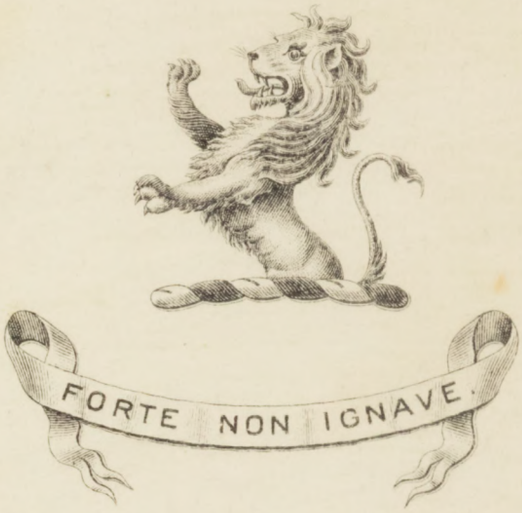


*Alfred Lee.*

*CASE* ..... *SHELF* .....

*No.* .....

# Map to illustrate The Report of an Expedition into The interior of WESTERN AUSTRALIA, in 1854.

By Robert Austin, Assistant Surveyor.

10 20 30 40 50 100
English Miles.

SHARK BAY
Bernier I.
Dorre I.
Dirk Hartog I.
Gascoigne R.
Hamelin Harbour
Peron Peninsula
Freycinet Harbour
A. C. Gregory Aug.t 1852.
Gantheaume B.
Murchison R.
Geraldine Mine
20 Nov.r 1854.
Port Gregory
Hutt R.
Wallabi Group
Houtman
Abrolhos
Rat I.
Easter Group
Pelsart Group
Champion B.
Port Grey
Chapman R.
Mt Fairfax
Wizard Pk
Coal Seam
A. C. Gregory Sept.r 1846
Mt Hill
Arrowsmith R. (of Grey)
Irwin R. (of Gregory)
A. C. Gregory Aug.t 1847.
Long I.
Cervantes I.
Wedge I.
Lancelin I.
Moore R.
Mt Austin's Route is Coloured.
Rottnest I.
Fremantle
Carnac
Garden I.
C. Peron
Guildford
PERTH
Helena R.
Mt Dale
Avon R.
County Pk
Mt Balcewell
York
Northam
Swan R.
Baylup
Toodyay
Bejoording
Walyourmouring
Goomalling
Mombekine 10 July 1854.
Moore R.
Kalguddering
Wongan Hills
Gt Salt Lake
Cow-cowing
Lake Moore
Gt Salt Lake of Gregory (dry)
Salt L.dry
A. Hillman July 1846
A. Hillman July 1846
Danjinning
Wandaring
Yalburning
Fraser's Rocks
Lakes
Mt Gawcoman
Mt Kenneth
Aug.16
Aug.15.1854.
Aug.13
Aug 11
Aug 4
Aug.2
July 31
July 28
July 27
July 26
July 25
July 15
July 13
July 11
Waddouring
Salt L.
Well
Roombekine L.
L. Brown
A. C. Gregory Aug.t 1846
A. C. Gregory Aug.t 1846
Surveyor General Roe Oct.r 1836
Great Inland Marsh
Mt Farmer
Mt Charles
Carved Tree Spr.
West Mt Magnet
East Mt Magnet
Red Kangaroo Hill
Recruit Flats
Poison Rock Marsh
Horse Camp
Aug.30
Sep.2
Aug.28
Aug.20
Aug.24
Sep.6
Sep.10
Sep.15
Sep.17
Sep.19
Sep.22
Sep.24
Sep.30
Oct.1
Oct.2
Oct.3
Oct.5
Mt Welcome
Mt Grass
Mt Vinden
Mt Murchison
Mt Narryer
Oct.6
Oct.7
Oct.8
Oct.12
Oct.28
Oct.29 1854
Oct.30
Nov.6
Nov.9
Nov.11
Nov.12
Nov.16
Nov.18
Murchison R.
Sanford R.



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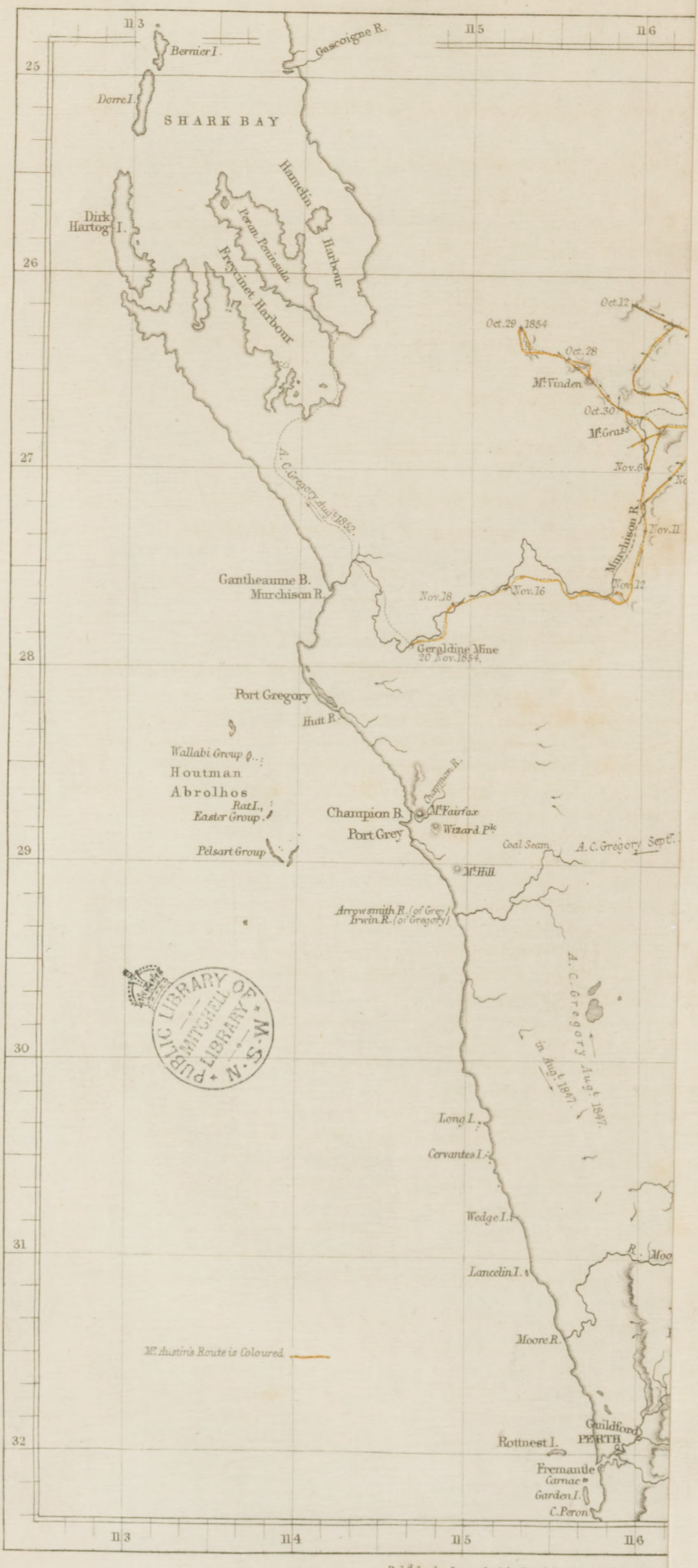
John Arrowsmith






Pub.d for the Journal of the Royal Geographical Society, by

# XXI.—*Report by Assist.-Surveyor* Robert Austin, *of an Expedition to Explore the Interior of Western Australia.*

Communicated by the Colonial Office.

*Read,* February 11, 1856.

To the Hon. the Surveyor-General, &c. &c., Perth.

Western Australia, Perth, March 20, 1855.

Sir,—I have the honour to submit, for your examination and approval, and for the information of His Excellency the Governor, the following Report, briefly explaining the operations of the Expedition to Shark Bay; and adverting to the geological structure, natural productions, water-parting, and general character of the interior of this colony to the N. and E. of the settled districts, and towards the Gascoigne River, described in the accompanying maps and journals, and explored by the party under my command, in pursuance of instructions received, by direction of His Excellency, from the Honourable the Colonial Secretary, dated 14th June, 1854, detailing the objects the Government had in view in despatching the Expedition, pointing out the course proposed for their attainment, and leaving me at liberty to pursue a different route, if I saw a corresponding advantage likely to accrue from any deviation therefrom; provided I formed my plan subject to reaching the mouth of the Gascoigne, if possible, to meet the ship there at the appointed time.

The exploring party, under my command, consisted of ten men with twenty-seven horses, with one hundred and twenty days' provisions, accompanied by Mr. Woodward, who placed himself, with Mr. Chidlow's team, escorted by two men, for whom he brought forty days' rations, under my orders, to proceed to Cow-cowing, and convey my report of that country to head-quarters. We left Mombekine, 14 m. N.E. by N. from Northam, on the 10th July, and proceeded by way of Youlanging, where we crossed the Salt River; travelling on a course N. 60° E., through gum-forests and sand-plains 15 m., to Goomalling, a spring and streamlet, at the S. end of a belt of granite country about 5 m. long and 3 m. wide, trending N., containing eight thousand acres of second-rate land, suitable for a horse run, watered by several streams flowing into the tributary plains of the Mortlock, or Salt River, and surrounded by scrubby sand-plains.

Travelling thence, on a course N. 3° E., over this land, and across a belt of elevated sandstone conglomerate, forming a scrubby forest, we entered extensive casuarina (swamp oak) plains, dry and hard, and strewed with trees uprooted, and water-marked 3 ft. high, indicating occasional heavy floods, flowing S. The country maintained this swampy character for 3 m., when we ascended a ravine called Walyurmuring, 911 ft. above the level of the

sea ; a grassy spot, watered by pools in a granite rock, forming a barrier across the ravine which connects the plain we had traversed with another of a similar description to the northward, which it drains.

Halting here for a day, in s. lat. 31° 11′ 30″, E. long. 117° 2′, in consequence of three of the Daren men (natives of Cow-cowing) and Gerip, a native of the country around the Wangan Hills, having joined us this morning ; when Gerip corroborated the accounts I had before heard of a good tract of grassy land extending from Kalguddering towards Gnyngarning, about 80 m. E. of Bebano, and I sent Messrs. Whitfield, Brown, and Woodward to visit and report upon this place, and the lead off to the northward, while I, through an interpreter, interrogated the Daren men, from whom I received a favourable description of their country around, and to the N.E. of Cow-cowing, and who expressed their intention of accompanying us through the thickets. Mr. Whitfield returned in the evening, reporting that Kalguddering, whence the Wangan Hills were visible, apparently 15 m. off, bearing N.N.W., in line with the southern group, was a patch of granite country, 14 m. N.N.W. from camp, affording 2000 acres of second-rate grazing land, watered by two springs, and surrounded by scrubby gum-forests and sand-plains ; while the intervening country, after leaving the casuarina plains around Walyurmuring, presented gum-forests and sand-plains, stretching far to the N., and swarming with kangaroo. Had this report been more favourable, I intended to have visited Gnyngarning, and travelled through this country on my return. Resuming our journey on the 14th, in company with three of the Toodyay natives, Gerip, and the Daren men, on a course N. 76° E., we travelled over undulating sand-plains 6 m., to a spring on the N. side of a salt lake, called Koombekine, 1025 ft. above the level of the sea, and found the country beyond this place so densely wooded that it was necessary to leave the cart here, in charge of the Toodyay natives, and make a détour on a course N. 94° E., along the sand-hills, on the N. side of some marshy thickets trending to the southward. After travelling 4 m. over these scrubby hills, we descended into a dense thicket of eucalyptus-wattles, growing on red and white sandy soil, extending 6 m., in which, with the exception of several knowow's, or native pheasant's nests—rings of sand and gravel, 10 feet in diameter, with a deep hole in the centre filled with narrow acacia-leaves, placed there by these birds to ferment, and form a bed sufficiently warm to hatch their eggs artificially—we saw no traces of birds or animals. It is singular that this thicket is below the level of the lakes to the eastward and westward of it. Emerging from it, we passed about a mile along the foot of a sand-hill, and bivouacked at a spring on the N. side called Hejanding. Steering thence N. 93° E., along the smooth gravelly shore of a small salt lake, surrounded by gum-forests, after travelling 4 m., we struck the S.W. shore of the great salt lake called Cow-cowing ; and, as it was skirted with dense eucalyptus and acacia thickets, while the bed was dry, I held my course over the S. end of the lake, forming two indents, or bays, 6 m. across, presenting a yellow, saline sediment, covered with minute univalve shells and extensive patches of samphire, with round shallow holes, and separated by a narrow neck of land, from the summit of which the Binjemaring Hills bore S. about 10 m. off. The natives report permanent water and a patch of grassy country there, surrounded by sand-plains, in which kangaroos are numerous, though we have not seen any tracks of those animals since we entered the thickets. Notwithstanding the lake was dry we found it very heavy travelling for both men and horses, and I halted for the night on the eastern shore, at a well on the N. side of a sand-hill called Nalging, in S. lat. 31° 7′ 54″, E. long. 117° 28′, from the summit of which the natives view the extensive sheet of water on the N.W. side of the lake ; superstition and fear, based on the supposed existence of a large snake, that swallowed several black fellows whole some years ago, probably originat-

ing in these men having sunk in the soft bottom while travelling over the treacherous crust, deterring them from a closer inspection of that famous part of the lake; hence the conflicting and erroneous reports that have emanated from them relative to this place.

The well was drawn dry for the horses during the night, and in the morning I found that the sandy basin in which it was sunk was thoroughly drained. I crossed the lake, searching in vain for fresh water. Returning to camp I observed a sand hummock in the lake, and while I made arrangements to leave with Mr. Whitfield, Narryer, and Wooddang, to make further search if requisite, I sent three men to dig there. I found them 5 ft. down, picking at a hard cemented sandy floor similar to the bottom of a well, which Capt. Elliot, with a detachment of the 99th regiment and myself, sunk and found salt water in, while crossing Perron's peninsula at Shark Bay, in the summer of 1850, and knowing further efforts there were useless, I sent the men into camp, and pushed on through the thicket on the S.E. shore, to a place called "Twattergnuyding," 7 m. N.E., where we found feed and water, and I encamped the party the following day. Here the lake presented three large arms stretching N.E., N.W., and S.W., falling from the N.E. and N.W. towards the S.W.; while on the N.W. side a large body of water was so little below the level of this place, which is 996 ft. above the level of the sea, that the water flowed back here during the prevalence of a N.W. gale. I observed the bed of the lake was cut up in every direction by emu tracks, converging to the rain-water splashes around Twattergnuyding, on which several mountain ducks and painted teal were shot.

*July 19th.*—I left Mr. Whitfield in charge of the camp and proceeded, accompanied by Mr. Woodward, Narryer, and Wambinning, to examine the Cow-cowing Lake and surrounding country, steering N.N.W. We had some difficulty in crossing the lake now the water was blown over. The bottom in many places was like quicksand, and we had to pursue a circuitous route of many miles along the crooked belts of samphire and salsolaceous plants, to reach the opposite shore, where we entered a thicket of eucalyptus and acacia, morrell, gnalerack or cable gum, and thorny scrub, on hard bare red loam, studded with small salt lakes, extending about 12 m. on our course, and terminating in a dense eucalyptus wattle thicket, along the shore of the lake, at the foot of a patch of undulating granite country, where we bivouacked. Perceiving that we should be involved in thickets and salt marshes by holding our course to the northward, I determined to steer to the eastward and examine the country said to exist there favourable for sheep. Striking into the forest on a due E. course, travelling 7 m. through dense scrub and gum-trees on bare red loamy soil without a vestige of any grass, though the country has not been burnt for several years, we struck a dry arm of the lake flowing from the N.E., and crossed over 4 m. of samphire flats, forming its bed, to the opposite shore, where we entered another scrubby forest extending 6 m. on our course, and reached the shore of another lake trending S.W., with shallow pools of salt water and samphire beds. Our course led about 6 m. along the N. side of this lake, and then 12 m. beyond, through gum forest and scrub, to a group of granite hills called Wadduring, on the N.E. side of which the native led us to a fine running streamlet taking its rise at the base of the most prominent bare hill, and flowing through a small grassy flat, to the N.W.: while between this bare hill and a wooded range to the westward there was a fine grassy valley containing 50 acres of rich black loam and two permanent springs. Turning our horses loose here, I ascended the hill and obtained an extensive view, embracing all the places the Daren men had described, which, as Wambinning pointed them out, one by one, proved to be isolated granite rocks, affording only feed and water, at certain seasons, sufficient for a few horses en route to better country, and surrounded by dense scrubs. This was the

country the settlers of the eastern districts had been so long anxious to avail themselves of, relying on the favourable interpretation that resulted from inquiries among its hardy and cheerful inhabitants, who form a high opinion and give most glowing descriptions of any place that will generally afford them a rat and a draught of water. Returning to camp on the 24th I found all well, and moved the party to Wadduring, where we arrived on the 26th, and I halted a day to reconnoitre and give the horses an opportunity to fill themselves in this grassy spot. By observations of the sun and stars I found the highest summit of Wadduring (bare) hill in s. lat. 31° 00′ 13″ E., and long. 117° 59′ 30″ by chart; apparent elevation above the surrounding plain 250 ft.; while the camp at its base was 1236 ft. above the level of the sea by observations taken simultaneously by you at your house in Perth, and by myself at this place with Dent's aneroid barometers, and 6½ m. s.s.w. from Gylburngobbing (Mount Marshall) on your track from the eastward in 1836, and about 20 m. N.W. from Lake Brown.

I found, and on reference to the chart it will be seen at a glance, there was no inducement for me to push farther E. from this place, as Mr. Gregory had traversed to and from a point 90 m. to the N.E. of it; so I determined to make northing by traversing the unexplored country between his outward and return track, and push vigorously to the north-eastward after I had cleared his work. In pursuance of this plan, we left Wadduring on the 27th July, and forced our way from granite rock to rock for water and feed, through gum forests and dense scrubs, to the high bare granite hill on Mr. Gregory's return track, in s. lat. 29° 53′ 12″, E. long. 118°; working between this parallel and 118° 12′ of long., over ground rising from the lakes (1026 ft. above the level of the sea) on the N. side of Mount Marshall, to 1636 ft. in lat. 30° 26′, shedding its waters to the S.W. between lat. 31° 13″ and lat. 31° 34′, and to the N.E. between the latter meridian and the high bare granite hill, to the base of which, 1205 ft. above the level of the sea, the country falls from lat. 30° 26′. Between the points last named there are no water-courses, and the scrubs are almost impenetrable. Along this track no springs or permanent water-holes could be found, nor do I think any exist, and we depended upon the precarious supply of rain-water accumulated in the hollows of the rocks, which are coarse amorphous breccia composed of felspar, quartz, and green stone. Fragments of these rocks cover the ground, and mixed with débris of red sandstone, the prevailing rock of the surrounding plains, form brown and red gravelly soils, strewed with small angular fragments of highly crystalline quartz, densely wooded with eucalyptus and acacia (woorruck and jam wattles), where the soil is red and loamy and the granite predominates, while melaleuca (tea-tree), wattles, and cypress-trees present formidable thickets, where the quartz and red sandstone rocks afford a yellowish brown light sandy loam, with small angular fragments of quartz. In the thickets of young acacia, on the better land, tufts of soft silk-like grass and slender rushes, such as the natives in the settled districts sew their cloaks and a bushman clears his pipe-stem with, grow luxuriantly; and a jointed grass, resembling couch, that the horses were very fond of, climbed and covered high bushes in the most shady spots. We arrived at the high bare granite hill on the 4th of August, where I halted the party five days to recruit my horses and make arrangements for sending Mr. Woodward with his team and escort to head-quarters, with a letter to you, reporting all well, the country traversed, and my determination to push into the interior and proceed thence to Shark Bay, to meet the ship at the mouth of the Gascoigne on the 17th October next.

*August* 11.—This morning I issued ten days' provisions, ten rounds of ammunition, three pack-saddles, and two double-barrelled guns to Mr. Woodward for himself and party, and instructed him to return on our tracks and proceed to head-quarters with my report, taking with him Mr. Chidlow's two

horses and a horse named Polly belonging to Mr. Phillips, to be delivered to their owners. At noon we were all in readiness to start, and Mr. Woodward and his party left us, with our hearty thanks for his kind and valuable services. Giving him a cheer as he entered the scrubs, we recommenced our journey, steering N. 25° E. to a low granite hill 2 m. distant, at the N.E. extremity of this group of rocks, from which we steered N. 34° E. through an opening in the salt marshes that stretched to the N.W. and southward. Travelling on this course 6 m. through scrubby plains, thickets, and salt marshes falling to the westward, we entered plains of red loam covered with quartz stones, wooded with acacia, eucalyptus, and casuarina, and extending 10 m. on our course to the foot of an elevated patch of rocky country, presenting conical quartz hills, resting on granite breccia and cliffs about 50 ft. high, the lower portion of which presented a glistening white rock composed of felspar and quartz grit, capped by red sandstone, forming a table-land covered with scrub. Our route here led through a thicket of acacia, casuarina, and gum-trees, on red loamy soil, covered with quartz stones, for half a mile, when we encountered another cliff of a similar description, facing to the S., and passed through a stony defile, densely wooded, bounded by these precipitous rocks. The natives had broken down the bushes, and formed a rude fence about 3 feet high on each side of this defile, about half a mile in length, converging towards the eastern entrance, where there was a square hole 18 inches wide, with stout pegs driven in at the sides, to which they attach a net made of wattle-bark string, into which they drive the small animals that are very numerous in these thickets. Travelling over about 4 miles of tolerably level stony country beyond this place, we passed several new fences in the thickets, and saw fresh tracks of the natives who were constructing them, as well as a small bark cup they had left at a water-hole. At sunset we reached the hill for which we had been steering the last two days, and found it a rocky table-land, falling gently to the westward, covered with scrub and bare patches of honeycombed sandstone, and terminating abruptly to the eastward in a perpendicular escarpment 140 ft. high, presenting the same section and appearance as the cliffs we had passed. Some of the indents or deep bays were nearly circular, and had the appearance of vast amphitheatres, to which the varied colours of the red and white rocks, furrowed by water that had deposited the denuded felspar in a broad sheet of white pipeclay at the base, forming a glistening pavement, gave a lively and beautiful effect. Our dog brought a porcupine (*echidna hystrix*) to bay at the foot of these cliffs, where Mr. Guerin found this singular animal endeavouring to bury itself, while poor Turpin was barking and furious at pricking himself every time he tried to lay hold of it. Finding plenty of water here in the hollows of the rocks, we searched in vain for feed in the vicinity till dark, when we encamped for the night, and tied up the horses on the summit of the cliff, as the water was in places inaccessible to them, and there was great risk serious accidents would result from their being allowed to rove here, where the ground was intersected by deep ravines, covered with bushes. The ensuing morning, observing some broken country, with granite rocks cropping out round the red sandstone cliffs, 2 m. E.N.E., we proceeded there, expecting to find feed for our horses, but as this, the most promising place, was as scrubby, stony, and destitute of grass as the country we had travelled over, I halted the party while I ascended the hill to make a reconnaissance before proceeding farther. It was then raining so hard that the country around was enveloped in thick mist. However, after waiting a short period, I could see that the country was more open and favourable to the N.N.E., and moved off with the party in that direction to some salt marshes 4 m. distant, where I found some coarse salt feed, and turned the horses out to graze. It rained

heavily all day and night, and we had great difficulty to prevent the horses straying back on the track. These salt marshes, in s. lat. 28° 29′ 30″, E. long. 118° 15′, were 1104 ft. above the sea, and, falling to the westward, stretched to the verge of the horizon E. by S. and W. by S. The coarse feed, cold, and wet combined, gave several of the horses the gripes the following morning, when we proceeded on the same course, N.N.E. 12 m., over undulating, stony, scrubby country, and Mr. Kenneth Brown, who was in advance with me, caught a glimpse, through a vista in the thicket, of an elevated range of table-shaped and peaked hills, similar in appearance and contour to the Champion Bay country. This was a welcome discovery. Looking through the telescope, I thought it promised well, and determined to proceed there. I found its bearing N. 10° E., and apparent distance 30 m. By this time the whole of the party joined us, and, as soon as the good news was communicated, they pushed on in high spirits. We named the highest table-land Mount Kenneth, after my young friend who discovered it. Travelling through dense thickets, we entered a descending country, destitute of water, in which all the bushes were dead or dying, and fell crashing before us, staking several of the horses, and the grass was dry and dusty from two or three years' drought at least. Had it not been for the promising country ahead, it is probable we should have been dispirited on this occasion, and I felt thankful for this gleam of hope and its cheering influence on my weary companions, though my own conviction was, judging from the gradual inclination of the incumbent rocks dipping to the S. and W., that the upheaving primary rocks cropped out far to the northward and eastward of the place we were steering for, which, at best, could only be a transition country, forming second-rate land, which, though a vast improvement on the sandstone formation we had been traversing, would only be of use to the colony by affording valuable mineral deposits or pasture for stock en route to a better country beyond.

We saw no more of Mount Kenneth till the following night, when we emerged from the scrubs and entered an open plain, and found water and feed in a rocky gully 12 m. S. of it, where we halted, and then pushed on over stony plains, rising as we advanced, crossing some rugged scrubby greenstone hills midway, to the foot of the mount, where we found it and the surrounding table-hills of sandstone formation, capped by ironstone, and covered with scrub. Observing a grassy stream-bed, with small pools of water in it, E. by N., about a mile from Mount Kenneth, I moved the party on and encamped them. Here I halted the party two days to recruit them and the horses, inspect our stores, and make necessary alterations and repairs. By meridian altitude of the sun during the day and *α* Lyræ in the evening, I found the latitude of the mount was 28° 57′ 11″ S., and long. 118° 20′ E., and obtained a commanding view from the summit. Far as the eye could range to the N. and E., sandstone flat-topped ridges, trending N.E., and presenting façades of a white hue, capped by overhanging rocks of a red colour, clothed with acacia scrub, strewed the extensive stony plains in that direction, through which, here and there, peaked white hills of stratified quartz rocks, inclining to the westward and resting on greenstone, jutted out in association with several amorphous masses of breccia composed of sienitic granite and felspar. From N.W. to W., on a radius of 30 m., low rounded hills of trap formation, apparently greenstone, covered with scrub, gave the country in that direction an undulating, scrubby character; while to the southward, the country we had traversed presented scrubby waves, rolling to the verge of the horizon. The summit of this hill was 180 ft. above the level of the surrounding plain, which was 1401 feet above the level of the sea, and intersected by several watercourses trending S.E., all now dry, and

presenting rocky beds, though not deep channels, as the rocks are close to the surface. The main stream was 50 ft. wide, and evidently shed the waters of this country into the lakes we crossed in s. lat. 29° 29′ 30″.

The following specimens of natural history were procured here by Mr. Brown, and preserved, viz. :—Two white owls, with small brown spots on the back of the neck and wings (*strix delicatula*), two cinnamon-coloured ground thrushes (*cinnamoneus cinclosoma*), three small brown parrots with slate-coloured breasts (*Euphemia Bourkii*), a very small scarlet bird (*epithianura auriforis*), and a small rat (*apalotis Mitchelli?*). I saw a small tree among these hills, in form and size resembling a fig-tree, with pear-shaped seed-pods hanging point down, and radiating from a common process at the base of the leaf-stalks. Subsequently I saw large quantities of these seed-pods at the fireplaces of the natives, and I believe they eat the seeds.

The following extract from the meteorological journal shows the range of the barometer (aneroid) and the thermometer (Fahrenheit's), and the weather, during the period we were encamped at Mount Kenneth :—

August 17, 8 A.M., barometer 28·25′ ; thermometer 42° ; wind N.W. ; rain.
„ 8 P.M., barometer 28·30′ ; thermometer 48° ; wind S.W. ; cloudy.
„ 18, 8 A.M., barometer 28·30′ ; thermometer 48° ; wind N.W. ; cloudy.
„ noon, barometer 28·27′ ; thermometer 58° ; wind N.W. ; rain.
Heavy showers till 6 h. P.M.
„ 8 P.M., barometer 28·30′ ; thermometer 50° ; wind N.W. ; clear.

*August* 19.—We resumed our journey, steering N.E., as I now considered the change in the formation of the country favoured my pushing boldly in that direction towards the outcrop of the primary ridge, which appears to have suddenly elevated this portion of the continent, and disturbed the level of the primeval ocean in which it was submerged, that rolled from E. to W., sweeping away the torn country and loosened hills in its course, and thus denuded the vast area we had traversed of the superincumbent rocks, many hundreds of feet in thickness. Our course, for 6 m., lay through broken country, presenting sandstone cliffs, quartz, round scrubby hummocks of black shining iron ore, and stony plains, wooded with acacia and sandal-wood trees, and drained by a stream 30 yards wide, trending S.E., the bed of which was dry and shallow, like an arm of a lake, and presented a white, glistening bottom, composed of felspar. Travelling thence, through acacia and cypress thickets, on undulating, stony, and red loamy soil, we struck extensive salt marshes, trending N. and S., 3 m. across, perfectly dry, and presenting a sound, but soft and heavy bottom for our horses.

Here I observed the country was less densely wooded in a line with a white patch of rocks bearing N. 70° E., and steered towards them. Crossing this marsh was heavy work for the horses : they sank up to the knees, every step, in the soft, yellow, saline sediment, and had to step quick, or they would have been up to their girths in it, though it was dry and dusty ; however, they struggled through with great courage, and maintained this trying pace bravely, till they reached the opposite shore, when they were fairly blown. Breathing them a few minutes there, we pushed on again, in hopes of finding grass and water for the poor animals ; but the thicket became more dense and unpromising as we advanced, and, when night approached, I halted in the scrub, and tied them up for the night without either. Having had so much rain recently, I depended upon finding plenty of water everywhere for several days, and was surprised when I found that the parched land had absorbed it so rapidly.

The next morning we steered E.N.E., through an almost impenetrable thicket, to the right and left of which still denser cypress scrubs presented hard, wall-like fronts. The horses were so jaded that our pace did not exceed a mile an hour. At this pace, hour after hour, we plodded wearily

through this wretched country. At length the soil changed from stiff red loam to red sandy loam, and we reached a more open country, covered with low acacia scrub, after travelling about 3 m., when the cypress thickets trended round to the southward, sending out a few spurs only in the direction we were travelling. Wishing to avoid even these, if possible, I ascended a bush to reconnoitre, and sighted a patch of granite rocks, 3 m. off, bearing N., for which we steered at once, and arrived there at 11h. 40m. A.M. We found water and feed, and bivouacked for the day to rest the horses. While the horses were unloaded here, I obtained a meridian altitude of the sun, and found our position in s. lat. 28° 43′ 23″, long. 118° 38′ E.

From the rising ground behind the camp Mount Kenneth was visible, and the summit of an elevated group of round-topped hills loomed blue in the distance, bearing N. ½ E., about 15 m. off. I determined to proceed to these hills the next day. To the eastward, the country was gently undulating and very scrubby. There were three patches of bare, rounded, red granite rocks here, and a small spring at the base of the most southern group, close to the bivouac. Abundance of silky grass grew in tufts in the acacia thickets around, and very coarse grass was growing in the clefts of the rocks, the roots of which, when pulled up, emitted a pungent odour, something like ammonia.

The following morning two of the horses strayed away. Expecting they would be speedily tracked up and brought in, we saddled, and had the horses standing between the loads, ready to have them put on directly the ramblers arrived. It was noon, however, before they were brought in. Narryer, who had brought in one horse, reported he had broken one of his hobble-straps, and gone off 9 m. to the westward. Souper found the other horse in a patch of grass in a rocky gully 3 m. N.W. As it was now too late to push on to the hills 15 m. N., and the horses had been saddled up all the morning, I determined to leave their loads here, and take the horses to the place Souper had found, so that they might start the next morning in good heart. Accordingly, at 1h. P.M., I started, with Messrs. Whitfield, Brown, Guerin, Buck, Farmer, and Souper, with the horses only, leaving the other men, with Mr. Fraser, in charge of the camp. We had not proceeded far, when Mr. John Hardey's horse reared and fell, kicking violently, among the rocks. In an instant, four other horses were spinning in the air, and fell, plunging violently when they were down. By the time the other horses that required to be tied up were secured, their prostrate companions were quiet, and, seeing it was poison they were suffering from, we bled them freely, which seemed to afford immediate relief, though they were unable to rise again for three or four hours. Scarcely had the fleams been wiped, when my own two horses were reeling and stupified, and obliged to be bled also, and left with the others in charge of Mr. Guerin. As it was not safe to turn the horses loose in this vicinity, I sent Mr. Whitfield on with the other horses to Souper's Flat, instructing him to bleed any of them that staggered, and tie them all up till I joined him. I then returned to the camp for the tether-ropes and some medicines, and proceeded with them, in company with Mr. Fraser, to the flats, where I found Mr. Whitfield, who reported having bled two other horses before my arrival. The grass here was of the same description as that described growing on the rocks near the camp, and the poison-bushes were growing along with it everywhere, so that we had to cut them up with our hatchets to clear two tethers for each horse. This poison-plant is a species of *gastrolobium*, with a small, bright, orange-coloured pea-blossom, like birds' eyes. The leaves are opposite and spreading, 2 inches long, wedge-shaped, with a triangular apex, at each angle of which, and at the base of the leaf, are small thorns, and the breadth at the base of the apex is half an inch. The average height of the bushes is 3 ft., though many are

much larger. This is the first instance I know of horses having been seriously affected by this plant. Some years ago, Dr. Harris gave a large quantity of it to a pony without injuring the animal. I am, therefore, disposed to think my horses were so seriously affected in consequence of their stomachs being empty and weak.

The other horses were too much weakened to carry their loads, and, as there was no chance of their improving in condition where they were, I determined to move them to a better place as soon as possible, and leaving eleven horses that could not travel in charge of Messrs. Whitfield, Buck, Farmer, Narryer, and Edwards, whom I also left in charge of the camp and stores, with instructions to procure grass from the thicket at hand, wash the roots, and feed the horses on them, if they were hungry, or on a little flour-gruel, till they gained strength, I pushed off with the rest of the party and ten days' rations, leading the rest of the animals, sixteen in number, steering N. ½ E. towards the hills seen in that direction. Travelling 9 m. on this course through stony undulating country, wooded with acacia, we entered a sandy plain, covered with dry, soft grass in tufts under acacia bushes, affording better feed than we had seen for several days, though it was very indifferent. Here I halted, and turned the horses out to feed. Soon afterwards I found it necessary to have four more horses bled, as their heads were swollen, and they were just going to spin. There now remained only eleven horses unaffected, and these, unfortunately, were the weakest. During the afternoon and night the rain poured down in torrents. The wind was from the N.W. The next morning the horses were tucked up like racers, having been standing up all night during the storm without feeding. I therefore allowed them to graze till 10 A.M., when we resumed our march through dense scrubs to the stony plains around the foot of the hill, where we saw old tracks of red kangaroos, in well-beaten paths 18 inches wide, and put up several gnows. After watering the horses *en route*, I observed they scoured very much, and several were griped. Under these circumstances I kept them moving very briskly. Arriving at the hills, I found their elevation less considerable than their appearance from a distance led me to expect, their great apparent height being attributable to the gradual rise of the country in the direction we were travelling. Ascending them, I found they were of foliated greenstone formation, about 200 ft. above the plain, very scrubby and rocky, and that there was not a blade of grass on them. A range, of a similar description, lay 2 m. to the W.N.W., and a group of ironstone hills 2 m. E.S.E., nearly of the same elevation, and covered with dense scrub. To the northward, open acacia plains extended to the foot of a range of hills 12 m. off, the summit of which bore N.N.E. As the most favourable country intervened, I determined to steer towards these hills, and halt at the first suitable place I could find *en route*. Descending from the hill at 2 P.M., we found the plain composed of good, light, red loam, very stony in many places, and covered, in most, with dry perished grass, presenting an appearance that induces me to believe this is the first heavy rain that has fallen here for two or three years. There were several burrows like boudy holes, inhabited by animals whose tracks resembled those of the dalgite, in these plains, the earth around and thrown out from which was perfectly white, and presented the appearance of lime, though it was really decomposed foliated greenstone, which assumes this colour when exposed to the atmosphere, giving the hills composed of it the loom of quartz hills, when viewed from a distance, as it is only when fractured that the brilliant green lustre of the rock is developed. The prevailing rocks on the plain were quartz and ironstone; but the soil beneath was rich and deep, and in a favourable climate would most probably have been very fertile. Not a trace of natives having recently visited this country, or even the smoke of a distant fire, could be seen here, nor have we seen anything of

the kind since Mr. Woodward left us ; and I am, therefore, induced to think that the great scarcity of water has obliged them to abandon this desert country. At 5 P.M. we passed a rocky hill, presenting slopes of dislocated granite, blended with greenstone. This laid on our left, our course leading between it and a huge pile of large granite rocks, heaped in a cone 90 ft. high. Soon afterwards we struck a small samphire and salt bush flat, half a mile from the base of the hills we were steering for, and, finding water and grass, bivouacked there for the night, having marched 21 m. I then pushed to the summit of the hill, to obtain a view of the country beyond. The surrounding hills prevented my obtaining such an extensive view as I had anticipated. A more rugged hill than the one I ascended can scarcely be conceived. Had it not been for my gun-sling, I must have ascended unarmed. Large square blocks of granite and greenstone were piled confusedly together to a height of 250 ft., in masses so perpendicularly and awkwardly placed, that it was only by climbing the bushes and springing from them on to the rocks I managed to accomplish the ascent. From W.N.W. to E., over an area of 4 m., detached groups of hills of a similar formation formed rocky, undulating country, wooded with acacia, with only one break affording a view of the country beyond, through which I caught a glimpse of a high range of hills, bearing N. 6° W., apparently 20 m. distant, to which I proceeded the following day.

Travelling through the 4 miles of broken country above mentioned, and the scrubby plains 3 miles beyond, we entered level, open plains, covered with salt weeds and coarse grass, and a tolerable supply of water, owing to the recent heavy rains. If the water would last, I saw I could recruit my horses here, but as they were tolerably full and fresh now, and the range ahead promised something better, I pushed on, over black iron ore and sharp gravel, through a dense thicket, that stretched from the northern side of these plains, that I subsequently called the Recruit Flats, 13 m. to the foot of the range, which we reached at 5 h. 30 m. P.M., and bivouacked on a small patch of dry grass, in a thicket at the base of the eastern side, abreast of the highest summit, formed by the shed of a rocky gully that flowed down the side of the hill, and, spreading over, fertilised this spot ; but the bed of this streamlet was dry, and the grass sapless and dusty, apparently very old, and it was only on the salt bush and acacia spray that the horses fed. The base of this hill was 1569 ft. above the sea, and the elevation of the summit 400 ft. above the plain. The range, in which it formed the prominent feature, presented several conical summits of less elevation, grouped 5 or 6 m. on each side in the form of a crescent, facing N.E. The lower portion of the range was composed of compact, variegated, crystalline rocks, hard, heavy, and evidently of trap formation ; presenting red, white, and black seams, alternating. Above this rock there rested, forming the summit of the hills, a mass of flat, dislocated, stratified rocks, highly crystalline, but of more sombre hue ; the lower beds of which seemed horizontal, while the upper were rent and piled disorderly. Upon a closer inspection of this rock I found it presented a laminated structure, composed of thin seams of puce or chocolate coloured rock, of a clayey character, separated by delicate layers of a crystalline substance resembling quartz, and that while the laminæ were horizontal, the fracture was vertical, and at an angle of 45° with the surface. I found this rock caused great local magnetic attraction, and that each piece of the stone had two poles, like the loadstone, powerfully attracting and repelling the same point of the magnetic needle. I therefore called this hill Mount Magnet, and fixed its position, by observation, in s. lat. 27° 58′, E. long. 118° 37′, whence I obtained a view of the country 30 m. around. There was an appearance of wooded hills, with large trees, surrounded by extensive plains, N. by W. about 25 m., and a white quartz hill cropped out on the intervening plain, bearing N.N.W. 7 m. off. To the east-

ward red, scrubby hills, backed by a distant range of low red cliffs, presented an unpromising prospect as far as the eye could reach. I therefore determined to get all my party and horses to the Recruit Flats, crossed yesterday, in s. lat. 28° 15′, as quick as possible, and retraced my steps to the camp 50 m. off, where we arrived on the 28th at noon.

I found seven of my strongest horses dead. The other horses that I had left were in a very precarious state. As it was necessary to leave a considerable portion of our equipment behind, under these circumstances, I lightened up about 4 hundred weight, by leaving the pack-saddles, spare bags, painted load-covers and tents, horse-shoes, and such personal comforts as could be dispensed with, without injuring the health of the party, and, loading up immediately, moved the whole of the party and horses, except one which I abandoned in a dying state, to a place I had found 6 m. off *en route* to the Recruit Flats. I found the horses were too weak to carry their loads far, and that I must sacrifice nearly the whole of them if I determined to push on, without resting, to the Recruit Flats, 40 m. distant. I therefore sent out three light parties, on a radius of 15 m., ranging from N.W. to E., in search of grass.

In the evening Charles Farmer and Narryer returned, reporting green grass and water in a thicket 10 m. to the eastward, and the following morning (the 30th Aug.) I sent Mr. Whitfield and six of the party there, with the whole of the horses, excepting two which were left behind without a chance of recovery.

On the 1st September Mr. Whitfield returned to camp, reporting that the horses were in a good place and doing well. I left him with Mr. Fraser and Buck in charge of the camp, and joined the party with the horses, accompanied by two men carrying rations for them. The following morning I left Messrs. Brown, Guerin, Edwards, and Cant in charge of the horses, sent C. Farmer and Souper to the N., and went with Narryer to the E.N.E. reconnoitering. I travelled about 10 m. on this course, over 4 m. of stony plains, covered with scrub, and 6 m. of hilly country, presenting ironstone and trap rocks densely wooded with acacia. Ascending a hill I saw about 20 m. into the interior, over acacia thickets, studded with low scrubby hills, similar to those seen to the northward, and the loom of salt marshes rose under a range of low scrubby hills that bounded the horizon. I then steered W.S.W. to some promising looking hills that seemed to have been burnt, about 11 m. off, travelling over stony plains, densely wooded, to them. Crossing these plains I saw a new species of parrot—a small green bird with a yellow bar across its breast—and shot two worrungs, a diminutive species of kangaroo, about the size of an opossum. We reached the foot of the hills at 2 h. 30 m. P.M. and saw the track of a native that had just gone to the summit we were steering for. Travelling along his tracks a few yards we found a scoop, or drinking cup, and two clubs, that probably belonged to him. Narryer picked these up and ascended the hill with me. Half-way up the ascent we struck a quartz vein, which I stopped to examine. While stooping, breaking the stones, I heard a native's voice, and, motioning to Narryer to follow, sprung over the wall of quartz and confronted a native, stealthily approaching us about 50 yards higher up the hill, who halted when he was observed, and foiled in his murderous intentions. Narryer spoke to him in the Irwin-River language, telling him we were friendly-disposed and looking for water. He replied in a desperate rage, uttering a few loud words, and shaking his spear at us—but he spoke a language neither of us could understand, though his hostile intentions were sufficiently apparent; and, looking back towards the crest of the hill, he gave the unmistakeable double shout twice, as though he thought, since we were so peaceable, it would be quite easy to butcher us: he rushed at Narryer with his spear shipped, to whom I gave the order to fire, just as it quivered, in the act of being thrown. Startled and disconcerted by my voice, and quelled

by Narryer's determined bearing, he turned to fly, and received the charge in his back that was aimed at his breast, with the singularly fortunate distinction for him, that it was No. 4 shot instead of a ball, in consequence of Narryer thinking I said "shot" when I shouted "stop," as he turned, and giving him the lefthand barrel then instead of the right. He uttered a loud yell when he was struck, and bounded over the hill like a stag. Calling Narryer back, who was running after him, and directing him to load with ball and follow me to the top of the hill, when we reached the summit we found the tracks of two other men and a woman, where they had been crouched up in ambush.

As this man had been so bold, I was apprehensive they had attacked and gained an advantage over some of my party, and marched to the bivouac where the horses were, about 7 m. off, at a rapid pace, cautiously guarding against surprise. Fortunately all had been and was going on well there, and Farmer arrived soon after me, reporting that he had found a spring 10 m. N., around which the natives had built a number of huts last summer, and that the bones of three wild dogs and many small animals were scattered about their fireplaces.

At dawn the following morning I mounted Souper on the best horse, and sent him to Mr. Whitfield, to ascertain how they were at the camp, and directed Mr. Whitfield, by letter, to be vigilant, prepare three days' rations for the road, and send Souper back immediately with a day's rations for my party. I then had the horses looked up, and finding Jailor in a hopeless state from fatigue and poison, left him to his fate, and moved over with them and my party to our bivouac of the 22nd ultimo, 11 m. W.N.W., where we found Souper waiting for us with the rations and Mr. Whitfield's report, stating all was well at the camp. The country traversed to-day was densely scrubby, with patches of dry perished grass, and stony thickets. Three of the horses were very weak, and obliged me to travel very slow, so that it was dark before we reached our destination.

*September 4th.*—This morning I travelled with my party and the horses to the camp to breakfast and load up. I had now 13 horses, 3 of which were unable to carry more than their saddles, but we had so reduced the weight and compass of our baggage, that the 10 available for burthen were enabled to carry all our provisions, ammunition, and stores requisite to efficiently equip us for the march to the Gascoigne River, and 20 days' flour in addition, with which the party could fall back on the Geraldine Mines, in the event of any accident occurring to the vessel that was to await our arrival there with supplies. I therefore announced my intention of proceeding to that point in Shark Bay as speedily as possible, and called the attention of the party to the fact of our being in as good a position as ever we were for the attainment of the important results we had pledged ourselves, under Providence, to achieve, with the exception of having to walk, which we were well able to do, would redound to our credit at the close of the march, and be remembered by those whose good opinion we valued, long after the fatigue was forgotten; that duty and prudence urged us forward—while to retreat, under present circumstances, would involve fatigues and privations no less trying, and a spirit-breaking reception from our friends, whom such faint-hearted conduct would estrange for ever.

As I had made all the necessary arrangements for the distribution of the loads before I joined the horse-party, the horses were loaded up in a few minutes after our arrival, and we resumed our journey, steering N. ½ E. to the Recruit Flats, 40 m. off, where we arrived on the evening of the 5th. Here I halted the party to recruit the horses, and Messrs. Fraser, Brown, Narryer, and Souper accompanied me to make a reconnoissance to the W.N.W., with a view to finding a favourable route to the promising-looking country I had seen from Mount Magnet, 50 m. N.N.W. from our present position, as the

country in a direct line was impracticable. Our course led 3 m. through the open plains around the camp, bounded by hilly, rocky country of granite, trap, ironstone, and quartz formation, covered with loose stones and dense acacia scrub, in which we were entangled two hours while advancing 3 m. farther on, to an open scrubby plain, intersected by salt marshes trending s.w., taking their rise on the N.W. side of Mount Magnet, and about 1500 ft. above the sea. Twelve miles on our course I halted on these plains, and left Messrs. Fraser and Brown to rest, while I proceeded with the natives to search for feed and water, as this was about the distance my horses could travel in a day, the weakest necessarily regulating the pace and journey. We found feed 3 m. N., but could not find any water near it. The promising place in sight was a rocky hill 6 m. s.w. I therefore returned to my companions and informed them of the feed—the probability of there being water at the hill I pointed out 6 m. W., to which I was about to proceed with the natives to ascertain the fact—that in the event of our being successful, I would send back Souper with instructions for Mr. Whitfield to move the party to the grass the first night, and the water the following morning; and wishing them a safe return, I sent them back to the camp, where they arrived late at night. I was much pleased with an incident that occurred on their march, which, though short, was a trying one. Mr. Fraser was wearing a new pair of strong nailed boots, that in travelling over the rocks so galled his feet, that, doing his very best, he fell to the rear. When I halted for him, annoyed at the circumstance, though I felt sorry for him, I saw Mr. Brown taking off his boots, and, apprehensive there was something wrong with him too, I inquired the cause, and he said that "he thought he could walk very well in Fraser's boots; at any rate he would lend him his *and try*." Accordingly the exchange was made, but the new boots soon served Kenneth the same, and I had to halt again while they compromised the matter by each wearing one of the old boots, and wrapping part of their clothes round the other foot. In this way these young men marched 25 m. through country covered with sharp rocks and high scrub for 16 hours, on the first hot day we experienced, without a drink of water, and, what is far more to their credit, without a murmur.

Sending the two natives out half a mile on each side of me, with orders to march steadily towards the hill to the westward, when I had fired my gun and they had answered it, we crossed the plain searching for water, and found it on the s.w. side of the hill, where we met and bivouacked. The next morning Narryer shot the first specimen of the red kangaroo (*osphanter rufus*), and I carefully preserved it. It was a male, and rather larger than the common kangaroo. Its length, from the root of the tail to the poll of the head, was 5 ft. 3 in., and weight about 140 lbs. Subsequently I saw many much larger. The doe is a very compact, beautiful animal. In addition to the red colour and larger size there are other peculiarities appertaining to this animal which distinguish it from the common species. To a bushman the most important distinctions are its being more fat and better eating. But the zoologist, though doubtless in more appropriate terms, would observe that it was more bullet-headed, and had a Roman nose—that this nose was white, with black spots, in the form of what is called a double smut, and that his ears were as large as a young calf's, while the lower joint of the hind leg, from the hock to the toe, is much shorter, the foot or toe very short—about 4 in. long in a full-grown animal, and the jump is 18 ft., with the hind legs bowed and the feet so close together that the track resembles the spur of a divided hoof. These animals are not all of them red, some are of a blue or slate colour, with white throats and breasts, and tan marks on each side of the face. I have seen them, both bucks and does, varying thus in colour, herding and feeding together on the leaves of the nut or native peach-tree that are very numerous where these kangaroos are found; and two does, differing in colour, as above

described, were killed lying in the shade of the same bush, each with a young male animal in the pouch, similar in size, attached to the mamma, which had yellow silky hair, 3 in. long, growing round them, apparently to keep the young one's nose warm. My two natives, who had never seen one of these animals before, were pleased with their success and the praise I gave them for obtaining this valuable specimen—success, the pleasure of which was enhanced by the prospect of making a hearty breakfast off it, and they assisted me in separating the skin, head, and feet, from the rest of the carcase, but, unfortunately, all the peculiarities that I admired, and have noticed, and which were observed by them on this occasion, induced them to form such an unfavourable opinion of the animal, that they were afraid to eat the meat, though they were very hungry, and this was the first opportunity any of us had had for making a hearty meal for many weeks. When I expostulated with them, pointing out the absurdity of neglecting to strengthen themselves with this meat, Narryer became very excited, and begged me not to propose such a thing to him, "for," said he, "look at his head—truly it is that of a dog with the ears of a cow. Saw you ever kangaroo so fat, or with meat that smelt so strange? No, sir, this creature is not natural, and it must be a *bwolyer* (magician or evil spirit). Glad am I to be the first of my tribe that has killed one of this odious race! But my father and mother never eat one, neither will I. Let the Northern women eat it if they like, but I must become a great fool before I put any of this strange devil down my throat to give me the stomach-ache."

There was a high red cliff, about 10 m. N. of our bivouac, that promised water on the summit, and salt feed on the plains at its base. I pointed this out to Souper, telling him I was going there, and Mr. Whitfield was to meet me with the party at that place. I then wrote a letter to Mr. Whitfield, directing him to proceed next day to the grassy flat I pointed out to Mr. Fraser, come here and water the horses the following morning, and push on to meet me at the cliff I have just mentioned, and sent Souper with it, and a piece of the kangaroo, to the camp, where he arrived that night.

Taking Narryer with me, I pushed on over stony plains, covered with scrub, on which red kangaroos were numerous and very wild—so much so that they were startled by a twig breaking a quarter of a mile from them, and started immediately, travelling a mile or so without stopping, jumping very low, and bending more forward than the common species, which their fat heavy tail enables and obliges them to do. Five miles on our course we struck the dry bed of a brook trending to the eastward, and shedding into the marshes at the base of Mount Magnet, flowing to the S.W. As it was late when we started I bivouacked here, and found feed and water in the bed of the stream, where I shot and preserved a parrot, with brilliant green, scarlet, and orange plumage, smaller than the *icterotis*, which Mr. Sanford—to whom I am greatly indebted for his kindness in classifying and preserving my specimens, and affording me an opportunity of referring to his valuable works on Natural History—has called *platycercus*. Travelling over plains of red loam, wooded with acacia, and covered with quartz stones in many places, for about 4 m., we reached the salt-bush plain at the foot of the cliff, and proceeding to the cliff I ascended the summit, and found several small water-holes in the rocks, but not containing sufficient water for the horses that were to be moved here, so I pushed on immediately to another cliff 5 m. N.W. by W., unfortunately with the same result, and halted there. These cliffs were composed of felspar and quartz-grit, capped by stratified quartz and red sandstone, clothed with acacia, while the surrounding plains were scrubby and stony.

The next morning I pushed back to intercept the party, but they had muffled the horse-bells to get near the kangaroos, so I passed them in the thicket and struck the track behind them. Following them up till dark, and renewing the

chase when the moon rose, we came up with them at two o'clock the following morning at the cliff, where they had encamped and the horses found more water, so that there was sufficient for them. All hands were on the alert, and welcomed our arrival with a hearty cheer. When we had breakfasted the day was dawning, and, directing Mr. Whitfield and Edwards to accompany me with two days' rations, I led them to the summit of a cliff 3 m. N., whence the rocky summit of a great wave in the country bore N. by E., apparently 13 m. off, to which I sent them to reconnoitre for water and feed, with instructions to signalize by smoky fires, to show their position, at 4 h. 30 m. P.M. that day, and at 8 A.M. the following morning. I then returned to camp, and posted Mr. Guerin on the cliff to look out. Narryer, though very stanch, was quite knocked up. We had been two days without any other food than half a rat each, being one that he had killed while we were separated hunting for water—devouring his portion immediately, and saving me the largest share, though I had the advantage of him in starting on a good meal of kangaroo. I found the position of this camp S. lat. 28° 00′ 45″ ; E. long. 118° 20′ ; and 1582 ft. above the level of the sea. In the afternoon I went with my telescope to watch for Mr. Whitfield's signals, but saw none.

The following morning (the 12th), while the horses were collected to start, I sent Mr. Guerin on to the cliff to watch for the signal fires at the appointed time ; he saw none, and returned to camp at 10 h. A.M., reporting to that effect. Three of the horses strayed away, and were not brought in till after noon. This, and the uncertainty of feed and water ahead, coupled with the water-holes at the camp being dry, compelled me to send Messrs. Fraser and Brown, with two men and the horses, to the stream-bed six miles back, with orders to turn them out there and bring them back early in the morning. In pursuance of this plan the horses were all in and loaded up early next morning, when we started, steering N. about 5 m. to clear the cliffs and rugged stony ground beyond, and then directing our steps on a course N.N.E. to strike the point to which I had sent Mr. Whitfield, travelling through densely wooded country, on red loam and brown gravelly soil, stony in places, with fragments, 6 inch. cube, of rounded, yellow quartzose rock, with a conchoidal fracture ; while the elevated land to which I had sent Mr. Whitfield was of ironstone-gravel formation, and less densely wooded. I halted there, and made casts with the natives to the right and left, firing guns, without seeing or hearing anything of him, and then pushed on about 4 m. further, when we halted, without feed or water, as I did not like going on further without these men, for whom guns were firing during the night. The horses strayed back on the track 4 m., and two of them were reported to have gone right off without hobbles.

While they were tracking up and getting the horses together, I took Farmer and Narryer with me, and proceeded to some cliffs 8 m. to the north of the camp, thinking it probable Mr. Whitfield had gone there and made signals, where they could not be seen, especially as it was the only place that promised water in sight. We saw traces of natives, and several small water-holes, but saw no traces of the men. I then steered for a sheet of water or an extensive salt lake, the shore of which was 5 m. E.S.E. from us, trending N.W., and apparently falling to the westward, that might have attracted them, and where we should certainly find their tracks if they had visited the place. On reaching the lake I saw no signs of my men or the water either, as the latter was the delusive effect of refraction on the dry bed of the lake, quaintly termed by Narryer "walk-away and tell-lie water," since it kept receding and still deceitfully luring us on.

I then returned to camp, and, crossing our outward track, observed the natives had been along it with dogs. When we reached the camp Mr. Whitfield and Edwards were just coming in, having been stopping at a water-hole

5 m. E.S.E. Mr. Whitfield reported having only lighted one fire, on the second morning, as a signal, when the smoke spread before it rose above the bushes; this probably caused it to be unobserved; and that he had waited at the water-hole till his provisions were exhausted, when he proceeded to strike the track, picked up Turpin, one of the stray horses, and followed us up. I determined to proceed to the water he had found, with the horses, at once, as there was a patch of grass close to it, and, leaving Buck, Edwards, Cant, and Narryer in charge of the camp, we started over with them. After roaming about in the scrubs four or five hours in the dark without Mr. Whitfield having found the place, I halted the party till dawn next morning, when he knew nothing of his whereabouts, and, as it was becoming serious, I questioned him closely, and was thus enabled to lead him on to the place, when he recognised it, and I found it 3½ m. to the eastward of his course. It was most providential that we did not reach the place in the night, as it was full of poison, and he had not noticed it. Famished as our horses then were, they would have eaten it eagerly, and I should have lost them all. Here I halted two days to rest the horses, herding them during the day, and posting a watch on the poison during the night. Here Mr. Guerin, who was very frank, spoke to me privately of the harassing duty and hard work caused by the horses being too much for him, that he feared he should not be able to hold out much longer, and that he thought we should be better off if we had no horses, and each man carried his own provisions. I have said that he was frank; his quiet statement saved the lives of the party, for when I was thus enlightened, I saw that several other men were under the same fatal delusion, based upon a faint heart and lazy disposition, and I was consequently most watchful and strict to prevent accidents, till they were in a more healthy frame of mind.

I was anxious to recover the other horse that had strayed away, and on the 16th sent Farmer, Narryer, and Souper, with six days' rations, after him, instructing them to persevere three days on his track if necessary, but no longer, and then return, with or without him, as speedily as possible, striking across to a high hill 15 m. N.W., on the north side of which I determined to pass, and halt at the first suitable place near it.

The following day we resumed our journey towards the hill, and travelled 12 m. *en route*, over tolerably level, stony country, wooded like the country before described, halting at some granite rocks, where we found feed but not sufficient water for the horses. Next morning, after traversing 3 m. of level, open acacia plains on red sandy soil, we struck the S.W. extreme of an arm of the great salt lake, over which we passed to the base of the hill to which we had been steering. Here I halted the party, among quartz veins and trap rocks, forming rugged and terrible country for horses, while I ascended the hill to make a reconnoissance. Scrambling over walls of quartz and hornblende schist at the bottom, and over brown mica slate, forming the hill itself, I reached the summit. Here I obtained a commanding view of the great salt lake, extending N. and E. to the verge of the horizon, falling to the N.W. and dry, though there was the same appearance of water that had before misled us. To the S.W. an extensive high range of trap hills, similar to Mount Magnet, rose from the plains, covered with scrub and stones around it, 15 m. off, to which, for distinction, I gave the name of West Mount Magnet. Midway on the plain, and a little more to the southward, red hills and cliffs formed rugged scrubby country, fronted by red sand downs, tolerably open; while 10 m. N., two rounded hills, apparently of the same formation (mica slate) as the hill on which I stood, were connected by a lofty ridge, forming a promontory on the western shore of the lake. Mica slate and trap-hills, blended with quartz veins and hornblende schist, extended 5 m. from the base of this hill towards the N. and W., presenting rugged, scrubby, undulating country, with valleys strewed with the fragments of those rocks. The most promising places for water were

some ravines N.N.W. 3 m., and some cliffs 4 m. to the westward. I therefore rejoined the party and proceeded with them to the N.W., winding through the rugged country in search of water without success, and debouching upon a level plain of hard, red loam, lightly wooded with acacia, I saw a hill to the westward, for which we steered; and, travelling 7 m. on this course, about 2 m. from the hill we struck the dry bed of a large brook-course, trending to the N.E., and shedding into the great lake.


As several of the horses were knocked up, and some of the loads left a mile back, I halted here to send two of the strongest horses for the loads, while the stragglers were collected, and, sending Messrs. Whitfield, Cant, and Brown down the brook in search of water and feed, I ascended it alone for the same purpose The brook-bed was deep, on a red sandstone bottom, through which trap and granite cropped in many places. About 2 m. up, another rocky dry bed of a stream, coming from the westward, joined, and there was a grassy flat at the junction surrounded by acacia thickets, covered with large quartz stones. Having found feed, I then struck over the hills to the N. hunting for water. These hills were very rugged, presenting purple, micaceous schist, rising in a dislocated red conglomerate, resting on felspar grit cliffs, in which there were large caves roofed by the red conglomerate that had been recently inhabited by the natives. While examining one of these caves I saw a fly come out of a hole in the side, that the natives had placed a stone over, containing about a quart of water, and this was all I could find.

Returning to the camp, I passed over quartz and iron stones that strewed the plain round these hills, and observed a new shrub or bush about 6 ft. high, with a beautiful flower, consisting of a purple bell drooping from a red and white star-shaped calyx. My friend Mr. Drummond has kindly promised to classify this and other botanical specimens worthy of notice that I have procured.

Mr. Whitfield reported that he had followed the brook down about 2 m., when it spread over a plain with some perished grass on it, and that he had not found any water. Fortunately we had carried some, and I issued a pint to each man for supper, bivouacked there, and led the horses up the brook to the patch of grass I had found. The next morning the horses were scattered and roaming in every direction, searching for water—two of them, which were nearly dying, being the only horses on the flat, and we had great work to get them together; but in doing so, Messrs. Fraser and Cant, whom I took with me to a promising cliff 6 m. s.w., found a spring of water and a beautiful patch of grass. I never saw a man more pleased than Mr. Fraser was on that occasion; he was quite beside himself with joy, and heavily loaded signal guns immediately communicated the cheering intelligence to Messrs. Whitfield and Brown, who had been most indefatigable in tracking up and collecting the horses in this difficult, stony, and scrubby country. Leaving these gentlemen in charge there of the horses they had found, I took Mr. Fraser and Cant over the plain for those we had collected, with instructions to untie two of them and bring them into camp to be loaded with the water-bottles and kegs for a supply of water for the men in charge of the baggage, while I pushed on to them as fast as possible to make the necessary arrangements to prevent delay, as two or three of the horses were dying from weakness and thirst. In passing rapidly through the flat I found one horse down, and another dead; and, hastening to the camp, I procured what we wanted, left Mr. Guerin and Edwards in charge there, and pushed over with the horses to the spring, where we turned them out to feed. I then filled the water-bottles, and loading Postmaster with them, took a supply of water to the men at the camp, and returned to the spring in the evening. This spring was in the sandy bed of a cave, under a felspar and quartz grit cliff, and on the north side of this cave there were perfect representations of seven left hands of natives of the ordinary size,

with one large right hand above and to the left of them; five couples of red kangaroos' feet, and three emus' feet of the natural size—having the appearance of impressions made by these hands and feet previously dipped in some acid fluid that had corroded and discoloured the rock; and several rude imitations of the emus' and kangaroos' feet had been recently carved beneath them, by chipping the rock with a piece of hard stone, probably quartz, as I found a sharp fragment of that rock suited for the purpose in the cave. I called this place the Carved Cave Spring, and found by observations it was in s. lat. 27° 43′ 13″, E. long. 118°.

The following morning, soon after dawn, a native woman and child were seen about a hundred yards from the spring, coming towards it from the southward, and they fled when they saw us there. The child's foot was very small, and they ran off in a S.W. direction. Shortly after this occurrence I moved over with the men and horses to fetch the loads from the camp, and have all together at the spring. I was hurrying on in advance of the party, and near the camp, when one double shot after another announced there was something wrong there; and, in a few minutes after I had answered these signals, Mr. Guerin came running towards me and reported that Charles Farmer had shot himself. I found the poor lad stretched between the loads under the shade of a horse-rug; the horse I had sent him after stood by his side, and the natives, silent and sorrowful, were sitting at his feet. It was a saddening sight, they looked so wan and altered. Farmer's right arm was shattered by a gun-shot wound received above the wrist, and extending along the muscles towards the elbow, where the charge of No. 4 shot had lodged, and apparently injured the joint under the following circumstances, as narrated by himself to me :—

While they were returning with the horse, Narryer, on the 19th, shot a red kangaroo, and Farmer laid his gun down in a bush while he skinned and fastened the hind-quarters on the horse; this done, he laid hold of his gun by the muzzle to throw it over his shoulder, when the hammer caught in a branch, and discharged the contents of the left-hand barrel in his right arm. They had been travelling two days since this occurrence without any other water than the small quantity they were fortunately carrying at the time, which the natives had given him the whole of, though they themselves had been reduced to the utmost extremity by thirst, and the poor horse had been three days without water.

His arm was much swollen, so I washed it with tepid water and put on a large poultice of linseed and oil to reduce the swelling. After I had dressed his arm the poor fellow was very cheerful, said he expected it would soon be well again, and marched quite strong to the spring, where, with great difficulty, I succeeded in getting all the men, horses, and equipment in the evening; but the horses would not feed after they had eaten what little green grass there was on the soakage of the spring, as the dry, dusty grass and salt feed was then distasteful to them, and several of them were so determined in their efforts to get at the green poison-bushes that grew among the rocks, that I was compelled to post a man there to keep them off during the night.

The following morning we resumed our march on a W.N.W. course towards the S. end of a distant high range, extending 10 m. in a N.N.E. direction, with a view to making northing along its water-shed. Travelling 13 m. over stony plains and acacia thickets on red and brown loam, we halted at dark on a patch of dry grass, though there was no water there, in consequence of Farmer's wound rendering it impossible to push through such a densely wooded country during the night; and two of the horses having sunk under their loads two miles back, I sent Mr. Brown with a horse to bring on their loads, while I pushed ahead three miles, reconnoitring for feed and water.

I saw a promising cliff about 5 m. beyond, on our course, which was cheering

for the morrow, but too far off to move my jaded horses that night; so I kept them tied up till dawn, when we pushed on, leaving two behind in a dying state; but our march was slow and harassing, from four more horses beginning to fail when we started, and finally falling with their loads after travelling about 3 m.; and while I halted the party to unload and get these horses up again, the rest of the horses lay down. I then took the loads off the weak horses, and left them and poor Farmer in charge of Messrs. Whitfield and Guerin, having anticipated and carried bread and water for such an emergency, and pushed on with the horses and the rest of the men, still travelling very slow, to the cliff 3 m. off, which we reached in two hours, and turned the horses out to feed on the salt bush flat at its base, while all but two men, whom I left in charge of the loads, ascended the cliff to search for water. The instant we reached the summit I found a basin containing several gallons on an overhanging rock, and called all the men up to drink before they separated, with strict orders to meet them again in two hours. When we mustered Cant reported having found a hole containing about eight gallons of water on the top of the cliff a mile N.; while I had found a native well about 2 m. S., that I hoped we should obtain water from by opening it, as the ground was moist to the depth of my ramrod. As the horses were feeding I now determined to remain here till sunset, and if in the mean time we could not find feed and water, to push on during the night to the hill, and send Cant to reinforce Mr. Whitfield's party, and inform them of the water-hole he had found. However, that no chance might be lost, especially as I knew that no one was so capable of cheering and getting Farmer round as myself, though Mr. Guerin was very kind and attentive to him, I sent the natives out to examine carefully some broken country I had seen to the southward, and taking Mr. Brown and Edwards with me, opened the well, but as we got down the bottom became more dry, presenting gravel and pipe-clay resting on granite breccia, and indications like many other places visited, where I should have washed for gold had water been procurable, the want of which induced me to consider how much more precious that element was than the metal it thus assists us to discover. Here Mr. Brown shot a fine specimen, the first I had seen, of the crested pigeon of the marshes described by Captain Sturt, and a beautiful ground parrot (*pezoporus formosus*), both of which I preserved.

At 7 P.M. Narryer and Souper returned, reporting they had found plenty of water in, and a spring among, some granite rocks 4 m. S., that were surrounded by belts of green grass with poison growing in it, and that they had seen two natives on the way constructing a fence in a ravine at the base of a cliff about 2 m. to the westward, to whom they had shouted and made friendly signs to induce them to point out water, but who ran away immediately, and when they were pursued, separated; so that Narryer ran after one and Souper the other. Narryer said he pressed his man so close that he jumped into a thicket and climbed a bush; that while he was there he endeavoured by signs and words to assure him of his friendly disposition and want of water; but the man was so enraged he could not pacify him, and that he threw some filth in his (Narryer's) face and jumped out to attack him, when he (Narryer) fired and the man fell, apparently lifeless. I deeply regretted, and still regret, this occurrence—an occurrence, if blameable, the blame of which attaches to myself for sending these men away; but we were necessarily separated and struggling for our lives; and had blood been shed, or even death ensued on this occasion, instead of the man having, as I have every reason to believe, fallen from the fear of death, since no traces of blood could be found, nor other trace of the man than his firm track leading at a running pace from the spot, I should have found consolation, as I do now, in the reflection that it was unavoidable and fair fighting. Though, to prevent a recurrence of anything of this kind, I severely censured my men for pursuing these natives, and thus provoking

hostilities under circumstances that would have rendered a white man highly culpable; but not without making due allowance for their weaker judgment, and the fact of their having reported the occurrence to me under a firm conviction that they had done their duty.

As it was not safe to travel during the night after this affair, I set the watch an hour a man, and waited till dawn, when I moved with the party to the place Narryer had found, and was very glad to reach such an excellent spot to recruit my horses, which I turned out a short time to feed; and, selecting the strongest, loaded him with water, directing Mr. Brown to proceed, in company with Narryer and Souper, to convey this supply to Mr. Whitfield, to whom I wrote, directing him to send Farmer over with Narryer, Souper, and the horse, and keep Mr. Brown and Guerin there till the morrow, when I would send for them all and the loads. I then had the horses herded on the plains while we cleared the poison off the grass round the rocks and burnt it. In the evening Farmer arrived with the natives, and his arm was looking much better now the swelling was reduced, and suppuration had commenced discharging the shot, eighteen of which were now out. I dressed his arm as before, and gave him a dose of castor oil. We tethered all the horses on the grass we had cleared for them, but several broke away in the night, and fed among, without touching the poison; so, as these horses were more full and doing better than the rest, I turned the others loose and watched them, with the intention of tying them up again if they attempted to eat the poison. Fortunately they ate the grass only; and I subsequently found they never would touch the poison-plant if it were surrounded by other green herbage.

In the morning as arranged, I sent Edwards, with three of the strongest horses, accompanied by Narryer and Souper leading one, loaded with two large water-bottles, instructing them to proceed together to Mr. Whitfield's party.

The following day, I examined all the horses, made good their shoes, and dressed the backs of several—chiefly the withers, which our saddles began to press, now the poor animals were thin. After this, all hands were busily employed repairing boots, except Narryer and Souper, whom I sent out to shoot a mess for Farmer, who at 8 A.M. (26th Sept.) complained of sore-throat, difficulty in swallowing, and pain across his stomach. His arm, however, looked much better, and several more shot came out. I gave him a dose of castor oil at 9 A.M. At noon, stiffness in the jaw alarmed the poor boy, and made him apprehensive that lock-jaw was coming on. This unfortunately was the case; but I told him perhaps he had caught cold, and rubbed his throat with liniment. Towards evening, he could scarcely open his mouth wide enough to admit the point of a spoon. I then bled him, taking a pint of very black blood from his left arm, and gave him ten grains of calomel. During the night he was in great agony, caused by violent pains in his stomach, that made him draw up his limbs, in convulsive fits, on several occasions so hard that he carried away the tent that was over him. I put a large horse blister on his stomach, but in his struggles it was rubbed off before it took effect; so, to give him immediate relief, I applied flannels, dipped in hot water; that he said eased him a little; but, at dawn, I saw there were no hopes of his recovery, and spoke soothingly to him of his approaching dissolution; when he spoke calmly and sensibly to me about his affairs, and added his sufferings were so great, that he was glad to hear that his death was, thank God, about to release him from them. Leaving him to the particular care of Mr. Guerin and Buck, though all the party were anxious and ready during the night to do anything they could to alleviate his sufferings, I directed Mr. Whitfield, in company with Cant and Souper, to proceed with a day and a half's rations, and explore the high hills 10 m. N.W., for our next bivouac, and return the following afternoon; and sent Mr. Brown, with Narryer, to find feed in the neighbourhood, if possible, better than the horses

were in, as I feared, now this place was eaten off, they would soon commence eating the poison. When I returned to Farmer's side, he told me he had four horses and some money—that he wished his brother Thomas to have the horses, and the money to be divided equally between his other brothers and sisters. I wrote a paper to this effect, and read each sentence to him as I wrote it, in the presence of the men, and he approved of what I had written. But, while I was writing the concluding lines, "in witness thereof I have signed my hand," &c., he was seized with violent pains, and became insensible, or rather delirious, calling out for his brother Thomas, till he fainted away. He then lay apparently dead for a few minutes, then rallied—still delirious, and in great agony—for about twenty minutes, when he fainted again, and died at twenty-five minutes past two o'clock on the afternoon of the 27th Sept. As the poor boy could not sign his will, I obtained the signatures of those men to it who were present when he made and approved of it. We then selected a nice spot for his grave on the summit of the hill, close to the camp, shaded by a beautiful drooping wattle-tree, but we reached the solid rock at 2 ft. down, and were obliged to dig it lower down the hill, 20 yards from the left bank of the brook, 80 yards from the spring, and 1896 ft. above the level of the sea, being the highest plain visited, in s. lat. 27° 41′ 18″, E. long. 117° 42′; where we buried him at sunset, sewn up in his blanket, with his saddle for a pillow, on to which we lowered him gently in a horse-rug. I read the beautiful service of our Church for the burial of the dead over him, after which we fired our guns, and retired in silence. I never saw men so strangely affected; not a tear was shed, but every man's voice was low and tremulous, and sounded hollow and unearthly all that night.

The following morning Mr. Fraser was attacked with dysentery, and I attributed his illness to anxiety and the desponding frame of mind unfortunately common to all the party, excepting Mr. Brown and Edwards, about this time. I therefore pushed off with the horses and all the men, but Mr. Fraser and Buck, whom I left in charge, with plenty of light work to keep their minds employed, and bivouacked on a nice patch of feed with water, that Mr. Brown found yesterday, 5 m. to the southward, around another patch of granite rocks, the intervening country being very scrubby and stony. In the afternoon Mr. Whitfield and his party returned to camp; where I arrived the next morning with Mr. Guerin, whom I sent back to the horse-party with a day's rations, and orders for them to bring the horses into camp next morning. Mr. Whitfield reported that he had found water and grass 15 m. N.N.W., on the W. side of the high hills to which I had sent him, and that I subsequently called Mount Farmer. After breakfast we carried some stones from the adjacent granite rocks, and placed them round and over poor Farmer's grave, with a slab at his head, on which, with a chisel and tomahawk, I carved "C. Farmer, 1854."

I then examined our stores and weighed all the provisions, namely, 568 lbs. of flour, 24 lbs. of pork, 12½ lbs. of sugar, 20¼ lbs. of tea, and 16 lbs. of tobacco; equal to 50 days' rations of flour, 5 of pork, 44 of tea, 5 of sugar, and 85 of tobacco, after issuing to the 1st October inclusive. Joker, a fine young horse, died from fatigue that morning, and Sinbad, Mr. Whitfield's horse, was so weak as to be unable to carry a load. Having only 11 other horses, several of which were very weak, it was necessary to dispense with all we possibly could to reduce our baggage, and consequently I set aside the spare saddlery, the boxes in which specimens were stowed, all the geological specimens that I could correctly describe, and 20 lbs. of powder—burying the latter at the foot of Farmer's grave, and stowing all the specimens in the apparatus for evaporating salt water. We then arranged the loads in proportion to the relative strength of the horses, and towards evening we had everything in readiness to put on their backs. Soon after dawn the next morning (30th), the horses

were brought in, and we resumed our journey from Farmer's grave towards the hills I had named after him, steering N.N.W., through acacia thickets, on yellow sandy land, covered with ironstone gravel, to a granite hill 10 m. distant, situated between the southern range, Mount Charles, and the more elevated northern hills of Mount Farmer. I ascended this granite hill, which was dislocated and wooded, and as the party wound round the N. side, halted them, and called up Mr. Whitfield and Souper, to point out the place they had found, that I might get the bearing and distance, to prevent the spot being missed, in the event of our being benighted. Marching thence on the same course, over plains covered with ironstone, densely wooded, and intersected by several dry streamlet beds trending towards the W., from the W. side of the Mount, after travelling 2 m., we struck a patch of granite rocks, with more than sufficient water on them for our horses, whence, while watering, Souper saw the place we were steering for, about 4 m. off. As the horses, after this timely refreshment, were able to reach the feed before dark, and I was particularly anxious to obtain a round of angles from the summit of Mount Farmer, I sent Mr. Whitfield on with the party, instructing him to tie up the horses till I joined him, and then pushed off to the top of the hill, where I arrived a few minutes only before sunset, and obtained a view of the surrounding country that amply compensated for the hard run Narryer and myself had to reach it in time for my work. From E., round by N., to S.W. on a radius of 20 m., the country presented stony plains, covered with scrub, studded with trap hills to the westward, and granite rocks from E. to N.W., like the bold hills on the Dale River, and bounded on the N.E. by the western shore of the great salt lake, in which a distant blue peak loomed like a granite hill, apparently 40 m. distant, bearing N.N.E. or in a line with the Mount Farmer range, extending about 3 m. in that direction, from the summit, which is about the centre of this group of hills, and 380 ft. high. Here I observed great local magnetic attraction in the trap rock of which these hills are composed, which is a close-grained green and white rock—green predominating, like clink stone, with a conchoidal fracture. The country that intervened between Mount Farmer and the camp, 5 m. W.N.W., presented a rocky thicket, covered with sharp quartz and ironstone round the foot of the hills, changing to brown gravelly and sandy soil, wooded with acacia, extending to the granite rocks, where I found my party bivouacked at 8 P.M. on a nice patch of grass, 1726 ft. above the sea.

*October* 1*st*.—The next morning we steered W.N.W., and marched 5 m. over stony plains, wooded with acacia and studded with small granite rocks, when we encountered a patch of densely wooded ironstone country, from the summit of which I saw a large bare granite hill, bearing N.W. by W. apparently 12 m. off, to which, as the intervening country was more favourable, I proceeded, over red loamy land, affording better travelling than I anticipated, and presenting acacia and salt bush plains drained by watercourses, then dry, trending S.W., and that had cut down to the red sandstone rock which formed the substratum of these plains. The base of the granite hill was very rugged and stony, but we found a patch of grass and a fine water-hole on the S.E. side, where we encamped for the night. Among the huge blocks of granite on the eastern side, the "mourarungs" or rock kangaroos were very numerous, and several of these animals were shot. On the plains to the westward, many red kangaroos were seen, but they were very wild, and we could not get near enough to them for a sure shot, though several were badly wounded. Here also we shot several "budgeragar" or shell parrots (*melopsittacus undulatus*), and four small finches resembling, but smaller than Java sparrows. After this date, the latter birds were always found at the water-holes, and frequently by their chirping attracted us to water, that but for them would have been passed unnoticed when the men and horses were suffering from thirst. From the

summit of this hill I observed a peaked hill apparently 35 m. off, looming blue and smoky like granite, and the country *en route* N.W. ½ N. looked more promising, as bare granite rocks jutted out on the intervening plains, and the sandstones had been swept off a vast area, over which not a cliff could be seen in that direction.

Travelling towards this peak next day, to a granite rock 10 m. *en route*, we passed through 4 m. of rugged country, presenting conical hills of quartz and ironstone, rising to the height of 200 ft. from plains strewed with mica, hornblende, and quartz schist, and wooded with acacia, whence we emerged on open acacia and salt bush plains, extending to our bivouac in s. lat. 27° 15′ 23″, E. long. 117° 10′. Here I was rather anxious about my two natives whom I had sent to shoot kangaroos, as we were getting short of meat, with instructions to work till the close of the day if they were unsuccessful, and then join us in the evening, and who were absent all night, in consequence of my speaking very positively to them under the impression that a superstitious feeling had deterred them from killing these animals since poor Farmer's accident.

We made a short journey of 7 m. the next day to a group of bare granite hills to the westward, travelling over 3 m. of undulating rocky country and then entering a plain intersected by two dry brook courses, on which some natives had recently bivouacked, and the bed of a river, 110 yards wide, trending to the northward, with a sharp gravelly bottom in the channels and sand hummocks between them, on which clumps of black wattles were growing luxuriantly. Narryer and Souper joined us in the afternoon, reporting that the river we had just crossed flowed into another 8 m. N., that came from the N.E. and was trending S.W.; and that they had found a spring 2 m. N. of our last bivouac, where the natives had constructed an ambush so as to lay hold of the emus' and kangaroos' legs when they were watering. They also mentioned a curious mark on a bare granite rock, consisting of four large stones laid in the form of a cross around the base of a vertical stone like a boundary mark. The following morning (4th Oct.) we resumed our march, steering N. by W. towards the distant peak. The country for 4 m. presented granite hills and rocky valleys wooded with acacia, and affording a little green grass round the rocks. We then entered a level, open country covered with angular quartz stones, extending 2 m. on our course, and terminating in a belt of sandy loam stretching along the left bank of the river Narryer had described, and that we struck after travelling about 8 m. and crossing three dry brook courses falling into it. This river bed was dry, 70 yards wide from bank to bank, with small sharp quartz and granite gravel in channels, 30 ft. deep, trending S.W. and apparently falling into the Murchison, as a belt of casuarina trees fringed its tortuous course on the plains towards that river. A small and beautiful painted quail rose from the stony plain, and several crested pigeons were flushed in the acacia scrub on the sandy land; while from the many tracks of emus and kangaroos, these animals must have been very numerous. Crossing this river and travelling on the same course over granite country, wooded with acacia and presenting undulating brown gravelly land for about 8 m., we struck another dry bed of a river trending W.S.W., the same breadth and 21 ft. deep, cut through the red sandstone to the granite rocks that formed a waterfall with three springs at the base where we struck it, and encamped in s. lat. 27° 2′ 43″, E. long. 116° 58′, 1584 ft. above the sea.

We found the traces of a large body of natives having bivouacked here about three months before us, and feasted on kangaroos. Their fires were ranged in a circle, about a bundle of grass like a wheat-sheaf, that they had left behind. The springs were bushed round, and pits sunk within the enclosures, in which they had secreted themselves to spear animals when they

drank at the springs. This was the first place at which I had seen any indications of a large number of natives having been collected during the last three years, and I thought it encouraging, especially as the country ahead was improving. I named this river the "Sanford," after, and in compliment to W. H. Sanford, Esq., our respected Colonial Secretary, and pushed on to the peak next morning, over 6 m. of undulating granite country.

Halting the party at the base of the peak, I selected Mr. Guerin to accompany me and ascended to the summit of this bare granite rock 240 ft. above the plain, whence I could see many miles—at least 40—in every direction. I named this hill Mount Luke, after my friend Mr. Luke Leake, of Perth. It was surrounded apparently by a vast wooded plain, studded with bare granite hills and bounded on the N.W. by a high range about 50 m. distant, the summit of which bore N.W. by N.; but when I descended and advanced with the party towards this high range, I found the intervening country for many miles very rocky and uneven, and intersected by several brooks, trending to the westward, with grassy banks and beds. The country was so much better than we had been traversing before, though still very indifferent, that we obtained grass and water every night, and 25 m. on our course, in s. lat. 26° 38′, E. long. 116° 40′, 1199 ft. above the sea, we crossed three large and deep river-beds, perfectly dry, trending S.W., and spreading over plains tributary to the Murchison. There were white gum-trees growing along the banks of these rivers, the first we had seen since leaving Toodyay, and many of them of a large size.

On the 8th we encamped on the W. side of the high range for which we had been steering, in s. lat. 26° 24′ 58″, E. long. 116° 28′, in the plain intervening between the base of the range and the Murchison River. We halted here a day, and called the highest summit of the range Mount Murchison, which is about 400 ft. above the plain, and of greenstone trap formation, with a conchoidal fracture, while granite rocks crop out round the base of the range, and the sides of the hills are strewed with quartz stones. Resuming our march on the 10th, and travelling 3 m. on a N.W. ½ N. course, over a plain 1069 ft. above the sea, we struck the Murchison River, trending W.S.W., the bed of which was dry, 64 yards wide from bank to bank, with a main channel 36 yards wide, cut down 33 ft. through the red sandstone rock, with coarse yellow sand in the bed, on which several patches of samphire and rushes were growing. White gum-trees of a large size, looking very healthy, grew along the margin of the river, and stunted trees of the same description were growing for half a mile on each side, on clayey flats subject to flood, and covered with small nodules of limestone.

Five miles beyond the river, we entered a patch of rocky country, presenting red sandstone cliffs, and conical hills of greenstone trap, through which we passed on to a white plain, covered with quartz stones, and studded with red and white hills, presenting small peaks of felspar and red sandstone. From the highest of these peaks I obtained an extensive view. To the eastward the country presented red sandstone cliffs and scrub for at least 30 m.; and on each side of a group of trap hills, 10 m. to the N.E., which I called Mount Narryer, the country was very rugged, much dislocated, and very densely wooded. I therefore held my course over undulating, broken country, strewn with ironstone, quartz, and gneiss stones, and wooded with acacia, for about 10 m. further, when I saw a white cliff, that promised well, bearing N.W. by W., apparently 20 m. distant, for which I steered, travelling over densely wooded, stony country, rising towards it, and where we arrived at 10h. A.M. on the 12th of October, in lat. 26° 7′, long. 115° 58′.

The cliff we struck was the highest, and composed of white sandstone with quartz pebbles imbedded, surrounded by a broad belt of gneiss stones, along the eastern edge of which, a watershed without a channel, wooded with white

gum-trees, and strewed with nodules of limestone, trended to the southward. Another long cliff extending to the s.w., composed of white rock like chalk, with quartz pebbles imbedded, was surrounded by gneiss and quartz stones, on undulating scrubby country. A little in advance, and trending N.E., a range of gneiss hills, much dislocated, presented rocky scrubby country, destitute of water, and intersected by two ridges of pale greenish white rock, the one having angular pieces of quartz about 1½ in. cube imbedded, and the other round pebbles about the same size, both seams having the appearance of congealed concrete. There was no water here, and this was the third day my horses had been without water. The country to the N., N.W., and W., was gently undulating, scrubby, and most unpromising. The only place in sight that promised even a chance of water was a group of table hills 25 m. s.; but my horses were too jaded to push on over the rocky country that intervened; however, there was no time to lose, so I determined to retreat to a native well 12 m. back, where the water came in at the rate of three gallons an hour, draw that well steadily, and open another. Accordingly we returned to the well, and were up all night watering the horses. At dawn we commenced sinking another well, but struck rock everywhere at about seven feet; so, seeing there was no chance of obtaining more water, I determined to draw the old well steadily till midnight, and then travel during the night towards the table cliffs 25 m. s.w. from here. At noon I sent Mr. Whitfield and Souper on in advance, with instructions to explore around the cliff for water, and to be prepared to lead us to it when we arrived there with the horses, and thus save time, as I knew the horses would be greatly distressed.

About 2 A.M. on the 14th we resumed our march, and the horses travelled very well till dawn, when we entered a dense thicket of acacia and eucalypti, on loose, yellow sand—the worst piece of country we had yet encountered, extending 12 m. on our course. The sun shone out with peculiar brightness and intense heat—the glare was intolerable; one horse fell to the rear, and I directed Cant, who was leading him, to let the old horse take his time, and sent Narryer back to keep him company. About noon we struck a patch of broken, undulating land, covered with quartz and gneiss rocks, and much more open, about half-way; whence a large smoke, that Mr. Whitfield had made in advance, could be seen. In about two hours I was near the smoke, and fired a signal gun, which was answered by Mr. Whitfield; and the party pushed on with revived spirits. As we approached the smoke could be distinctly seen, rising from beneath a large green tree, so healthy-looking, that we fully expected to find a fine spring there; but, to my great surprise, Mr. Whitfield reported there was no water, and that he had been waiting under this tree since nine o'clock in the morning, as it was so hot that he was afraid to push on to the cliff and execute his orders. I was annoyed, but said nothing to show it; and told Mr. Whitfield, as it was now cool, he could resume his march, and that it was of the utmost importance his orders relative to the cliff should be executed. There was only one man in advance when I came up with Mr. Whitfield, and seeing the effect the disappointment had on him, I determined to push on, if possible, without its being communicated to the rest of the party.

After travelling about 3 m. through a rocky thicket, I saw the fresh track of a native. I knew on such a day he would not travel far without water. The country was so stony it was some time before I found another foot-print —night was coming on—four more horses were down, and when I halted the rest to prevent their running over the track, several rocked to and fro, and sunk under their loads. I had the loads taken off those horses; and, having taken the direction the native's tracks led, we pushed on again, and, just as the sun went down, I struck a path which, providentially, led me to a beautiful well of water, in a bare ironstone plain, that no one would ever have expected

to find water on. Had we missed this well, not a horse would have been saved. Mr. Whitfield came in a few minutes afterwards, without having visited the cliff, apparently perfectly ignorant of the importance of the duty I had intrusted to him, and prostrated by anxiety.

Although we had every reason to rejoice and be thankful for this timely supply of water, I felt anxious about the two men that were absent with the four horses that had been left behind between three and six miles. These horses belonged to Messrs. Guerin and Fraser; so I selected those gentlemen to accompany me at dawn next morning, carrying some bread and water for the men, and to endeavour to save the horses. About 2 m. from the camp we met Cant and Narryer coming in, driving one. They were more cut up than I expected to find them, especially Cant, who had taken fright at seeing the loads scattered about on the track, and who reported that one horse was down 8 m. back, and that the other horses that we were going after had strayed from the camp. I sent Cant into camp with one, and gave him great credit for getting the old horse on so far. Narryer volunteered, after he had eaten a small piece of dry bread and drunk about a quart of water, to accompany me after the horses. We spent the whole of the day tracking them up, and driving them towards the camp, but they all fell about 2 m from it, and died there, after all our trouble.

The next day I sent Messrs. Brown and Whitfield, with Edwards and Cant, to feed the horses at the flat, with orders to return with them the next afternoon. I then started with Narryer and Souper, searching for feed and water round the cliff to the S.W. I found the cliff was of gneiss formation, of great extent, forming a rocky table-land, and surrounded by dislocated red and yellow hard sandstones, in fine slabs. Among these rocks Souper and myself fired at, and missed, two moderate-sized black kangaroos. We saw several fresh tracks of natives, but could not find either feed or water anywhere about these rocks.

At dawn the following morning I took Messrs. Fraser and Guerin, and Narryer and Souper, out with me towards the S.E., and found a patch of feed about 5 m. from the camp, in that direction, and sent Messrs. Fraser and Guerin back with instructions for Mr. Whitfield to move the party and horses on there, after they were brought back in the afternoon. I then pushed off to some granite rocks to the eastward, where I found a spring and a small patch of good feed about 8 m. from the last place I had instructed Mr. Whitfield to move to, and I now sent Souper with a note to him, directing him to bring the party here next day, and await further orders. There were many traces of the natives having recently visited this place. At one fireplace I found a large broken univalve shell, and on the flat top of a large granite rock there were some rude carvings representing either a boat or a fish and a harpoon. For distinction, I called this place the Broken Shell Spring. The following morning, Narryer accompanied me towards a high, bare granite hill, 23 m. S.E. Before the sun rose we had shot two red kangaroos, and left them with our water-bottle in the fork of a bush, to which we intended to return to supper.

After travelling 10 m. over tolerably open country, covered with quartz stones in many places, we struck the Murchison River, trending W., and 115 yards wide, at its junction with another dry stream-bed coming from the N.W. The river here was very bold, in one channel 30 ft. deep, with a bare gravelly and coarse sharp sandy bottom, cut through the red sandstone that underlaid the stony table-land on both sides, which, like the banks higher up, appeared to be subject to occasional rushing floods. Descending the river in search of fresh water, we found several large shallow pools of brine, surrounded by a sheet of salt several inches in thickness in many places, though in most it was about an inch thick. We traced a native into and along the

bed of the river about a mile, when he struck off towards some broken country about 5 m. to the southward. We spent several hours in an unsuccessful search for fresh water. Though we dug in the most promising places we invariably obtained salt water about 4 ft. down. We saw the tracks of red kangaroos and emus where they had been drinking or bathing in a pool as salt as brine, and subsequently saw some brilliant parrots water there. There were two of these birds, male and female I imagine, as one was brilliant scarlet on the breast and neck, and dark green on the back and wings; while the other was a beautiful rose colour on the breast and neck, and pale green on the wings; and they came and went in company. Thinking it probable that the man whose tracks we had seen was travelling to some watering-place, I struck off towards the rocks, 5 m. S., and reached there late at night. The following morning we explored every place likely to afford water, but could not find any. Another roasting day was before us, and we had not tasted water or food since we left the Broken-Shell Spring. But the feed certainly and possibly the water also was exhausted there by this time, while there was every probability of there being both feed and water at the granite hill, which now bore E. 10 m. distant. To it therefore we went over undulating scrubby country and through open salt-bush plains, tributary to the Murchison, and arrived there an hour after noon. Here we found water and grass, and shot a rock kangaroo for breakfast. While we were resting a fine emu came to the water-hole, but saw us and ran off before we could get a shot at him. Tired as Narryer was, he bounded after this bird in an instant, bow in hand, and was stealthily approaching almost within shot, when another bird, that he had not observed, caught sight of him and gave the alarm to its mate, with whom it fled into the scrubs.

I saw with pleasure that my horses would gain strength at this place, and called the hill "Mount Welcome." Knowing they were starving, we started back at sunset, and reached the Broken-Shell Spring at dawn next morning, after marching hard all night. I found Mr. Whitfield with the party there all correct, cheered them with the news of the good place we had found, and sent them off there immediately, detaining Mr. Guerin to guard Narryer and myself while we slept, and accompany us to join the party during the night. But myriads of small black flies rendered sleep impossible. I determined to lie quiet and get used to them; however, I could not stand them; and when at last I opened my mouth to denounce them, a cloud of the little wretches charged down my throat and nearly choked me. Fortunately they retired at sunset, when we slept a few hours, and thus refreshed, pushed on early the next morning to join the party at Mount Welcome, where I found all well, at 2 P.M. on the 21st October, in S. lat. 26° 44′ 23″, E. long. 116° 24′. I halted here till the 25th, and sent Mr. Whitfield out with a party to explore the broken country through which, under any circumstances, I determined to push to the westward, to facilitate our progress. While we were encamped here the weather was hot and sultry, with light airs from the N.W., very cloudy, threatening a thunderstorm every day, till towards night, when the wind veered to the westward and the sky became clear till about 2 A.M., when a heavy bank came up from the N.W. and soon spread in dense cumulus above us, but so low that the granite hills that studded the plains attracted fleecy clouds from the mass that produced a beautiful effect at sunset. My barometer was unfortunately injured by the horse falling over a cliff with it in his load, on the 14th, when it received a severe shake, and the observations taken with it here are only of value as showing a rise of ·03 every evening when the cloudy canopy was dissipated.

The mean temperature for this period was—8 A.M., 89°; 10 A.M., 104°; noon, 109°; 2 P.M., 110°; 6 P.M., 103°; 8 P.M., 91°, in the shade of a blanket under a shady bush. The direct heat was, of course, more intense, probably 120° at noon.

At 4 P.M. on the 22nd Smuggler fell backwards into the well, and so injured himself that he died on the 24th. On the 23rd I examined and weighed all our provisions, and issued rations for all hands up to the 28th inclusive. There was a balance of 222 lbs. flour only, so I reduced the ration from 1 lb. 2 oz. to 1 lb. per day, which, for the ten of us, gave 22 days' supply—or up to 19th November—there being a loss or excess of consumption on unavoidable occasions of 30 lbs. since we left Mount Farmer.

On the 24th, Messrs. Fraser and Brown, accompanied by Souper, whom I had sent out the previous day with Mr. Whitfield, returned to camp, reporting that they had found water 14 m. W. by N., and a patch of good feed 4 m. south of it, and that Mr. Whitfield would meet me at the water on the evening of the 25th, as directed. The following morning (25th) we resumed our march towards the Gascoigne, and travelled over open plains, shedding the waters of the rivers we had crossed to the eastward into the Murchison, for about 10 m., when we entered the rugged country of sandstone, gneiss, and other schistose rocks, mingled with quartz and ironstone, and densely wooded, round my bivouac of the 18th, through which we pushed to the granite rock that afforded the water-hole they had found. Here we halted, and after the horses were watered and the men had dined, I sent them to the feed 4 m. south, with orders to return here and pick up their loads early in the morning. Mr. Whitfield, with Edwards and Narryer, returned the next morning, reporting that the country he had traversed for about 12 m. to the westward was rugged and destitute of water and feed, and that he had not seen any place that would sustain our horses for a night, while the Murchison River, where he crossed it, 7 m. to the westward, presented a bold bed, saturated with salt water, for a mile or two to the right and left of his track.

Soon after Messrs. K. Brown, Guerin, Cant, and Souper came in with the horses, looking well, and an old native they had found near the Grass Mount, and who had pointed out a fine spring about half a mile south of the feed. The old man was very thin, and eagerly devoured what food we gave him. Unfortunately, we were very hard up, and could not spare much. As Mr. Whitfield and his party were very tired and had suffered a great deal from thirst, so much so that Edwards gave up and Narryer had to carry water 10 m. for him, and Mr. Whitfield, who stayed with him, before they had the courage to travel, I determined to move the party down to Grass Mount, and water at the hole the native had pointed out, and which, on our arrival, we called the Captive Spring, in compliment to the poor old fellow whom I detained when he wished to leave.

The next day (27th) we resumed our journey, taking the old man with us, and steering N.W. by W. for the south end of the cliffs, and the scrubby undulating country that crippled us on the 12th. For 8 m. our course led over tolerably open acacia plains, on which Narryer shot a fine red kangaroo. We then crossed the bed of the Murchison, trending south, and divided into two large channels, half a mile apart, in a salt-bush flat 3 m. wide, covered with nodules of limestone, and apparently flooded at times, while the margins of the channels were fringed with she-oak and white gum-trees, similar to those before described. Beyond the river the country became very stony, with gneiss and quartz, in angular blocks, about 5 inches square, and densely wooded with acacia.

Travelling about 9 m. over this wretched country, we succeeded in reaching a water-hole, under a cliff, with a small patch of grass near it, that was surrounded by a dense thicket, which we should never have thought of penetrating but for the old man who led us through it.* Here, in S. lat. 26° 40′ 13″, E. long. 115° 50′, I was obliged to watch the old man very narrowly to prevent

* Three specimens of a small rose-coloured cockatoo, with slate-coloured body, about the size of a pigeon, were shot and preserved here.

his escape, as I took charge of him till after Aldebaran came on the meridian, and the old fellow was very troublesome. I assured him we were only going a few days' journey to the westward, and that we would bring him back to his own country again and set him at liberty. But as the language of each was unintelligible to the other, I did this by signs; and, at two o'clock next morning, called Mr. Guerin to watch him till dawn, when we started again, steering N.W. through undulating yellow sand-hills, covered with dense acacia scrub, separated by rocky, ironstone, and gneiss plains, tolerably open, but still terribly hard for both men and horses, as the stones were so loose and large we could not obtain a firm footing.

After travelling about 12 m. over this kind of country, we struck a samphire flat, at the foot of some rugged hills that stretched across our course. As it was an awkward place to face with weak and jaded horses, I halted a few minutes to breathe them, and questioned the old man about the water ahead. He pointed to the south-west, and gave me to understand there was plenty of water and grass in that direction, but none on the course I was steering, and that the natives never travelled through the country I wanted to traverse, but always went either to the south of it, or the north, where there was a great river and plenty to eat and drink. His great wish appeared to be to lead us back towards the Champion Bay country. He was becoming sulky when I questioned him further, so I determined to hold my course and trust in Providence, keeping a sharp look-out for water. The country was the worst we had travelled for loose stones and rugged hills, but we nevertheless accomplished 13 miles more, and reached a ravine of brown micaceous, primary slate presenting huge flights of steps and extensive platforms, exceedingly difficult for the horses to descend. I had to grope my way through this frightful place in the dark, as it was so confined and difficult, that the night closed over us before we could extricate ourselves. Repeatedly the horses took leaps and passed places that the party deemed impracticable. I was pledged for the performance, and it was a most exciting scene. Not a horse was hurt, and we reached a patch of feed at the bottom, where the brook, that occasionally dashes over these rocks and must then present a fine sight, had formed a fine flat. Here we encamped, and spent a great part of the night searching for water, but without success. The old man depended upon finding water in the ravine, and was greatly disappointed when we failed to procure a supply there.

29th October.—At dawn next morning we recommenced our march on the same course, and travelled through a narrow valley, bounded by mica slate-hills on the right, and quartz grit and felspar cliffs on our left, for about 3 m. —the horses forming the centre of the party, which was distributed over the country for 3 m. in search of water, and advancing towards a promising cliff, *en route* at the head of the valley. We all met again there, where we could not find water, and every man reported he had been equally unsuccessful. There was a long range of high cliffs in sight, bearing W.N.W., apparently 12 m. distant, that presented a deep indentation, likely to afford water and feed, so I determined to proceed there, and, descending from the cliff, we crossed a plain 3 m. wide, covered with samphire and salt bush, and shedding S.W.; after which we entered a dense thicket of acacia, covered with quartz and ironstones, like a newly metalled road, over which we marched about 10 m. to the gorge in the cliffs, where we arrived at 10 A.M., and I halted the party to reconnoitre.

The day was very hot, and the men and horses looked very jaded. The old man scratched a hole under a bush and lay down like a dog, overpowered by heat and thirst. When I roused him, to ascertain if he knew where there was water in these cliffs, he laid hold of my arm and pointed up the gorge, but seemed doubtful. However, I pushed off in that direction immediately, with Souper and Buck, and explored every nook to the head of the valley. We

found several large water-holes, perfectly dry, and one with some moist sand on the top, near to which some natives had recently bivouacked. We opened the latter without any benefit; but I found it was taking too much out of me working without water under a broiling sun, and, at 3 P.M., returned to the party, whom I found buried, like the old native, in holes they had scratched in the sand under bushes that they had thrown the horse-rugs and blankets over. The horses, too, were so thirsty they would not feed, and were standing alongside the men, with their heads under the blankets. The thermometer was then 111·30° in the shade.

The old man looked up anxiously when I arrived, and wept bitterly when I told him that the water-holes were dry. He evidently despaired of his life, and his apprehensions were speedily communicated to many of the party, as I saw by their anxious faces. Every man's eyes were fixed inquiringly on mine, and it was evident they knew the importance of the next move. I had formed my plan, but I was so oppressed by a perception of the consequences, that, though anxious to relieve my companions from suspense, several minutes were passed in silence before I could tell them that we were beat, and that I intended to retreat to our last watering-place, 40 m. S.E., subsequently called the Retreat Well, and to start at sunset.

We were now in s. lat. 26° 15′, E. long. 115° 16′, or about 50 m. from Shark Bay, and 100 m. from the mouth of the Gascoigne River; and the country for 30 m. towards either was densely wooded, and falling to the westward, without a trace of any water-shed. I assured them that, under Providence, there was every probability of our reaching the Geraldine Mines in safety, even though every horse were lost; that fortunately I saw my way very clearly, and felt satisfied that every man, who steadily obeyed my orders, would see his friends again; but that, at the same time, we must be prepared to endure great privations, which every horse we could save would diminish. All were very cheerful after this, though their sufferings were great, and drove them to extreme measures to allay their thirst. When the sun went down we took off our shirts, loaded the horses, and marched through the night stripped to our boots and trowsers, to get the benefit of the dew. I sent Narryer and Souper on ahead, with instructions to keep the track, make haste to the well, and return along the track to meet us with a keg of water. Near our bivouac of the 28th I made a détour to the northward, to avoid the rocky ravine, and at dawn I found we were entangled in gneiss and mica slate-hills, nearly as bad as the country I was avoiding. Soon after this our course was arrested by the rocky table-land we were traversing terminating in a perpendicular cliff, 90 ft. high, extending as far as I could see to the right and left, and facing our old track, 3 m. south of it. I saw no loaded horse could pass this place, and determined to unload, leave the baggage here, mount the men on the horses, and push on to the well, to save the lives of both. When I halted them, both men and horses rocked as they stood, and I was afraid we should have some accidents in descending the cliff. I ordered each man to unload the horse he led, mount him, and come on with his arms and ammunition. Messrs. Whitfield and Guerin had each lost their horses this morning, and consequently had to walk. I gave Chainer Cant, who rode my horse, a bag of flour to take charge of, and Buck half a bag. Then, as the old man had been hanging on me all night, and said he knew of no water nearer than that we were steering for, I gave him a blue shirt, shook hands with him, and intimated that he was free either to follow us and share what we had, or leave us. The effect of this intelligence was wonderful. The crouching feeble creature, whom I had supported all night, believing that, if we passed near water, he would be obliged to discover it, was up in an instant, standing erect and proudly on the edge of the cliff, where, with laughing devilry flashing in his eyes, and his right arm extended towards the west, he blew like a grampus in the direction of our track.

I found a better place than I expected to descend to the plain, but we had not proceeded far when I saw that Cant was giving up and we should lose his horse, so I took the flour away from him and gave it to Edwards. Mr. Whitfield then lay down under a small bush and said he could not go any further. I tried to rouse him, but failed in my endeavours; and then directing the party to follow in one track, so that we might be easily followed, I pushed on to the track, and placed some bushes across it to mark the spot for night-work.

About an hour after we struck the track, I found Narryer and Souper buried under a bush, and the empty keg lying in the pad. They said they were very sorry that they had not done what I told them, and that they would follow up in the afternoon. I told them not to fear, and to come on at once if they were able. Narryer then crawled out and pushed on about 6 m. farther, when he gave up again. The horses began to fail when the sun got power, and fell to the rear one by one, till, at the close of the day, when I reached the well, I was only within hail of Mr. Brown; but, as I had brought the keg on with me, I then felt that I was in a position to save them all.

At 8 P.M. they were all safe, excepting Messrs. Whitfield, Cant, and Guerin, after whom I started at dawn next morning, with Edwards and two horses. Just as we started I heard a gun, apparently about 2 m. off on the track, and, as the horses travelled very slow, I called out Mr. Fraser, and sent him on fast with some water. In a few minutes we came up with poor Guerin, sadly altered and nearly gone, supported by Mr. Fraser. He had no gun, and I therefore knew that one of the other men was near, so, directing Fraser to get Guerin in as soon as possible, I pushed on, firing signal guns in answer to those ahead, about 5 m., when I found Mr. Whitfield and Cant sitting on the track, under the shade of a small bush, and nearly done. We stayed about two hours with them, and freshened them up with flour and water till they were sufficiently recovered to travel, when we mounted them on the horses, and I gave Mr. Whitfield instructions to proceed to camp and send Messrs. Fraser and Brown to meet me here next day with some water. I then went on to the loads, accompanied by Edwards, to hide the flour and procure a few things that would place us in a better position, and diminish our risk in the event of anything occurring to prevent our recovering the baggage. Unfortunately the sleeve full of water that we intended to carry had been left with Mr. Guerin, and we were thus left without water for two days, marching back with a load. Edwards behaved remarkably well on this occasion. We reached the cliff at night, and went over the loads at dawn next morning, procured what we wanted, found three horses dead, and returned to camp that night, escorted over the last 6 m. by the gentlemen I directed to meet us with some bread and water.

When I arrived, Mr. Whitfield reported that the water-hole was nearly dry. I inspected it, and saw we had not a moment to lose. I sent Mr. Whitfield, Buck, Narryer, and Souper off immediately with the horses for the loads, and, at dawn next morning, sent Messrs. Fraser, Brown, Guerin, and Cant to the Captive Well, with orders to halt there and await further orders if there was water; and, in the event of its being dry, to push on to Mount Welcome and wait there till I joined them, taking care to screen all the water-holes from the sun. I directed Mr. Fraser to kill a horse, if he failed, near the river, and salt him down, as he was on his last legs and could not be of further use.

November 2nd.—This day Edwards and myself were resting at the Retreat Well, while the rest of the party were moving as I have described. We examined the country along the s.w. side of the great gneiss cliffs, and found several water-holes dry that had been visited by a large body of natives that were encamped there about three months before us. There were an immense number of their fire-places, with acacia-pods around them, and the stony slopes were full of holes made by them in digging up some root they eat, and that

must be very plentiful and a favourite food, as the surrounding thicket is intersected by numerous well-beaten paths. At midnight the horses arrived with their loads all correct, but as I had only a gallon of water for each of them, I turned them out three hours to feed till dawn, when I gave them the water, and we pushed on towards Mount Welcome. Leaving them to proceed along the track, I struck off with Souper, and found a fine water-hole in another patch of ironstone table-land. Signal guns were fired immediately, as agreed upon, and, in a couple of hours, the horses had as much water as they could drink, and were grazing in a tolerable patch of feed about half a mile south of the well, which was half-way between the Retreat Well and the Murchison, and 2 m. south of the track. I sent Souper off immediately to place a mark on the track where we turned off, for Mr. Whitfield's guidance, who was behind with Narryer and did not come in till the afternoon, in consequence of having to go back 2 m. beyond the loads, to fetch my haversack with the watches and some valuable memoranda that I had given him to take care of, and that he laid down and left behind when the horse fell. I then sent Souper with a day's rations for Mr. Fraser's party, and orders for them to join me immediately, in pursuance of which they came in the following morning.

Mr. Fraser reported that the horse died on the 3rd, at Grass Mount, and that the meat was too inflamed for food. Here we halted a clear day to refresh the horses, and I deemed it advisable to reduce the ration to ¾ lb. of bread per day.

On the 5th November we resumed our march, and proceeded all together towards the Captive Spring, for about 3 m., when I sent Mr. Whitfield on there with the party, and taking Narryer and two days' rations, steered S.S.E., over tolerably open stony country, and struck the Murchison about 15 m. lower down, where it presented a bold bed, and we could not find either fresh water or feed, though we worked at every likely place for 6 m. down the river till noon the next day, when Narryer was nearly done, and I thought I should lose my faithful and generous companion. However, he rallied after I washed him with brine; and marched quite strong to the Captive's Well, where we joined the party, after midnight, and found all correct.

The next day we all proceeded to Mount Welcome, and bivouacked a night and day there. Just as we were about to start again, the well failed before all the horses were watered, and had we not most fortunately filled the water-bottles and kegs in the morning, we should have been in a most critical position. But fortune never deserted us. We had been striving hard to win our way through a most formidable country, and Providence so ordered the course of events, that we were repeatedly extricated from perilous positions by means, in semblance trifling, though really miraculous.

On the 8th I examined and weighed the provisions, and finding we had only 81 lbs. of flour and 2½ lbs. of tea, while we had 160 m. to march before we could reach the Geraldine Mines, and 90 m. to strike Mr. Gregory's last watering-place on the Murchison, through a country so densely wooded and destitute of water, that he had been deterred from penetrating it, I determined to reduce the ration to ⅝ lb. per day, so as to make it last for twelve days, or till the 20th of November, when I expected to arrive at the mines. I then buried 9 lbs. of powder, the shoeing tools, and four tomahawks, under a bush 18 yds. E. from the base of a deep indent on the S.E. side of the mount. At midnight we left Mount Welcome with water for three days, steering S.W. towards Mr. Gregory's last on the Murchison, where, with great difficulty, by long night and day marches, we arrived on the 12th, and encamped on a beautiful patch of grass on the bed of a stream that we obtained water in by digging, 4 m. E.N.E. from the great bend of the river, and in s. lat. 27° 40′ 13″, E. long. 115° 50′. Our course between Mount Welcome and this place led across extensive plains, over which the waters of the rivers we had crossed to the eastward flow to the Murchison, and through places

covered with quartz and iron stones, wooded with acacia and studded with granite breccia, greenstone, and mica-slate hills, that in many places presented rugged barriers impeding our progress without affording either feed or water, and only furnishing a sufficient supply for our horses once, at a large hole on an elevated granite platform on the N.W. side of a huge bare rock of that description, in S. lat. 27° 38′, E. long. 115° 48′.

On the 14th we resumed our march down the Murchison, in which, below the great bend, or the point where the waters from the eastward are concentrated and fall into it, we found plenty of fresh water, either in small springs under the red sandstone cliffs that bound the bed on either side, or by digging in the sand hummocks accumulated in the bed. Twenty miles along the river, from the great bend, we found a few pools of salt water, and shot a few brown ducks on them; and in the thickets on both sides, presenting stony plains and wooded with acacia and white gum-trees, ½ m. back, several turkeys and red kangaroos were shot and many emus were seen. Lower down, the fresh water and grass were scarce for 30 m., and the country presented a barrier, destitute of large game, that appeared never to have been visited by them. Low ranges of hills that, till this time, had been 7 or 8 m. off on both sides, now closed upon the river, and made the passages down it difficult by continually driving us into or across the heavy sandy bed, and presenting dense scrubs that prevented our cutting off the bends. The prevailing rocks on these hills were sienitic trap and gneiss, and spurs or dikes of the former rock cut across the river-bed in several places. After I had verified our position by Mr. Gregory's marks, I found his sketch of the river of the utmost service, for, knowing his accuracy, I was enabled by it to save many miles and strike his water-points even in the dark; and I have much pleasure in admitting that I was mainly able to penetrate beyond him, through the valuable information he afforded me and the friendly interest he took in the Expedition.

From the traces of Mr. Gregory's party in the bed of this river, and other satisfactory evidence, I am convinced there has not been a sufficient fall of rain in the interior during the last three years to cause either it or its tributaries to flow.

We met a party of natives about 30 m. from the mines, and they, thinking we were going up the river, gave me a very truthful account of the country, advising us all that it was destitute of fresh water, and no men could live there at this season.

On the 19th, at noon, we were within 15 m. of the mines, and finished our provisions, intending to get in that night; but, at sunset, Narryer shot a fine emu, about 4 m. from the mines, in a fine patch of grass, and, as the horses were weary, I halted there for the night and pushed on to the mines next morning, where we arrived in health and spirits, though looking thin and jaded, at 11 A.M. on Monday, the 20th November, and where we were received and treated most kindly by Mr. C. Evans and Captain Hoskens, to whom I shall always feel grateful for their unremitting attention to my party, as soon after we arrived there all of us were ill, except Mr. Brown, and I was down the first night, though I had been very abstemious.

On the 22nd, I sent R. Buck, J. Edwards, W. Cant, Narryer, and Souper, with the horses and equipment, in a cart to Port Gregory, in charge of Mr. Whitfield.

On the 24th, Captain Sanford galloped in with a lot of fine horses, mounted the rest of the party, invited us all to Linton, and volunteered to take me up in his cutter to Shark Bay, to relieve the ship and push, if possible, from the mouth of the Gascoigne to my last bivouac in the interior. The pleasure this offer afforded me can scarcely be conceived. I determined to take Narryer with me, and eagerly embraced it. It was such a noble and manly offer, and

so calculated to be of service to me—especially as he well knew the risk, having nearly perished in his former bold attempt along the coast with Mr. Gregory—that, though circumstances ultimately prevented my accepting it, I thank him from my heart. We accepted his kind invitation, and leaving our good friends at the mines, proceeded on the 25th to Port Gregory, where I had the pleasure of meeting on that day, and consulting with you relative to the disposal of my party, and when it was arranged that Messrs. Buck, Edwards, and Cant should accompany you in the schooner 'Daphne' to Fremantle; that Messrs. Whitfield, Fraser, Brown, and Guerin should be, as they requested, immediately released from their engagements; and that Narryer and Souper were to proceed overland with me to Head Quarters, as soon as the horses were sufficiently recruited. In pursuance of this arrangement, I arrived at Perth on the 27th December, and reported myself to you, when I was glad to learn that all my party had safely arrived before me.

Looking at the map of the country I have traversed you will see, 1st.—That there are extensive marshes in 118° E. long., between 27° and 28° of s. lat., flowing and trending N.W., and about 1400 ft. above the level of the sea; that the country between Toodyay, which is about 800 ft., and the base of Mount Farmer, on the N.W. side of these marshes, rises gradually to the height of 1896 ft. above the sea; and that this portion of the country is so inclined, that the water is shed over this area, towards the S. and W., into Mr. Gregory's great lake "Moore," which is tributary to lake Cow-cowing, flowing thence, by way of the Salt River and the Avon, to the ocean.

2nd.—That there are four large rivers in 117° E. long. (between 27° 20′ and 26° 40′ S. lat.) of a decidedly fresh character, coming from the N.E., and shedding into the Murchison, which, itself, flows from the same direction; and that I appear to have struck near the N.W. extreme of its basin; that large numbers of natives occasionally come down these streams at the latter end of our dry season; and that red kangaroos, emus, and turkeys were very numerous between these rivers, though the country on our route was very indifferent, and still worse to the westward, while, everywhere else, the country traversed was destitute of game, and afforded no traces of any number of natives, except at the eastern side of the cliffs near "Farmer's Horse Camp."

3rd.—That, between Mount Farmer and Mount Magnet, 150 m. to the eastward of Mr. Gregory's last bivouac on the Murchison, and 300 m. S.E. from Shark Bay, I have passed over 70 m. of undulating country, presenting chocolate-coloured mica-slate hills, and felspar and quartz grit cliffs, in association with quartz and hornblende schist, resting on granite breccia and greenstone, surrounded by plains of red loam, covered with quartz stones and rich black iron ore, and shedding to the N.E. into the great interior marsh I have discovered flowing to the N.W.; that 100 m. E. from the bottom of Hamelin Harbour, or the N. arm of Shark Bay, at the place we retreated from on the 12th of October, there are white cliffs resembling chalk, and quartz grit cliffs, with egg-shaped quartz pebbles of various sizes imbedded in them, resting on dislocated gneiss rocks, intersected by two walls or veins, one of round and the other of angular quartz stones, cemented in a hard greenish-white matrix, and surrounded by red loamy plains, covered with these angular and rounded stones; that 100 m. S.S.W. from this last-named place, and on the left bank of the Murchison, across my track of the 15th and 16th of November, there are similar pebble cliffs in association or blended with primary schists; that there are pipeclay plains, resting on greenstone, around the quartz schist ranges, in the vicinity of Mount Kenneth, and similar plains, covered with quartz stones, at the base of the Felspar Cliffs, near our bivouac of the 12th of August; and that all the facts I have alluded to under this head

show the accuracy of Sir Roderick Murchison's views relative to the geological formation of the country to the eastward of the Murchison River and at the back of Shark Bay.

I beg to direct your attention to the first and second items, as indicative of *a fertile country to the eastward;* and to the latter as confirmatory evidence in support of an eminent geologist's opinion that we have, in this hitherto unexplored and imprudently neglected portion of our territory, probably one of the finest Gold Fields in the world. I have noted many important facts in support of these opinions, which, if you wish me to lay before you, I shall have much pleasure in submitting for your further consideration, as well as a plan for future operations from a central depôt on the great bend of the Murchison. In conclusion, I thank you for the consideration and kindness with which you have supported and guided me in this arduous undertaking; and I beg to assure you that I regret that an Expedition, for which I was so efficiently equipped, and on which, subject to proper restrictions, I was left as free to act as I could possibly have desired, has not resulted in immediate benefit, to satisfy those who are not capable of appreciating the importance and ultimate utility of such explorations.

I have much pleasure in bearing testimony to the obedience and general good conduct of my party.

To Mr. George Phillips, of the Colonial Secretary's office, we are all indebted for his having volunteered and taken charge of the schooner 'Perseverance,' sent to meet us at the mouth of the Gascoigne, and I have to thank him for the judicious and spirited steps he took there with that vessel, which I am satisfied were admirably calculated to ensure our communicating with him, had we been so fortunate as to reach that place. Nor am I forgetful of the privations the officers and crew of the vessel cheerfully endured to serve us, and for which I do, and we all ought, to thank them.

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# APPENDIX.

1. *Letter from Mr. George Phillips to the Hon. the Surveyor-General.*

Western Australia, Perth, July 6, 1855.

Sir,—In compliance with your request, I have the honour to inform you, with reference to the River Gascoigne falling into the N. arm of Shark Bay, after perusing my journal, kept while engaged carrying out your instructions relative to furnishing supplies for, and communicating with the exploring party, under the command of Assistant-Surveyor Robert Austin, that this river flows into Shark Bay by two branches, about 2½ m. apart, forming an island, called Babbage Island. The approaches to these branches are obstructed by sand spits. The entrance to the north branch is about 12 yards wide, with a depth of 4 ft. water at high tide. When once in, it has the appearance of an estuary, being of considerable width, say 500 yards, running inland N.E. about a mile, when it takes a sharp turn to the southward. Point Whitmore, to the north of this entrance, described by Captain Grey as being a drift sand, has, since then, been washed into the northern entrance, thereby contracting it, and lesseuing the depth of water on the bar. There is but little drift-wood on the banks of this branch of the river.

The southern branch is of a very different appearance. After crossing the bar, which, at low water, is perfectly dry, and, during flood-tide, has from 5 to 6 ft. water over it, you immediately come into a fine sheet of water, about 276 yards wide, and 2½ fathoms deep. Up this branch we pulled 1½ m., the river still carrying its width with it, but not depth. This branch had every appearance of being the outlet of very heavy falls of water. The banks to the south were thickly covered with driftwood, some of the logs being of considerable dimensions, and a

great quantity of it mahogany (*eucalyptus robustus*),* which, from my slight experience in these matters, I believe is indicative of a well-timbered country at the back. The banks of the river are composed of porous red sand, among clay; and the flats, which extend to the south, are salt marshes.

The bar, at the entrance, is, I imagine, from its shape, formed of a deposit from the freshes during the floods. On it there is a considerable quantity of driftwood, some of which is so placed as to resemble a number of posts, when viewing it from seaward.

That portion of Babbage Island presented to the sea is formed of abrupt white sand dunes. At the back of these dunes, it appears to be luxuriantly vegetated, and intersected by mangrove creeks. The island is easily recognised, it being the most southern part of the coast where the sand dunes exist in that portion of the bay, the southern branch of the river separating it from the belt of mangrove-trees.

The country to the south of the river, and on the coast side of the range of sand hills, so far as I had an opportunity of observing, is of a very sterile nature. It consists of salt marshes, clay flats, sand, and scrub; no timber of any description, and covered with natives' paths, well beaten, and in places, artificially raised above the level of the swamps.

With regard to the natives, the majority were well-proportioned and fine athletic men; they do not seem to make use of any paint whatever, are of a dirty black colour, do not wear any clothing, and I never at any time saw them accompanied by women or children. They were always armed with short, barbed spears, and throwing-sticks, and always seemed anxious for us to go to them; but on our doing so, retreated to the shore or into the scrub, where they would commence hallooing one to another until the sounds were lost in the distance. They never evinced any hostility to us, save on one occasion, when three of the men left the boat to visit the bottle I had buried, containing intelligence of our arrival, for Mr. Austin, on the south end of Babbage Island; when returning to us they were chased by nine natives armed with spears. Upon the men regaining the boat, we fired a shot over their heads which checked their further pursuit. They then made signs of peace to us by throwing down the spears behind them and holding up their hands to show that they were empty, but they were not to be trusted. I observed upon one occasion, when returning to the vessel from the river, that they used a description of net which appeared, as near as I could form an idea at the distance we were from them, to be about 20 ft. in length and 3 ft. deep; this was drawn across the channels, like a seine, by two men, and the fish driven by others into it.

We were very fortunate in securing a good anchorage, 5 m. to the south of the river, in a channel in a very extensive sand flat. This flat stretched over an extent of 15 m. north and south—ran out into the sea between 4 and 5 m., was intersected by deep channels, with bar entrances. The one in which the schooner was anchored had 6 ft. of water on the bar, 2½ fathoms inside, and about 100 yards wide. In this novel harbour we remained in perfect safety, 3 m. off shore, and in smooth water, although exposed to the full force of the wind. On each side of the channel at low water the flat was perfectly dry.

It is exceedingly difficult to discover the approaches to any one of these channels in gloomy weather owing to the flat being covered with weed at its outer edge, but on a clear day these openings are very distinct, and you are enabled to follow the channel with the eye until it shoals to a mere ditch.

There is a very large channel to the south-and-by-east of the river, and at the northern extremity of the sand flat, with upwards of 7 ft. water at the entrance to it at low ebb tide, and about 200 yards wide, with upwards of 3 fathoms water. The only disadvantage attending this channel, is that it is open to the north-west gales; and it would be necessary to proceed some distance up it to avoid the sea.

It would always be desirable, in the event of any vessel seeking shelter in any one of these channels, to lay down buoys on each side of the entrance, and send a boat a short distance in advance up the channel, when with proper management a vessel could be safely taken in without fear of grounding.

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* It is believed that this is the most northern point on which this species of eucalyptus has been seen.

The wind, during our stay, varied from S.E. to S.S.W., with clear sky. When at S.E. it invariably blew a gale, which caused fine red sand to blow from the main, giving the appearance of a red haze. Upon one occasion, when it had been blowing stiffly from the east, the rigging was covered with a fine red dust. With the wind from the E.N.E., we had very cloudy, gloomy weather, intensely hot, and accompanied by severe thunder-storms. On December 17 we had the only shower of rain worthy of notice; during the time the shower lasted it was exceedingly close.

The rise and fall of the tide varies from 5 to 6 ft. at the full of the moon, when we had the highest water, and low ebb tides at the season of the new moon.

The only curiosities I was fortunate enough to discover, were some water-snakes, of green and yellow colour, about 6 ft. long, but which I was unable to preserve, not having the proper materials,—and part of a canoe, picked up on the southern extremity of Babbage Island, similar to that found by Mr. Austin when surveying that coast in 1851.*

The following, Sir, is a brief outline of my proceedings from the time of my leaving Fremantle to that of my return to head-quarters:—

Sailed from Fremantle on the 11th October, 1854, with a light wind from the S.E. Arrived at Port Gregory on the 15th; and after taking in our supply of water we sailed again for Shark Bay on the 18th—anchored at the Quoin on the 20th. We then formed a Provision Depôt, as a resource for the boats, in the event of an accident occurring to the vessel while off the river. Sailed at daylight on the morning of the 25th for the N. end of Peron's Peninsula, and anchored there at 4 P.M. on the same day. We again sailed in the morning and sighted the main about 9h. 30m. A.M.,—stood in close for the land. I then went in search of the river without succeeding in finding it. While searching for the river I came upon an extensive flat with from 2 to 3 ft. of water on it. It was intersected at intervals with deep channels, varying from 2 to 3 fathoms in depth, with bar entrances. After pulling up and down the coast for several hours I returned to the ship, when it began to blow very strongly from the S.E. We were, therefore, obliged to stand out to sea once more. On the night of the 29th, the wind having fallen, we stood in again for Shark Bay, having been blown about 60 m. outside of Bernier Island. On the 31st went in through the Naturalist Passage, and at 7 P.M. let go anchor for the night on a pearl bank, about 3 m. to leeward of Peron's Peninsula. On the following morning we worked up to the north extremity of the Peninsula, where we remained till the 5th November, taking in a supply of firewood.

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* The canoe presented to the Perth Museum by Lieut. Helpman and Mr. Austin, on their return from the survey of Shark Bay and Exmouth Gulf, in 1851, was found by the latter gentleman on the sandy mangrove point on the southern side of the S. entrance of the Gascoigne River, and consisted of a very light log of white wood, 11 ft. long, and 10 in. diameter, curved at one end to an angle of 160°, with pegs driven on each side of the curved end, on which two layers of small twigs were bound with bark, forming a basket like a dish along half its length, in which the natives probably place their spears, children, &c., while propelling themselves across the river; but as these canoes, which are not adapted for rough water, were found among the drift timber, at a point where the river is fordable in fine weather, and the materials of which they are formed do not grow on the coast, Mr. Austin infers they came from the interior with the drift timber, from a good country lying in a N.E. direction, within 200 m. of the coast, shedding its waters S.W., into the upper part of the N. arm of Shark Bay by this river, and another supposed to exist between it and Cape Cuvier, and abreast of Bernier Island, on which Captain (now Sir George) Grey discovered a great quantity of large drift timber; and N.W. into Exmouth Gulf, where Mr. Austin discovered extensive mud-flats, containing fragments of granite, slate, and quartz, indicative of the mouth of a large river that flowed from a country where these rocks prevailed, more especially as the neighbourhood of the coast appears of coalitic and tertiary formation. In addition to what I have advanced here, and elsewhere, in favour of a large river flowing into Shark Bay, it may be useful to state that the singular mammiferous animal called the Dugong, an inhabitant of shallow seas near the mouths of large rivers in S. America, was found by Lieut. Helpman there, and accurately described for the information of Professor Owen, of London, by myself.—ROBERT AUSTIN.

At 2 A.M. on the morning of the 6th we again sailed for the main, with a light southerly wind. At noon we anchored the vessel in one of the channels before mentioned. After the vessel was safely moored I started once more in search of the river, the south entrance of which we made at dusk, and found it as before described. While running up the coast this afternoon we fell in with several sea-snakes of a dingy brown colour, with bright green and yellow spots. We slept at the southern extremity of the island on the night of the 6th. In the morning, so soon as it was sufficiently daylight, I went and examined the mangrove bushes, to see if any limbs had been cut off, also whether any of the earth had been turned up about them, but found no signs of the party. We then returned to the vessel.

On the 14th I visited the north entrance of the river for the purpose of ascertaining the depth of water and the formation of that branch. We found the entrance very narrow and about 4 ft. deep: this was at high water. It had a sand-bar in front, on which, with an ordinary sea breeze, the sea broke with violence.

During my absence on the 6th the vessel was visited by seven natives without evincing any fear, as I was afterwards informed by the master, and which I found to be the case on several subsequent occasions.

On the 22nd the vessel was moored in another channel with less water, and with barely 4 ft. water on the bar at the entrance, at ebb tide. In this channel we remained till the 60 days had expired, and continued to visit the river twice a week. On one occasion of visiting the river we found the remains of a ship's long boat about a quarter of a mile to the s. of the river.

Native fires were very numerous along the coast during the whole period we were in this vicinity.

On the 7th January, 1855, the number of days we were to remain in the vicinity of the Gascoigne having expired, and not having seen any signs of the Exploring Party, we took advantage of the fine weather, and after warping the vessel out of the channel set sail for the Peninsula; the wind favouring us a little, we arrived at the north end of the Peninsula on the 8th, took in a supply of water, and sailed for the Quoin on the 12th, where, after breaking up the Provision Depôt and ballasting the vessel with guano, we sailed for Port Gregory, at which port we arrived on the 27th, and having learnt the safe return of Mr. Austin and party, we sailed for Fremantle on the 30th, and arrived there on the 4th February, and on the 5th I proceeded to head-quarters and reported the safe return of the schooner from Shark Bay.

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## 2. *Letter from Mr. Drummond.*

Hawthornden Farm, April 16, 1855.

SIR,—I have examined the two collections of plants brought and sent home by you, *as well as I can, from the very imperfect state of the specimens.* I find, in all, about fifty exogenous plants, three *endogens*, and one *acrogen*, or lichen. The leguminous plants are ten in number. The plant which was pointed out to me by my son James, as the one which poisoned your horses, is a species of gastrolobium, the same genus which is known to produce so many poisons; it is in flower in the first collection, and in seed in the second. One of the most beautiful plants you brought home is of this order—a plant with flat, leafless stems, and large red or yellow flowers. I found it, first, near the Wangan hills, and, afterwards, saw it in many places in the Champion Bay district. Although I have long sent it to Europe, I have, as yet, seen no description of it. I observe six myrtaceous plants in the collections: one, a grey shrub, with branches densely *crowded with leaves,* is new to me; but it has neither flowers nor seed-vessels. Among the myrtaceæ, there are specimens of *salisia pulchella*, and *callistemon phœniceus*, of Lindley, both beautiful Swan River plants. There are five or six *proteaceæ*, none of them new, and an equal number of *compositæ*, all common everlasting flowers. The collection contains a pretty *hibiscus*, with grey, wrinkled, solanum leaves, and a hoary-leaved purple flower. I have gathered both of these plants in the Champion Bay district; both collections contain specimens of a very beautiful plant, the *keraudrenia velutina* of Steetz, a plant first found in this colony by Mr. Roe, and, I believe, sent by him to Baron Hügel. The second collection contains fragments, *almost in the form of powder*, of two *loranthaceous*

plants. These make our Western Australian specimens of this curious parasitical genus amount to eleven in number. If you can recollect them, it would be well to state the trees on which these parasites grow. When at Champion Bay, I found a curious climbing blue-flowered pentandrous plant, a new genus, natural order unknown to me. Your second collection contains two additional specimens of this unknown genus. The same collection contains two remarkable plants, which are altogether unknown to me. Of one, there is only a very small fragment, the top of a shoot with very clammy leaves. This plant I cannot examine without altogether destroying the specimen; and I think it better to return it to Mr. Roe as I received it. The other plant has grey leaves, and remarkably oblong shield-like seed-vessels. I know no plant which in the least resembles this, and, without much better specimens, I cannot understand its economy. Of the endogens, two are very common all over the west coast. The third has no leaves, but, from the flowers, it seems to be a pretty, new species of thysanotus. The *acrogen* is a curious lichen, allied to the European L. caninus.

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### 3. *Letter from W. A. Sanford to the Colonial Secretary.*

Perth, July 7, 1855.

Sir,—As you request, I send you a list of the mammalia and birds, the skins of which you have forwarded me, as far as I am acquainted with them, with a few observations on the distribution of the species.

*Osphranter rufus.*—Great red kangaroo. *Lagorchestes hirsutus.*—Rufous hare kangaroo. *Hapalotis Mitchellii.*—Mitchell's soft-ear. *Echidna hystrix.*—Spiny echidna.

From your description, you appear to have fallen in with large numbers of the *Hapalotis conditor*, the building soft-ear, and *Chœropus castanotus*, the chestnut-eared hog's-foot, and some of the *Onychogalea lunata*, lunated nail-tailed kangaroo or worung.

*Strix delicatula.*—Delicate owl. . . . . .Another species. *Cinclosoma cinnamomeus.*—Cinnamon ground-thrush. *Cacatua eos.*—Rose-breasted cockatoo. *Melopsittacus undulatus.*—Undulated grass parrakeet or bujirigar. *Euphema Bourkii.*—Bourke's grass parrakeet.

*Platycercus.* . . . . .Probably a new species—small, not so large as *P. icterotis*; blue, green, with a delicate brown bar on the tip of each feather on the neck and back; base of the tail black, shaded through green and blue to white; primaries black, outer rib blue shaded into white; secondaries deep blue; under wing coverts and scapulars bright blue; belly and vent pale greenish orange, frontal band orange, and spots of orange brown on rump, shoulders, and top of the head. Killed on the Upper Murchison.

*Pezoporus formosus.*—Beautiful ground parrot. *Ochophaps plumifera.*—Crested pigeon. *Estrilda bella?*—A small finch. *Cursorius?*—I am not acquainted with this courser, but have no reason to believe it new.

Four small insessorial birds, with which I am not acquainted.

You also appear to have fallen in with considerable numbers of the gnow, *leipoa ocellata*, and many other birds well known in the colony.

Your description and sketch of the nest of the gnow is most interesting, and is probably new to naturalists, as far as the detail is concerned.

The conclusions which may be drawn from the existence of many of the above animals in the colony are, that a country of a somewhat similar character to that in which they were found exists, extending from it to the borders of New South Wales.

The *Osphranter rufus* has not hitherto been found to the west of South Australia, except when seen by Mr. Gregory and my brother, in their last Expedition; and your having brought home specimens sets the question at rest as to the existence of the species in this colony. The fact of the variation of colour in *both* sexes from blue to red is a fact, as far as I know of, hitherto unnoticed.

As these animals require good feeding ground, their existence in this colony affords some hope that a communication may yet be found between this and the Eastern Colonies.

The *Hapalotis* of both kinds, the *Chæropus*, and *Echidna* have been found in the Eastern Colonies, and, with the exception of the *Echidna*, in much the same sort of country as that in which you appear to have found them.

The *Lagorchestes* and *Onychogalea* have hitherto been found in this colony alone.

Of the birds, the most interesting, in point of distribution, are probably *Cinclosoma cinnamomeus*, a bird of considerable rarity, found only in the remote interior. Another species inhabits this colony, and another New South Wales. *Cacatua eos*, *Melopsittacus undulatus*, *Euphema Bourkii:* these are all characteristic of the interior; this *Euphema*, I believe, has never been found near the coast.

The *Cursorius* indicates the probable existence of vast flat countries. The only parts where such birds are at all plentiful, as far as I am aware of, are in the neighbourhood of the Sahara, and similar localities.

The birds, as well as the mammalia, lead to the conclusion that you reached the central region of animal life of this continent; and that a country capable of supporting large animals exists throughout the interior, although probably separated into oases of greater or less extent and distance from each other. The spot where the great red kangaroo was most abundant would, on this view, be the best adapted for a starting-point for any fresh Expedition into the interior.