

History

Gold has been the most prized metal of all for millennia, holding a special place in the hearts and minds of people across the globe. Throughout history, gold has inspired conquerors and explorers, entrepreneurs and adventurers. It has provided the wealth to forge empires and birth nations. Practically it has been used as a way to define and store wealth as a both a currency reserve and investment. It has been used to craft great works of art and the finest jewellery, as well as objects of divine worship. In the modern world it is also used in scientific, medical, engineering and technological applications. Gold has helped shape human history. Whereas other metals ages have come and gone, gold endures.

Geology

Broadly speaking gold formations can be classified into two main categories: primary and secondary.

Primary deposits can be considered as the original occurrence where gold accumulated in concentrations large enough to first mineralise into ore and seams. These deposits were created by hydrothermal fluids containing carbon and sulphur flowing up through the earth's crust and dissolving gold and other ore components from the rocks which they passed through. Travelling along the path of least resistance, the gold carrying hydrothermal liquids ran along faults and fractures in the rocks. When the fluid cooled or reacted with other rocks the gold which it was carrying remained in cracks and fractures forming gold veins. Primary deposits in Victoria categorised into three types: orogenic deposits; Volcanic-hosted massive sulphide (VMS) deposits; and Intrusion-related gold deposits.

Secondary deposits on the other hand were formed by primary deposits being exposed to the elements and breaking down into fragments which are carried away by wind water or ice and redeposited.

Victoria

For Victoria, gold is the metal that enabled the State to transform from a minor British colony to the home of the wealthiest city in the world at one time. Although the Victorian gold rushes of the 1850s have past, and the easily won gold that inspired the rushes has been exhausted, Victoria remains a recognised global gold province with significant reserves of gold still to be discovered. Historically 80 million ounces (Moz) of gold has been mined in Victoriaⁱⁱ, worth over \$150 billion at today's gold priceⁱⁱⁱ. Recent geological research suggests that there remains between 15 and 70Moz of gold yet to be discovered beneath cover in the region north of Stawell and Bendigo (the Bendigo and Stawell zones)^{iv}. Even at the lower end of the spectrum this is a significant amount of gold and, at today's prices could be worth between \$25b and \$130b. This provides substantial opportunities for industry to invest in Victoria.

At present Victoria has gold mines operating at Stawell, Ballarat and Fosterville, as well as old mine sites under redevelopment at Walhalla and the A1 gold mine site near Mansfield. The mine at Bendigo has been placed under care and maintenance. The long operational lives of these mines are an example of both the richness of Victoria's historical gold fields as well as the long term potential of mines for future discoveries. With the current upward trend of the price of gold, the rich goldfields of Victoria that have yet to be fully exploited represent significant exploration and development opportunities.



The Latrobe Nugget found in Victoria in 1853. Weight 23.05 Oz. This nugget is an exceptional specimen because of its heavily crystallised structure rather than its size.
Source: Wikimedia Commons.



A space suit from the Apollo 15 mission to the moon, note the visor's gold coating to protect the astronaut from the infrared radiation from the sun.

Source: Wikimedia commons

Use

Aside from its use in jewellery and as an investment reserve, gold is extremely useful in the scientific, medical, engineering and technological fields. The usefulness of gold stems from the unique collection of properties it possesses. These properties include:

- Corrosion and tarnish resistant
- High electrical conductivity
- High ductility and malleability (gold is the most ductile and malleable metal, enabling it to be rolled so thin it is transparent and it can be spun into fine thread or wire)
- Infrared (heat) reflectivity
- Thermal conductivity

Due to its unique collection of properties gold is used in a variety of applications, including but not limited to:

- Jewellery
- Electronics
- Dentistry and medicine
- Aerospace and engineering

ⁱ Victorian Government, Department of Primary Industries: Gold Fact Sheet

<http://www.dpi.vic.gov.au/earth-resources/minerals/metals/gold>

ⁱⁱ Ibid DPI.

ⁱⁱⁱ For a current gold price see: <http://www.perthmint.com.au/metalprices.aspx>

^{iv} Victorian Government, Department of Primary Industries: Gold Undercover

<http://www.dpi.vic.gov.au/earth-resources/about-earth-resources/projects/gold-undercover>

^v Although the gold standard, the monetary system by which currencies were valued against set amounts of gold, is no longer used, gold is still widely held by governments, central banks and investors as a financial reserve.