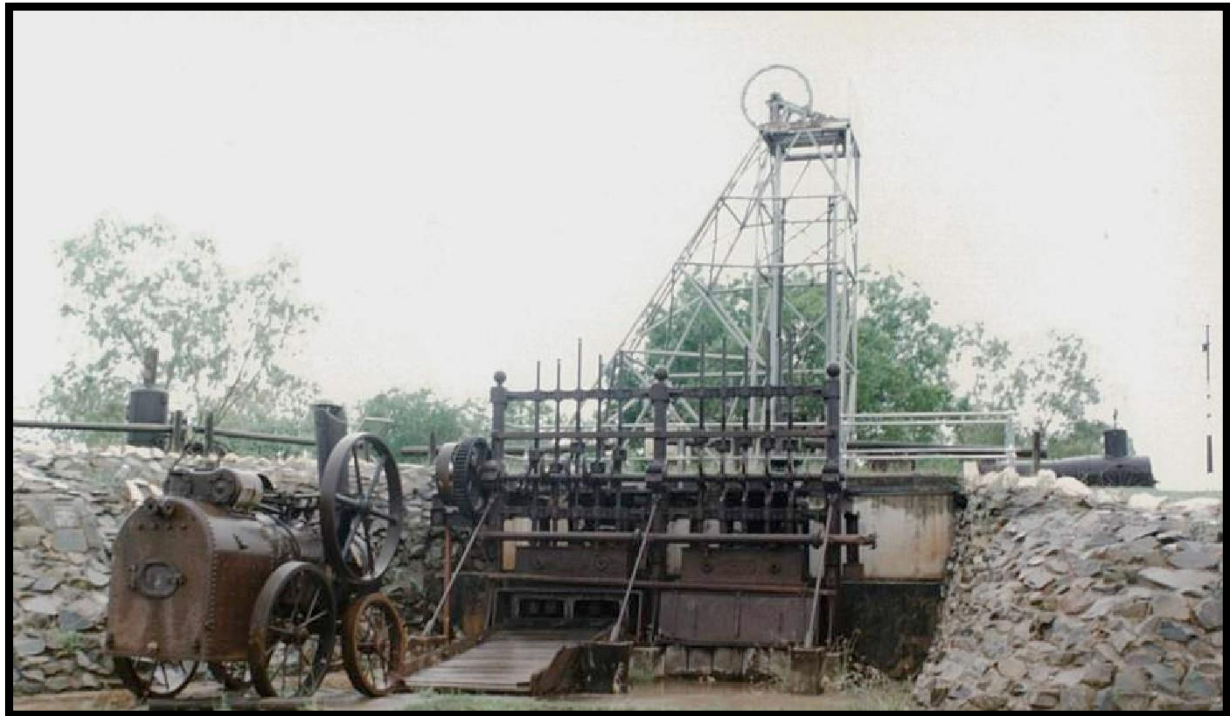


AUSTRALASIAN MINING HISTORY ASSOCIATION

**21st ANNUAL CONFERENCE
DARWIN, NT
21-25 JUNE 2015**

Mining: Past – Present - Future



Pine Creek Miners' Park, Northern Territory. Photograph, courtesy Peter Bell



Message from the Minister for Arts and Museums

The Hon Garry Higgins, MLA

The Northern Territory Government is pleased to welcome delegates to your Australasian Mining History Association's 21st Conference.

The Northern Territory's mining history began shortly after the southern Gold Rush, there were with gold discoveries throughout the 1960s around Tennant Creek and much larger gold deposits discovered in the 1970s closer to Darwin. Today, mineral production in the Territory is dominated by manganese, gold and zinc/lead concentrate. The Territory also produces bauxite, iron ore and uranium.

Mining is a key contributor to the Territory economy through trade, investment and employment. In 2013-14 mining was the second largest industry in the Territory, behind construction, accounting for 13.3 per cent of GSP. However, the importance of mining extends further, with a significant proportion of construction activity related to investment in major resource projects.

The majority of minerals produced in the Territory are exported overseas. China is the largest export market, accounting for about three-quarters of Territory mineral exports. Other key export markets include Korea, Japan and India.

The Northern Territory Archives Centre is an ideal venue to hold the welcome reception for Australasian Mining History Association Conference delegates. The NT Archives Services is the archival authority for the Northern Territory Government and holder of archival collections about the Territory, including unique records relating to mining and of the Territory's mining history.

I invite conference participants to immerse yourselves in our rich history and enjoy your visit to the Territory.



Mining: Past – Present- Future

President's Foreword

On behalf of the Executive of AMHA it is my pleasure to welcome you to the 21st Annual Conference of our Association. This is a significant occasion in being our first conference in the Northern Territory. We hope that it may lead to an increase in our NT membership.

The history of mining in the Northern Territory is inextricably linked to that of the Overland Telegraph. As Geoffrey Blainey observed in *The Rush That Never Ended*: 'The men who spanned the continent with wire found the first payable gold in the Northern Territory'. In December 1870 at Yam Creek, to the south of Palmerston (now called Darwin), a telegraph post-hole encountered alluvial gold. This find was quickly followed by others at Adelaide River, Cullen River and Pine Creek. However, as Peter Bell explains in his article in our conference book, it was the discovery of reef gold in August 1872 by prospectors that led to the development of a mining industry in the Northern Territory.

The gold boom of the 1870s foundered with the prohibitive cost of mining in such an isolated location, even with the employment of Chinese labour. But to again quote Blainey: '... it did delight thousands of Chinese, settle the fringes of a vast area, and lay a stepping for the anti-clockwise march of prospectors around Australia'.

The 20th century saw renewed interest in mining in the Territory, with many major discoveries. Today NT has a diverse resource industry with production of a wide range of mineral commodities (including bauxite, uranium, manganese, iron, gold, zinc-lead, zircon and non-metallic minerals) as well as major oil and gas projects; the industry is a major contributor to its economy.

Our conferences are a vital annual activity in providing an opportunity for members to present papers on their current research and to get feedback from other members. The social activities where we gather in an informal atmosphere are also important and have led to the forging of many long-standing friendships.

But conferences do not just "happen", they are the result of a great deal of hard work by the organisers, all voluntary. In this case I want to express our thanks particularly to our indefatigable Secretary-Treasurer, Mel Davies, and the "local team" of Bev Phelts and Janie Mason, and the support of the Historical Society of the Northern Territory. Thanks are also due to David Carment, Bev Phelts and Yvonne Forrest for their organisation of the Pine Creek excursion. We also greatly appreciate the help of the Hon Garry Higgins, MLA, NT Minister of Arts & Museums and Phyllis Williams, Director NT Archives Centre, for hosting our Welcome Reception, and we acknowledge the support of Peter Waggitt, Department of Mines & Energy; Victoria Jackson, Executive Director Energy, NT Department of Mines and Energy; Professor Suresh Thennandil, Chemical Engineering, CDU; Rebecca McCaig & Daryl Hudson representing the NT Convention Bureau; and members of the NT Mining and Historical fraternity.

Ross Both

Mining in the Northern Territory – A brief historical overview

Dr PETER BELL: pbell.2@bigpond.com

From 1825 onward, the Northern Territory was part of New South Wales, which wasn't very interested in it. Sydney established a few short-lived military settlements along the coast from the 1820s onward, and a few explorers braved the inland. Things changed in 1863 when South Australia acquired the Territory, determined to make an economic asset of it. The first large influx of Europeans into the interior came in 1870-72 with the construction of the Overland Telegraph from Adelaide to Palmerston, now called Darwin. Workers on the line made minor discoveries of alluvial gold along its route. Within days of the line's completion in August 1872, prospectors found payable gold in reefs near the Yam Creek telegraph station, a company was formed, and the Northern Territory had a mining industry.

Discoveries quickly spread to Pine Creek, the Howley, Adelaide River, the Union, Grove Hill, the Shackle and Cullen River. By 1873 there was a pattern of minor gold discoveries spread over a large area centred on Pine Creek, where the Eleanor reef was one of the most encouraging prospects. The Telegraph battery was crushing in Pine Creek by the end of that year. Far to the south, there followed a period of dubious share trading. About 30 Northern Territory mining companies had been floated in 1873, mostly in Adelaide, although there was a conspicuous lack of activity on most of their leases. Some of these companies were simply fraudulent, and even in their own time most of the others were regarded as notoriously speculative, their directors interested in short-term sharemarket profits rather than gold.

The industry stabilised, with reef gold mining centred at Pine Creek, Yam Creek, the Union and the Howley for the rest of the century. However, a number of things were changing in the mining industry during that time. It was diversifying away from gold, as significant finds of other metals were made, particularly copper at places such as Iron Blow, Daly River and Copperfield, and tin at Mount Wells, Hayes Creek and Mount Todd.

In 1874, Territory mining companies faced with constant labour shortage brought in 188 Chinese labourers from Singapore. They were the first of thousands. Once word had gone back to Guangzhou that there was alluvial gold scattered over a wide area of the Northern Territory, organised migration began through Port Darwin. Through the 1870s and 80s, parties of Chinese miners arrived in the Territory and spread out to Pine Creek and other centres such as Brock's Creek, Mount Wells, Howley and the Union. About 10,000 Chinese were in the Northern Territory by the early 1880s, and as the European population was so small, they very quickly dominated the society that was developing in the north. Europeans were not able to exclude Chinese from mainstream mining as they did throughout much of Australia. Chinese companies owned major mines and batteries, and European miners brought their ore to them for crushing. In 1879 the Chinese passed 50% of the Northern Territory's population, and held that position until 1910. Their temple floors, distinctive hearths, pork roasting ovens and broken pottery can be found throughout the mining districts.

The other change was the coming of the railway. The 235km North Australia Railway (paradoxically operated by South Australian Railways) opened from Palmerston to Pine Creek in 1889. It immediately reduced costs close to the line of track, but had little effect elsewhere. Thus it tended to create a strip where mining was viable down the middle of the Territory, and today most of the historical mining sites showing evidence of significant investment are found close to the railway. The railway would eventually go on to Katherine and Birdum, but would not link with its ultimate destination, Adelaide, until 1980.

South Australia handed the Territory over to the Commonwealth in 1911, when the mining industry was at its lowest ebb. Issues of distance, cost and lack of infrastructure always plagued the Territory mining industry. Until recent decades there was only ever one significant port in the Northern Territory, Darwin. In the nineteenth century it had no manufacturing industry whatever. Every pick, shovel, stamp battery and bag of flour had to be shipped to Port Darwin, and then carried inland at enormous freight charges. Every mile further south from Darwin increased the cost of mining, so the mining industry struggled under a multiple burden of huge outlays, chronic labour shortage, a monsoonal wet season for months each year, and endemic tropical diseases.

The history of mining in the Territory, like its geology, is complex and diverse. There have been a number of commodities mined, some of them to the present day: mica at Harts Range, wolfram at Hatches Creek, tin at Maranboy, Iron ore at Mount Bundey and Frances Creek, lead-zinc at McArthur River, manganese at Groote Eylandt and Bootu Creek, rubies at Hale River, diamonds near Borroloola and zircon in the Tiwi Islands. Mining has been carried out in some remote and arid areas: gold was found at Arltunga 110km east of Alice Springs in 1892, and at The Granites in the Tanami Desert in 1900. The Territory's greatest historical gold mines were discovered near the Tennant Creek telegraph station in 1926, just in time for the gold price rise of the Depression. The Rising Sun, Nobles Nob, Warrego and Gecko mines have made Tennant Creek one of Australia's significant goldfields, producing 5.5 million oz of gold and significant amounts of copper.

One colourful episode in Northern Territory mining history came in 1929-31 when Harold Bell Lasseter (he also had other names) produced specimens which convinced a group of Sydney investors that he had found a fabulous gold reef in the remote south-west, near the Western Australia border. Months of exploration with trucks and aircraft followed, but no reef was ever found, and the expedition ended with Lasseter dead of thirst in the desert. Occasionally people still search for the lost reef, but modern writers have concluded that the affair was either a fraud or a hoax by a man with an obscure motive, and the specimens came from Coolgardie, where Lasseter had been a miner.

The Northern Territory made a major contribution to Australia's early uranium industry. In 1949, uranium was discovered at Rum Jungle, not far from Darwin. In the decades since, uranium has been mined there and across Arnhem Land at El Sharana, South Alligator, Nabarlek and Jabiluka. The last uranium mine, Ranger, stopped mining in 2012 and is still processing stockpiled ore.

The great gold price rise of the 1980s saw a mining renaissance in the Northern Territory as elsewhere. Huge opencut pits swallowed up classic nineteenth century reefing fields such as Pine Creek, Howley and the Union Reefs, all of which are have now closed again, and Tennant Creek had a revival. Bauxite has been mined near Nhulunbuy on the Gove peninsula since 1968. An alumina refinery opened in 1972, but closed in 2013.

Howley Mine

Mention of the Howley Mine, takes us to the delightfully-named Horatio Bottomley (1860-1933), a person summed up in his *Wikipedia* entry as "an English financier, journalist, editor, newspaper proprietor, swindler, and Member of Parliament". He rose from childhood in an orphanage and as an errand boy to become an international financier, establishing the *Financial Times* of London as well as a string of tabloid newspapers. His career didn't end well. He was jailed for fraud, expelled from the House of Commons and died in poverty.



During his colourful career (see photo on left – *from BBC Hulton Picture Library*) he found time to dabble in Northern Territory mining. His first Australian adventure was in Kalgoorlie, where commencing in 1894 he floated numerous gold mining companies, including Associated Gold Mines of West Australia and Lake View South, all dubious gold prospects, but intended as vehicles for complicated share transactions and company reconstructions, which steadily milked investors of money without ever providing any return. It was little more than a Ponzi scheme cloaked in impressive-sounding legal and financial dealings.

In 1896 Bottomley floated the Northern Territory Goldfields Company in London with capital of £300,000. Through agents, the company acquired a string of mining properties including Big Howley, Woolwonga, Yam Creek, Eveleen, Yet Loong Chan's and the Cosmopolitan at Pine Creek and the Zapopan at Brock's Creek. All of these were old mines which had passed their heyday (which is why they were for sale) but they were promoted in London as promising prospects with inexhaustible ore bodies, sure to pay handsome dividends. The purchase price was £225,000 in shares.

The mines were to be re-equipped with new machinery, coal would be imported as fuel, and jarrah for mine timbering shipped from Western Australia. In the Territory the whole scheme was regarded as simply too good to be true, but in London Bottomley promoted it as "the richest goldfield yet discovered in the world" and somehow managed to convince investors that he knew more about mining than other people. Some of the mines were lavishly re-equipped with steel-lined shafts, expensive pumps and new crushing batteries. Big Howley and the Zapopan had electric lighting. Today Bottomley's trail can be followed through the Top End by his legacy of steel-lined mine shafts.

The company was assisted by a fluke discovery of rich ore in the Zapopan mine, but by 1898 it was in financial difficulty, and Bottomley persuaded investors to find another £100,000, telling them the value of their mines was "beyond the dreams of avarice". In 1899 he needed another £60,000, and the investors kept paying. By 1901 the company's balance sheet showed assets of £4,000,000, but rumours were reaching London that the Northern Territory mines were closing because they had no cash to pay the miners' wages. A whistleblower wrote a letter about the company's mines to the *Northern Territory Times*, describing profligate expenditure, but no gold. This bought an explosive meeting of shareholders in London, and the company's days were numbered. Bottomley had secretly sold all his shares, but somehow remained Chairman. In 1902 creditors started to foreclose, and some of the mines were seized.

Incredibly, there were investors who still had faith in Bottomley, and out of the wreckage he built the Northern Territory Mining and Smelting Company, this time to focus on copper at a time of rising metal prices. Smelters were built at Yam Creek, Iron Blow and Mount Ellison. None were particularly successful, and the enterprise was wound up when the copper price collapsed in 1907.

Bottomley was charged with conspiracy to defraud in connection with his Northern Territory investments in 1907, but was acquitted. Five years later he was declared bankrupt, ending his mining adventures. In 1922 he was convicted of fraud in another matter and spent seven years in prison. Northern Territory historian Timothy Jones wrote of him, "Whether Bottomley ever intended genuine mining in the Territory is doubtful" and "As mining ventures, Bottomley's companies failed totally".

Northern Territory's Mineral Riches

Emeritus Prof. David Carment AM: dcarment@bigpond.net.au

Various forms of mining have taken place in Australia's Northern Territory since its early European history. The Territory is rich in mineral resources and mining provides a greater contribution to its Gross State Product than any other industry.

Gold

The first commercial goldfield developed from 1871 in the Pine Creek district, where it has continued until the present. The second major field was at Arltunga, where gold was discovered in 1876, when gold mining was Territory's major employer. It was also mined at nearby White Range and Winnecke's Depot but many of the mines contained little ore and the rush to the area ended in 1903. Not until the 1930s was there a wide expansion of mining, with rushes to the Granites and Tennant Creek in 1932. The Granites field was short lived but mining resumed there in 1976.

Base metals

Commercial copper mining commenced in the Daly River area in 1883 but declined in the early twentieth century. Production in the Tennant Creek district after the Second World War was far more profitable. Silver-lead was also mined in the Pine Creek district from its discovery there in 1885. One of the world's largest silver-lead mines opened at McArthur River in 1995. Tin was mined in the Pine Creek district from 1878 and there were smaller mines closer to Darwin. A new field at Maranboy became dominant after 1917 and remained the Territory's principal tin producer for 36 of its 40 years of active mining.

Manganese

Manganese was mined on a large scale at Groote Eylandt from 1966. By 1992, this was the world's third largest manganese producer.

Wolfram

Wolfram mining started at Hatches Creek in 1914 and nearby Wauchope Creek in 1917. By 1937-1938, wolfram from the two fields amounted for about half of the total value of Northern Territory mineral production but mining declined rapidly from the late 1950s.

Mica

Between the 1890s and the close of the Australia mica mining industry in 1960, almost all the nation's mica came from the Northern Territory. Most was extracted from Harts Range.

Bauxite

An open cut bauxite mine, an alumina mine and the town of Nhulunbuy were developed on the Gove Peninsula from 1965, with mining starting in 1971. Much of the ore was treated to extract alumina.

Uranium

A very large and rich lode of uranium was discovered at Rum Jungle in 1949 and mining began in 1954. Up to closure in 1971, 3530 tonnes of uranium oxide were recovered at the Rum Jungle plant. Other uranium deposits were found in the South Alligator Valley in 1953 where mining ceased in 1964. Open cut mining commenced at the Ranger Mine in the Alligator Rivers district in 1981 and the operation quickly became Australia's largest uranium project. The industry became politically contentious, with federal Labor governments until 2007 opposing the development of new projects.

Oil and Gas

The Territory's first commercial oil and gas field was found at Mereenie in 1963. Gas fields in the same vicinity were subsequently developed at Palm Valley and Dingo No1. From 1969 exploration drilling occurred in northern offshore areas, where most activity concentrated on the Joseph Bonaparte Gulf Basin and later the Timor Gap and Timor Sea. By 2005-2006, oil and gas contributed a third of the value of all Territory exports.

Recent Industry development across the Northern Territory

Sourced from http://www.dcm.nt.gov.au/territory_economy/major_projects

The Territory has a number of significant major project developments that will underpin continued growth for the region.

Major oil and gas projects include:

- \$34 billion Ichthys LNG project on Blaydin Point – one of the biggest oil and gas projects in Australia’s history
- \$5.4 billion Darwin liquefied Natural Gas (LNG) project on Wickham Point – supplied by a 502 km pipeline from the Bayu-Undan gas field
- \$110 million Marine Supply Base at East Arm Wharf, which will service oil and gas ships such as rig tenders
- \$55 million Darwin Industry Fuel Terminal – a common user facility adjacent to the East Arm Wharf that provides tank storage and related logistics for the oil and chemical industries
- \$50 million Helium Plant – the plant exports two thirds of its production to South-East Asia.

North East Gas Interconnector - connecting the NT to the eastern gas markets

In August 2014 the Northern Territory Government granted Major Project Status to the development of a gas pipeline link between the Northern and Eastern Gas Market (the North East Gas Interconnector Project - NEGI).

The Northern Territory Government has launched a competitive process to seek private sector proposals for the development of a pipeline connecting the Northern and Eastern Gas Markets – the North East Gas Interconnector (NEGI). This action is in response to private sector interest in Northern Territory gas – both supply and demand – and Government focus on commercialising the Northern Territory’s substantial gas resources.

The NEGI will deliver substantial and unique economic benefits to the Territory. The competitive process will enable the private sector to develop the best pipeline solution, as well as arriving at the best way for government to help the project come to fruition.

Visit to Oil and Gas facility at Charles Darwin University

Tuesday 23rd June 2015 (4.00pm – 5.30pm)

Those who have signed up for the visit will learn more about recent and also future developments for the Territory’s Oil & Gas industry when we meet with Professor Suresh Thennandil and his team at the Centre for Oil & Gas at Charles Darwin University.

After an introductory presentation titled ‘*CDU Education and Training Capability Framework to service the resource industry from VET to Higher Education*’ by Professor Thennandil and Mr Dennis Tonkin, we will split into three groups (approx. 20 in each group), and those present will be able to choose and attend two of the three streams on offer. These streams will be labeled:

Group A - NACOG (North Australia Centre for Oil & Gas).

Group B – Trade Training Centre.

Group C – Welding/Neptune Asset Integrity.

Refreshments will then be served in the Centre’s foyer.

Darwin Conference – 21-27 June 2015

PROGRAMME of EVENTS

Sunday 21st June

12.30pm to 1.30pm – Registration at the Northern Territory Archives Centre, Millner

1.30 – 3.00pm - **Welcome Reception by the Hon Gary Higgins, Minister for Arts and Museums, at the NT Archives Centre, Millner.**

3.30 pm – Meeting of Advisory Committee at Audit House, National Trust, Burnett Place.

Business Sessions and Events

Art Gallery & Museum of the Northern Territory

Bullocky Point, Darwin

Monday 22 June

Registration 9.00 - 9.45am

9.50am – Welcome to Country by representative of the Larrakia Nation

10.00am, *Session 1: Keynote Speaker* – Peter Waggitt (Director Mining Compliance at NT Department of Mines and Energy): *A brief history of mining in the Northern Territory: past and present*

11.00 – 11.25 Tea break

11.30am – 1.00pm, *Session 2*

Mining in Northern Australia

Chair – Ken McQueen

1. David Carment: *Technology on the Australian frontier: a history of Northern Territory mining*
2. David Branagan: *YOU and ME: fifty-plus years with radioactivity*
3. Jim Enever: *The rush that ended: the quest for rubies in Central Australia*

1.00 – 1.55pm, Lunch break

2.00 – 3.30pm, *Session 3*

Dust and disease – the Australian experience

Chair – Janie Mason

1. Criena Fitzgerald: *Mines Inspectors in Western Australia: victims or accomplices in the silicosis epidemic of 1915-1963?*
2. Ella Stewart-Peters: *'To Brave a Thousand Cornishmen': Cornish-South Australian identity and the question of government intervention*
3. Bill Musk: *Wittenoom, Western Australia: a modern industrial disaster*

Free Evening

Tuesday 23rd June

9.30 – 11.00am, *Session 4*

Labour and economic impact of goldmines – some Australian examples

Chair – Adrian Hutton

1. Matthew Churchward: *"First class plant, dispatched without delay": Victorian mining machinery manufacturers and the Australasian export trade, 1861-1915*
2. Joan Hunt: *Is it really worth it?: experiences of a working miner on a Victorian deep-lead goldfield in the 1860s*
3. Roger Kellaway: *The Third Basin Gold Rush, Launceston 1857*

11.00 – 11.25am – Tea break

11.30 am – 1.00pm *Session 5*

Mining diversity – case studies in New South Wales

Chair - Jim Enever

1. Rob McLachlan: *Bricks and mortar: building the Bathurst government settlement (est. 1815)*
2. Ken McQueen: *The Bathurst region: cradle of metal mining in New South Wales*
3. Jenni Brammall: *The Australian Opal Centre: showcasing an iconic Australian mining industry*

1.00 – 1.55pm – Lunch break

2.00 – 3.00pm, *Session 6*

Footprints – early developments and Chillagoe mining

Chair – Jan Wegner

1. Kal Ellwood: *Aboriginal prospectors and miners of tropical Queensland, from pre-contact times to ca.1950: a new story for the Chillagoe mineral fields, North Queensland*
 2. Ray Owen: *What's happening at the Zillmantion Mine? Dewatering 1.2 million litres of water per day*
- 3.30 **To Charles Darwin University Oil & Gas Laboratories – coaches leave from outside the Museum, followed by free evening.**

Wednesday 24th June

9.30 – 11.00am *Session 7*

Coal mining – the impact of convicts/transport/war

Chair – Nic Haygarth

1. Greg Maiden: **An invisible landscape: lifting the lid on the convicts of Salt Water River**
2. Leonie Knapman: *Transportation of coal and shale in the Southern Highlands of NSW*
3. Xiaolu Wu: *War and the coal mine: the history of the Tianfu Coal Mining Company, China, and the every day life of ordinary miners during World War II*

11.00 – 11.25am – Tea break

11.30am – 1.00pm, *Session 8*

Mining financing and politics in the 1930s

Chair – Gordon Boyce

1. Sybil Nolan: *Robert Menzies, the miners and the metals market crash of 1930*
2. David Rogers: *Burma, the Burma Corporation and Herbert Hoover*
3. Mel Davies: *Stock exchange machinations: Claude de Bernales and the Commonwealth group of companies*

1.00 – 1.55pm – Lunch break

2.00 – 3.00pm *Session 9*

Success or failure – smelting in two economies

Chair – Roger Kellaway

1. Peter Claughton: *Silver Spur, Queensland, 1892-c.1925: a preliminary assessment of the evidence for copper/silver working.*
2. Philip Hart: *The Auckland Smelting Company*

6.30 for 7.00pm – **Pre dinner drinks followed by Conference Dinner at Novotel**

Thursday 25th June –

9.30 – 11.00am *Session 10*

Trials and tribulations – life in mining towns

Chair – Wendy Carter

1. Ruth Kerr: *Conditions for teachers in schools on the north Queensland mining fields*
2. Janie Mason: *Beginning experiences: bush nurse and wife in Batchelor, living area for Rum Jungle mine*
3. Jan Wegner: *Mungana: death of a mining town*

11.00 – 11.25am – Tea break

11.30am – 1.00pm, *Session 11*

Chinese miners in Australia – organisation and trade

Chair – Matthew Churchward

1. Paul Macgregor: *Gold for goods: Chinese miners and the trade with Hong Kong*
2. Barry McGowan: *Kongsis, huis and clans revisited: the economics and organisation of Chinese gold mining, with reference to the Braidwood, Kiandra and Adelong goldfields of southern NSW and the North Queensland and Northern Territory goldfields*
3. Lee McKinnon: *Resistance and remonstrance: opposition to the Chinese Protectorate on the Bendigo Goldfields*

1.00 – 1.55pm – Lunch break

2.00 – End of Conference announcements and award presentations, followed by AGM

6.00 – 8.00pm – **Boat Tour, Darwin Harbour Cruises, meet at right hand side of Stokes Hill Wharf (Please be ready to board at 5.30pm)**

Spend the rest of the evening at Mindil Beach for meals and socialising at the market

Friday 26th June

9.00am – Take coaches to Pine Creek for two-day tour.

Meet and board coaches marked ‘Grand Touring’ at front of the Mantra Esplanade [on the cnr. of The Esplanade & Peel Street]* in CBD,

* Note there are two Mantra’s in the CBD – the other is on Knuckey Street.

ABSTRACTS

Jenni Brammall, Australian Opal Centre, Lightning Ridge, NSW. contact@australianopalcentre.com

The Australian Opal Centre: showcasing an iconic Australian mining industry

Opal was discovered in Australia in the 1840s and mined from the late 1870s. Opal mining has continued since that time – the economic and cultural lifeblood of remote communities in three states. Each opal-producing region has distinctive opal, opalised fossils, history, mining methods and technology, landscapes, natural and cultural heritage. Australian opal is regarded as the world's finest and Australian opal mines also produce the world's only opalised fossils – rare and scientifically significant relics from the age of dinosaurs. Opal was proclaimed Australia's National Gemstone in 1993.

The Australian Opal Centre (AOC) is a community-initiated, not-for-profit facility dedicated to opal-related scientific research, education and training, history, heritage, arts, travel, cultural and economic development. Based in the classic opal mining locality of Lightning Ridge, the AOC has been developing its collection and programs since 2004, while working towards construction of a major building to provide an international hub for opal-related knowledge and activity.

This presentation will provide an overview of the Australian Opal Centre, highlighting efforts to document, preserve and share Australian opal mining history and heritage.

David Branagan, School of Geosciences, University of Sydney. dbranaga@mail.usyd.edu.au

YOU and ME: fifty-plus years with radioactivity

Academics and students of geology at Sydney University had a long history of interest in radioactive minerals, beginning in the early twentieth century, with Douglas Mawson (1906) and Edward Simpson (1907), and later, Leo Cotton (1926).

My personal involvement began in the early 1950s with work at Broken Hill under Ted Rayner, Geological Survey of NSW; then several years later at Cloncurry through company activities, following the discovery of the Mary Kathleen deposit in that district. There was also a brief encounter with thorium-rich beach sands on Australia's east coast.

The last major personal involvement concerned the Northern Territory Ranger Enquiry, examining proposed development there, because of previous problems at Rum Jungle.

An interesting associated historical study concerned the unorthodox hopeful mine developer, Captain Eugene De Hautpick, who introduced, in the 1930s, portable equipment for locating radioactive deposits.

David Carment AM, Charles Darwin University. dcarment@bigpond.net.au

Technology on the Australian frontier: a history of Northern Territory mining

Various forms of mining occurred in Australia's Northern Territory from the early stages of its history as a separate entity. Mining is one of the very few types of European economic enterprise that proved viable there, but even it had a chequered record. Often initially exciting discoveries of minerals did not prove worthwhile in the long term. Miners' hopes were dashed and the consequences were sometimes tragic. The Territory's mines were usually isolated, their environments were harsh and there were disputes between the different racial groups involved in mining. Yet in the end the industry was a success. As was the case in many other frontier areas, this was largely due to the use from the nineteenth century onwards of the most advanced forms of technology. Miners and mining companies were attracted from many parts of the world, witnessing a substantial expenditure on surface plant and infrastructure. Mining in the Territory is an illuminating case study of how the international Industrial Revolution, with its insatiable demands for raw materials, spread to the most sparsely populated, climatically difficult and remote areas.

Matthew Churchward, Museum Victoria. mchurchward@museum.vic.gov.au

“First class plant, dispatched without delay”: Victorian mining machinery manufacturers and the Australasian export trade, 1861-1915

The rapid mechanisation of Victorian goldfields in the late 1850s played a key role in establishing the colony as Australia’s leading heavy engineering centre. By 1861, only a decade after the Victorian goldrushes began, there were already 750 steam engines, 500 quartz crushing plants and hundreds of steam-powered puddling machines and pumping plants employed on the goldfields and some 40 foundries and engineering works had been established to manufacture, repair and maintain mining machinery. The year 1861 also brought news of gold discoveries in New Zealand and the first great exodus of Victorian miners began. Soon afterwards, foundries in Melbourne, Ballarat and Bendigo began receiving their first orders from the Otago and Thames goldfields, beginning what would become a major export trade in Victorian-made mining machinery.

Over subsequent decades Victorian engineering firms would supply equipment to every significant Australian mining field from Gympie, Ravenswood and Charters Towers to the Palmer, Croydon and Pine Creek in the far north, from Mt Bischoff, Zeehan and Mount Lyell in the south, to Silvertown and Broken Hill, and a great western arc from the Kimberley, Pilbara and Murchison to Southern Cross, Coolgardie and Kalgoorlie. Beyond Australia’s shores, Victorian-made mining machinery would find its way not just to New Zealand, but also Fiji, Java, Borneo, India, South Africa and the rich tin fields of Malaysia, all in the years before the First World War.

This paper will examine the growth and composition of the Victorian mining machinery export trade during the years between 1861 and 1915. It will review the range of products supplied and the role of innovation, technological transfer and other key motivating factors that drove the trade. It will demonstrate that the trade was more than a mere historical curiosity, playing a key role in establishing Victoria’s engineering prowess through the decades leading up to Federation and creating a demand that would continue for over half a century following the demise of Victoria’s own gold-mining industry.

Peter Claughton, University of Exeter, UK. P.F.Claughton@exeter.ac.uk

Silver Spur, Queensland, 1892-c.1925: a preliminary assessment of the evidence for copper/silver working

The Silver Spur Mine, near Texas in south-east Queensland, worked a silver-rich poly-metallic deposit from 1892 until around 1925. It was one of Queensland’s premier copper/silver producers until mining was halted at the outbreak of war in 1914. Production was resumed but finally ceased after less than a decade. Output was in the form of a silver-rich copper matte shipped for refining elsewhere, primarily in Swansea (Wales), and small quantities of lead metal. The mining company operated coal mines across the border in northern NSW but also drew on other fuel resources, local and further afield, utilising a variety of transport options.

Archaeological investigation on-site has included the evidence for mining, ore processing and smelting, taking in a series of furnaces erected over the life of the mine. Interpretation of the evidence is aided by the survival of a substantial archive held by the State Library of Queensland.

This presentation will provide a preliminary assessment of the evidence, based on the author’s research over the last four years as part of a larger project on silver in Queensland.

Mel Davies, OAM, University of Western Australia. mel.davies@uwa.edu.au

Stock exchange machinations: Claude de Bernales and the Commonwealth group of companies.

Struck off the London Stock Exchange in 1939, Claude de Bernales, mining entrepreneur and financier who had developed the Commonwealth Group of Companies, complained of Star Chamber Treatment. This paper examines the evidence presented in the Stock Exchange Minutes held at the Guildhall, London, to appraise whether he was correct in his assumptions.

Gallina (Kal) Ellwood, James Cook University, Cairns. Kalbjellwood@bigpond.com

Aboriginal prospectors and miners of tropical Queensland, from pre-contact times to ca.1950: a new story for the Chillagoe mineral fields, North Queensland

The history of Aboriginal mining in post-contact Australia has been both neglected by historians and forgotten by the community. The Chillagoe Mineral field was first located by the Aboriginal base metal prospector George Hensey, in 1887. But the Aboriginal mining history for the field predates the time of contact. Aborigines mined copper, silver, gold and ochre for rock art pigments and chert, greenstone, tin, copper and obsidian for stone tools. They also heat-treated chert, silcrete and quartzite to improve their qualities for stone tool making, and these treatment pits also smelted tin and copper. These skills were used post-contact to prospect, mine and treat copper ores for sale to local smelters. Aborigines also worked European-style mines, both working for European employers as miners and prospectors, and working their own mines. Later, King Spider's people became essential workers for the Chillagoe Smelters. Using historical records and archaeological investigation, this paper will present a case for continuance and reworking of pre-contact mining in the Chillagoe District.

Jim Enever, jmenever@satlink.com.au

The rush that ended: the quest for rubies in Central Australia

In August 1886, explorer David Lindsay discovered what he thought might be a valuable occurrence of gem quality rubies in the East MacDonnell Ranges. On the return of Lindsay's exploration party to Adelaide, a syndicate was formed to pursue the discovery, and a follow-up party was dispatched back to the area to evaluate the prospect. A large cache of stones was brought back to Adelaide, which when examined by experts was proclaimed to contain a proportion of 'true Oriental rubies'. This sparked a rush to the area, with about 800 claims being registered between September 1887 and May 1888, and 23 ruby companies being floated in Adelaide. At the peak of the rush, about 300 miners were reported to be on the field.

From the start of the rush there was on-going debate about the true worth of the stones, both in Australia and in the UK where samples had been taken. Argument in the public domain centered around whether the stones were valuable rubies or 'worthless' garnets, a compromise eventually being reached with the stones being popularly classified as 'Australian rubies', a completely new gem species. Academic opinion was strongly that the stones were garnets. After the prospect of English capital entering the arena had kept the uncertainty about the nature of the stones alive, it became generally accepted by around June 1888 that the stones were in fact garnets. This realization sparked an exodus from the field. By the end of 1888, the ruby field was completely deserted. Estimates made at the time suggested that up to ten tons of gem material might have been removed throughout the life of the rush. The ruby companies progressively slid into liquidation during the first years of the 1890s. As fast as the rush had begun, the rush had ended.

Criena Fitzgerald, University of Western Australia. crienafz@iinet.net.au

Mines Inspectors in Western Australia: victims or accomplices in the silicosis epidemic of 1915-1963?

Ventilation of mines began to be important in WA by 1898 when alluvial mining peaked and companies began deep mining. Invalidity and death from industrial lung disease became apparent in 1915 with the commencement of the Mine Workers' Relief Fund. The first Ventilation Inspector of Mines in Western Australia was appointed in 1915 to '...devote himself to the betterment of the ventilation of the larger mines'. A Kotze Konimeter to measure underground silica dust particles was purchased in 1925 in South Africa by Inspector William Phoenix and brought to Western Australia. From 1926 Inspectors measured the concentration of dust particles (p.c.c.) in the air underground and reported their findings to the State Mining Engineer. There were few prosecutions for high dust counts and the incidence rates (new cases) of silicosis remained virtually unchanged until the 1960s, when newer mining techniques were introduced. Mines Inspectors patrolled the intersection between productivity and safety underground. Their independence was often questioned by management, as well as by workers, each accusing the Inspector of 'favouring' the opposite party. Most Inspectors tried diligently to obey the edicts of the State Mining Engineer, but they were often compromised because of the distances they were required to cover in their inspectorates, the myriad of tasks they were expected to perform, many of which were not related to the inspection of mines, and the lack of equipment to measure and record ventilation and dust conditions underground. They had no power to enforce regulations, and frequently their efforts to do so earned them censure rather than support. This paper looks at the work of Inspectors of Mines in Western Australia and examines their failure to adequately monitor dust suppression underground and prevent silicosis.

Philip Hart, Waikato University, New Zealand. prhart@waikato.ac.nz

The Auckland Smelting Company

Formed by a small and struggling businessman notable on occasions for his dubious business ethics, this company planned to extract base metals from the Tui portion of the Te Aroha field. Big plans were announced, including the construction of a smelting works, and optimistic prospects were publicised, although officials and some outside experts had their doubts. Of concern to some in the local community was the likelihood of the town's water supply being polluted, but others hoped for a successful mine providing employment.

This under-capitalized company lacked expertise and, having done insufficient preliminary testing of its ground, struggled from the start. It constantly sought government assistance, including several subsidies, which officials, who did not share its optimism, were reluctant to provide. Operating from 1948 until 1953, it was doomed from the start, especially because of its founder's unethical behaviour, which split the board and forced the resignation of his most skilled employee, the mine manager.

Joan E. Hunt, Ballarat Archives Centre. joan_hunt@bigpond.com

Is it really worth it?: experiences of a working miner on a Victorian deep-lead goldfield in the 1860s

The deep-lead gold mining companies at Happy Valley, 30km south-west of Ballarat, provided employment for many family men from the northern Pennines of England in the mid-nineteenth century. Experienced coal and lead miners from Weardale and Allendale spent their daily working lives in shafts and tunnels 25-30 metres underground, where they would have called upon many of the skills they brought with them. Unlike the Cornish at Ballarat, they were not hard-rock miners of

quartz, although they frequently had to sink through layers of basalt to bottom on the buried river beds. Digging out and processing washdirt from layers of loam, clay, gravel, sand, boulders, and conglomerate was demanding and exhausting work. This paper reveals some extraordinary experiences and discoveries made by the underground workers, not necessarily related to their primary task of gold retrieval.

Roger Kellaway, University of Tasmania. rogerkellaway@bigpond.com

The Third Basin goldrush, Launceston 1857

In March 1857 a minor goldrush began at the Third Basin of the South Esk River. While typical of thousands of minor rushes that occurred throughout Australia in the nineteenth century, it has an historical importance more significant than one would expect from its microscopic size. One factor to be considered is that it took place within an hour's walk of Launceston rather than in the normal isolated bush environment. This led to an unusual structure where miners living in town supplemented the permanent diggers who formed the classic camp at the site. It also allowed the city's two newspapers to provide virtually day-by-day coverage of the development and decline of the field. Most importantly, these reports provided extensive information about personalities – some named and others anonymous – and their activities which in more normal circumstances would have escaped attention.

A second factor integrated within the discussion of the Third Basin goldrush involves its significance to the broader economic history of Tasmania. In 1857, the colony was slipping into a depression that would last until the mid-1870s. While many of the causes involved complex international issues, a Tasmanian goldfield was widely believed to have the ability to reverse the major problems caused by the juxtaposition of the end of convict transportation with the Victorian goldrush. Due to its proximity to Launceston, the otherwise insignificant Third Basin diggings were important in revitalising both the call for a Tasmanian goldrush and the search for gold in the field.

Ruth S. Kerr, OAM, University of Queensland. r.kerr3@uq.edu.au

Conditions for teachers in schools on the north Queensland mining fields

Schools were established on the north Queensland mining fields in response to the advocacy of parents and miners and the companies. As many were established in very small mining camps, the schools were often tent schools and one room timber and galvanized iron buildings, often without verandahs. Living conditions for teachers were extremely harsh and difficult, particularly for women. This paper considers the particular circumstances in Redcap, Fossilbrook, Boonmoo, Koorboora and Mount Mulligan, and assesses how the Department of Public Instruction and the Queensland Teachers Union addressed the situation.

Leonie Knapman. leonieknapman@bigpond.com

Transportation of coal and shale in the Southern Highlands of NSW

When the railway reached the Southern Highlands of New South Wales in the 1860s it revolutionised coal and shale transport to Sydney. In any mining operations, such as shale and coal, transporting produce to the market place presented many problems, including distance to the market, cost of transport and efficiency of the transport. Many of the mines were located within deep valleys or on the steep sides of mountains. The first problem to solve was how to get the products up the mountain sides. Initially flying foxes or skips using cables were used to take the coal and shale from the valleys. Later, in both small and large operations, inclines were constructed to haul the minerals up the valley walls and from there they were transported by auxiliary lines to the main southern line.

Paul Macgregor, Melbourne Chinese Studies Group. paulmacgregor@diversity.org.au

Gold for goods: Chinese miners and the trade with Hong Kong

Chinese miners in 19th century Australia were at one end of a sophisticated two-way trade between China and Australia. Very large sums of gold were shipped to Hong Kong by Chinese merchants in Australia, in payment for equally large quantities of Chinese foodstuffs, tea, opium, liquor, equipment and luxuries – as well as labour supply. This paper examines the nature of this trade, how it linked in with the organisation of mining, the systematic victualling of mining camps, and the internal politics of the Chinese mining communities. Mining camps are also prime sources of archaeological material which demonstrates the massive extent of the import of Chinese goods to colonial Australia. This paper will present an overview of what has been found in archaeological excavations and surveys of Chinese sites in the last three decades, and how it can be used as historical evidence of mining activity. Finally, this paper will look at the sources and manufacture of the goods from China, and will argue that the Pearl River delta, and other areas in south China, with Hong Kong as their export node, increased their production of goods in response to the flow of mining output from Australia - a parallel with the 21st century.

Greg Maiden, Consulting Mining Engineer, Brisbane. grmai90@gmail.com

An invisible landscape – lifting the lid on the convicts of Salt Water River

In 1833 the convict coal mine at Salt Water River was developed as a cheap and reliable source of coal for the colony of Van Diemen's Land. However, as a place of secondary punishment for the "most refractory" of the convicts at the penal settlement of Port Arthur it quickly gained another reputation. It is typically portrayed today as having been a place of torment and ill repute and ultimately proved a commercial failure for the government.

Our knowledge of the history of the coal mine, from its commencement until its abandonment in 1877, has been informed largely by a fragmentary and selective documentary record, for the most part a product of the convict administration. This official legacy provides an insight into the production and penal motives of the managers of the establishment, but it is largely indifferent to the technical details of the mine or the professional skills of those who actually developed it.

The underground workings still exist today, an in-situ but invisible archaeological record of the development of the mine. A synthesis of the mining operation and sequence of development has been compiled by combining the remaining historic plans of the mine with the surface archaeology and ambiguous data from the historic documentary record. This reveals something of the miners who were sent to this place, and suggests that considerable skill was exercised by the convict overseers in the working of the mine despite a combination of difficult geology and changing demands of the convict administration.

Elizabeth (Janie) Anne Mason, Charles Darwin University Nursing Museum.

janie.Mason@cdu.edu.au

Beginning experiences: bush nurse and wife in Batchelor, living area for Rum Jungle mine

This is my story of working as a nurse in 1964 in Batchelor Township, the living area for the Rum Jungle uranium mine. In the context of that time, uranium was greeted by Territory people as a potential catalyst for growth and with pride in the name Rum Jungle – so unlike the controversy of the decade prior to the opening of the Ranger Uranium Mine in 1980. I was living, learning and practicing against a backdrop of the awesome landscapes of bush and sea. I found many surprises as a nurse not long out of a southern training school, yet so far from her southern training of clinical practice in a science of cause and effect. I learnt to live in a company town and with the knowledge that my status was an appendage of my husband. In the Batchelor Hospital I met a new and different class of clientele and learnt new and different ways to inform my practice as a beginning bush nurse.

Barry McGowan, Australian National University, Canberra. barry.mcgowan@bigpond.com

Kongsis, huis and clans revisited: the economics and organisation of Chinese gold mining, with reference to the Braidwood, Kiandra and Adelong goldfields of southern NSW and the North Queensland and Northern Territory goldfields.

The success of the Chinese miners in the colonial period in Australia was often attributed by local reporters and mining officials to their ability to work in large cooperative groups. Historians such as John Fitzgerald and Mai Ngae have argued that the organisation of Chinese mining bore a very strong resemblance to the co-operative Chinese *kongis* of South East Asia, in particular at Kalimantan and Bangka Island in Indonesia, and parts of the Malayan Peninsula. Using examples from the Braidwood, Kiandra and Adelong goldfields of southern NSW, and the North Queensland and Northern Territory goldfields, I will argue in support of Fitzgerald and Ngae, and suggest that the Chinese *kongsi* model explains much about the profitability of Chinese mining and the social organisation of the Chinese miners, and the resentment by some European miners at their success. The *kongsi* was as much a social organisation as an economic one, and included non-mining industries such as fishing.

Leigh McKinnon, Golden Dragon Museum, Bendigo. leighjmckinnon@gmail.com

Resistance and remonstrance: opposition to the Chinese Protectorate on the Bendigo Goldfields

In this paper I will look at the nature, scope, and impact of opposition to the Chinese protectorate system, and the accompanying residential strictures and financial burdens which occurred on the Bendigo goldfields in the mid to late 1850s. Opposition took various forms, ranging from commentary in the press sympathetic to the Chinese miners, to large scale organised campaigns of civil disobedience and non-violent protest. It will also be considered how far these efforts contributed towards the collapse of the protectorate system in the early 1860s.

Rob McLachlan, Charles Sturt University. RMclachlan@csu.edu.au

Bricks and mortar: building the Bathurst government settlement (est. 1815)

2015 marks the bicentenary of the establishment of Bathurst by Governor Macquarie, making it the oldest colonial, or European, settlement in inland Australia. With settlement came the need for building materials, in particular locally sourced clay bricks and a mortar to bind the bricks.

Drawing on current research on the settlement and its buildings, this paper will review what is known – and outline what remains to be discovered - about the production of bricks and mortar for use in early Bathurst. This is not a tale of heroic pioneer achievement. The poor quality of early building materials is reflected in the absence of surviving structures.

However, a significant development came in the early 1820s following the chance discovery of limestone near Bathurst. Convict labour was employed to quarry limestone and to operate crude kilns to produce lime, not only for brick mortar but also for use in tanning cattle hides. The site where the quarry and kilns was located is still known today as Limekilns - Australia's earliest identified mining site in the post-settlement era. By coincidence, Ophir, Australia's first payable goldfield, lies but a short distance to the west.

Ken McQueen, University of Canberra. Ken.McQueen@canberra.edu.au

The Bathurst region: cradle of metal mining in New South Wales

Bathurst was established in 1815 as the first European settlement west of the Blue Mountains. It lies in a geologically diverse area with a remarkable variety and endowment of mineral resources and it soon became the birthplace of metal mining in New South Wales. The region has a fascinating mining history and heritage. This began with the first attempts to mine copper in 1845 followed by the discovery of payable gold and the first gold rush to Ophir in 1851. Gold prospecting sparked further discoveries of other metals, particularly when the search for reef deposits began. The presence of gold in many of the ores in the region meant that gold became a pathfinder for other metals. During the renaissance of the Australian gold mining industry in the 1980s, gold exploration again led to the discovery of new types of base metal deposits. The variety of ores mined around Bathurst has matched the historic changes in mining and processing technology over the last 170 years, as driven by commodity demand, capital investment and greater economies of scale. Ore deposit types range from rich alluvial gold and high-grade vein, massive sulfide and skarn deposits of gold, copper, silver, lead, zinc and iron, worked by 19th century miners, to large porphyry copper–gold deposits discovered and exploited since the late 20th century. A number of major developments in the Australian mining industry can be traced to discoveries and mines in the Bathurst region.

A.W. (Bill) Musk, Sir Charles Gairdner Hospital, Perth. crienafz@inet.net.au

Wittenoom, Western Australia: a modern industrial disaster

Wittenoom is situated in the tropical Pilbara region of Western Australia, 1600 km by road from Perth. Deposits of blue asbestos (crocidolite) are associated with ironstone and were mined by hand dressing, commencing in 1937. The Australian Blue Asbestos Company operated a mine initially in Yampire Gorge in the Hamersley Ranges, moving the operation to nearby Wittenoom Gorge in 1948. A dry milling process was operated; most of the operation was manual and dust control was always inadequate. Despite warnings, the industry did not close until 1966 and then for “financial reasons”. Over the period of operation six and a half thousand men and five hundred women were employed and a further five thousand people are recorded to have lived in the town. Measurements of dustiness showed poor compliance with recommendations for the workforce and the town’s residents. This paper will discuss the effects of poor dust control in the mine, mill and township, which resulted in Australia’s worst occupational health disaster.

Sybil Nolan, University of Melbourne. sybil.nolan@unimelb.edu.au

Robert Menzies, the miners and the metals market crash of 1930

When base metal prices crashed in 1930, the mining industry rallied political and media connections in its support. Melbourne, then the industry’s chief corporate base, was a centre of this lobbying. One of the issues around which it agitated was the tariff, which since the late nineteenth century had been a token of faith with liberals and even conservatives in Victoria. Robert Menzies, a QC and Victorian politician then taking his first tentative steps towards the federal arena, played a key role in weakening the unalloyed allegiance of the Victorian Nationalist Federation to the tariff, altering the party’s platform to reflect the need for tariff reform. This paper investigates the development of Menzies’ thinking about tariff policy, and how it was partly shaped by his emerging connections in the Melbourne world of industry and finance, both in the Collins House group and beyond it.

Owen Ray, James Cook University, Cairns. owen.ray@my.jcu.edu.au

What's happening at the Zillmanton Mine? Dewatering 1.2 million litres of water per day

Zillmanton, worked between 1898 and 1913, was one of the Chillagoe Company's flagship mines. The archaeological remains are notable for the amount of machinery used in one 13-hectare lease, notably three large Cornish pumps and a number of different types of winding machinery distributed over 5 shafts. This paper looks at the history of the mine to try to explain the archaeological footprint, and why the mine was prematurely closed down.

David Rogers. rogersd@ozemail.com.au

Burma, the Burma Corporation and Herbert Hoover

Several years of financial worry and company reorganisations passed before the Burma Corporation won fortunes for its promoters. Not only technical and financial troubles had to be overcome, but the mine was situated in difficult mountainous country at Bawdwin, northern Burma. Transport was extremely difficult, and a variety of tropical diseases prevailed. To achieve profitability, a tortuous railway had to be built, smelters erected and a method of treating the refractory ore found.

There was alleged mismanagement of the existing Burma Mines company, which led to the Burma Corporation being incorporated to take over. Herbert Hoover, formerly of Bewick, Moreing and Co., mine managers and financiers, led the reorganisation and achieved ultimate success. According to Hoover, the Bawdwin mine had the potential to be another Broken Hill, and therefore some comparisons of the two lodes are made in this paper. The Burma Corporation lifted Hoover to the pinnacle of his personal fortune.

To appreciate the history of the mine it is necessary to provide a short detail of the British colonial period of Burma and its diverse culture. The paper is supported by company and private photographs from the early 1930's, together with maps and notes.

Ella Stewart-Peters, Flinders University, Adelaide. stew0231@uni.flinders.edu.au

"To Brave a Thousand Cornishmen": Cornish-South Australian identity and the question of government intervention

During a measles epidemic at Moonta Mines in 1874, the Adelaide-based Central Board of Health enforced stringent regulations in an attempt to curb the rapid spread of disease. Although large numbers of children had been lost to a fatal combination of measles and other conditions such as diarrhoea and dysentery, the community at Moonta Mines staunchly refused to accept the proposed sanitary measures, despite government assurances that such regulation would be beneficial to the health of all members of the frontier mining community. This paper will examine the extent to which the Cornish ethnic identity of the community impacted upon the response of the Moonta Mines inhabitants to the measles crisis of 1874-1875 and the role that this ethnic identity played during subsequent attempts by the colonial government to enforce sanitary regulations within the community.

Jan Wegner, James Cook University, Cairns. janice.wegner@jcu.edu.au

Mungana: death of a mining town

Many small mining towns in tropical Queensland did not survive when the mining declined. However, some persisted, supported by other industries, transport links, and services supplied by Government, local government and private enterprise. Despite having some of these advantages, the lead and copper mining town of Mungana on the Chillagoe Mineral Field lost the last of its residents in the early 1960s. This paper considers reasons for its decline and why those advantages failed to rescue it from oblivion.

Xiaolu Wu, University of Queensland. xiaolu.wu@uq.net.au

War and the coal mine: the history of the Tianfu Coal Mining Company, China, and the everyday life of the ordinary workers during World War II

The Tianfu Coal Mines Company was founded in 1925 in Chongqing, the wartime Capital of China. After several years of development, it became the biggest mining company in southwest China. After the outbreak of the second Sino-Japanese War, it became the most important fuel base for the wartime capital. From 1938 to 1943 the city of Chongqing experienced intensive bombing by the Japanese air force and also faced wartime shortages. This paper addresses the problems and the question of how the Tianfu Coal mining company and the ordinary people coped during this difficult wartime period.

PINE CREEK 2-Day Tour

Friday 26th – Saturday 27th June 2015

Itinerary

Friday 26th June

9.00am – Meet and board coaches marked ‘Grand Touring’ at front of the Mantra Esplanade in CBD on the corner of The Esplanade & Peel Street.* There will be one 48 and one 29-seater coach available.

* Note there are two Mantra’s in the CBD – the other is on Knuckey Street.

10.30am – Arrive at Adelaide River Railway Station - opened in 1889, on North Australia Railway that was built to connect Darwin (then Palmerston) with the goldfields. See precinct and have refreshments.

11.15am Depart Adelaide River.

12.30pm - Grove Hill Hotel - built in 1935 to serve surrounding mining area. See building/precinct and have lunch.

1.30pm - Depart Grove Hill.

2.15pm - Burrundie Cemetery – short-lived Burrundie town established in 1885 as main centre for goldfields.

2.30pm - Depart Burrundie Cemetery. Drive past ruins of Mount Wells Mine buildings.

3.00pm - Burrundie town and railway station remains.

3.30pm - Depart Burrundie.

3.40pm - Late nineteenth Chinese ovens on Spring Hill Road.

4.15pm - Depart ovens.

5.00pm - Arrive Pine Creek.

Free evening to enjoy Pine Creek’s Gold Rush Festival entertainment. From 6pm there is a free art exhibition in the Railway Station Masters House that you might care to attend.

SATURDAY 27th JUNE

9.00am to 12 Noon. At leisure to walk around late nineteenth and early twentieth century buildings in historic mining town of Pine Creek, including museum (former Mining Warden's court at Burrundie), railway station precinct and Miners Park (large outdoor display of historic mining equipment). Also look at Gold Rush Festival displays/events (such as the gold panning exhibition).

12 Noon Lunch in Pine Creek (at Mayse's Café, Pine Creek Hotel or food stalls).

1.00pm - Depart Pine Creek.

1.10pm - Late nineteenth century mine shaft on road to garbage dump.

1.20pm - Depart mine shaft.

1.30pm - Enterprise Mine lookout.

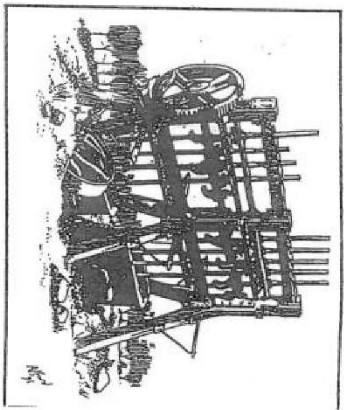
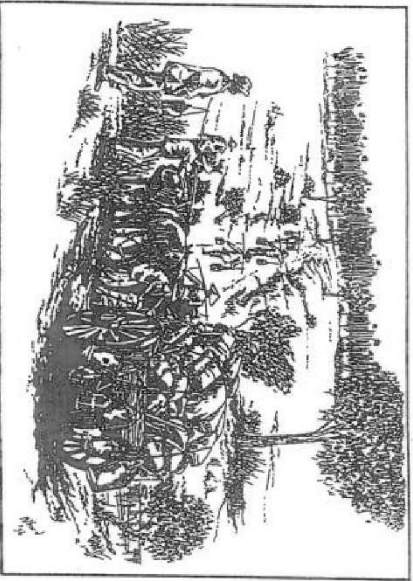
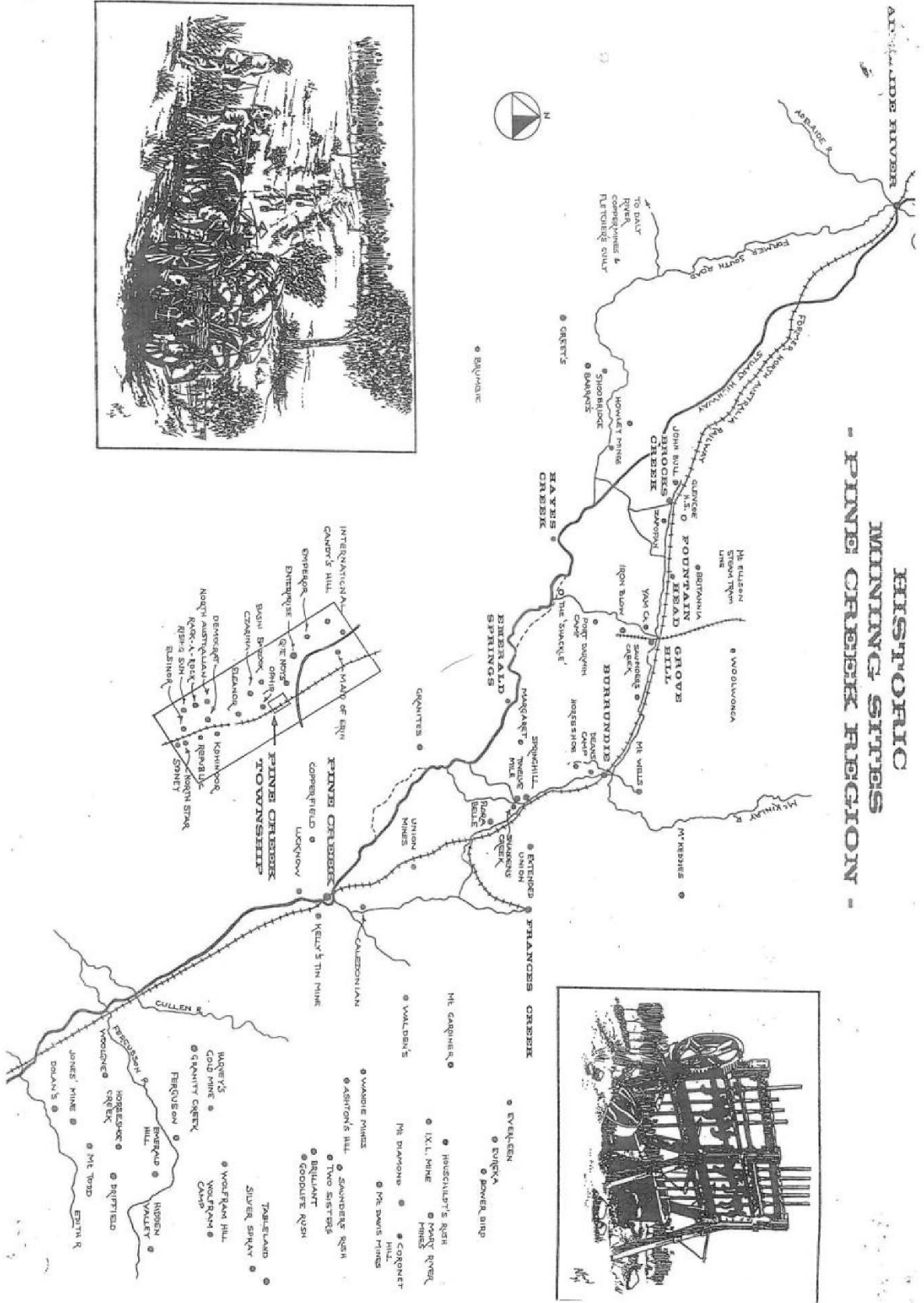
1.50pm - Depart lookout.

3.00pm - Adelaide River War Cemetery and refreshments at Adelaide River Pub (Charlie, the Crocodile Dundee buffalo, is stuffed and mounted on the bar).

3.45pm - Depart Adelaide River.

4.45pm - Arrive Darwin.

**HISTORIC
MINING SITES
- PINE CREEK REGION -**



PINE CREEK TOUR – PLACES OF INTEREST

Adelaide River. First settled by Overland Telegraph Line workers early 1870s. Hotel built 1874. North Australia Railway reached settlement in 1888. Later linked to goldfields. Much military activity during Second World War. Railway ceased being used 1976.

Adelaide River Railway Heritage Precinct. Occupies area around restored 1889 railway station. Operates as museum. Nearby bridge completed 1888.

Adelaide River War Cemetery. Established 1942.

Ah Toy's Store, Pine Creek. Pre Second World War building with post-war façade. Jimmy and Eddie Ah Toy prominent local figures.

Bonrook Homestead, Main Terrace, Pine Creek. Built 1894 from locally acquired materials. Moved to present site 1933. Then general store and butcher shop.

Burrundie. Town surveyed in 1885. Intended to be main centre for goldfields. Defunct by 1901.

Burrundie Cemetery. Burials 1893-1901.

Chinese ovens, Spring Hill Road. Chinese miners in area from 1878.

Grove Hill. Settlement began after gold discovery during Overland Telegraph Line construction 1872. Stamping battery operated from 1887. Formerly a siding on North Australia Railway. Tramways connected nearby mines to main line. Township abandoned by 1935.

Grove Hill Hotel. Built 1934-1935 using materials scavenged from abandoned mining sites. Now incorporates museum.

Mount Wells. Tin mining from 1878 or 1881 (sources differ). Battery later established.

Pine Creek. Telegraph repeater station and police camp established 1873. Centre for mining in area since then.

Pine Creek Bakery, Main Terrace, Pine Creek. Built originally at Mount Diamond about 1908 as butcher shop. Moved to Pine Creek 1915.

Pine Creek Chinatown. Archaeological remains near Stuart Highway but may be difficult to access. Seek local advice.

Pine Creek/Enterprise Mine lookout. Panoramic views of open cut pit. Late nineteenth century mine shaft on nearby road to garbage tip.

Pine Creek Miners' Park, next to Railway Station. Historic mining equipment collected from region.

Pine Creek Museum. Originally home of Mining Warden at Burrundie. Building moved to Pine Creek 1913. Had many purposes before becoming National Trust museum.

Pine Creek Railway Station. Completed 1889 when North Australia Railway reached Pine Creek, providing easier access to goldfields. Two sidings. Now museum. Includes 1877 steam locomotive.

Playford Club Hotel, corner Baxter and Main Terraces, Pine Creek. Opened 1889. Continued trading to 1957 with break in Second World War.

