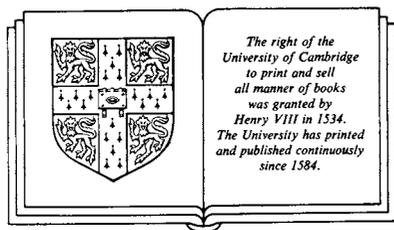


CAPITAL AND LABOUR ON THE KIMBERLEY DIAMOND FIELDS 1871–1890

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Contents

<i>List of plates</i>	<i>page</i> x
<i>List of figures</i>	x
<i>List of maps</i>	x
<i>List of tables</i>	xi
<i>List of appendix tables</i>	xii
<i>Preface</i>	xiii
<i>List of abbreviations</i>	xvii
1 Diamond mining: an overview	1
Diamonds	4
The Kimberley Mines	5
The Reef	6
The five phases of competitive diamond production	9
Haulage	11
Transport, depositing floors and washing	14
Fuel, dynamite and water	15
Underground mining	17
Conclusion	18
2 African labour in the early days	19
Labour migration	19
Desertion, diamond theft and violence	25
The pass system	27
Racism	29
Conclusion	31
3 The new colonial state, 1873–75	32
The first election	32
The Diggers' Committees	34
The Committee of Public Safety	36
The Defence League	39
The Diggers' Protection Association	40
The Black Flag Revolt	43
The trial	46

Contents

4	The Black Flag Revolt: an analysis	49
	Diggers and share-workers	49
	Master and servant relations	52
	Rebel leaders	57
	Merchants, mining capitalists and the state	59
	Money-lenders	66
	Landed proprietors	68
	Conclusion	71
5	Company mining	73
	Diamond merchants and the diamond trade	74
	Mining capitalists and mining companies	79
	The primitive accumulation of Cecil Rhodes	82
	The white working class	87
	The supply of African labour	89
	The social geography of Kimberley	94
	Conclusion	104
6	The 'share mania'	105
	The Kimberley share market	106
	Colonial and London speculators	109
	Company promoters	111
	Conclusion	121
7	The depression and strikes of 1883 and 1884	122
	The impact of the depression on profit in the mining industry	123
	A white labour policy for the mines?	124
	The reorganisation of the division of labour	127
	The mineowners' legislative programme	132
	The 1883 strike	134
	The 1884 strike	138
	The aftermath	143
8	The closed compound system	146
	Improvement in yield and theft: the mineowners' case unmasked	147
	Underground mining and the introduction of closed compounds	149
	The De Beers convict station: the model for the closed compound	155
	Closed compounds and social welfare	158
	Mortality in comparative perspective	163
	Proletarian, stabilised or migrant workers?	165
	Conclusion	172

9 Illicit diamond buying and the town economy	174
Gonivas	174
The Diamond Trade Act of 1882	181
Town vs. mine	184
Barnato Brothers and illicit diamond buying	195
The revolt of the ‘camp followers’	198
Conclusion	204
10 Amalgamation	206
Amalgamation schemes, 1882–86	207
De Beers vs. Kimberley Central	211
The effects of monopoly	226
Conclusion	227
<i>Appendix tables</i>	228
<i>Notes</i>	240
<i>Bibliography</i>	278
<i>Index</i>	291

Plates

1	Kimberley Mine, south side, 1877	<i>page</i> 13
2	Rotary washing machine	15
3	A team of workers in Kimberley Mine in the late 1870s	16
4	A gang of African mine labourers arriving at the outskirts of Kimberley	26
5	A diggers' compound in Kimberley in the 1870s	95
6	De Beers West End compound in the early 1900s	148
7	Kimberley Market Square from the Old De Beers Road in the 1880s	177
8	W. P. Taylor's Share and Claim Agency in the late 1880s	213

Figures

1	Section through Kimberley Mine, 1889	7
2	Number of labour contracts registered in all mines, 1873–98	54
3	'New Hand' contracts registered in Kimberley and De Beers Mines, 1873–85	93
4	'New Hand' contracts registered in Dutoitspan and Bultfontein Mines, 1877–85	93
5	Ratio of black and white workers employed in the mines, 1881–90	127
6	'Old Hand' contracts registered in all mines, 1873–85	167
7	De Beers DMC: capital and shareholders, March 1880 – March 1888	214
8	Kimberley Central DMC: capital and shareholders, April 1880 – March 1888	218

Maps

1	Kimberley Division, Griqualand West, showing the river diggings and diamond mines	2
2	Principal labour migration routes to Kimberley	20
3	Kimberley in the 1880s	96

Tables

1	Exports and imports of the Cape Colony increased by the exports of diamonds, 1869–88	<i>page</i> 10
2	Assessment value of diamond mines, 1874–90	80
3	Vendors' and invested capital, and fixed and circulating capital, in non-colonial and colonial DMCs formed in 1881	106
4	Selected directors, non-colonial DMCs, 1881–83	112
5	Selected directors, colonial DMCs, 1880–81	114
6	Mining production and profits, 1 Sept. 1882 – 1 Sept. 1885	124
7	Kimberley Central DMC, labour complements, 1882 and 1883	130
8	Kimberley Central DMC, wages, 1886–88	153
9	Death-rates of Africans in diamond mines, 1897–1905	163
10	Kimberley location population, 1903	169
11	Share prices, Kimberley Central and De Beers DMCs, Kimberley, January–June 1888	223
12	Market value, Kimberley mines, London, March 1888	224

1

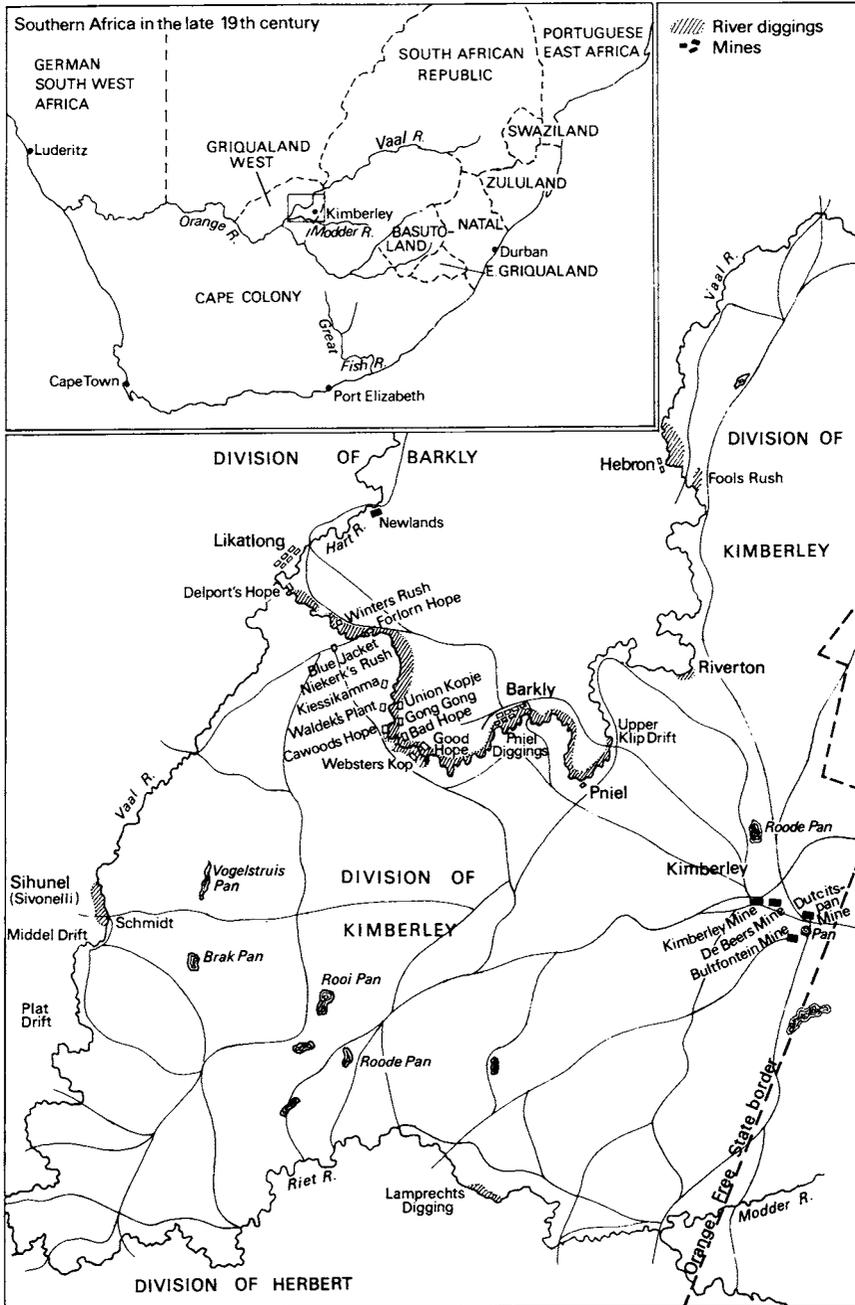
Diamond mining: an overview

In 1867 the first diamonds were discovered in South Africa somewhere in the vicinity of the Orange River and traded in Hopetown in the northern Cape some 600 miles from Cape Town. Over the next two years itinerant traders and hunters bartered for diamonds with Tlhaping, Kora and Griqua who lived in the Vaal River valley north of Dikgatlong. Most of these diamonds were found on the surface near the river; by 1869 Africans no longer trusted to chance and organised systematic searches for diamonds. Chiefs managed to restrict the access of white prospectors to the 'river diggings' of the Vaal River, at least on the north bank, until the early months of 1870. At this time whites took advantage of conflicting claims to authority between Kora and Tlhaping chiefs over access to the diamond-rich area and the great white diamond rush to the 'river diggings' began. In July 800 whites were congregated at Klipdrift, later renamed Barkly West, and in October 5,000 white diggers were working on the banks of the Vaal River.

By October 1871 African chiefs had lost control of the 'river diggings' and the Vaal/Harts region had been annexed by Britain. Two major factors prompted imperial intervention: the territorial ambitions of the Afrikaner republics, the Orange Free State and the South African Republic, and the Cape Government's own ambitions for control of the region. Recently, Kevin Shillington has disclosed another factor which increased the pressure for British annexation: the machinations of colonial merchant speculators who sought to manipulate rival claims to the area for their own advantage.¹ In this sense the strategic aim of keeping the trade and labour routes into the interior out of republican hands, was overlaid by economic interests in land claims. While this saga of the 'river diggings' and its hinterland is fascinating in itself – the basic outline of how the region was determined to belong to the Griqua and then taken under British 'protection' has been told many times² – our concern is only with the 'dry diggings', a day's ride away from the river at what became known as Kimberley. The discovery of diamond mines here provided an added incentive to British annexation of the territory called Griqualand West, which conveniently included both 'dry' and 'river diggings'.

In November 1869 two adjacent farms, on which the Bultfontein and Dutoitspan diamond mines were later to be developed, were acquired by

Diamond mining: an overview



Map 1 Kimberley Division, Griqualand West, showing the river diggings and diamond mines [Based on original surveys, 1882]

merchant speculators from their Afrikaner owners. The one farm, Bultfontein, was bought by the Hopetown Company for £2,000; the other, Dorstfontein, was leased for ten years by the same company. The Hopetown Company was a three-cornered partnership between the Hopetown merchants, Lilienfeld Brothers, the 'gentleman', Henry Barlow Webb, and the Cape Town lapidary, Louis Hond. Lilienfeld Brothers, renowned for their purchase in March 1869 of the famous 'Star of South Africa', a pure white 83-carat diamond, were supported by the important eastern Cape merchant house, Adolph Mosenthal and Company. Mosenthals managed to interest the Posno family, major Amsterdam jewellers, Ochs Brothers, leading London diamond brokers, and C. Martin, a London diamond merchant, in the promotion of a new company in London for speculation in diamonds and land. In November 1870 the London and South African Exploration Company was formed with a capital of £20,000. In March 1871, it bought Dorstfontein farm for £2,600 and in January 1875 the Bultfontein farm for £11,000. Martin Lilienfeld and Henry Webb of the Hopetown Company became major shareholders in what turned out to be the most profitable company ever formed to make money out of Kimberley diamonds.³

In April and July 1871 two more mines, De Beers and Kimberley, were found on a neighbouring farm called Vooruitzicht owned by Johannes de Beer. The Hopetown Company was beaten to the purchase of this farm by a syndicate of Port Elizabeth merchants, who bought the farm in October 1871 for £6,000. The syndicate was led by Alfred Ebdon, MLA and partner in Dunell, Ebdon and Company, and included John Patterson, MLA and leader of the eastern Cape separatist movement. In 1873 John Merriman, MLA, and George Manuel, MLA, bought a one-sixteenth share in the syndicate at the rate of £50,000 for the whole farm; in 1875 it was bought by the government of the Griqualand West for £100,000.⁴ The Vooruitzicht farm was a richer property than that of the neighbouring London Company estate.

After Griqualand West was annexed by Britain it was run by three temporary Commissioners. Prior to this Olaf Truter, a *landdrost* (magistrate), administered the diamond fields as a whole on behalf of the Orange Free State. Republican rule was appreciated by white diggers; many resented British annexation. The Colonial Office hoped to pass Griqualand West on to the Cape Colony, but found that the definition of the boundary between the land of the Griqua and the Orange Free State was the critical stumbling block to Cape annexation. Consequently, in January 1873 Griqualand West became a Crown Colony with a Lieutenant-Governor, and executive and legislative councils. In late 1875 the Colony's Governor was sacked and replaced by an Administrator. In October 1880, after years of negotiation, Griqualand West was annexed by the Cape Colony and run by a system of Civil Commissioners.

Diamond mining: an overview

DIAMONDS

Before the fifteenth century diamonds were relatively insignificant in the galaxy of precious stones. Pearls were the most precious, but rubies, emeralds, opals and sapphires all ranked above diamonds. At this time a diamond's distinguishing feature was its hardness, whereas the rare qualities looked for in precious stones were perfect colour and proportion. But this changed when it was discovered how to cut facets on the face of a diamond. In 1456 a European lapidary, Louis de Berquem, perfected scientific faceting and, in doing so, he turned diamonds into perfect reflectors of light, unleashing the interior beauty of the stone. By the nineteenth century diamonds were well established as the most precious of all gem stones.⁵

The market value of a diamond depended on its weight, its form and its colour. Large stones were rare before diamonds were discovered in the Cape. Indeed, so rare were large stones from Brazil, the world's largest producer in the mid nineteenth century, that slaves who found stones weighing 17 carats⁶ and over were rewarded with their freedom. At Kimberley stones of this weight were a common occurrence. More large stones were found there in the two decades, 1870–90, than in Brazil in 170 years or in India in 1,000 years.⁷

Large diamonds were vastly more valuable than the run of the mine one-carat stone. The price of diamonds increased exponentially with their weight and stones over 100 carats were sold for whatever a prince or potentate could be made to pay. Many stones were literally priceless and found their way into the Crown Jewels of European and Asian monarchies.

A huge diamond lost between a half and three quarters of its weight in cutting. The Koh-i-nur from Golconda in India was 793 carats in the rough but was cut into a gem stone weighing 186 carats. This was often the fate of stones the size of a man's fist, but the finished diamond was still large enough to be unusual. If the rough stone, pure crystallised carbon, had a regular octahedron or rhombic-dodecahedron shape, less weight was lost in the manufacture of the finished diamond. Such a shape was ideal for the brilliant cut which was the most common form of gem stone.⁸

Although weight and form were important, it was the transparency and flawlessness of a diamond which fundamentally defined its market value. In the early days on the Kimberley diamond fields the majority of stones were slightly yellow in colour. So abundant were they that all off-coloured stones that came on to the market were designated Cape diamonds. This destroyed the reputation of all Cape diamonds and to overcome this association in the market, many Kimberley diamonds were sold as Brazilian.⁹

The colour-less and water-clear quality, prized in the best of Indian and Brazilian diamonds, was relatively rare in the Kimberley mines. But the Cape production, four times the annual production of Brazil by 1873, more than compensated in quantity for this lack of quality. Still, there were

enough stones with the treasured blue-white quality to make rich men of yeoman farmers and shop-keepers from the port towns. The 160-carat Porter Rhodes diamond found in Kimberley Mine was absolutely perfect. It was classified as a stone of the first water, while going down the scale, stones tinged with colour, but otherwise flawless, were classed as second water and stones with obvious colour defects brought up the rear and were termed third water. But colour did not destroy a gem entirely. Coloured diamonds of perfect transparency were highly valued. They were called fancy stones and included red, blue and green diamonds. Such a basic description of diamonds, which were classified into over 200 varieties, gives some indication of the complexity of the diamond dealer's trade.¹⁰

THE KIMBERLEY MINES

The four diamond mines at Kimberley bore no resemblance to deposits in Brazil or India. Consequently, an entirely new method of mining was developed at Kimberley. It had little in common with precious or base metal mining and was a far riskier undertaking. To begin with the richness of a gold or copper mine could be assayed from a sample of ore, but this procedure was impossible in the Kimberley mines. There was no reliable method of predicting the future results of mining. Diamonds were not evenly distributed in the blue ground, the true diamond-bearing *breccia*, which was found after about 60 feet of yellow ground had been excavated in all the mines. And the diamond yield varied with depth and position in the blue ground. This simple geological fact made it extremely difficult to assess the extent of diamond theft, which became a running sore for the mine-owners, and still is.

Nonetheless, there was an imperfect measure of the yield of the diamond-bearing soil. It could be quantified on the basis of the past results of mining. The yield was calculated from the number of carats found in a load of soil, the standard industry measure, of 16 cubic feet of broken blue.¹¹ For example, in 1883 the average yield of Kimberley mine was 1.2 carats, while it was only .9 carats in De Beers Mine. On the basis of geological quantity these were the two richer mines of the four at Kimberley. In contrast, the yield of the other two mines, Dutoitspan and Bultfontein, was .25 and .33 carats respectively. Once underground mining was undertaken the measure became even more inaccurate as so much shale, or dead ground, was excavated with the blue. Still, mineowners had little else to go by and, imperfect though it was, men came to know the rich from the poor claims.¹²

The abundant yield of Kimberley Mine made it the richest mine in the world, but it did not produce the finest diamonds. That honour went to the Dutoitspan mine, poor in geological quantity but compensated with quality. Bultfontein diamonds had nothing special to recommend them as they were mainly small and spotted, whereas De Beers diamonds were remarkable for their size. And, although Kimberley Mine had a rich yield, it produced 90

Diamond mining: an overview

per cent of the industry's *boart*, the diamonds used for industrial purposes.¹³

Kimberley Mine was ten acres in size and originally divided into 470 claims.¹⁴ In the early days claims closest to the sides of the mine were excavated with the greatest energy as hauling was easier from the edges of the mine. It took on the shape of a dough-nut with blocks of ground standing in the centre. It was only in the later 1870s that the centre ground was taken down and the mine turned into a basin. But digging was not all productive in this rich yielding pit. There were poor layers of ground scattered throughout the claims and there was one section, the West End, that was poor throughout.¹⁵

The wealth that was dug out of Kimberley Mine in the early days attracted most diggers and left the other mines undeveloped. In the early days of De Beers, gullies were sunk in enchanted spots between the poor expanses of ground in the West and East Ends. In the 1880s Baxter's and Schwab's Gullies in the north, the ambiguously named Poor Man's Gully in the centre, and Australian Gully in the south remained the richest sections of the mine. Its rate of development was far slower than that of Kimberley Mine. In 1874 only 48 per cent of the pit was worked but even then only on an irregular basis. In 1881 only 34 per cent of the mine had been dug into the blue ground, while of the remainder only 40 per cent were worked at all. Thereafter, under a regime of company production the pit was rapidly developed.¹⁶

The poor mines, Dutoitspan and Bultfontein, were two miles away in the direction of the Orange Free State border. Until the late 1870s they were only intermittently worked. Before then Dutoitspan was used as a camp latrine and Bultfontein became known as the 'poor man's diggings'. Both were larger than the rich mines, the former being 31 acres and the latter 22 acres in size. Even when they came back into favour their development was slow. In Dutoitspan, as in De Beers, certain gullies named after pioneers – Solz's, Fry's, Odendaal's, Robinson's, Young's – spearheaded progress in the mine. But in 1880 even the most advanced gullies were only an average of 80 feet deep, barely a quarter of the depth of Kimberley Mine. A similar state of affairs existed in Bultfontein, although once company production began in the 1880s the 'poor man's diggings' became a regular paying prospect and it was developed faster than Dutoitspan.¹⁷

THE REEF

The containing walls of the open-cast diamond mines were called the reef, unlike in gold mining on the Rand where the term refers to the gold-bearing ore. The reef, composed of yellow, pink and predominantly black shales, extended 300 and more feet down into the mines until it hard rock or *melaphyre*. Whereas the hard rock stood firm, the reef did not and began to break up soon after it was exposed to the atmosphere by the removal of the blue ground.

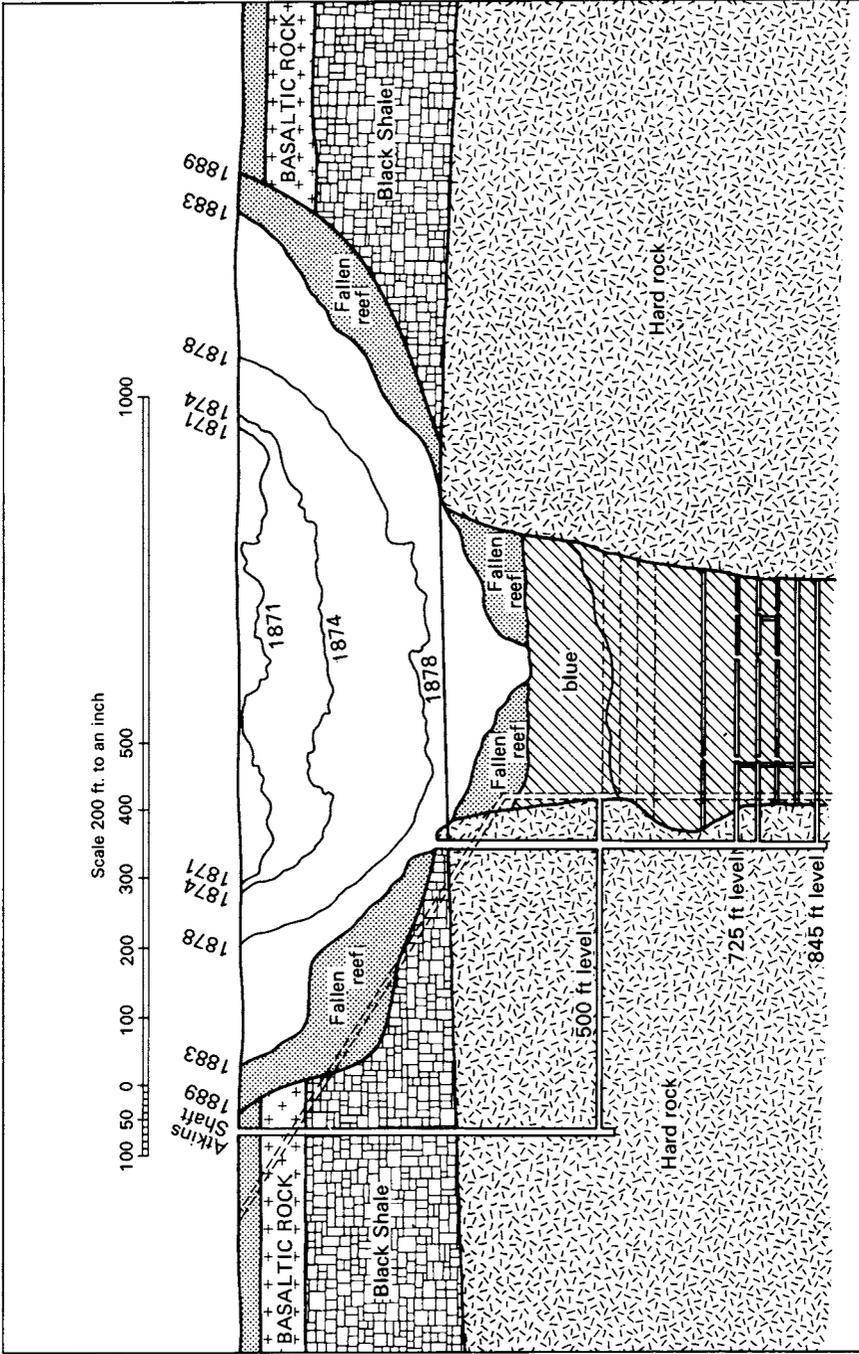


Fig. 1 Section through Kimberley Mine, 1889. (Source: CCP, RIDM, 1890)

Diamond mining: an overview

The collapse of reef on to the claims below was an ever present threat to diggers. A heavy fall could retard production for anything from three to six months while the debris was cleared off the claims. When a big fall of reef occurred it was a spectacular sight:

Along the towering face at various points little bits of rock broke away, increasing rapidly in number and quantity during the next hour or so. The gaps between the solid ground and the doomed section increased visibly as one watched, and the gigantic body rolled over, crashed, and like an enormous tidal wave swept everything away in its path.¹⁸

Usually the reef gave ample warning that it would collapse. Great cracks appeared on the top of the reef and they were carefully measured so that diggers could estimate when it was due to fall. But there were other occasions when huge chunks of it came away without warning and buried workers in the claims.

Kimberley Mine faced reef problems first because it was excavated earlier and faster than the other mines. It was only after 1878 that reef falls emerged as a threatening issue in De Beers Mine. The poor mines were spared this problem largely through their lack of development until 1885 in Dutoitspan and 1887 in Bultfontein. The only true solution to the threat was underground mining.

Before the institution of underground mining in the rich mines between 1883 and 1886, reef extraction made production expensive and often unprofitable. The Kimberley Mining Board, set up in 1874 to administer common aspects of mining and financed by a general rate on mineowners, organised the extraction of reef in Kimberley Mine. At times the Board employed a reef contractor, but normally claimholders cleared their own reef and charged it to the Board. In the first five years of Kimberley Mine production one load of reef was extracted to every seven loads of blue ground. Then, the reef problem rapidly worsened and by 1883 nearly five loads of reef were extracted to every load of blue ground. The Board had tried to stop the reef collapsing by cutting it back in terraces, but the idea was implemented too late. When reef collapsed on to claims, owners were unable to pay the Mining Board rate. In 1883 the situation of non-payment became so acute that the Board went bankrupt with liabilities of £360,000 against assets of only £60,000. Between 1871 and 1882 eleven million loads of reef were removed from Kimberley Mine at a cost of £2 million.¹⁹

The claimowners of De Beers Mine learnt from the harrowing experience of Kimberley Mine. Between 1878 and 1882 the De Beers Mining Board cut the reef back in terraces. It gave the claimowners a crucial breathing space but it was only a temporary measure. In 1885 an avalanche of reef fell into the mine from the East End. Then the worthless, yellow ground in the West End collapsed on to the blue ground and production was halted for six months. The mineowners were forced to begin the development of underground mining.²⁰

The five phases of competitive diamond production

THE FIVE PHASES OF COMPETITIVE DIAMOND PRODUCTION

Between 1845 and 1870, when Brazil was the largest producer of diamonds, her average output was 200,000 carats a year.²¹ The diamond production of the Cape outstripped that of Brazil fairly quickly. In 1872, barely three years after the first diamond rush, over a million carats were mined and by 1888 production had climbed close to four million carats (see Table 1).

The rapid growth in output was determined by the application of steam-power to the production process and a substantial increase in the productivity of labour. While steam machinery made mining at depth possible, it did little to lighten the load of the mineworker in the pit. Diamond mining was a labour-intensive industry in which the basic tasks of drilling, picking and loading were made more strenuous as powerful steam-driven machinery was able to extract greater quantities of reef and process more and more blue ground. Output also grew significantly around 1880 when the three relatively unworked mines, De Beers, Dutoitspan and Bultfontein, became paying propositions. In addition, underground mining enabled round-the-clock production in contrast to the thirteen hour day in summer and nine hour day in winter in the open-cast mine. But it also led to a greater intensity of labour, as for the first time mineworkers were paid piece- rather than time-wages.

Growth in labour productivity was absent in the first two phases of diamond digging. In the first phase (1871–73) the yellow and blue ground was loaded into buckets, hauled out of the mines by windlasses and dry-sorted on diggers' encampments. Over 1,600 production units operated in Kimberley Mine while the other mines remained largely unworked. This phase ended with the productive capacity of the mine sapped by the accumulation of water in the claims and the initial collapse of the reef. In the second phase (1874–77) a novel system of haulage based on aerial tramways was developed. It allowed the centre of the mine to be worked, while the richly regarded reef claims suffered under an accumulation of water and debris. The blue ground had to be loosened by powder or dynamite, hauled out of the pit by horse-driven whims or small steam engines, and left to decompose on depositing floors for varying lengths of time. From 1875 diamonds, instead of being dry-sorted by hand, were extracted from the blue in large rotary washing machines. In this phase there was a steady differentiation between claimholders with steam machinery and those with less progressive horse-driven appliances.

Out of this process of competitive differentiation arose a class of mining capitalists who began to turn diamond digging into a mining industry. In the third phase (1877–81) output soared as De Beers, Dutoitspan and Bultfontein began serious production for the first time. The use of steam machinery became the dominant motive-power in the industry, with the poorer mines investing for the first time and Kimberley buying larger engines. This investment in fixed capital culminated in 1881 in a joint-stock mining

Diamond mining: an overview

Table 1 *Exports and imports of the Cape Colony increased by the export of diamonds: 1869–88*

	Exports exclusive of diamonds £	Diamonds exported			Total computed exports £	Total computed imports £
		carats	value £	av. price s d		
1869	2,200,966	16,542	24,813	30/-	2,225,779	1,953,091
1870	2,416,039	102,500	153,460	30/-	2,569,499	2,352,043
1871	3,128,260	269,000	403,349	30/-	3,531,609	2,585,298
1872	4,451,453	1,080,000	1,618,076	30/-	6,069,529	4,388,728
1873	3,882,626	1,100,000	1,648,451	30/-	5,531,077	5,130,065
1869–73	16,079,344	2,568,042	3,848,149		19,927,493	16,409,225
1874	4,225,413	1,313,500	1,313,340	20/-	5,538,747	5,558,215
1875	4,206,544	1,380,000	1,548,634	22/6	5,755,178	5,731,319
1876	3,499,196	1,513,000	1,513,107	20/-	5,012,303	5,556,077
1877	3,633,743	1,765,000	1,723,145	19/6	5,356,888	5,158,348
1878	3,456,330	1,920,000	2,159,298	22/6	5,615,628	6,151,595
1874–78	19,021,226	7,891,500	8,247,490		27,278,744	28,155,554
1869–78	35,100,570	10,459,542	12,105,667		47,206,237	44,564,779
1879	3,805,637	2,110,000	2,579,859	24/6	6,385,496	7,083,810
1880	4,342,294	3,140,000	3,367,897	21/6	7,710,191	7,662,858
1881	4,220,706	3,090,000	4,176,202	27/-	8,396,909	9,227,171
1882	4,514,098	2,660,000	3,992,502	30/-	8,506,600	9,372,019
1883	4,408,828	2,413,953	2,742,470	22/8½	7,151,298	6,470,391
1879–83	21,291,563	13,413,953	16,858,930		38,150,493	39,816,249
1884	4,138,345	2,263,606	2,807,329	24/9½	6,945,674	5,249,000
1885	3,321,785	2,439,920	2,489,659	20/4¾	5,811,444	4,772,904
1886	3,620,600	3,135,061	3,504,756	22/4	7,125,356	3,799,261
1887	3,616,504	3,598,930	4,242,470	23/7½	7,858,974	5,036,135
1888	4,854,278	3,841,937	4,022,379	20/11¼	8,876,657	5,678,337
1884–88	19,551,512	15,279,454	17,066,593		36,618,105	24,535,637
1879–88	40,843,075	28,693,407	33,925,523		74,768,598	64,351,886
1869–88	75,943,645	39,152,949	46,031,190		121,974,835	108,916,665

Sources: Max Bauer, *Precious Stones* (London, 1904), p. 236; A. Michielsen, *De diamant-economie. Waarde, prijs en conjunctuur* (Antwerp, 1955), p. 125; CPP.G–15–'89m *Trade Returns*, p. 5; CPP.G11–'90, *Reports of the Inspectors of Diamond Mines for 1889*, p. 36.

company promotion boom. There was an enormous inflation in the market value of claims. Inevitably, it was followed by a slump.

The crisis was the result of over-production. In the fourth phase (1882–1885) the mining industry suffered an extended depression, the product of both problems in mining and a collapse in the European diamond market. During the depression the industry worked to between 60 and 70 per cent of capacity and a quarter of the capital was liquidated. Production in Kimberley Mine largely came to a halt as a result of the accumulation of reef and experiments in underground mining were begun. This paralysis provided a natural restriction on output and for the first and last time, Dutoitspan and Bultfontein produced more than 50 per cent of the value of production.

The depression accelerated the tendency towards the centralisation of production in the mines. In the fifth and final phase (1886–91) underground mining replaced open-cast production in Kimberley and De Beers and marked a new era in the diamond industry. The large companies experimented with different systems until a uniform method was adopted when the mines were brought under the control of the De Beers Consolidated Mines Limited.

HAULAGE

The river diggings on the Vaal River were similar to the alluvial deposits in India and Brazil. When the mines at Dutoitspan and Bultfontein were first discovered in 1869, it was assumed that they would be similar surface diggings. Digging to bed-rock, diggers thought, would be accomplished quite adequately with picks and shovels. But the mines did not 'bottom-out'. Before this was realised digging was conducted on a damaging, haphazard basis. Soil taken out of a claim was sorted on an adjacent one; water was struck after 40 feet and so each hole was filled in and another one begun. Dutoitspan mine was so badly worked, wrote one official, 'that there are not 10 full claims worked to a depth of 40 feet, although it has been worked for 18 months longer than Colesberg Kopje [Kimberley Mine] and there is not an average depth of 10 feet.'²²

Sorting inside the mine obstructed digging as debris mounds were left upon productive soil. In an attempt to encourage diggers to take soil out of the mines, a central road, running across the pits, was left intact in Bultfontein and Dutoitspan, while in Kimberley Mine a road system was adopted on a grand scale. Across the pit from north to south 14 roads were laid. Each claim surrendered seven and a half feet along one side and backed with its adjacent claim made roads 15 feet in width. The soil was hauled out of the claims in buckets, loaded on to waiting carts or wheel barrows on the roadways and then taken out of the pit to diggers' encampments for sorting. But the roadway system could not last. Diggers undermined the roadways in their search for diamonds and by April 1872 the system had developed into a death trap. Roads were patched together