Scottish Geographical Magazine

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rsgj19>

A journey around lake eyre

Professor J.W. Gregory ^a

^a F.R.S., Glasgow University ,

Published online: 27 Feb 2008.

To cite this article: Professor J.W. Gregory (1908) A journey around lake eyre ,
Scottish Geographical Magazine, 24:7, 355-365, DOI: [10.1080/00369220808733871](https://doi.org/10.1080/00369220808733871)

To link to this article: <http://dx.doi.org/10.1080/00369220808733871>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access

and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

tion, data covering five years are now available. The observations for 1904 are in the press and will be issued immediately, and the detailed values for the following three years will be in type about the end of this year, together with a complete discussion of the material for the whole period. The station on Wandel Island in 65° S., occupied by Dr. Charcot in 1904, will, it is hoped, be re-established next summer by the Argentine Meteorological Office. The most pressing necessity now is for one or two years' observations at a continental station in from 70° to 74° South, between the meridians of 40° and 70° West. In this way the full value of the meteorological observations at the South Orkneys would be obtained, and the causes of the ebb and flow of the Antarctic atmospheric circulation rendered apparent. Is it too much to hope that the great international Arctic scheme of meteorological investigation which led to such important results a quarter of a century ago will be revived at the other extremity of the globe in the immediate future?

A JOURNEY AROUND LAKE EYRE.¹

By Professor J. W. GREGORY, F.R.S., Glasgow University.

THE European settlement of Australia began with the foundation of Sydney in 1788, and for some years the main energies of the colonists were devoted to the fertile plains along the eastern coasts. Early attempts were made to reach the interior; but the way inland was barred by forest-clad cliffs, which for a while proved insurmountable. In 1813 that dread enemy of Australia, drought, fell on the coast plains and forced the colonists to seek fresh pastures beyond the hills that hitherto had hemmed them in upon the west. With this stimulus three explorers, Wentworth, Blaxland and Lawson, forced a way up the cliffs of the Blue Mountains. It was then discovered that the mountain slopes to the west of Sydney were not the front of foothills, hiding yet higher ranges behind. They were the face of a vast rugged tableland, the surface of which falls to the interior and is drained by large rivers flowing directly away from the sea inland. The fate of these rivers became at once the most striking puzzle in Australian geography. The coasts of the continent had already been surveyed, and it was thought that the careful work of Matthew Flinders proved that no great river had its outlet on the southern coast. Hence arose the conception of Australia as a great saucer-shaped continent, with a rim of mountains enclosing a vast central depression.

Oxley in 1815 and 1818 was the first to track the rivers far into the interior, until they expanded into vast swamps, which were passable neither on foot nor by boat. He concluded that he was near the edge

¹ A Lecture delivered before the Society in Edinburgh on March 26, 1908. A fuller account of this journey and its results was published in a work entitled *The Dead Heart of Australia and its Flowing Wells* (Murray: London, 1906), reviewed in the *Scottish Geographical Magazine*, vol. xxiii. p. 19 *et seq.*

of an inland sea, fed by the heavy rains on the mountain girdle of Australia. Oxley's supposed sea, however, proved to be non-existent or only temporary. For Sturt, who followed him during the dry season of 1828, instead of an inland sea found a desert, with streams of salt water and pools of brine. The rivers that flow down the western slopes of New South Wales into the interior join the Murray River; and such of the water as is not returned to the air by evaporation trickles out to the Southern Ocean through the sand-bars of the Coorong in South Australia.

The exploration of the central basin of Australia, which had been begun from Sydney, was prosecuted after 1836 from a new base. The state of South Australia was then established as a social and political experiment. Its capital, Adelaide, was founded a few miles from the shore of the Gulf of Saint Vincent on a plain, which ends abruptly inland at the foot of the Highlands of South Australia. The country around Adelaide was at first disappointing, and the colonists turned their attention northward in the hope that the valley at the head of Spencer Gulf would lead up to a central mountain region with a better rainfall and less arid soil.

The exploration of the valley that runs inland from the head of Spencer Gulf was begun in May 1839 by E. J. Eyre, afterwards famous as Governor of Jamaica. In his first journey he travelled northward from Port Augusta to a mountain subsequently called Mount Eyre, from the summit of which he saw a wide sheet of salt swamps, which he named Lake Torrens. The lake extended further northward than he could see, but appeared to offer an easy route to the interior. So next year he started northward again along the eastern shores of Lake Torrens, to a mountain which he called Mount Deception, whence he saw the lake bending to the north-west. Need of water drove him to the hills, and he kept northward along them until they sank below the plains. Leaving his main party in camp, he continued with only one black boy, until in August 1840 he was stopped on the shore of a dry lake trending from east to west. Eyre thought that this was also part of his Lake Torrens; so he returned to his main camp and started inland toward the north-east. As soon as he left the hills, he was again stopped by the bed of a salt lake, trending first to the east and then to the south. Eyre concluded that the lake shores he had reached all belonged to one great lake, which was shaped like a horse-shoe, and surrounded the South Australian Highlands on all sides except the south. To cross the bed of these salt lakes is often impossible either on foot or by boat. "On every side," said Eyre, "we were hemmed in by a barrier which we could never hope to pass." He named the hill from which he had his best view to the north-east "Mount Hopeless," and returned to Port Augusta intending to resume his journey northward along the western side of the lake. Instead he started on that famous journey around the Great Australian Bight, which is probably the most remarkable feat of travel, and the most dramatic story in the annals of Australian exploration.

The next attempts to gain the interior were made to the east of

Eyre's horse-shoe lake. Sturt in 1844 started from the Darling River and journeyed further north than Eyre. He reached what he called the "Stony Desert," which he regarded as the bed of a northern extension of Lake Torrens. In his efforts to cross it he suffered such hardships that when his graphic journals reached Adelaide they turned his wife's hair white in a single night, and kept men from following in his footsteps for almost twenty years.

A series of less famous expeditions threw further light on the structure of the Great Valley of South Australia; but the results were economically disappointing. The supposed easy route to the interior was found to be a snare. The great valley indeed was there. Its grade was easy. The country on its floor was open. But instead of the expected fertile plains there were wastes of shifting sand, and instead of a river commensurate with the vast area it was supposed to drain, there was only a line of brine pools and salt swamps.

In 1860 it was still believed that most of Central Australia had an unbroken outlet to the Southern Ocean through Eyre's Lake Torrens; but then Babbage made the discovery that the basin of Lake Torrens was closed to the north by a range of hills, and that the northern lake-shore reached by Eyre belonged to an independent lake. Eyre's horse-shoe lake has since been broken up into many lakes, through the gaps between which there are practicable routes to the interior.

The largest of these lakes has been named, after its first discoverer, Lake Eyre; it occupies a lower basin than Lake Torrens, and its shore has been proved to be about thirty-nine feet below sea-level. There are many points of such interest in the geological history of the Lake Eyre basin, that I seized the first opportunity for a few months' field work in Australia to make a visit to this area. I hesitatingly invited my assistant, Mr. H. J. Grayson, and five of my students to go. I was unable to give them a very pressing invitation, as I could not represent the journey as likely to prove an easy picnic; for our work in Melbourne rendered it impossible for us to go except in our summer vacation; and Lake Eyre is never likely to become a fashionable summer retreat. Even travellers of the middle generation of Australian explorers, such as Warburton, scouted the idea of the possibility of travel in the Lake Eyre district in the summer; and the missionaries in the station at Kilalpannina, to the east of Lake Eyre, warned me that the shade temperature at that season often varied from 118° to 125°. But these warnings had little effect on the enthusiastic Melbourne students, and five members of the Engineering School of the University, Messrs. Donaldson, Dow, Lyon, Voss Smith and Guy Smith, promptly accepted the invitation. To their help and comradeship and the invaluable help of Mr. Grayson, most of the success and pleasure of the expedition was due. Our party was made up to nine by the engagement of a camel-driver and a cook. As our journey was being made to one of the hottest areas in Australia and in the summer, I was strongly advised to engage an Afghan camel-driver; but fortunately I decided on a white man, who probably withstood the hard work in the extreme heat better than an Asiatic would have done.

Our party collected at Adelaide, and we started thence (in December 1902) by a railway which extends seven hundred miles northward into the interior. Late on the second day, the train landed us at Hergott Springs, a settlement which has grown up around a group of hot springs. The crowd of Afghans on the platform at once impressed upon us that we had reached one of the chief camel depôts of Australia. Hergott was suffering at the time from a severe heat-wave, during which the record temperature had been almost reached. The hotel was like an oven. Sleep was possible only out on the verandah, whence at daybreak we had our first view of the surrounding country. It looked at first uninviting from its appalling dreariness and desolation. But the sunrise with its swift play of pure vivid colours sweeping across the plains, lighting up the white-walled mosque and the brown huts of the Afghan camp, soon threw an oriental charm over the landscape. As we watched the scene, entranced by the beauty of the colour effects, we all felt the call of the desert; we were eager to start along the rough trail that led out northward across the plain and follow it over some low hills of desert sandstone into the haze-filled basin that lay beyond.

We had not long to wait. Everything was ready for us, and in twenty hours after our arrival we had made our last purchase, our last load was tied, and we had the pleasure of seeing our caravan of nine camels start from the town. We made a short stage that evening, and our first real march was on the next day. It took us on to what are known as the Illusion Plains, on account of the exceptional vividness of the mirage effects. We thought them well named, for we were soon experiencing the usual discomforts of a first march. The camels were frisky, and yet slack after their long rest. The ropes stretched and worked loose, and the loads had several times to be re-tied; and just as the main party reached the halting-place, a blinding dust-storm swept over the plain, turning the camp into confusion, and preparing us to believe the worst that had been written about the interior of Australia. Next day everything was more cheerful; the air has been cooled and cleared by the previous storm; we had an easy march; the loads rode better, and in the evening we reached a lovely camping-ground on the bank of the last freshwater pool we were to see. There were plenty of wild duck for supper, and we saw a few cattle belonging to the last station, except the mission, which we were to see till we came close to the railway at the end of our journey.

Our next march led us on to Sturt's Stony Desert; and this type of desert well deserves its name. There have been many speculations as to the origin of these stony plains. Sturt regarded them as shingle on the bed of a former lake; but they are due to the action of wind and not of water. The whole of this country was once covered by a sheet of rock known as the "Desert Sandstone." This rock has gradually been broken up. Its hard crust and the pebbles in it have been left littered across the country, while all the softer and lighter material has been blown away. The pebbles show the characteristic effects of wind action.

The first stages of our journey were easy, as we followed the well-

known track by which cattle raised on the downs of western Queensland are driven to the South Australian railway at Hergott Springs. The traverse of this country has been rendered possible by a series of deep wells which have been bored by the South Australian Government. Some of them are a mile deep; but the water in the water-bearing layer is under such heavy pressure that as soon as it is tapped it rushes up with great force and overflows at the surface. The flowing well at Dulkaninna discharges about one million gallons a day. Providence knowing that tea was to be the national beverage of Australia, considerably arranged that the water of some of these wells should come up almost boiling, and from that at Kopperamanna I made tea without further heating the water.

As soon as we left this artificially watered stock-route, travel was possible only by the use of camels. During the summer in this hot arid climate, a horse requires three hundred pounds of water a day which is about the full load it can carry. Camels carry so much more and drink so much less, that they are independent of a daily or even weekly water supply. Camels in Australia have gone more than a month without drinking, and Central Australia could never have reached its present stage of development but for camel transport.

Late one evening, after a long march across barren stony plains, we camped at sundown in sight of a dark belt, which next day proved to be the trees on the flood plains of Cooper's Creek. This river will be ever famous in Australian annals, as it was on its banks that Burke and Wills, after accomplishing the first traverse across the continent, perished of starvation during their return journey. Cooper's Creek, where we reached it, was a broad muddy flat eight miles across; the whole width is flooded when the river is running; but at the time of our visit it was only a plain covered with scrub and low trees, and containing a few pools of salt water. On the sandhills on the northern bank stands the mission station of Kilalpannina, where for thirty-five years a party of devoted Lutheran missionaries have been at work educating and helping the surrounding tribes.

The few aborigines still living on the shores of Lake Eyre belong to some of the most primitive tribes in Australia; and it has been claimed that they have the most archaic of existing social systems. The prevalent idea of the Australian aborigines is that they are the most degraded and lowest of mankind. So I expected to find them lower than the African negroes or even lower than the African pygmies. I was accordingly surprised at their high intelligence and generous spirit, and at the striking resemblances in their features to those of Europeans. These facts, however, are easily understood, when it is remembered that the Australian aborigines are probably "black Caucasians," the view advocated by Dr. Russell Wallace. As Caucasians they therefore belong to the same primary division of the human family as ourselves. The extreme hairiness of these Australian aborigines is a character in which they differ from the negroes. Among their striking physical features are the deep notch above the nose and the receding eyes, characters probably acquired by prolonged exposure to the glaring sun of these open sandy plains. In face the

aborigines in many ways resemble Europeans, for though the facial angle is low, they have fine wide foreheads. Among their nearest allies are the Vedda of Ceylon and the Hairy Ainu of Japan, who are other survivors of a formerly widespread primitive race of hairy Caucasians.

After a few days' stay at the mission station we were compelled to tear ourselves away from our hospitable hosts and continue our journey to Lake Eyre. We loaded our camels in the afternoon with the mission thermometer standing at 123° in the shade; and we noticed as we loaded our camels, that the blacks, though they said they often had it hotter, kept contentedly in the shade of the nearest verandah.

Here both our difficulties and work began, for we were entering waterless desert and the field of our special inquiries. According to the traditions of the Australian aborigines, the barren deserts of Central Australia were once fertile, well-watered plains. The country was covered by a solid vault of clouds, which were supported by three gigantic gum-trees that towered aloft to support the sky. Great animals, the Kadimakara, lived in the skyland and occasionally climbed down the gum-trees to feed on the luscious vegetation that then grew around Lake Eyre. Once while some of the Kadimakara were below, the gum-trees were destroyed and the animals were cut off from their retreat to the skies. So they had to roam about on earth until they died. Their bones are said still to lie where they fell; and at times when the country is devastated by prolonged drought the aborigines pilgrimage to these places, and there by sacred ceremonies appeal to the spirits of the Kadimakara to intercede with those that still live in the sky and control the clouds and the rain.

It seemed probable that these legends referred to the Diprotodon, a gigantic marsupial which, though now extinct, lived in Australia in times geologically recent. The legends might be a reminiscence by the aborigines of personal acquaintance with these animals. Accordingly we hoped to visit some of these localities, and by finding fossil bones in them, discover what sort of animals the Kadimakara were, and possibly also whether they and man were contemporary in this part of Australia. In spite of the widespread belief that Australians are the most archaic of mankind, Australia is the one continent where there is not yet evidence of the great antiquity of man. In spite of the exceptional thoroughness with which the gravels of many parts of Australia have been searched for gold, and that by keen-eyed miners who are, I think, the most intelligent of all artisans, and who take the liveliest interest in the chance of finding aboriginal implements, yet there are no well-authenticated instances of the discovery of ancient stone implements in Australia. As there is no direct evidence of man having been in existence in Australia for any considerable length of time, it appeared possible that these Kadimakara legends might give indirect evidence. Hence, in addition to our geological work, we hoped to discover new facts of anthropological interest. So we turned aside from the stock route to Queensland to follow Cooper's Creek toward Lake Eyre. As we journeyed westward the aspect of the country changed. The river bed was no longer a vast clay flat, but a

narrow channel between well-defined banks; on the floor of the river channel there appeared a chain of waterholes full of intensely salt water. These pools themselves are shallow. There had been no rain for more than twelve months, and yet evaporation would remove all the water in these pools in the course of a week or two. Hence the presence of the water showed that the supply was renewed by percolation from the surrounding loam hills. Our only chance of being able to work in this district depended upon finding the trickles of fresh water which feed these waterholes.

Sometimes a few rushes or a slight dampness of the ground would indicate an underground channel. By digging pits in such places the water would slowly drain into them. Such holes are known as soaks, and we studied the nature of these soaks, in order that we might discover the most likely places to renew our supplies of water.

After some days' march we reached some large water pools, where Cooper's Creek flows through a deep channel; and here we were told by an aboriginal guide that we were near one of the localities sacred to the Kadimakara. He promised next day to show us where one of these animals lay buried. We started out to search first thing next morning; and soon one of our black fellows became wildly excited, and with many gesticulations he pulled from the ground a jaw of a *Diprotodon*, exclaiming as he did so "Kadimakara."

Leaving a party to dig at this locality for further specimens, the rest of us went on to Lake Eyre. We found on our journey many other deposits of fossil bones; but as we reached lower country we found increasing difficulty with our water supply. There was plenty of salt water, but none fit to drink. Luckily, however, a stray dingo track led us to a hole among some sandhills, where we found a soak that gave fairly fresh water. It took us so long to refill our water-casks from this slow soak, that we resolved to cross the plateau beyond by a night march. The night at first was perfectly quiet and calm. The air was still, and there was not a rustle of the dry grass tufts; nothing disturbed the silence except the dull thud of the camels' feet and the occasional creak of their harness. Towards midnight we suddenly heard a rustle in the distant scrub by the Cooper. The sound quickly increased into a whistle, and then into a weird yell, and as the sound was rushing towards us, we knew that a storm was about to burst upon us. We had only just time to make the camels sit down and to unfasten their loads, when we were struck by the wind and enveloped in a swirling, stifling cloud of dust. It was impossible to face it, and in the pitchy darkness and buffeting eddies, we lost any sense of direction. All we could do was to wrap our heads in our blankets and crouch beside the camels. The noise was deafening. For an hour and a half we were pelted with coarse grit which had been lifted off the bed of the Cooper. Then in a lull in the storm we found that one of our aborigines was missing; but our shouts guided him back to us. He had been caught by the storm only a few yards away, and found it quite impossible to return to us.

The same storm burst upon the others at Emu Camp. They were

fortunately sheltered in the valley, but when the wind had finished wrestling with the tents they were not worth taking on except as dish-cloths. The men had to struggle up through the sand that rained upon them, and next day many of the loads were buried feet deep in sand and had to be dug out.

After recovery from the storm we pressed on next day down Cooper's Creek and reached its delta. Leaving a black fellow to dig a soak and to collect water for the return journey, we crossed the sand-hills to the shore of Lake Eyre. We got there on a dull grey day, with a low haze covering the plain and heavy clouds covering all the sky. The country was a picture of melancholy. We could see no water in the lake, and went for a "cruise" for some miles on to its bed, which was in places muddy, and we could probably have marched right across the lake to the eastern shore. The journey, however, would have been a waste of time, so we returned up the Cooper and rejoined the rest of our party at Emu Camp.

Here we had to say farewell to most of the aborigines who had come with us from Kilalpannina, and an incident at our parting illustrates their kindly disposition. The demands on our sugar and tea were greater than we had anticipated, and our stock was running low; so on giving the aborigines food for their return journey, I apologised for the smallness of the rations of tea and sugar. Their chief spokesman soon came back to say, that as they were going back to the station where they could soon get whatever they wanted, and we were going out into the desert, they wished to return all the tea and sugar that we had given them. It was fortunately unnecessary for us to avail ourselves of this generous offer, but it is typical of the considerate kindness of these people.

From Emu Camp we had a march northward for fifty miles across a waterless stretch of country—the Tirari Desert—which we heard would prove difficult. But the march was easy; for our way lay between parallel sand-dunes which cross the country in long lines sometimes as regular as railway embankments. The valleys between the dunes had firm level floors, so we made quick progress. This stage in the journey took us to the valley of the Diamantina River, which rises in the hills of Queensland, and when it contains any water, discharges it into Lake Eyre. At times of exceptional rains in Queensland, the Diamantina is a great river which rushes down on to the Lake Eyre plains as a roaring flood many miles in width. The most probable explanation of the disappearance of the Leichhardt expedition—one of the great mysteries of Australian exploration—is that the whole party were engulfed in one of the floods of this river. At the time of our visit, however, the Diamantina was not flowing. Along its course there were occasional pools of brine maintained by drainage from the sand-hills, and some of them were charmingly picturesque. Most of the river bed was occupied by tracts of dry sand with intervals of soft mud. These mud belts were our chief danger; for camels smelling the moisture from the mud flats are tempted on to them and "bogged." One of our camels had this misadventure, and we lost half a day in

the arduous work of digging it free and hauling it on to a platform of faggots.

After a series of long marches down the Diamantina we left it, and crossed a plateau to the valley of a river that sometimes enters Lake Eyre from the north-west. We hoped to find guides across this country in a camp of aborigines; but the few black fellows fled at the sight of us, and we had to find our way for ourselves. A worse disappointment was that the water in the pools, which we hoped to find only brackish, was too salt even for the camels. As the water was fit neither for man nor beast, we had to camp till we could find soaks and collect a store of water for the journey ahead.

Having obtained enough to give each camel a full drink, and having filled every water-holding vessel in our equipment, we left the Diamantina and climbed on to the plateau. The following marches were the most arduous of the expedition. The sandhills were high, and as they lay in parallel lines right across our line of march, we had to climb them one after the other; in one day we crossed thirty-three. Some of the hills were so steep that the whip had to be brought into play to lash the camels over the last caps of sand on the crests. By steady pressure and careful driving, we crossed the country, and reached the delta of the Macumba river, which, on the rare occasions when it flows, enters the northern end of Lake Eyre. We had hoped for water here; but as the ground was saturated with salt, there was no hope of finding fresh water, until we rose above the plane of salt saturation. It was absolutely necessary to get water before we left this valley, as we had before us a long march over a plateau, where there would be no water, to a valley where there might be none. So we continued anxiously up the Macumba valley till we reached a part of it where fresh water became possible. For a while the search was vain, and after dark we continued our march up the valley. At length to my great relief I saw in the distance the flare of a fire which told us that one of our party had found water. I rushed on to the signal, thinking that if the quantity of water was proportionate to the size of the signal fire, our difficulties were at an end. But it was only an old soak, which had been dug and abandoned by the aborigines. The water was so salt and the supply so scanty that our camel-driver when he came up reported that it was useless. The quantity might keep one man from starving, but was no good to us, let alone to our camels. However, by the firelight we settled down to study the conditions, and found that though most of the water trickling into this soak was salt, from one layer it was fresh enough for us to drink when made into tea, and also for the camels. So we plastered up the salt-yielding layers, and opening several soaks, carefully collected the fresher water; we baled it into improvised canvas troughs for the camels. Half our party were kept busy guarding them as they were making desperate efforts to get to the salt-water pools, in the muddy borders of which they would have been inevitably bogged. By patient work all night we obtained enough to give each camel a five-gallon drink, and had a sufficient store for ourselves to risk the march across the plateau ahead. We crossed it safely, and as we had left the country where there was

any chance of finding "Kadimakara" bones, we pressed on quickly towards the railway which passes some distance to the west of Lake Eyre. We reached Wood-duck station, but it was abandoned as the local water supply had failed. We rested in its shade till the evening, hoping to make a long night march. But we were stopped by the bed of the River Neale, which was too wide and muddy for us to risk its passage in the dark. We crossed its muddy bed at dawn, and by the next march arrived at the hills on the western border of the Lake Eyre basin. At their eastern foot is the only cattle station then occupied in the district, "the Peake," where we had a most hospitable welcome from the proprietor.

The aborigines at the station were performing a five-night corroboree, and they gave us permission to attend the last performance, which was to be held that night a few miles from the station. Mr. Grayson kindly took on the baggage camels, leaving us to follow after dark, for the train was going next day, and it only goes once a fortnight. We attended the first part of the corroboree, and marched across the hills after midnight. At first we had a little moonlight, and the journey was easy, but after the moon had sunk, it was so dark that we could see nothing. Guided by the compass we kept on westward until suddenly we stumbled across a railway line, which seemed singularly out of place in such a desert. Following the track we reached the station in time to catch the fortnightly train, all glad that we had got our collections back in safety, but sorry that our six hundred mile camel-ride had come to an end.

This regret may seem unreal, for it is difficult to describe such a journey without giving the impression that the work was tedious and arduous, but the discomforts of our journey were really trivial compared with its pleasures, for the desert has a charm as irresistible as it is almost indescribable. It is easy to state the discomforts of our journey, but the attractions of the desert are matters of sympathy that must be felt. The desert has a wonderful beauty of its own. The colours that sweep across the plains at sunrise and sunset are of unrivalled brilliancy and purity; and the breadth of the scenery, with its free open curves, its long low horizons and its unequalled expanse of sky, gives an exhilarating sense of freedom.

It is true that in the heat of the day the desert is often harsh and hard. Such is the mood represented by the poets—

"When the sun burns as a menace,
Glaring from a sky of brass,"

and according to Kendal, the nature poet of Australia—

"On the tracts of thirst and furnace, on the dumb, blind burning plain
When the red earth gapes for moisture, and the wan leaves hiss for rain."

But then after the struggle and the glare of the day, follow the perfect peace, the exquisite silence and soft beauty of the night. The contrast inevitably suggests that between life and death, and it presents the two chief associations of death in their most attractive guise. The desert

thus projects the imagination into the future, while at the same time it recalls the instincts of the past; for the simplicity of desert life, the persistent uniformity of its conditions, and the merciless severity of its forces, all awaken the feelings of early man. The traveller with a small caravan in the desert meets the conditions of prehistoric man, but he regards them with the thoughts of the twentieth century. And to face mystery and the unknown free from the fears that paralysed primitive people, gives that stimulus to the imagination which is the highest joy man can know.

I have, therefore, tried in this lecture not only to give some account of the present conditions and to show photographs of the scenery of the vast plains of central Australia, but to hint why the Australian bushman loves that country so dearly; for though in general accounts of travel there, the discomforts loom large, they are really insignificant compared with the deeper and more lasting impressions for which we shall always remember with gratitude our sojourn in the desert places round Lake Eyre.

THE RIVER MASSAN.

By FREDERICK MORT, M.A., B.Sc., F.G.S.

(With Sketch-Map and Section.)

THE district of Cowal, comprising the Highland area between Loch Long and Loch Fyne, presents numerous interesting problems in river development. Many of the streams illustrate nearly all the typical features of river-erosion in the most beautiful manner and for this alone are worthy of detailed study. In addition, their past history will have to be thoroughly investigated before the present drainage system of Scotland is properly understood, for in this district evidence must be looked for connecting the present rivers of the Southern Uplands with their former head-waters which, it is supposed, may have arisen even west of the present coast-line of Scotland.

In dealing with the River Massan a brief account will first be given of typical examples of river-work well illustrated by this stream; and secondly, some consideration must be given, necessarily more speculative in character, to the former history of the Massan and its relations to neighbouring streams. Pupils in schools or students in colleges might well spend a whole day in tracing such a stream from mouth to source. Such an excursion, under competent guidance, would be of great educative value, and it is to be hoped that at no long distant time such practical study will be an integral part of the geography curriculum of every school and college.

The Massan is represented in maps and is generally thought of as a tributary of the Echaig which flows into the head of the Holy Loch. A glance at a map, however, will show that the Holy Loch was not formed by the Echaig but by the Massan, for the loch and Glen Massan are in one straight line. A person in a boat about the middle