·0460
	1845	75·4	4·6	29·7740	·028	0	5	11	9	1	91·	60·	30·096	29·599	31·	0·497	·0450
	1846	80·2	8·0	29·7845	..	1	5	11	1	1	108·	59·	30·151	29·304	49·	0·847	·0703
	1847	77·5	4·2	29·8119	..	3	3	12	7	1	88·2	63·2	30·090	29·457	25·	0·633	·0524
		76·5	6·0	29·8241	·029	1	3	14	6	2	108·	59·	30·197	29·304	49·	0·893	·0556
March	1843	72·6	5·5	29·9520	·027	0	0	26	1	0	85·	59·7	30·293	29·704	24·3	0·595	·0520
	1844	74·6	6·2	29·8560	·028	0	0	21	5	5	90·5	56·	30·162	29·572	34·5	0·590	·0560
	1845	74·3	5·0	29·8780	·029	0	1	18	10	2	93·	53·	30·270	29·758	40·	0·512	·0610
	1846	75·04	5·02	29·8633	..	0	1	18	11	1	87·	57·5	30·195	29·705	29·5	0·490	·0769
	1847	74·5	4·84	29·8120	..	1	3	10	11	4	92·7	56·5	30·286	29·389	36·2	0·897	·0617
		74·2	5·3	29·8840	·028	0	1	19	8	2	93·	53·	30·293	29·389	40·	0·910	·0623
April	1843	68·1	5·6	30·0130	·021	0	4	13	4	5	76·5	51·	30·367	29·673	25·5	0·634	·0360
	1844	67·4	6·0	29·8590	·037	1	0	4	13	6	83·	47·5	30·229	29·508	35·5	0·721	·0830
	1845	68·9	3·5	30·0020	·020	0	1	15	7	1	80·7	52·	30·291	29·711	28·7	0·550	·0580
	1846	71·7	5·1	29·9362	..	0	1	10	12	6	100·	49·	30·183	29·556	51·	0·617	·0707
	1847	69·6	3·4	29·9056	..	1	3	13	7	3	78·5	53·5	30·199	29·601	25·	0·598	·0680
		69·1	4·5	29·9331	·026	1	2	11	9	3	100·	47·5	30·367	29·508	52·5	0·759	·0631
May	1843	64·3	4·3	30·1150	·012	5	3	5	8	8	71·	48·5	30·371	29·883	22·5	0·488	·0540
	1844	62·4	2·7	30·0910	·018	8	2	3	1	9	71·5	41·	30·385	29·753	33·5	0·632	·0500
	1845	62·9	2·3	29·8830	·017	4	0	5	9	11	72·	47·	30·295	29·445	25·	0·850	·0510
	1846	64·9	4·7	29·8879	..	4	1	6	6	14	76·	45·	30·264	29·401	30·	0·863	·0819
	1847	63·2	2·3	29·9883	..	10	0	5	8	6	73·2	46·	30·358	29·787	27·2	0·571	·0701
		63·4	3·5	29·9960	·016	6	1	5	7	10	76·	41·	30·385	29·401	35·	0·984	·0626
June	1843	59·7	3·9	30·0010	·011	7	1	3	4	12	64·	44·5	30·472	29·557	19·5	0·915	·0290
	1844	58·6	2·8	30·0610	·015	5	2	5	5	13	69·	41·	30·675	29·675	28·	0·700	·0210
	1845	58·8	2·9	29·9820	·016	7	1	1	2	19	60·	42·2	30·504	29·704	26·8	0·750	·0500
	1846	59·6	2·7	30·0864	..	8	2	2	6	11	67·5	40·7	30·474	29·868	26·8	0·606	·0539
	1847	56·5	2·8	29·7839	..	7	0	1	2	18	73·7	38·5	30·095	29·307	35·2	0·788	·0639
		58·4	3·0	29·9881	·011	7	1	2	4	15	73·7	38·5	30·472	29·307	35·2	1·165	·0435
July	1843	58·4	4·3	29·8450	·018	9	2	1	1	15	61·	42·5	30·295	29·422	21·5	0·843	·0550
	1844	57·4	2·9	29·9120	·019	9	1	1	5	13	68·7	37·	30·305	29·547	29·7	0·858	·0640
	1845	57·9	3·0	30·0410	·013	10	4	3	2	10	67·2	41·5	30·390	29·798	25·7	0·691	·0720
	1846	57·9	3·3	30·0091	..	10	0	3	8	10	75·	40·	30·693	29·295	35·	1·338	·0584
	1847	57·8	3·6	29·7340	..	6	0	1	3	20	69·	41·	30·132	29·231	28·	0·901	·0340
		57·9	3·4	29·9252	·017	7	1	2	4	14	75·	37·	30·693	29·231	38·	1·372	·0567
August	1843	58·7	4·7	29·9950	·015	1	1	14	4	11	70·2	35·	30·350	29·667	35·2	0·683	·0530
	1844	59·2	2·7	29·9030	·020	4	2	2	7	13	71·5	42·	30·424	29·393	29·	1·031	·0630
	1845	61·7	5·3	29·8800	·026	1	2	6	8	13	71·5	42·	30·275	29·406	29·5	0·869	·0830
	1846	58·4	3·1	29·9757	..	5	3	3	5	10	69·5	40·	30·511	29·576	29·5	0·935	·0685
	1847	60·1	2·7	29·9571	..	1	2	11	7	7	72·7	41·7	30·395	29·416	31·	0·979	·0640
		59·5	3·7	29·9135	·020	2	3	7	6	11	72·7	35·	30·511	29·393	37·7	1·118	·0759
September	1843	61·3	7·0	29·7680	·029	2	2	10	5	11	86·5	43·	30·098	29·155	43·5	0·683	·0830
	1844	62·9	3·0	29·8720	·021	3	2	8	7	10	72·9	43·7	30·207	29·104	36·2	0·803	·0580
	1845	63·1	3·6	30·1150	·025	2	3	11	6	2	80·	47·	30·463	29·756	33·	0·707	·0580
	1846	61·3	2·5	30·0500	..	2	4	11	9	1	81·	45·5	30·458	29·569	35·5	0·889	·0843
	1847	63·5	4·7	29·8262	..	0	3	20	6	1	77·5	45·7	30·507	29·692	31·8	0·813	·0892
		63·2	4·3	29·9859	·026	2	2	13	7	4	86·5	43·	30·507	29·104	43·5	1·103	·0717
October	1843	68·2	5·2	29·8670	·027	1	0	11	6	6	80·7	49·9	30·260	29·523	30·8	0·677	[illegible]
	1844	67·4	4·5	29·8880	·023	1	1	9	10	6	88·7	44·2	30·321	29·379	44·5	0·942	·0520
	1845	67·7	4·7	29·9740	·036	0	0	13	8	10	86·8	49·5	30·218	29·672	37·3	0·546	·0640
	1846	68·5	4·7	29·9563	..	0	0	17	8	5	92·	52·	30·254	29·564	36·2	0·690	·0783
	1847	67·7	5·9	29·9535	..	0	1	17	8	1	87·	47·5	30·308	29·716	39·5	0·592	·0920
		67·9	4·9	29·9457	·028	0	1	11	8	3	88·7	44·2	30·321	29·379	44·5	0·942	·0701
November	1843	74·6	7·0	29·8170	·035	0	1	13	6	0	98·8	54·5	30·138	29·500	39·3	0·638	·0700
	1844	71·8	4·8	29·7110	·043	1	1	15	10	2	96·	48·	30·121	29·351	48·	0·767	·0800
	1845	75·4	7·4	29·7330	·037	0	3	9	5	2	102·7	55·	30·040	29·400	47·7	0·640	·0830
	1846	75·2	5·4	29·9119	..	0	1	26	3	0	95·5	52·	30·260	29·649	43·5	0·611	·0679
	1847	73·7	5·9	29·8079	..	0	4	21	2	1	101·5	55·	30·197	29·504	46·5	0·693	·0872
		73·7	6·1	29·8172	·038	0	3	17	5	1	102·7	48·	30·260	29·354	54·7	0·906	·0776
December	1843	75·8	6·7	29·8670	·040	1	1	19	6	0	94·	55·2	30·126	29·510	38·8	0·616	·0570
	1844	72·4	4·7	29·9100	·030	2	3	13	11	0	100·	50·5	30·349	29·513	49·5	0·836	·0790
	1845	76·7	5·3	29·7820	·025	0	2	22	3	1	102·5	61·	30·016	29·582	41·5	0·434	·0490
	1846	75·1	4·0	29·8446	..	0	2	20	8	1	95·	60·7	30·158	29·434	34·3	0·724	·0782
	1847	78·2	9·1	29·8321	..	0	7	18	3	0	94·	53·5	30·295	29·524	40·5	0·771	·0678
		75·4	5·9	29·8472	·032	1	1	18	6	0	102·5	50·5	30·349	29·431	52·	0·915	·0662

Month.	Mean. Max.	Mean. Min.	Mean. Evap.	Mean. Rain.	Mean at IX. A.M., five years. Temp. Air.	Air. Wet Ther.	Pressure at 32°.	Evap.	Winds. C.	N.	E.	S.	W.	Mean at Noon, five years. Temp. Air.	Air. Wet Ther.	Pressure.	Evap.	Winds. C.	N.	E.	S.	W.
January	82·5	66·9	4·052	4·508	74·1	4·4	29·8496	·075	6	3	9	8	5	76·5	5·1	29·8305	·027	1	1	16	10	2
February	82·9	65·9	3·508	3·378	74·1	4·4	29·8837	·061	6	1	5	6	5	76·5	5·6	29·8625	·021	1	2	11	7	2
March	77·5	61·	3·589	2·318	71·5	3·8	29·9563	·061	9	5	2	5	10	74·3	5·5	29·9335	·020	2	5	13	9	3
April	71·4	59·	3·062	3·347	65·2	3·4	29·9065	·063	6	4	1	2	16	68·7	4·8	29·9712	·018	4	3	5	9	8
May	65·4	52·9	2·403	3·954	58·6	1·9	30·0616	·038	1	2	1	0	25	62·2	3·2	30·0352	·011	8	1	2	3	15
June	60·	47·7	2·104	3·953	52·9	1·7	30·0316	·046	6	2	0	1	21	57·1	2·9	30·0063	·011	6	1	2	2	19
July	59·6	46·5	2·410	1·630	52·9	2·0	29·9799	·045	6	3	0	1	19	57·1	3·4	29·9505	·011	7	2	1	3	18
August	61·5	47·9	2·573	3·001	54·1	2·4	29·9894	·051	6	3	1	1	18	58·9	3·7	29·9531	·013	7	2	3	5	14
September	65·3	51·1	2·592	2·855	60·1	3·8	30·0576	·056	9	3	2	3	12	63·5	4·5	30·0240	·018	1	1	8	6	6
October	72·	56·2	3·461	1·519	65·4	3·8	29·9858	·074	6	3	4	8	9	68·1	4·9	29·9634	·024	2	2	12	9	1
November	79·8	62·2	4·222	2·002	72·7	5·3	29·8955	·063	4	3	7	8	6	71·6	6·1	29·8632	·033	1	2	15	7	3
December	80·3	64·	4·133	1·952	73·4	4·8	29·9134	·079	1	5	11	7	3	75·2	5·4	29·8733	·029	1	2	10	8	1
	71·52	57·03	38·412	35·077	64·63	3·45	29·9667	0·0623	6	3·3	3·6	4·2	[illegible]	67·72	4·49	29·9381	0·0197	3·7	2·2	9·2	6·5	7·9

Month.	Mean at III. P.M., five years. Temp. Air.	Air. Wet Ther.	Pressure.	Evap.	Winds. C.	N.	E.	S.	W.	Temperature. Max. 5 Years.	Min. 5 Years.	Pressure, 5 Years. Highest.	Lowest.	Therm. Range, 5 Years.	Barom. Range, 5 Years.	Mean Monthly Atmospheric Tide, 5 Years.
January	77·1	5·6	29·7828	·035	1	2	17	8	1	107·5	60·	30·454	29·411	47·5	0·743	0·0668
February	76·5	6·0	29·8241	·029	1	3	14		2	108·	59·	30·197	29·304	49·	0·893	·0556
March	74·2	5·3	29·8840	·028	0	1	19	8	2	93·	53·	30·293	29·389	40·	0·910	·0623
April	69·1	4·5	29·9331	·026	1	2	11	9	3	100·	47·5	30·367	29·508	52·5	0·759	·0631
May	63·4	3·5	29·9960	·016	6	1	5	7	10	76·	41·	30·385	29·401	35·	0·984	·0626
June	58·4	3·0	29·9881	·011	7	1	2	4	15	73·7	38·5	30·472	29·307	35·2	1·165	·0435
July	57·9	3·4	29·9252	·017	7	1	2	4	14	75·	37·	30·693	29·231	38·	1·372	·0567
August	59·5	3·7	29·9135	·020	2	3	7	6	11	72·7	35·	30·511	29·393	37·7	1·118	·0759
September	63·2	4·3	29·9859	·026	2	2	13	7	4	86·5	43·	30·507	29·104	43·5	1·103	·0717
October	67·9	4·9	29·9457	·028	0	1	11	8	3	88·7	44·2	30·321	29·379	43·5	0·942	·0701
November	73·7	6·1	29·8172	·028	0	3	17	5	1	102·7	48·	30·260	29·353	54·7	0·906	·0776
December	75·4	5·9	29·8472	·032	1	4	18	6	0	102·5	50·5	30·349	29·431	52·	0·915	·0662
	68·02	4·49	29·9021	0·0257	2·2	1·8	11·7	6	5·5	108·	35·	30·693	29·231	73·	1·372	0·0643

ON THE POSITION OF MACQUARIE HARBOUR, AND POINTS ON THE WEST COAST OF VAN DIEMEN'S LAND.

From the observations of Mr. Calder given at page 428, and Lieut. Kay's remarks upon these observations, given at pages 389—391, of the present number of the *Tasmanian Journal*, on the position of Macquarie Harbour and various points on the west coast of Van Diemen's Land, Capt. P. P. King, R.N., has addressed a letter to the editor, from which we make the following extract:—"I did not survey Macquarie Harbour farther up than the part where the shoals terminate; all to the east and south-east was from a plan given me at Hobart Town in 1818, surveyed, I believe, by Mr. Florance. I believe its extent was very much exaggerated by that gentleman, although I think the outline was sufficiently correct. *I am only responsible for the entrance.*

"The longitude of Cape Sorell was fixed by chronometer with reference to Hobart Town as given by Captain Flinders, and ought to be correct to one or two minutes of arc—or three at most. In some of the early maps the Harbour occupies a much larger extent of the interior of the western coast than it ought, but the error has been corrected. I have no means of reference to Frankland's map, to which the paper in the *Tasmanian Journal* refers, nor to my own papers, as I write this in Sydney."

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY OF LONDON.

February 24, 1846.

Descriptions of eleven new species of Australian Birds, by John Gould, Esq :—

ATHENE MARMORATA. *Ath. omni superiore corpore, alis, caudâque, saturatè fuscis, nuchâ autem alarum tectricibus, et scapularibus, obscurè albo maculatis; pogoniis internis primariorum ad basin et rectricum lateralium fasciis stramineis, ad extremam pogonium albicantibus, ornatis; facie et mento* *albidis; corpore inferiore saturatè fusco, albo et arenaceo colore maculato.*

All the upper surface, wings and tail dark brown, obscurely spotted with white round the back of the neck, on the wing-coverts and scapularies; inner webs of the primaries at their base, and the inner webs of the lateral tail-feathers crossed by bands, which are buff next the shaft and white towards the extremity of the webs; face and chin whitish; under surface dark brown, blotched with white and sandy brown; legs and thighs fawn-colour; bill horn-colour; feet yellow.

Total length, 14 inches; bill, $1\frac{1}{8}$; wing, $9\frac{1}{2}$; tail, 6; tarsi, 2.

Hab. South Australia.

Remark.—Nearly allied to *Athene maculata*, but much exceeding that species in size.

Athene rufa. *Ath. disco faciali saturatè fusco; omni corpore, suprà saturatè fusco, infrà arenaceo-rufo, multis autem lineis rufo-fuscis transversim fasciato.*

Facial disc dark brown; all the upper surface dark brown, crossed by numerous narrow bars of reddish brown, the tints becoming paler and the barrings larger and more distinct on the lower part of the body, wings and tail; all the under surface sandy red, crossed by numerous bars of reddish brown; the feathers of the throat with a line of brown down the centre; vent, legs and thighs of a paler tint, with the bars more numerous, but not so decided; bill horn-colour; toes yellowish, slightly clothed with feathers.

Total length, 20 inches; bill, $1\frac{3}{4}$; wing, $13\frac{1}{2}$; tail, $9\frac{1}{2}$; tarsi, $2\frac{1}{4}$.

Hab. Port Essington.

Remark.—A very powerful species, nearly allied to *Athene strenua.*

Alcyone pulchra. *Alc. omni corpore superiore splendidè purpurascente-cyaneo; alis fusco-nigris; loris, cristulâ post aurem, et gulâ, stramineis; lateribus pectoris purpurascente-cyaneis, in vini colorem ad latera mergentibus.*

All the upper surface shining purplish blue; wings brownish black; lores, tuft behind the ear, and throat, buff; under surface deep ferruginous orange; sides of the chest fine purplish blue, passing into a rich vinous tint on the flanks; irides and bill black; feet orange.

Total length, 6 inches; bill, 2; wing, $2\frac{7}{8}$; tail, $1\frac{1}{2}$; tarsi, $\frac{3}{8}$.

Hab. Port Essington.

Remark.—This is by far the finest of the Australian Alcyones, and is at once distinguished by the rich blue of the upper surface and the beautiful vinous colouring of the flanks.

Alcyone Diemenensis. *Alc. omni superiore corpore intensè cyaneo, ad uropygium et tectrices caudæ superiores splendidius; alis nigris cyaneo lavatis; gulâ stramineâ; vertice nigro indistinctè fasciato.*

All the upper surface deep blue, becoming more vivid on the rump and upper tail-coverts; wings black, washed with blue; throat buff; under surface of the body and wings ferruginous orange; on each side of the chest a patch of bluish black; lores and a small patch behind the ears buff; crown of the head indistinctly barred with black; irides and bill black; feet orange.

Total length, $6\frac{1}{2}$ inches; bill 2; wing, $3\frac{1}{8}$; tail, $1\frac{3}{4}$; tarsi, $\frac{1}{2}$.

Hab. Van Diemen's Land.

Remark.—Rather more robust than *Alcyone azurea* or *A. pulchra*, and differing from both in the blue of the upper surface, which is less brilliant and of a slight greenish tinge.

Eöpsaltria leucogaster. *Eöps. parvo maculo triangulari ante oculum nigro; vertice, corpore superiore, alis caudâque, saturatè griseis; corpore inferiore albo.*

Immediately before the eye a small triangular-shaped spot of black; above the eye a faint line of greyish white; crown of the head, all the upper surface, wings and tail dark slate-grey; the lateral tail-feathers largely tipped with white on their inner webs; all the under surface white; irides dark brown; bill and feet black.

Total length, $5\frac{3}{4}$ inches; bill, $0\frac{11}{16}$; wing, 3; tail, $2\frac{3}{4}$; tarsi, $\frac{7}{8}$.

Hab. Western Australia.

The sexes are alike in plumage.

Strepera arguta. *Strep. toto corpore nigro; remigum api-*

cibus fuscis; crisso, et pogoniis internis primariorum secundariorumque ad basin et tertiæ partis apicalis rectricum albis.

All the plumage black, becoming browner on the tips of the wing-feathers; base of the inner webs of the primaries and secondaries, the under tail coverts and the apical third of the inner webs of the tail-feathers white; irides yellow; bill and feet black.

Total length, 21 inches; bill, 2; wing, $11\frac{3}{4}$; tail, 10; tarsi, $2\frac{3}{4}$.

Hab. Van Diemen's Land.

Remark. This is the largest species of the genus I have yet seen.

Strepera plumbea. *Strep. corpore superiore plumbeo-griseo, ad frontem loresque multo saturatius; alis nigris; secundariorum marginibus griseis, apicibus, et crisso, albis.*

All the upper surface leaden-grey, becoming much darker on the forehead and lores; wings black; secondaries margined with grey and tipped with white; basal half of the inner webs of the primaries white, of the outer webs grey; the remainder of their length black, slightly tipped with white; tail black, margined with grey and largely tipped with white; all the under surface greyish-brown; under tail-coverts white; irides, bill, and feet, black.

Total length, 18 inches; bill, $2\frac{3}{4}$; wing, $11\frac{1}{2}$; tail, 9; tarsi, $2\frac{1}{2}$.

Hab. Western Australia.

Strepera melanoptera. *Strep. corpore superiore caudâque nigris; corpore inferiore fusco-nigro, abdomine griseo tincto; crisso rectricibusque, duabus intermediis exceptis, albis.*

All the upper surface, wings and tail black; under surface brownish-black, tinged with grey on the abdomen; under tail-coverts and tips of all but the two centre tail-feathers white; irides yellow; bill and feet black.

Total length, 19 inches; bill, 2; wing, 11; tail, 9; tarsi, $2\frac{5}{8}$.

Hab. South Australia.

Remark.—Distinguished from all other species by the total absence of any white mark on the wings.

Gallinula tenebrosa. *Gal. griseo-nigra; dorso scapularibusque nigris; crisso medio nigro ad latera albo.*

General plumage greyish-black, with the exception of the back and scapularies, which are deep brown, and the primaries and tail, which are nearly pure black; under tail-coverts black in the centre and pure white on the sides; frontal plate orange; base of the bill blood-red; tip greenish-yellow; above the knee a garter of yellow and scarlet; joints of the legs and feet green; under surface of the legs and feet olive; the sides of the tarsi and frontal plates of the toes yellow; frontal plates of the tarsi yellow; those nearest the knee stained with scarlet; irides olive.

Total length, 15 inches; bill, 1¼; wing, 8; tail, 3; tarsi, 2½.

Hab. South Australia.

Remark.—The above is the description of a female; the male is supposed to be larger in size, and to differ in being of a paler hue beneath, and in having the whole of the upper surface brown.

SYLOCHELIDON STRENUUS. *Syl. fronte vertice et nuchâ nitidè nigris; dorso alis caudâque pallidè cinereo-griseis; reliquis plumis albis.*

Forehead, crown and nape deep glossy black; back, wings and tail pale ashy grey, becoming lighter on the tail and deepening into dark grey on the primaries, the shafts of which are white; remainder of the plumage pure white; irides black; bill scarlet, stained with yellow on the sides and tip, and with greenish yellow near the extremity.

Total length, 20½ inches; bill, 4; wing, 16½; tail, 6½; tarsi, 2.

Hab. Southern coasts of Australia.

Remark.—The above is the description of the plumage of the breeding season; at other times the head instead of being wholly black is mottled with black and white.

SULA PERSONATA. *Sul. alba; tectricibus alarum majoribus, secundariis, tertialibus, rectricibus lateralibus, et rectricum intermediarum apicibus, intensè fuscis.*

The whole of the plumage pure white, with the exception of the greater wing-coverts, primaries, secondaries, tertiaries, the tips of the two central and the whole of the lateral tail-feathers, which are of a rich chocolate-brown; irides yellow; naked skin of the face and chin in dead specimen dull bluish black; legs greenish blue.

Total length, 29 inches; bill, 5; wing, 16½; tail, 8½; tarsi, 2½.

Hab. North and north-east coasts of Australia.

Remark.—A very robust and powerful species.

June 23, 1846.

Professor Owen read a Memoir (Part II.) on the Dinornis, descriptive of parts of the skeleton transmitted from New Zealand since the reading of Part I. (Proc. Zool. Soc., November, 1843.)

The bones referable to species defined in that communication were first described. Among these were the cranial portion of the skull of *Dinornis struthoides*, and a corresponding portion of the skull of *Dinornis dromioides*, which in general form more resembled that part of the skull of the Dodo than of any existing bird; but they are remarkable for the great breadth of a low occipital region, which slopes from below upwards and forwards; the almost flat parietal region is continued directly forwards into the broad sloping frontal region; the temporal fossæ are remarkably wide and deep; the orbits small; the olfactory chamber expanded posteriorly, but not to so great an extent as in the Apteryx; the plane of the foramen magnum is vertical. Many other characteristics in the cranial organization of the genus *Dinornis* were described, and the specific distinction of the two mutilated crania pointed out.

The tympanic bone of the *Dinornis giganteus* was described in detail, and compared with the same bone in existing birds.

Different cervical and dorsal vertebræ, referable to the species *Din. giganteus, ingens, struthoides* and *crassus*, were described. These vertebræ were remarkably entire, and with some of the best preserved bones of the extremities, described in a subsequent part of the memoir, had been obtained from a turbary formation on the coast of the Middle Island, near Waikawaite.

One of the most interesting of the novel acquisitions from this locality was an almost entire sternum, referred by Prof. Owen to the *Din. giganteus.* It is a subquadrate, keel-less, shield-shaped, bone, broader than long, with the posterior angles and the xiphoid process prolonged, as in the Apteryx, but without the anterior emargination. The coracoid depressions were small. This bone was minutely described and compared with the keel-less sternums of the existing Struthious birds; that of the Apteryx being demonstrated to be most like the sternum of *Dinornis*.

The following bones of the extremities, imperfectly or not at all known in 1843, were next described:—

The entire femur of *Dinornis giganteus*. Entire tibiæ and tarso-metatarsi of *Din. giganteus*, indicating a robust variety of this stupendous bird to have existed in the Middle Island.

The tarso-metatarsus of *Dinornis ingens* from the North Island, distinguished by a rough depression indicative of a fourth or back-toe, and consequently a genus *(Palapteryx)* distinct from *Dinornis*.

Femora, tibiæ, and tarso-metatarsi of a Dinornis of the height of the *Din. ingens*, but of more robust proportions, from the Middle Island; with a feeble indication of a surface for a back-toe.

The tibiæ and tarso-metatarsi of *Dinornis (Palapteryx) dromioides* from the North Island, confirming by their long and slender proportions the conjecture hazarded in the author's former memoir (Zool. Trans., vol iii., pp. 252, 264). The tarso-metatarsus also shows the rough elliptical surface for the attachment of the back-toe, indicating the *Din. dromioides* to belong to the same generic or subgeneric section as *Din. ingens* from the North Island.

Femora, tibiæ and *tarso-metatarsi*, from the Middle Island, were next exhibited and described, which establish a new species, for which Prof. Owen proposed the name of *Din. casuarinus:* a small and feeble depression, five lines by three lines, indicates that this species had a back-toe in the corresponding position with that in the Apteryx, but more rudimental.

A very remarkable femur and tarso-metatarsal bone, also from the Middle Island, were exhibited, belonging to an additional tridactyle species, to which the name of *Dinornis crassus* was given. Of this species the author remarks:—"With a stature nearly equal to that of the Ostrich, the femur and tarso-metatarsus present double the thickness in proportion to their length. It must have been the strongest and most robust of birds, and the best representative of the pachydermal type in the feathered class."

The third new species is comparatively a small one, being intermediate in size between the *Dinornis didiformis* and the *Din. otidiformis;* it was founded on remains exclusively from the North Island, and was called by the author *Dinornis curtus.*

The author expressed his grateful acknowledgments to the following gentlemen, to whom he was indebted for the opportunity of examining and depicting the specimens described in the present memoir:—Capt. Sir Everard Home, Bart., R.N.; the Hon. William Martin, Chief Justice of New Zealand; the Rev. Archdeacon Williams, Corr. Mem. Z. S.; William Swainson, Esq., F.R.S., F.L.S., the distinguished naturalist; Colonel William Wakefield; J. R. Gowen, Esq., a Director of the New Zealand Company; the Rev. William Cotton, M.A.; the Rev. Richard Taylor, M.A.; the Rev. William Colenso, M.A.; Dr. Mackellar; George Bennett, Esq., F.L.S.; and Percy Earl, Esq.

The paper (which was illustrated by numerous figures) concluded by some general comparisons and remarks on the geographical distribution of the different species of *Dinornis,* and with the following table of admeasurements of the bones of *Dinornis* in comparison with those of existing Struthionidæ.*

April 11, 1846.

John Gould, Esq., read a description of a new species of *Cinclosoma:—*

CINCLOSOMA CINNAMOMEUS. *Cinc. toto superiore corpore, scapularibus, rectricibus duabus intermediis, pectore ad latera, et lateribus cinnamomeis; alarum tectricibus nigris, plumis singulis ad apices albis; lineâ superciliari indistinctè*

[*] Average Dimensions of Bones of *Dinornis* i

	Din. giganteus.		Din. ingens.		Ostrich.		Din. crassus.	
	in.	lin.	in.	lin.	in.	lin.	in.	lin.
Length of femur	16	0	13	6	11	0	12	0
Circumference of ditto..	7	3	6	10	5	3	6	8
Length of tibia	35	0	28	10	18	6	..	..
Circumference of tibia..	6	6	6	0	4	3	..	..
Length of metatarsus	18	6	14	0	16	0	8	6
Circumference of ditto..	5	6	5	0	3	7	4	8

albâ; gulâ loroque nitidè nigris; magnâ ovatâ maculâ infra oculum, et corpore inferiore albis; pectore magnâ maculâ nitidè nigrâ, formâ tanquam sagittæ, signatâ.

The whole of the upper surface, scapularies, two central tail-feathers, sides of the breast and flanks cinnamon-brown; wing-coverts jet-black, each feather largely tipped with white; above the eye a faint stripe of white; lores and throat glossy black, with a large oval patch of white seated within the black, beneath the eye; under surface white, with a large arrow-shaped patch of glossy black on the breast; feathers on the sides of the abdomen with a broad stripe of black down the centre; lateral tail-feathers jet-black, largely tipped with pure white; under tail-coverts black for four-fifths of their length on the outer web, their inner webs and tips white; eyes brown; tarsi olive; toes black.

Total length, $7\frac{1}{2}$ inches; bill, $\frac{7}{8}$; wing, $3\frac{3}{4}$; tail, $3\frac{1}{4}$; tarsi, $1\frac{1}{8}$.

Hab. South Australia. Shot by Capt. Sturt at the depôt, lat. 29° 40′, June 9, 1845.

This fine new species, discovered by the enterprising traveller Sturt, is of peculiar interest, as being one of the few inhabitants of the sterile and inhospitable interior of Australia, and as forming the third species of the genus known to belong to that portion of the globe; it is considerably smaller than either of its congeners, and also differs from them in the beautiful cinnamon colouring of the upper surface. It now forms part of the national collection at the British Museum.

PARIS ACADEMY OF SCIENCES.

March 29, 1847.

M. Boussingault read the Report of a Committee on a paper

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comparison with those of existing *Struthionidæ*.

[in.] ...oides.	Emeu.	Din. casuarinus.	Din. dromioides.	Din. didiformis.	Din. curtus.	Din. otidiformis.	Apteryx.
lin.	in. lin.	in. lin.	in. lin.	in. lin.	in. lin.	in. lin.	in. lin.
0	9 0	10 2	9 6	8 0	0 0	0 0	3 9
2	3 7	4 9	4 0	4 0	2 9	2 1	1 0
0	16 10	19 0	21 0	16 3	11 3	8 9	5 3
0	3 4	4 9	4 0	4 1	2 9	1 11	1 3
0	15 0	8 0	10 5	7 0	5 0	....	3 3
3	3 0	4 2	3 9	3 6	2 10	....	0 0

by M. Vincent, relative to the means employed in detecting by a chemical test, the admixture of *Phormium tenax*, or New Zealand flax, with the hemp and flax of European growth and preparation. It appears that the *Phormium tenax* does not possess certain qualities essential for naval cordage, and it was considered important to discover the means of detecting the presence of this article. M. Vincent has found that if the *Phormium tenax* be immersed in pure nitric acid, its fibres, owing to the presence of some azotic substance, take a blood-red tint; which is not the case with the hemp and flax admitted for use in the navy. Thus it is very easy, by subjecting a rope to the action of nitric acid, to discover whether there has been any admixture of *Phormium tenax*. The report of the Committee confirms the statement of M. Vincent. —*Athenæum*.

END OF VOL. III.

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF JULY, 1848.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine a.m. Dry.	EXTERNAL THERMOMETER. Nine a.m. Wet.	EXTERNAL THERMOMETER. Three p.m. Dry.	EXTERNAL THERMOMETER. Three p.m. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 a.m.	WINDS. 3 p.m.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	30.215	44°	30.225	46°	39°	38°	51°	47°	51°	39°	Calm	Calm	Nil.	Nil.
2	30.249	46	30.120	47	48	47	51	48	52	48	S.W.	S.W.		1.632
3	29.796	48	29.640	48	50	50	50	48	51	41	N.W.	N.W.	.030	1.092
4	29.800	46	29.776	47	44	42	49	46	49	38	N.W.	N.W.		Nil.
5	29.838	45	29.839	46	46	45	48	45	51	33	N.W.	N.W.	.040	Nil.
6	29.995	44	30.025	46	44	41	48	43	48	42	Calm	S.E.		Nil.
7	30.149	45	30.149	46	46	44	50	47	50	42	S.E.	S.E.	.020	Nil.
8	30.241	46	30.250	47	46	44	51	48	51	42	S.W.	S.W.		Nil.
9	30.307	45	30.262	47	46	42	50	47	50	43	S.W.	S.W.	.040	Nil.
10	30.298	45	30.245	46	45	43	48	44	48	33	S.S.W.	S.S.W.		Nil.
11	30.327	42	30.308	45	37	35	46	42	47	33	Calm	S.S.W.	.020	Nil.
12	30.343	43	30.305	43	37	36	53	41	46	31	Calm	Calm		Nil.
13	30.272	40	30.173	43	35	33	45	42	52	34°5	S.W.	S.W.	.030	.018
14	30.101	42	30.109	42	38	37	48	46	52	34°5	N.W.	N.W.		Nil.
15	30.200	42	30.305	42	38	37	48	46	50	33	N.W.	N.W.	.010	Nil.
16	31.325	42	30.263	45	40	39	49	45	49	38	Calm	N.W.		Nil.
17	30.139	44	30.058	45	44	43	50	47	50	43	Calm	N.W.	.030	Nil.
18	30.000	45	30.029	47	45	44	50	47	52	36°5	N.E.	S.		Nil.
19	30.309	43	39.330	45	40	38	46	45	46	28	S.E.	S.E.	.030	Nil.
20	30.388	41	30.328	42	36	34	45	43	45	27°5	Calm	Calm		Nil.
21	30.380	38	30.329	42	29	28	46	42	46	29	Calm	S.E.	.020	Nil.
22	30.405	43	30.356	45	41	37	48	46	48	39	Calm	S.E.		Nil.
23	30.297	42	30.145	45	40	39	49	47	49	38	Calm	N.W.	.030	Nil.
24	30.020	44	29.875	46	39	37	53	49	53	39	Calm	N.W.		.048
25	29.762	46	29.701	47	46	45	51	47	51°5	32	Calm	S.E.	.050	Nil.
26	29.882	42	29.936	45	36	34	47	45	47	36	Calm	S.E.		Nil.
27	30.148	44	30.164	45	43	40	48	42	48	37	S.E.	S.E.	.040	Nil.
28	30.313	43	30.229	43	40	37	46	40	46	31	Calm	S.E.		Nil.
29	30.209	43	30.175	47	42	40	48	44	48	31	Calm	S.E.	.030	Nil.
30	30.062	43	29.977	44	43	40	47	44	47	31	Calm	Calm		Nil.
31	29.977	42	29.876	45	37	36	48	44	48	37	Calm	Calm		Nil.
Mean	30.153	43°4	30.113	45°1	41°9	39°5	48°2	45°	49°	36°1		Total..	.420	2.790

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF AUGUST, 1848.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine a.m.		Three p.m.							
					Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 a.m.	3 p.m.		
1	29.700	44°	29.771	45°	47°	41°	49°	48°	49°	38°	N.W.	N.W.	.010	.168
2	29.958	44	29.975	48	43	41	52	48	52	38	N.W.	S.E.	.020	Nil.
3	30.050	44	29.966	46	42	41	52	48	52	35	Calm	N.E.		Nil.
4	29.829	44	29.839	45	42	41	46	40	47	32	Calm	S.E.	.060	Nil.
5	29.869	42	30.067	46	40	37	49	45	49	30	Calm	S.E.		Nil.
6	30.236	42	30.285	45	37	35	50	45	50	30	Calm	S.E.	.010	Nil.
7	30.376	40	30.304	44	37	33	49	45	49	30	Calm	Calm		Nil.
8	30.340	41	30.222	44	37	36	49	45	53	37	Calm	S.E.	.020	Nil.
9	30.088	46	30.010	47	52	49	54	48	54	43	Calm	S.E.		.522
10	29.667	46	29.479	50	51°5	49	56	51	56	46	Calm	N.W.	.060	Nil.
11	29.652	47	29.782	48	48	46	52	46	52	33	N.W.	N.W.		Nil.
12	30.149	42	30.175	46	38	37	52	48	52	33	Calm	Calm	.020	Nil.
13	30.379	43	30.342	46	41	40	52	48	52	34	Calm	N.W.		Nil.
14	30.265	43	30.085	47	40	38	52	48	53	40	Calm	N.W.	.020	.612
15	29.810	46	29.684	47	47	46	50	48	50	40°5	N.W.	N.W.		.384
16	29.450	45	29.320	46	44	42	46	43	47	35	N.W.	N.W.	.030	Nil.
17	29.500	42	29.526	45	37	35	48	43	48	34	Calm	S.E.		Nil.
18	29.758	43	29.812	46	44	41	49	43	49	30	Calm	S.E.	.030	Nil.
19	29.982	40	30.000	45	35	33	51	46	51	32	Calm	E.		Nil.
20	30.169	43	30.100	46	41	40	51	48	51	35	Calm	S.E.	.030	.252
21	29.913	43	29.723	47	44	42	54	48	54	44	Calm	N.W.		.090
22	29.585	47	29.623	48	50	48	53	48	55	39	N.W.	N.W.	.030	.144
23	29.967	46	30.023	48	48	45	48	45	52	41	N.W.	N.W.		Nil.
24	29.633	45	29.587	48	44	43	50	48	52	31	S.W.	S.W.	.040	Nil.
25	30.058	43	29.997	48	41	39	50	48	50	33	Calm	S.W.		Nil.
26	29.970	43	29.882	46	41	38	50	46	50	31°5	Calm	N.W.	.060	Nil.
27	29.867	42	29.841	46	41	39	54	47	54	32	Calm	S.W.		.024
28	29.912	42	29.928	47	36	34	54	48	54	37	Calm	Calm	.030	Nil.
29	29.948	47	29.899	48	49	46	54	48	54	40	Calm	S.E.		.420
30	29.881	45	29.795	47	44	42	53	48	53	40	Calm	S.E.	.030	.672
31	29.581	46	29.447	47	47	45	51	49	51	46	Calm	N.W.		
Mean	29.922	43°7	29.885	45°4	42°5	40°8	50°9	46°6	51°4	36°1		Total..	.500	3.288

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF SEPTEMBER, 1848.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine a.m. Dry.	EXTERNAL THERMOMETER. Nine a.m. Wet.	EXTERNAL THERMOMETER. Three p.m. Dry.	EXTERNAL THERMOMETER. Three p.m. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 a.m.	WINDS. 3 p.m.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29.083	47°	29.012	48°	46°	44°	50°	46°	50°	45°	N.W.	N.W.	.060	.510
2	28.984	47	29.100	48	48	45	53	48	53	39	N.W.	W.		Nil.
3	29.394	46	29.317	47	48	44	49	46	49°5	39	W.	N.W.	.050	.276
4	29.495	46	29.510	48	48	44	50	48	52	39	N.	N.W.		.060
5	29.399	45	29.247	45	47	44	47	43	47	41	N.	N.W.	.040	.948
6	29.180	45	29.221	47	47	43	49	44	50	33	N.W.	N.W.		Nil.
7	29.608	43	29.744	47	42	39	52	45	52	32	Calm	S.W.	.070	Nil.
8	30.075	43	30.042	47	43	41	53	49	55	35	Calm	S.W.		Nil.
9	30.200	45	30.148	48	50	46	55	50	55	37	Calm	W.	.020	Nil.
10	30.183	45	30.083	48	43	42	52	48	52	39	Calm	S.W.		.042
11	30.113	48	30.076	48	50	48	55	50	55	45	Calm	W.	.030	.015
12	30.022	48	29.960	50	50	49	57	55	58	49°5	Calm	S.W.		Nil.
13	30.015	50	29.954	52	58	54	56	52	58	49	S.W.	S.W.	.070	Nil.
14	29.738	50	29.629	53	55	52	59	54	59	47	N.W.	N.W.		.502
15	29.307	50	29.575	50	50	48	51	44	52	33	N.W.	W.S.W.	.060	Nil.
16	29.990	45	30.043	48	45	41	51	45	51	35	Calm	S.W.		Nil.
17	30.079	43	30.009	46	39°5	38	48	44	49	38	N.W.	N.W.	.060	.024
18	30.215	46	30.292	50	48	43	52	47	52	39	S.E.	Calm		Nil.
19	30.301	45	30.241	49	47	43	54	49	55	42	Calm	Calm	.050	Nil.
20	30.262	46	30.196	50	49	46	55	49	55	47	Calm	E.		Nil.
21	30.168	51	30.085	50	55	50	55	50	55	50	S.	S.E.	.050	Nil.
22	29.943	50	29.830	51	55	50	56	52	56	49	S.E.	S.E.		.066
23	29.652	50	29.537	52	56	50	57	54	57	49	N.W.	N.W.	.050	.384
24	29.125	52	29.125	50	56	54	51	49	56	46	N.W.	N.W.		.528
25	29.170	49	29.117	50	52	48	53	52	54	40	N.W.	S.W.byW.	.060	.024
26	29.571	49	29.500	53	54	50	62	57	62	46	Calm	W.		.240
27	29.391	49	29.533	48	46	44	48	43	50	37	S.E.	S.E.	.060	Nil.
28	29.998	48	30.049	46	50	45	49	45	55	43	Calm	S.E.		Nil.
29	30.000	47	29.936	50	49	46	59	54	54	44	Calm	N.W.	.080	Nil.
30	29.929	49	29.764	54	51	52	68	59	68	50	Calm	N.W.		.384
Mean	29.753	47°2	29.729	49°1	49°3	46°1	53°5	49°	54°2	41°9		Total..	.810	4.039

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF OCTOBER, 1848.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
	Barometer	Attached Therm.	Barometer	Attached Therm.	Nine a.m.		Three p.m.							
					Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 a.m.	3 p.m.		
1	29.638	52°	29.589	52°	53°	49°	54°	50°	62°	47°	N.W.	N.W.	.030	.648
2	29.773	50	29.775	51	53	50	54	49	55	37	W.N.W.	S.W.	.040	.096
3	30.033	47	30.023	50	50	46	54	49	55	37	Calm	N.W.	.030	.144
4	30.105	46	30.170	51	49	45	55	50	56	38	Calm	S.W.	.020	Nil.
5	30.060	47	29.913	50	49	45	53	47	54	43	Calm	N.W.	.040	Nil.
6	30.157	48	30.160	51	50	43	56	43	59	40	S.W.	N.W.	050	Nil.
7	30.320	52	30.269	52	59	52	61	53	61	39	Calm	N.W.	.030	Nil.
8	30.290	48	30.180	52	52	49	61	53	61	46	Calm	N.W.	.040	Nil.
9	30.096	49	29.947	52	53	47	58	51	60	46	Calm	N.W.	.030	Nil.
10	29.591	51	29.415	54	60	55	65	62	65	47	Calm	N.W.	.040	Nil.
11	29.380	52	29.797	52	54	52	54	51	57	41	N.W.	N.W.	.030	.384
12	29.327	53	29.337	52	56	52	54	52	58	48	Calm	S.W.	.020	.066
13	29.813	53	29.889	54	56	52	62	60	62	52	S.E.	S.E.	.050	.048
14	30.015	52	29.957	52	55	53	57	51	62	51	N.W.	N.W.	.020	.036
15	29.733	53	29.647	57	61	57	64	53	64	45	N.W.	N.W.	.060	Nil.
16	29.838	52	29.708	55	57	51	63	54	63	39	N.W.	N.W.	.060	Nil.
17	29.803	50	29.854	56	55	46°5	61	54	61	39	S.E.	S.E.	.060	Nil.
18	30.004	52	29.963	54	61	53	63	55	63	44	Calm	N.W.	.030	Nil.
19	30.180	50	30.146	55	57	53	61	55	63	41	Calm	N.W.	.040	Nil.
20	30.120	51	29.988	54	59	55	64	63	64	44	Calm	N.W.	.040	Nil.
21	29.575	53	29.422	53	60	56	58	57	60	51	Calm	N.W.	.020	.282
22	29.469	53	29.496	55	60	57	63	60	64	47	Calm	N.W.	.040	Nil.
23	29.737	53	29.649	56	60	57	62	56	62	46	Calm	N.W.	.040	1.272
24	29.868	51	29.885	53	55	50	61	59	55	39	Calm	W.	.030	Nil.
25	30.119	50	30.067	55	55	50	61	56	62	41	Calm	N.W.	.050	Nil.
26	30.156	51	30.083	54	58	51	60	53	60	48	Calm	N.W.	.040	Nil.
27	29.820	52	29.753	53	56	53	59	56	62	46	Calm	N.W.	.030	.192
28	29.840	53	29.763	56	61	58	66	59	68	48	Calm	N.W.	.040	.144
29	29.560	53	29.437	53	56	52	56	53	56	43	S.E.	S.E.	.020	.306
30	29.592	52	29.623	53	56	50	57	51	57	44	Calm	S.W.	.040	.012
31	29.583	50	29.490	52	53	49	53	50	54	46	N.W.	N.W.	.020	.654
Mean	29.857	50°9	29.819	53°1	55°7	51°2	59°	54°	60°1	43°9		Total..	1.130	4.284

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF NOVEMBER, 1848.

DATE.	NINE O'CLOCK. Barometer	NINE O'CLOCK. Attached Therm.	THREE O'CLOCK. Barometer	THREE O'CLOCK. Attached Therm.	EXTERNAL THERMOMETER. Nine a.m. Dry.	EXTERNAL THERMOMETER. Nine a.m. Wet.	EXTERNAL THERMOMETER. Three p.m. Dry.	EXTERNAL THERMOMETER. Three p.m. Wet.	Extreme Range of Temperature. Highest.	Extreme Range of Temperature. Lowest.	WINDS. 9 a.m.	WINDS. 3 p.m.	Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
1	29.490	51°	29.473	51°	54°	51°	54°	52°	60°	44°5	N.W.	W.	.030	.284
2	29.586	52	29.567	54	60	55	60	56	60	50	Calm	S.E.	.020	.360
3	29.799	53	29.823	55	57	53	60	55	60	43	S.E.	S.E.	.040	Nil.
4	29.892	52	29.814	55	59	55	64	57	64	50	Calm	N.W.	.040	Nil.
5	29.689	53	29.550	57	60	56	65	58	65	50	N.W.	N.W.	.050	.840
6	29.205	53	29.400	54	55	52	55	50	57	43	N.W.	W	.050	.084
7	29.833	52	29.848	54	57	51	62	56	62	45	W.	N.W.	.050	Nil.
8	29.972	53	29.853	54	59	53	64	58	64	53	N.W.	N.W.	.040	.732
9	29.420	53	29.441	55	55	55	64	60	64	46	N.W.	S.W.	.050	.264
10	29.741	53	29.724	54	60	53	57	52	60	49	N.W.	N.W.	.060	.312
11	29.512	51	29.460	54	51	48	55	50	58	49	Calm	N.N.W	.040	.036
12	29.455	50	29.496	53	51	48	56	54	57	43	N.W.	S W.	.050	Nil.
13	29.918	50	29.955	53	57	52	62	53	62	41	Calm	S.W.	.050	Nil.
14	30.035	51	29.945	55	61	54	65	60	65	54	Calm	N.W.	.060	Nil.
15	29.569	55	29.402	57	62	58	64	62	64	57	N.	Calm	.040	.528
16	29.025	55	29.050	55	59	57	60	57	60	47	E.	S.	.040	.162
17	29.288	52	29.279	53	55	48	55	49	55	47	Calm	W.	.070	Nil.
18	29.367	50	29.428	53	53	50	59	51	61	45	N.W.	S.W.	.040	Nil.
19	29.596	53	29.527	55	59	51	60	56	60	44	N.W.	N.W.	.060	.246
20	29.462	51	29.433	52	51	48	53	53	55	48	N.W.	N.W.	.040	.144
21	29.556	51	29.550	55	55	52	61	55	61	46	N.W.	N.	.040	Nil.
22	29.570	52	29.415	51	55	50	51	48	56	37	N.	N.	.040	.234
23	29.252	48	29.325	53	49	45	57	48	60	44	N.W.	W.	.030	Nil.
24	29.478	50	29.509	53	54	43	61	52	61	41	N.W.	W.	.070	.024
25	29.772	51	29.713	53	56	50	58	52	60	51	N.W.	N.W.	.040	Nil.
26	29.675	53	29.659	55	60	55	64	60	64	48	N.W.	N.W.	.070	Nil.
27	29.700	53	29.528	52	57	53	55	52	61	42	N.W.	N.W.	.040	.294
28	29.635	50	29.764	54	54	48	59	53	62	36	N.W.	S.W.	.050	Nil.
29	30.037	52	29.014	55	62	55	62	52	66	47	N.W.	N.W.	.070	Nil.
30	29.990	53	29.870	56	59	54	71	62	71	56	Calm	N.W.	.030	Nil.
Mean	29.618	51°8	29.594	54°	56°5	51°9	59°7	54°4	61°1	46°3		Total..	1.390	4.508

METEOROLOGICAL REGISTER AT LAUNCESTON FOR THE MONTH OF DECEMBER, 1848.

DATE.	NINE O'CLOCK.		THREE O'CLOCK.		EXTERNAL THERMOMETER.				Extreme Range of Temperature.		WINDS.		Evaporation in 24 hours: in inches.	Rain fallen in inches in 24 hours.
					Nine a.m.		Three p.m.							
	Barometer	Attached Therm.	Barometer	Attached Therm.	Dry.	Wet.	Dry.	Wet.	Highest.	Lowest.	9 a.m.	3 p.m.		
1	29.580	55°	29.616	56°	64°	60°	64°	59°	64°	41°	N.W.	N.W.	.050	Nil.
2	29.934	53	29.962	56	61	54	67	57	67	47	Calm	N.W.	.060	Nil.
3	29.787	54	29.720	55	58	52	61	55	62	52	N.	N.W.	.020	.216
4	29.443	53	29.380	54	57	53	56	53	57	42	N.	N.W.	.020	.338
5	29.227	50	29.145	52	50	48	54	49	55	43	N.W.	S.W.	.040	.300
6	29.410	50	29.462	53	55	48	58	54	58°5	47	S.W.	S.W.	.060	Nil.
7	29.505	51	29.531	51	57	52	62	53	62	41	S.W.	S.W.	.060	Nil.
8	29.715	52	29.691	54	58	50	58	52	59	52	N.W.	N.W.	.050	.396
9	29.277	52	29.445	53	54	50	56	50	57	42	N.W.	N.W.	.050	.024
10	29.764	50	29.828	53	52	47	57	48	59	45	S.W.	N.W.	.050	Nil.
11	29.900	52	29.910	54	59	52	61	55	61	52	N.W.	N.W.	.060	Nil.
12	30.012	53	29.977	57	58	54	67	60	71	51	N.W.	N.W.	.040	Nil.
13	29.909	55	29.850	58	70	64	74	66	74	48	N.W.	N.W.	.060	Nil.
14	29.790	57	29.820	60	59	55	74	64	76	54	N.W.	N.W.	.040	.009
15	29.947	56	29.998	61	61	55	70	63	71	50	N.W.	N.W.	.080	Nil.
16	30.064	57	30.040	60	66	58	72	60	72	50	N.W.	N.W.	.050	Nil.
17	30.146	57	30.103	60	68	54	74	60	74	57	N.W.	N.W.	.050	Nil.
18	30.228	56	30.151	59	61	56	69	60	69	53	N.W.	N.W.	.050	Nil.
19	30.139	56	30.015	59	62	50	67	59	69	53	N.W.	N.W.	.070	Nil.
20	29.883	57	29.808	60	69	61°5	71°5	60°5	72	54	Calm	S.	.090	Nil.
21	29.953	55	29.870	59	63	55	68	59	70	48	S.W.	N.W.	.060	Nil.
22	29.785	57	29.660	59	69	60	72	62	72	52	N.W.	N.W.	.060	Nil.
23	29.631	57	29.622	61	69	62	73	64	75	50	N.W.	N.W.	.100	Nil.
24	29.952	53	29.942	58	56	52	66	60	66	49	S.E.	N.W.	.060	.126
25	30.076	56	30.009	57	63	56	65	58	65	50	Calm	Calm	.045	.102
26	29.981	52	29.873	51	51	51	57	54	59	51	Calm	S.	.025	.294
27	29.757	54	29.680	57	59	56	67	62	67	57	S.W.	S.W.	.020	Nil.
28	29.600	57	29.467	58	64	61	66	61	67	43	W.	N.W.	.040	.330
29	29.334	55	29.170	54	58	52	53	50	58	46	N.	N.	.040	.528
30	29.453	52	29.548	55	55	'49	61	53	65	45	N.W.	S.W.	.060	.018
31	29.900	54	29.913	57	66	58	72	64	72	51	S.W.	N.W.	.050	Nil.
Mean	29.778	54°2	29.748	56°6	60°3	54°3	64°9	57°5	66°	49°		Total..	1.610	2.681

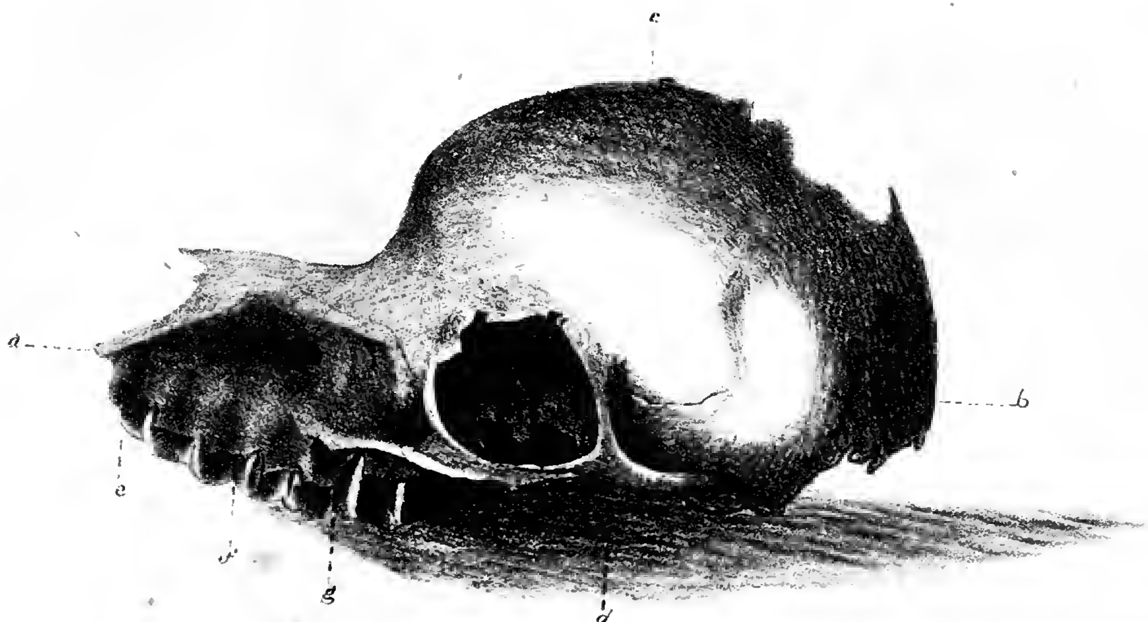
INDEX.

ERRATA.

Page 11, line 17.—For *nearly* read *from*.
,, 65, ,, 21.—Dele *a*.
,, 237, ,, 16.—For *showing* read *ascertaining*.
,, 237, ,, 29.—For *antipoda* read *depressa*.
,, 307, ,, 18.—For 1847 read 1845.

Henry Dowling, Printer, Launceston.

Plate III



Printed by T. Browne, Hobart Town.

PLATE IV

PLATE V.

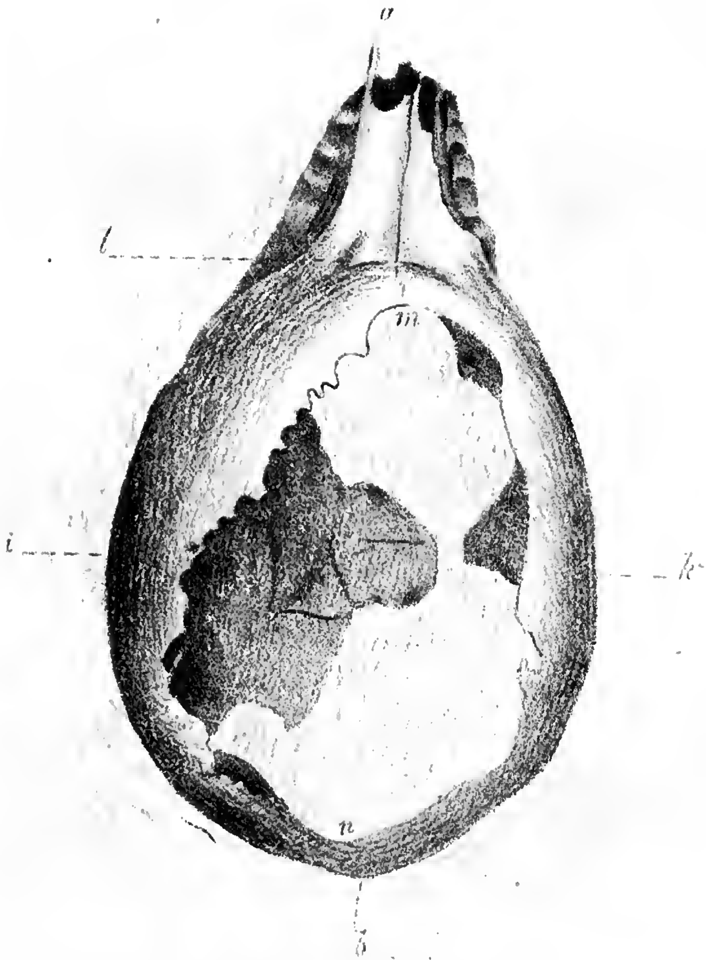
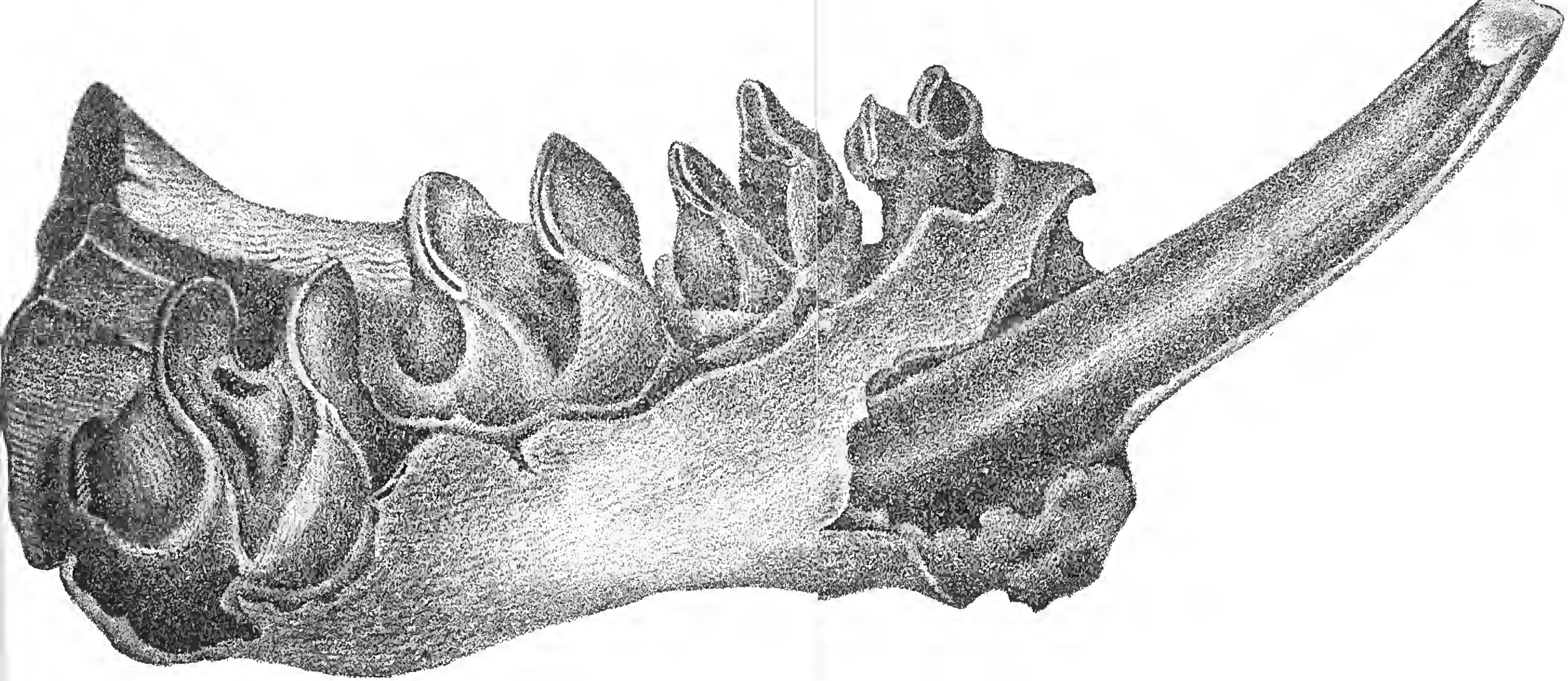


Plate VI.



DIPROTODON AUSTRALIS, Owen.

Hobart Town V.D.L. Printed by T. Browne, Macquarie St

DIRECTIONS TO THE BINDER.

Map of Australia to face page 50.
Plate II. *Richea pandanifolia*, page 72.
Plates III, IV, and V. Skull of so-called "*Bunyip*," page 148.
Plate VI. Jaw of *Diprotodon Australis*, page 388.

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*** *It is requested that all communications for the Tasmanian Society and Tasmanian Journal may be addressed to the Secretary,* MR. RONALD C. GUNN, *Launceston, Tasmania.*