

A World of Diamonds

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Today diamonds are mined in about 25 countries, on every continent but Europe and Antarctica. However, only a few diamond deposits were known until the 20th century, when scientific understanding and technology extended diamond exploration and mining around the globe. For 1,000 years, starting in roughly the 4th century BCE, India was the only source of diamonds. In 1725, important sources were discovered in Brazil, and in the 1870s major finds in South Africa marked a dramatic increase in the diamond supply. Additional major producers now include several African countries, Siberian Russia, and Australia.

It is a modern misconception that the world's diamonds come primarily from South Africa: diamonds are a world-wide resource. The common characteristic of primary diamond deposits is the ancient terrain that hosts the kimberlite and lamproite pipes that bring diamonds to Earth's surface.

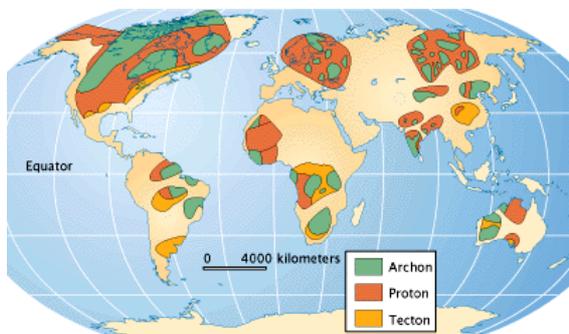


Fig. 1 Major deposits and the ancient bedrock

The map above shows both the major deposits and the ancient bedrock, both the 2,500-million-year-old archons and less productive 1,600 to 2,500-million-year-old protons, that contain the diamond pipes. The diamonds in secondary deposits have been moved by erosion away from the pipes.

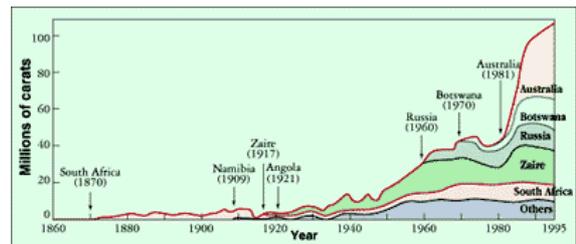


Fig. 2 Diamond production increase in the 20th century

The monumental increase in diamond production in the 20th century is shown on this graph. India's maximum production, perhaps 50,000 to 100,000 carats annually in the 16th century, is very small by modern standards. Brazil and Venezuela are barely discernible compared to South African production following discoveries in 1867. For the most part, except for major wars and economic recessions, diamond production has been steadily increasing since then, with non-African sources growing in relative proportion. Major production is now dominated by Australia, Botswana, Russia, and Congo Republic (Zaire), but South Africa is still a major producer, in both volume and value.

South Africa

The 1867 discovery of diamonds in the Cape Colony, now a province in South Africa, radically modified not only the world's supply of diamonds but also its conception of them. As annual world diamond production increased more than tenfold in the following 10 years, a once extremely rare material became more accessible to Western society with its growing wealth, science learned that diamonds came from volcanoes, and everyone learned of Cecil John Rhodes, Barney Barnato, Kimberley, and De Beers. Today South Africa maintains its position as a major diamond producer.

The story of diamonds in South Africa begins between December 1866 and February 1867, when 15-year-old Erasmus Jacobs found a transparent stone on his father's farm, on the south bank of the Orange River. Over the next 15 years, South Africa yielded more diamonds than India had in over 2,000 years. This great outpouring of diamonds coincided with depletion of

Brazilian deposits and with a great rise in wealth, particularly in the United States, that ensured diamond prices did not fall as they did when Brazil outproduced diamond demand in the 1730s.

Plan of concessions and claims at the Kimberley mine from June 30, 1883. [click to zoom in](#)

The first diamond discoveries in South Africa were alluvial. By 1869, diamonds were found far from any stream or river, first in yellow earth and below in hard rock called blueground, later called kimberlite, after the mining town of Kimberley.

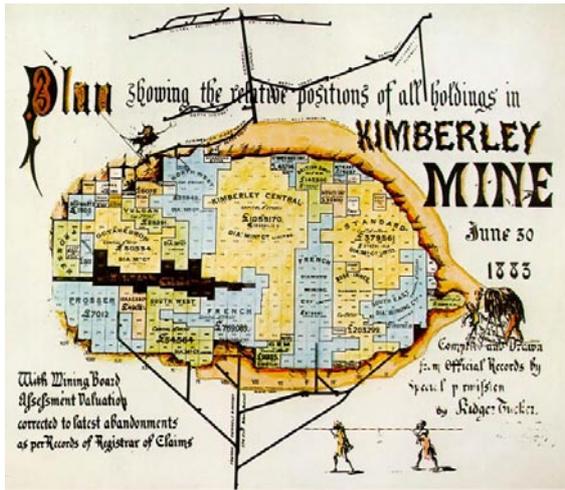


Fig. 3 The Kimberley Mine holdings in 1883

In the 1870s and 1880s Kimberley, encompassing the mines that produced 95% of the world's diamonds, was home to great wealth and fierce rivalries, most notably that between Rhodes and Barnato, English immigrants who consolidated early 31-foot-square prospects into ever larger holdings and mining companies. In 1888, Rhodes prevailed and merged the holdings of both men into De Beers Consolidated Mines Ltd., a company that is still synonymous with diamonds. Today South Africa is third in production in terms of value and is likely to stay that way for the foreseeable future.



Fig. 4 The Kimberley mine in 1873.

Fig. 4 shows the roadway and the square claims of the Kimberley mine in 1873 which were 31 feet on a side, creating a terrain of holes and walls that made mining difficult and hazardous. From "The Diamond Mines of South Africa," G.F. Williams, New York, 1906.



Fig. 5 Barney Barnato

Barney Barnato arrived in South Africa from England in 1873 at the age of 20. In 1876 he bought four claims in the Kimberley mine. He made a huge profit and later formed the Barnato Diamond Mining Co., which he merged with Kimberley Central Mining Co. in 1883. In competition, Rhodes sold one of his companies to Barnato's Kimberley Central but his retained interests gave Rhodes a 20% share in Kimberley Central. Rhodes and Barnato battled viciously for the remaining stock. In 1889, Barnato sold out to Rhodes for £5,338,650, at that time \$25,000,000, paid with the largest check ever issued at that time. In 1896, Barnato disappeared at sea while on passage back to England, a presumed suicide.



Fig. 6 Sir Cecil Rhodes

In 1870, at the age of 17, Cecil John Rhodes followed his brother to South Africa. There he purchased diamond claims and became prosperous pumping water from the deepening, flooded claims in Kimberley. After expansion of his holdings and competition with Barney Barnato, Rhodes went on to form De Beers Consolidated Mines. He became prime minister (some

say dictator) of the Cape Colony, and dedicated his final years to the creation of Rhodesia (now Zimbabwe). In 1902 at age 49, Rhodes died a very controversial figure. From "The Diamond Mines of South Africa," G.F. Williams, New York, 1906.

Russia

The greatest success story of diamond exploration in the 20th Century is Russia. In the 1930s, academician Vladimir S. Sobolev recognized similarities between the ancient bedrock of Siberia and that of South Africa and Botswana. He concluded that major diamond deposits in Siberia were possible.



Fig. 7 A workers camp at the Aikhal ("Glory") mine in Yakutsk, soon after the mine's discovery in 1960.

In 1947, prospecting started by looking in streambeds for trails of indicator minerals such as pyrope garnet and ilmenite, which point to primary diamond deposits. Within a decade the efforts succeeded, in spite of very difficult Arctic wilderness conditions. In 1954 in Sakha (formerly Yakutia), the first kimberlite pipe, Zarnista (Dawn) was found in the Daldyn field; in 1955, the very rich Mir (Peace) and Udachnaya (Lucky) pipes were discovered within 10 days of each other but about 400 km (250 miles) apart. By 1956, more than 500 kimberlites had been discovered. In a harsh and remote area, deposits were developed gradually from 1957, and by 1970 Russia had become the third largest producer. It is now the fourth largest producer on the basis of weight. Its production is about one quarter gem diamonds, worth \$1.2 billion, second to Botswana.

Canada

With much of Canada underlain by ancient bedrock, the existence of diamond-bearing kimberlite has been considered very likely, particularly with tantalizing diamonds found in Wisconsin in deposits swept down by glaciers from up north. Now the country is home to

the latest major diamond discovery. Intermittent exploration for kimberlites by major companies was unsuccessful through the 1980s. But Chuck Fipke, head of Dia Met Minerals, persevered and in April 1990 located a kimberlite under Point Lake. Eventually, his company, with partner BHP Minerals, found more than 100 kimberlites on their claims; 42 contain diamonds.



Fig. 8 The first kimberlite pipe discovered in the Northwest Territories is under Point Lake. The top of the kimberlite lies about 50 m below the surface of the lake, which is 600 m wide.

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