ASHET News

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Newsletter of the Australian Society for History of Engineering and Technology

100 years ago – notable events on sea, land and air in 1912

On 10 April 1912, the Cunard liner *Titanic* sailed from Southampton on its maiden voyage to New York. Four days later at 11.40 pm on 14 April the Titanic struck an iceberg in the Atlantic. It sank two hours and 40 minutes later, with the loss of over 1500 lives. On 18 April the Cunard liner *Carpathian* arrived in New York carrying 705 survivors.

On land, a notable event was the appearance of the first diesel locomotive designed for mainline service. It was built by Diesel–Klose Sulzer for the Prussian State Railway. It weighed 95 tonnes, had a power of 883 kw and a theoritical maximum speed of 100 k/h. It began trials in 1912, but never entered commercial service.

In that same year Henry Deane was appointed engineer in chief of Commonwealth Railways, with the principal task of directing the construction of the Australian transcontinental railway. Having experienced huge problems with steam locomotives, which needed to haul enough water to make the trip across the Nullarbor, and suffered serious boiler problems because of the poor water quality, he recommended the adoption of diesel locomotives. He was years ahead of his time. Diesel locomotives wee slow to develop. By the 1920s, they were being used as shunting locomotives and there were many diesel rail cars, particularly in Europe. It was not until the 1950s that diesel mainline locomotives were replacing steam in large numbers.

In the air, 1912 waa a year packed with notable events. On 22 April, Denys Corbett Wilson flew the first plane to cross form Britain to Ireland, and on 16 April Harriet Quarmby was the first woman to fly the English Channel. On 22 February Jules Vedrines became the first pilot to fly at 100 k/h, near Pau in France. Alfred Berry made the first parachute jump forma an aircraft at St Louis, Missouri on 11 March.

Australia's first air crash occurred when a plane piloted by W. E. Har, carrying one passenger, became entangled in telegraph wires while trying to make an emergency landing in bad weather near Mt. Druitt. Neither the pilot nor the passenger was seriously injured and the aircraft was repaired and back in servie within two days. The Australian Flying Corps was formed on 22 October 2012.

Technology and the world economy

The Economist of 19 November 2011, writing about the slowdown in growth of rich-world real incomes since the 1970s, notes that technology, or the lack of it, is increasingly being fingered as a culprit.

The Economist cites a recent book by Tyler Cowen, a professor of economics at George Mason University, titled *The Great Stagnation: How America Ate All the Low-Hanging Fruit of Modern History, Got Sick, and Will (Eventually) Feel Better.* Tyler claims that the gains from the big inventions of previous eras – electricity, jet engines and antibiotics, for example, are now exhausted and new comparable inventions are exceedingly rare.

The Economist notes that this is not the only view. Another recent book, by Erik Brynjolfsson and Andrew McAfee, *Race against the machine*, argues that too much innovation is the bane of struggling workers. Progress in information technology is occurring too fast for labour markets to keep up. Such a revolution, it says, should be obvious enough to dissuade others from writing about stagnation.

Another perspective on the advance or stagnation of technology is offered in a recent book by a prolific technology writer, Vaclav Smil, *Two Prime Movers of Globalization: the History and Impact of Diesel Engines and Gas Turbines*.

Smil notes that while progressive gains in the efficiency of steam engines became small in the 20th century after a rapid increase during the 19th, the performance of diesel engines and gas turbines is continuing to increase, along with increases in size and reliability Some of the most important advances have occurred in the last twenty years. The most important applications of both diesel engines and gas turbines have been in the field of transport, and Smil terms them 'Prime Movers of Globalization'.

In 1895 Diesel built and tested his first successful engine, which had an efficiency of 20%. Progress with commercialisation was slow, and makers of the engines at first had difficulty producing reliable units. Most of the early diesels were small stationary engines. An early marine application was in submarines, because diesels offered higher efficiency than petrol engines (less fuel to be carried on board), and the fuel was less volatile than petrol. No petrol-fuelled subs were built after the First World War.

Diesel always expressed his hope that his engines would dominate the automotive market. For heavy vehicles that hope has been realized, and in Europe particularly, where petrol is expensive, an increasing number of cars are now diesel-powered.

The most dramatic changes have occurred in ship propulsion, where diesel power is now almost universal. The largest diesel engines, of around 80 MW, are fitted to container ships. Their reliability is such that these ships invariably have only one engine. Overall efficiency is close to 60%, much higher than the best steam turbines.

The first proposals for gas turbines preceded by decades the first practical machines. The first patent of the concept was by John Barber in England in 1791, but it was not until the late 19th century that the first experimental machines were being built. The first practical result came during World War I when turbo superchargers were added to American aircraft engines, boosting their power by around 50%. The pioneering work by Frank Whittle in England, and independently by Hans Ohain in Germany, on turbo jet engines for aircraft began during the 1930s and was of critical importance in the Second World War.

Since then there has been a steady stream of improvements in design and use of material in gas turbine engines that have led to major increases in power, efficiency and reliability.

Smil observes that it is possible to be confident about the future of these two inventions, because there are no comparable alternatives ready to displace them on the seas, roads or in the air.

Wärtsilä-Sultzer diesel engine for large container ship

GE gas turbine engine for A330 Airbus aircraft

ASHET Events

Tuesday 21 February, 2012
Talk by Anita Yousif
Residential Development of Archaeological Sites in NSW

This paper will showcase two sites, a locally significant site and a State significant heritage site, both of which have been subdivided and redeveloped as residential precincts. The first case study site is located on the outskirts of Dapto, 110km south of Sydney. Now known as Brooks Terrace, Kanahooka, the redevelopment successfully amalgamates built heritage elements of the former Dapto Smelter site.

The second case study represents a development of the State heritage listed archaeological site of the former Bungarribee colonial estate, located at Doonside, western Sydney. The residential allotments are arranged around the central heritage area that has been transformed into a Heritage Park, with interpretive landscaping of the estate's archaeological remains.

This paper demonstrates that both developments represent an effective fusion of heritage resources and contemporary living with comprehensive interpretation of the archaeological evidence.

Anita Yousif is a Senior Consultant with Godden Mackay Logan. As a field archaeologist she has worked on a number of archaeological excavations in Australia, Cyprus, Italy and Serbia. She has recently directed excavations of World Heritage listed sites, including the Old Government House at Parramatta and the Sydney Opera House.

This is a joint activity of ASHET and the Royal Australian Historical Society.

Venue: History House, 133 Macquarie Street, Sydney
Time: 5.30 for 6 pm
Cost: $8.00 Includes light refreshments on arrival
Bookings: phone RAHS on (02) 9247 8001 or email history@rahs.org.au

Thursday 29 March, 2012
Talk by Tony Griffiths
Lithgow's Small Arms Factory Centenary; a century of service

This factory, opened in June 1912, introduced precision mass-production to Australia and has equipped Australia's infantry from the First World War to the present with over a million rifles and light machine guns, plus sundry other military hardware and services. Its presence in Lithgow was a source of great local pride. It was a supportive local citizen and, in busy times, it boosted the local economy. In lean times, however, it struggled to keep its workforce employed; its efforts at commercial work often unprofitable victims of its own excellence.

Tony Griffiths' retirement from electronics has been taken over by the urge to record the history of the Lithgow Small Arms Factory, his grandfather having worked there for parts of both World Wars. He has written a two-volume history covering 1907–1950 and 1950–1990.

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Tuesday 24 April, 2012
Talk by Phillip Hammon
The Katoomba Aerial Ropeway

The aerial ropeway at Katoomba, 2.4 kilometres long, was built to haul coal to the railway at Katoomba from the Gladstone Colliery in the valley 300 metres below. It was opened in 1885. The ropeway was based on a patented concept that was developed in Germany a few years earlier by Adolf Bleichert, and used widely throughout the world. The Katoomba ropeway was designed by a brilliant German engineer, Oscar Schulze, who had migrated to Australia and who later was a consultant for the Hawkesbury River railway bridge.

The Gladstone mine closed after producing only a few thousand tons of coal, and the ropeway was then used for hauling oil shale from J.B.North's mine in the valley. The ropeway closed permanently in 1889 following the failure of one of the ropes.

Philip Hammon's father purchased the lease of the coal mine in 1945 and built the basis of the tourist attraction ScenicWorld at Katoomba. His son Philip, our speaker, worked there as electrician, accountant, Manager and Director. He was responsible for restoring the facility's buildings and lastly the rebuilding of the Skyway in 2004.

Philip has done extensive research on the aerial ropeway and is co-author with Philip Pell of the book *The Burning Mists of Time: a technological and social history of mining in Katoomba*, published in 2009.

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Tuesday 22 May, 2012
Talk by Robert Croft
Sydney to Penrith milestones

Robert and Sandra Crofts began in 2009 their self funded project to investigate and record the sandstone, concrete and timber milestones/mileposts in Sydney and surrounds. During the course of the project they have recorded the location and photographed the remaining milestones along all the major roads out of Sydney. They are currently seeking a publisher for their book entitled *Discovering Sydney's Historical Milemarkers and Boundary Stones*. Robert brings his passion for Australian history and photography while Sandra brings research skills from her nursing background to the project.

Robert's talk will include a brief history of the milestones, and focus on the Macquarie Obelisk in the city of Sydney, and the 22 remaining milestones between Sydney and Penrith.

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Opals and the Australian opal industry

By Ian Arthur

The history of opals

The name *opal* comes from the Latin *opalus*. Most modern references suggest that this was a Roman adaptation of the Sanskrit úpala. The term appears in Roman literature from around 250 B.C., at a time when opals were highly valued. They were supplied by Middle Eastern traders, who claimed that the source was India.

In the Middle Ages, opals were considered lucky because they were believed to possess all the virtues of the gemstones represented in their colours. But later, Sir Walter Scott in his novel *Anne of Geierstein*, published in 1829, had the Baroness of Arneim wearing an opal talisman with supernatural powers that were associated with her death. Within a year of the book's publication sales of opals in Europe dropped by 50 per cent, and recovered only after twenty years.

Precious opals are mined at various places around the world, but Australia now supplies 90 per cent of the market. 97 per cent of the world's black opals are from Lightning Ridge. The opal has been named as Australia's National Gemstone. In 2008 New South Wales Premier Morris Iemma designated black opal the state's Gemstone Emblem.

Structure and classification of opals

Opal is a form of silica chemically similar to quartz, but containing a variable amount of water within the mineral structure. Water content varies between 2 and 20%, with precious opal generally containing 6–10%.

It is deposited at relative low temperatures and may occur in fissures in almost any kind of rock. In Australia, all the known opal deposits are within or close to the Great Artesian Basin. They have been found close to the surface, mostly at depths up to 30 metres. Queensland's boulder opals are found naturally attached to the ironstone host rock in boulders that range in size from a few centimetres to more than 20 centimetres. In New South Wales, opals have been found in fissures in both igneous and sedimentary rocks. At Lightning Ridge, opals are found in claystone lenses (opal dirt) under sandstone, either as irregular nodules ('nobbies') or in seams or thin layers.

Precious opals are those that display a *play of colour.* Common opal or potch does not display a play of colour. Black opals have a dark underlying body colour that gives greater intensity to the colours in the gem, and are considered to be particularly valuable. In black opals, green and blue colours are the most common, red is less common, orange and yellow are rare. Light opal shows a play of colour within or on a light body tone.

Precious opal is composed of small spheres of amorphous silica packed in a regular array. White light is diffracted by these layers and broken up into the colours of the spectrum, causing the characteristic display of colours for which opal is so highly prized. The colour observed is dependent on the layer spacing, which is determined by sphere size. In opal which shows dominant red fire, the spheres are ~4000 Å (Angstrom units; 1 Å = 10^{-7} mm) in diameter, while green opal spheres are ~2500 Å. The body colour or background for the diffracted colour play may be milky white, grey, blue, black or colourless. In common opal, which shows no play of colours, the silica spheres are either of assorted sizes which do not produce the regular array required for colour diffraction or are too small to produce a visible play of colour.

Australian opals

The German geologist Johannes Menge found common opals near Angaston, South Australia, in 1849. Precious opals were discovered at Listowal Downs, south of Blackall in south west Queensland, in 1869. The first mine was registered in 1871, near Quilpie. Queensland opals attracted interest when they were exhibited at the London International Gem Exhibition in 1873. An Adelaide entrepreneur, Tullie Wollaston, was largely responsible for establishing in 1889 the commercial mining and international marketing of Queensland opals which has continued until the present day.

Opal mining in New South Wales

In 1873 Robert Moore, manager of Muggarie Station, later renamed Angledool, discovered pretty stones at Lightning Ridge in northern NSW. Believing them to be of some worth he sent them to Sydney for evaluation. They were returned as having no commercial value. A piece of opal was found in a gravel pit at Lightning Ridge in 1887 and this was reported to the Mines Department, but generated little interest.

In 1889 precious opal was discovered by four kangaroo shooters on Momba Station in the far north west of NSW and sent to Adelaide where it attracted immediate interest. Within a year opal from White Cliffs was on international markets and the population of White Cliffs quickly grew from 30 to 500. At the peak of the boom between 1898 and 1900 the population was estimated at around 5,000. Mining there was easy. The white opal from White Cliffs found a ready market in Europe and established the reputation of Australia as an important source of precious opals. Mining was in decline at White Cliffs before the start of the First World War when the European markets closed. There are now only around 20 full time miners at White Cliffs. Population at the 2001 census was 210.

Lightning Ridge

Jack Murray, a boundary rider at Dunumbral station, found opal at Lightning Ridge while setting a rabbit trap in 1900. The Mines Department annual report of 1903 records that Murray commenced mining for opals in 1901. His neighbours, the Ryan family, learned to cut and polish the gems. At this time White Cliffs was experiencing a serious drought, which, along with low opal prices, led many miners to leave. Among them was Charlie Nettleton, an experienced gold miner who returned to Bathurst. While there he heard rumours that gold had been discovered near Angledool and went to investigate. There are varying versions as to when Nettleton arrived in Lightning Ridge, but the one preferred by Len Cram who has conducted detailed research, is that in September 1902 Nettleton met the Ryan family where he saw his first black opals. At this point Joe Becket, innkeeper at Weetalibah, organised a syndicate of seven, to employ Nettleton, as an experienced opal miner, to search for the gems. The first shaft was sunk in October 1902 at what is now known as McDonald's Six-Mile. The site of the shaft has been preserved and marked with a plaque. There is no evidence that Nettleton dug more than one shaft in this area.

Commemorative plaque at Lightning Ridge

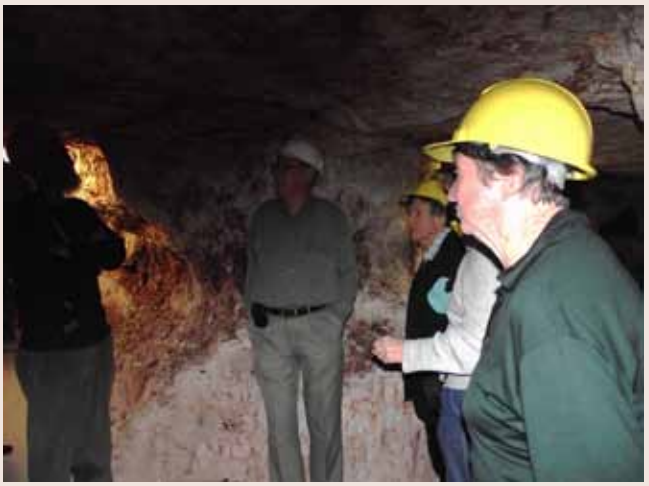
Opal miner's cottage at Lightning Ridge

Inerior of opal miner's cottage

In 1903 he moved to the Shallow Nobby where Murray and others were now working. Rumours began to circulate that a rich new opal field had been discovered. Hopeful miners arriving at Lightning Ridge soon found that there were no rich pickings to be easily had. The opals they did find were considered to be of poor quality. George Hyndman, a well known Victorian gem buyer, visited Lightning Ridge and after seeing some of the opal, left for White Cliffs where he filed a damning report on the prospects of Lightning Ridge. The mining syndicate soon collapsed, but Nettleton persevered until he had a parcel of opals that showed good colour. With this, and taking Murray with him, he walked to White Cliffs arriving in October 1903 and showed his samples to the opal buyers there. Only one, E. F. Murphy, showed any interest, and offered £15 for the parcel, with the possibility of more if Wollaston, for whom he was buying, approved. Nettleton was disappointed in the offer, but accepted. Murphy wrote later that Wollaston endorsed his opinion and instructed him to go on buying and that he then wrote to Nettleton that he was prepared to buy all they produced. It was Wollaston who named the gem 'Black Opal', little realising the problems he would experience marketing it.

Historical Society buildng in main street of Lightning Ridge

The news that Murphy was buying soon spread and miners began moving to Lightning Ridge. Conditions there were difficult, with station owners refusing access to water for the miners' horses, and explosives in short supply. Murphy recorded that at the end of 1904 there were 14 men on the field, but with an increase expected. Miners began to explore areas adjacent to the Nobby, and found Sim's Hill where a shanty town sprang up, known as Old Town. Further afield, opals were discovered at the Grawin, about 40km southeast of Lightning Ridge. A major discovery,



ASHET members undreground at Lightning Ridge

ASHET and Lightning Ridge

In August 2011, as part of a study tour of northern NSW, 22 members of ASHET were in Lightning Ridge for two days. Our principal guides for the visit were Barbara Moritz, secretary and treasurer of the Lighting Ridge Historical Society and Sebastian Deisendorfer, president of the Lightning Ridge Miners' Association. During the tour we visited mining and puddling sites and also the Australian Opal Centre. We were able to see in action some of the machines for opal mining that have been developed by miners and mechanics at Lightning Ridge.

One outcome of the tour is that ASHET is currently applying for a grant under the Australian government's new *Your Community Heritage* program to research and record the story of the machinery and technology for opal mining at Lightning Ridge.

Our plan is to have one of our members, Beverley Johnson, a recently retired professional historian, visit Lightning Ridge to hear and record the story at first hand foam miners and others who have been involved in the development , and to provide training in oral history recording for a group of local people at Lightning Ridge who will record interviews with some of the those who can tell the story. We will present the story in a graphic display at the Australian Opal Centre, and in a web version on the ASHET website. The oral history interviews will also be on the website as audio recordswith a text summary.

in 1907, was made by Archie Gillspie and two colleagues, of the Three-Mile Flat, one of the richest opal fields ever found. Unlike the earlier discoveries it developed quickly and by 1908 had a population of 1,500. The New Town was surveyed on land roughly equidistant between Old Town and the Three-Mile, and was gazetted in 1908.

The opal fields were quiet during both world wars, with the men joining the armed forces and international markets inactive. In 1944 the school had dwindled to 50 pupils and the police station was closed. Recovery was slow, and Cram records that when he first visited in 1961 the population was scarcely 100. There was a serious shortage of water. This was rectified in that year when a syndicate of graziers sank a deep bore that provided the town with permanent water. In 1966 electricity came to the town. Cram records that in 1963 there were only 34 full time miners, and there always seemed to be an oversupply of opal. But as the market for black opal developed, and some spectacular gems wee discovered, the number of miners increased steadily.

Mining at Lightning Ridge has always been on a small scale, with the size of claims limited to 50 m x50 m, and a limit of two claims per person. Shafts are usually sunk on each claim through the sandstone layer to reach the opal bearing clay below, and rarely exceed 30 m in depth. The first locally-made dry puddling machine appeared around 1960, and consisted of a rotating drum that separated the opal bearing nobbies from the waste material. Once water became available during the 1960s, wet puddling was introduced using converted concrete mixers. Many of these can now be seen around Lightning Ridge. Other machines that have been developed or adapted for small scale opal mining at Lightning Ridge and built locally include drilling rigs, the auto-hoist, digging machines that can be lowered down a shaft in parts and assembled underground, and the 'blower', developed at Coober Pedy, that sucks material from underground into a bin at the surface. Shafts around one metre square were formerly dug by hand, but now a Calweld drill is generally used for shaft sinking. Mining still involves a lot of work with a pick and shovel.

In 1994 a new field was discovered at the Corcoran. Of the ten claims on the field, three had large amounts of opal The first 11 truckloads of

Auto-hoist at Lightning Ridge

Wet puddling at Lightning Ridge

The Wilcox Inquiry into Lightning Ridge opal mining

In July 2011, Murray Wilcox AO QC completed an Inquiry into opal mining at Lightning Ridge. It was particularly concerned with compensation to landholders for the effects of opal mining. It recommended urgent action by the Minister to fix rates of compensation. Other recommendations were for better planning of opal mining activities, provision of accurate and readily accessible information about claims and mining rights to land-holders and other interested parties and improvements to the management of compensation payments.

Wilcox found that at present mineral claims could be granted for up to two years, but most are granted for one. A person who applies for a one-year mineral claim currently pays a total sum of $185. This sum comprises an Application Fee of $130, which goes to Consolidated Revenue, an Environmental Levy of $20, which is reserved for "rehabilitation and environmental maintenance work on areas not currently under mineral claim" (that is, secondary rehabilitation of old workings), a Roads Levy of $25, used for "establishment of new roads, maintenance of roads; purchase, installation, repair of grids, gates, access signage" and a Mullock Levy of $10 for "maintenance and environmental rehabilitation work on stockpiles of mullock".

In addition to this payment, an applicant for a mineral claim must provide $700 security, in cash or by bond. The bond is to cover any cost incurred by the Government that may arise out of any breach by the mineral claim holder of a condition imposed by the Act, the Regulations or the claim—the most likely breach being failure to clean up the claim area and/or carry out primary rehabilitation.

The payments made at the time of application do not, currently, include compensation to the landholder. This is regarded as something for the miner to arrange. However, at present, this mostly is not done.

The miners expressed a strong and unanimous view that it would be preferable for an applicant for a mineral claim to be able to pay a specified, appropriate compensation sum to the officer of the Department who receives the Application Fee and levies, leaving the Department to account to the relevant landholder. This would not only save miners what is sometimes a time-consuming task, it would avoid poisoning the landholder-miner relationship, at its outset, with a dispute about compensation.

Wilcox recommended that the Department accept responsibility for collection and distribution of compensation payments. He recommended that the rates be set a little higher then the present guidelines, but well short of what was being sought by some landholders, at $80 plus 10 cents per hectare for opal prospecting licences and $50 per annum for mineral claims.

The Minister has released the report for public comment, for twelve weeks ending on 22 February 2012.

dirt from one claim yielded $14 million worth of opal, and to owner estimated that the value of the claim wss around $70 million.

Today the population of Lightning Ridge is around 5,000, 20% Aboriginal and the rest including around 60 nationalities. In addition there are around 80,000 visitors per year. There is still mining close to the town, but the main centres of mining are now an hour's drive to the south west at the Grawin, Glengarry and Sheepyard.

Opal mining in South Australia

Opal was discovered at Coober Pedy, 750 km north of Adelaide in South Australia, in 1915. Mining developed rapidly after the First World War. Coober Pedy is now the source of most of the world's precious white opals. Boundary riders discovered opals on Andamooka Station, 520 km north of Adelaide in 1930. Mining developed slowly, but by 1962 there were 800 miners. A well sinker discovered opals at Mintable, about 300 km north of Coober Pedy, in the 1920s, but there was little mining activity until the mid-1970s, when the field was recognised as a source of valuable black opals. The population reached around 1,500 by 1988, but has since declined along with opal production. Most mining at Mintable is by open cut.

Australian opal production was estimated to be worth $120 million in 1996-97. Of this $82 million was from New South Wales (nearly all from Lightning Ridge), $40 million from South Australia (mostly from Coober Pedy), and $1 million from Queensland.

The Australian Opal Centre

The Opal Centre began in the late 1990s as the Lightning Ridge Opal and Fossil Centre. In 2007 it was renamed the Australian Opal Centre. It now has an important collection of opalised fossils, and is building a collection of precious opal, cultural artifacts, artworks, photographs, archival and research materials. These are on display at the Centre's building in Morilla Street, Lightning Ridge.

ASHET members at Australian Opal Centre, Lightning Ridge

Mining equpment on display at the Opal Centre

The Centre has acquired a 3.1 hectare site on the historic Three-Mile opal field close to the town centre, and in 2008 gained development approval for an energy-efficient underground building designed by architect Glen Murcutt and his wife Wendy Lewin. It is planned to include permanent exhibitions, an opal vault containing the finest and rarest opals, a research laboratory, library, meeting and teaching spaces, cinema, café and an underground garden.

Sources and further reading

The most comprehensive account of opal mining at Lightning Ridge is the volume by Len Cram, *A journey with colour: a history of Lightning Ridge opal, 1873–2003,* Len Cram, Lightning Ridge, 2004. The complete work, published progressively in four volumes between 1998 and 2006, also includes volumes on the history of opal mining in Queensland, White Cliffs and South Australia. Len, originally from Queensland, has been a resident of Lightning Ridge since 1961.

Other sources of information for this article include the following web sites:

http://en.wikipedia.org/wiki/Opal; A good brief article with references.

http://www.dpi.nsw.gov.au/minerals/lightning-ridge; Information about opals and Lightning Ridge.

http://www.pir.sa.gov.au/minerals/geology/mineral_resources/commodities/opal: Information about opals and south Australian opal fields.

http://www.wj.com.au/index.html: Information about Lightning ridge, including its history, opal mining, and the Australian Opal Centre.

Barbara Moritz, secretary and treasurer of the Lightning Ridge Historical Society, provided additional information for the article and constructive comment on the first draft.

About ASHET

ASHET, the Australian Society for History of Engineering and Technology, is a non-profit society, incorporated in New South Wales and affiliated with the Royal Australian Historical Society. ASHET currently has 92 members.

It was formed in Sydney in 2003. Its objects are to encourage and promote community interest and education in the history of engineering and technology in Australia. It has members throughout Australia, with most in Sydney and other parts of New South Wales.

ASHET has regular program of events in Sydney, and looks forward to establishing groups with programs of activities in other centres.

ASHET meetings in Sydney are mostly held at History House, 133 Macquarie Street, Sydney, on weekday evenings, as joint meetings with the Royal Australian Historical Society. In addition ASHET arranges daytime visits to places of historical interest.

ASHET has held weekend tours to the Mudgee, Lithgow and Goulburn and Glen Davis areas, and longer tours to northern Tasmania, Broken Hill and northern NSW.

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