## Recent Discoveries in Austyalia.

Six years ago we knew nothing of the far interior of Australia, beyond what we had learned from Captain Sturt, who reached in 1844 a point half-way between Spencer's Gulf and the Gulf of Carpentaria. His discoveries considerably misled our speculations, for they lay in a belt of the most barren description, which geographers were too ready to accept as a fair representative of the country to the right and left of it. Sturt's sufferings in endeavouring to cross the far-famed stony desert, were fearful. There is perhaps no traveller who has shown more vividly than he, the horrors of the desert, or a more determined courage in facing them. Hence his reports, more than those of any one else, have given a bad repute to the interior of Australia.

During the gold fever, discovery on a large scale was idle; numerous small additions were made to our geographical knowledge, but their effect on the map of Australia might be compared to the crystallized border that grows gradually within a chemist's evaporating bath. It timidly pushes out tiny spiculæ here and there, always towards the middle, each new crystal becoming established for ever and serving as a foundation for further growth. So the process extends itself, until the time is ripe, and then long spikes dart right across from side to side, and all the interstices rapidly close up. One, we may almost say two, of these long spikes have now darted across Australia. Two lines of route have virtually joined north to south and established themselves henceforth on our maps. They were made almost simultaneously. The first was that of A. Gregory, from the north, whose route was overlapped and almost reached by McDouall Stuart, in his great journey from the south; the second was wholly successful in traversing the continent, and was that of Burke. Nor are A. Gregory, Stuart, and Burke the only prominent discoverers of the last six years. A great deal has been also done in Western Australia by F. Gregory. In fact the Gregorys are a wonderful family of four brothers, who have left their marks as explorers on every side of Australia. But West Australian discovery is more like the crystallized border, of which we have been speaking, progressing at a rapid pace, than the far-darting spikes, which so captivate our imagination. We must, however, give one word of recognition to a dashing exploit just made by a party of young men, the Messrs. Dempster and others, whose route will be seen on the south-west of the diagram, p. 355. Another strange district yet remains to be alluded to; it is marked B, and is the site of that half imaginary feature of all but the most modern maps, called Lake Torrens. A host of people have travelled there, from whom we will hereafter select Mr. Babbage, and sheep stations are now spread over a territory

whence Eyre was repulsed by drought, and whose chief feature is that mountain, which, despairing of the land, he named Mount Hopeless. It should have been Mount Hopeful.

The result of the manifold explorations of late years can be discussed in two ways only. One is to pore over a map on a very large scale, where the routes of all the explorers are inserted, with their daily notes of the country they traversed, written at the side; thin spider lines crowded with minute detail, separated from one another by vast blank areas, which show the scantiness and broken character of our knowledge: the other is to generalize, but to do so in so rude and broad a manner, that a miniature map like that which is given here, can easily show all



Squatting Districts.

Settled Districts. Co

C Carpentaria Gulf. V Victoria River. CC Cooper Creek. T Lake Torrens of old maps. B Country explored by Babbage and others.

we have to say. If we attempted a greater refinement of generalization, we should be aiming at more than we have facts to warrant. Proceeding on these premises, we may say that we have obtained a fair knowledge of the eastern half of the continent, and that it is generally habitable, not by any means over its entire area, but sporadically, in the same way that Arabia is inhabited by the Arabs. Of the western half of the continent we know much less; but our knowledge, so far as it goes, is equally favourable. The south-eastern corner is the most favoured of all. The Lake Torrens district is altogether peculiar: it is an alternation of brackish lagoons with saline desert and good pastoral country.

Aridity during summer is the great drawback to Australia. Enough rain falls on the average of the year to support a fair vegetation, but the features of the country are not decided enough to drain the water into channels, or to form perennial springs. The water either lies in shallow lagoons, each representing the drainage of a trifling area, or in miserable creeks; and by far the greater part of it evaporates during the heats. There is no grandeur in the framework of Australia; it is a vast extension of a series of little features; such as scrub and grass, lagoon and creek, sandy and muddy plains. It supports very little life; few creatures exist that do not migrate. The marsupials pack their broods in their pouches, and travel for their lives; the waterfowl disappear when the

waters are low. The physical character of Australia makes it easy to understand how intelligent explorers like Sturt, Eyre, Kennedy, and many others, brought disheartening accounts which our modern knowledge contradicts: it is worth while to examine the causes of such mistakes. First, then, it appears hopeless to ascertain the habitable qualities of any district in Australia by seeing it only once. The arid plains, dancing with mirage, swept with dust-storms, void of life, and bare of all but some miserable shrub, seem the abomination of desolation, while the same plains, after a month's soaking showers, are wholly altered. Lagoons form, tall grass springs up abundantly, waterfowl make their appearance, and the traveller is charmed with the goodly land he has the fortune to discover. Not only do the seasons differ one from another, but the total rainfall of different years is probably a fluctuating quantity, and again, the showers fall unequally over the country. Another fertile source of misconception of the qualities of a district arises from the unequal character of adjacent belts.  $\Lambda$  mere accident may lead a traveller along a line where hardly a day shall pass without his finding water, or he may fall upon an arid strip and nearly perish of thirst. It is wholly beyond belief that a cursory traveller should discover all the watering-places in his neighbourhood; the records of McDonall Stuart's journeys give remarkable examples to the contrary. An unexpected fact still remainsit is, that wherever a sheep-station is by any means established, the country becomes rapidly improved by its influence. It is a subject for Darwinian speculation. The grazing is said to improve the grasses, and to introduce or foster new species. The mere cropping does something; the manuring and the stamping of the sheep's feet have an effect. Then the occupier of the station makes the most of the watering capabilities of the place: he dams up a creek, or deepens a water-hole. Perhaps the grasses and bushes around it flourish permanently through its moisture; the roots of the vegetation will then form a natural matting that checks evaporation, while the long fibres of the roots encourage rain-water to enter deeply into the soil. In this fashion, causes may be reacted on by their effects, until originally trifling influences produce considerable improvement.

A very curious feature exists throughout the Lake Torrens district (no of the diagram) which would have vastly altered Eyre's opinion of that country if he had been aware of it. In numerous places over an otherwise waterless area, mounds are seen of various heights, up to 100 feet or more. On their top is a crop of verdure, not necessarily visible from the plain, and a diminutive streamlet may be discovered trickling or oozing over one part of its edge. On climbing one of these hillocks its top is found to be a basin brimful of water, a most extraordinary prize to a thirsty traveller. It must seem like a magical creation of some good fairy in his behalf. Obviously the hillocks are of travertin, or some such mineral deposit, which has settled from the spring from the time when it first broke through the ground, and has thus in long years been moulded into

a case that encloses the water and reaches the highest level to which it can rise. Where springs of this description are frequent, one would think an artesian well might be sunk anywhere with success.

We will now follow up these introductory remarks by a short narrative of the most prominent of the recent expeditions. Let us first make it clearly understood that the difficulty of Australian travel does not lie so much in the trouble of obtaining water as in the necessity of carrying food. A traveller in that land cannot shoot his dinner. The Australian wilds do not supply subsistence to a white resident, much less to a white traveller. A native who is gathering roots or seeds all through the day, having leisure, and knowing where to look for them, and who also has a stomach capable of digesting those things, is master of his situation. A white man is fully as dependent on the load of flour and dried meat carried by his horses, as are the crew of a vessel on the stores they have shipped. Judicious arrangement in commissariat matters is the first essential of successful Australian travel.

The first of the great modern Australian journeys, in order of time, was that of A. Gregory, in the north. It was felt scandalous that we should remain in wilful ignorance of our own territory, and abandon British settlements to increase on the spot where hazard had planted them, instead of finding out the best places in the land and colonizing in an intelligent way. For instance, the Victoria River, on the north-west coast, urgently demanded examination; it had been ascended for nearly 200 miles by the officers of the Beagle, and its promises were great. Again, the middle of Australia was generally supposed to be a dried-up basin: but how much land was there north of that basin, sloping towards the coast? Did rain fall abundantly on that more favoured belt? was it backed by mountain ranges of importance, which cut off moisture from passing southwards, by condensing it on their flanks and turning it back into the Northern Sea? The determination of these points was the object of the Government's North Australian expedition of 1856, under the command of A. Gregory.

We will dismiss the latter part of his travels with a few words, for although they were the most protracted, yet they were barren of favourable results. He found the water parting of the country to be low, and little distant from the coast; consequently his route lay along a line drawn closely parallel to that travelled over by Leichhardt, some years previously. Gregory has satisfactorily proved that no broad belt of humid, tropical land exists in Australia. The former part of his route led more directly towards the interior, and to a certain degree tapped the continent. He traced the Victoria to its source, then crossed the water parting, and went down a creek that ran south-east, till it lost itself in dry salt lakes. His route lay through the usual type of Australian country, such as we have described it; that is to say, a constant alternation of pastoral land and worthless land. If all the good parts were summed up, the total would be immense; the sum of the bad parts would be vastly greater. It was a

country that might starve the cattle of an explorer, but it could sustain millions of sheep after its choicer patches had been discovered and stocked.

We will now go south, to the discoveries made in the Lake Torrens district: there are crowds of travellers who have assisted in them. Step by step it was found that Eyre's ill report, though most conscientiously made, was not justified by closer examination. The imaginary Lake Torrens was cut up into numerous separate lagoons, and its formidable horseshoe barrier has disappeared from our maps.

The Governor of South Australia takes a legitimate rank among the explorers of his colony; for though a heavy weight to bestride a grass-fed hack, he made a dashing ride to view the latest discoveries of others and to make new ones himself. However, the greatest South Australian effort was the equipment of Mr. Babbage. That gentleman was a truly zealous and scientific man, and did good work as a traveller; but his principle of carrying on explorations proved erroneous, and he was recalled. He wished to vanquish the desert by slow approaches, making sure of each step before taking another, and thoroughly surveying the neighbourhood of every successive depôt. His plan was far too cumbrous and complex to succeed. While he was laboriously and accurately examining the land, there was time for one or two men to scour far ahead and sufficiently open out the country to make it immediately available to sheep-farmers. Such was the plan of McDouall Stuart. Starting in search of pasture, in a single short season, he rode in a great sweep far beyond and right round Mr. Babbage, and his successful return excited a furor of applause in Adelaide. No desert had been seen to stop his onward progress. He returned simply because he had been unprovisioned for a longer journey. In 1860, Mr. Stuart started again with only two companions, endeavouring to penetrate right through the continent. His dash and sustained energy were marvellous. To his right lay the Lake Torrens district, which he avoided, keeping along the higher ground, which possibly forms a north and south water parting between two great Australian basins. He met no serious obstacle: it was the old story so often told, of a few hours' scrub, then a few hours' grass, and so on; ringing the limited changes of Australian scenery in every possible combination.

He passed what he considers to be the centre of the continent, where fortunately there is a mountain—Mount Centre—(we sadly want some marked features in Australia to feed our imagination)—and a little afterwards became entangled in breadths of dense scrub. Here, he found a numerous tribe of natives, who attacked and repulsed him. Again, in 1861, he follows his old route, starting early and travelling, though laboriously, even through the driest season of the year, in order to be early at his goal. This time he extends his route until it far overlaps Gregory's on the Victoria, as may be seen in the diagram. His efforts to break through the 100 miles of impracticable country that hemmed him in were repeated on nearly a dozen eccasions, until he was utterly beaten, and

compelled to retire. Either he was checked by scrub "like a wall," or by dry plains fissured with deep cracks and overgrown with grass, forming natural pitfalls in which a horse might break his leg. Yet he would be the last person to say that plenty of excellent roads might not be found, and we trust he may yet find one: for so small is the distance between success and failure that we read how frequently he stumbles on a great lake or set of springs hidden in the bushes, when the aridity of the country is driving him to distress. The reader lays down Stuart's narrative, conscious of the blindness with which every traveller is compelled to feel his way, and aware how largely the best among them must be indebted to hazard in bringing their journeys to a fortunate issue.

We now conclude with the last, the greatest, and the most tragical of all Australian explorations—that of Burke. It is remarkable in many ways, and in none more so than in its means of transport. Leichhardt and Sturt of olden times, and Babbage of more recent ones, travelled with wheeled vehicles. A. Gregory led a large and rigorously disciplined body of horsemen in his principal journey. Stuart slipped through the land on horseback, almost alone; but Burke, for the first time in Australian history, was to lead a party of camels, imported from Asia for that especial purpose. His expedition was planned on an unusual scale. It was first set on foot by the patriotic offer of 1,000l. from a wealthy individual, in the event of other sums being subscribed, and was afterwards liberally supported by the government of Victoria, and organized by the Royal Society of Melbourne. It enlisted the sympathies of all classes, in the same way that the sympathies of England were enlisted in behalf of Franklin during the flourishing days of polar exploration. Neighbouring colonies had long sent their pioneers into the field, but this was the first great expedition from the rich colony of Victoria.

The camels were bought in India, and in June, 1860, upwards of thirty of these quaint, slow-paced associates of Old World history stalked out of their vessel into the land of the kangaroo, to lend their much-desired aid to a dashing enterprise of one of the newest colonies of the modern Anglo-Saxon race. There, let us hope their breed may be established, and do future good service in a land and climate sufficiently resembling their native Arabia to make their usefulness probable.

Burke's plan was to reach the boundaries of civilization upon the Darling, and thence to strike northward across comparatively unknown country, to Cooper's Creek, marked C. C. on the map. Cooper's Creek is an historical name in the annals of Australian discovery. It was a famous halting-place in Sturt's expedition, and had been ever since the most distant of the known watering-places where cattle could subsist all the year round. Burke was there to establish his depôt, and thence he was to make tentative efforts with a light party to reach the Northern Sea; travelling as long as the provisions he could carry would allow, and always falling back on the depôt when they were on the point of being exhausted. The establishment at Cooper's Creek was to be the rock of his safety; its

failure, as will be seen in the sequel, proved the cause of his disastrous end.

When Burke arrived at the Darling with his cumbrous impedimenta, he was too late. Summer was advancing with rapid strides, sure before many weeks were over, to lick up the puddles and sheets of shallow water due to the last rains, and to convert the now green plains into an arid, desolate waste. Of immediate danger there was none, but by the time he could hope to reach Cooper's Creek and enter the dreaded stony desert, the sun would be nearly vertical. Government expeditions are generally behindhand, not from any want of zeal in the officials who direct them, but from the slow way in which business necessarily filters through a series of authorities. Burke's was no exception; he had chafed at the delays in Melbourne, and he now found himself on the Darling, at the commencement of his actual journey, with a cumbrous slow-moving retinue, disunited associates, and already tired cattle, while the fatal words too late stared at him in phantom letters, in the far distance.

Burke did what those who judge by the issue are pleased to blame as ill-advised. He left the mass of the party behind, and took an excellent bush-man, Mr. Wright, who knew the way, to guide him and seven companions on the road to Cooper's Creek. As soon as he had satisfied himself that the road was perfectly practicable by riding over the half of it, and also being thoroughly confirmed in his high opinion of Mr. Wright's ability, Burke incorporated his guide into the expeditionary party, made him its third officer, and sent him back to bring the heavy detachment in easy stages from the Darling to Cooper's Creek, while he himself rode on with the rest. There can have been no fair cause for anxiety in Burke's mind when he did so. There were no wayside difficulties to check the advance of those behind; water and grass were in such unusual abundance, that as he rode on, at the rapid pace of twenty miles a day-very rapid for bush travelling-his camels and horses actually throve on the road. He reached Cooper's Creek with perfect ease, having also accomplished some lateral expeditions of importance, according to the instructions with which he was furnished in Melbourne. Thus far all was excellent. He stayed two days at Cooper's Creek, wrote a long account of what he had seen and done, enclosing a report from Wills on the geography of the district; and then, subdividing his party, he left four men, well provisioned, on the Creek, with orders to remain there, in company with the daily expected detachment under Mr. Wright, as long as their food permitted, and went straight a-head to Carpentaria. He was accompanied by Mr. Wills, the second officer of the expedition, and two men. They had six camels and a horse, and carried as large a store of provisions as they were able.

It was now December 14, 1860 (we must recollect the December of the Antipodes is their summer). Burke, and his three companions were off to Carpentaria; four men were established on Cooper's Creek; and Wright, with the heavy stores and larger portion of the expedition, was sup-

posed to have long since left the Darling, and to be approaching the depôt in easy stages. But unfortunately they were doing no such thing. A stupid mischance had occurred, which threw everything out of gear, cost in the end the lives of many zealous men, and raised a storm of troubles, which even now has not subsided. It was simply this,-Long after Burke had left the Darling, a messenger came with news from Melbourne that McDouall Stuart had almost crossed the continent. This was important intelligence for Burke to receive, because if he failed to find a road in the direction he was about to explore, he might with advantage turn to the left, and striking upon Stuart's track, continue it on to the sea. Accordingly, away started two volunteers in a most unfortunate chase after him; the others awaited the issue, encamped upon the Darling. Days and weeks passed by, and the men never returned; the camp grew alarmed, scouts scoured the country, and the end was, that the two blunderers failed in their object, lost their way, and nearly killed themselves and their horses; and more, the rest had also exhausted themselves and their cattle in looking after them. Burke was well on his way to Carpentaria, confident that his depôt on Cooper's Creek was securely established, when Wright's party was still on the Darling, knocked up by an ill-judged escapade. Burke's party had travelled far beyond those plains where summer drought is overpowering, when the heavy detachment, under the leadership of Wright, entered upon their now fearful route. They traversed the first section of the road to Cooper's Creek, where all had been so green and luxuriant three months before, with difficulty and anxiety, but it was on February 12th that the full horror of Australian aridity came upon them. They were then virtually cut off from Cooper's Creek, at a time when poor Burke and Wills and the rest had actually reached and turned back from the sea at Carpentaria, and weak with scantily eked out food, were often thinking, as we may well believe, of the good cheer and joyous welcome they hoped to find awaiting them at Cooper's Creek—their well-stored depót in the desert oasis.

Let us, before the interest of the impending catastrophe leads us aside, take a rapid glance at what the travellers saw and wrote down in their note-books, which they buried when they were dying, and which have since been recovered and preserved. From the Darling to Cooper's Creek, the country was at first excellent both for food and travel; it then became stony, but by no means impracticable; and Burke indicates a still better route than that which he followed. Cooper's Creek itself is as permanent a watering station as it had been reported, but a disagreeable place to stay at, owing to the quantities of mosquitoes, and a perfect plague of marsupial rats. Proceeding northwards (not N.W., as Sturt went,) the country is good for a few days, but remarkable for stony ridges running across the plain. These expand and form the stony desert of Sturt. The party travelled across the desert, without the slightest difficulty as to water or grass: indeed they found a large shallow lagoon in the midst of it. Still proceeding, they crossed into the tropics, and the character of the country

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rapidly changed. The vegetation was richer and ranker, and the watercourses were exceedingly abundant. In their entire journey from Cooper's Creek to Carpentaria, and back to the stony desert, they appear on no single day to have failed in reaching water. In fact, their results quite overturn the usual accounts of Central Australia. When they approached the sea, they had to wade marshes, and push through brushwood, leaving their camels behind them with the two men. The natives were far too numerous to warrant the division of their party for long together, and in consequence, they never succeeded in getting a fair view of the open sea which they reached was that of the Flinder's River. Their route has made us acquainted with no striking geographical features, such as mountains, or rivers, or deserts; its interest lies in its vast span, and in its probable influence on future colonization. Natives were frequently met, and were peaceable, and even courteous to them, pointing out the best ways unasked.

They turn back from the sea about February 10th, and henceforth toil and insufficient food, added to indisposition produced by the hot humid air of the coast, makes havoc upon them and their cattle. They arrive on April 21st at Cooper's Creek, with two worn-out camels and the horse, themselves barely able to walk, and one of their small party dead. Where they expected greetings, there is absolute silence; not a soul to be seen; they reach the encampment: it is deserted; a mark on a tree directs them to dig; they do so, and learn their awful situation. That very morning the men they had left behind had quitted the creek; themselves ill and disheartened, but their cattle in good travelling condition. No one had ever come to them from the Darling. The natives had been troublesome; their rations were running low; they felt their position untenable, so they buried what trifling food they could spare, and departed south. Burke was utterly unable to overtake them. He, his two companions, and his cattle, had done as long a day's work as their strength would admit. The trifling interval which separated them from their retreating friends-it was only fourteen miles-was an impassable gulf. They were utterly cut off from present help. In this terrible position they did what they could; they dug up the food and the letter buried in the bottle by its side, and determined to travel down the creek to try and reach the settled districts about B in the map. Finally, they buried an account of their own proceedings in the same bottle which they had dug up, replaced the earth as they had found it, and by some fatal oversight made no alteration in the simple indication of DIC which the retreating party had cut in the tree by its side. They re-made the cache too carefully, and went their way. A few days of slow travel made it obvious that the strength of the whole party, men and animals, was failing them. They could not reach the settled districts; nay, the animals died, and they had to walk, carrying what they could. The last resource was to try to live like the natives, who subsist mainly on the seeds of a fern called

nardoe, which they pound and cook. The travellers endeavoured to associate with the natives, to learn how to find this nardoo, and to obtain support from them, but with little success. At length King discovered the plant in abundant patches, and they collected the seeds and lived upon them. But food may have nutritious qualities, and yet be of so indigestible a character that the stomach cannot extract its nutriment. The natives are reared upon food of coarse descriptions, which are stubborn in the laboratory of European stomachs, and much more so in those of men like our travellers who were ill and worn out. So they gathered the nardoo, and pounded it, a wearisome and exhausting task, with such savage means as were at hand, and they grew weaker day by day. At length Wills begged the others to leave him, and push on, and try to get assistance from the natives. They did so, and Wills remained alone. Writing his diary to the last, and looking death steadily in the face, he describes his daily weakening without complaint. He does not suffer from hunger, but finds starving on nardoo an easy death. He compares himself to Dickens's character of Mr. Macawber, "waiting for something to turn up," writes some practical and noteworthy suggestions about the sort of food with which Australian expeditions should be provided; -more of the saccharine or heat-giving elements, and not meat and flour alone, as heretofore. He writes with humour and good sense to the bottom of the very last page in his note-book, and then this brave man, way-worn and hunger-worn, to whose notes we mainly owe our knowledge of what the expedition achieved, whom we would have so gladly greeted on his return, appears to have laid himself down, and died quietly, on June 28th.

Burke and King struggled on, growing weaker daily; and then Burke's time came, and with resignation and without pain, the gallant leader of the first party who ever crossed Australia, passed away. All honour to his memory. King, now lonely and forlorn, wanders back to Wills' hut; and then the savages take strange compassion on him, and he wanders and lives with them, until aid from the South comes to him, on September 15th, in the form of a fresh and well equipped party of rescue under Mr. Howitt. We cannot here relate the long story of sufferings and deaths which befel both the heavy detachment from the Darling and the retreating party from Cooper's Creek. They met on the way, exhausted and broken down. At length the leaders of the two parties, who were almost the only men among them fit for the undertaking, rode on to Cooper's Creek for the chance of finding Burke's party returned, and reached it early in May. They had indeed returned, and were at that moment no great distance off; but the cache was apparently in the same state in which they had left it, the inscription on the tree was unaltered; and again, though assistance was so near, it never reached the heroes of our story.

As in the annals of arctic voyages, one missing party sets a train of others in motion, each of which in its turn may do the same, and heaps a growing burden of embarrassment on the nation who sends them: so this

party of Burke, whose failure in each of its three detachments was solely due to two messengers losing their way, has caused two missions to be sent by sea to Carpentaria and another overland to the same destination from Queensland. In addition to these Mr. Howitt was also equipped, who succeeded, as we have seen, in his search, and is now under instructions to proceed on new explorations.

The camels did their duty well across the desert country of which Cooper's Creek is the northern metropolis: plenty of them are reported to remain alive and in good health. But the sphere of their usefulness is limited; in the more northern parts of the continent, horses are clearly the most useful animals for an exploring party.

There is thus a great movement of discovery in various parts of Eastern Australia. The sheep-farmers on their side are not idle, for parties have pushed westwards from Queensland in search of good grazing-land, until they reached to within two hundred miles of the line traversed by Burke. The chief inquiry now is whether the country bordering the northern shores of Australia will be a profitable site for English colonists. The fear is, lest it be too hot and humid for a pastoral country, and not humid enough for a valuable tropical settlement. The question is still unsolved, whether sheep of any breed productive of wool can thrive continuously far within the tropics. Experience both of Queensland and of South Africa is more negative than positive; it simply shows that no sub-tropical latitude has yet been reached, where wool is an impossibility. Again, as for sheep, so for men: it is still an open question how far to the northward the Anglo-Saxon race can thrive in the peculiar climate of Australia. There are abundant data for argument; but the history of our settlements is too limited and the world is too small for instances to be adduced which are truly apposite. If our race and our sheep succeed in Australia as well as the Dutch Boers have succeeded in Southern Africa, we shall have little cause to complain.