

Jean Cocteau

Empress Marie Theresa

Duchess of Windsor

Information Pack

for Teachers

Incan

Bendigo

Pharaohs

Napoleon

Althorp

Barbara Hutton

Viking

Ballarat

AND CIVILISATION

Etruscan

Egyptian

Cartier

Fabergé

Russian Czars

Sheikh El-Ard Rifaat

The Vatican



Gold

AND CIVILISATION

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Gold & Civilisation

An exhibition featuring some of the world's great gold treasures

Gold and Civilisation is an exciting blockbuster exhibition on display initially at the National Museum of Australia and then Melbourne Museum. The exhibition explores our timeless fascination with gold and reveals how its discovery has contributed to the development of modern Australia.

Set in an international context, Gold and Civilisation examines how other cultures and times have regarded the qualities of gold. It brings to life the allure of gold and explores the powerful place gold has in the human imagination.

World Gold

Gold has often been of special religious and secular importance. Finely crafted objects such as the Papal Tiara used by Pius IX and John XXIII, a mummy head-covering and the breakfast service of the Empress Maria Theresa all feature in the exhibition. Among them they tell the stories of our relationship with gold over time, showing how different royalties, power elites, religions and cultures have cast their different meanings onto gold.

The artefacts in the exhibition represent 35 countries, including Austria, China, Denmark, France, Indonesia, Ireland, Israel, Italy, Mexico, Poland, Russia, Switzerland, Spain, Turkey, the United Kingdom and the Vatican. These objects all represent the highest artistic standards of their culture.

Australian Gold

The Australian section of the exhibition explores how the discovery of gold in Australia has had a profound effect on our development as a nation in a number of ways — economically, politically and socially.

It triggered immigration on a grand scale. Although most migrants were from Europe, there were those who came from a more diverse background, including California, South America and China. The latter tended to be younger and more skilled.

The discovery of gold was a catalyst for the opening of the Australian continent. Exploration and land settlement saw the establishment of rural centres and the infrastructure, such as roads, railways, bridges and communication lines, to support their growth.

It led to rapid economic expansion. Gold provided a firmer financial base for Australia, encouraging foreign investment. Primary production expanded to support an increase in migrant numbers.

Different forms of gold led to diverse technological advancement, particularly in engineering. Most miners used pans or a cradle, but sinking shafts and later heavier mining machinery, were developed.

Gold was also a catalyst for significant political change. Immigrants brought with them ideas derived from their own societies. These ideas helped the push for independence and later added strength to the Federation movement.

Within this dramatic national story are many individual stories - the stories of miners, goldsmiths, ex-convict diggers, prospectors, artists, entertainers, merchants, doctors, bankers, the Chinese people, Aboriginal people, women, children and explorers. These are told through a series of personal narratives, photographs and memorabilia. Painting, prints, drawings and decorative arts are a particular feature of the Australian section of the exhibition. It is the first time such a large selection of Australian art from this period has been brought together.

This artwork has been loaned by national, state and rural museums, galleries, universities and other cultural institutions Australia-wide. It shows the commitment of the National Museum of Australia and Museum Victoria to developing collaborations across Australia and internationally to assist in telling stories of Australia within the context of the world.

A joint initiative with Art Exhibitions Australia Limited, Gold and Civilisation is on display at the National Museum of Australia from 11 March until 24 June 2001.

It will then be on display at the Melbourne Museum from 19 July to 21 October 2001, where it will play a part in the celebration of the sesquicentenary of the first discoveries of gold in Victoria.

Life on the Goldfields

Background information for teachers

In the decade from 1851, half a million people from Britain, Europe and North America flocked to the fledgling colony of Victoria in search of a fortune they hoped they would find on the goldfields. Instead they found accommodation scarce and everything from food to travel exorbitantly expensive. Hopeful diggers often spent their small reserves of capital on a few days stay in Melbourne and ended up auctioning precious possessions then setting off for the diggings on foot.

Colonial officials had little time to worry about the colony's transport problems, and most of the 'roads' were dusty tracks in summer and muddy bogs in winter. The cost of cartage was enormous during winter, sending the price of provisions on the goldfields soaring. Life on the diggings was not easy. Digging was a back-breaking, dangerous, dirty occupation with no certainty of any return. However, at a time when most laboured long and hard just to keep food on the table and a roof over their heads, when an accident or bout of sickness could plunge a family into poverty, it is small wonder that the chance to 'make a fortune' induced men to flock to the diggings.

In the early years most mining was for alluvial gold. The claim was opened up as a pit exposing the gold bearing ore. The rich soil was brought up in buckets and carried to the creek in a cart or wheelbarrow, where a dish, cradle or later a puddling tub, were used to separate the gold from gravel and light soil. As the claim was normally some distance from the tent, diggers usually worked in small groups, sharing possessions and profits. This allowed one person to remain behind to do the cooking and guard the belongings and the others to share the labour most efficiently.

Living conditions were often primitive. Tents, usually made of cotton, were pitched haphazardly. Packing cases, logs and stumps served as furniture, with a mound of straw or leaves on the floor and covered by a flea ridden blanket, serving as a bed. Food was expensive and monotonous. Poor diet was responsible for the continual festering of abraded hands which few diggers could avoid. Inadequate sanitary arrangements and polluted water led to outbreaks of dysentery, and sand fly bites caused 'sandy blight'. Hygiene was also a problem and the diggers were prone to a variety of illnesses. Injury and death from mining accidents were also numerous. Doctors, many of whom had no qualifications except initiative, did a thriving trade.

Clergymen came to the goldfields to bring the word of God to the diggers. Often they preached in the open air. As well as doctors and sly-grog sellers, others such as storekeepers, blacksmiths, tinsmiths, dentists and chemists, made a good living. There was usually more money to be made selling goods and services to diggers than there was from digging for gold.

At night diggers spent their evenings smoking their pipes and telling stories around the fires. Gambling was a common pastime and games such as 'two up' or tossing for nuggets were very popular, as well as a variety of card games. The night air was often filled with music. Fiddles, flutes, banjos and songs of home could be heard across the diggings. Authorities initially banned alcohol from the Victorian goldfields, but numerous 'coffee shops' had a good trade selling sly grog. Apart from license evasion, the most common crime on the goldfields appears to have been drunkenness which spilled over into violence.

Initially a license fee had been fixed at thirty shillings a month and anyone caught searching for gold without permission could be prosecuted both civilly and criminally. By allowing claims as small as eight square feet per person the government unwittingly allowed multitudes equal access to the gold. They hoped to limit the number by enforcing high taxation through the license but this was not sufficient to discourage the gold seekers. Licenses were issued by goldfield commissioners and had to be shown on demand. Failure to produce a license could result in imprisonment. The agitation against the licensing laws led government officials to fear revolution was imminent.

Governor La Trobe set up the Gold Commission. Commissioners were to issue licenses and detect defaulters, guard the fees and gold for escort, settle disputes and be responsible for order in their field. Many of the commissioners were inexperienced youths, some were corrupt and others manifestly incompetent. Many of the police officers on the goldfields had been convict superintendents and many of their subordinates were ex-convicts. The government gave half the proceeds of fines for sly-grogging and license-fee evasion to the police officer responsible for the conviction. This led to other duties being neglected and widespread blackmail and perjury.

The Victorian government reviewed the license system three times — in 1851, 1852 and 1853 — and each time it was renewed. In 1851, a move to increase the fee to sixty shillings a month brought violent opposition and the government reverted to thirty shillings a month. Although the fee was considered unfair as it was levied against unsuccessful as well as successful miners, it was the actual

method of collection that caused the greatest conflict. Government officials were often arrogant and rude. Cases of wrongful arrest and harsh treatment were frequent. Often no distinction was made between diggers not paying their fees and criminals, even murderers. Many of those enforcing the system thought that it was needlessly harsh and unreasonable.

A proposal to exact an additional export levy on gold caused strong digger agitation at both Castlemaine and Bendigo. A delegation was sent to Melbourne and this proposal was voted out.

In May violence broke out at Castlemaine. Police raided a coffee house and surrounding tents when it was suspected illegal liquor was being sold. Using, what the diggers saw as extreme and undue violence, they evicted many people including women and children. The diggers were incensed at what they saw as the 'tyranny' of the police.

In June, the Anti-Gold-License Association was formed in Bendigo and in July, a petition was adopted listing the diggers' grievances. More than 5 000 signatures were obtained, but the meeting with Governor LaTrobe was unsatisfactory. Due to the strain of long service and family responsibilities, La Trobe requested permission to resign and in June 1854, Charles Hotham took over as governor of the colony. He was a most unwilling governor, and endeavoured to convince both the Duke of Newcastle and the Prime Minister that a better choice of governor could be made. On arriving in the colonies he was horrified to discover the extent of evasion of the license fee and the accompanying loss of revenue. However, initially he was regarded as liberal and friendly to the diggers.

As the license hunts increased and petty acts of persecution continued, the diggers again began to agitate. The event that brought all the underlying unrest to a head was a case of blatant maladministration of the law. A Ballarat hotel proprietor, Bentley, was one of a group that kicked to death a drunken digger. Bentley's hotel was a favourite drinking place for camp officials, and despite evidence which clearly made a case for committal, the case was dismissed. A mass meeting to call for the re-opening of proceedings was held and Bentley's hotel was set on fire. Hotham immediately ordered the re-arrest of Bentley, but also sent more soldiers and police to Ballarat. Three men were arrested who were no more guilty than hundreds of others. Hotham was determined to make an example of them and the three men were found guilty.

When a deputation to Hotham failed to secure the release of the men, a meeting in Ballarat moved to abolish the license system by burning the licenses. A provocative license hunt, where shots were exchanged and prisoners taken, was the catalyst for a crowd to assemble on Bakery Hill. Later, the crowd moved to Eureka Lead where a rough stockade was erected. On Friday 1 December, approximately 1 000 diggers manned the stockade amid great confusion. As tempers cooled on the Saturday, diggers were undecided on their course of action and on Saturday night, believing nothing could happen on a Sunday, many left the camp.

Of the 150 or so that remained, nearly all were asleep when the alarm was raised that almost 400 troops and police were approaching. Determined to teach the diggers a lesson, the order to attack was given. Within a short time it was all over and nearly 100 prisoners were taken from the stockade. Five soldiers were killed, twelve seriously wounded and about thirty diggers were also killed or later died of wounds.

When news of Eureka arrived in Melbourne there was initially huge support for Hotham and the troops. However, the tide of opinion changed and a public meeting moved a resolution in favour of the diggers. This marked the emergence of a strong, popular democratic movement.

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Life on the Goldfields

Activity Sheet

What if?

It is interesting to explore the goldrush not only in terms of individuals and personal stories, but in terms of the effect it had on society at the time. The discovery of gold in Australia had an enormous impact on our development as a nation — economically, politically and socially.

It triggered immigration on a grand scale. Although most immigrants were from Europe, there were those who came from other backgrounds, including California, South America and of course China. The latter tended to be younger and more skilled.

The discovery of gold was a catalyst for the opening of the Australian continent. Exploration and land settlement saw the establishment of rural centres and the infrastructure, such as roads, railways, bridges and communication lines, to support their growth.

It led also to rapid economic expansion. Gold provided a firmer financial base for Australia, encouraging foreign investment. Primary production expanded to support an increase in migrant numbers.

Different forms of gold led to diverse technological advancement, particularly in engineering. Most miners used pans or a cradle, but sinking shafts and later heavier mining machinery were developed.

It was also a catalyst for significant political change. Immigrants brought with them ideas derived from their own societies. These ideas helped the push for independence and later added strength to the Federation movement.

- 1 How do you think the development of Australia would have been different if the goldrush had not occurred or had occurred at a different time in Australia's recent history?

- 2 Explore, through group discussion and further research, how our migrant population, economic base, technological advancement and settlement of the inland might have been different had gold not been discovered or had been discovered at a different time. Try to make connections between developments at the time and our society today.

Present your findings in essay form.

Commission of inquiry

- 1 Set up a classroom commission of inquiry into life on the goldfields. Investigate the life of different groups on the goldfields such as miners, doctors, artists, entertainers, women, children, and Chinese or Aboriginal people. What activities did each of these groups perform? What was life like for them on a day-to-day basis? What hardships and injustices did they face?
- 2 Write a report of your findings and present it as if to a contemporary commission of inquiry. Make recommendations as to how conditions could be improved for the particular group of people you are representing. The commission should then report back on its recommendations to the class.
- 3 A number of students might like to take on the role of the media. They can report on the proceedings, offering an overview of the inquiry and a summary of the commission's decision.

A symbol of a free Australia

The Eureka flag was, and to an extent still is, used as a symbol of a free and independent Australia. The Aboriginal and Torres Strait Islander flags are also used as symbols of an Australia that is not descended from Britain.

- 1 Discuss the symbolism of these flags and the symbols inherent in the current Australian flag. Do you think the flag should change if Australia were to become a republic. Why?
- 2 Design a flag that symbolises your school or community.

Eureka!

Set up a series of debates looking at the events surrounding the Eureka Stockade. Assign one group of students the miners, and the other the soldiers. Ensure that you explore different aspects of the rebellion and debate the issue as if you were there at the time. Here are three debate topics that you might like to explore:

- The Eureka Stockade was an unjustified rebellion against authority.
- The licensing system was unfair and oppressive.
- The Eureka Stockade was a legitimate fight against oppression.

Strike it rich!

When gold was discovered in Australia, news spread around the world and people flocked to the goldfields in the hope they might 'strike it rich'. They left their homes, and often their families, travelling vast distances through challenging conditions and settling in tents and huts on the goldfields.

- 1 People continue to try to 'strike it rich' today. List ways people do this, for example, lotteries, the TAB, the stockmarket, the Internet, raffles and so on.
- 2 Conduct a survey in your community which explores ways people might try to 'strike it rich'. Ask questions to find out what speculative activities people engage in, how often they engage in them, what motivates them to take part in such activities, and what the success rate is. The results could be collated and shown in graph form.
- 3 As a class discuss further what sort of effects such 'gambling' has on society.

Paint your own picture...

Research further the life and experiences of people on the goldfields. Look at the conditions in which diggers lived and worked and paint a wall frieze that brings to life these experiences. Each group should paint a different 'scene'. Ensure, however, that you work together so that your frieze tells a complete 'story'.

The frieze can be displayed in your classroom, or in the school's main entrance.

Gold today

Much of our understanding of gold is of its importance historically, of the timeless allure and fascination with gold, the different meanings explorers, artisans, religious people and royalty have attributed to it.

But what of gold today? How is it used?

- 1 Construct an ideas web that details as many uses for gold that you can think of — for example jewellery and decorative items, coins, electrical and computer circuitry, space technology and medicine.
- 2 As a class, extend this discussion of the usages of gold into the importance or value of gold today. Discuss its importance not only economically, but technologically, politically and socially. Sort your previous responses of the varied uses for gold under one of these headings and compare them with the rest of the class.
- 3 In groups, investigate the importance of gold in one of these areas. Decide which use for gold you consider most important and set up a debate forum to argue this.

Minorities on the Goldfields

Background information for teachers

Women

At first, life on the goldfields was thought to be too hard for women. Not only was the work arduous, but the rowdy behaviour and colourful language were judged unsuitable for 'respectable' women. As time went on more and more women braved the rigours of the goldfields to work with their husbands and raise their families. They became an accustomed, if not an accepted, part of life on the goldfields.

Some women, such as Martha Clendinning, opened stores; others worked alongside their husbands. Martha Clendinning, a doctor's wife, developed an admiration for such women who were able to successfully carry out all manner of employment. Many men were happy to hand over the drudgery of tent-keeping to their women. In official circles, the presence of women was seen as a positive step towards better morality on the goldfields. Women such as Mrs Andrew Campbell founded Sunday schools for the children on the diggings, which led to government schools being established on the goldfields.

Caroline Chisholm's Family Colonisation Society promoted female immigration to Australia during the gold-rush era. The colonial authorities supported all attempts to redress Australia's population imbalance, although there were those who saw such schemes as trafficking in women. While the authorities felt the need for 'respectable' women on the goldfields, their detractors thought that the 'respectable' thing for women to do was stay at home.

Not all the women on the goldfields aspired to respectability. One of the first women on the Mount Alexander goldfields was Mrs Finch. She walked from Melbourne wheeling a barrow containing a washing tub and other necessities. After setting up her tent, she charged sixpence a nip for the brew mixed up in the wash tub. Two women at Bendigo, noted for their size, owed their ample girth to tin containers strapped around their waist from which they dispensed spirits through a tube sticking out of a side pocket. Prostitution and sly grogging seemed to go hand in hand, although such activities are rarely recorded in accounts of goldfields life.

Chinese

Chinese people had been in Australia well before the gold rushes began. Brought out by the squatters, they worked as shepherds, labourers, cooks and household servants. However, with the discovery of gold, what had been a trickle turned into a steady stream as thousands flocked to the goldfields. Initially they were looked on with amusement due to their dress and appearance. Their loose clothing, upturned shoes, wide-brimmed hats and pigtails gave them a singular appearance, as did their habit of carrying their belongings in baskets on either end of a long pole supported on their shoulders. This made them the butt of jokes from diggers and settlers alike.

The Chinese people who came to Australia were mainly peasants, small farmers or traders. They were all male and usually came in organised groups under the credit-ticket system. This meant they were bound to wealthy Chinese merchants. The merchant paid for their passage and gave them rations and sometimes a small wage, but they had to work for the merchant for twelve months and any gold they found during this time belonged to their creditor. They intended to make their fortunes and return to China quickly.

The Chinese worked hard on the goldfields, usually working abandoned ground. They worked in gangs and thoroughly and patiently re-worked 'tailings' and creek beds already discarded by Europeans. Often they found profitable amounts of gold in places that Europeans had given up on. As gold became harder to find, diggers began to resent the fact that Chinese people appeared able to find gold where they could not. However, only very few Chinese struck it rich. Most successful Chinese people in the goldfields were in employment rather than mining. Storekeepers, gardeners and saloon owners often made a very profitable living. However, this did not stop other miners from complaining that the Chinese were 'unfair' competitors.

In 1854, Chinese people landing at the wharf in Melbourne were set upon and beaten. Later in the same year, a group were driven from the Bendigo goldfields, and troops were called from Melbourne to quell the riot. The press at Bendigo also waged a campaign against the Chinese, asserting that they held 'disgusting practices, fearful immorality and unknown vices'.

The Gold Fields' Commission of inquiry, set up after the Eureka Stockade, decided that restrictions should be placed on Chinese immigration. This led to a number of restrictive measures against the Chinese, including a ten-pound tax on each Chinese arrival. However racial violence continued. The colonial legal system did nothing to help the Chinese. The police often used illegal and violent means to arrest Chinese people. The Chinese were not allowed to serve on juries and Chinese evidence was often disregarded unless corroborated by European testimony. Europeans assaulting Chinese were generally found not guilty. While European vagrants were usually imprisoned for seven to fourteen days, Chinese vagrants were often sentenced to hard labour for eight to twelve months.

Some Chinese (over seventy reported cases) became so depressed by the constant racial violence that they suicided. Goldfields racial violence continued well into the 1860's by which time the Chinese population had declined dramatically with about 10 000 returning home and those that were left only making a meagre living.

Aboriginal people

During the colonisation of Victoria, thousands of Aboriginal people were either killed or brutally disposed of their land. The colonists believed that the British race was the greatest and most civilised in the world, and as Aboriginal people did not plough land and grow crops, it was their right to take the land and 'use it properly'. Aboriginal people were not only killed in battle and given poisoned food, but diseases brought by Europeans, such as measles and influenza, had a devastating effect on a people who had developed an immunity.

In 1839, George Augustus Robinson was brought from Van Dieman's Land (Tasmania), as Chief Protector of the Port Phillip protectorate, which was established in 1843. The protectors were to act as intermediaries between the Aboriginal people and the settlers. However, the effects of warfare, disease and the spoiling of traditional hunting grounds by introduced livestock and the fencing off of water supplies, had taken their toll. By the time gold was discovered in Victoria, the Aboriginal population was almost decimated. It is estimated that by 1850 the population had fallen to about 2 000.

The Central Board, later the Board for the Protection of Aborigines was created in an attempt to 'settle and civilise' the remaining Aboriginal population. However, most Aboriginal people preferred to live an independent existence by rural labouring and traditional food gathering. As the rush to the diggings took labour from the land, some runs were staffed entirely by Aboriginal labour. As it was not part of their culture, Aboriginal people were not affected by the lure of gold. In the 1840's, the native police force had been formed to use traditional enmity as a means of controlling the Aboriginal population. They were seen as being ideally suited to goldfields assignment, as they were less likely to succumb to 'gold fever' and could be quickly mobilised and moved from one diggings to another.

Other Aboriginal groups paid regular visits to the goldfields selling possum-skin rugs. Due to the proximity to a good water supply, Aboriginal groups often camped close to the diggings and soon learnt of the value of the golden specks found in the soil. Although there is not a great deal of evidence of Aboriginal diggers, there is a report of a group of Aboriginal people who were digging at Forest Creek. When asked to show their licenses, they asserted their rights over the land and any gold that was in it.

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Minorities on the Goldfields

Activity sheet

Women on the goldfields

- 1 Make a list of the sort of occupations women might have had on the goldfields.
- 2 Write a story from a child's perspective about a day on the goldfields. In your story you should comment in particular on the role of women.
- 3 Debate the topic "Women would improve morality on the goldfields".

Chinese people on the goldfields

Here is an extract of evidence presented to the commission on the Chinese in Victoria from 1854 to 1855.

Charles James Kenworthy, American, Ballarat, on 23 December 1854.

- 1364 *There are a number of Chinamen here now, are there not? —* Yes; and they are the greatest nuisance on the diggings, and the government ought to take some steps, if not for their removal, at all events to prevent their increase; they are a nuisance; they spoil all the water on the goldfields, and will merely work upon the surface.
- 1365 *How do they spoil the water? —* By washing in it; they do nothing but surfacing.
- 1366 *Is there any other disadvantage connected with them? —* They are a notorious set of thieves.
- 1367 *Has your attention been drawn to their morality? —* I think they are sober, and industrious, and quiet, but I am satisfied, from personal observation, that they are a set of thieves.
- 1368 *Do they appear in the police court for thieving? —* I have visited the police court so seldom that I cannot answer that question. I have been encamped near some twenty Chinamen's camp for some six months, and they would come in front of our tent and pick up a log, at six o'clock in the morning, and walk away with it.

1369 Do you think they understood the difference between taking it on another man's property and taking it on their own? — I think when it is 200 feet from their tents they ought to know the difference.

1370 Do they mix with other people? — They generally keep by themselves; they are the most notorious gamblers in existence.

From Ian F. McLaren, 1985. *The Chinese in Victoria: Official Reports and Documents*, Red Rooster Press, Ascot Vale.

- 1 What sort of 'washing' do you think Charles Kenworthy objected to?
- 2 Do you think Kenworthy gives sufficient evidence to support his claim that the Chinese were 'a notorious set of thieves'?
- 3 What other accusation about the Chinese does Kenworthy make? What evidence does he give to support this accusation?
- 4 Why do you think Kenworthy would have held these views? Do you think they would have been widespread on the goldfields? Explain your answer.
- 5 From Kenworthy's statements why do you think there was conflict between the Chinese and other diggers?

Aboriginal people on the Goldfields

- 1 Research all of the books in your school library that deal with the goldrushes and see how many of them refer to Aboriginal people.
- 2 Using books on Aboriginal history, research what was happening to Aboriginal people at the time of the Victorian goldrushes.
- 3 Discuss with your teacher and other students what you have discovered from the above two pieces of research.

Gold: The Yellow Metal

Background information for teachers

No other element fascinates people as much as gold. Its easily recognisable colour and metallic lustre ensure that it is as eagerly sought after today as it was during the nineteenth century gold rushes in America and Australia and even as far back as the Pharaohs.

On daily news services the price of gold is regularly reported, providing an insight into the global economy. Whilst many bank vaults around the world are filled with gold bullion and ingots, still the search for undiscovered deposits continues and the cries of 'gold' can spark the imagination.

Name	Gold
Symbol	Au
Atomic number	79
Mass number	196.96
Melting Point	1063°C
Boiling Point	2807.8°C
Density	19.32 g/cm ³
Malleability	High
Ductility	High

Mineral Deposits

Gold is a naturally occurring metal found in low concentrations throughout the Earth's crust.

Many millions of years ago, gold was sweated out of rocks buried deep beneath the earth's surface.

Hot solutions of salty water carried the dissolved gold towards the surface. Before reaching the surface the solutions cooled. This caused the gold to crystallise as particles ranging in size from small grains to large nuggets. These particles were often enclosed in quartz reefs.

After millions of years of erosion, the quartz and gold veins are eventually exposed to the atmosphere and carried into nearby streams and soil.

A valuable substance

Gold is not only prized because of its rareness but also due to its many unique properties.

It is soft enough to cut with a knife yet firm enough to maintain its shape. It also doesn't tarnish or corrode. This makes it ideal to be used in jewellery with designers moulding it into shapes for rings, earrings and watches.

Carats

The gold content of jewellery is expressed as 'carats'. Pure gold is known as 24 carat gold. 18 carat gold contains 75 per cent pure gold. 18 or 9 carat gold is often used in jewellery as it is harder than 24 carat gold.

Like most metals, gold is malleable and can be hammered into sheets. A single ounce of gold can be stretched into a thin wire about 80km long making it extremely ductile. Very thin, almost transparent gold leaf is used to decorate books, picture frames, statues and even architectural features such as ceilings.

Gold plays a critical role in the telecommunication and electronic industries. Its ability to conduct electricity, and withstand extremes of heat make it ideal for use in computers, VCRs and digital cameras.

Spacecraft, satellites and even space suits worn by astronauts are coated in gold foil to reduce heat and glare. Gold reflects solar radiation. In other words, it is difficult for rays of light to pass through gold. Therefore it acts as a protective barrier against heat.

In the past, gold was thought to heal the sick and protect against evil spirits. Today it is used in a wide variety of medical practices due to its non-toxicity, malleability and because it never rusts or corrodes. Dentists use it to replace and repair teeth. It is also used in the treatment of some cancers. For example, microscopic gold pellets are used in the treatment of prostate cancer. Gold instruments and gold-coated lasers are used during operations. It is also added to other substances to create new medical drugs.

Gold is an extremely versatile and durable substance. It is unaffected by sunlight, fire, most acids and seawater, making it virtually indestructible.

Searching for gold

The value of gold has long been recognised. Many attempts have been made to try and recreate gold out of other metals. Alchemy dates from about 300 BC in Ancient Alexandria and was particularly popular during the Renaissance period through to the eighteenth century. Many different ingredients were added together in varying quantities in the hope of producing 'the philosopher's stone' which could turn base metals into gold. Unfortunately the recipe has never been found, but the work of alchemists in studying chemical substances led to the beginnings of the science of chemistry.

During the American and Australian gold rushes, prospectors found gold through panning river gravel. Some prospectors were lucky and found large pieces of gold known as nuggets. Many people arrived on the goldfields expecting to find it littered with lumps of gold. The largest nugget found was the 'Welcome Stranger' found on a bush track near Moliagul, 60km west of Bendigo, in 1869. It weighed 72 kilograms.

Very few of these gold rush nuggets still exist. Most were melted down for cash to buy provisions or to finance further mining activities.

Today, the mining industry is the major supplier of gold. Geological surveys are carried out to find out if areas contain gold in concentrations suitable for mining.

As part of the mining process gold-bearing rock is blasted, excavated and then crushed into powder. The powder is then mixed with water to form a slurry. Depending on which other minerals occur with the gold, several other processes can then be used to recover the gold. The newest method uses carbon pellets to adsorb the gold, which is then removed by dissolving it in cyanide solutions. Passing an electric current through the solutions results in gold precipitating on an electrode. The crude gold is then roasted and melted several times before it is 99.9% pure. This gold is called bullion and is cast into ingots.

The mining process creates a number of environmental concerns. Open-cut mines may use large areas of land which need to be extensively rehabilitated after mining has ceased. Chemicals such as sodium cyanide and arsenic, used as part of the extraction process, can leach into surrounding waterways and soil creating problems for plant and animal species.

The mining industry operates under a series of guidelines to ensure that environmental impact is minimised.

Australia is the third largest producer of gold and produces about 300 tonnes annually.

Did you know:

The 8 kg 'Pride of Australia' nugget, found in Wedderburn in 1981, was stolen from a Museum of Victoria display case in 1992. It has never been recovered.

Gold: The Yellow Metal

Activity Sheet



Across

3.
5.
7. can be stretched into wires
9.
10. method of searching for gold
11. symbol for gold
12.

Down

1. largest gold nugget
2. way in which gold can be used
4.
6.
8.

What's in a word?

- 1 Use each of the following terms in a separate sentence with the word gold:

soft

rare

heat

indestructible

corrode

- 2 Match the following gold properties with the most appropriate use:

Property

Use

Malleable and durable

Astronaut's suit

Malleable, lustre,
doesn't corrode

Ring

Malleable, ductile, reliability
good conductor

Coat metal and
glass objects

Malleable, lustre

Teeth

Reflect radiation

Telecommunications
wiring

Problem Solving

- 1 Gold is much heavier than water. It is actually 19.3 times denser than water. If a litre of milk weighs 1 kg how much would a litre of gold weigh?
- 2 Ingots are made at the Perth Mint by pouring 300 mls of gold into a mould. How much would these ingots weigh?

Lucky you!

You've just been panning in the bush and found an ounce of gold!

- 1 Look in the newspaper or watch the news on TV for today's gold price. How much is your gold worth?
- 2 For the next month record the price of gold each day. Record your findings as a graph. Is your gold worth more or less than when you first received it?
- 3 What date would have been the best date to sell?
- 4 Are you going to keep or sell your gold? Explain.

She's worth her weight in gold!

- 1 Karla, a Year 8 student, has won a local competition where she will receive her weight in gold.

$$55\text{kg (Karla's weight)} \times 1000 = 1768 \text{ ounces}$$

31.1

- 2 Use the newspaper to calculate how much Karla is worth.
- 3 If you had won the competition how much would you be worth?

Yellow, white or red?

- 1 Using the internet or your local library find out what material is used to make the following types of gold:

Yellow Gold

White Gold

Red Gold

Mining gold

1 A number of gold mining companies operate in Australia. In a small group select one of these companies and find out about their operations. Present your findings to the rest of the class. Your presentation might include information on:

- Name of the company
- Location of mining operations
- Mining operation techniques
- Amount of gold extracted
- Who buys the gold
- Rehabilitation programs
- Other interesting facts

Imagine

1 In 1652, in a cellar deep below the streets in a European city you are working to discover the recipe for the 'philosophers stone'. Write a short story of your experiences.

2 Millions of years ago gold was sweated out of rock buried deep beneath the earth's surface. Write a newspaper report 'From Rock to Leaf' to explain how this gold has ended up as part of a picture frame in an art gallery.

Old Gold and Tall Tales

Background information for teachers

Important dates in the history of gold

For at least the last 6 000 years, people have believed that gold was worth finding and more importantly — worth keeping. We can see by the way gold has been treated and used by ancient societies, that it was a valued and precious commodity. Many cultures believed that it came from the sun and often made it a symbol of their most important gods.

Did you know that:

- Gold was probably found on the ground and used by prehistoric people as a tool.
- **4000 BC**, gold was first known to be used in parts of Central and Eastern Europe.
- By **3000 BC**, many places in the Middle East and South Asia were working with gold with great skill and craftsmanship. For example:
 - the Egyptians had mastered the art of beating gold into gold leaf and alloying it with other metals.
 - delicately designed and made gold art objects and jewellery dating back to around 3000 BC have been discovered by archaeologists in the Royal Tombs at Ur (Mesopotamia), in what is now Southern Iraq.
 - the Hindus of India began their 5 000-year tradition which values gold as the noble metal — the substance which brings luck, removes sin and cures sickness.
- One of the very earliest civilisations, Sumeria, valued gold so highly that only kings and queens were considered worthy to wear it. On a gold helmet found at the royal tomb of Ur, each strand of the king's hair is engraved individually (**2000 BC**). The engraving methods used on the sheet-gold helmet are still used today.
- By **1500 BC** the Shekel (two-thirds gold) was used as a standard unit of measure throughout the Middle East
- The Egyptians were the first to mine gold rather than search for alluvial deposits, and they were the large-scale gold producers of their time. They used gold rings as currency and were the first to award military medals, also of gold. The Egyptians believed in life after death and they buried objects of imperishable gold with the bodies of kings and nobles preserved for eternity.

One example is the 111kg beaten gold coffin of the Pharaoh Tutankhamun, (**1352 BC**), which was just as beautiful when it was excavated as when it was buried 3 000 years before. It is the largest gold object known to survive from the ancient world.

- Goldsmiths of the Chavin civilisation in Peru were making ornaments by hammering and embossing gold by **1200 BC**.
- In **1091 BC** squares of gold were legalised in China as a form of money as an alternative to silk.

- A method still used today to test for gold content in carats is based on a system developed by the merchant empire of Lydia, 670 to 546 BC.
- The Etruscans, who lived in north-western Italy before Roman times, are still considered to be the finest goldsmiths of all time. They took gold so seriously that their jewellery was made only from the precious metal.
- Gold threads were used on the embroidered badges of rank worn by officials of Ming Dynasty China in about 1250 AD.
- By the 12th to 16th centuries in Europe, gold took on a religious significance and represented eternity. Very little gold was mined during this period and the resulting shortage caused alchemists to search for a way to transform other substances into gold. Although they were unsuccessful, their attempts were the forerunner of modern chemistry.
- The Celts of Ireland were considered to be the finest European goldsmiths during the Middle Ages.

Gold is still as precious as it was 6 000 years ago. Despite paper currency and credit cards, people still use gold as a secure form of wealth and a symbol of status and success.

So they say...

There are many 'sayings', stories and proverbs that talk about gold. These are just a few.

- 'The Golden Rule' — do unto others as you would have them do unto you.
- Stories from Ancient Greece such as King Midas, Jason and the Golden Fleece and the Golden Apple of Aphrodite.
- The Lydians, ruled by legendary King Croesus, produced the first gold coin for use as currency (money). Today, we still say a very wealthy man is 'rich as Croesus'.
- Spanish explorers went exploring in search of 'El Dorado' and 'The Seven Cities of Gold'.

According to legend, El Dorado was a golden city where the king anointed himself daily by bathing in a river of gold. The true story was discovered by a conquistador who found that the Chibcha Indians, in what is now Colombia, had once practised an annual ritual where the chief would roll in gold dust and wash himself in a sacred lake. The 'seven cities' are thought to have been adobe-plastered cliff dwellings shining in the sun.

Strange but true - even today

- In 1922 a medical study in France proved gold to be valuable in treatment of Rheumatoid arthritis.
- At a Japanese resort, businessmen pay by the minute to bathe in a solid gold tub cast in the shape of a phoenix.

Old Gold and Tall Tales

Activity sheet

Myths and Legends

- 1 Use the Internet or your library to find stories, myths and legends about gold.
- 2 Choose one story, myth or legend and re-tell it in your own words.
- 3 What role does gold play in the story you have chosen? Is it good or bad? Explain.
- 4 Make a copy of a world map. Using an atlas, locate where your myth or story comes from. Mark this on your map and use it to illustrate your story.
- 5 Place a large map of the world on your classroom wall and mark where your story comes from. Once everyone in your class has marked on the location of their story look and see whether every continent has stories about gold? Are there any continents which do not have gold stories? Explain.

Silence is golden

- 1 There are many sayings and proverbs that include 'gold' or are about gold:
 - Silence is golden
 - The Golden Age
 - All that glitters is not gold
 - The goose that laid the golden egg
 - Golden Rule

Select one of these and find out what it means.

- 2 Re-write the meaning in your own words.
- 3 Add another saying or proverb of about gold to the list above and write its meaning.

Gold at home

- 1 In your own house, find five objects that are either :
 - made from gold
 - designed to look like gold

2 Fill out the following table to describe your objects:

	Object	Made from gold/ designed to look like gold	Use or function	Value
1				
2				
3				
4				
5				

3 Are any of these objects very old? Do they have special significance to your family?

Celebrations and ceremonies

1 Which celebrations, ceremonies or events that you know about, include gold as part of the ritual? Make a list of these. For example: marriage — the couple exchange golden wedding rings.

Sing a song of gold

1 Find five songs (these could be from today or any era) that mention gold in the lyrics (words).

2 Write these lyrics down, and re-tell what they mean in your own words.

3 Write your own song or poem using gold as a theme.

Let's talk about it!

1 In groups, think about the term 'Gold Fever'. What do you think it means? What is the usual meaning of the word 'fever'? Discuss why these two words have been linked.

2 Imagine you are writing an article about 'Gold Fever'. Brainstorm and list all the things you would include in your article.

Imagine you are an artist

1 Imagine you are one of the artists responsible for designing gold objects for Tutankhamun's tomb. Design or make a model of a gold object and explain why it should be included in the tomb.

Gold

Curriculum Links for NSW and ACT Schools

ACT Upper Primary

SOSE (Studies of Society and the Environment)

- 1 Time, Continuity and Change
- 2 Resources
- 3 Place and Space

English

The Arts

Science

ACT Secondary

SOSE (Studies of Society and the Environment)

- 1 Investigation, communication and participation
- 2 Time Continuity and Change
- 3 Place and Space
- 4 Resources

English

The Arts

Science

New South Wales Primary

Human Society and It's Environment

- 1 Change and Continuity. Significant Events and Peoples — Stage3.
- 2 Environments. Relationships with Places — Stage 3.
- 3 Social Systems and Structures. Roles Rights and Responsibilities — Stage 3.

English

The Arts

New South Wales Secondary

History

English

The Arts

Gold

Resources on Gold

Books

Annear, R., 1999. *Nothing but Gold*, Text Publishing, Melbourne.

Audience: Lower and middle secondary. A lively history of life on the goldfields in the year 1852. Describes in detail the life of diggers, women and children and the much-hated licensing system.

Boardman, A. and Harvey, R., 1981. *Eureka Stockade*, Scholastic, Sydney.

Audience: Middle to upper primary. A picture book illustrated by Roland Harvey.

Buranelli, V., 1979. *Gold: An Illustrated History*, Hammond Incorporated, New Jersey

Audience: Middle and upper secondary. Provides a detailed overview of the use of gold from ancient times through to the present.

Carroll, B., 1999. *Gold - Focus on Australia*, Macmillan, Melbourne

Audience: Upper primary. Explores the gold experience Australia-wide, looking in detail at the Eureka Stockade, life and work on the diggings, early mining methods and Aboriginal people on the gold fields. Also discusses the place of gold in modern Australia.

Coupe, R., 2000. *Australia's Gold Rushes*, New Holland Publishers, Sydney.

Audience: Upper primary to lower secondary. Provides an in-depth exploration of all facets of the goldfields experience. This informative book is written in clear and simple terms. It features the key discoveries of gold in Australia, clear maps, historical drawings, engravings and paintings, and easy to read and understand text.

Gilbert, P.F., 1970. *Gold*, The Jacaranda Press, Queensland

Audience: Upper Primary, Secondary. Includes primary source material that explores life on the goldfields.

Hart, K. *The Discovery of Gold In Australia*, Zart Art, Melbourne.

Audience: Middle to upper primary. Features a range of visual arts activities — including drawing, collage, painting, murals and 3D construction — that enable students to explore all aspects of the goldfields experience. The book gives instructions on how to make a goldfields tent, design a Eureka Stockade mural and make a collage on how diggers looked, amongst other activities.

Jennings, M.J. (ed), 1966. *Australian Goldfields*, Hill of Content, Melbourne

Audience: Lower to middle secondary. A package containing copies of primary sources from the goldfields period including artwork, cartoons, newspaper clippings, photographs, song lyrics, excerpts from letters and maps.

Metropolitan Museum of Art. 1998. *Gold*, Simon & Schuster Editions, New York.

Audience: Secondary. A lovely small book describing the various ways in which gold has been used in Art. It also contains ideas and materials for making craft projects such as a Precolumbian mask, Babylonian pendant and coins.

Moore, G., 1999. *Gold in Australia*, RIC Publications, Greenwood.

Audience: Upper primary. A comprehensive package with a lot of information on the discovery of gold in Australia. It details the history of gold discovery, the impact on Australia and the environment, the processes of gold, important geographical information and life on the goldfields.

Morrissey, D., 1985. *Gold*, The Macmillan Company of Australia, South Melbourne

Audience: Primary, Lower Secondary. Provides brief discussions on a range of topics including living on the diggings, open-cut mines and ghost towns.

Scarre, C., 1993. *Timelines of The Ancient World A Visual Chronology from the Origins of Life to AD 1500*, Dorling Kindersley Limited, London.

Audience: Secondary. Includes information on how various cultures used gold.

Serle, G., 1963. *The Golden Age*, Cambridge University Press, Melbourne.

Audience: Middle and upper secondary. A history of the colony of Victoria from 1851 to 1861.

Stone, D.I (ed), 1974. *Gold Diggers & Diggings: A photographic study of gold in Australia, 1854-1920*, Lansdowne Press, Melbourne.

Audience: Upper primary to upper secondary. A large book containing over 270 photographs that bring to life the stories of miners and life on the goldfields. Detailed notes support the photographs, providing useful supplementary information.

Tonkin, R., 2000. *To the Goldfields!*, Allen and Unwin, Sydney.

Audience: Middle to upper primary. Offers a boy's view of life on the diggings. Readers get a sense of the daily commotion and activity on the gold fields.

Wheatley, N., 2000. *A Banner Bold*, Scholastic, Sydney.

Audience: Upper primary. A children's novel that details the diary and letters of Rosa, a child in the Ballarat gold fields. The story of the Eureka Stockade unfolds as the novel progresses.

Websites

National Museum of Australia

www.nma.gov.au

Includes a summary of the Gold and Civilisation exhibition at the National Museum of Australia. The website highlights seven objects from the collection — providing a glimpse into the exhibition — and includes a list of all the objects on display.

Sovereign Hill Education Service

<http://www.sovhill.com.au/education/>

Includes a selection of student activities ranging from general comprehension questions to making a timeline of gold. In addition, the site includes details of a global classroom project that encourages students Australia-wide to contribute to the story of Tim Flannigan, a miner on the Australian goldfields. The project follows a 'choose your own adventure' format, and guides students in adding dimensions to the story on the basis of their own research. The site also includes teacher strategies for teaching about gold and general information on the education programs available at Sovereign Hill.

Australian Geographical Survey Organisation

<http://www.agso.gov.au/>

Includes good general information on gold as a mineral and the technology associated with mining gold. The slide set on the technology of gold mining is a useful teaching resource.

Minerals Council of Australia

<http://www.minerals.org.au>

The Minerals Council of Australia promotes an understanding of the Australian minerals industry. The site includes details of a range of resources for lower primary to upper secondary.

Historic Bywong Goldmining Town

<http://www.bywonggold.citysearch.com.au>

The Historic Bywong Goldmining Town site details the 'hands on' experience visitors to Bywong Town can have. Students can pan for gold, work in the blacksmith shop, operate the whim, see the working machinery that extracts gold from ore and walk through an 1890s street and learn how people survived under the harsh conditions that existed on the goldfields.

Perth Mint

<http://www.perthmint.com.au>

This site provides a number of fact sheets on gold including its formation, mining in Australia and a history of nuggets.

Gold Institute

<http://www.goldinstitute.org/>

A range of interesting facts and figures about how gold has been used through the ages and its role in technology and medical sciences today.

World Gold Council

<http://www.gold.org/Welcome.htm>

Find out about world gold markets.

This resource list is not exhaustive. Its purpose is to offer a sample of the resources available for teaching gold in the classroom. The National Museum of Australia and Melbourne Museum take no responsibility for the content of these sites.