

LECTURE FOR THE INAUGURAL FESTIVAL OF
THE 1820 SETTLERS NATIONAL MONUMENT
IN THE SERIES FROM PLOUGHSHARE TO COMPUTER

MINERAL DISCOVERIES AND HOW THEY CHANGED THE FACE OF SOUTH AFRICA

Most of us are aware of the prophetic words uttered by Sir Richard Southey in 1869. He was then the Colonial Secretary of the Cape government and when shown the superb 83,5 carat white diamond, now known as the Star of Africa, he is reported to have said:- "This diamond is the rock upon which the future success of South Africa will be built".

I venture to suggest that in making this prophecy, all Southey had in mind was the problem of balancing the budget of a country whose future was to be primarily agricultural. Up to the time of the discovery of diamonds, all expeditions into the interior in search of mineral wealth had returned disappointed, and though there were always stories of gold, iron and copper north of the Limpopo, these deposits were, like the copper of Namaqualand, considered to be too far away for profitable exploitation. Southey could not possibly have foreseen the riches that lay hidden beneath the surface of the southern extremity of our continent.

Richard Southey was an 1820 immigrant. He had landed as a boy of 12 on the shores of Algoa Bay. His father, George Southey, came from Devonshire and the family settled near the town of Grahamstown at Round Hill. Initially Richard helped his father farm and thus developed a love of hunting and the open air. He saw military service with the Albany Mounted Sharp Shooters and it was here that he attracted the attention of Sir Harry Smith, to whom he became private secretary. This position eventually led to his appointment several years later as Colonial Secretary. This, I suppose, would be the sort of upbringing experienced by many of the youths who arrived with those early settlers. The desire to hunt, or rather to seek new fields in which to hunt, prompted many of them to travel north, where the game was still plentiful. Ivory, of course, was a great attraction.

Minerals have long played an important part in the development of southern Africa. We know man was mining specularite, an oxide of iron, over 40 000 years ago, in the border caves near Swaziland, to provide the rich red ochre regarded by the primitive tribes as the "blood of mother earth" and therefore used in all sorts of ritual proceedings. We are not sure when man first turned to smelting it to make iron, though we do know he was doing this fairly extensively in the Northern Transvaal at least 1 700 years ago.

In this context, the story of the early inhabitants on Melville Koppies in Johannesburg is worth repeating. On this jagged quartzitic hill, a mile or two north of the main reef outcrop, there is evidence of a settlement of stone-age bushmen type people, probably going back some 20 000 years. From this attractive and high hill these early settlers could view for miles the rich and fertile grassy plains to the north - an ideal vantage point for the hunter. Then there came, about the time of the Norman conquest of England, a race of warriors who knew how to work iron. The pastoral and game hunting bushmen were forced to flee and the Melville Koppies site was taken over by the more sophisticated metal working warriors. They immediately recognised that the reddish brown shale inter-bedded with the quartzite on the top of the hill was rich in iron. The early iron smelting furnaces that they built are preserved to this day, visible proof that Johannesburg's industrial history goes back long before gold was discovered!

The Portuguese sailors who sailed around our coast were primarily concerned with establishing a sea route to their possessions along the Arabian and Indian coasts. They knew there were minerals in the interior of southern Africa. Before the end of the 16th century they had been given rights by the King of the Congo to mine copper inland from the west coast. On the east coast they had established their permanent outposts on the island of Mozambique and at Sofala. Here they had met both Arabs and Indians trading in gold and they were well aware of the legends of gold in the Kingdom of Monomotapa, the traditional home of the Queen of Sheba.

In no time they had established themselves up river on the Zambesi, with headquarters at Tete, with rights to mine gold to the south in Manica and to the north, in what is now Zambia. But the returns were so small "that men ignored working the mines"; and finally the hostile natives and unfriendly climate baulked their ambitions.

Van Riebeeck and his followers were little interested in the copper and iron trinkets occasionally found on the Hottentot, it was gold that was wanted. They studied extensively the Portuguese records and they are reported to have concluded that the chief city of Monomotapa, Davaque, would be somewhere approximately near where the Witwatersrand is today, whilst the richer and more fabulous city of Vigita Magna, was further south and only 300 miles from the Cape. Expedition after expedition was sent north but to no avail. Nor could parties of trained miners sent out from Holland find minerals closer at hand. In 1681, Commander Simon van der Stel confirmed by personal inspection that there was rich copper ore in Namaqualand, but it was too far away for exploitation, and he found no sign of gold.

Some years later, there was considerable excitement much nearer home, when Frans Diederick Muller, said to be a "professional and experienced mineralogist", claimed in 1740 he had found a rich silver mine at Drakenstein, close to Simonsberg. Several prominent citizens and officials, including the Governor, participated in a venture to back Muller and establish a mine. No more silver was found, and the ore was then said to be copper, next it was gold, and when finally it was tested in Holland, was found to be a very inexpensive metal, manganese, used to improve the tone of bell castings! The mine had been "salted" and for five years and more, Muller's supporters had been hoaxed. He was found guilty of fraud, his property confiscated and he was banished to Batavia. ^{1.}

Commissary General J. A. de Mist reviewed, in 1802, the conditions existing in the Cape just prior to his coming out to take it over from the British after the first occupation. By this time, agriculture had fared reasonably well since there had been increasing demands for food and supplies for the garrison and for victualling British ships that passed through the Bay. Hattersley comments that the coming of the British had made an immediate difference. Official economy was helped by large scale government expenditure. Trade was brisk since every man could buy and sell with whom he wished. ².

An extract from de Mist's report is as follows:-

"Although, in an agricultural colony it is necessary to regard mining as an occupation of secondary importance, it seems necessary to differentiate between those mines that merely accumulate stores of useless wealth, and those which are eminently useful and valuable in the pursuit of agriculture. The former type of mine withdraws from the fields many useful workers, and brings in its train disaster and misfortune to the Company. They must be looked upon as ruinous to the prosperity of a young, growing community, and every effort should be made to discourage them. The development and support of the latter kind should be considered the special duty of the government, whose purpose it is to extract all the good possible from this colony. The copper and lead mines in the vicinity of the Cape should be included in the second class". ³.

Presumably he was referring, in the first class, to gold mining as accumulating "stores of useless wealth". Many of us in the gold mining industry got rather tired of hearing our product described in such derogatory terms in more recent years, c.f. Keynes "The form of digging holes in the ground known as gold mining not only adds nothing whatsoever to the real wealth of the world, but involves a disutility of labour." ⁴. Somehow, gold has a habit of reasserting itself despite these criticisms! As to the second class, de Mist went on to say the Namaqua copper deposits, though important, were far away in a dry and uninhabited country. Besides there were no competent or reliable miners in the Cape who could work them.

With the second British occupation in 1806, there came a growing body of adventurers and missionaries ready to cross the Orange River and probe far to the north. Many left accurate accounts of their travels, thus encouraging others to follow. In the earlier reports there was much reference to copper, to iron, and even to asbestos, but little to encourage the search for gold.

There was though a growing confidence in the colony now that it had become a British possession, closer contact was established with England and new colonists began to trickle into the Cape. In 1817, Benjamin Moodie brought out 300 Scottish artisans to fill a long wanted need in the community. English merchants began to appear, and to prosper, in Cape Town, and they were prepared to invest capital in new ventures. When George Thompson and later Captain James Alexander in 1837, brought back rich samples of copper ore from near the mouth of the Orange River, they felt the time had come to exploit the deposits.

Here possibly was a means of safeguarding their businesses against the times when agriculture fared badly. The period of 1831/4 had been one of prolonged drought. It was particularly severe towards the eastern border, and the new arrivals were forcibly made aware of the Afrikaans dictum,

"Die springkaan en die droogte
is swaar in onse land." 5.

By 1845, profits were flowing again, merino wool was making "gentlemen of people who only brought a spade and a check shirt to Africa!" 6.

At the beginning of 1846, after an unsuccessful attempt to form a company in England, local merchants, including George Thompson, formed the South African Mining Company to work some of the Namaqua copper deposits.

This was the first public mining company in our country - unfortunately it did not prosper - but it set an example which was followed by the Cape firm of Phillips and King. This company had bought the farm Springbokfontein, and the mine they started here proved immensely rich. The first 31 tons of picked ore were shipped to England in 1852. This triggered off a rush of speculation. According to Theal, "a host of prospectors and explorers, bent upon discovering and appropriating copper mines, poured into Namaqualand". A "perfect mania for forming companies set in". By 1854, "companies had been formed in all the principal villages as far east as Grahamstown". 7.

In 1855, the bubble burst, most of the companies proving to be worthless. But by then ships had explored the coast for harbours. Robbe Bay, now Port Nolloth, was chosen as the best port, rough roads were made and even a government geologist had been appointed! Two companies remained in profitable operation. First was Messrs. Phillips and King; later they became the Cape Copper Mining Company and were to be associated with John Taylor and Sons of Britain. The second Cape company - Prince, Collison and Company - was working the Concordia Mine, and it became the Namaqualand Mining Company.

By 1855 nearly 2 000 tons of copper concentrate were being shipped per year to England adding annually R600 000 to the Colony's exports. Little note of the continuing activities of these mines was taken by the great majority living in the Colony since by now the agriculture and pastoral community had regained prosperity. The mines did provide a small market for foodstuffs but for the most part they operated in isolation with miners imported from Cornwall. Wool was still the Colony's major export, having risen from being worth R356 000 in 1846, to R1 676 000 in 1856, and to R4 164 000 in 1866, but there were ominous signs that Australian wool was threatening the South African market. Then, there was the drought of 1862, to be followed by a drastic fall off in English and American trade; London had no money for investment, railway construction in the Cape, which had started under George Grey's governorship in 1859, had to stop, having reached Wellington in 1863. Political problems increased in intensity, there were no funds for garrisons or police forces, and the Cape was forced to borrow on an empty treasury from Britain. The Transvaal Republic could not pay its officials; the Orange River Colony in desperation had introduced a paper currency but creditors were refusing to accept it. Natal was barely subsisting. The whole economy of the tip of southern Africa had slumped badly, and to save it, a miracle was necessary. It came - with the discovery of the first diamond in Hopetown in April 1867, and then eight months later, with reports by Karl Mauch of vast deposits of gold much further to the north.

South Africa's first diamond was used as a marble by children playing on Mrs. Jacobs' farm at Holspan, near Hopetown, just south of the Orange River in the Cape Colony. A neighbour, Schalk van Niekerk, became interested in checking whether this unusual pebble had any significance, and he handed it to a travelling salesman, John O'Reilly, to show to friends in the nearest town. The acting civil commissioner in Colesberg, Lorenzo Boyes, thought it might possibly be a diamond and suggested it be sent for determination to Dr. W. Guybon Atherstone, a medical practitioner and amateur geologist residing in Grahamstown. Atherstone not only declared it to be a "veritable diamond" worth R1 000, but added "where that came from there must be lots more". 3.

He sent it on to Richard Southey, the Colonial Secretary, and it is worth noting that the Governor, Sir Philip Wodehouse, when he saw it, purchased it immediately at Atherstone's price. Little positive action followed this first discovery or Atherstone's favourable predictions. Atherstone himself at this time was said to be more interested in starting a silkworm industry near Grahamstown and in mining coal in Albany! There were many critics, such as J. R. Gregory, a prominent English geologist and mineralogist, who was outspoken that in South Africa there were no formations in which the diamonds would be found. Atherstone, with dignity, stuck to his principles and recommended that the home government make proper investigation. At this time too there were several other local residents such as Dr. Gray of Cradock, Mr. Wyley, the geological surveyor, and Dr. John Shaw, who, with Atherstone, contended there was a striking similarity between the geology of India and Brazil where diamonds were presently being recovered, and that of South Africa. Now, 100 years later, professional geologists are firmly convinced that these three continents were at one time contiguous, the larger mass being known as Gondwanaland. One cannot but be impressed with the manner in which these early settlers painstakingly widened their education and sought scientific knowledge. Dr. John Atherstone - father of the "diamond" Atherstone, and also a medical practitioner - delivered in Cape Town a series of public lectures on science soon after his arrival in 1820. These lectures were most popular, and were the first public lectures of this kind given in the Colony.

As I have said, there was little positive reaction to the first diamond discovery. Besides, the rumours of gold further north were of greater interest. Dr. David Livingstone had arrived in Kuruman in 1841, and shortly afterwards started his expeditions to the north. In all his travels he recorded with meticulous care his many keen observations and his writings provide a fund of information for the mineral prospector. He reported in great detail on the gold-bearing white quartz outcrops near Mashinga in what is now Rhodesia. Secondly, there were the richer gold-bearing sands and gravels in the Manica district and around Tete. He referred to a Jesuit Mission 10 miles south east of Tete, and that the gold riches of this fraternity had been immense.⁸

His reports of copper and other minerals further north were equally important. He commented on the weight of the copper anklets worn by certain chiefs and the awkward way in which the owner had to walk because of these encumbrances. He reports "That is the way in which they show off their lordship in these parts". He reflects too "the cross has been used not as a christian emblem, but from time immemorial as the form in which the copper ingot of Katanga is molded". He says of the "Go Naked" people he met in the Kariba gorge "the women are well clothed and adorned. Some wear tin earrings all round the ear and as many as nine often in each ear". The tin was said to come from the north. Frequent reference was also made to iron, to iron smelting and metal working.

Another great explorer, James Chapman, was born in England in 1831. He came out to Pietermaritzburg at the age of 17, and a year later moved to Potchefstroom. His requests to the Volksraad to be allowed to prospect for gold in the Transvaal were refused, so in 1852 he moved further afield. For the next twelve years he explored southern Africa, to as far north as Lake Ngami, that is, the Okavango Swamps, and as far west as Walvis Bay. In 1861, he reported gold "in the country inhabited by that part of the Bechuana race called the Bamangwato".

Karl Mauch, a young German geologist, bent on exploration in South Africa, landed in Durban in 1865, and soon after was fortunate to join the big game hunter, Henry Hartley, on two expeditions to the north. Hartley, English by birth, had landed at the age of 5 with the 1820 Settlers. In the '40's he started his hunting trips to Matabeleland, making friends with Mosel'katsi. He guided Mauch, and the artist Thomas Baines to various old workings and mineralised areas and on his return, Mauch announced in glowing terms, in December 1867, that there were extensive fields of gold where he had travelled with Hartley near the Portuguese settlement of Tete in the east, and on the Tati River (near the present Francistown) in the west. We now know that Mauch had "unsurpassed habits of exaggeration", but nevertheless, these announcements caught the imagination of the colonists and were given considerable publicity in the British press.

Was this to be a repetition of gold in California of '49 or in Australia of '52? Before the Cape government could organise an official expedition to this country which was outside her borders, a party from the eastern Cape under James Chapman had rushed up and started work. Others followed.

In 1868, the London & Limpopo Mining Company was formed in England with Sir John Swinburne as managing director. The first mining machinery, including a steam engine and tractor, to be established on a gold mine in Africa, arrived from England in the following year. More than 100 europeans, mostly English, with three times that number of africans, put down shafts and extracted limited amounts of high grade ore. It is reported that the shaft on the Blue Jacket Mine simulated a corkscrew - this caused no surprise since a bottle of whiskey per day was issued to each european to prevent malaria. Whiskey was a much more palatable preventitive than "Dr. Livingstone's mixture" which consisted of the strongest purgatives! Gold there certainly was but its quantity was limited and once again there was disillusionment. But by this time more diamonds had been found in the Hopetown district and most of the miners moved down there.

In 1887, Lobengulu granted the Tati concession of 1 300 000 acres to James Fairburn and Samuel Edwards who formed the Tati Concession Mining and Exploration Company under the laws of the Cape Colony. This company continued to operate for several years.

The famous Star of Africa diamond was found in March 1869, picked up by a Griqua shepherd boy on the farm Zandfontein, near the Orange River. There was now no doubt that this was a land of diamonds. Sir Richard Southey's prediction was quickly fulfilled since there immediately followed an economic revolution which Hobart Houghton has declared to be "without parallel elsewhere in the world except perhaps where a backward country has struck oil". 9.

There was a rush to the diggings, described by Leo Marquard as the "second great trek".⁵ The first organised parties to the Vaal River workings came from 'Maritzburg. These were English officers who had been stationed in that town. Next came a party from Queenstown, then a group of Australians, and in no time people from all over South Africa and the world were flocking to the area to seek their fortunes. The country towns lost their menfolk; so much so, that by May 1870, the district to the east of Grahamstown was reported by J.H. Bowker to be almost deserted. The population of the diggings grew rapidly to 45 000; but Marion Robertson praises the behaviour of these early arrivals.¹⁰ Conditions were primitive, life was difficult, housing was non-existent, typhoid rampant and there was little form of government; but the diggers were by and large well behaved and law abiding. They came, she says, mainly from British settler stock. They elected their own committees, solved many of their own problems and avoided violence. They made the early history; in fact, she adds "there is a settler in every major event that took place". One might add too that those diggers who came up from Cape Town travelled on a recently completed highway which had greatly shortened the distance through the mountains between Wellington and the Karroo. Andrew Geddes Bain, born in Scotland, arrived in the Cape in 1816 and supervised much of this work, and parts of the route are still honoured with his name.

The economic changes that took place were both immediate and dramatic. South African exports, which had averaged R4,2 million per annum in the period 1861/5, rose to R11,3 million for 1871/5 and to R16,0 million for 1881/4. In this latter period R6,5 million per annum was accounted for by diamonds. Kimberley became the country's second biggest city. Capital for road and rail construction again was available. Major changes took place in agriculture, to feed this growing population. Imports and international trade grew rapidly, and the new found prosperity led to responsible government in the Cape in 1872. Within ten years the railway had been extended from Cape Town, from Port Elizabeth and from East London to a common junction at De Aar. It then went on to Kimberley, which was reached in 1885. Telegraph lines accompanied the railway and cable communication to Europe was established by 1880.

Meanwhile Edward Button, son of a Natal colonist, accompanied by Tom McLachlan, James Sutherland and James Parsons, following up reports by Struben and by Karl Mauch, announced that they had found payable gold at Eersteling, north of Potgietersrust, in January 1871. This became South Africa's first established gold mine, a twelve stamp battery was erected on it and in a small way it worked for several years. The old chimney and boiler stack were modelled in Cornish style. They stand to this day and they were built with granite imported from Scotland. How times have changed - we now export 'black granite' (norite) from the Transvaal to Europe!

In 1872, Tom McLachlan returned to a gold showing in the Lydenburg district which he and Button had seen earlier, and found more gold. In no time there was a rush to work the gravels in the streams feeding into the Sabie River and later in those of the Blyde River. Gold was there a-plenty. Henry Struben took President Burgers to the area in 1872 to try and establish some order, and Struben's suggested gold laws based on Australian and Californian practice, were later adopted by the Republican government. Burgers went there again in 1874 and on this occasion bought 300 ounces of gold which he sent to England to be minted into the 837 Burger sovereigns which are now so well known and valuable. There was enough gold too to revitalise the Transvaal Republic's finances, but not enough to complete a railway from Delagoa Bay to the Transvaal Republic!

The mine at Pilgrims Rest continued profitable operations until very recently; but it has left us a still greater heritage. To supply timber for the mine workings, the company established the first forest plantations. These now cover the eastern escarpment for hundreds of miles - they are not only of great beauty, but they also provide the timber for our great pulp, paper and lumber industries.

In 1882, with Tom McLachlan again the pioneer, gold was found in the De Kaap Valley and the Barberton field came into being. The gold rush now moved here, and once again young men came up from the coast, and disillusioned diamond diggers moved over from Kimberley. Speculators got in quickly and this time they were soon followed by prominent mining engineers and Kimberley financiers. The rich pockets found initially were quickly worked out; but some veins persisted and mines working these have continued to do so for many years. But the disillusionments that followed the excitements here led to a more cautious outlook when gold was reported on the Witwatersrand.

Carel Kruger may have been the first to find gold on the Witwatersrand. This was in 1834, but he lost his life before his finds were confirmed. In 1852, an Englishman, John Henry Davis, "a practical mineralogist" from Pietermaritzburg, reported that he had found "considerable quantities" of gold during his stay with a certain Mr. Pretorius on the farm Paardekraal, now Krugersdorp; but when he showed his gold to President Andries Pretorius, he was forced to sell it "for R1 200 to the state and leave the country":¹¹ The Transvaal government had, in those early days, no wish to throw their country open to prospectors or diggers; the Transvaalers cherished their land for its peaceful pastoral heritage, it was their new home, and they clung to a life rooted in the soil. They were loath to let the English follow minerals into their lands lest the English government take possession of the country.

Thomas Baines reported:

"In 1850 I myself visited the then little village of Potchefstroom and heard of gold among the Slaamzyn (Islaams or Mahomedans) Kafirs, achter (beyond) Zoutpansberg. In those days, however, my friend Joseph Macabe was fined 400 rix dollars for having written an itinerary of one of his journeys, and I had the honour of being made "Vogel Vrie" i.e. "free as a bird" (for anyone to shoot at) for the crime of possessing, and being able to use, a sextant".¹²

McCabe had been born in the Cape in 1816. He too was an intrepid explorer and a keen botanist; but at this time he was under very deep suspicion of more serious crimes against the Republic. Nor were such penalties only for the outsider; a Boer farmer who had made rings from a metal, thought to be nickel, which he had found on his travels, was threatened with a fine of 600 rix dollars should he disclose the metal's origin - lest the English should hear of it.

After independence was acknowledged in 1852, the Republic gained more confidence, but times were slow to change. Karl Mauch had to be particularly circumspect in visiting the farms near Rustenburg when he first came to the Transvaal in 1865. Gradually these prospectors won the friendship of their hosts - after all most of the prospectors had money with which to buy produce or to pay for the farmers for their labour. Baines himself reports with pleasure that in 1869 he could enjoy a "jovial glass of grog" with the very officer sent to take him 19 years earlier.

In 1853, Peter Jacob Marais, who had had experience in the Californian gold rush of '49 was given permission by the Transvaal Republic to prospect for gold, but he was threatened with death if he divulged any information to any foreign power. He too stayed with Pretorius at Paardekraal - he reported small finds of gold in the Crocodile and Jukskei rivers, but further work was most disappointing and he relinquished his appointment in 1855.

In 1860, Henry Struben and Evans, a geologist from Natal, had travelled to the Zoutpansberg and reported seeing a gold bearing formation - in the hills north of Makapaans Poort. The pace was hotting up, and in May '66, the South African Republic Mining Company was formed to work all kinds of minerals, and in fact during the following year a ton of copper ore passed through Pretoria on its way to Natal. The Republic had been forced by financial pressures to permit mining in its territories. In 1871, the State offered an award for the discovery of a new goldfield. Many a farmer now claimed gold; but the most important discoveries were made by the Struben brothers.

The Struben family came out in 1850. The father, Capt. Struben, had been born in Holland, but had married a wealthy Scottish girl and they first lived at Cowes in England. Captain Struben became magistrate at Ladysmith, but a few years later, in 1855, after his wife's death, he moved with his son, Henry, (Henrik) to the Transvaal. Henry started farming on President Pretorius' farm, Kalkheuvel, Magaliesberg. Tiring of this he became a schoolmaster and then a transport contractor. He joined his brother, Fred, who was prospecting near Krugersdorp in 1884, and there they found gold in a number of conglomerate beds, where "there was room for hundreds of mills and thousands of miners". 13.

By the end of 1885, they had erected a 5 stamp battery, and in addition to their own rock, were treating that of outsiders such as Bantjies. Enough gold was found to encourage others to come and in 1886, Walker and Harrison found the richer parallel bed, now known as the Main Reef, a few hundred yards away to the south. This reef could be followed both to the east and west and it was consistently payable. The Witwatersrand Goldfield had been discovered and once again the diggers rushed in. Marquard's "third great trek" had commenced.

The Witwatersrand gold field came into production with amazing efficiency. The merits of large scale mining had been demonstrated at Kimberley, and in no time prominent engineers and financiers, well known overseas, had organised most of the new properties into groups. This system gave financial strength and high quality technical expertise to the individual operations. By the end of 1888, forty-four mines, with a capitalisation of some R14 million were in operation, and over R2 million worth of gold had been produced. Production rose steadily to R15 million a year by 1894 with further expansion to come. Skilled workers had had to be imported, miners from Britain, technicians from all over the world, and African labour from far afield. A city had arisen in the bare veld, two and three storey office blocks had been erected, a start had been made on macadamising the roads. Coal had been found and was being mined at Vereeniging and on the East Rand. A local railway had been established, and by 1895 rail connections to Lourenco Marques, to Durban and the southern ports had been made. Electricity was beginning to be distributed to the general community. All this within 10 years of the discovery of gold bearing reefs of the Witwatersrand! The development of such an "infra structure" in these early days was only made possible by the financial skills and strengths of the mining houses and their willingness to co-operate for a common purpose. The Chamber of Mines, formed in 1889, has played no small part in securing this co-operation.

But let us return to Kimberley. Cecil Rhodes had come out in 1870 to Natal to help his brother, Herbert, farm and to recover his health. Herbert moved to the diamond fields and in 1871 Cecil joined him to work claims in the De Beers mine. Cecil also went into a successful ice-making business with Rudd, another English immigrant, and together they invested their profits in further claims in the De Beers mine. They then formed a company of that name, and by 1887 had gained control of the De Beers mine. In the following year, with the help of Alfred Beit, and having come to an agreement with Barney Barnato, they took over the rich Kimberley mine. This was followed with the acquisition of Du Toitspan, Bultfontein, and finally Wesselfontein mines. Through De Beers Consolidated Mines, Rhodes now had control of all diamond mining in the Cape Colony. Marketing was done through a central organisation in London, the Diamond Syndicate. Control of the smaller Jagersfontein Mine in the Orange Free State and the larger Premier Mine in the Transvaal, which was only started in 1902, was to come later.

Rhodes, assisted by Alfred Beit, could now turn his attention to the north. Possibly he was an idealist and an empire builder, but in his concept of a Cape to Cairo railway he was materialistic. He was positive in the evidence that was available that rich mineral fields were to be found in the north. He was aware that not only people, but also a transport service was essential to provide the means of exploitation. R. S. G. Stokes has said: "Coincidentally, with pioneer advance, railway construction had further to be accomplished on a liberal scale even without the hope of immediate return, leading population as well as following it".¹⁴ Having obtained a concession to the mineral rights in Matabeleland from Lobengulu, Rhodes and Beit set up the B.S.A. Company in October 1889 capitalising it with much of their personal fortunes. This was the company which was to lay the foundations of civilisation and industry in the Rhodesias both north and south of the Zambesi. Naturally there were murmurs from shareholders waiting impatiently for dividends, but the trunk railway was pushed north reaching Bulawayo in October 1897, the Victoria Falls in 1904 and Broken Hill in 1906. The connection from Bulawayo to Salisbury and thus to Beira was made in 1902. From Vryburg in the Cape this colossal network had been built entirely by private capital and at great speed by George Pauling. The last 400 miles to Bulawayo from the south was completed in 400 days. The Pauling family, who originally came from England, were responsible for much of the railway construction in South Africa at this time. In 1908, R. S. G. Stokes summarised the results thus:-

"There is no mining corporation in the British Empire, probably in the world, which has exerted so powerful an influence upon the destiny of nations as the De Beers Consolidated of Kimberley. No company has been so loudly and persistently vilified; none ever contributed by its organisation, which evolved strength and order out of industrial chaos, more materially to the welfare of a country. In its conception was the touch of financial genius; in its administration have been revealed the highest attributes of scientific and progressive mine management; in its records of achievement appear colossal figures suggestive of a chancellor's budget." 14.

The mineral returns in 1906/7 give the measure of the success:

Value of minerals produced:

<u>District</u>	<u>Year-ending</u>	<u>Value</u>
Cape Colony	1.1.07	R15,2 million
Orange River Colony	30.6.07	R 2,6 million
Transvaal	30.6.07	R60,0 million
Natal	1.1.07	R 1,0 million
Southern Rhodesia	31.12.07	R 4,8 million

Perhaps this is a suitable point to refer to Natal's mineral possibilities. The existence of coal in Natal in the present Dundee and Vryheid districts was known to the Voortrekkers and by 1842 we read of wagon loads of the fuel being sold to willing buyers in Pietermaritzburg. It has also been suggested by Marquard that one of the reasons for the re-occupation of Port Natal by British forces in 1843 was the realisation of the importance of this coal to a port now that the age of steam had arrived. The merchants in Durban clamoured for a rail connection to the interior; but the difficult terrain and lack of finance was a stumbling block. A start could only be made in 1876, and it was to be another 14 years before the coalfields were reached and full scale mining commenced. The area now produces some 8 million tons of coal annually, most of it high grade and suitable for coking.

The first coal mine in South Africa was near Molteno in the Cape. In the early years the coal was transported by wagon to Kimberley, and in the rail programme of the '70's, the line from East London was brought through Molteno on its way to De Aar and Kimberley.

Let us now look at some of our other important minerals. Once again we cannot underestimate the careful observations of our earlier missionaries and hunters. With the arrival of the British more money was available for these expeditions. Furthermore, the new settlers and their descendants had many amongst them with an unquenchable thirst for knowledge. A typical example is Andrew Geddes Bain. He arrived out here in 1816 and soon became interested in hunting; he turned to exploring and finally to road building. In his spare time he studied geology, particularly the massive wealth of fossils to be found in the Eastern Cape. In 1852 he produced the first geological map of the Colony - a map which is substantially correct to this day. Karl Mauch too was self-taught. In his geological studies he concentrated on mineralogy. These were then the sort of people to whom the travellers turned for advice, frequently asking them to accompany them on their expeditions. So by the early '70's we have Mauch confirming the existence of extensive deposits of chrome ore, fluorspar and coal in the Transvaal. Henry Struben, who had frequently been accompanied by the English geologist Evans, sent iron ore samples to England for analysis; these contained 97 per cent iron and, the assayer added, "this was the second best ore in the world". No wonder that Iscor, which started producing steel in 1934, has been such a success. Struben reports too that his asbestos samples had been valued at R36 per ton.¹² Both Mauch and Struben had extraordinary confidence in the mineral future of South Africa.

Hans Merensky, son of the German missionary, grew up with a passion for geology, inherited from his father and imbibed from his father's friend, Mauch. Hans Merensky, after training in Berlin, confirmed Mauch's chromite discoveries, and showed they could be the world's greatest chrome deposits; coupled with this, in this same geological formation which we now call the Bushveld Igneous Complex, Merensky found the world's greatest platinum reserves. Nickel too was present, and large masses of titaniferous iron ore. Further to the east at Palaborwa, his work led to the formation of a big vermiculite mine, a very large phosphate undertaking and, thirdly, one of the largest copper mines in the world. Lastly, he solved the riddle of diamond deposition along our west coast, north and south of the Orange River. The total revenue derived from the undertakings based on Merensky's work must now be approaching R1 000 million per annum. Much of this is a result of our great platinum expansion.

There is more to come, and no doubt Mr. A. W. Schumann in his address will tell you about the great ferro-alloy industries developing in the eastern Transvaal. As it is, I have insufficient time to report on the discovery of uranium in our gold ores in 1923. Our reserves of uranium are so large that we have been spurred on to do the most advanced metallurgical research towards its separation and enrichment. We have also turned our tin, asbestos, and manganese deposits - incidentally, all known to the ancients - into profitable mining enterprises. The success of these ventures is greatly due to the infrastructure supplied by the gold mining industry.

This industry has, of course, expanded enormously since the turn of the century. Several of the old stalwarts such as Crown Mines, born in '97, and E.R.P.M. in '94, are still going. They have each produced more gold than any other mine in the world, though there is no doubt that West Driefontein will shortly overtake them. Crown Mines' production to date is some 1 400 tons of gold worth nearly R7 000 m at recent prices. The string of towns along the Witwatersrand, started originally as mining villages, are no longer regarded as gold towns. They, together with Pretoria and the Vereeniging-Vanderbijl area, have practically joined forces to become what I believe to be the greatest industrial area in the southern hemisphere.

Our first major industry, the biggest explosive factory in the world, was African Explosives and Chemical Industries, which has now broadened out to produce a variety of chemicals. Then there was Iscor and the various manufacturing industries turning its steel into mine equipment, machinery, ropes and even motor cars. We have sophisticated refineries for platinum and gold. We manufacture paper, and we turn our asbestos into the final commercial products. Behind these many industries you will see the mining houses. Not content with looking for extensions to our gold fields to the east and west of the Witwatersrand, or to the south to Klerksdorp, and across the Vaal River into the Orange Free State, the mining houses have steadily turned their research activities to other forms of industry. They have now succeeded in building a balanced community.

Gold has given us the finance to do this, either directly through the mining houses or indirectly through a prosperous community. Hobart Houghton has said "ever since 1886 the gold mining industry has been the great driving force in South Africa's economic expansion", and he goes on to quote S. H. Frankel's words in 1938 "for nearly fifty years the gold mining industry has been the power house of modern enterprise in the Union and the main attraction in capital from the money markets of Europe.....nearly one half of the privately listed capital from abroad has been directly invested in the Rand gold mines".

It was this inflow which accelerated the great developments that have taken place in our country, that completed our network of rail transportation, that provided the basic loads for industries. It was originally the gold mining industry that attracted from abroad "men with drive, energy, vision, and the courage to take chances" and it was gold that through the years has had the remarkable stabilising effect on our economy. There has been "an inelastic demand for the product at the prevailing price". In times of recession gold mining has tended to increase its profit margins, augment its activities and add to its labour requirements. Last, but not least, one must not forget that a large part of the mine wage-bill is paid to our African labour force which is migratory, and this generates income in the poorest and most backward parts of the country. 9.

Finally, just as diamonds provided the wherewithal for responsible Cape government, it was gold which supplied the carrot that made Union possible. Was this not its greatest achievement?

But before closing, I think I must make mention of our international mining achievements. Reference has already been made to the determination with which Rhodes and the B.S.A. Company pushed the railway to the north of the Zambesi. The Belgian Congo, as it was in the 1920's, was a producer of diamonds - and Sir Ernest Oppenheimer, then in control of De Beers and the Anglo American company, became interested in the selling of these diamonds. This led, through the good offices of Sir Edmund Davis, to Anglo American taking an interest in the mineral development of Northern Rhodesia. They placed a Canadian geologist, Dr. J. A. Bancroft, in charge of exploration, and, through Bancroft, they mounted in the years 1927 - 30, the largest exploration project for metalliferous deposits that the world had ever seen - some 167 professional geologists were employed, over half coming from the North American Continent.¹⁵ This led to the establishment of some of the world's greatest copper mines. In the early days, the majority of the staff, the equipment and provisions for these mines came from South Africa.

South African mining houses, led by Anglo American, continue to play no small part in the exploration and exploitation of minerals throughout the world; one can say with pride that throughout the western world, wherever there is mineral activity, there too will be South Africans. As a South African mining engineer, or as I prefer to say, minerals engineer, I am proud to have been associated, in a very small way, with some of these activities. I am proud to note the high esteem in which South Africa is held abroad for its technical achievements. These have been won, let us not forget, by hard work, by self education and by painful slogging, be it by the early missionary, the wagon trekker, the diamond digger, the prospector, or by the more modern counterpart of skilled scientist or dedicated engineer.

Each on his own, and in different ways, played his part. Today, we South Africans go forth with much closer common policies and thank goodness we have not lost our energy, our enthusiasm, or our determination to follow our chosen path. Perhaps I might conclude by quoting General Smuts:

"In the romantic setting of South Africa with its colourful history, its striking mineral deposits and its intriguing destiny, remarkable and picturesque men have emerged - some of them native born and some are extracted from other lands".

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