

Book Reviews

Erik Eklund, *Mining Towns: Making a Living, Making a Life*, University of New South Wales Press, 2012. pp. 1-29, photographs and diagrams. ISBN 978-174223-352-9 (pbk).

The author of *Mining Towns* sets out to examine the rich cultural and historical legacy of five iconic Australian mining-related towns, all associated with non-ferrous metals, that had significant impact on the Australian economy from the late nineteenth century and up to recent times. The intention of the author is to get away from the city-centric focus of most histories although he acknowledges the many financial and other linkages with the major centres of population. While the economic impact of the towns and their regional and national links are emphasised, the focus is to bring alive the development of community spirit and identity this by examining the rise of civic and convivial institutions while aligning such developments with the recollections of workers and their families.

The chosen settlements are spread throughout the country with the exception of the Northern Territory and Victoria, and three of the five have seen continuous habitation since the 1880s. One, Port Pirie in South Australia, is renowned for its smelting and has been included because of its industrial links and to illustrate the far-reaching impact of mining on the wider economy. Another distinguishing mark is that the mining towns, Broken Hill in New South Wales, Queenstown in Tasmania, Kambalda in Western Australia, and Mount Morgan and Mount Isa in Queensland are relatively isolated and located in harsh environments. These conditions have influenced the way the communities have developed.

Some of these influences were negative, such as those borne out of economic depression, or arising from industrial conflict often associated with profit-at-any-cost attitudes by employers, especially when communities were divorced from corporate bodies. Such social and often geographical distance brought on feelings of powerlessness among workers. Other negatives were associated with environmental problems linked to working conditions, or through pollution, such as that experienced in Mount Isa and Port Pirie where lead levels have had a deleterious effect on the health of the communities. An element of racism and exclusionism also featured in all five towns, although, not surprisingly, the latest town to develop, Kambalda from the 1970s, showed less evidence of this than in the other communities.

On the other hand, there are also stories of fulfilment, loyalty, reward, prosperity and attachment to the local industry and community. The one common thread in all towns was the desire and effort to bring about improvement in living conditions and to channel energy into supporting civic and voluntary causes through social interaction, though the concern of local employers was somewhat muted in some areas. Even in the 1880s, concern to plan and establish community was seen with the setting up of Progress Associations that attempted to tackle problems. The make up of such civic authorities depended on whether

they were ‘Company’ towns (such as Queenstown, or Mt Morgan) in which case they were dominated by the company hierarchy, or whether they were more worker oriented, such as at Broken Hill. Some of the palliatives that explain the awareness of community were associated with the formation of institutions able to address problems and provide solutions that led to an awareness of community and belonging. The development of these institutions themselves often became a reason to stay in uncomfortable environments. Churches of various denominations, trade unions, sporting and ethnic clubs, friendly societies, drama and musical societies (of which brass bands featured highly), public houses, all come into this category. As stated by the author, ‘They were vibrant and contradictory places’ (p. 32), with harsh conditions and hard times being compensated for by comradeship, social activities and social ties.

In all cases the growth of mining saw inflows of immigrants from diverse backgrounds. Many arrived with the object of staying for a short period of time, while others, despite initial problems with harsh environmental conditions, high costs of living, shortages of housing and other infrastructure, developed an attachment to the locality. It is with this latter group of people and their motivation to stay and build a community that attracts the attention of the author.

To detail development of all five towns would be too space consuming for this review but in all cases the author provides a broad and informative description of the origins and development of mining activity and of the leading figures involved. Described as an ‘Icon of working-class culture’, Broken Hill that came into existence following Charles Rasp’s discovery of silver-lead outcrops in 1883 had a population of just under 20,000 in 1893. By that time a municipal authority had been established, the township surveyed and a number of hotels and other institutions established but with ‘progress’ came problems with fume belching smelting chimneys and dust storms that were exacerbated following the cutting down of timber in the vicinity of the ‘line of lode’. Such problems saw formation of the Broken Hill Progress Committee in 1885 that lobbied the NSW government to provide services and facilities. While BHP dominated mining activity, other mining companies, smelters and mills meant this was not a one-company town, and linkages to other industries saw a healthy diversification of opportunities for the population. Because of its isolation and high transport costs, Broken Hill also had a vibrant commercial and service sector, something that provided some opportunities for female workers in a male-oriented town.

Following establishment of a Catholic Church in the town, the Hiberian Catholic Benevolent Society emerged in 1887 to provide sickness and accident benefits (an organisation that appeared in all towns at a very early stage of development). By 1934, it was among a number of such societies that covered 4,800 members or approximately 40 per cent of the total employed workforce. While at first there was industrial harmony and an alliance between employers and workers, by 1892 the employers had formed their own organisation thus seeing an escalation of class conflict that culminated in the wages dispute

of 1909 and the Big Strike of 1919-1920. The town's working class image was further exemplified by control of the municipal council by the Labor Party from 1900 onwards. Spokesmen also came from the ranks of sober religious bodies such as the Wesleyans, Primitive Methodists and other non-conformist groups.

While having an image of tolerance and fairplay, migrant workers in Broken Hill were always kept at the fringes of the labour market and allocated the hardest and most dangerous jobs, while Aboriginal people although supported by some sections of the religious and union community were also treated with contempt – something that sits uneasily with the subject of 'community'. Also noted was the formation of co-operative housing societies that were active in constructing houses from 1937, while in 1947 the Zinc Corporation also constructed and financed houses. However, even at the later developed Mt Isa and Kambalda the author finds cause to suspect the motivation of the companies when providing such infrastructure.

One now familiar reflection by the author is that the old cohesiveness of community in some of these centres is today being eroded by fly-in-fly-out, drive-in-drive out regimes and by the introduction of 12-hour shifts. Transient communities and long shifts that disrupt old social patterns make for poor community cohesiveness.

This is a well-written account of some of the major mining developments that have taken place in Australia over the past century or so. The publication presents a comprehensive and informative account of historical development, although in places the detail sometimes tends to distract from the main stated object, which is to zoom in and identify developments that brought about communal affiliation with the particular mining town. In other words, the message at times tends to become lost in the detail – but this is not a serious problem. Another minor quibble is that while the introduction stresses the role of oral interviews in compiling the story, there are relatively few quotes in the dialogue from the lips of those surveyed– again not a criticism of concern but an aspect that perhaps should not have been emphasised in the introduction. In another respect this is a book that should appeal to those interested in Australian mining history in that it provides excellent detail on the history of five major mining-related developments that have helped define the Australian industrial landscape.

Mel Davies

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Anthony Hope, *The Hope Factor – Mineral Discoveries Australia Papua New Guinea & The Phillipines*, Anthony R. Hope, Rivervale, NSW, 2011, i-xiii, 536pp. ISBN 9780646553214. Available from the author: PO Box 21, Battery Point, Tas 7004, email arhope@ozemail.com.au, \$69.95 (students \$59.50). Also from Australasian Institute of Mining and Metallurgy and Society of Mining Engineers.

As we continue to exploit our known ore deposits, the discovery of further mineral resources inevitably becomes increasingly difficult. In a Foreword to *The Hope Factor*, Professor Ross Large observes that: “Exploring for minerals has become a high-powered scientific discipline, with added elements of risk and luck.” Many examples of this are evident in Tony Hope’s account of his experiences from almost five decades involvement in mineral exploration in Eastern Australia, Papua New Guinea and the Philippines. The author’s summaries of the history of discovery, investigation and development of the various deposits are enhanced by contributions and anecdotes by others who were associated with the projects. Technical detail is kept to a minimum in the main body of the individual chapters; extensive bibliographies are provided and further geological information and technical data can be found in the appendices.

Hope’s book begins with a lengthy chapter devoted to the Mount Morgan copper-gold mine, where the author began his career as a geologist with Enterprise Exploration (a subsidiary of Consolidated Zinc Corporation) on a joint venture project with Mount Morgan Limited. In this and subsequent chapters the picture emerges of a versatile geologist with experience in a wide variety of projects and commodities, both metallic and non-metallic. Two chapters are devoted to heavy mineral sands in contrasting environments: modern beach sand deposits in Eastern Queensland and the Ginkgo Mine in the Murray Basin in New South Wales, an example of an ancient beach sand deposit.

The Browns Creek gold mine in central western New South Wales attracted the attention of “prospectors, syndicates, geologists, entrepreneurs and small and large companies” - the entrepreneur Michael Hickey developed the mine before selling it to BHP Gold. A detailed history of the mine is told by geologist Peter Toedter who was first involved with the project at the age of 22 and continued to be associated with it at various intervals for the next 32 years. Hope was Exploration Director of Browns Creek Gold NL during part of this time and acknowledges the heavy load carried by Toedter not only in geological investigations but also in the development of mining operations from the late 1970s to the early 1980s. A contribution by John Holliday, who was based at the Browns Creek mine while in charge of exploration for BHP Gold in central western New South Wales, provides an interesting link between the Browns Creek and Cadia mines.

Holliday was impressed by the potential of the nearby Cadia site and, after protracted negotiations, BHP Gold purchased the property and Browns Creek became the exploration base for the major discoveries of copper and gold that led to the development of one of Australia’s biggest mining operations by Newcrest (following the merger of BHP

Gold and Newmont). Holliday comments: “It is nice to think that this resulted from such small beginnings at Browns Creek”.

The Arumpo and Filmag bentonite mines are further examples of Hope’s involvement in non-metallic mineral resources. CRA Exploration discovered the Arumpo deposit during a drilling program for heavy minerals in the Murray Basin in New South Wales, but after preliminary testing decided not to proceed with development. A report of the discovery attracted Hope’s interest - at that time he was Exploration Director of Browns Creek Gold, but had previous experience with bentonite at the Filmag mine in the Philippines. He applied for an exploration licence on behalf of BCG who proceeded to evaluate and develop Arumpo, the largest known bentonite deposit in Australia. The product is used in a wide variety of civil engineering, environmental and agricultural applications.

The chapters describing the Panguna and Ok Tedi porphyry copper-gold mines and Lihir gold mine in Papua New Guinea provide comprehensive accounts of the discovery and development of these deposits. The inclusion of Panguna and Ok Tedi in this book could be queried, since Hope was apparently not involved in either of those projects; but the accounts by Ken Phillips and Doug Fishburn of the discoveries of Panguna and Ok Tedi, respectively, are fascinating and are testament to the fortitude and perseverance of the exploration teams working under arduous tropical conditions to prove up these outstanding ore bodies. Phillips’ review of Panguna also gives some interesting insights into the background to the discovery. Gavin Thomas’ story of the discovery of the Ladolam epithermal gold deposit on Lihir serves as an outstanding example of the application of geological theory in exploration, and the hazards of developing a mine in an active geothermal system are revealed in the accounts by Hope and others.

A final chapter describes some of the author’s encounters with less-than-friendly wildlife – including a near-fatal sting from a box jellyfish in the Philippines.

The book is lavishly illustrated with photographs and maps. The photographs tend to be somewhat repetitious and although the author could have been more selective, for those who worked on the projects the photographs will no doubt bring back memories. The book would have benefited from more careful editing: the text suffers from some typographical/spelling and grammatical errors, as well as some repetition of material between chapters. But these are not sufficient to seriously detract from the entertaining and informative stories by Tony Hope and other contributors. The author has achieved his aim of producing a book that should appeal to a broad spectrum of readers.

Ross Both

John Milton Hutchins, *Diggers, Constables and Bushrangers: The New Zealand gold rushes as a frontier experience, 1852-1876*, Lakewood, Colorado: Avrooma Apfelwald Press, 2010. Pp. i-xii, 284, including illustrations. ISBN 978-1-933933-03-0

The first thing I must say is that I very much enjoyed reading John Milton Hutchins' book *Diggers, Constables and Bushrangers*. Hutchins' overview of the New Zealand gold rushes is written in an accessible and entertaining, rather than an academic style. He concentrates on human stories rather than on the dry statistics of gold production, immigration figures or crime rates. His work therefore is potentially a good introductory text to the gold rushes for the general interest reader. There are few startling new revelations in Hutchins' book, which largely relies on the contemporary writings of gold rush participants as source material. The author provides a welcome fresh perspective, writing as an American on a key aspect of New Zealand history. He firmly places New Zealand events within the context of the international series of gold rushes, from California and Victoria in the 1840s and '50s, through to the South African and Alaskan rushes at the end of the nineteenth century. Such a perspective is perhaps the most useful way to view the nineteenth century rushes, given that they were a series of global events, which acted as great locomotives of human migration.

Diggers, Constables and Bushrangers could be described as anecdotal history. Hutchins uses only a limited range of recent works and very little archival material. Instead he has accessed a broad range of nineteenth century publications, making his book a valuable guide to this original literature. His work is enlivened with plenty of the colourful tales readers expect from gold rush histories. Hutchins has used a comparative approach throughout, having looked at the memoirs of participants in American, Canadian and Australian rushes. These provide insights into both the universal features of international gold rush life and those factors specific to particular gold fields. Such use of memoir gives voice to the memories, experiences and opinions of the participants. On the other hand, this anecdotal history leads the discerning reader to question the accuracy of some of the statements. Are the memoirists describing events typical of their times or have they played up the more exciting and colourful tales? Are some events in fact remembered due to their unusual nature, rather than as part of the day to day unfolding of prospecting life? How much of the contemporary writers' accounts are based on truth and how much on rumour? Such issues particularly arise when the vexed questions of crime rates and violence, a central features of Hutchins' book, are considered. These are points where the dry statistics would have provided good supplements to the anecdotal accounts.

A few of Hutchins' observations seem anachronistic, such as his suggestion that New Zealand provincial and colonial authorities felt 'xenophobia' towards diggers coming over from Australia. In the 1850s and '60s there were few strong feelings of 'New Zealand' or 'Australian' national identity in the Australasian colonies. Any nationalism was more centred on the contested identities originating in the countries and regions of Britain, including, at that time, Ireland. The strong desire of some among the ruling groups in New

Zealand to keep out Australian diggers was largely due to prejudices based on class and fear of criminality. The one element of xenophobia that may have been present was the fear many British Protestants had of the colony being swamped by Irish Catholics from Australia. Certainly there seems to have been little objection in New Zealand to non-convict, Protestant British (including Protestant Irish) immigrants coming via Australia.

Hutchins gives attention to the fact that white prospectors from Europe, Australia and North America were not the only diggers on the New Zealand gold fields. He acknowledges Maori opposition to mining in the Coromandel, but also covers Maori involvement in the various rushes as prospectors and miners. Curiously, while he describes such famous Maori finds as that at 'Maori Point' on the Shotover River in Otago, Hutchins fails to mention the central role that Maori diggers played in the initial gold finds at the Hohonu River on the West Coast. Hutchins also spends some time on the arrival of the Chinese diggers in Otago in 1866, although he pays little attention to their significant presence on the West Coast. Given that at various times Chinese diggers made up from one fifth to over a quarter of the gold seekers in Otago and on the West Coast, Hutchins could have given them more space in a work seeking to give a broad overview of the New Zealand rushes. It is also a significant oversight that Hutchins did not look at any of the writings of James Ng, in particular Ng's *Windows on a Chinese Past*. Ng's works provide a wealth of information on the New Zealand Chinese in general and their work on the gold fields in particular.

On mentioning oversights I must voice my major complaint about Hutchins' generally readable and informative book. As the title *Diggers, Constables and Bushrangers* indicates, a large part of the book concentrates on the issues of crime, unrest and policing on the gold fields. It is therefore remarkable that Hutchins did not consult Richard Hill's outstanding history of the early New Zealand police force. Hill's two volume work on New Zealand policing up to 1886 provides extensive coverage on crime and the police response to it in all the gold rush areas. If he had read Hill's works many of Hutchins' questions regarding crime and policing might have been answered. Having said that, Hutchins' overall conclusions regarding crime on the New Zealand gold fields are very similar to those reached by Hill. Both authors largely conclude that New Zealand gold rush crime was probably more extensive than many later commentators have suggested, but that the rate of murders and violence appears to have generally been relatively low compared to those of other gold rushes, especially those in America.

In conclusion, *Diggers, Constables and Bushrangers* is no groundbreaking study of New Zealand's gold rushes, but it is a useful and lively introduction to the subject. In the process of his narrative the author gives the reader a good taste of the writings of the nineteenth century gold rush participants. Hutchins' book has the added value of clearly placing New Zealand as a small but significant link in the international sequence of nineteenth century gold rushes.

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Lenore Layman and Criena Fitzgerald (eds), *110 in the Waterbag: A history of Life, Work and Leisure in Leonora, Gwalia and the northern goldfields*, Western Australian Museums in association with the Leonora Research Project, 2012. ISBN 9781920843687 (pbk), pp. 461, with illustrations.

The publication *110 in the Waterbag* represents the work of a team associated with The Leonora Historical Research Project which captures the chequered history of communities in the vicinity of Leonora, Western Australia from the late nineteenth century to recent times. The research not only investigates mining developments in this isolated and desolate area but also embraces other activities, especially pastoralism, and the effect of developments on the original Aboriginal inhabitants. Much of the comment in the book is seen through the eyes of past inhabitants, many of whom were Italian or Slav immigrants attempting to improve their material wellbeing. The term ‘110 in the Waterbag’ is a synonym for the harsh unforgiving environment in which the local communities lived and suffered – for indeed, the book highlights the individual and community hardships, the disappointments and struggle for survival, although it also presents the triumph of the human spirit and the close-knit relationships that bound the communities together.

To edit a compendium of chapters from a number of contributors in a team project is no easy task and although the editors have in large part produced an excellent coverage of developments, there is a weakness emanating from the team effort, in that while some of the contributors have managed to present their chapters with literary flourish, thus leading to interesting reading, others have tended to be rather more turgid, something unlikely to win plaudits from the general reader.

Yet another problem is that while the range of topics covering aspects of life on the northern goldfields is wide in scope, such variety tends towards superficiality for some of the chapters, leaving the reader wanting to know more, or to wonder whether these sections are merely space-fillers. One other negative, which might be a personal quibble, is the layout of the book which tends to follow the format found in many (especially economic and other technical) textbooks these days, of interspacing the dialogue with blocks of information related to, but not part of, the dialogue – something that is a distraction, as it breaks the flow.

But apart from those negatives, there is a great deal to recommend. Much of the mining emphasis is concentrated on the Sons of Gwalia goldmine, though in a nicely flowing chapter on ‘other mining’, Peta Chappell raises the salient point that there was more than gold to be won in the locality. This stimulating chapter encompasses geological information with historic developments of the trials and tribulations associated with development of copper, zinc and nickel mining that have been significant in the local and national sphere up to and including present times. In light of the time it takes to develop infrastructure today, its salutary to note that in the early 1900s, it took only 4 months from ordering plant in Adelaide to producing the first ingot of copper at the Anaconda Copper

Mine, Ealaminna. Chappell concluded with the staggering statistic that in 2009-2010, the value of mineral commodities in the Shire of Leonora reached \$2,414,778,934.

AMHA members will be especially interested in Patrick Bertola's introduction to the development of the Sons of Gwalia GM that looks at the origins and economic milieu in which the mine was established. The description includes the attempts of Herbert Hoover to reduce costs by introducing 'Taylorism' and by recruiting Italian and Slav miners. This section is complemented by Richard Hartley's informative discussion of the technical difficulties met and overcome in developing the mine, including development of the 'all sliming process' and adoption of 'precipitation by charcoal' that was a forerunner of the pulp-in-carbon process of mineral recovery.

Related to these sections, Phil Bianchi examines the history of the Woodlines that supplied fuel and timber to the Gwalia mine, and brings out the hardships experienced by the hewers and carriers of wood. In total, some 670 km of rail were laid between 1903 and 1963, and 120,000 hectares cut out to supply the mines with wood. Of interest was the description of the makeshift camps of these cutters and loaders, who would periodically be shifted from camp to camp with their cabins preceding them on the Woodline trains. Theirs was a hard life, and only in the late 1950s were power saws introduced.

Both Lenore Layman and Criena Fitzgerald provide insights on the health and accident issues that accompanied mining in what was a harsh environment for both miners and their families. The accident rate from rock falls, plant failures, premature detonations and fumes was horrendously high, with 139 deaths being recorded in the district between 1896 and 1960, although as the author says, because of definition issues, the true level of mine related deaths is greatly underestimated. As well as facing such tragedies, the families of victims were faced with a management that was reluctant or hostile to recognising its responsibilities to the survivors and their next of kin, with many relying on communal support and payments from Friendly Societies to eke out an existence. The section reveals a startling statistic that shows 21 miners committed suicide in the period by 'placing dynamite in their mouths and blowing their heads off'!

Lest readers think that aspects other than mining have been ignored, there is a well-developed chapter on pastoral activity by Elizabeth Hof who points out that while there was some antagonism between mining developers and pastoralists, a certain symbiotic relationship existed whereby the respective activities were complementary. The pastoralists could rely on a regular market for their meat in the vicinity and in times of pastoral decline opportunities to supplement incomes could be found in supplying services or labour to the miners. In more recent times, as low prices hit pastoralists, mining companies saved the day by buying or leasing pastoral properties where they were unhindered in their efforts to explore the mineral potential of the country. In 2009, mining companies owned some 13 out of 24 pastoral companies in the area.

The fortunes of the local Aboriginal communities are also considered, and it comes as no surprise that their treatment tended to be far from benevolent at both community and

government levels. While the authorities supposedly tried to maintain harmony between whites and Aboriginals in the area, they did so mainly by excluding them from Leonora and other towns. One fact revealed is that while the native inhabitants were welcomed as workers by local pastoralists, mine owners shunned them - this because of hostility and lack of cultural understanding but also because when trying to meet manning requirements on tenements, the government, under the *Mining Act of 1904*, excluded Aboriginals in their calculations. This remained the situation until parts of the Act were repealed in 1958. The lack of understanding, or perhaps blatant antagonism is shown in Craig Muller's chapter, where he points out that deliberate desecration of a sacred site by miners near the Weebo Homestead in the late 1960s led, perhaps ironically, to the introduction of state-wide protection through inauguration of the 1972 *Aboriginal Heritage Act* in WA. Not that Aboriginals were the only recipients of negative treatment, as illustrated in Crien Fitzgerald's section on the sad fate of Afghan cameleers who did so much to maintain the life of the local communities and mines in the early years of activity.

The development of 'community' in Gwalia and in Leonora, which were linked through the mine, yet divorced by a few kilometres and function, is another well-developed section by Lenore Layman. It shows the strength and cohesion of the locals in their fight for facilities, though as pointed out, with the recovery of mining in the 1980s and 90s when the mine was developed as an open-pit, that feeling of community became eroded with the coming of fly-in, fly-out workers – though one positive outcome has been the great improvement in quality of the local infrastructure.

Overall, this is a much-needed regional account of mining come pastoral development that embraces all aspects of economic and social life and experience in an isolated area. It must reflect the experience of other isolated areas in Australia and the publication could well serve as a template for other such studies.

Mel Davies

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Ronald H. Limbaugh, *Tungsten in Peace and War, 1918-1946*, University of Nevada Press, Reno, Nevada, 2010. Pp. 284 + xiv illustrations. ISBN 978-0-87417-820-3

Tungsten is an overlooked metal that is little appreciated by the general public, but Ronald H. Limbaugh's excellent book should do much to bring it closer to centre stage. Tungsten is an awkward metal in that it does not appear in nature by itself but rather is usually entrained in other minerals of a similar crystalline structure. Moreover, it can be found in a variety of forms the quality of which can pose significant challenges in refining. Yet it is vital strategic metal used in hardening cutting steels, fabricating armour plate, and manufacturing materials used in the electronics and aerospace industries.

Tungsten in Peace and War is a strong combination of industrial and business history. It charts developments in world tungsten mining, market and price trends, patterns of global trade, the structure of the industry, and relations between governments and the industry. Against this backdrop, Limbaugh traces the history of one of America's most important producers, originally called Pacific Tungsten Co. upon its foundation in 1917 and renamed Nevada-Massachusetts Co. in 1924. The book begins with a discussion of the importance of tungsten in the fabrication of speciality steels that played such a central role in the rapid development of the engineering and armament industries between 1880 and 1914. Limbaugh's exposition of the metallurgical and technological context will not deter the general reader; it is clear, informative, and highly readable. New refining processes and applications made tungsten 'the key metal of World War I'.

The geographic distribution of the "grey metal" enhanced its strategic significance. Most deposits occur in China, Russia, Canada, and what is now Kazakhstan, while the U.S. has always been a minor producer accounting for about eight percent of the world's supply. Deposits were often small and located in remote parts of the western states of the USA (A series of photographs serves to emphasise the tough conditions in which tungsten miners worked). High prices attracted speculators and itinerant operators. Therefore, tungsten mining in America was carried out mainly by small scale enterprises and a handful of more substantial, but in comparison with other metals, relatively modest ventures. Pacific Tungsten and its successor firm ranked among the latter.

The enterprise was formed by a colourful character, William J. Loring, an engineer with international experience and a first-rate reputation, who interested a lawyer turned banker, Charles H. Segerstrom, in the project. Loring, known for gaining and spending wealth disproportionately, faded from the scene and died penniless aged eighty-three. Segerstrom assumed control of Pacific Tungsten in 1924, renamed it, restored its finances, and guided it through the rest of the difficult interwar period and beyond World War 2. He proved to be a very effective manager who kept a close eye on costs, followed prudent mining practices, and carefully controlled expansion projects. Segerstrom took a long-term view on business relations; he showed sound judgement in making concessions to preserve and strengthen key relationships. As a result, he built a sound marketing organisation with

key customers and retained an effective workforce, despite labour scarcities during the Second World War. A pragmatic figure, skilled at building links with government officials despite his distrust of the New Deal and an aversion to big government, he came to represent the U.S. tungsten industry as it sought appropriate classification within the NRA framework and attempted to organise a producer cartel. Segerstrom was certainly a multi-skilled entrepreneur and his manifold talents helped to make Nevada-Massachusetts America's premier tungsten producer. Segerstrom also built up personal business interests which were related to those of the main business, and when he passed away, exhausted by his wartime exertions, his family managed the combined enterprise until they closed down operations in 1958 and finally sold out to General Electric and Utah International in the 1970s.

Limbaugh charts the history of Nevada-Massachusetts while addressing broader themes relevant to the industry as a whole. He examines key issues such as foreign influences on the domestic market for the grey metal, disputes between industry sectors, patent contests, business-government relations, changing technology, and multinational business. The creation and maintenance of America's strategic stockpile receives comprehensive treatment. However, he avoids engaging in academic debates regarding geographic determinism and resource scarcity as a cause of war and the place of western mining in U.S. history. The result is a highly readable book that deserves wide attention from mining and business historians. Limbaugh spared no effort in researching Tungsten; he consulted archives in state and university libraries across the West, worked his way through the extensive records of Nevada-Massachusetts and Segerstrom's voluminous correspondence, and interviewed descendants of the key figures within his study. As a result, Limbaugh has produced an interesting book that definitively fills a major gap in the history of strategic metals.

Gordon Boyce

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Ross Mainwaring, *Riches Beneath The Flat: A History of the Lake George Mine at Captain's Flat*, Light Railway Research Society of Australia, Melbourne, 2011, pp. i-v, 104, with illustrations. ISBN 978 0 909340 49 0

R*iches beneath the Flat*, presents the history of the Lake George Mine at Captain's Flat in NSW. The area is approx. 900 metres above sea level and is 60 km on the eastern side of Canberra, an area that was inhabited by the Ngarigu Aborigines prior to European settlement. Two phases occurred in its mining development: initial endeavours prior to 1900 and major development after the Great Depression.

Colonists passed through the area as early as the 1830s, and gold was investigated there from 1852. Subsequently gold mining endeavours arose for the Captain's Flat area from 1864 but it was not until 1882 that major activities commenced after a large reef was discovered, and in the following year copper was found.

Gold was difficult to extract from the ore at Captain's Flat due to the high levels of silver and lead that were present. However, mining attempts persevered before attention turned to the extraction of lead and silver in their own right. In 1885, a Kahlo and Dobb 'Pacific Water-jacket' Smelter was built to assist this approach. This revolutionised the mines but, due to the capital costs, it was found that only with large-scale mining could operations survive.

To improve the situation at the then Commodore and at the Koh-i-noor properties, new furnaces, a stamping battery, a Huntingdon Mill and a reverberatory calciner were implemented. The Koh-i-noor group also began heap roasting the ore in 1890, with workers heaping the ore onto timber beds that were then set alight. Huge amounts of sulphur were released which killed most of the bushland in the area, the remaining timber being felled and used in the furnaces. The company believed they could increase yields by introducing Pyritic Smelting, and set about adjusting the facilities to achieve this. They constructed stacks and furnaces, installed pumping equipment, and brought in improvements in the form of electric lighting and telephone communications.

In 1894 the Commodore-Vanderbilt and Koh-i-noor mines were amalgamated and became the Lake George Mining and Smelting Company. Following further investment in 1896, the name was shortened to Lake George Mines Limited.

During the late 1890s the town's population reached 3,000 and it boasted five hotels, an oyster bar and a jeweller. The vast copper yields made world headlines and attracted great interest, seemingly assuring Captain's Flat as a major industrial centre. However the smelting plant could still not satisfactorily deal with the complex, low grade sulphide ore, and the government decided that ore production was too low to justify building a railway to ship the product out. Thus, by 1899 mines were closing down and the town, like so many mining settlements, started to disappear.

The main focus of the book is the second, successful stage in mining development at Captain's Flat. Mining endeavours were re-initiated from 1929 with improved ore

recovery approaches in mind because of the relevant industrial experience gained during the interim period, particularly at Broken Hill. The specific target was iron pyrites which could be used as a feed for the smelters of Port Kembla on the NSW south coast.

Technically the main production development was the achievement of appropriate mineral processing through flotation. Trials were made in 1929 but all was put on hold for a while due to the Great Depression. When re-initiated from 1935, the team included major staff with mineral processing experience relevant to supplementing the outcomes of the trials. On completion of adequate rail links to the coast, and on obtaining the correct mining equipment for the project, the next development involved the provision of blended ore. By 1937, Lake George Mines had built a 39km railway to Bungendore, and introduced new drilling techniques and flotation plants as the base for re-opening the whole area. The targeted level of full production in lead and zinc was commenced in the late 1930's. The town rallied again, so that by 1940 there were 550 miners and a population of about 1800.

Captains Flat became successful. By the end of the 1930s it was second only to Broken Hill, as its mines produced vast quantities of gold, silver, lead, and zinc, plus copper and iron pyrites. However, WW11 placed restraints on production and on client outlets, for both German and Japanese groups had been customers until that time.

Although the mine was a 'protected undertaking' during the WW11 period it still suffered due to the shortage of experienced staff and restrictions on equipment purchases, the latter being especially associated with weak access to off-shore equipment supplies and funds, a situation that was extended to beyond 1945. But fortunately for the local producers Australia placed restraints on externally sourced competitive products as a means of protection.

To assist the World War 11 endeavours, the flotation of copper ahead of lead was introduced in 1942 so that from 1944 a high-grade copper concentrate could also be provided. Very profitable years ensued but revenue started to drop from 1952/53. In the social welfare sphere, the company, Lake George Mines, built 190 fibro cottages for married miners and established a large hostel type building for single men. It also provided a new theatre, a hospital, a swimming pool, an ambulance service, payments for doctors and nurses, electricity, plus in-street lighting, and improved water supply arrangements, but despite this, relationships between the company and the miners became acrimonious. From the production point of view, the role of underground locomotive drivers proved a barrier to lowering costs because it was hard to get experienced people, to set up a good training program and to get locomotive crews to adopt flexibility.

Several major strikes occurred, including one that lasted for seven months. Unfortunately an arrangement in wages and in productivity that was acceptable by both parties could not be achieved. By the late 1950's, based on the resources and the costs, it was apparent that those resources that remained viable were limited and that cost reductions were unlikely. Hence the operation was phased down and mine closure occurred in 1962.

The railway line closed and once again the town returned to being a sleepy hollow. Thus ended a second flurry of localised mining activity..

The town now has far fewer residents and being only 45 minutes' drive from the centre of Canberra some of them commute to Canberra for work. Today, Captains Flat is an interesting place to visit with the many mining heritage features available for inspection. The Captain's Flat Hotel (still operating today and apparently well worth a visit) was built in 1938, and, at 32 metres long, it contains the largest bar in Australia.

Overall, this is a detailed and well-illustrated book, which is a very worthwhile buy, both for providing a detailed outline of the past and for presenting background for a visit to the wider area. A mild criticism is that possibly more could have been done to provide greater detail on some of the characters involved. The book's background in that it has been produced for the Light Railway Research Society perhaps explains why mobile equipment is the main focus of the author, rather than the actual mining activities. An attractive positive is that the frequency and range of photographs form a major and useful component of the report.

Jack Barrett

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Philip Payton, *regional Australia and the Great War: 'The boys from Old Kio'*, University of Exeter Press, 2012. Available from Footprint Books, Australia. pp. i-xiii, 244pp, with illustrations. ISBN 978 0 85989 872 0 (HB); ISBN 978 0 85989 873 7 (PB)

Philip Payton is well known for his expertise on the history of the Cornish communities on the Eyre Peninsula in South Australia. In this book he turns his attention to the Great War and how this region and its inhabitants – covering the mining and smelting towns of Moonta, Wallaroo and Kadina – interacted with this extraordinary and traumatic global experience. He delivers a book that represents a highly effective synthesis of local and global history; a powerful insight into the detailed lives of those from one region strongly connected to the world-turning events of 1914 to 1918. War brought hopes and dreams, and grief and loss across all of the combatant nations but it included as Payton notes ‘dimensions that were always intensively personal and intensely local, and above all rooted in place.’(p.2)

The author then follows the lives of soldiers and their families as they moved through enlistment, the Gallipoli campaign, the Western Front, and periods of leave or recuperation in Old ‘Blighty’. In these diverse experiences Payton explores the complex effects on identity. Visiting England for example was a remarkable experience for young men many of whom had relatives there, but as relationships between the Tommies and the Anzacs soured somewhat, the experience was not always positive. Visiting Cornwall was also a special experience for Peninsula men who were infused with Cornish culture and could visit Cornish relatives. Payton also covers the effects of the divisive conscription campaigns and the continued majority ‘No’ vote on the Peninsula despite the best efforts of pro-conscription politicians and churchmen.

Finally he covers the last battles of the war, the end of the conflict and the often frustrating process of demobilisation. The end of the war did not mean the end of suffering, as many endured the physical and psychological wounds of the conflict and those on the homefront managed as best they could or were left to mourn those who never returned. To make matters worse the economy went into recession and mining towns were particularly hard hit. All through this extended story, the author probes the personal stories of soldiers and their families, all too often ending with a description of how a man that we have come to know as readers was killed in action or by wounds that failed to heal.

Payton draws on the work on Bill Gammage and John McQuilton in particular, who have expertise on the lives of ordinary soldiers in the case of Gammage, and the relationship between rural regions and the war in the case of McQuilton. There is also a hint of Bruce Scates’ work too as the author draws together individual stories from Australian War Memorial Records, soldier’s letters and family correspondence to create a picture of the soldiers’ experience at war and their changing relationship to the homefront. The rural press on the Peninsula, in particular the *People’s Weekly*, played a crucial role initially in publishing letters from soldiers, and later as news from home read by soldiers at

the front. While, as one might expect, the war emphasised national and imperial loyalties over local ones, the author shows how regional loyalties were also activated and even strengthened by the experience.

This book makes a very important contribution to two usually distinct historiographies – regional history, and military history. By connecting the two in such an effective and compelling fashion, Payton has shown a new direction in studies of war and history. The approach has all of the strengths of local history with its eye for detail and personal stories, but also possesses the big picture context that comes with a wider global scale. The book is handsomely produced by the University of Exeter Press with a generous number of photographs and reproductions of original documents. For mining historians it offers new ideas about connecting place with global history and also suggests new ways of looking at the impact of war on the Australian mining industry and its communities.

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