



## Scottish Geographical Magazine

Publication details, including instructions for authors and subscription information:

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

### Notes of a journey in South Africa

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Published online: 27 Feb 2008.

To cite this article: Mr. John Baylie Don B.Sc. (1893) Notes of a journey in South Africa, Scottish Geographical Magazine, 9:10, 524-530, DOI: [10.1080/00369229308732660](https://doi.org/10.1080/00369229308732660)

To link to this article: <http://dx.doi.org/10.1080/00369229308732660>

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## NOTES OF A JOURNEY IN SOUTH AFRICA.

THE following letter has been received by Professor Geikie from Mr. John Baylie Don, B.Sc., a former pupil of his, and will be read with interest, as it treats of certain regions which are still very imperfectly known :—

"I came out to South Africa in 1890, and after a year in Cape Town and Johannesburg began to carry out my long-cherished desire to explore Africa, by setting out for Fort Salisbury with a friend, who was also seeking his fortune in the promised land.

"We travelled alone and on foot, carrying our possessions on four pack donkeys which we drove before us, and in this way traversed the Transvaal to its most northern point, and then Mashonaland, from the Limpopo to Fort Salisbury. After an exceedingly pleasant and interesting journey we reached our temporary destination. I should have liked to have advanced still farther up the country, but money was necessary and the rainy season at hand, so, my friend being an experienced prospector, we counted ourselves fortunate in receiving a commission from the British South Africa Company to prospect and explore the country between 19° and 21° south latitude along the watershed between the Sabi and the Buzi—in fact, the debated Portuguese Frontier. In pursuance of this object we retraced our steps to Fort Victoria, and there left the road and crossed the Sabi valley to the east, a country little known to Europeans, striking, near Umtali, the Umtali-Salisbury road (at Umtali the Beira route enters Mashonaland), where we met a few white men prospecting the Umtali gold-field.

"Having found out our exact position, we immediately left the road again and followed the watershed southwards through almost unknown country till we reached our southern limit, which may be called, after its reigning chief, Shikwanda. While camped here we heard of a white man who lived some days' journey off to the south-east, and before setting out on our return I determined to visit him and find out who he was. Leaving Shikwanda's with two natives, on March the 21st, 1892, I reached the white man's on the 23rd, and found him to be Senhor Mario Barreto, who with Senhor Falcão represents the Portuguese Government in Gazarland; his place is called Mussurise and was the site of Gungunhana's old Kraal (Gungunhana migrated five years ago to the Limpopo mouth). Having been treated with the greatest kindness by Senhores Barreto and Falcão I got back to camp and found my friend slightly unwell. This was our first experience of malarial fever, and we had been very much misled by accounts, emanating from sources that seemed most trustworthy, as to its danger and the possibility of avoiding it during the season. However, experience is a good master. As my friend gradually grew worse, I sent two natives with a note to Barreto asking for assistance. The next day, the 8th of April, my friend died at about 2 A.M. As we had no attendants I was now quite alone, and, from the extraordinary weakness I felt, perceived that the fever had me well in its grip, though not manifesting itself in the acute form. With great difficulty I buried

my friend. Day by day I grew weaker till I hardly had strength to get water or make a fire. I could not help reflecting how easily my messengers might shirk the journey, and that, even if they were faithful, Barreto might do nothing. I reckoned that if the messengers had gone at their best pace I might possibly receive a reply on the 13th. The 13th came, and just at sunset Barreto and Falcão, mounted on donkeys and followed by their whole establishment, rode up. Next day we set out for Mussurise, and when we reached that place on the 21st I was much better. Here I spent ten days, Barreto and Falcão sparing no pains to make me comfortable. On the 28th of April I set out for the coast in a hammock which, with nine carriers, Barreto lent me free of charge. He also lent me £15, an act of no common generosity, considering that he had no security and that I was an utterly unknown stranger of a nation not very friendly with his own. Striking the Buzi on the 8th of May, I followed it down to a trading outpost where I procured a canoe to take me to Beira, which I reached on the 11th of May. Here I remained till the 31st, when I left on a steamer for King William's Town, where I have been ever since. I soon shook off the fever, and have never had a return.

"As regards natural features, no doubt you are well acquainted with the general descriptions of South Africa and its geology. Professor A. H. Green<sup>1</sup> has well summarised the Geology of Cape Colony. From Cape Town to Johannesburg the treeless country rises suddenly within fifty miles of the former town from under 1000 to over 3000 feet, and then, on the whole, steadily rises to 5000 or 6000 feet at Johannesburg. Between Cape Town and Kimberley flat stretches are the rule, but mountains are always in sight. From Kimberley to Johannesburg the country is more undulating and more richly grassed, but without any conspicuous elevations in sight.

"Johannesburg is on the summit of the Vaal-Limpopo watershed, and its geology is, no doubt, well known to you. Its strata seem to me not easily defined. Sedimentary strata half metamorphosed they might be called, but this description might also be applied to very much simpler formations. Probably the structural peculiarity of the neighbourhood, compared with that of immense stretches on either hand, is connected with its unique position on the summit, not merely of a mountain range, but of a vast mass of land 1000 miles across at its base. One peculiarity that struck me was that quantities of talcose stuff are often found mixed up with apparently sedimentary sandstone. Possibly the great mass of what I take to be siliceous sinter, which is found 20 miles to the north, near Pretoria, may have some connection with the Johannesburg formation. This sinter is pierced from above by numerous holes, some 25 feet deep, apparently made by natives to mine ferruginous veins.

"Within the first 50 miles beyond Johannesburg you rapidly descend 1000 feet or more, crossing the crest of the watershed and descending the northern side, where you enter a new region, having exchanged the open country of the south for a land uniformly (except a few isolated areas, usually flat hill-tops) covered with more or less open wood. The

<sup>1</sup> *Quarterly Journal of the Geological Society of London*, 1888.

quartzite ridge of the Magaliesberg, running east and west past Pretoria, crosses this region near its southern boundary; beyond, plains covered with mimosa wood and 3000 to 4000 feet above the sea-level stretch to Pietersburg, half way to the Limpopo. About half way to Pietersburg these are crossed by the sandstone (tilted vertical) and shale ridge of the Waterberg, and just south of Pietersburg by the ridge of the Marabas Stad mountains, composed of sandstone lying unconformably on schist, while Pietersburg itself lies on one of the open grassy plateaus more than 4000 feet above the sea.

"Beyond the elevated Pietersburg clearing there is a change in the vegetation, the thorn giving place to the *mopani* (*Bauhinia*) as the predominant tree, and the general level of the plains is rather lower, gradually descending to 1700 feet at the Limpopo. In this region, too, the *kopje* of granite (small isolated hill, sometimes a solid mass, sometimes a pile of angular fragments), so characteristic of Mashonaland, first appears.

"However, perhaps its most important feature is its aridness, for, except in a few highly mineralised rivers, water is not to be found. This region is crossed about half way between Pietersburg and the Limpopo by the ridge of the Zoutpansberg, the most imposing mountains on the route, formed of quartzite dipping to the north.

"Between the Zoutpansberg and the Limpopo it is still more arid than to the south, and is by far the most desolate and uninhabited stretch of country I have seen in Africa. It is a dead flat of granite, mica-schist, and other metamorphic rocks, almost destitute of *kopjes*, up to within 10 miles of the Limpopo (a little west of that part marked on recent maps as lying to the north of the 22nd parallel). Here a most singular formation of raised pavements of sandstone crosses the country, forming detached flat-topped hills 60 feet or so above the general level, and quite bare of grass or soil, although a few trees cling here and there in the interstices.

"The flat tops have been worn by some means into huge pot-holes, forming reservoirs of good water, some of which are so deep as to be inaccessible to wild animals long before they are drunk dry, and are full of a deep green slime, the product of ages. The sandstone, though so well exposed, has not the faintest trace of bedding planes, and is coarse-grained and brownish grey. The only break in its homogeneity I ever saw was a thing like a half walnut shell, apparently half imbedded in a weathered surface, due, I take it, to a spherical shell of induration weathering out and getting broken. The course of the Limpopo is marked by a dense belt of forest of large trees, quite different from the open *mopani* wood on either side.

"From the Limpopo to the Lunde, not quite half way to Salisbury, much the same vegetation prevails as from Pietersburg to the Limpopo, *i.e.* *mopani*, baobab, etc., but the country is not so arid, being crossed by many sandy river-beds with either surface or sub-surface water. The Tuli, the most remarkable of these, has a sandy bed half a mile wide and more, but in winter the total width of flow is not 10 yards. The general level of the land does not vary much from 2000 feet as you pass from the Limpopo basin into that of the Sabi. As far as the Umzingwani, about 50 miles

beyond the Limpopo, the formation is a peculiar heavy compact rock full of white amygdaloids of quartz, and having a granulated roe-like structure, picked out with white, on exposed weathered surfaces. It splits into small cubical blocks, and is quite decomposed in many places, shelling off in cuboidal masses after the manner of basalt. It covers the country to the exclusion of any other rock, and is, I believe, a volcanic stream. At the drift of the Umzingwani there is a small, apparently isolated, hill of soft clayey, structureless sandstone, and then comes the Mashonaland granite, which, almost unbroken, occupies the rest of the country.

"This uniform granite formation is by far the most prominent geological characteristic of Mashonaland, and, indeed, of most of the interior. Sometimes it rises into mountains, but usually the general level is only broken by low *koppies*, and in those parts where the bed-rock and surface are flattest the *koppies* present the most singular appearance. The whole country seems dotted with huge kerbstones, and in whichever direction you look they gradually close in the vista as the trunks of the trees would in a forest, that is, if you stand above the general level of the real forest which everywhere clothes the country. Some of these kerbstones are 300 feet or more high, sheer all round, and apparently of smaller diameter than height. Sometimes the original mass has been so broken up as to form the most marvellous steeple-like structures springing out of the rich foliage clinging in all the crevices. All the native huts are built on these *koppies* in the most inaccessible positions.

"From the Lunde to Fort Victoria you rise, in 50 miles, 2000 feet or so to the general level of the so-called plateau—I say so-called, because it is so much cut up by valleys as to be rather a net-work of ridge-lines. The average level is very high, even the valleys being never less than 2000 or 3000 feet above the sea-level. Instead of the *mopani*, a tree with feathery foliage prevails often almost to the exclusion of all other types. The inner bark of this tree is used for tying and wrapping up all kinds of packages, and is sometimes woven into cloth. This region continues to Fort Salisbury and indefinitely in all directions along the main ridge-lines. Viewed from the road between Victoria and Salisbury, which follows the main ridge-line, it consists of open forest traversed by marshy glades, most of which, however, are dry in winter. The level varies from 4000 to 5000 feet, and the country is very slightly undulating. At one stretch, where the road follows the very ridge of the watershed, it traverses treeless country for 30 miles or so. *Koppies* still occur, but are very much more insignificant than in the lower and flatter country.

"On the ascent, from the Lunde on to the plateau, there is no distinct escarpment, but only a rather broken, hilly country leading gradually to a higher level. In this broken country the granite is crossed by east and west ridges of schist which form a well-marked feature in contrast to the granite *koppies*. At Fort Salisbury there is a somewhat isolated outcrop of schist, and everywhere there are occasional outcrops of greenstone in the granite.

"So far I have been describing the characteristics along the beaten track.

When we left the road and went eastward, we soon found that the apparent flatness of the main road was illusory. As soon as we got some distance from the main axis of the ridge we came into broken country where there were frequent rough, though unimportant, escarpments. The geology, however, was just the same—granite everywhere, broken near the Sabi by an outcrop of schist, which is continuous with the Umtali and Massi-Kessi gold-belt beyond and, possibly, with the Victoria belt.

"The Sabi, where we crossed it, seemed to be descending from the mountain (or plateau) and entering on its more level course, for below us it wound away to the south-east through a wide plain, the mountains receding on either side till lost in haze; while above us they closed in all round.

"The topography of this locality was rather interesting, but too complicated to describe. One noticeable feature was that the course of the river through its plain was beacons out by granite *kopjes*. The vegetation was a mixture of those of the plateau and the *mopani* regions.

"Beyond the Sabi and its tributary the Odzi, there is, towards Umtali and Massi-Kessi, rather a low neck on the watershed between them and the sea, but both to the north and south the watershed rapidly rises to very broken and mountainous country, and, going south-eastwards, we had an exceedingly stiff pull to get on to it. We struck the ridge-line about 40 miles south of Umtali and found it a chain of exceedingly precipitous mountains connected by saddles so narrow that sometimes there was an open grassy stretch not more than 50 or 100 yards wide between an exceedingly precipitous drop of 1000 feet or more on the one side to the flattish, wooded country drained by the Revue, and on the other to deep-wooded valleys, running away like great trenches to the Sabi, and separated from one another by wall-like spurs running out at right angles to the main axis.

"This watershed was marked on the Rhodesia map as a grassy plateau, and we determined to follow it southwards till we reached the plateau, or proved its non-existence, thus avoiding at the same time the presumably unhealthy country to the east and the certainly impracticable and also unhealthy country to the immediate west. After marching along it for 6 miles we came to a total change of formation, leaving behind the granite and coming on to hard, fine-grained sandstone or quartzite lying perfectly flat. On the eastern slope of the neck the division between the formations was marked by a tremendous chasm 1000 feet deep at least. On the west there was no corresponding chasm, but merely a shallow upland valley running some miles before it became a rugged gorge—almost the first open valley we had seen since leaving Pietersburg.

"The very first mountain of the new formation was the highest we saw or ascended in the country, being almost 8000 feet.

"The watershed range now consisted of a chain of parallel, flat-topped spurs, running east and west. The summits were grassy and open and each several square miles in area, and the western valleys separating them from one another were for some miles shallow and unwooded, before they passed over the escarpment towards the Sabi and its wooded broken country. The vegetation in the lower courses of the valleys on either

side was still the same, but, especially on the eastern slope, there were frequent patches of dense, dripping forest of large timber, quite different from the usual open forests of the interior, and very like those of Cape Colony. Bracken and brambles mingled with the grass in the open, and there were forests of heaths so gigantic that one might climb many feet above the ground among their branches. Huge tree-ferns were also common, and lines of them growing along a shallow depression often marked an underground watercourse, to which, here and there, a well descended, choked with tree- and other ferns, the plashing of the water being audible through the foliage.

"As we went on southwards, the western valleys again became very broken and were wooded from their very sources, but open shallow valleys separated by low ridges ran out to the east, and finally the mountains suddenly dropped from 6000 to 4000 feet, the watershed no longer rising above the general level of its eastern spurs, and the whole forming an open undulating plateau of low grassy ridges and boggy hollows about 1000 square miles in extent. This was the Gazaland plateau, and here it was my companion died.

"The sandstone formation was still the same, and still, apparently, quite horizontal. This I judge from the fact that where we first struck it the sandstone, while hard and of a quartzite texture at an elevation of 7000 feet, was interstratified towards the upland valley-bottoms, at 4000 feet, with a thin shale and with a thick red earthy bed, and here on the plateau the same horizontal beds again cropped out at the same level.

"This plateau gives birth to, and is bounded on the south by, the Buzi, beyond which, on my way south-south-eastwards to Mussurise, I crossed several wooded ridges and marshy plains, and then, surmounting the ridge which had bounded our southern view, suddenly entered a new floral region, which extends to the coast, and is chiefly remarkable for its extraordinary rank grass, sometimes 15 feet high. In fact, in the hilly tract of 50 miles through which I descended from the ridge, some 4000 feet high, to Mussurise, it was hardly ever less than 10 feet long. In this tract, which forms the southern end of the plateau, the sandstone gives place to an igneous formation similar to, and possibly continuous with, that crossed just north of the Limpopo. How far it extends southwards I do not know, for my farthest point was about 21°, and the country farther to the south-west, south, and south-east, between the Transvaal and the sea, is much less known than the more distant Zambezi and lake regions, though traversed in part by St. Vincent Erskine in 1871, Dr. Jameson in 1891, and the Anglo-Portuguese Boundary Commission in 1892.

"Mussurise (the Gungunhana of maps) is about 800 feet above the sea-level, and from thence north-east to the Buzi where I struck it, thirty miles inland and about the same distance along the river above the tidal limit, is an arid, wooded, flat country, almost destitute of flowing water for 120 miles together. Being sick I did not notice accurately, but I believe that the igneous region was succeeded by a schistose belt, and then, 50 miles from the coast, a wide belt of sedimentary limestone occurred, followed by alluvium and mangrove swamp.

"The plains both in the North Transvaal and in the lower parts of Mashonaland appear to be all plains of denudation, and are as a rule quite destitute of sedimentary deposit. The sandstone just south of the Limpopo and a coarse grit on the plain north of the Magaliesberg are exceptions, and I also noticed a few outcrops of what seemed to be altered grit or mudstones.

"Almost everywhere in Africa, as far as I know, the subsoil immediately above the bed-rock is cemented together either by calcareous matter, as in the metamorphic parts of the Transvaal, or by ferruginous matter, as in the igneous, sedimentary, and granite regions. In flat marshy places the lime is pure and abundant enough to be worked, and in similar situations the ferruginous cement approaches to bog iron ore.

"The geology of the Transvaal is very much more complicated than that of Mashonaland, and the numerous metamorphic regions, especially in its north-eastern parts, lead me to expect future finds of gold there rather than in the latter country. Though prospecting a region said to be rich in deposits, we saw not one speck of gold after leaving the Umtali gold-belt. From the tops of the high mountains of the watershed we could see, far to the east, rising out of the Portuguese low country, a great ragged mountain mass, apparently schistose and, possibly, gold-bearing.

"Mashonaland is a country fertile enough for native grains, etc., and would prosper without the gold, were it not for the real drawback to Africa from the European point of view, that is, fever. Most people imagine that, because Africa has been found to be a very elevated country, therefore, despite all experience to the contrary, it *must* be healthy. My opinion is that, though it is undoubtedly a continent of great elevation, yet it is still more undoubtedly the most deadly, even on these elevated areas. I was born and lived five years in the delta of the Ganges, where the heat is incomparably greater than on the African plateau, or even on the sea-board. Cholera, etc., are endemic. But the death-rate among white men from malarial fever is altogether insignificant compared to what it is on the African plateau.

"Of course all this only refers to the main mass of the continent within the Tropics. South of this, the region containing the Cape Colony, the Orange Free State, Natal, most of Zululand, and the Southern Transvaal is as free from malarial fever as Edinburgh.

"As the boundary of the healthy region is neither a contour line nor a parallel of latitude, no doubt the winds prevailing at certain seasons have an important effect. I should mention that in Mashonaland generally the sickly season is from January to April. The rest of the year is healthy, and all the year round the climate is pleasant and not too hot. King William's Town is quite as hot as any part of Mashonaland."