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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, arboresecent *zamia*s 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. 36sec. to 20 deg. 37 min. 13sec., 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 north-west and turns to the eastward. I made my first camp in the bed of this river, in latitude 20 deg. 37 min. 13sec., 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 Loto-phagians." 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 beau-

tifully 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, talcschist, 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 *Bossiaea 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 freshea 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, fre-

quently 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 consi-

derable, 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 lati-

tude 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 psammitic,) 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 Montjealk, 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.

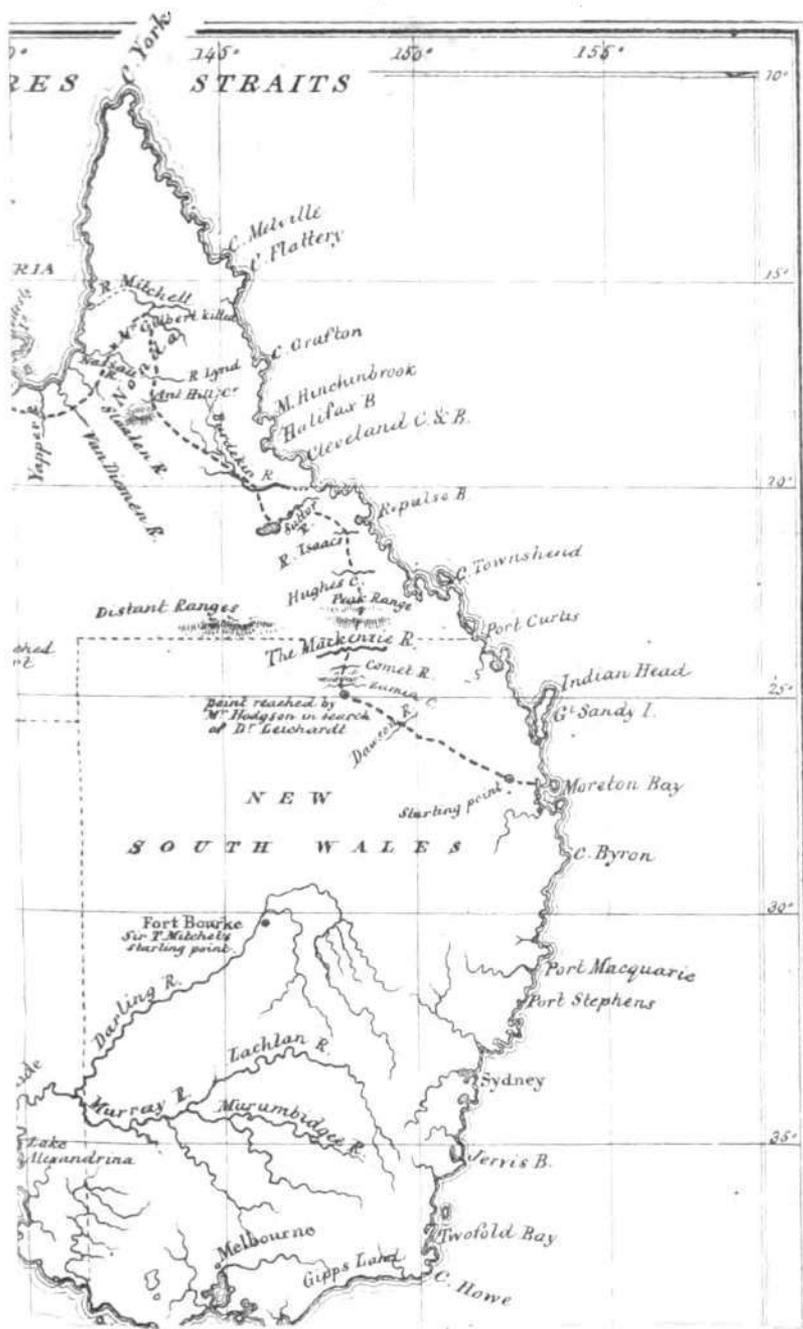
I entered Victoria with one pack bullock and with eight horses. We had killed fifteen of our bullocks, and had dried their meat. Along the east coast, and at the east side of the gulf, they kept in very good condition, and yielded a fine supply of fat meat; but at the west side long stages, bad grass, 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 Nelumbó (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 Mountrorris 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-



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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 $34^{\circ} 26'$ south, longitude $149^{\circ} 23'$ 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 sterile 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.