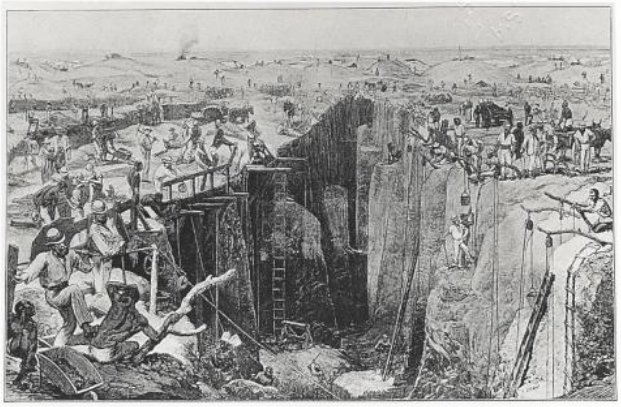
Diamond Mining in South Africa



Sometime between December 1866 and February 1867, Erasmus Jacobs - the 15-year-old son of a poor farmer - found a beautiful pebble along the southern bank of the Orange River.

The pebble was sparkly and lying with some gravel. Although Erasmus didn't know it, at the time, the transparent pebble - which weighed 21¼ carats - was a diamond.

As the interesting stone was passed from person to person, it made its way to Richard Southey, the Colonial Secretary, who reportedly said:

> *This diamond is the rock upon which the future success of South Africa will be built.*

Erasmus' discovery led to diamond mining, an entirely new industry in South Africa. Coupled with the discovery of gold, it also led to wars between various interested parties who wanted to own, and control, these valuable natural resources.

What, exactly, is a diamond? How are diamonds formed? Where are they found? How are they mined?

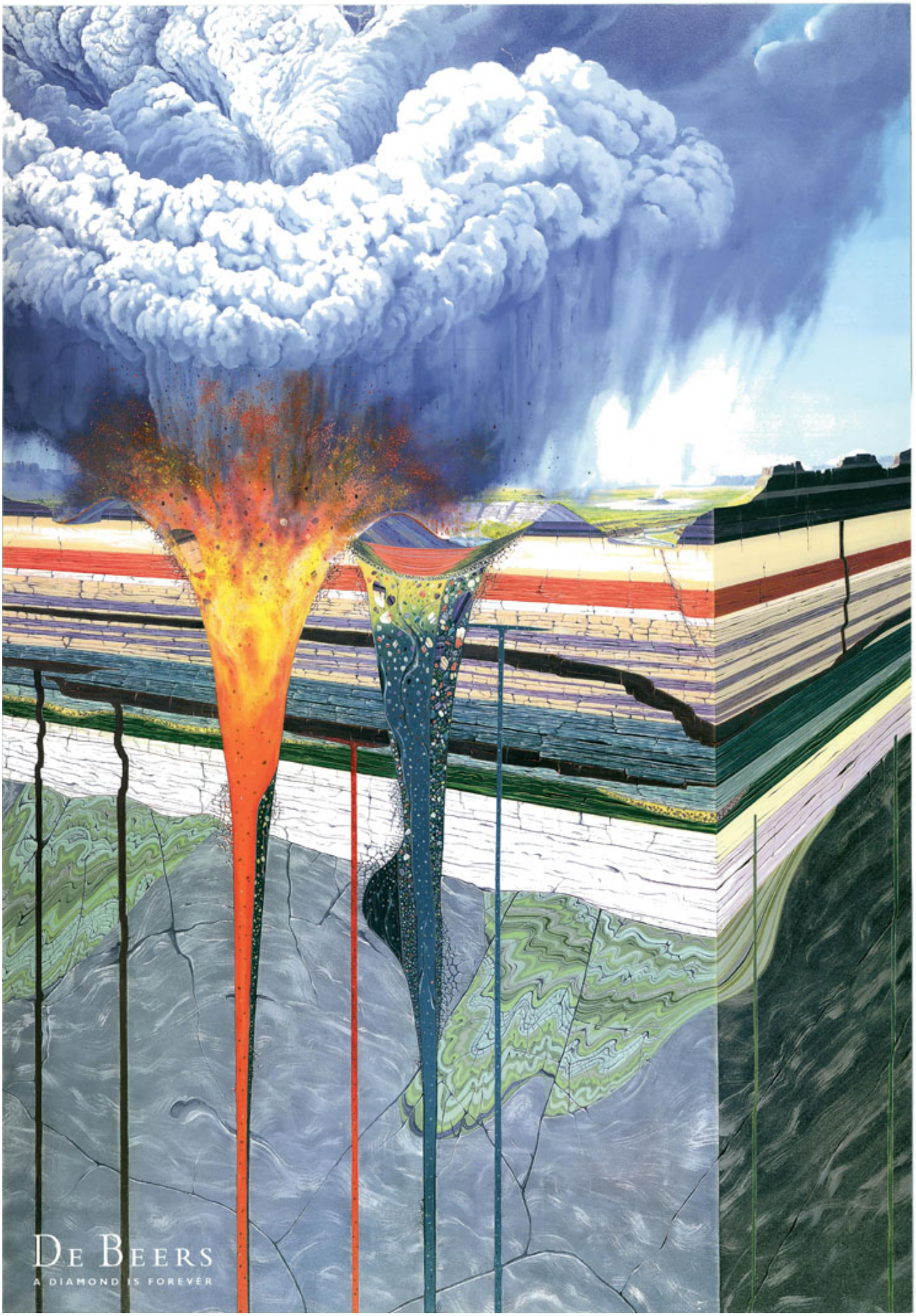
Diamonds are survivors. What they went through, when they were formed from pressures inside the Earth's Upper Mantle billions of years ago, is remarkable.

We don't exactly know what forces worked on these pieces of crystalized carbon - or how it all happened - because the actions occurred in the Upper Mantle, about 150 kilometers (or so) below the Earth's surface. It's a place where temperatures and pressures are extremely high, so people have never been to naturally occurring, diamond-creation sites.

In other words ... we don't find the diamonds where they were formed.

That means, diamonds are also travelers. For people to find them, diamonds have to move from where they're formed to where they can be found. How does that happen?

If we think about how magma comes to the surface, in an exploding volcano, we get some idea of how diamonds move from their formation place to their mining place. If molten rock (on its way to the Earth's surface) sweeps through an area where diamonds are located, the magma picks-up the diamonds (just like it picks-up other minerals in its path).

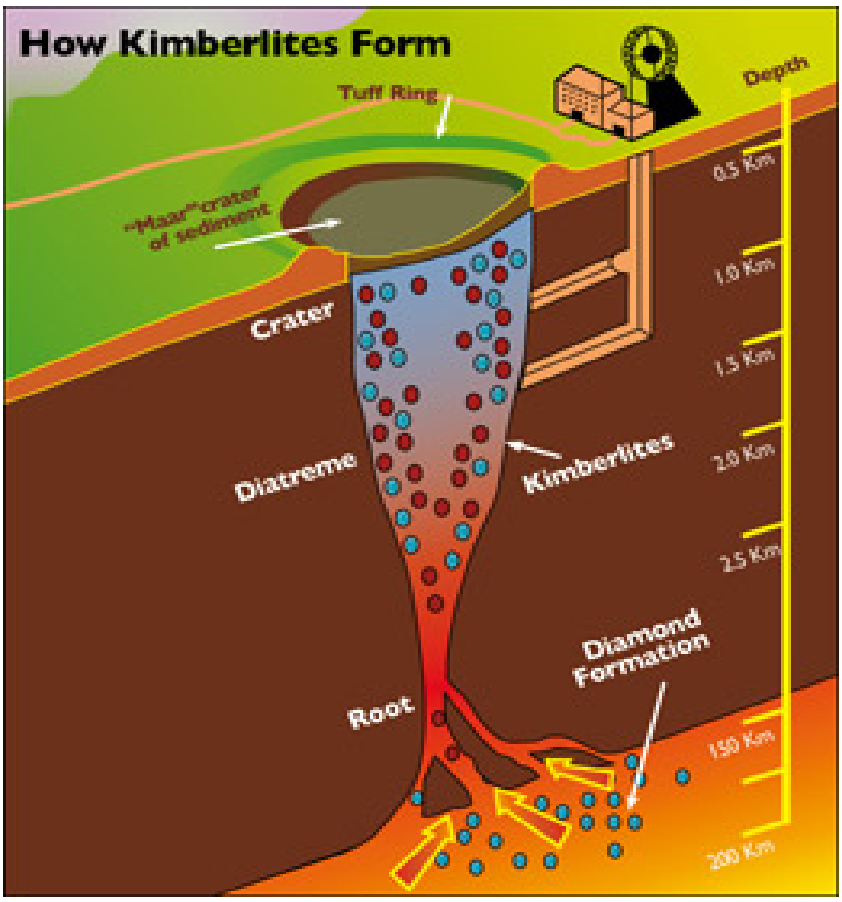


But there's something very interesting about the way that hot magma interacts with diamonds. To learn more about it, we check-in with Britain's Natural History Museum (in London):

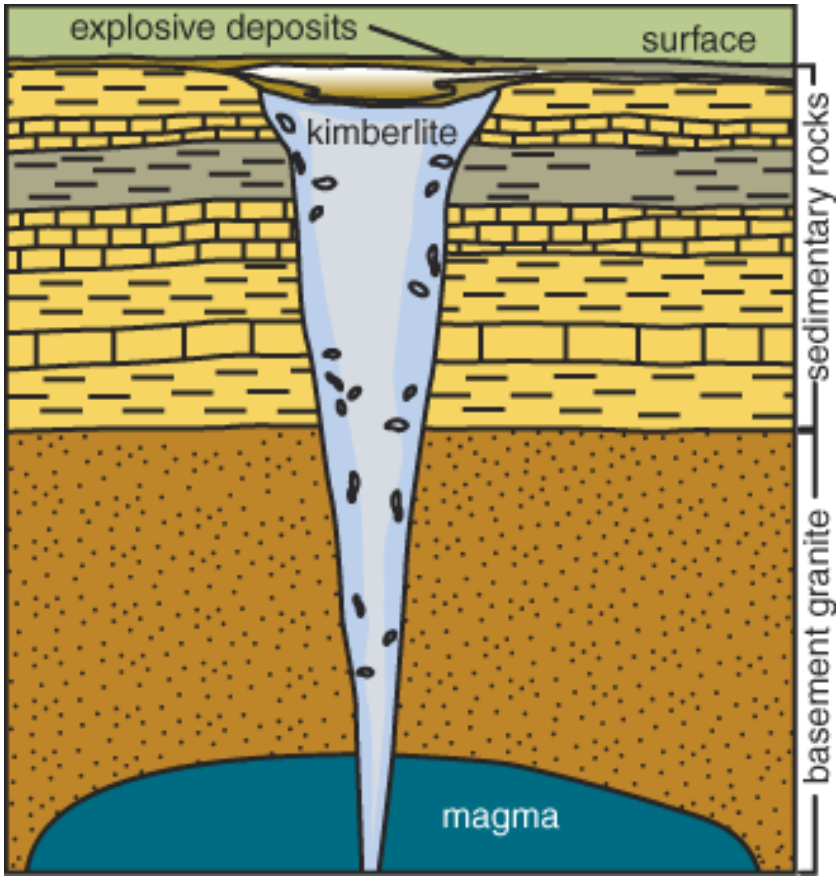
As it cools, the magma solidifies into carrot-shaped pipes, or sometimes thin dykes, of kimberlite [a kind of potassic volcanic rock]. *These are named after the place where the first pipe was discovered, in Kimberley, South Africa.*

The carrot-shaped pipes normally extend to depths of around 2.5km below the surface. The upper levels erode over hundreds of millions of years and expose any diamonds they are carrying.

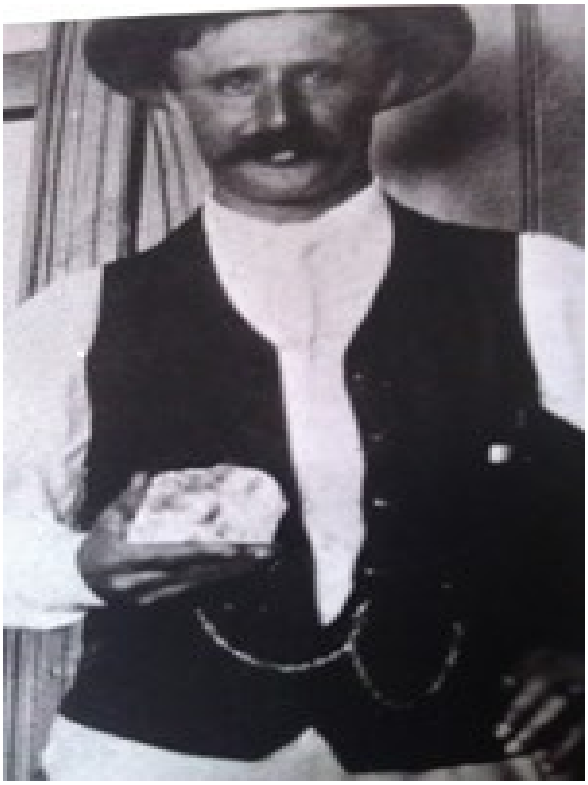
The Kansas Geological Survey provides this image to help us better visualize where diamonds form and how the kimberlite pipes appear below the Earth's surface.



In other words ... the traveling diamonds have caught a rocket ride to the Earth's crust by means of a Kimberlite Pipe. Then, as surface erosion takes place, someone like Erasmus Jacobs can find a diamond, lying near a riverbed, or miners can go deeper into the surface to find what's hidden below.



The largest diamond, found to date, is the Cullinan. In its rough form—when it was discovered in the Premier mine (near Pretoria) on the 26th of January, 1905—it weighed 3,106 carats!



After the huge diamond was discovered, the Transvaal Government (in South Africa) bought it as a gift for the British Monarch (King Edward VII at the time). It was a way of thanking the King for passing governmental control from British to local rule.

In addition to their weight, in carats, diamonds are valued by their color. The closer a diamond is to colorless (designated as "D"), the more valuable it is.

Diamonds are the hardest substance on Earth. Only a diamond can cut another diamond.

Geologists estimate that 1 in 200 kimberlite pipes contain diamonds. That means a lot of pit digging takes place to find the diamond-containing kimberlite pipes.

All that digging, however, has scarred the Earth's surface. One major example is not far from where Erasmus

found the shinny pebble.

As more and more diamond miners moved to the Kimberley area of South Africa, they removed a great deal of earth from the mining pit (in order to retrieve its many diamonds). What they left behind is known as "The Big Hole."

The diamond which Erasmus found was ultimately cut and polished. Now weighing 10.73 carats, it is known as the Eureka Diamond.

In 1967, De Beers - a diamond company founded by Cecil Rhodes ** (in 1888) - purchased the Eureka for the South African people. It is maintained at the Mine Museum in Kimberley, South Africa.

The image at the top of this page depicts an early mining scene in Kimberley, South Africa. The original Kimberley mine closed in 1914.

Now that you know something about diamonds, try your hand at a diamond-knowledge quiz. And ... if you want to know more about how diamonds are made in the lab ... have a look at this video from BBC's Horizon.

** Cecil Rhodes is the person who established the "Rhodes Scholarship," providing the financial means for selected applicants to study at Oxford University.

Credits:

CP. Kimberley. Diamond Mining. Online via African Online Digital Library.

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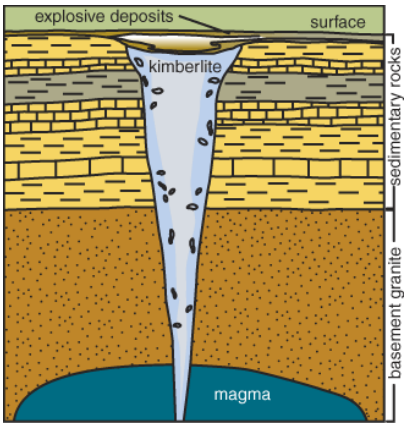

Kimberlite with Diamond Formation
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Kimberley Mine
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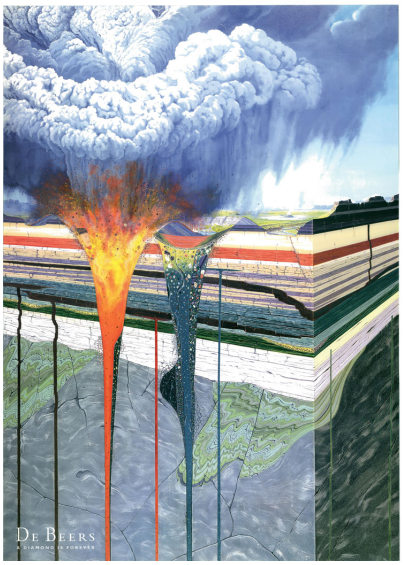

Kimberlite Explosion - Diamonds to the Crust
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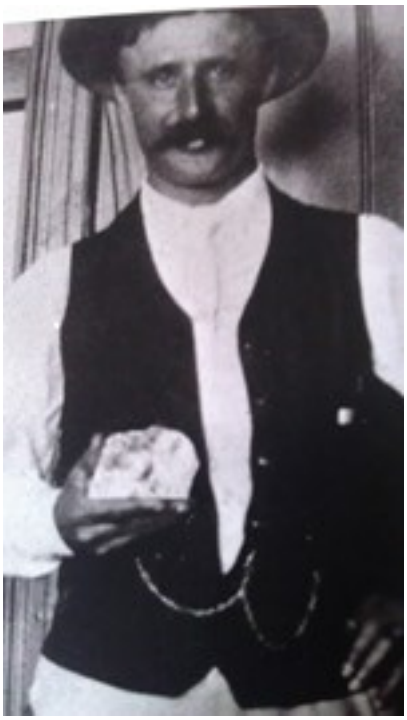

Cullinan Diamond
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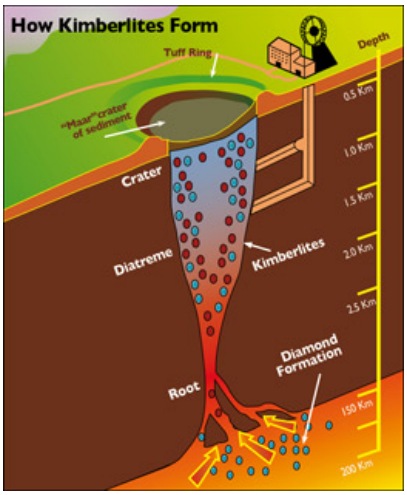

Kimberlite - Diamonds Form
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Eureka Diamond
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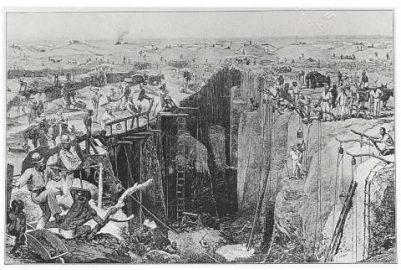

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