MERTON’S REWARD GOLD MINE: RECONSTRUCTING THE MINE AND DECONSTRUCTING THE MYTH

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B.Sc (Hons)

This thesis is presented for the degree of Master of Philosophy of Murdoch University

January 2013
I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary institution.

..........................................

Marianne Diane [Peta] Chappell
Merton’s Reward Gold Mine: then …

Top: Merton’s Reward *circa* 1900. Fred Merton stands in front of a timber structure (a crib) supporting the roof (the back) of the underground workings. Bottom: *circa* 2004. These appear to be the same workings. The crib has been replaced with sturdy timber props. (Courtesy Navigator Resources Ltd, both images)

… and now
Prospector Fred Merton discovered gold near the town of Malcolm in Western Australia in March 1899 and took the bold step of developing his find as sole owner/manager. When he sold to British interests in January 1902, his audacity had won him fortune – approximately £84,202 worth of gold plus the proceeds of the sale – and fame. Or should that be infamy?

This thesis addresses two aspects of the history of Merton’s Reward gold mine. It analyses the evolution of the mythology that developed around Merton and his mine throughout the twentieth century, and it investigates how and why the mine developed as it did, firstly under Merton’s management and then that of a typical British mining company.

The Western Australian gold boom of the 1890s generated numerous tales of prospectors and bonanzas but there has been little discussion or analysis of the authenticity of these myths in either the reminiscence literature or scholarly histories. The well-documented mythology surrounding Merton and his mine provides an excellent subject for this type of investigation. Its origin is revealed in misinterpreted and biased newspaper reports of the time.

The mine itself developed into a sprawling confusion of randomly named quarries, shafts, and associated workings, sorely in need of clarification. Detailed examination of the records demonstrates the importance of geology as a factor in its development. When integrated with other factors including finance and the influence of the individual, Merton’s Reward provides a rare opportunity to compare management style in the two phases – the one-man show and the company operations – of the gold mine’s life. Although Merton ran the mine for his own benefit he followed locally accepted mining practice. He understood the limitations of his style of management and sold when changing conditions within the mine threatened to surpass them.

Despite a full complement of staff appointed to professionally manage development of Merton’s Reward and despite the company producing roughly twice as much gold as
Merton, it failed to achieve a return on its investment. The geology of the mine defeated it.

This case study starkly illustrates the insurmountable difficulties associated with chasing a failing orebody at depth, the main reason for closure of the majority of Western Australia’s outback mines. Merton is demonstrated to have been highly competent, both as prospector in his choice of ground and as mine owner in the timing of his departure.
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Mertons Reward Mine [Composite Plan]  
1907 | -  
[based on 14/290 & 15/290] |

### Derivation of the plans

The DoIR disclaimer that appears on Plans 1, 2 and 4 applies also to Plan 3 and to DMP plans 11/290 and 12/290, which are reproduced as Figures 4.4 and 4.5. The originals of Plans 1 and 2 were prepared by the staff of Merton’s Reward Gold Mining Company Ltd in 1903; the copies reproduced here were obtained as scans from the DoIR, the predecessor of the DMP. They have not been materially altered but were ‘cleaned up’ – the background of one being very blue and of the other very orange.

The original of Plan 3 was prepared by Bewick Moreing personnel in 1904. The scanned copy obtained from the DoIR proved to be badly distorted so a folded paper copy in my personal possession was used as the basis for the reproduction included herein. Extensive cleaning up was necessary to remove the effects of years of folding but no alterations were made to the drawing itself.
Plan 4 is not strictly speaking an original mine plan. In 1990 the Department of Mines permitted Ashton Gold WA Pty Ltd to redraw original blueprints 14/290 and 15/290, which had been prepared by Merton’s Reward Gold Mining staff progressively up until April 1907 – the most recent date found labeling the workings on the plan. It is reproduced here as scanned by the DoIR.

In order to print the mine plans at A1 size the scales of Plans 1 and 4 had to be reduced; this was not necessary for the two Longitudinal Sections, Plans 2 and 3, which are printed at original scale.

Of the mine plans which are used as figures in text, DMP plans 11/290 and 12/290 are reproduced as drawn by Bewick Moreing personnel in 1900 as Figures 4.4 and 4.5, whereas Figures 4.3 and 5.1, based on DMP plans 1/290 and 17/290 respectively, have been amended and annotated by the author of this thesis to highlight specific details of the mine.

The DMP holds other historic mine plans for Merton’s Reward gold mine but the four large scale plans selected for inclusion in this thesis between them effectively illustrate the development of the mine and the difficulties in deciphering that development.
# Abbreviations

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<tr>
<td>AGSO</td>
<td>Australian Geological Survey Organisation</td>
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<tr>
<td>AIME</td>
<td>American Institute of Mining Engineers</td>
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<td>AR</td>
<td>Annual Report</td>
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<tr>
<td>AusIMM</td>
<td>The Australasian Institute of Mining and Metallurgy</td>
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<tr>
<td>BIF</td>
<td>banded iron formation (geological)</td>
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<tr>
<td>BM</td>
<td>Bewick Moreing Company Ltd files</td>
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<tr>
<td>CM</td>
<td>Coolgardie Miner</td>
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<tr>
<td>DoIR</td>
<td>Department of Industry and Resources, Western Australia</td>
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<tr>
<td>DMP</td>
<td>Department of Mines and Petroleum, Western Australia</td>
</tr>
<tr>
<td>E&amp;MJ</td>
<td>Engineering and Mining Journal</td>
</tr>
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<td>E-W</td>
<td>direction of strike (trend) of veins or other geological features</td>
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<tr>
<td>GF</td>
<td>Goldfield</td>
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<td>GGWA</td>
<td>Government Gazette of Western Australia</td>
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<td>GM(s)</td>
<td>Gold Mine(s)</td>
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<td>Gold Mining Lease</td>
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<td>MC</td>
<td>Malcolm Chronicle</td>
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<td>MDAR</td>
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<td>MH</td>
<td>Morning Herald</td>
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<td>MRGM Co Ltd</td>
<td>Merton’s Reward Gold Mining Company Limited</td>
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<td>MRSEL</td>
<td>Mining Reports of the Stock Exchange of London</td>
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<td>NCH</td>
<td>North Coolgardie Herald</td>
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<tr>
<td>N-S</td>
<td>direction of strike (trend) of veins or other geological features</td>
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<tr>
<td>NSW</td>
<td>New South Wales</td>
</tr>
<tr>
<td>RC</td>
<td>Reward Claim</td>
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<tr>
<td>SROWA</td>
<td>State Records Office of Western Australia</td>
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<td>Trans IMM</td>
<td>Transactions of the Institute of Mining and Metallurgy</td>
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<tr>
<td>USA</td>
<td>United States of America</td>
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<td>WA</td>
<td>Western Australia</td>
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Units of Measurement and Conversion Factors

Original units have been used throughout this document. Gold was measured in Troy weight as fine ounces (oz), pennyweights (dwt) and grains (gr).

1 acre = 4840 square yards
       = 0.404 685 6 ha

1 chain = 66 feet
        = 22 yards
        = 20.116 8 m

1 foot (ft) = 12 inches
            = 0.3048 m

1 gallon = 4.546 09 x 10⁻³ m³

1 grain (gr) = 0.041 667 pennyweight
              = 0.064 798 918 g

1 inch (in) = 25.4 mm

1 mile = 1760 yards
        = 80 chains
        = 1.609 344 km

1 ounce, Troy (oz) = 20 pennyweights
                   = 480 grains
                   = 31.103 477 g

1 oz/long ton = 30.612 24 g/t
1 oz/short ton = 34.285 71 g/t

1 pennyweight (dwt) = 24 grains
                     = 1.555 173 8 g

1 dwt/long ton = 1.530 612 g/t
1 dwt/short ton = 1.714 286 g/t

1 ton, long = 2240 pounds
             = 1.016 047 t

1 ton, short (U.S.) = 2000 pounds
                    = 0.907 185 t

1 yard = 3 feet
       = 0.9144 m³


Currency:

1 pound sterling (£1) = 20 shillings = 240 pence
1 sovereign = £1 as a gold coin
Acknowledgements

The research presented in this thesis would not have been possible without the permission and co-operation of the owners of the mining tenements which cover the old Merton’s Reward gold mine, originally Ashton Gold WA Pty Ltd and currently Navigator Resources Ltd. Particular thanks are due to Ian Walker of Ashton Gold, who first set me on the path of researching and assessing old gold mines, and to Tom Sanders at Navigator for generously granting me access to all available information on Merton’s Reward, both historical and recent exploration results generated by the various companies who have held the leases in the last twenty years.

In researching public and archival records I would like to acknowledge the considerable assistance received from the staff of several institutions. In Perth these were the Battye Library of Western Australian History, the State Records Office of Western Australia, the Department of Mines and Petroleum Mineral House Library and the old third floor Survey and Mapping Division of the former Department of Mines: in London the Guildhall Library, the London Metropolitan Archives, and the Geological Society of London: in Sydney the State Library of New South Wales, in Melbourne the University of Melbourne Archives and in Beechworth the Burke Museum. I also received assistance from the libraries of the University of Western Australia, Murdoch University, the School of Mines (Kalgoorlie) branch of Curtin University, Imperial College (London) and the Kalgoorlie branch of the Chamber of Mines and Industry.

I am particularly grateful to Richard Hartley whose knowledge of mines and technical personnel in the period covered by my thesis, and generosity in sharing it, knows no bounds. My thanks also to Bill Staunton and Greg Wardell-Johnson, formerly of the Gold Group based at Murdoch University, who cheerfully checked my metallurgical mathematics and ideas, to Frances Hammond who drew the saddle reef and to my son Tom Chappell who assisted in re-sizing and printing the large-scale mine plans.

I would also like to express my gratitude to Murdoch University, and in particular the School of Social Sciences and Humanities, for giving me – a geologist – the opportunity to undertake a research degree in history, albeit mining history. I am
particularly indebted to two people – Lawrie Davidson and Lenore Layman. Lawrie, as Associate Professor in the Extractive Metallurgy Programme, initially supported my application and directed me to Lenore as a possible supervisor. Through the years, he has never failed to give support, even viewing as a learning curve his extensive ‘repair’ work on the mine plans, the digital re-drafting of Figures 4.1, 4.2 and 5.3 and annotations to Figures 4.3 and 5.1. He also assisted in the final collating of the thesis. I am extremely grateful.

But my greatest debt of gratitude goes to my supervisor, Associate Professor Lenore Layman. Gradually she cajoled me into learning to write the type of history required at this level. If I have succeeded the credit is all hers; if I failed the blame is all mine for not following her advice closely enough.
Chapter 1

Introduction

This thesis presents a history of Merton’s Reward gold mine in the period 1899 to 1911. It is a case study in the rise and fall of an outback goldmine in Western Australia’s first gold boom. With a total official gold production of only 60,036.87 fine oz of gold from 88,166.50 tons of ore from discovery in 1899 to the present day, all but 2,800 oz of which were produced in the period to 1911, Merton’s Reward might appear an unlikely candidate for such intense examination. However, the mine illuminates several of the major themes in the history of gold mining identified in more general texts, notably the myth of the prospector. The history of Fred Merton and his mine has been heavily - and for the most part unfairly - mythologised in Western Australian reminiscence literature throughout the twentieth century. The eventual sale of the mine in 1902 to mining engineer and entrepreneur Charles Kaufman provides a sharp illustration of the interface between prospector, entrepreneur and mining company. The subsequent establishment and progress of Merton’s Reward Gold Mining Company Limited exemplifies the theme of the structure and modus operandi of a free-standing mining company. The mine also demonstrates the crucial importance of an understanding of its geology to a convincing interpretation of its mining history.

The myth of the prospector

Tales of prospectors – their chance discoveries, epic journeys, near misses and flamboyant behaviour – are legion. The published texts which recount these tales tend to fall into two categories – the reminiscence literature and the more scholarly commentaries. The reminiscence literature is written either by participants in the events described – for example, N.K. Sligo’s Mates and Gold and Albert Gaston’s Coolgardie Gold – or by people closely associated with the prospectors or geographical locations described, exemplified by Malcolm Uren’s Glint of Gold based on the reminiscences of C.M. Harris, known as ‘Diorite’, and Norma King’s Colourful

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Tales of the Western Australian Goldfields. There is little discussion or analysis of the authenticity of the tales being told; they are simply rattling good yarns spun with affection. They provide a lively but uncritical picture.

The myth of the prospector in the scholarly histories may be viewed as a component of the ‘pioneering’ myth. Massie, in describing the pioneers of the Canadian Plains, uses words such as ‘rugged, stalwart, honest, hardworking, entrepreneurial, moral, resourceful and visionary’, all of which have also been applied to the Australian prospector. The pioneer myth put service to the community above self-interest. However, Hirst has pointed out that the pioneers’ aim was occupation of the land for their own use to the exclusion of others, hardly an unselfish attitude. The prospectors were not interested in land per se, but in the mineral wealth it might contain; they were entirely driven by self-interest. Blainey noted that the Australian gold rushes coincided with times of economic crisis; desperate times drove individuals to try their hand at the hard life of the independent gold miner. In The Rush that Never Ended he eulogized the prospector as individual entrepreneur. They were strong men, exemplified by ‘experienced bushman’ Gilles McPherson, a ‘tall Scot with chiselled face and toughness of granite’.

Rohrbough’s vision of the Californian Gold Rush as an ‘economic democracy’ in which ‘anyone with a pick, pan and shovel could participate’ was better suited to the early rushes in New South Wales and Victoria, with their extensive alluvial gold occurrences, than to the Western Australian gold rushes of the 1890s as there was comparatively little alluvial gold here.

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4 C.T. Stannage, Western Australia’s Heritage: the Pioneer Myth, University extension, University of Western Australia, Nedlands, WA, 1985, p 6
8 Ibid, pp 168, 165
reefs at the surface, but for most prospectors the winning of gold from the reefs and lodes of the Archaean greenstone belts was a hard slog, requiring time, energy and expense. Not all were prepared to turn miner, committing to the levels of dedication and organization needed. Those who did rarely worked alone.

Even in the scholarly histories there is little analysis of the prospectors’ tales. In a rare critical moment Blainey cast doubt on the veracity of Leslie Robert Menzies, after whom the Western Australian town was named, who wheeled £750,000 of gold, supposedly found in two hours’ prospecting, from his hotel in Coolgardie to the bank in a barrow. ‘Strong man, a strong barrow, his six tons of gold equaled the recorded yield of the entire colony for 1894!’ Lynette Ramsay Silver’s *A Fool’s Gold: William Tipple Smith’s challenge to the Hargraves myth* represents a rare attempt to deconstruct a prospector’s story – in this case the supposed first finding of gold in New South Wales. This story also features in Barry McGowan’s *Fool’s Gold: Myths and legends of gold seeking in Australia*, which presents a selection of the best known and most enduring tales of gold rushes and gold seekers including a masterly analysis of the Lasseter legend.

Blainey likened the opening up of the goldfields in the arid zones of Western Australia to a series of stepping-stones. If a new field became successful, it became the supply base from which other prospectors moved further out. Gold was found close to Mt Malcolm in 1892, the town of Malcolm officially declared in 1897. By 1899 when Merton made his find the pioneering prospectors had moved on from the area. What little evidence exists suggests that Fred Merton was never in the earliest wave of pioneering prospectors. He was an enthusiastic prospector but in areas close to existing finds. His talent was to spot what others had missed, his character bold enough to do what others would not – develop his find to full-scale mine as sole owner/manager.

11 Blainey, *The Rush that Never Ended*, p 178
15 Ibid
The prospector/entrepreneur/company interface

The interaction between prospector and entrepreneur or company frequently falls within the compass of prospectors’ tales and is therefore dealt with in many of the texts previously identified. Both Uren and de Havelland record details of deals done between prospector and promoter; for instance, Pollard and Heaphy’s sale of Heaphy’s Find near Laverton in the Mt Margaret Goldfield to John Waddington, who then sold it on to a ‘major mining and investment company’. However these tales are scarce and rarely exhibit any personal colour, the story of Fred Merton and Merton’s Reward being the exception featured by both authors. Although Blainey made some mention of the prospector/entrepreneur interface in The Rush that never Ended, his more localised mine histories, such as Mines in the Spinifex: the story of Mount Isa Mines, provide detail and personality in the recounting of the often complex dealings between the early prospectors, promoters and companies.

The interface between promoter and company has proved a more fertile field for commentary. McCarty commented that promoters purchased hundreds of small shows in Western Australia and sold them on to investors ‘as tickets in a lottery’. The majority were unsuccessful but there were a few glittering prizes to be won. His view of the typical company flotation – a company with a nominal capital of £200,000 of which half to two thirds went to the vendor and promoters, frequently with a secret arrangement between them to artificially inflate the sale price of the property so that it might appear more valuable – has been widely accepted by subsequent authors. Wilkins identified three types of promoters – an intermediary between vendor of property and company who never took up shares in the company, a type of underwriter

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17 D.W. de Havelland, Gold and Ghosts: a prospector’s guide to metal detecting and history of the Australian Goldfields, volume 1 - Western Australia, Hesperian Press, Carlisle, 1985, p 213. Heaphy’s Find became better known as the Ida H., a major producer worked by the Ida H. Gold Mining Company Ltd.


20 Ibid, p 11-12
who took up shares for resale, or a principal in the transaction who would continue to hold the company’s securities.

The thorny question of who benefited most financially in the complex interactions required to bring prospect to mine has progressed beyond the simplistic model of promoter exploiting unworldly prospectors in selling their former property at vastly inflated price into a company float. For instance, Hill demonstrated that rigorous analysis of a series of transactions in the development of the Blackwater gold mine in New Zealand, involving the calculation of a present value of the mine at each change of ownership and comparison of the calculated values with the price paid, considerably altered the perceived wisdom of the cheated prospectors, greedy promoter and overcapitalized company. He calculated that the first two sales – prospectors to promoter, promoter to mining company – were effectively made at a discount to the true value of the mine. The company, however, made a ‘quick profit of £150,000’ by vending the property into a new entity, Blackwater Mines Ltd, for 200,000 £1 shares. The new company raised working capital by issuing 50,000 shares to the parent company’s shareholders.

In discussion of Hill’s paper, Hillman has pointed out that there was no quick profit; the vendors took shares, not cash. He also argued that the ultimate beneficiaries of both vendor and cash shares in Blackwater Mines Ltd were the same – the shareholders of the parent company. The point clearly made by the work of Hill and Hillman is that every deal deserves close analysis. The interface between prospector and promoter, promoter and company is a fertile field for further study.

The transition of ownership of Merton’s Reward from Fred Merton to Merton’s Reward Gold Mining Company Ltd is a case in point. Despite extensive documentation in the archives of the London Stock Exchange it is impossible to establish the full transactions involved. However close attention to the detail of the

23 Ibid, p 163
24 Ibid, p 162
documents leads to the conclusion that this was the type of deal described by McCarty in which the sale price was artificially inflated to make the mine appear more valuable.

**The structure and modus operandi of the free-standing mining company**

The theme of the free-standing mining company is one which has attracted some discussion in the past twenty years. Wilkins used the phrase to describe a particular type of British foreign direct investment in which it was the company which was the foreign investor, not the owners of its securities.\(^2^6\) Her model described a company designed to provide ‘the institutional apparatus for the management of the specific business investment’ overseas.\(^2^7\) The British head office usually comprised a corporate secretary and a board of directors and little else.\(^2^8\) The degree of control exercised by the directors in London varied from company to company.

Hartley has reviewed Wilkins’ model and its refinements by Hennart and Casson. He concluded that neither Hennart’s suggestion, that free-standing companies were formed in order to raise capital for the establishment of enterprises which was not available in the country in which they operated, nor Casson’s, that they were formed largely to supply specialist managerial and technical services needed for the formation of non-manufacturing enterprises abroad, provides an appropriate model for the 683 companies floated to mine gold in Western Australia between 1895 and the end of 1897.\(^2^9\) The vast majority of Western Australian mining companies were ‘true free-standing companies of the type Wilkins described’.\(^3^0\)

In his work on the American mining frontier, Burt raised an interesting conundrum. He pointed out that, in the rise of the American mining industry in the nineteenth century, British miners, managers and engineers played a major role in bringing locally-owned and promoted ventures into successful long-term production whereas direct investments in the same mining districts by British-owned companies nearly always failed. He proposed that labour and expertise were ‘steeped in experience’ gained from

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\(^{2^6}\) Wilkins, ‘The free-standing company’, pp 259-261
\(^{2^7}\) Ibid, p 264
\(^{2^8}\) Ibid
\(^{3^0}\) Ibid, p 9
generations working in the mining industry in Britain, ‘the world’s leading mining industry’, whereas the promoters and investors of free-standing British mining companies lacked both this experience and any practical knowledge on which to base informed judgements about the mining prospects they were intending to develop.31

However, Burt’s study was largely based on companies and personnel working in the period 1835 to 1896 in both American precious metal and base metal mines.32 It is therefore of tenuous relevance to gold mining in Western Australia. By the 1890s it could be argued that three generations of mining experience had developed within Australia. The sons of the Cornish miners who, in January 1844, stood with picks ready at the opening of the Kapunda copper mine in South Australia could easily have worked in the Victorian goldfields in the late 1850s and their sons at Southern Cross in Western Australia in 1887.33 Much of the labour and expertise working on the Western Australian goldfields was Australian; of the remainder, a surprising proportion of the imported engineers and mine managers were either British or American men whose experience had been gained in American mines.

Burt’s view of the promoters, directors and investors in the free-standing British mining company is probably more apposite. Certainly some companies boasted boards of directors which included professionally qualified mining men, such as Herbert Hoover and Charles Kaufman, but many boards exhibited little connection to the realities of the industry in which they were engaged.34 The lack of understanding, combined with the vast distance between Western Australia and Britain, was at the root of the most vexatious problem confronting the free-standing mining company – ‘how to manage efficiently a mine on the other side of the globe’.35 As Wilkins comments, this need ‘provided a formidable challenge, and one that the free-standing companies often failed to meet’.36

32 Ibid
33 Ian Auhl and Denis Marfleet, Australia’s Earliest Mining Era, South Australia 1841-1851: Paintings by S.T. Gill, Axiom, 1975, pp 29, 36. For a list of the discovery of the major metalliferous fields in nineteenth century Australia, see Blainey, ‘A theory of mineral discovery … ’, p 300
34 In a ‘cherry-picking’ search of the Mining Manual for 1897, 1900 and 1904, only three directors other than Hoover and Kaufman were found who were credited with professional qualifications.
35 Blainey, Mines in the Spinifex, p 27
36 Wilkins, ‘The free-standing company’, p 264
As a typical free-standing mining company, Merton’s Reward Gold Mining Company Ltd had one putative advantage – the presence on its board of Charles Kaufman, a German-trained American mining engineer turned entrepreneur. A controversial figure, Kaufman is seen by some commentators as one of the instigators of the sharp practices which brought Western Australian gold mining companies into disrepute in the 1890s whilst at the same time being acknowledged as a promoter of technological innovation in the mines themselves. His technical competence was of value to the mines on whose boards he sat in the 1900s.

The importance of understanding the mine itself

In 1948, Uren pointed out that the full story of the Western Australian goldfields would need to tell not just of the finding of gold but also of the development of mines and mining technique, from hammer and tap through to large-scale mechanical shovels, of improvements in processing techniques, of the feats of engineering which supplied water to the mines and of the part played by men who gave leadership in mine management. Blainey undertook precisely this type of study for individual mines in the eastern states; his books on Mt Lyell, Mt Isa and Broken Hill covered most of these topics along with the business structures and economics of the mines.

Gradually the importance of understanding the various factors which together govern the development of a mine has been recognized. The extent and role of technological innovation in the Western Australian goldfields has been admirably addressed by Hartley in ‘A History of Technological Change in Kalgoorlie Gold Metallurgy 1895-1915’, in which he highlighted the relationship between international technological transfer and increased local inventiveness. In his work on labour processes prior to World War 1, Bertola touched on the importance of new forms of machinery, such as tube and ball mills, air-powered hoists and conveyor belts, along with improvements to existing machinery to the organizational and technological changes that powered the Kalgoorlie gold mines to peak production and peak productivity of labour by 1910.

37 Hartley, ‘A History of Technological Change’
However, geology has fared less well. The geology of an orebody – the rock types, their mineralogy, texture and structure – is the foundation of all mining activity. Major geological studies of many of the largest historical gold producers exist, but they are for the most part highly technical and aimed at the contemporary geological fraternity. In recent years, however, attempts have been made to present accessible accounts of the influence of geology on mine development. Campbell’s *Hidden Gold: the Central Norseman Story* presented a detailed account of the impact of advances in geological thought on the mines of the Norseman area. Berkman’s *Making the Mount Isa Mine, 1923-1933* took a broader view. He succeeded admirably in his intention to supplement Blainey’s *Mines in the Spinifex* by describing the early management, engineering and scientific activities at the mine which contributed to its development.

An important point identified by Berkman was that there was ‘no permanent mine geologist’ at any Australian mine until the employment of Roland Blanchard at Mount Isa in 1931. The science of geology was in its adolescence in the 1890s; mine managers appeared unconvinced of its relevance to their mines, preferring the accumulated wisdom of generations of miners. The rare geological reports of the times were contributed by visiting government geologists or by consultant mining engineers. No-one from the Geological Survey of Western Australia ever inspected Merton’s Reward gold mine; the few reports that exist were produced by Bewick Moreing personnel. To elucidate the influence of the mine’s geology on its mining history it is necessary to extrapolate backwards in time from more recent mine plans and reports.

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42 *Ibid*, p 63
43 The correct name of the London-based company of mining consultants and mine managers is Bewick, Moreing and Company Limited; the shortened form generally used is Bewick Moreing.
Figure 1.1. Location map for Merton’s Reward gold mine.

The significance of Fred Merton and Merton’s Reward

The history of Merton’s Reward is an extraordinary one. From his discovery of gold on a low hill roughly 30 km north of Malcolm in March 1899 Fred Merton worked and developed his property as sole owner until its sale in January 1902. He was his own mine manager, metallurgist, assayer and paymaster. It was not a small mine; 46 men were employed there in the December quarter 1899 and it regularly achieved gold
production of about 1,200 oz per month.\textsuperscript{44} For a gold mine of this size in Western Australia this is, as far as I know, a unique situation. That Merton was able to develop his mine with no outside financial backing was the result of favourable surface geology. A freakish combination of orebody geometry and topography combined to produce extensive outcrops of rubble-like gold bearing quartz which could be raked up, bagged and sent to a stamp battery. The mine paid for itself from the outset.

\textbf{Figure 1.2.} Fred Merton, proprietor of Merton’s Reward gold mine, \textit{circa} late 1900. (Courtesy Battye Library, Q338.27COO, p 69)

\textsuperscript{44} Gold production records, \textit{Government Gazette of WA}, 1899-1902
Unusual prospector, freakish surface geology - add to this the court case brought against him by the prospector with whom he was working at the time for a share of his find and it is hardly surprising that Merton and his mine became the subjects of an intense and long-lasting mythology. It is a mythology that deserves interrogation. The court case, in which the jury found for the plaintiff Callagher despite his self-contradictory evidence, demonstrated the power of the ‘cheated mate’ myth. The verdict was overthrown on appeal, and rightly so on the basis of the evidence presented to the court. Other parts of the myth are easily revealed as tall tales based on insufficient evidence or the persistence of errors. For instance, the tale that Merton’s gold sent him mad, playing with it and making little figurines out of it, clearly has its origin in a photograph originally printed in *Twentieth Century Impressions of WA* (1901) in which Fred Merton was depicted standing alongside a table laden with a heap of retorted gold. At its apex stood a small statue of a prospector fashioned from gold. This photograph has been widely reproduced. But a second photograph of an almost identical scene shows Merton’s son standing alongside the table. If this had been the image that became widely accessible, might not the story have been of an indulgent father who allowed his son to play with the gold? However other parts of the myth are not as easily undermined and may well have a basis in fact.

After the sale the mine became the property of the free-standing British mining company, Merton’s Reward Gold Mining Company Ltd. The change in ownership ushered in a different style in management; the one-man show gave way to operations run by a team of experienced mining men. This provides an excellent opportunity to compare management style and decision-making in the two phases of the mine’s life.

Although little technical reporting survives from the period of Merton’s management, if it ever existed, the newspapers of the day regularly reported on progress at the mine. The mine workings eventually consisted of a series of quarries, horizontal drives from three shallow-angle inclined shafts overlying each other and several short exploratory vertical shafts. They were described as having ‘the appearance of a rabbit warren on a large scale’. There was no consistency among commentators in the naming of the individual workings, which considerably complicates efforts to establish precisely what was happening where. Although Merton was obliged to supply the Mines

45 *Malcolm Chronicle*, 29 September 1900, p 2
Department with plans of his property none has survived. Despite this it is possible to chart the progress of the mine and from it determine Merton’s vision of the orebody and the validity of his decisions regarding its development.

When the company took over management of the mine, the problems with nomenclature were resolved, the standard of technical reporting improved and the mine plans survived. However, with greater depth the geology of the orebody became increasingly difficult to fathom. The addition of a vertical main shaft with the usual complement of horizontal levels and drives into the pre-existing inclined workings resulted in mine plans of such horrendous complexity that they would tax the skills of even the most competent mining technician to unravel.

Thus my project falls naturally into two parts: an analysis of the composite mythology of Fred Merton and Merton’s Reward gold mine and the charting of its progress through time, and a detailed examination of the records of the mine itself in order to straighten them out, and from them demonstrate how the geology of the orebody became the key factor driving the decision-making process and hence the history of the mine.

Sources, methodology and structure of the thesis

This study has drawn largely on primary archival material, notably Western Australian Department of Mines files and copybooks now held in the State Records Office. Most gold mining leases (GMLs) have individual correspondence files, that for GML 638C Merton’s Reward North proving most useful as it includes progress reports with each application for concentration of the leases. Warden Burt’s notebooks duplicated much of this information. The Register of GMLs for the Mt Malcolm District yields information on title-holders of the leases, caveats held and periods of exemption. The State Records Office also holds the Appeals Books for the case Callagher versus Merton, which include complete transcripts of the trial.

The library of the Department of Mines and Petroleum (DMP) is home to the Bewick Moreing files, a collection of reports made by Bewick, Moreing and Company Ltd engineers - and the occasional geologist - on more than 980 mines and leases from
1894 to the 1930s. The company managed Merton’s Reward gold mine for approximately eight months in 1904; the two reports generated in this period provide the best technical information on the mine and its infrastructure whilst two earlier reports from 1899 and 1900 give geological details.

Statistical information was drawn from official production records held in the Statistics Branch of the DMP, the Government Gazette of Western Australia and the Monthly Journal of the Chamber of Mines of Western Australia. The last provided the dates of registration of each mine manager employed by Merton’s Reward Gold Mining Company Ltd and also proved invaluable in filling in the background of the state of the mining industry in Western Australia in the 1900s.

For Merton’s period of management one of the best sources of information is the local newspaper, the Malcolm Chronicle, which assiduously reported his activities and bemoaned his reticence in providing gold production figures. Other goldfields newspapers such as the Coolgardie Miner and the North Coolgardie Herald carried news and informative articles, the Kalgoorlie Miner less so. Reporting of the court case featured in all the major newspapers, including Perth publications, the West Australian and the Morning Herald. The ‘Dolly Pot’ column published in the 1930s and 1940s in the Western Mail is an interesting source of commentary, more for what is not said than what is. The prospectors who were its contributors rapidly quashed any suggestion of Merton as mythic rogue. The mythology of Fred Merton and his mine has not been encountered in print prior to 1945. Other commercial publications which have provided useful background or specific financial detail include the American magazine Engineering and Mining Journal and London’s Financial Times.

As a British company, all the annual reports of Merton’s Reward Gold Mining Company Ltd are contained in the yearly volumes of Mining Reports of the Stock Exchange of London at the Guildhall library in London. For some mines these volumes have yielded historical mine plans unavailable in Western Australia; unfortunately this was not the case for Merton’s Reward. The archival records of the Stock Exchange appear to have returned to the Guildhall after temporary re-location in the London Metropolitan Archives. Of extraordinary value are the manuscript files ‘Applications for listing’ on the London Stock Exchange. An individual company file usually
includes its certificate of incorporation and memorandum of association but may also hold such items as a prospectus, reports on the company’s property, list of shareholders and examples of the scrip. However the contents of the files vary greatly depending on the reason for applying for listing – new float, company reconstruction, etc - and from company to company.

The unusual aspect of my study of Merton’s Reward is the emphasis on mine plans, modern geological data and the use of production statistics to clarify the history of the mine. The large-scale historical mine plans which are the backbone of this study have recently been transferred to the Resources Safety division of the DMP. Unpublished exploration reports and plans generated by the companies who have held the lease over Merton’s Reward since 1980, notably Hunter Resources Ltd in the 1980s and Sons of Gwalia Ltd in the 1990s, were generously made available to me by the current leaseholder Navigator Resources Ltd. As a former exploration geologist I have the expertise to apply recent geological findings to the history of the mine in order to shed light on the problems faced by the old-timers. And by compiling the monthly gold production records of the mine into a continuous data bank, irregularities in production became visible and their causes open to question. Who would ever have thought that the Spring Racing Carnival in Victoria could have impacted on the gold production of a mine in Western Australia?

Although the title of my thesis is ‘Merton’s Reward gold mine: reconstructing the mine and deconstructing the myth’, the deconstruction of the myth is presented first as this facilitates a smoother chronological flow in the overall history of the mine. Most of the events featured in the mythology occurred during Fred Merton’s tenure of the mine; its reconstruction covers both Merton’s and the company’s periods of management.

In the Introduction to Part 1 Deconstructing the Myth, a composite account of the myth is presented and its four main elements identified: the finding of the deposit and the legal battle for ownership, the development of the mine under Merton’s management, the sale to Kaufman and the Rothschilds, and the disparity between the results obtained from the mine under Merton’s control and those under the company’s management.
Chapter 2 takes the first element – the discovery and the lawsuit – and compares the mythic construct with the reality of the court transcripts. It shows how the reporting of the trial in the newspapers of the day influenced the shaping of the myth and charts its development through time as an example of the cheated mate myth. The other three elements - the development of the mine under Merton, its sale, and the different results achieved by Merton and the company – are covered in Chapter 3, which draws out strands within these elements. For the development of the mine three main strands – the fabulous early results, the erection of the battery, and fraud and manipulation in the lead-up to the sale – are identified. These, along with the last two elements listed above, are compared with gold production statistics (where appropriate) and are tracked through the various written accounts in order to analyse the historical construction of the myth.

The main objective of Part 2 Reconstructing the Mine is to analyse the old reports, maps and plans in order to demonstrate how and why the mine developed as it did within its historical context. In the Introduction to Part 2, essential background knowledge of regional and local geology is presented. The favourable combination of local geology, topography and supergene enrichment at Merton’s Reward is explained. Apart from the geology the other major driver of mine development was its management. The concept of mine as personal fiefdom is introduced to describe Merton’s management style and is briefly contrasted with the style of the British company. The point is made that the simultaneous changes in management style and orebody geology were not coincidental.

Chapter 4 tracks the development of the mine from the discovery of gold in March 1899 to the mine’s sale in January 1902 and assesses it in the light of geological knowledge of the time and best practice in contemporaneous mines. It is pointed out that, for the duration of the lawsuit, Court-appointee James Johnson Robinson was legally manager of the mine; his influence on the decision-making process, particularly with respect to placement of shafts and infrastructure, is discussed. Where relevant, recent exploration reports and plans, dating from 1981 to the present, are used to illuminate and temper the primary sources.
In Chapter 5 the development of the mine as the property of a typical British free-standing mining company is analysed. Changes in policy and attitude with each of the five managers who had charge of the mine from January 1902 to 1908 are followed and the reasons for, and appropriateness of, some of the decisions made are discussed. The constant factors in this period of the mine’s life are revealed as the pressure to obtain a listing on the London Stock Exchange and the overwhelming presence of the chairman of the board, Charles Kaufman.

Altogether this case study of the development and decline of an outback goldmine in Western Australia’s first gold boom demonstrates the necessity of understanding the complex inter-weaving of geological, technological, market and human influences if a convincing account is to be written.
PART 1
Deconstructing the Myth - Introduction

The fascination which gold has exerted over many cultures and people throughout time has generated a rich vein of mythic narrative. From the tale of Jason and the Golden Fleece to the search for Lasseter’s reef, stories abound of gold discoveries, gold rushes, gold mines, the rogues and swindlers associated with them and the precious metal itself. This preoccupation with gold reflects not only its financial value and cultural glamour but also its accessibility. Gold is one of the very few metals which occur as the native element; this characteristic, combined with its malleability, means that it can, in the right circumstances, simply be dug out of the ground or panned out of the stream sediment and be used or sold as is. The prospect of untold wealth lies open to all; it is as close as the next blow of the pick or swirl of the panning dish.

Within Australia, powerful mythic narratives have been constructed concerning the early days of specific rushes or diggings and the entrepreneurial activities associated with transforming a small gold show into a company-run gold mine. The myth of Merton and his mine is a case in point. It has provided one of the best-documented and most persistent accounts of that subject in Western Australian historical and popular writings throughout the twentieth century.

The mythology which evolved around Merton and his mine is centred on four main elements in the Merton’s Reward story - the finding of the deposit and the legal battle for ownership, the development of the mine under Merton’s management, the sale to Kaufman and the Rothschilds and lastly, the disparity between the results obtained from the mine under Merton’s control and those under the English company’s management. Below is a composite account of the myth drawn together from the writings of Malcolm Uren, C M Harris, Helen Wilson, Norma King, D W de Havelland, G F Young and George Compton. None of these authors provides all the

detail included in the composite account; each version emphasises some parts of the story over others at the whim of its writer.

The myth begins in 1899 with Fred Merton working a small mine, the Australian Peer (also known as the Deerah), which was located close to Pig Well, a few miles from Mt Malcolm, in an uneasy partnership with William Callagher.

Often when two of them should have been together breaking out a crushing, Callagher would be on the job but Merton would be out prospecting. More than once Callagher rebelled against doing most of the hard work. He told Merton repeatedly that if he did not do his share … he could find another mate.47

Merton is thus constructed as the mythic prospector in constant search for the bonanza.

Early in March Merton left the camp in search of one of their horses, which had strayed. It was late in the day when he found the horse and, on the way back to camp, he came across a large quartz blow. ‘He napped pieces off the outcrop, which was literally held together with coarse gold’.48 He promptly pegged out a reward claim of six acres. On his return to camp, he said nothing to Callagher about his find. When Callagher told him that he had better shape up or ship out, Merton replied “All right; from now on, I’m on my own”.49 Merton shifted camp the following day, pegged out a 24-acre lease at each end of the reward claim and then went into Malcolm to apply for the three leases at the Mining Registrar’s office.50 Embedded centrally in this component of the myth is the implication that Merton deliberately hid his new find from his mate and partner while he engineered a separation between them in order to defraud Callagher of his legitimate share. In other words, Merton was a swindler.

Callagher lodged an objection to the leases on the grounds of their partnership, ‘saying they were mates and he should share the bonanza’.51 The Warden found for Merton on the grounds that the partnership had been dissolved before Merton applied for his

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47 Uren, *Glint of Gold*, p 186
48 Harris, ‘The Margaret and the Murchison Fields’, p 23. Another version states that, it being late, Merton pocketed the specimens without seeing the gold. On inspecting them the following morning ‘copious gold was visible’. Compton, ‘A circulating load’, pp 22-23
49 Harris, ‘The Margaret and the Murchison Fields’, p 23
50 Ibid
51 Wilson, *Westward Gold!* p 127
Callagher took the case to the Supreme Court and won; Merton appealed and, in December 1899, won the Full Court decision. None of the writers presented the full sequence of legal events in the case of Callagher versus Merton, most preferring to summarise the confusion surrounding them in one terse statement; for example, ‘The court dispute by Callaghan [sic], who claimed that half the mine should be his, was settled in favour of Merton…’. Compton is alone in claiming that Merton took the case to the Privy Council.

The first crushing of ore from the mine was made at the Richmond Gem battery at Malcolm, yielding a return of more than six ounces to the ton. Merton put on men to rake up the loose surface stone around the reef. ‘Within two months two hundred and fifty tons had been crushed at various batteries in the district for a return of £8,200’. Well pleased with these results, Merton took the unusual step for a prospector of purchasing and installing his own battery. Merton’s transformation from penniless prospector to wealthy mine owner in just a few months is a classic example of the rags-to-riches element of the mythology of gold and is central to the Merton myth as told and re-told by the writers analysed here.

About this time, Frank Merton, one of Fred’s younger brothers, turned up at the mine. Frank had been charged and acquitted over the fatal shooting of an Afghan camel-driver who had run amok during a disastrous prospecting expedition from Coolgardie eastwards into South Australia. He now demanded a share of the mine. Fred refused. Frank produced his gun and Fred ran to his house where he was kept prisoner ‘whilst the irate brother took pot shots at him and he in a similarly brotherly fashion, returned them’. The fracas was resolved by Fred paying Frank’s passage to South Africa – one way – with a four-figure sum of money awaiting him there. In winning a share of

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52 Harris, ‘The Margaret and the Murchison Fields’, p 23
53 King, Colourful Tales of the Western Australian Goldfields, p 71
54 Uren, Glint of Gold, p 186
55 de Havelland, Gold and Ghosts, p 201
56 Compton, ‘A circulating load’, p 22
57 de Havelland, Gold and Ghosts, p 201
58 Harris, ‘The Margaret and the Murchison Fields’, p 23. There is some variation between the writers quoted with regard to the tonnage, yields and locations of the early crushings.
59 Uren, Glint of Gold, p 187
61 de Havelland, Gold and Ghosts, p 202
the wealth, ‘where a Callagher failed, a Merton succeeded’. Mythic characters in
goldfields yarns have frequently been ascribed such outrageously larrikin behaviour;
Merton was no exception.

Fred Merton had ‘great mechanical ability and a lot of metallurgical experience’. With the battery installed, development of the mine was energetically advanced. Compton’s version of the tale recounts how the battery box was salted to inflate the apparent grade of the ore. On a Friday, having paid his workers and his bills, Merton would tip gold sovereigns surplus to needs into the box from which the ore fed into the stampers, simulating a circulating load. The rich, and possibly fraudulent, returns ensured interest from prospective purchasers. The implication here is that Merton was prepared deliberately to deceive unwary buyers.

A syndicate headed by Charles Kaufman inspected the mine with a view to purchasing it. Kaufman asked how much Merton would want for the show. ‘“Half a million” was the reply. No business was done at that figure’.

It was said that Merton went slightly insane with success. He played with gold, making little statuettes of himself and spilling gold as though he were pouring molten iron or copper. Some said he was really insane; too much gold had driven him mad.

Twelve thousand ounces of gold was won from five thousand tons of ore within a year. When Merton eventually decided to sell, having developed the ore body to a depth of three hundred feet, Kaufman was the buyer. ‘Merton received £10,000 in cash and 100,000 shares in a company of 300,000 £1 shares’. After the sale was completed Merton traveled to Europe ‘to sample the delights of the high life’, returning to Australia eventually and settling in the Eastern States.

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63 Young, *Under the Coolibah Tree*, p 203
64 Compton, ‘A circulating load’, p 22. A circulating load refers to the (legitimate) practice of returning crushed ore which will not pass the screens - ie is too big to go through the mesh screens between the crusher and the next part of the process - to the hoppers above the crusher with the raw feed.
65 Uren, *Glint of Gold*, p 187
66 Compton, ‘A circulating load’, p 22
67 Harris, ‘The Margaret and the Murchison Fields’, p 23
68 Uren, *Glint of Gold*, p 187
69 Compton, ‘A circulating load’, p 22
And the mine? The high grade gold continued at depth to a point but in veins which proved increasingly unprofitable. From 1902 to 1911 the English company won 37,151.80 ounces of gold from 75,476.50 tons of ore crushed, at a grade of approximately half an ounce per ton, a result far removed from the grades obtained by Merton.\textsuperscript{70}

The composite account of the Merton’s Reward myth outlined above portrays Merton as rogue and swindler: he cheated his mate out of his share of the mine, he salted the production and he sold out at a falsely inflated price. Part 1, chapters 2 and 3, will consider each of the four main elements of the story identified earlier - the finding of the deposit and the lawsuit, the development of the mine under Merton’s management, its sale, and the disparity between the results obtained under Merton’s control and under the English company’s management. Each component of the myth will be questioned in light of the primary source records.

\textsuperscript{70} de Havelland, \textit{Gold and Ghosts}, p 201
Chapter 2
Callagher versus Merton – the discovery and the lawsuit

Confusion reigns supreme in the recording of the events concerning the discovery of the gold mineralisation at Merton’s Reward and the dispute over its ownership. The basic facts – that Merton found the quartz reef on 4 March 1899 on his return from searching for a lost horse, that he pegged out the leases on the following day and applied for them on 6 March, that Callagher, his partner in the Australian Peer, took him to court claiming a share but lost – are not disputed. The devil is in the detail. This chapter will straighten out the tangled tale using hitherto unresearched Department of Mines and Supreme Court records to give Callagher and Merton their own voices. It will also show how contemporary reporting influenced the shaping of the myth.

The early stages

The earliest reports of the finding of the gold mineralisation vary little. Both the 
Malcolm Chronicle and the Coolgardie Miner carried basic reports on 18 March 1899, twelve days after Merton had applied for his Reward Claim. Brief reports in various newspapers outlined ongoing activity and emphasized the phenomenal results being obtained throughout March and April. No mention was made of a partner, let alone of an objection or plaint being heard in the Warden’s Court in Mt Malcolm. This omission would not have been remarkable in any other newspaper but the Malcolm Chronicle assiduously reported the proceedings in the local Warden’s Court; it would hardly have missed such a juicy titbit had it occurred.

The mining records of the Mt Malcolm district reveal no plaint Callagher versus Merton. Similarly the records of the Supreme Court action make no mention of any hearing in the Warden’s Court. It would seem that this part of the myth is a

71 Warden’s Court – Evidence Books: Mt Malcolm - Plaints. WA Mines Dept AN17/Leonora, Cons 1456 Item 2, SROWA. Plaints were listed numbering consecutively, with no omissions during the relevant period.
72 Supreme Court of Western Australia Appeal Book, C No 53/1899 William Callagher (Plaintiff) and Fred Merton (Defendant), Cons 3580, WAS 577, SROWA
fabrication. However, Callagher lodged caveats over the leases with the Mining Registrar in Mt Malcolm in order to protect his putative half-interest.\(^7^3\)

Whereas there is no record of Callagher as a partner, there is evidence that Merton was trying to find someone to fund his discovery. At the time of pegging out the leases he was short of funds and ‘would have taken £20 from anyone to go in with him in his new venture’, according to the *Coolgardie Miner*.\(^7^4\) But no one would. The blacksmith, Jack Cotter, loaned him ten pounds and the Malcolm store, Johnson Brothers, allowed him credit, thereby enabling Merton to retain full ownership of the leases.\(^7^5\)

The first hint of an ownership dispute occurred when the *Coolgardie Miner* reported trouble in connection with a ‘partnership transaction’, commenting that ‘matters have gone so far that there seems no probability of anything but food for lawyers’.\(^7^6\) The following day the *Malcolm Chronicle* reported that Callagher had obtained a Supreme Court injunction to protect the half interest in Merton’s find to which he laid claim.\(^7^7\) The Interim Injunction was imposed on 26 April 1899; it restrained Merton from dealing in any way with a one half interest in RC 1\(^C\), GML 638\(^C\) and GML 644\(^C\), and also from using one half of the money or gold lodged at the WA Bank in Mt Malcolm. It restrained the bank from handing over ‘the said half of the moneys, gold or bullion’ to Merton.\(^7^8\) The supporting documents included an affidavit which provided Callagher’s story for the first time.

Callagher claimed to be the owner of a half interest in the leases listed above. He and Merton had verbally agreed to become mates or partners in equal shares in any mining properties discovered or taken up by them, or by either of them. In early March Callagher went in search of their missing horse, failed to find it and returned to camp

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\(^7^3\) Letter to Registrar, Mines Dept, 26 April 1899, Warden’s Office – Letter Books: Mt Malcolm, 28 September 1898 – 2 June 1899. WA Mines Dept AN17/Leonora, Cons 1456 Item 13, SROWA. G Bray, solicitor, charged Merton for the expense of searching these caveats at the Warden’s Office on 26 April 1899. Affidavit of increase, July 1900. Item C53/1899
\(^7^4\) *Coolgardie Miner* [*CM*], 12 May 1899, p 6
\(^7^5\) David McDonald, ‘Autobiography’, mss, undated, MN1124, Acc 3406A, Battye Library, Perth, pp 81-82. McDonald also commented on Merton’s generous repayment of his debt. ‘Jack Cotter had gone prospecting and he called regular and received a cheque from Fred. He’d load his pack horses and set out again and return when empty, he got good interest on ten pounds’.
\(^7^6\) *CM*, 12 May 1899, p 6
\(^7^7\) *Malcolm Chronicle* [*MC*], 13 May 1899, p 2
\(^7^8\) Interim injunction, 26 April 1899. Item C53/1899
the same day. On the following day Merton went out to search for it, returning the next
day. Callagher later learnt that Merton had discovered a ‘valuable reef’ about ten miles
away during his search.\textsuperscript{79} Merton applied for and was granted a Reward Claim, RC 1\textsuperscript{C},
and subsequently marked out and applied for GMLs 638\textsuperscript{C} and 644\textsuperscript{C}.\textsuperscript{80}

Callagher first heard about this from the owners of the Flying Pig lease, which
adjoined the Australian Peer. When he asked Merton what he meant by concealing the
discovery from him, Merton replied “Oh Billy there is nothing in it, it’s no good at
all”\textsuperscript{81}. However the Reward Claim proved to be very rich. The first three crushings
gave a total yield of 1,950 oz valued at about £7,500. According to Callagher, after the
discovery Merton asked him to sign some papers, saying they were to cancel all
existing arrangements, but he refused to do so.\textsuperscript{82}

On 2 May Merton’s solicitors served a summons on Callagher and his solicitors to
attend in Chambers for the hearing of an application to have the Interim Injunction
dissolved.\textsuperscript{83} The affidavits in support of this application presented a different story.
The first affidavit was that of Gildalt Bray, solicitor practising at Malcolm.

Apparently, Callagher came to Bray for advice in late March. Prior to Merton’s new
find, he and Merton were partners in the Australian Peer, in which lease he was
entitled to one-quarter interest. Because of that interest Callagher considered that he
was ‘justified in asking or claiming an equal interest in Merton’s new discovery’.\textsuperscript{84}
When asked if he had any agreement with Merton to share in any properties discovered
outside the Australian Peer, his reply was negative. Bray advised him, on the strength
of what he had just said, that he had no claim on Merton for any interest in the new
discovery.\textsuperscript{85}

\textsuperscript{79} Affidavit of Wm. Purkis in support of application for interim injunction. Item C53/1899
\textsuperscript{80} Merton applied for GML 638\textsuperscript{C} Merton’s Reward North (north of RC 1\textsuperscript{C}) on 16 March and GML 644\textsuperscript{C}
Merton’s Reward East (east of RC 1\textsuperscript{C}) on 27 March. Register of Gold Mining Leases [GMLs], Mt
Malcolm District, Cons 4451, Item 076, SROWA. For plan of leases see Figure 4.2
\textsuperscript{81} Affidavit of Wm. Purkis … . Item C53/1899
\textsuperscript{82} Ibid
\textsuperscript{83} Summons, 2 May 1899. Item C53/1899
\textsuperscript{84} Affidavit of G.H. Bray, 2 May 1899. Item C53/1899
\textsuperscript{85} Ibid
Merton submitted two affidavits, one responding to Callagher’s claims and the other dealing with issues relating to the management of the mine. In the first Merton stated that Callagher was not entitled to a half or any interest in the properties in dispute and that, apart from the arrangement on the Deerah lease (formerly the Australian Peer), ‘we were not in any manner whatever concerned as mates and are not now interested in any other properties as mates or partners’. He explained that he held the Deerah lease and had agreed to give Callagher one-quarter interest in it plus his food in return for his labour. Merton also employed other labour to assist on the lease. They worked the mine on those terms for approximately fourteen months – a profitable deal for Callagher but not for Merton, who bore all the expenses.86

On Saturday 4 March he ‘went out prospecting’, Merton stated, making no mention of searching for a horse. He discovered what he thought would turn out to be ‘valuable stone’, pegged out, applied for a prospecting protection area and in due course was granted the Reward Claim and other leases. Callagher took no interest whatsoever in his discovery until after the third crushing of ore. Only then did Callagher ask for a one-quarter interest in it. Merton was surprised at his request and declined, at which Callagher said ‘if I don’t get a cut I’ll cause you trouble’. Merton denied the existence of the verbal agreement to become mates or partners in equal shares in any new discoveries, as claimed by Callagher. He also denied that he had asked Callagher to cancel all existing arrangements but, at Callagher’s request, had agreed that he should have £2 per week in lieu of providing food.87

The second of Merton’s affidavits presented evidence to support the request for dissolving the Interim Injunction. He pointed out that, were the injunction not lifted, the jobs of the men employed on Merton’s Reward property and in manufacturing machinery for erection there would be at risk. Apparently, the manager of the WA Bank had refused to allow Merton to use his account at the Bank at all; Merton had purchased at auction mining tools and materials for use at the mine, payment was due and he would ‘lose a good bargain and be open to action for damages’ if he was not allowed to use the proceeds of the sale of the gold.88

86 Affidavit of F Merton, 2 May 1899. Item C53/1899
87 Ibid
88 Affidavit of F Merton, 4 May 1899. Item C53/1899
In response, Callagher admitted the arrangement on the Deerah lease, on condition that he provide one half of the labour so long as only two men were required to work it. He reiterated the existence of the verbal agreement for equal shares in new discoveries, the request to sign the document cancelling all existing arrangements and that Merton set out not to go prospecting but to search for a horse. He also stated that he did not ask for a quarter share but for ‘his share (meaning half thereof)’; when Merton refused, Callagher said “I’ll fight you through the courts for it”. 89 As for Bray’s affidavit, Callagher agreed with most of it but denied absolutely the allegation that, when asked if he had any agreement with Merton to share in any properties discovered outside the Australian Peer, he had replied that he did not.90

The Judgement in Chambers of 10 May 1899 granted Merton’s request for an order to dissolve the Interim Injunction. Merton and his counsel argued successfully that the injunction was excessively restrictive, making it impossible to develop the mine. The condition placed on its dissolution was that a Receiver and Manager be appointed to the mine. As Receiver, the manager of the Malcolm branch of the Western Australian Bank was appointed and, as Manager, James Johnson Robinson.91

But Robinson was already the manager of Merton’s Reward, appointed by Merton within three weeks of its discovery as he himself would be absent buying the battery and other equipment needed for the fledgling mine.92 Robinson had worked on the Deerah lease with Callagher and Merton; that Callagher accepted him as Court-appointed manager of Merton’s Reward probably says something about the calibre of the man.93 Effectively the judgement gave Robinson and Merton joint management of the mine.94 That it was not under Merton’s sole control for practically the whole of the first year of its existence is a fact that eluded all of the myth-makers.95

89 Affidavit of Plaintiff opposing summons to dissolve injunction, 8 May 1899. Item C53/1899
90 Ibid
91 Judgement in dissolution of injunction, 10 May 1899. Item C53/1899
92 CM, 28 March 1899, p 7
93 Callagher’s solicitors attempted to subpoena Robinson to appear as a witness for the plaintiff at the Supreme Court Trial but he had already agreed to appear for the defence. Subpoenas and Praecipe for appearances, August 1899. Item C53/1899
94 Judgement in dissolution . . . , Item C53/1899
95 Also eluding them was the fact that from 21 December 1900 to 26 November 1901 Merton’s Reward was legally owned by Alice Merton, although still under Fred’s control as her manager. Register of GMLs, Mt Malcolm District, Cons 4451, Item 076
Despite Merton’s and Callagher’s versions of the truth being exposed in the court process, they received no press coverage, presumably because the main action, Callagher versus Merton, was still to be decided and the whole matter was sub judice. Between May and September the Malcolm Chronicle continued to report on developments at Mertondale, the town name conferred on the locality of Merton’s Reward in late April 1899. 96 Leases were pegged, water supply was discussed but mostly the results obtained from Merton’s Reward and neighbouring leases were enthused over. In the meantime, legal documents flew between the solicitors, including the Statement of Claim by Callagher and the Statement of Defence by Merton.

The only material difference between Callagher’s previous statements and the Statement of Claim was the emphasis put upon the assertion that the discovery of Merton’s Reward was made whilst Merton was working in partnership time:

The said discovery was made by the Defendant whilst he was engaged in searching for a strayed horse used by the co-partners on the Deerah Lease and during the time he would otherwise have been engaged in working with the Plaintiff on the said Lease. 97

In the Statement of Defence Merton denied that he had wrongfully absented himself from work or that he had made his discovery whilst searching for the horse during time he should have been working with Callagher. 98

The trial and the appeal

With the commencement of the September trial of the action Callagher versus Merton, full versions of the events surrounding the discovery of Merton’s Reward and its disputed ownership entered the public domain. Callagher’s case as presented in court was that circa January 1898 he and Merton verbally agreed to become partners to work Gold Mining Leases at Mt Malcolm. From March of that year they had continuously worked as partners on GML 406C, the Deerah, under an agreement by which he had one quarter share in the property plus rations in return for contributing one half of the statutory work requirement. 99 Merton and he came to a verbal agreement that any new

96 MC, 29 April 1899, p 3
97 Statement of Claim, in Pleadings, 4 August 1899. Item C53/1899
98 Statement of Defence, in Pleadings, 4 August 1899. Item C53/1899
99 The Mining Regulations stipulated that a 12-acre lease (such as the Deerah) should be worked by 2 men full time.
prospect found by either would be shared equally by both. They found the Australian Peer West adjacent to the Deerah and took the lease up.100

On 2 March 1899 Callagher went looking for the lost horse but failed to find it. The following day Merton took over the search as Callagher was stiff from riding; Callagher and Robinson worked on the Deerah lease. Merton returned with a strange horse and went out again to look for theirs, returning in the evening. Callagher did not see Merton the next day, which would have been 4 March, as he had gone off on his bicycle.101 On Monday 6 March Merton went into Mt Malcolm supposedly to buy stores. As Callagher noted, ‘There is a Warden’s Court there’. That night Callagher found out about Merton’s discovery and so he questioned him about it the following day but did not ask for any share ‘because I had heard that he did not want me to know anything about the find’. Merton moved to his find on 7 March; several of the miners who were camped near to the Deerah working other leases went with him. John McDonald started work on the Deerah lease on 8 March in place of Merton.102

On 10 March Merton visited the Deerah to speak to Callagher who was working down the shallow shaft. McDonald was on the brace immediately overhead. According to Callagher Merton asked him to sign an agreement the wording of which Callagher could not remember precisely: ‘the effect was to cancel all agreements up to date’. Callagher refused, saying that he was ‘satisfied with existing arrangements’.103 Merton told him to come up to the camp and draw up one for himself.

Callagher consulted with Bray but was dissatisfied with his advice, so he wrote to a solicitor in Perth. About the end of March Callagher saw Merton again in Mt Malcolm and asked him for his share in the new find. Merton refused; consequently Callagher instructed the Perth solicitors to commence proceedings.104

100 Callagher’s evidence at Supreme Court Trial, 13-14 September 1899. Item C53/1899. The GML would have been pegged to protect a possible extension of the gold-bearing Deerah lode.
101 There appears to be a discrepancy in dates. Merton consistently claimed that he made his find on 4 March; he had gone out looking for the lost horse, brought in a horse (not the one they had lost), had seen it harnessed to the whip for drawing water from the workings, had words with Callagher and, after lunch had gone out prospecting on horseback. As the dates stand in Callagher’s evidence, on that day Callagher never saw Merton as he had gone off on his bicycle.
102 Callagher’s evidence, Item C53/1899
103 Ibid
104 Ibid
Under cross-examination, Callagher attempted to clarify the verbal agreement between himself and Merton:

There was no special agreement made … We did not come to a real final agreement. We used to talk about it and say we would share alike in anything we found. Can’t say when the final arrangement was made.  

With evidence like this from the plaintiff, how could Merton have lost the case? The answer probably lay in the fact that, in giving evidence in his defence, Merton never once referred to the verbal agreement even though he had denied its existence in the written defence presented to Callagher’s lawyers before the trial. The lack of a straightforward verbal denial in front of the jury may well have been his undoing.

As it was, the defence case was aimed squarely at proving an employer/employee relationship between the protagonists rather than one of mateship. ‘I only looked upon Callagher as an employee who was receiving a ¼ interest for his services’, stated Merton. His evidence cast back to January 1898 when he made the offer of work at the Deerah to Callagher only after the latter had heard his brother Herbert Merton decline it. Merton paid Callagher’s relocation expenses from Paddington to Mt Malcolm and provided the tools needed to work the lease. From January to mid-April Callagher and Herbert Merton worked the lease – evidently Herbert had not refused the work but the method of remuneration. From Herbert’s departure until June another man worked with Callagher: from June to November Fred Merton and Callagher worked the lease together. In November Merton took on Robinson and his son. Each time replacement or additional labour was taken on it was Merton who paid for it.

Merton also commented that Callagher worked badly and refused to work in the water. Appearing as a defence witness, Robinson confirmed this: ‘Callagher objected to work as long as there was water at the water level’. That Callagher was the one who objected to working would appear to be a complete reversal of the myth-makers’ versions of the story; however, in their versions Callagher’s complaint that Merton did not do his share of the hard work referred to his frequent absences while out

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105 Callagher’s evidence, Item C53/1899
106 Merton’s evidence at Supreme Court Trial, 13-14 September 1899. Item C53/1899
107 The work arrangements for the Deerah lease were compiled from the evidence of Herbert Merton and James Johnson Robinson, witnesses for the defence, as well as from that of Fred Merton.
108 Robinson’s evidence at Supreme Court Trial, 13-14 September 1899. Item C53/1899. Most mine workings ‘make’ water, the rate of inflow being dependent on local hydrogeological conditions.
prospecting, behaviour which Merton did not deny. Merton obviously believed that he was within his rights to absent himself given that he was paying for replacement labour.

In his summation Mr Justice Stone clearly stated that the case depended ‘upon the question of whether the plaintiff and the defendant verbally agreed to share equally any mining property which they discovered’. The case rested solely upon verbal testimony, which was contradictory, and therefore the jury would have to weigh up the relative likelihood of each protagonist’s tale. There were inconsistencies in the evidence with regard not only to the so-called final agreement, but also to the cancellation of existing arrangements, the disclosure of the find, and to the size of the share which Callagher claimed was his due - reported as no share by one witness, one quarter by three witnesses, and one half by Callagher himself.

The supposed attempt by Merton to cancel existing arrangements between himself and Callagher was the only one of these issues which could, arguably, affect the main argument as to the existence of the verbal agreement. Merton claimed that the paper he wanted Callagher to sign purely related to a change in Callagher’s employment conditions, whereby he would take £2 a week in lieu of rations. John McDonald, the prospector employed by Merton as the second man working the Deerah lease after he and Robinson decamped to the new find, confirmed Callagher’s version of the events that took place, stating that Merton said, ‘I want you to sign this Bill and cancel all existing arrangements and make a fresh start’. The problem was that Callagher recalled Merton saying only “I want you to sign it”. If Callagher’s version was correct, how did McDonald know the contents of the document? Callagher claimed not to remember the exact wording of the agreement on the paper, recollecting only that its effect was to cancel all existing arrangements, yet in cross-examination he recalled that it stated that he should receive £2 per week in lieu of rations!

Much was made of the secrecy, or lack of it, surrounding Merton’s discovery. Callagher stated that the first time he heard of the find was on the night of Monday

109 Summing up, Justice Stone, Supreme Court Trial, 13-14 September 1899. Item C53/1899
110 Merton’s evidence, Item C53/1899
111 McDonald’s evidence at Supreme Court Trial, 13-14 September 1899. Item C53/1899
112 Summing up, Justice Stone, Item C53/1899
113 Ibid
6 March. Richard Lewis, one of the Flying Pig boys appearing as witness for the plaintiff, testified that Merton had told him about the find on 6 March, asking him not to tell Robinson or Callagher. But under cross-examination, he said that it was known at the camp that Robinson had dollied stone from the find for Merton. Why would Merton have told Lewis not to tell Robinson about the find when Robinson had already dollied stone from it?

Merton claimed that he showed the stone to Robinson on the Sunday morning in Callagher's presence. Robinson dollied it while Merton was out collecting more samples from the find. On the Monday Merton told Robinson and Callagher that he was going into Malcolm to apply for a Reward Claim; ‘Callagher did not say anything’. Robinson’s evidence supported Merton’s version of events, adding ‘there was no secret about it, it was known in the camp on Saturday’. The secrecy aspect of the myth depends entirely on whom you believe but there is no evidence for the scenario of a contrived separation in order to defraud Callagher of his share.

As the case drew to its conclusion, it was for the jury to decide whom to believe – and they chose to believe Callagher. In late September 1899, Merton’s lawyers lodged an appeal and also a notice of motion for a new trial, the latter on the grounds that the verdict was against the weight of the evidence and contrary to the direction of the Judge; it was perverse. There is nothing further in the records about a new trial, but the move for an appeal was upheld.

On Friday 1 December 1899 the hearing of the appeal in the Supreme Court began before Chief Justice Sir A.C. Onslow and Justices Hensman and Stone. No transcripts of proceedings are included in the court records; the newspapers of the day are the sole source for what transpired. Mr James, acting for Callagher, argued that it was a matter of credibility. The jury had been ‘the sole judges of the credibility of the witnesses’; they had chosen to believe Callagher and their decision should stand. Mr Burt, QC, acting for Merton, argued that there had been a miscarriage of justice as ‘the plaintiff’s
evidence bore out the defendant’s contention’. The three judges were unanimous in the
decision that the finding of the jury should be set aside and a verdict ‘exactly the
opposite of that of the jury’ should be returned.120 On what did they base their
decision?

In giving his findings the Chief Justice said that he viewed with suspicion Callagher’s
claim for a special agreement between himself and Merton. ‘The plaintiff, first of all,
set up a claim to a quarter of the defendant’s find, and then pleaded a special
agreement, whereby he claimed one half of the property’.121 Callagher had called
witnesses but none of them supported his version of his claim. Moreover, the men to
whom he had admitted having said that he had no share, when called, gave evidence to
that effect.122

If the Plaintiff had sworn that there was such an agreement, but that he remembered
nothing more about it, it would have been a question for the jury as to whom to
believe. If that had been the case, His Honour would have been very loath to interfere
with the finding of the jury.123

As it was, Callagher’s case was ‘cut away from under his feet by his own admissions’.  
Chief Justice Onslow also found that it had been clearly understood that Merton was at
liberty to look for other prospects as long as he left someone else to do his share of the
work in his absence, and ‘the fact that he was looking for a partnership horse when he
made his discovery did not give the plaintiff any claim to a share’.124

Justices Stone and Hensman agreed with all that the Chief Justice said. Justice Stone
added that, if the arguments used at the appeal had been presented at the original
hearing and the defendant’s counsel had so requested, he would have withdrawn the
case from the jury – ‘he was much surprised at the verdict which had been returned,
and it was one with which he did not concur’.125 On Callagher’s behalf, Mr James
applied for, and was granted, leave to appeal to the Privy Council. In the meantime the
restraining injunction and appointments of receiver and manager would continue.

120 West Australian, 5 December 1899, p 2
121 MC, 9 December 1899, p 3
122 Ibid. However, at the trial Callagher had explained that when he told people that he had no interest in
Merton’s discovery, he meant that he had not yet obtained his share. Callagher’s evidence, Item
C53/189
123 MC, 9 December 1899, p 3
124 Ibid
125 Ibid
The final act of the lawsuit was a non-event. Callagher failed to proceed with his action within the three months allowed for bringing an appeal to the Privy Council. Merton’s lawyers applied for the discharge of the Manager and Receiver and for the lifting of the restraining injunction, which, by mid-March 1900 had been in place for almost eleven months. Callagher’s solicitor agreed to give them a letter addressed to the Registrar of Mines enabling the lifting of the injunction but the letter was not forthcoming as he was ‘unable to get instructions’ from his client. Did this mean that Callagher could not be found?

Shortly after Merton moved to his new find, he gave his share in the Deerah to Callagher. The lease was declared forfeit in early December 1899 for failure to comply with the statutory work conditions despite recording gold production that year. It is probable that Callagher had moved on even before the hearing of the appeal.

On 20 March 1900 Chief Justice Onslow ruled that the Receiver and Manager be discharged and that the injunction restraining Merton from accessing half the proceeds of gold won from the Merton’s Reward property be dissolved. He also ordered the removal of all the caveats which Callagher had lodged against Merton’s leases. It is unclear whether the matter of costs in the case was ever resolved but Merton finally had clear title to the mine.

Merton had testified at the September trial that Callagher had said to him that ‘he would cause me a lot of trouble’ if he refused to give him a quarter interest in his new find; Callagher may have ultimately lost his case but he caused irreparable damage to Merton’s reputation. From exonerated defendant to cheating partner in an enduring myth - how did it come to this?

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126 Affidavit of C.H Teague, 19 March 1900. Item C53/1899
127 Merton’s evidence, Item C53/1899
128 MC, 16 December 1899, p 2
129 Order removing Receiver and Manager, 20 March 1900. Item C53/1899
130 Affidavit of Increase by Stone and Burt dated 16 July 1900. Item C53/1899
131 Merton’s evidence, Item C53/1899
The genesis and growth of the myth

Very few people would have had first-hand access to the lawsuit as it unfolded over eleven months. News of its progress would have been disseminated by word-of-mouth and through the press. The September trial was covered by most of the Western Australian newspapers of the day. Both the *West Australian* and the *Morning Herald* gave extensive coverage to the first day’s proceedings, and considerably less to the second.132 Inevitably Merton, as defendant, was poorly served by the press for the simple reason that the plaintiff’s case was presented first. Callagher’s evidence was used to set the scene. Although Merton also testified on the first day, his evidence was edited heavily and, it would appear, selectively to omit anything that would contradict Callagher’s version of events, the most telling omission being Merton’s testimony that he ‘only looked upon Callagher as an employee who was receiving a quarter interest for his services’.133 Moreover, in the *West Australian* the second day’s report consisted largely of an attack on Merton’s character by the plaintiff’s lawyer.134 The *Morning Herald* gave instead a succinct summation of what occurred in court.

The *Coolgardie Miner*, *Kalgoorlie Miner* and *Western Argus* carried identical reports of the first day’s proceedings based entirely on the opening remarks of the plaintiff’s lawyer – no evidence, no witnesses, no defence.135 The *Coolgardie Miner* also gave a one-paragraph summary of the second day of the trial, which the other two papers ignored.136

In contrast, the *Malcolm Chronicle* was the height of discretion, its report exceedingly brief - one paragraph - and to the point.137 It was, after all, Merton’s local newspaper and, whatever the outcome of trial and appeal, he would still own at least half of

132 *West Australian*, 14-15 September 1899; *Morning Herald*, 14-15 September 1899
133 Merton’s evidence, Item C53/1899
134 This involved some business with a bicycle and the transfer of leases out of Merton’s name in order to avoid execution of a judgement against him. Merton had reluctantly explained that the judgement had already been satisfied at the time of the transfer of shares in the leases to his daughter, his reluctance due to the involvement of his brother who was ‘in some difficulties in that connection’. Summing up, Justice Stone, Item C53/1899
135 Judging by the dates, the other two newspapers copied the *Coolgardie Miner*’s report. CM, 14 September 1899, p 5; *Kalgoorlie Miner* [KM], 15 September 1899, p 2; *Western Argus*, 21 September 1899, p 10
136 CM, 15 September 1899, p 5
137 MC, 16 September 1899, p 3
Merton’s Reward. The only newspaper to pass judgement on the case was the Menzies-based North Coolgardie Herald, which wrote that ‘the decision in Merton’s case has given general satisfaction, as throughout it was considered that Callagher was entitled to a share’. 138

The West Australian and the Morning Herald once again gave the most extensive coverage of the December appeal, with the Malcolm Chronicle carrying the latter’s version verbatim.139 Other newspapers gave only a brief statement of the reversal of the jury’s decision.140 As for the March 1900 conclusion to the lawsuit, it rated no more than one-line comment in just three papers, the Malcolm Chronicle, Coolgardie Miner and Kalgoorlie Miner.141

Of these newspapers, all but two - the West Australian and the Kalgoorlie Miner - had ceased publication by 1912; both had given Merton’s defence short shrift.142 Little wonder, then, that it was Callagher’s story that passed into goldfields myth. And yet the first forays into published versions of the story supported Fred Merton, reverting to the simplest horse-seeking version with no mention of a partner or a legal dispute; ‘he was out after horses on March 4th when he saw some good-looking stone …’. 143 For many years it was as if Callagher had never existed.

In 1936 the Western Mail initiated ‘The Dolly Pot’ column to bring to life ‘the picturesque personalities (of the gold fields) past and present’.144 For six years it recorded tales of times past distinguished chiefly by the comradeship and mutual respect evident amongst its contributors, pioneer prospectors such as Gus Luck, Jim Tregurtha, Jim O’Brien and John Meiklejohn.145 For more than a year a debate on the

138 North Coolgardie Herald [NCH], 16 September 1899, p 3
139 West Australian and Morning Herald, 2 and 5 December 1899; MC, 9 December 1899
140 CM and KM, 5 December 1899
141 MC, 10 March 1900; CM, 13 March 1900; KM, 17 March 1900
143 North Coolgardie Herald – Special Mining Number, 24 April 1901, p 68
144 Title block of ‘The Dolly Pot’, The Western Mail, 1937-1942
145 In the Introduction to Dolly Pot, a selection of articles from The Western Mail column of the same name, editor Peter Bridge wrote that the column started out to collect reminiscences of pioneer prospectors. ‘Unfortunately, during the war it deteriorated into “creative writing” and many valuable original contributions were thereby lost’. However, Bridge considered the column to be ‘the most significant single source of information on the Westralian goldfields pioneers. It is the voice of the men who made the country...’. Peter Bridge (ed), Dolly Pot, Taurus Resources and Hesperian Press, Perth, 1987.
meaning of mateship enlivened its pages. Towards the dying stages of the discussion, Jim Tregurtha (writing as “J.E.T.” of Nedlands) raised the case of Fred Merton as something ‘a bit different’:

Before Merton found his famous reward claim, he and a mate were trying a reef near Pig Well … One morning Merton said he was going to look for a horse he had not seen for some time. His mate said: “If you do you will have to put a man on to work your share”. Merton complied with his request.

But later when the mine Merton found when looking for the horse turned out to be a bonanza, his Pig Well mate sued him for a half share. If I remember rightly the case went to the High Court, but Merton won in both courts, and quite rightly, too.¹⁴⁶

The general gist of Tregurtha’s account is in accordance with the facts as revealed in the court case, but what is most revealing is that a prospector of Tregurtha’s standing and experience, writing almost forty years after the event, felt that Merton had been in the right. No one wrote in to contradict him.¹⁴⁷

Earlier, in November 1937, “Rastus” of Broad Arrow submitted a long article on Merton’s Reward. He advised that the details were taken from an earlier publication but did not identify it. This account of the finding of the mine did not include the controversy of the cheated mate.¹⁴⁸

In 1937 Albert Gaston, another pioneer prospector, published his recollections of the Goldfields in the 1890s. He was dry-blowing at Red Flag in the Mt Margaret Goldfield when Merton made his discovery. Again, Gaston’s version of events made no mention of Callagher or the dispute but simply had Merton searching for horses prior to shifting camp. In the Preface to Gaston’s book, Sir John Kirwan, former editor of the *Western Argus* and the *Kalgoorlie Miner*, reflecting on the contradictory versions of the events surrounding many of the gold finds, expressed surprise his memories coincided as well as they did with those of Albert Gaston. He included a list of ‘those whose efforts were of paramount importance, inasmuch as they were the actual gold-finders’, placing Fred

¹⁴⁷ It is unclear how many of the contributors to ‘The Dolly Pot’ may have been personally acquainted with Merton but some definitely were. Gus Luck, in setting the scene for an anecdote, wrote that ‘Another time Fred Merton and I were in a billiard room in Menzies …’. Gus Luck, ‘Carr Boyd and Arizona Bill’, *The Western Mail*, 14 July 1938, p 9

37
Merton alongside the likes of Bailey and Ford, Talbot and Hannan, Jerry McAuliffe, Phil Saunders, Fey and Burbank.¹⁴⁹

These writers were men who, even if they did not all know Merton personally, knew the life and mores of the prospector intimately. When, in 1945, the first account penned by one of the mythmakers appeared, Merton’s story passed into different hands. It is highly unlikely that any of this group - Uren, Harris, Wilson, King, de Havelland, Young and Compton – knew Merton personally but at least five of them were almost certainly just one degree of separation from him.¹⁵⁰

In 1945 Charles Harris, known also as “Diorite”, was seventy-two years old and still working on the Golden Mile. A professional mining man, he had been mine manager of the Cosmopolitan at Kookynie and of Hannan’s Proprietary at Kalgoorlie amongst others.¹⁵¹ His version of the Merton’s Reward story appeared that year as part of a longer article on the Mt Margaret and Murchison goldfields. It placed Merton and ‘his mate’ Callagher working a small reef near Pig Well. There were recriminations because of Merton’s preference for going prospecting rather than helping break out a crushing – ‘more than once Callagher told Merton that if he didn’t like to work he had better get out of the partnership’.¹⁵²

Harris continued with the usual version of the search for horses, finding of the gold, and pegging of the reward claim. He then introduced the engineered separation:

(Merton) said nothing to his find to his partner, and when Callagher again suggested that he had better stay and work on their show or get out, Merton took him at his word, saying: “Alright; from now on, I’m on my own”. Next morning Merton moved his belongings to his find, pegged out twenty-four acre leases at each end of his reward claim, and went into the Mining Registrar’s office and applied for the claim and the leases. Callagher put in an objection on the grounds of their mateship, but the Warden held that they had dissolved their partnership before Merton had applied for his claim, and therefore recommended to the Minister for Mines that Merton be granted the claim and leases.¹⁵³

¹⁵⁰ Wilson and de Havelland are the two for whom no direct links are evident.
¹⁵¹ Western Australia Biographical Index, Battye Library. Malcolm Uren, Glint of Gold, Robertson and Mullens, Melbourne, 1948, p v
¹⁵³ Harris, ‘The Margaret and the Murchison Fields’, p 23
There is nothing in the previously published versions of the story identified so far, even in those that appear most sympathetic towards Callagher, which would explain the distortions introduced here. Harris acknowledged as source of the information for his full piece ‘an article by Aureus, December 1927’. The name Aureus is reminiscent of the by-lines frequently adopted by contributors to newspapers and journals at the time, but no article has been found bearing that name.

Harris blended accepted fact with outrageous fiction, some of which he, as an experienced mine manager, should have recognized for what it was. For example, Callagher could not have objected to the leases before they were granted as he did not have grounds to object to the leases themselves. He could have made plaint regarding the lease holder(s) but the Warden’s Court would not consider such plaint until the leases had been approved. Instead Callagher was granted caveats against the leases, protecting his putative interest in them whilst awaiting the outcome of the civil law action to determine whether a partnership existed.

The effect of Harris’ version of the finding of Merton’s Reward was dramatic. A complete reversal of the work-related recriminations helped to set Merton up as the rogue who manipulated his mate out of his share of a fortune. It set the tone for most of the subsequent versions of the tale.

Malcolm Uren, career journalist, writer and historian, who joined the *West Australian* in 1920 and rose to be Managing Editor, acknowledged Harris as the source of the stories in his 1948 book *Glint of Gold*. Not surprisingly, Uren’s account of the find and the dispute was an embellishment of Harris’ version. Uren clearly established Merton as the archetypal prospector, always happier searching for the next bonanza rather than working the current one. He downplayed the role of the Warden in resolution of the dispute, attributing the final decision to the Supreme Court. Although more accurately reflecting the passage of the dispute through the courts, Uren’s version perpetuated the view of a partnership which had existed and been dissolved through the deceit of one partner.

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154 Harris, ‘The Margaret and the Murchison Fields’.
155 Peter Winter, ex-Tenements Manager, Ashton Gold WA Pty Ltd (and ex-Dept of Mines), pers comm. To object to leases being granted some error in the process of application must be demonstrated, eg failure to post notices in time, incorrect pegging procedure or over-pegging of existing leases.
156 Uren, *Glint of Gold*, p 186
Although not considered one of the mythmakers, David McDonald’s 1953 article ‘Mertons and Mertondale as I Knew Them’, published in the Coolgardie Miner, warrants mention in this context as it, and McDonald’s subsequent autobiography, are the work of a man who knew Fred Merton; he was employed as a battery feeder at Merton’s Reward in 1900.

McDonald, the quintessential battler, came to the goldfields from New South Wales in 1895 aged 14 years, looking for work. After about ten years on the fields, he went to sea, working as a stoker, eventually settling on the land in Canada. After World War I he returned to WA working in the timber mills at Manjimup before going prospecting. By 1942 he had made his home in Kalgoorlie.157

McDonald was prompted to write his account of events at Merton’s Reward because of the ‘fantastic stories’ he had heard about the Merton brothers.158 His version of the find and the dispute commenced with Fred Merton and Callagher working the Australian Peer when Merton made his discovery whilst out searching for horses: ‘Fred brought some samples to show his mate, but he refused to have anything to do with it and told Fred he’d had enough of him and his wildcats’.159

According to McDonald, the leases were duly granted as there were no objections to them. Merton immediately began crushing ore from the surface. McDonald recalled the best results, obtained at the State Battery at Leonora, as 8 oz 7 dwt and 8 oz 18 dwt to the ton. Results from other batteries were slightly lower. He continued:

> When Callaghan [sic] heard of these results he made claim for a half share and this was granted by the Warden at Malcolm. Merton appealed to the High Court and won the appeal.160

Certain aspects of this version are surprising, given that the writer knew Fred Merton and was at Mertondale only a year after the events took place. It depicts Callagher telling Merton that he has had enough of him and his wildcats. Although it is possible that Callagher may have said something of the sort to Merton at some stage, neither of

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157 McDonald, ‘Autobiography’.
158 David McDonald, ‘Mertons and Mertondale as I knew them’, CM, 13 November 1952, p 4
159 McDonald, ‘Mertons and Mertondale …’, p 4
160 Ibid
them would have been likely to report the incident. From Callagher’s point of view, admission of such a statement would have damaged his case against Merton, whilst from Merton’s point of view it would have been totally irrelevant. He viewed Callagher as an employee. Inclusion of this story suggests that McDonald’s memory had been influenced by the Harris/Uren versions in which Callagher expressed his displeasure with his mate. Also surprising is that McDonald wrote that the Warden granted Callagher a half share in Merton’s Reward. However, his memory for grades of ore was amazingly good, the figures that he quoted being very close to those reported at the time the crushings were completed.¹⁶¹

In his autobiography, which was probably written two or three years after the 1953 article, McDonald basically repeated the version he wrote for the Coolgardie Miner, adding detail but nothing that contributed to the development of the myth.¹⁶² It is obvious from his writings where McDonald’s loyalties lay – ‘the best boss I ever had on the Goldfields’ was how he described Fred Merton.¹⁶³

In 1973 Helen Helga Wilson included the story of Merton’s find in her book Westward Gold!.¹⁶⁴ A graduate of the University of Western Australia, Wilson began writing shortly after the end of the Second World War, quickly establishing a successful career as novelist, short story and scriptwriter. She did not fully reference her book but she acknowledged Uren’s Glint of Gold in her bibliography. Her story of the find and the dispute condensed the Harris/Uren version. Evidently this was the version rapidly becoming entrenched as the accepted story.

Yet occasionally other versions still surfaced. In 1980 Norma King devoted one chapter of her book Colourful Tales of the Western Australian Goldfields to Mertondale. Her take on the story of Merton’s find was as follows:

Fred Merton and party had been so successful at the Australian Peer mine that at one stage Merton was using a 30-centimetre-square slab of stone, studded with coarse gold,

¹⁶¹ See CM, 7 June 1899
¹⁶² McDonald commented ascerbically on a recently published book which he found wildly inaccurate. Careful comparison of McDonald’s critique with books of the time indicates that the book in question must have been Gordon Young’s Under the Coolibah Tree (1953), which did not include the story of the find and the legal dispute. McDonald, ‘Autobiography’, pp 88-89
¹⁶³ McDonald, ‘Autobiography’, p 91
as a paperweight. Eventually the gold gave out, so Merton and his partner, Gallagher [sic], decided to go prospecting further on and (according to Gallagher) agreed to share anything found. While Merton was looking for their horses before moving camp, he noticed, about 13 kilometres north of the Australian Peer mine, a stony ridge near an old beaten track made by dryblowers on their way from Cue to Mount Margaret. He examined the outcrop and to his delight found the quartz to be speckled with gold. It was one of the richest quartz reefs he had ever seen. He immediately pegged out a reward claim and a 10-hectare block and made his way to Mount Malcolm to lodge the claims at the registrar's office. Gallagher, after trying unsuccessfully to claim his half share, filed a case at the Supreme Court, and won. A notice of appeal was given and by December of that year, 1898, Merton won the Full Court decision against Gallagher.  

Although King described Merton and Callaghan as partners before the find, she clearly did not subscribe to the full-blown cheated mate myth. Like Wilson, she did not reference her work but she did acknowledge Hocking and Company of Kalgoorlie for making available old copies of the *Kalgoorlie Miner* and the *Western Argus*.

Of all the writers analysed so far, Norma King was, arguably, the one most likely to have been exposed to oral versions of the story. Born in 1922 the descendant of Cornish miners, she married a miner and was a long-term resident of the goldfields. Her father set up a cyanide treatment plant at Mertondale in 1935 in order to process the old residues from Merton’s Reward. By that time the town had long been deserted. King recalled that her family stayed there for almost a year. Her experience of Mertondale would have attuned her to the stories told by old-timers encountered in her travels all over the goldfields.

In 1985, David de Havelland published the first volume of his book *Gold and Ghosts: a prospectors guide to metal detecting and history of the Australian Goldfields*, combining anecdote with detailed factual information regarding the production and geography of a great number of old mining centres. In the section on Mertondale, he began the story somewhat differently:

During late 1898 Fred Merton and Charlie Callaghan [sic] left Malcolm to prospect the country north of that town. Callaghan found traces of colour and decided to sink a shaft near Pig Well.  

Callagher as the discoverer of the Deerah? De Havelland’s list of source material is comprehensive, including Gaston, Harris, Uren, Wilson and King as well as Mines

165 Norma King, *Colourful Tales of the Western Australian Goldfields*, Rigby, Adelaide, 1980, p 71
166 Ibid., pp 74-75
Department and Geological Survey publications, but nothing in any of these sources justifies this particular distortion of the story. The rest of de Havelland’s tale reverted to the spirit of the Harris/Uren version.

The most recent version of the tale is that of George Compton, published in the *Goldfields Mining Journal* in 1992. Compton was a retired geologist who worked around the Eastern Goldfields for more than 40 years; his father was also a goldfields mining identity. At first, his lively re-telling of the tale followed the Harris/Uren version, adding a few perceptive details. In describing the Deerah mine, for example, he wrote that he suspected ‘the show may have been something in the nature of a sweat mine, lacking the potential to yield the reward sought by Merton’.\(^{168}\)

However Compton introduced a novel element into the story. Merton had picked up some ‘likely-looking’ quartz after finding the horse, but had spotted the gold in it only after he had been told that he was ‘OUT’ by Callagher and had shifted camp. In having Merton not discover the gold in the quartz until the following morning, Compton was setting up a unique version of the legal dispute, as follows:

Gallagher [sic] plainted Merton seeking a half share in the discovery.

However, the Warden found that the partnership had been terminated in the evening before Merton had made his discovery; in the Warden’s view “discovery” occurred when Merton saw the gold and not when he picked up “likely stone”.

Gallagher was dissatisfied with the Warden’s decision and succeeded in overturning the verdict in a higher court.

That verdict was, in turn, overturned when Merton took the case to the Privy Council.

That Privy Council case (3 Ed VI 11, 104) [sic], besides confirming Merton’s sole title, was also a precedent in establishing the virtual finality of a Warden’s Court decision.\(^{169}\)

The first half of this - Callagher making plaint to the Warden and the Warden finding that the partnership had been dissolved before Merton’s discovery - is close enough to the Harris/Uren version, but the appeal by Merton to the Privy Council would appear to be pure fabrication. It was Callagher who lodged an appeal to the Privy Council but

\(^{168}\) By the term sweat mine Compton presumably meant a mine which was hard work for little return, a view of the Deerah with which I would agree. G. Compton, “A circulating load”, *Goldfields Mining Journal*, vol 1, no 7, 1992, p 22

\(^{169}\) Compton, ‘A circulating load’, p 22
failed to go through with it. So from where did Compton suddenly conjure this version and what is his ambiguous reference, the only one he gave in the entire article?

Compton stated that forty years previously, in the early 1950s, he had known an old man who had worked on the mine as a youngster. His unnamed informant had ‘delighted in recounting the “goings on” in the days of his youth’.

In his words, Fred Merton was the best boss he ever worked for; he found the mine, bored his cuts, stood his timber, built his battery and boiler, drew his plans … and took the “London Jews” for a ride.170

This sounds like David McDonald. But he could not have been the source for Compton’s version of the legal dispute as he had written that the Warden found for Callagher.

In summary, the finding of Merton’s Reward and the legal dispute over its ownership is one element of the Merton myth for which reliable primary sources exist. The uncontested facts in these sources provide a yardstick against which the evolving myth can be measured and found wanting. However it should be acknowledged that access to some of these sources would have been limited and that the story gleaned from available sources such as the newspapers was unbalanced and could therefore have contributed to the distortions evident in the myth. The next chapter will continue the assessment of the myth looking at the development of the mine under Merton’s management, the sale to Kaufman and the Rothschilds, and the disparity between the results obtained from the mine under Merton’s control and those under the English company’s management.

170 Ibid
Chapter 3

The development of the mine and its sale

With the legal dispute regarding the ownership of the Merton’s Reward gold mine settled, Fred Merton was free to proceed with development of the mine as sole owner. In this chapter the development of the mine and its sale will be discussed as they relate to the mythic construct. The focus will be on Merton himself.

As previously explained the various versions of the myth can be reduced to four main elements of which one, the finding of the deposit and the legal battle for ownership, has been explored in detail. The second strand, the development of the mine under Merton’s management, can be sub-divided into three topics of interest:

- The fabulous results within months of the discovery
- Merton’s audacity in purchasing and erecting his own battery
- Fraud and manipulation in the lead-up to the sale.

The first of these topics features accounts of ounces won and wealth earned by Fred Merton. Misled by ambiguously worded contemporary articles, several of the myth-makers inflated the value of the gold won from the mine by the end of 1899 almost four-fold. The battery at Merton’s Reward elicited comment from most of the writers but only Harris and Uren appeared to appreciate the unconventional action Merton took in purchasing and erecting a battery himself.  

The last topic covers activities that could be interpreted as promotional ploys to increase the value of the mine in the eyes of potential buyers. Some of the myth-makers revelled in tales of the salting of the battery box and of Merton’s careless handling of his gold – as if there were so much gold it mattered not if he played with it and spilt it on the ground.

The other two main strands of the myth are the sale to the English company and the disparity between the results obtained from the mine under Merton’s control and those under the English company’s management. Inextricably intertwined with all three mythic strands to be discussed in this chapter is the character of Fred Merton himself.


The fabulous results

In the brief period between the pegging of the leases in early March and the commencement of legal action in late April, progress at the mine was impressive. ‘Mr Merton is not a man who wastes time on any occasion’ wrote the *North Coolgardie Herald*, ‘but this particular time he surpassed all records in the expedition with which he got to work.’\(^{173}\) Within days of pegging the leases, men were employed breaking and bagging stone. By 26 March a parcel of 20 tons of ore had been treated at the Waitekauri battery, approximately twenty kilometres from Merton’s Reward, yielding 140 oz of smelted gold, at a grade of 7 oz/ton.\(^{174}\) The return would have been even more rapid had Merton not had difficulty in securing camels to transport the stone.\(^{175}\)

On 28 March a further 79 tons was sent to the Waitekauri, while on 8 April a small parcel of 8.5 tons was treated at the Leonora state battery.\(^{176}\) A subsequent parcel of stone was sent to the Richmond Gem battery in June.\(^{177}\) The different battery destinations were probably determined by availability, but might have constituted a deliberate comparison of their efficiencies.

The local newspapers busily reported the tonnages of stone carted to the various batteries and the spectacular results obtained. The reports varied widely from paper to paper, yielding much confusion.\(^{178}\) Luckily in the course of a long and detailed interview with the *Morning Herald* Merton set the record straight.\(^{179}\) His figures are presented as part of Table 3.1 Gold Production Statistics for Merton’s Reward gold mine for 1899. This table clearly shows the initial high grades, averaging 8 oz/ton to the end of April, the slightly lower grade obtained in June at the Richmond Gem, and the interruption in gold production while the Merton’s Reward battery was constructed.

\(^{173}\) *North Coolgardie Herald* [NCH] – Special Mining Number, 24 April 1901, pp 68-69
\(^{174}\) *Malcolm Chronicle* [MC], 18 March 1899, p 2. *Coolgardie Miner* [CM], 7 June 1899, p 6
\(^{175}\) *CM*, 7 June 1899, p 6
\(^{176}\) ibid
\(^{177}\) *CM*, 19 June 1899, p 6
\(^{178}\) For example: ‘99 tons being treated for a yield of 762 oz gold’, *CM*, 6 April 1899, p 5; ‘99 tons of stone conveyed to the Waitekauri battery, [gave] a total return of 634 oz of gold’, *MC*, 15 April 1899, pp 2-3
\(^{179}\) As reprinted in *CM*, 7 June 1899, p 6
Table 3.1 Gold Production Statistics for Merton’s Reward gold mine (RC 1C and GML 638C) for 1899: compiled from official gold production records and Merton’s own figures, as quoted in the *Coolgardie Miner*.

<table>
<thead>
<tr>
<th></th>
<th>Date (1899)</th>
<th>Ore treated</th>
<th>Gold therefrom</th>
<th>Grade (oz/ton)</th>
<th>Value of gold per oz</th>
<th>Battery where treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>26 March</td>
<td>20 tons</td>
<td>140 oz</td>
<td>7 oz/ton</td>
<td>£3 15s 0d</td>
<td>Waitekauri</td>
</tr>
<tr>
<td>2</td>
<td>2 April</td>
<td>79 tons</td>
<td>494 oz</td>
<td>6.25 oz/ton</td>
<td></td>
<td>Waitekauri</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Also 2 tons concentrates carrying 150 oz gold)</td>
</tr>
<tr>
<td>3</td>
<td>March</td>
<td>99 tons</td>
<td>634 oz</td>
<td>6.4 oz/ton</td>
<td>£3 17s 10d</td>
<td>Waitekauri</td>
</tr>
<tr>
<td>4</td>
<td>8 April</td>
<td>8.5 tons</td>
<td>71 oz</td>
<td>~8.5 oz/ton</td>
<td></td>
<td>Leonora</td>
</tr>
<tr>
<td>5</td>
<td>April</td>
<td>107.5 tons</td>
<td>855 oz (incl 150 oz in concs)</td>
<td>~8 oz/ton</td>
<td>Total value £3,206 5s 0d (at £3 15s/oz)</td>
<td>Leonora</td>
</tr>
<tr>
<td>6</td>
<td>June</td>
<td>139 tons</td>
<td>722.75 oz</td>
<td>5.2 oz/ton</td>
<td>£3 15s 0d</td>
<td>Richmond Gem</td>
</tr>
<tr>
<td>7</td>
<td>June</td>
<td>246 tons</td>
<td>1,427 oz (excl 150 oz in concs)</td>
<td></td>
<td></td>
<td>Merton’s Reward</td>
</tr>
<tr>
<td>8</td>
<td>Nov</td>
<td>500 tons</td>
<td>1,250 oz</td>
<td>2.5 oz/ton</td>
<td>£3 16s 6d</td>
<td>Merton’s Reward</td>
</tr>
<tr>
<td>9</td>
<td>Dec</td>
<td>250 tons</td>
<td>629 oz</td>
<td>2.51 oz/ton</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL for 1899</strong></td>
<td><strong>996.5 tons</strong></td>
<td><strong>3,306.75 oz</strong></td>
<td><strong>3.32 oz/ton</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sources and comments**

Official gold production records are those records held by the Mines Department and posted in government publications. A general discussion of their provenance and reliability can be found in the Appendix - Quantifying the gold from the mine.

Lines in bold are subtotals and total.

1. *Coolgardie Miner*, 7 June 1899, p 6
2. Ibid.
4. CM, 7 June 1899, p 6
5. Ibid. The newspaper recorded the value of the gold as £8,206 5s 0d, clearly an error in transcription
7. CM, 24 June 1899, p 6. The tonnage should be 246.5 tons.
8. Gold production records, *Government Gazette of WA*, 63, MS No 3, 29 December 1899, p 4330
9. Ibid, 7, MS No 4, 2 February 1900, p 347

TOTAL for 1899 = 5+6+8+9. This matches Warden Burt’s 3,306.9 oz in his report on the Mt Margaret goldfield in the Annual Report of the Mines Department for 1899. The Production Record Sheet – Merton’s Reward North, GML 638C & RC 1C, Statistics Branch, Mines Dept, shows 2,903.7 oz at a grade of 2.91 oz/ton for 1899. The apparent discrepancy is due to reporting in fine ounces as against gross weight (see Appendix).
By the end of April 1899, when William Callagher lodged his claim for a half share of the mine, a total of 855 oz, including 150 oz in concentrates, had been won from 107.5 tons of ore at a yield of approximately 8 oz/ton. These were impressive results. Although the tonnages were comparatively low, the grades were amongst the highest recorded in the Mt Margaret Goldfield at the time.

A survey of approximately 100 monthly gold production returns for mines and leases in the Mt Margaret Goldfield that were contemporaneous with Merton’s Reward, commencing production in the period August 1897 – December 1899, resulted in just twelve individual returns with grades higher than 4 oz/ton (see Table 3.2). These included the March, April and June 1899 returns for Merton’s Reward. Amazingly, Merton’s previous property, the Deerah lease, yielded two monthly returns greater than 4 oz/ton. Merton appears to have been a capable prospector.

Table 3.2. Monthly gold returns for selected gold mines in the Mt Margaret Goldfield, 1897-99: in order of decreasing grade (twelve returns with grades higher than 4 oz/ton).

<table>
<thead>
<tr>
<th>Date</th>
<th>Lease No</th>
<th>Name of Lease</th>
<th>Ore treated tons</th>
<th>Gold therefrom oz</th>
<th>Average oz dwt gr</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 1899</td>
<td>RC 1C</td>
<td>Merton's Reward</td>
<td>8</td>
<td>71</td>
<td>8 2 16</td>
</tr>
<tr>
<td>11 Mar 1898</td>
<td>406C</td>
<td>Deerah</td>
<td>10</td>
<td>70</td>
<td>7</td>
</tr>
<tr>
<td>March 1899</td>
<td>RC 1C</td>
<td>Merton's Reward</td>
<td>99</td>
<td>634</td>
<td>6 8 2</td>
</tr>
<tr>
<td>28 Mar 1898</td>
<td>RC 1C</td>
<td>Leonora Gold Blocks</td>
<td>100</td>
<td>605</td>
<td>6 1 0</td>
</tr>
<tr>
<td>7 Dec 1897</td>
<td>RC 1C</td>
<td>Leonora Gold Blocks</td>
<td>54</td>
<td>324</td>
<td>6 0 7</td>
</tr>
<tr>
<td>28 Sept 1897</td>
<td>195/196C</td>
<td>Leonora Gold Blocks</td>
<td>100</td>
<td>522</td>
<td>5 4 10</td>
</tr>
<tr>
<td>June 1899</td>
<td>638C</td>
<td>Merton's Reward N</td>
<td>139</td>
<td>722</td>
<td>5 4 0</td>
</tr>
<tr>
<td>8 Dec 1897</td>
<td>452C</td>
<td>Flying Pig</td>
<td>35</td>
<td>179</td>
<td>5 2 7</td>
</tr>
<tr>
<td>4 Jun 1898</td>
<td>371T</td>
<td>Augusta</td>
<td>70</td>
<td>310</td>
<td>4 8 19</td>
</tr>
<tr>
<td>24 Dec 1898</td>
<td>371T</td>
<td>Augusta</td>
<td>64</td>
<td>280</td>
<td>4 6 20</td>
</tr>
<tr>
<td>25 Dec 1898</td>
<td>195C</td>
<td>Leonora Gold Blocks</td>
<td>65</td>
<td>262</td>
<td>4 0 9</td>
</tr>
<tr>
<td>11 Apr 1898</td>
<td>406C</td>
<td>Deerah</td>
<td>10</td>
<td>40</td>
<td>4</td>
</tr>
</tbody>
</table>

**Source:** Government Gazette of WA, Aug 1897 – Dec 1899

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180 The Deerah’s neighbouring lease at Pig Well, the Flying Pig, had one monthly return greater than 4 oz/ton
Of the other two mines with top grades, the Leonora Gold Blocks was geologically similar to Merton’s Reward but the Augusta, situated roughly four kilometres west of Laverton, was different, with gold-bearing quartz reefs hosted by banded iron formation, not the greenstone-hosted reefs which dominated the Mt Malcolm – Leonora area.

The Leonora Gold Blocks was the northernmost mine in the belt that included Harbour Lights, Trump, Tower Hill and Sons of Gwalia. Gold was found there in the second half of 1896, but the leases changed hands before serious development work was undertaken. The two returns listed above for 1897 would represent tonnage excavated in the course of development but the March 1898 parcel was the first ore extracted from the stopes on the 100 ft level, a good result for the mine.181

There were, obviously, unofficial reports of gold occurrences with far greater yields. Two parcels of ore from the Trump gold mine were taken to different batteries at Menzies reputedly giving results of 1 ton for 82.75 oz and 5 tons 9 cwt for 758.75 oz at a yield of 139.22 oz/ton.182 At the Little Wonder, 32 kilometres NNW of Leonora, ‘the average yield was never less than 1,000 oz to the ton, while as high as 1,300 oz to the ton was obtained’.183 These extraordinarily high grades were, however, the result of hand-picking of the ore. The Little Wonder was discovered two and a half years before any of the great Leonora mines. At the time the nearest crushing plant was at Southern Cross and there were no camels in the district. The prospectors were forced to use horses to transport all the stone that could not be hand-crushed to Southern Cross. A horse could carry a little under half as much as a camel. Under those circumstances they had to pack the richest ore.184

There was some speculation that the stone taken to the various batteries from Merton’s Reward in March-April 1899 had been hand-picked but according to Robinson, the mine manager, the reef was of ‘uniformly high grade quality’; the stone was broken

181 NCH, 24 April 1901, p 66
182 Ibid, p 65. No dates were given for the processing of the ore, but it would seem likely that the two returns would have been obtained in late 1896 or early 1897
183 Ibid, p 67. These returns were probably obtained in 1894-1895.
184 Ibid, p 67
down and bagged indiscriminately.\textsuperscript{185} However, for all small parcels of ore that were transported by camel to distant batteries, a certain degree of selectivity would seem inescapable.

By the end of 1899 Merton had won 3,306.75 oz gold gross weight which, even at a conservative £3 15s per oz, would have been worth £12,400. In contrast, several of the myth-makers attributed 12,000 oz of gold to the mine for the same period. Harris, Uren and de Havelland all stated that within a year Merton had obtained 12,000 oz from 5,000 tons – £45,000 worth – whereas Wilson claimed that he had won £40,000 worth in just 3 months.\textsuperscript{186} Merton was certainly becoming wealthy but not as rapidly, or as easily, as the myth-makers would have us believe.

The battery – an audacious purchase?

Merton must have made the decision to erect his own battery almost immediately after the first crushing at the Waitekauri because, by mid-April, he was reported to be in Menzies arranging, amongst other things, the purchase of a ten-head battery from James Martin and Co. of Gawler, ‘with power to drive twenty-head’.\textsuperscript{187} Evidently he had plans to increase the crushing capacity if all went well. Most mining authorities would have approved his choice; a Martin and Co. mill was considered to be one of the best available. Delivery was anticipated within eight weeks.\textsuperscript{188}

Adverse comment began almost immediately. The general opinion was that Merton had been premature in ordering the battery and that it would have been better to advance development work within the mine first.\textsuperscript{189} At the Leonora Gold Blocks the syndicate that owned and managed the mine did not install its own battery until the

\textsuperscript{185} \textit{MC}, 15 April 1899, pp 2-3
\textsuperscript{186} Harris, ‘The Margaret and the Murchison Fields’, p 23. Uren, \textit{Glint of Gold}, p 187. D.W. de Havelland, \textit{Gold and Ghosts: a prospector’s guide to metal detecting and history of the Australian Goldfields, volume 1 - Western Australia}, Hesperian Press, Carlisle, 1985, p 201. H.H. Wilson, \textit{Westward Gold!} Rigby, 1973, p 127. The erroneous gold production figure can be traced to a misinterpretation by the writer of \textit{Twentieth Century Impressions of WA} of data in the \textit{NCH’s Special Mining Number}. The latter stated that the total output from ‘the date of beginning work to the end of December was 5,000 tons for 12,000 oz of gold’, meaning total output to the December before the time of writing, ie to the end of 1900. \textit{NCH}, 24 April 1901, p 69. The writer of the former interpreted this as the output from commencement to the end of December 1899. \textit{Twentieth Century Impressions of WA}, Thiel, Perth, 1901, p 253.
\textsuperscript{187} \textit{NCH}, 12 April 1899, p 2; \textit{MC}, 15 April 1899, pp 2-3
\textsuperscript{188} \textit{NCH}, 21 April 1899, p 3
\textsuperscript{189} \textit{NCH}, 11 May 1899, pp 2-3
incline shaft had been sunk to the 150 ft level, with 1,000 ft of driving on the 100 ft level to open up the stopes, by which time £1,600 had been spent on crushing at public batteries.  

With the benefit of hindsight, the *North Coolgardie Herald* wrote in 1901 that:

> Many persons shook their heads over what they considered the overweening confidence of Mr Merton in his mine, as exhibited by his erection of so large a battery, and they predicated the possibility that the show was merely a surface one, the riches of which would probably be exhausted before they could have returned the price paid for the battery. But the event has in this case abundantly justified Mr Merton’s faith in the mine.

This brief extract highlights some issues that passed into the folklore. Firstly, how large was the battery? Since at the time of the sale to the English company there was a thirty-head battery working at the mine, there was a tendency amongst commentators to overlook the fact that Merton initially erected a more modest ten head of stampers. The newspapers of the day did not help, regularly referring to a twenty-head battery throughout 1899 although Merton did not install the second ten head until Christmas that year. In May 1901, Merton added the final ten head to the mill.

There was also the issue of Merton’s ‘overweening confidence’. Of all the commentators interested in Merton’s Reward, Uren was the only one to explain how exceptional Merton’s actions were:

> Most of the few successful prospectors reached this stage of the development of their finds and then sold out rather than face the outlay of a battery to crush the stone on the spot, but Merton bought his own battery and continued to secure rich returns …

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190 *NCH*, 24 April 1901, p 66  
191 *Ibid*, p 69  
192 Of the myth-makers, neither Harris nor Uren specified the size of the battery; King followed Young’s lead in attributing a 30-head battery with excess power capacity to the mine. De Havelland correctly stated that there was a 10-head battery installed by September 1899; however he never mentioned the increases to 20 and 30 head. Harris, ‘The Margaret and the Murchison Fields’, p 23. Uren, *Glint of Gold*, p 187. Norma King, *Colourful Tales of the Western Australian Goldfields*, Rigby, Adelaide, 1980, p 72. Young, *Under the Coolibah Tree*, p 203. de Havelland, *Gold and Ghosts*, p 202  
194 Gold production records, *GGWA*, May-July 1901  
195 *NCH*, 24 April 1901, p 69  
Perusal of records such as the Bewick Moreing files or the *North Coolgardie Herald’s ‘Special Mining Number’* shows that this was so. For example, a report by Herbert Hoover in the former recounts a ten-day visit that he undertook to the Laverton area in October 1897. Hoover visited forty-two fledgling mining properties, most of them up for sale, including the Lancefield, the Augusta and the Craiggiemore. At the Lancefield there was nothing to see but a few costeans, which he duly sampled. At the Augusta there was an incline shaft 65 ft deep, in which the vein averaged 2 ft wide, with a crosscut at the bottom where the vein was 6 ft wide, whilst at the Craiggiemore Hoover described a shaft down 90 ft with crosscuts at 45 ft and 90 ft deep extending 30 ft laterally into the lode formation. The respective prospectors were asking £2,500 for the Augusta, and £8,000 and a one-tenth interest for the Craiggiemore.197 In all, Hoover commented in his report on about half of the forty-two prospects, one or two of which were more advanced, but most less so.

What Hoover’s report illustrates is that the normal *modus operandi* of experienced prospectors was to open up their prospect through development work just enough to demonstrate continuity of the gold-bearing formation and to allow for sampling. At that stage, they would put the property up for sale, either outright or preserving a minority interest. Very few prospectors progressed further than this point, fewer still took Fred Merton’s path of erecting their own battery; the expense was too great given the high risk involved. But then, Merton’s Reward was totally unlike most other properties. A combination of multiple shallow-dipping veins and a gently sloping hillside had resulted in extensive outcrops of gold-bearing quartz-ironstone rubble. With so much high-grade ore exposed at the surface, Merton’s unusual decision to take the risk of erecting his own battery is understandable.

How well did Merton’s battery perform? It amply repaid the price paid for it but it undoubtedly under-performed in terms of tonnage of ore treated. Gordon Young, who worked at Merton’s Reward in 1905, wrote that, towards the end of Merton’s tenure, a

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197 Hoover’s conclusion was that the Lancefield, Augusta and Craiggiemore would warrant further investigation when the prospectors dropped their price. He was correct as these three properties went on to be major mines. Herbert Hoover, ‘Reconnaissance Trip for the London and Western Australian Exploration Co Ltd’, 12 October 1897, Bewick Moreing and Company Ltd [Bewick Moreing]. Part of this is archived in BM 64, pp 99-947, DMP, Perth. I am indebted to Don Reid for sending me a full copy of the report.
series of major accidents in the plant brought the battery to a standstill.\textsuperscript{198} There is scant evidence to support this claim.\textsuperscript{199} However, a review of the monthly gold returns for the mine from its inception until its sale in 1902 shows several apparent breaks in gold production. Could these have been due to mechanical failures? Or is there another explanation?

Table 3.3 shows monthly gold production for Merton’s Reward from March 1899 to February 1902. The four-month hiatus in production from July to November 1899 coincided with the construction of the initial ten-head battery. It took much longer than the anticipated eight weeks for all the necessary materials to arrive at the mine-site. Two wagon teams passed through Malcolm on 13 June loaded with machinery and timber for the battery but the mine was still waiting for some parts in early August.\textsuperscript{200} The battery was finally given a ‘trial spin’ on 1 September 1899.\textsuperscript{201} The 1,250 oz of gold recorded for November 1899 would have included gold produced during commissioning of the plant in September and October. During November and December, a second ten-head of stamps was erected. The twenty-head battery is shown in Figure 3.1.

There was no production recorded for January 1900. This may have been due, in part at least, to the general exemption granted to all mines in the Goldfields over the Christmas and New Year period.\textsuperscript{202} No production was recorded for March 1900 but the 600 tons recorded for April was double the tonnage recorded in February. Similarly, no production in July was followed by 1,000 tons of ore in August, roughly double the average figure for April to June. Another three-month hiatus September to November 1900 was followed by December production approximately quadruple the monthly average at 2,200 tons.

\textsuperscript{198} Young, \textit{Under the Coolibah Tree}, p 204
\textsuperscript{199} It is hard to believe that the \textit{Malcolm Chronicle} would have failed to report any major accidents.
\textsuperscript{200} \textit{MC}, 17 June 1899, p 3 and 5 August 1899, p 2
\textsuperscript{201} \textit{MC}, 9 September 1899, p 2
\textsuperscript{202} The Christmas/New Year general exemption from work was designed to permit men working far from their families time to journey home for the festive season. The duration of the exemption varied from goldfield to goldfield with distance from the main centres of population.
Table 3.3 Monthly gold production for Merton’s Reward, March 1899 to February 1902.

<table>
<thead>
<tr>
<th>Date</th>
<th>Lease or Claim Number</th>
<th>Number of Stamps</th>
<th>Area</th>
<th>Production</th>
<th>Mint value of gold/oz £ s d</th>
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<tr>
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<tr>
<td>March 1899</td>
<td>RC 1c</td>
<td>6</td>
<td>99</td>
<td>634</td>
<td>3 17 10</td>
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<tr>
<td>April 1899</td>
<td>RC 1c</td>
<td>6</td>
<td>8.5</td>
<td>71.15</td>
<td>8.13</td>
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<td>May 1899</td>
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<td>June 1899</td>
<td>638c</td>
<td>24</td>
<td>139</td>
<td>722.75</td>
<td>5.2 3 15 0</td>
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<td>July 1899</td>
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<td>December 1899</td>
<td>RC 1c, 638c</td>
<td>10</td>
<td>500</td>
<td>1250</td>
<td>2.5 3 16 6</td>
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<td>January 1900</td>
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<td>RC 1c, 638c</td>
<td>20</td>
<td>30</td>
<td>250</td>
<td>629 2.51 3 16 6</td>
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<td>March 1900</td>
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<td>April 1900</td>
<td>RC 1c, 638c</td>
<td>20</td>
<td>30</td>
<td>600</td>
<td>1244.8 2.07 3 17 0</td>
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<td>May 1900</td>
<td>RC 1c, 638c</td>
<td>20</td>
<td>30</td>
<td>700</td>
<td>1500 2.14 3 17 0</td>
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<tr>
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<td>20</td>
<td>30</td>
<td>400</td>
<td>1108 2.77 3 17 0</td>
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<td>July 1900</td>
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<td>December 1900</td>
<td>RC 1c, 638c</td>
<td>20</td>
<td>30</td>
<td>2200</td>
<td>2239.15 1.01 3 16 0</td>
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<td>RC 1c, 638c</td>
<td>20</td>
<td>30</td>
<td>300</td>
<td>400 1.33 3 18 0</td>
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<tr>
<td>February 1901</td>
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<td>20</td>
<td>30</td>
<td>800</td>
<td>1200 1.5 3 17 6</td>
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<tr>
<td>March 1901</td>
<td>RC 1c, 638c</td>
<td>20</td>
<td>30</td>
<td>500</td>
<td>750 1.5 3 17 6</td>
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<td>April 1901</td>
<td>RC 1c, 638c</td>
<td>20</td>
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<td>600</td>
<td>900 1.5 3 17 6</td>
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<tr>
<td>May 1901</td>
<td>RC 1c, 638c</td>
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<td>June 1901</td>
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<td>July 1901</td>
<td>RC 1c, 638c</td>
<td>30</td>
<td>30</td>
<td>1200</td>
<td>2000 1.67 3 17 6</td>
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<td>August 1901</td>
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<td>February 1902</td>
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* 10 additional stamps in course of erection

**Source:** Government Gazette of WA, 1899-1902
There is a pattern emerging. Clearly the battery was operating more or less continuously throughout 1900 but the production was not being reported every month; cumulative gold returns were being submitted at irregular intervals. Strangely for the cumulative returns the grade of the ore plummeted – 2.07 oz/ton in April (as against 2.64 oz/ton in February), 1.02 oz/ton in August and the all-time low of 1.01 oz/ton in December 1900. What was going on?

The answer is simple. Periods for which there were no gold returns from Merton’s Reward coincided with Merton’s trips away.203 David McDonald wrote that, during his absences on business or holidays, Fred Merton left his brother Herbert in charge but ‘(Herb) was only allowed to work the poorer grade ore’.204 Evidently Herb was not to be trusted with the high-grade ore; neither was he allowed to bank the gold or submit

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203 A calendar of Merton’s movements was drawn up from newspaper reports confirming the coincidence of periods of non-reporting of gold returns with his trips away from the mine.
204 David McDonald, ‘Mertons and Mertondale as I knew them’, CM, 13 November 1952, p 4
the monthly gold returns. McDonald also commented that Fred and Herb were ‘the only ones to clean up, retort and smelt the gold’.205

Despite these explanations for the apparent breaks in production and low grades, a question mark still hangs over the performance of the battery. McDonald, who had worked for Fred Merton as a battery feeder in 1900, described working conditions there as follows:

Fred erected twenty head of stamps and six of us feeders, knapped any stones required to be broken, the ore mostly soft quartz, did not warrant a rock-breaker … Each man fed ten head of stamps and this meant two on each of three eight hour shifts, changing over at weekends.206

During 1900 the best monthly tonnage put through the battery was 700 tons in May, but the average for the year was just 433 tons. Twenty head of stamps working continuously twenty-four hours per day should have been crushing more than that. There was a problem but it was not mechanical. The Mertondale area suffered from a desperate shortage of water.

According to Richard Hartley, ‘the critical factor that affected stamp mill operation on almost all of the eastern goldfields was the very limited supplies of surface water available for use as process water’.207 Estimates of the amount of water used in stamp mills varied quite widely. Various sources quoted by Charleton in his 1903 treatise *Gold Mining and Milling in Western Australia* gave volumes ranging from 112 gallons of water per ton of ore milled to nearly 1,000 gallons per ton, but the figures were probably totals for both milling and cyaniding of the ore.208 It should be noted that these volumes of water are not the total amount of water used but the amount lost or consumed during processing. Most process water was recycled. Water consumption increased in hot weather due to higher evaporation rates; it also increased if the amount of slimes produced was high, as was the case during McDonald’s sojourn at Merton’s Reward.209

205 Ibid
209 McDonald, ‘Autobiography’, p 89
Only when there had been good rains did the battery work at anything like capacity. In November 1899 it was reported that it had been running continuously since the ‘late rains’; they had been carting 2,000 gallons per day from a nearby creek, but the surface water was exhausted by mid-November. The autumn of 1900 was also a very wet period. By 14 April 218 points of rain had fallen for the month, 454 points for the year. The Malcolm Chronicle reported grass springing up everywhere. The abundant water supply was reflected in the good returns for the period April to June with 1,700 tons of ore being treated for 3,852.8 oz despite an accident to the pump which reduced production to just twelve days during June.

Merton’s efforts to secure a sufficient supply of water continued throughout his tenure of the mine. He commenced work on the first water shaft for the mine in April 1899 but the flow of water into it was slow. In May-June 1900 he had condensers built at the mine; in August of the same year he leased the government well at Mertondale and installed a pump. Yet all this effort sufficed to keep only ten head of stampers operating twenty-four hours per day. So he commenced sinking three further shafts for water.

By 1901 it appeared that the water problem had been overcome. Fred Merton announced his decision to upgrade to a thirty-head mill. Yet in an interview with the Morning Herald in April, he revealed that, ‘owing to the scarcity of water’, the twenty-head mill had run for only forty-four days in the first quarter 1901. The messages were definitely mixed.

The most important measure of the efficiency of a battery, as of all treatment processes, is the percentage recovery achieved. Comparison of the amount of gold

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210 MC, 18 November 1899, p 2
211 MC, 14 April 1900, p 2
212 MC, 14 July 1900, p 2. This was the only mechanical failure reported by the paper that year.
213 MC, 29 April 1899, p 2 and 6 May 1899, p 2
214 MC, 9 June 1900, p 2 and 15 September 1900, p 2. The Government well was something of a cause celebre in Mertondale. Sinking commenced in September 1899 and ceased in November although the ‘water supply was inadequate at 200 gallons per day’. Woefully inadequate would have been a better description. The Mertondale residents had a real fight on their hands to get the well sunk deeper. MC, 23 September 1899, p 3 and 18 November 1899, p 2
215 MC, 29 September 1900, p 2
216 MC, 23 March 1901, p 2
217 MC, 20 April 1901, p 2

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extracted with the amount of gold contained within the ore, established by assay, gives
the percentage recovery. As examples, figures quoted for the battery at the Ivanhoe
mine in Kalgoorlie were 64.89 to 70.2 percent in 1898, 66.35 percent in 1899 and
58.85 percent in 1900.218 Although Fred Merton never revealed percentage recoveries
for his battery, in March 1900 he reported a battery return of 2.5 oz/ton with
approximately 6 dwt/ton going to tailings following modification of the screens.219
These values equate to a recovery of 89 percent, which, if correct, is excellent.

Was March 1900 an exceptional month? The modifications to the screens apparently
saved 10 dwt/ton, indicating a prior recovery of 76 percent, which was well above
average. The *North Coolgardie Herald* quoted total output from the date of beginning
work to the end of December 1900 as 5,000 tons ore treated for 12,000 oz gold with
12 dwt in the tailings, which equates to a gold recovery figure of 80 percent.220 The
figures given by Harris are even more remarkable: 5,000 tons had yielded 12,000 oz
with enough gold in the tailings to ‘bring it up over 2½ oz per ton’, which works out as
just 2 dwt/ton in the tailings and a recovery of 96 percent!221 It would seem that
descriptions of Merton attributing to him ‘great mechanical ability and a lot of
metallurgical experience’ were justified.222

When the battery was hung up at the end of September 1901 it had produced
approximately 18,000 fine oz of gold worth £76,500. Arguably, had there been more
water available the returns would have been far greater.223 Even so, Merton’s gamble
in erecting his own battery had paid off and he had been amply rewarded for his
audacity.

**Fraud and manipulation in the lead-up to the sale**

218 Charleton, *Gold Mining and Milling ...*, p 227. General figures quoted for percentage recoveries
ranged from 55-65%.
219 MC, 24 March 1900, p 2
220 This included gold that was treated at other batteries before the erection of the Merton’s Reward
battery. NCH, 24 April 1901, p 69.
221 Harris, ‘The Margaret and the Murchison Fields’, p 23
222 Young, *Under the Coolibah Tree*, p 203
223 It should be noted, however, that at any given time, there is a finite amount of available gold in an
ore deposit. With more water the gold in Merton’s Reward might have been won more quickly with the
result that Merton got more gold and the company less.
So far the production statistics have been used to assess the performance of the battery at Merton’s Reward but is there more that we can learn from them to shed light on the mythology surrounding Merton’s development of his mine? Look again at Table 3.3. The gold returns for the four months February to May 1901 show varying amounts of ore treated for different amounts of gold but the grade of the ore remained constant at 1.5 oz/ton. This is not possible naturally. Gold is never distributed evenly through its host rock. The only way that Merton could have achieved constant grade for four months was by manipulating the results.

It was easily done. All that was needed was to maintain a small reserve of gold by holding some back in the best months, which could then be used to even out the grades in the following months. Fred and Herb Merton were the only ones involved in the retorting and smelting of the gold, so it would have been simple for Fred Merton to have made the appropriate adjustments to hold the grade steady at 1.5 oz/ton for four months.

Was this practice fraudulent? This is debatable. It could be argued that, as long as all the gold used came from the mine, it was not fraudulent because at the end of the mine’s life the final production figures would accurately record the total gold won. However, if the gold used to top up deficient monthly production came from another source, or was recycled gold from the same mine, fraud was definitely being committed.

Merton was not alone in the practice of maintaining a constant grade. In 1904-05, the Royal Commission into the conduct of the Great Boulder Perseverance Gold Mining Company Ltd revealed that several Kalgoorlie mines kept secret bullion reserves with which to even out their monthly gold outputs. The revelations sparked an intense debate into the practice. Mine managers such as Richard Hamilton of the Great Boulder, Robert Nicholson of the Ivanhoe and Frank Moss of the Kalgurli and

224 However, the practice could lead to fraud as was found to be the case in the Royal Commission to inquire into matters pertaining to Great Boulder Perseverance Gold Mining Company Ltd, Kalgoorlie, 1904-1905. At the Great Boulder Perseverance, a combination of inflated ore reserve estimates, prolonged falling monthly output and a secret reserve of gold led to disaster. The gradual fall in output ‘was obscured by doctoring the returns in the manner described until finally, the secret reserve being exhausted, the facts had to come out, and there was a collapse’ both in the share price and in the reputations of the mining professionals involved. *Engineering and Mining Journal (E&MJ)*, 24 November 1904, vol 78, no 21, p 819
Hainault mines gave evidence that a secret bullion reserve equivalent to one-half to one month’s gold output was considered essential for the maintenance of even returns. According to Richard Hamilton, failure to maintain a reserve might result in a 25-30 percent variation in gold returns: ‘such a fluctuation would affect the market probably to the detriment of the shareholders’. 225

Were the Kalgoorlie mine managers really pursuing this questionable policy in order to keep their shareholders happy? If so, why was Merton doing it? He did not have any shareholders - he owned his mine outright – so the reasons given for their actions by Hamilton, Nicholson et al were not relevant to Merton’s Reward. What other possible advantage was there for him? The only logical answer would appear to be to make the mine more attractive to potential buyers.

There was another way by which the grade of the ore could be made to appear constant for several months, and that was to fudge the figures. The figures for the amount of gold won each month had to be correct; they had to match the amount of gold deposited at the bank, or with other licensed gold dealers. But the tonnage of ore from which it had been obtained was a different matter. As Charleton commented:

\[...\text{when the fields were first opened, it is probable that the tonnage of ore crushed was not always as accurately estimated as it might have been, a larger tonnage being sometimes milled than was reported as put through the batteries.}\] 226

For most mines, the only method of determining the weight of ore crushed was by counting the number of skips or trucks delivering ore to the mill and multiplying by the established tonnage that could be carried per truck. To make the grade of the ore seem higher than it was, all that was needed was to load the trucks a little more heavily or to count fewer trucks than actually delivered ore. A truly unscrupulous mine manager could simply calculate the tonnage of ore required to maintain constant grade for the known amounts of gold produced by the mine and use that figure on the returns. 227

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225 Evidence given at the Royal Commission to inquire into matters pertaining to Great Boulder Perseverance Gold Mining Company Ltd, Kalgoorlie, 1904-1905, as reported in E&MJ, 1 December 1904, vol 78, no 22, p 860. The problem that many commentators had with this practice was the secrecy involved; the amount of the bullion reserve was rarely revealed even to the directors of the company, neither was it shown on the annual balance sheet.
226 Charleton, *Gold Mining and Milling* ..., p 216
227 There are no known cases of this happening, but then, it would be impossible to prove one way or the other.
The constant grade is the only incontrovertible evidence of manipulation, or fraud, by Merton at his mine. But there were stories, one of which suggested that Merton salted the battery box. According to Compton, Merton used to clean up the battery on Thursday morning and take the gold to be lodged at the bank in the afternoon. He would withdraw as gold sovereigns about half the value of the gold deposited, pay his accounts in town and then return to the mine in time for the Friday payday.\(^{228}\) He paid good wages; McDonald stated that he received £1 per shift.\(^{229}\) After the men were paid, Merton would fill his money-belt with the amount needed for the week and then he would tip any surplus sovereigns into the battery box!\(^{230}\) He was, in effect, inflating the grade of the ore. Compton acknowledged that it was not known if Merton’s action was an isolated incident, ‘occasional piece of flamboyance’ or a ‘consistent ploy to increase the apparent productivity of his mine when perhaps the mined grade was falling’.\(^{231}\)

There are several reasons why the idea that this was a consistent ploy to increase the grade of the ore is nonsense. Consider this – how many gold sovereigns would be required to increase the grade of the ore by just 0.1 oz/ton? Obviously the number would vary from month to month depending on total production. For March 1901, when 750 oz was won from 500 tons of ore, an extra 50 oz of gold would have been needed to raise the grade from 1.5 to 1.6 oz/ton, whereas for May 1901 the additional amount would have been 80 oz. A gold sovereign contained 0.2354 oz pure gold; in order to add 50 oz of gold to the battery box approximately 215 sovereigns would have been needed.\(^{232}\) Merton would have had to toss, on average, 54 of the coins – supposedly surplus to needs – into the battery box each week to achieve a paltry 2 dwt/ton improvement in the grade. Does this seem credible?

Another problem with the story is its timing. When was it supposed to have happened? Compton apparently had the tale from David McDonald, who probably commenced work at Merton’s Reward in the latter half of 1900 and left before construction of the

\(^{228}\) Compton, ‘A circulating load’, p 22
\(^{229}\) McDonald, ‘Mertons and Mertondale …’, p 4
\(^{230}\) Compton, ‘A circulating load’, p 22
\(^{231}\) Ibid
final ten-head of stamps in May 1901. Looking at the production returns for that period, the grades were the lowest recorded during Merton’s management, from a low of 1.01 oz/ton in December 1900 to the ‘high’ of the constant 1.5 oz/ton from February to May 1901 - hardly indicative of salting to inflate the grade! The evidence suggests that, if it ever happened, the salting of the battery box was more likely to have been a once only, or very occasional, act of flamboyance. McDonald himself never recorded the tales and opinions expressed by Compton’s ‘old-timer’.

It was also suggested that certain other of Merton’s actions might be interpreted as ploys to attract unwary buyers. When he built the mine office, a strongroom was constructed in the middle of the building. Young described the big vault, with its two ton Chubb door, as one of Merton’s showpieces, ‘designed no doubt to give the impression that much wealth lay therein’. To be fair to Merton, construction was completed within the first year of the mine when greater gold production was anticipated, and the mine was never successfully burgled, despite one serious attempt in 1904 and one more dubious incident in 1900.

Merton was said to have ‘spilt gold as though he were pouring molten iron or copper’ and to have played with it, fashioning little statues and other ornaments out of it. The photograph of Fred Merton and his gold in *Twentieth Century Impressions of WA*, reproduced here as Figure 3.2, shows that there was some truth in the tale, as, perched on top of the pile of gold, is a small statue of a prospector. However, there is another photograph of an almost identical scene in which Merton has moved to the other side of the gold-laden table and his place in front of the door taken by a young lad, presumably his son. Was it perhaps his son who was allowed to play with the gold?

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233 McDonald, ‘Autobiography’. McDonald was sparing with dates in his account of his life but did record that he passed Christmas 1900 at Mertondale. He worked on the twenty-head battery and stated that Merton had no intention of increasing the number of stamps, so he must have left before the extra stamps were installed in May 1901.

234 Young, *Under the Coolibah Tree*, p 212

235 Ibid, pp 212-214. *MC*, 30 September 1904, p 2 and 22 December 1900, p 2. The latter incident, when, with close to 2,000 oz of gold in the vault, Merton fired at ‘imaginary bushrangers’, might have been the source of the tale of the gunfight between Fred and brother Frank.

236 Young, *Under the Coolibah Tree*, p 204

237 *Twentieth Century Impressions of WA*, Thiel, Perth, 1901, p 253

238 Uren, *Glint of Gold*, figure facing p 161. Fred Merton is believed to have legally adopted the two children of his wife Alice by her first marriage.
In commenting on Merton’s strange behaviour, Young wrote that:

… his known actions certainly gave the impression that here was a mine so rich in gold that it could be chucked about regardless. Some tales got about that all this was designed and calculated to attract an unwary buyer.239

Almost certainly the construction of the final ten-head of stamps in the battery was a promotional ploy with a view to a sale. There seems to be no other logical reason why Merton would have purchased and installed a further ten head when he was having difficulty keeping the existing twenty head running at anything like capacity, because of the lack of water.240 One week after announcing the decision to purchase the final ten-head of stamps in March 1901 he stated that he would ‘increase the crushing power to sixty-head’ as soon as he had enough water.241 This statement is almost breathtaking in its audacity. Merton could scarcely find sufficient water to keep twenty

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239 Young, Under the Coolibah Tree, p 204
240 The full thirty-head battery only recorded production twice, in July and September 1901, before the sale to the English company was finalized in March 1902. See Table 3.3.
241 MC, 30 March 1901, p 2
stamps operational and yet he was suggesting doubling the capacity of the battery. But in so doing, he was promoting his mine by subtly comparing it with the Sons of Gwalia gold mine at Leonora which was rapidly establishing itself as one of the premier mines of the district, and which just happened to have a sixty-head battery.

**The sale**

By mid 1901 it had begun to dawn on perceptive residents of Mertondale and Malcolm that it would be in the best interests of the community if Merton’s Reward were sold to a big company. The *Malcolm Chronicle* encapsulated local sentiment perfectly when it wrote in November 1901:

> That the district possessed one of the best mines in the colony was never doubted by anyone who had been down Merton’s Reward mine, with its energetic proprietor, - Mr Fred Merton – but as the owner did not care to develop the property beyond what he was able to cope with under his own management, the real value of the district was never really known.

The impression Merton always gave was that he was determined to hold on to his mine and develop it himself, but he was an experienced prospector, shrewd enough to have known that, as time went by, it would become increasingly complex to manage and probably beyond his capabilities. From the start, he would have factored into his actions and words the possibility of selling the mine. He never denied that he was prepared to sell if the price was right but he stated that ‘I should want a higher price, cash down, for my holding than has yet been paid for any mining property in Western Australia’. He did not consider it likely that a cash buyer would be forthcoming. Uren claimed that the figure demanded by Merton was £500,000, which, as Merton would have been well aware, was an outrageously large amount of money for a mine at that stage of development.

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242 To be fair to him, water, like gold, is a resource which is erratic in its occurrence. Merton had only to strike an underground stream with a water-shaft or borehole and his water supply problems would evaporate. At the Leonora Gold Blocks water was struck at a depth of 65 ft, although it is unclear whether that was vertical depth or depth down the underlay shaft, which was sunk at an angle of 45°. By the time that the syndicate began processing their own ore, the water, which was perfectly fresh, was making, ie flowing into the workings, at a rate of 80,000 gallons per day. *NCH*, 24 April 1901, p 66

243 In March 1901 the Sons of Gwalia 60-head battery put through 9,432 tons ore for 3,819.98 fine oz. *GGWA*, No 33 MS No 19, 3 May 1901, p 1646

244 *MC*, 2 November 1901, p 2

245 *CM*, 7 June 1899, p 6

246 *Ibid*

247 *Uren, Glint of Gold*, p 187
There was no reason to doubt Merton’s sincerity regarding his intention to retain ownership of the mine until 1901 when unambiguously promotional ploys such as the constant grade and the expansion of the battery gave evidence of a shift in his mindset. Apart from acceptance of his professional limitations, another reason for the shift was probably personal. In October-November 1900, Fred Merton had returned to Melbourne for the excitement and extravagance of the Spring Racing Carnival. For perhaps the first time in his life he had gold sovereigns to spare jingling in his pockets and a bank account sufficient to ensure that his cheques would not bounce. The realization that he and his family could now aspire to a lifestyle of comfort and elegance must have been very seductive. On their return to the heat and dust of Mertondale, the contrast would have been stark indeed.

Through 1901, Merton advanced development within the mine. By mid-September an underlay shaft was down 300 ft and, according to one visitor who went underground, ‘the entire face is in sulphide ore, glittering with pure gold!’ The time was ripe to off-load the mine.

On 21 September 1901, the Malcolm Chronicle reported Merton’s intention of leaving on an extended trip. The thirty-head battery was to be hung up for ‘an indefinite period’ and twenty-five men were to be laid off, ‘only sufficient men being retained to man the leases’. Work was to commence on sinking a main shaft. Basically, maintenance and development were to continue in his absence and production was to cease. When Merton applied to the Mining Warden for four months’ exemption on his leases, one of the reasons cited was that the mine was under option to Richard Hamilton, manager of the Great Boulder. Merton testified that:

248 MC, 27 October 1900, p 2
249 At least one of Merton’s appearances in the Warden’s Court prior to 1899 had involved a dishonoured cheque; like many prospectors he had lived a very hand-to-mouth existence. Plaint 50/98 Geddes v Merton, 12 September 1898, Warden’s Court – Evidence Books: Mt Malcolm - Plaints. WA Mines Dept AN17/Leonora, Cons 1456 Item 2, SROWA
250 Morning Herald [MH], 20 September 1901, p 7
251 MC, 21 September 1901, p 2. Note the timing of his trip, coinciding with the Spring Racing Carnival in Melbourne!
252 Ibid. The article continued: ‘Fred, in his choice of men, always gives preference to married men as far as possible, and this is as it should be, seeing that a good many of his men have built comfortable homes for themselves and families, and from which they would find it very hard to shift’.
253 MC, 19 October 1901, p 2
… (Hamilton) is at present sampling it and I do not wish to do any further work until I know what he intends doing with it. If his samples are satisfactory he will recommend his people to work the mine right away. If he throws up his option I shall work the mine again myself at once.\footnote{254}

By 1 October Hamilton had completed sampling of Merton’s Reward.\footnote{255} He relinquished his option over the mine a fortnight later.\footnote{256}

During Merton’s absence from the district that spring, rumour and counter-rumour circulated widely. The situation was unsettling enough for the Malcolm Chronicle to comment that ‘the sale of this property to a big company would be hailed with delight in the Mertondale district’.\footnote{257} Fred Merton and his wife Alice returned to Malcolm in mid-January 1902 with news of the ‘long-looked-for sale’ and the new owner of the mine, Charles Kaufman, mining entrepreneur and general manager of the Lake View Consols and the Ivanhoe.\footnote{258} “Keep coming Kaufman”, David McDonald had overheard Merton tell him on one of his many visits, “and I’ll sell her to you”.\footnote{259} Finally he had done just that. Accompanying them were Richard Hamilton and Fred Morgan, formerly mine manager of the Lake View Consols.\footnote{260} The latter was to assume management of the mine for Kaufman when the sale was completed, but the presence of Hamilton raises questions for which, unfortunately, there are no answers. Was he there as advisor to Kaufman, or to Merton? If the latter, for how long had he been advising him? Could it be that the maintenance of a constant grade had been his advice?

\footnote{254} Although the grounds that Merton gave for making the application were shortage of water and the option granted to Richard Hamilton over the mine, these were not considered valid reasons for granting more than one month’s exemption. It transpired that, since the leases were adequately manned, exemption was unnecessary. GML 638\textsuperscript{C} Merton’s Reward North, Cons 964, Item 1507/99, pp 23-33, SROWA.\footnote{255} \textit{MC}, 5 October 1901, p 2\footnote{256} \textit{MC}, 19 October 1901, p 2\footnote{257} \textit{MC}, 11 January 1902, p 3. It was not the first time that rumours of a sale had surfaced. In the spring of 1900 there had been reports of an impending sale but the newspapers had got the wrong mine. It was Robinson’s lease, GML 640\textsuperscript{C}, Merton’s Reward No 1 North, immediately to the north of Merton’s leases, which was sold and offered to the public as the major asset of the company Merton’s Boulder Ltd. \textit{MC}, 1 December 1900, p 2 and 8 December 1900, p 2.\footnote{258} \textit{MC}, 25 January 1902, p 2. Geoffrey Blainey, \textit{The Golden Mile}, Allen & Unwin, St. Leonards, N.S.W., 1993, p 44. Kaufman figured in most of the myth-makers’ tales as the prospective buyer to whom Merton was prepared to sell for £500,000.\footnote{259} McDonald, ‘Autobiography’, p 83\footnote{260} \textit{MC}, 25 January 1902, p 2. Arthur Reid, \textit{Those Were the Days}, first published 1933; Hesperian Press, Carlisle, 1986, pp 263, 268.
The burning question of the day was, obviously, the price paid for the mine. Most of the newspapers carried the story of the sale but, since neither buyer nor seller had revealed it, the purchase price varied from £10,000 to £100,000 in cash, plus ‘shares in the company up to £100,000’. The *Malcolm Chronicle* commented tartly that:

It is just about as difficult to ascertain the amount which changed hands as it was to ascertain the actual monthly output of gold from Merton’s battery.

Although excellent documentation exists concerning the incorporation of Merton’s Reward Gold Mining Company Ltd and its public listing on the London Stock Exchange, the exact price paid to Fred Merton was never disclosed. The problem was that the sale was a two-part transaction. Merton sold his property to Charles Kaufman, who was acting on behalf of the Rothschilds as well as himself, under the terms of an agreement dated 25 January 1902. Kaufman and the Rt Hon Nathaniel Meyer Lord Rothschild, on behalf of N.M. Rothschild and Sons, then sold the property - comprising the Reward Claim, GMLs 638C, 644C, 645C and 653C, all buildings, fixtures, gold, and other assets - to the company for £210,000 in cash and shares under the terms of an agreement dated 3 April 1902.

Merton’s Reward Gold Mining Company Ltd was incorporated in London on 18 March 1902. The capital of the company was £300,000, divided into 300,000 £1 shares - 200,000 fully paid shares and 100,000 partly paid, or contributing, shares. Of the 200,000 fully paid shares, Merton received 100,000 and Kaufman and Lord Rothschild 50,000 each as part of the vendor’s consideration, the balance of the purchase price being £10,000 in cash paid to Kaufman.

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261 *MC*, 8 February 1902, p 3. (See also *MC*, 25 January 1902, p 2; *CM*, 27 January 1902, p 3; *MH*, 25 January 1902, p 11).
262 *Ibid*. The implications in the second part of this quote are interesting. The *Government Gazette* may not have been easily accessible in Malcolm but it was available to the general public. Was the newspaper referring literally to month-by-month figures (as against the cumulative totals for several months) or was it expressing criticism of Merton’s use of a secret gold reserve to maintain consistent grade?
263 This agreement was referred to in subsequent documents but was not included in the files as it was not relevant to the company’s incorporation and listing. Merton’s Reward Gold Mining Co. Ltd. [MRGM Co Ltd], Ms 18001, File 99B/408, London Metropolitan Archives [LMA]
264 Agreement for purchase of property, 3 April 1902. MRGM Co Ltd, Ms 18001, File 99B/408, LMA
265 Memorandum and Articles of Association of the Merton’s Reward Gold Mining Company Limited. MRGM Co Ltd, Ms 18001, File 99B/408, LMA
266 *Ibid*
267 Agreement …, 3 April 1902. MRGM Co Ltd, Ms 18001, File 99B/408, LMA
However Kaufman’s and Lord Rothschild’s 100,000 fully paid shares were issued as free bonus shares on a one-for-one basis for the 100,000 partly paid shares. The first call, or part payment, of 4s per share was payable immediately on issue, with further calls of 4s to be made at undetermined dates in the future. The maximum amount of money that could be raised on these shares by the company was £100,000. The £10,000 payable in cash to Kaufman was offset against the amount payable on his 50,000 partly paid shares. At 4s per share, the £10,000 neatly paid the first call for him. On the face of it, it was a sweet deal in which initially only Lord Rothschild paid any money - the £10,000 for the first call on his 50,000 partly paid shares.

So, what was Merton paid for his mine? Was the £10,000 in cash given to Kaufman to reimburse him for money paid to Merton under the terms of the first agreement? If so, Merton received £10,000 in cash plus £100,000 in fully paid shares in the company for Merton’s Reward. Or did he?

First, it is hard to believe that an operator as shrewd as Merton would have accepted such a low cash component for an established gold-producing mine. If he did, then it speaks volumes for his faith in the future of his mine. Second, Kaufman declared that ‘the statement published as to the purchase price being £10,000 and a share interest was untrue’. Kaufman himself must have incurred expenses in brokering the deal. Did he too have such confidence in the mine that he was prepared to forgo reimbursement of those expenses?

In describing the formation of British mining companies in the period 1895-96, McCarty wrote that the most usual capitalisation for a flotation was £200,000 of which about half to two-thirds went to the vendors and promoters. He continued:

In many cases promoters made secret agreements with vendors to inflate vendors’ price to say £100,000 in shares thus giving evidence of great value to the mine, when in fact they paid them say £20,000 in shares and kept the rest for themselves.

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268 Report, pursuant to S.12 of the Companies Act, 1900. MRGM Co Ltd, Ms 18001, File 99B/408, LMA
269 Agreement …, 3 April 1902. MRGM Co Ltd, Ms 18001, File 99B/408, LMA
270 CM, 27 January 1902, p 3
The documents requesting allotment of shares in Merton’s Reward Gold Mining Company Ltd indicate that something like this happened here. Each of the vendors divided his allotment of shares between several nominees. Lord Rothschild’s nominees received matching numbers of fully paid and contributing shares, as might be expected on the one-for-one basis of the deal. However, only five of Kaufman’s nominees received both fully paid and contributing shares. Kaufman took 41,900 fully paid shares in his and his wife’s names but off-loaded all his contributing shares to other people.²⁷² He wasn’t about to pay any calls!

The list of Merton’s nominees for his 100,000 fully paid shares is shown in Table 3.4. Merton reserved 58,000 shares for himself and his son. These are the only shares for which there is any certainty – the remaining 42,000 may have been involved in a ‘secret agreement’. Why did Merton assign shares to Kaufman and the Rothschilds? Was it simple generosity or was he recompensed to some degree in cash? Dawes and Anabacher were allotted 500 and 2,000 contributing shares respectively by Kaufman; did Kaufman pay for the matching fully paid shares allotted by Merton? The questions arising out of Merton’s list of nominees are endless and insoluble.

Table 3.4 Allocation of shares in Merton’s Reward Gold Mining Company Ltd to the nominees of Fred Merton

<table>
<thead>
<tr>
<th>100,000 £1 fully paid shares</th>
<th>Number of shares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominee</td>
<td></td>
</tr>
<tr>
<td>Mr Fred Merton</td>
<td>29,000</td>
</tr>
<tr>
<td>Fred Merton</td>
<td>29,000</td>
</tr>
<tr>
<td>Richard Hamilton</td>
<td>2,000</td>
</tr>
<tr>
<td>Christina Martin</td>
<td>10,000</td>
</tr>
<tr>
<td>Charles Kaufman</td>
<td>12,000</td>
</tr>
<tr>
<td>Richard Dawes</td>
<td>500</td>
</tr>
<tr>
<td>Henry Anabacher</td>
<td>2,000</td>
</tr>
<tr>
<td>Jonathan Bray</td>
<td>500</td>
</tr>
<tr>
<td>Lord Rothschild, Alfred de Rothschild, and Leopold de Rothschild</td>
<td>15,000</td>
</tr>
</tbody>
</table>

Source: MRGM Co Ltd, Ms 18001, File 99B/408, LMA

²⁷² Requests for allotment of shares in MRGM Co Ltd, 8 April 1902. MRGM Co Ltd, Ms 18001, File 99B/408, LMA
If further proof were needed of Hamilton’s involvement in some manner in the development and sale of Merton’s Reward, the 2,000 shares allotted to him provide it. Merton may have given them to him in appreciation of services rendered.273 The reasons why Jonathan Bray and Christina Martin received shares - and on whose behalf - remain a mystery.274 In my view, the true number of shares that Merton received was most likely to be 70,000, which number includes the Hamilton and Martin shares, but he may have received partial recompense for the other 30,000 from Kaufman and the Rothschilds.

Of the myth-makers who included a purchase price in their tales of Merton and his mine most followed the line taken by Arthur Reid in his book *Those were the Days* that Merton received £10,000 in cash and 100,000 £1 shares in a company of 300,000 £1 shares.275 Compton was the only commentator to appreciate the two-part transaction:

… Kaufman secured the mine for ten thousand pounds cash and one hundred thousand one pound shares. The company accounts show that they bought the mine for ten thousand cash and two hundred thousand shares … I presume Kaufman received the other one hundred thousand shares.276

In contrast, de Havelland stated that a ‘party of mining men’ representing London interests bought the mine for £90,000 in cash.277 This seems a strange divergence from the norm until it is recalled that this was precisely the amount of cash that the company could raise – and eventually would raise - as working capital through calls on its contributing shares.

It is difficult to make a valid comparison of the sale price that Fred Merton obtained for his mine, not just because the actual price is unclear but also because few mines changed hands at an equivalent stage of development. As previously explained, few prospectors developed their properties beyond the stage at which continuity of the

273 Or was it Kaufman who was thanking Hamilton by giving him the shares bought from Merton?
274 Jonathan Bray was at one time the manager of the Hannans Golden Treasure lease but may have been related to Gildalt Bray, the Malcolm solicitor. Nothing is known about Christina Martin. Reid, *Those were the Days*, p 261
275 Reid, *Those were the Days*, p 268. See also Uren, *Glint of Gold*, p 187 and King, *Colourful Tales of the Western Australian Goldfields*, p 73
276 Compton, ‘A circulating load’, p 22
277 de Havelland, *Gold and Ghosts*, p 202. de Havelland also recognized that ownership of the mine had passed through intermediaries before the company re-opened it in 1902.
gold-bearing formation could be demonstrated and the results of one or two good crushings were to hand. Merton had crossed the divide between prospector and mine owner.

Although full details of the purchase price of the mine have never been revealed, a strong case can be made, in my view, for a cash component of between £10,000 and £40,000 plus £70,000 in fully paid shares. With the profit he made on the gold produced, Merton could have departed from Mertondale with a fortune of up to £80,000 in the bank. This would have been more than enough to keep a prudent man, and his family, for the rest of his life.

The disparity between the results

Merton’s Reward Gold Mining Company Ltd commenced operations with ‘an abundance of working capital’ - the £90,000 potentially available from calls - with which to advance the ‘proper’ development of the mine. The London Head Office initially forwarded £7,000. This was augmented by a surprising windfall when, in March 1902, the battery plates were cleaned up yielding 251.05 oz gold, almost £1,000 worth. As the Malcolm Chronicle commented, ‘not a bad clean-up without crushing any ore.’ The surprising aspect of this gold recovery is that Merton failed to retrieve the gold before he sold the mine. It suggests either that he had indeed lost the impetus to continue or that he had not planned to sell so precipitously.

As far as the mythology surrounding Merton’s Reward was concerned, the events of the nine years of the company’s management were essentially reduced to the facts that the gold did not continue at depth and that the company never made a profit. Young

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278 The value of Merton’s total gold production was approximately £84,000; his costs were £35,000 so the profit was £49,000. Add to this the profit made from the sale of water (at 10s per 100 gallons) from the water shaft in 1899 whilst waiting for his battery to commence operations and the salary that he could have been paid as manager of Merton’s Reward. Gold production record sheets, Mertondale Mining Centre, Mt Margaret Goldfield, Statistics Branch [Stats], DMP. GML 638C, Item 1507/99, p 25. MC, 17 June 1899, p 3
279 MC, 8 February 1902, p 2
280 Report, 21 May 1902. MRGM Co Ltd, Ms 18001, File 99B/408, LMA
281 Gold production records, GGWA, No 31 MS No 31, 5 May 1902, p 1945
282 MC, 18 April 1902, p 3
283 Uren, Glint of Gold, p 187
claimed that the purchase price had been so big that ‘all the subsequent returns from the gold that was sold did not pay back as much as a quarter of it’.  

Between 1902 and 1911 Merton’s Reward Gold Mining Company Ltd won from the mine 37,151.80 fine oz of gold and 1,497.58 fine oz of silver. These figures omit the 220.9 fine oz retrieved from the plates in March, which were recorded with earlier results as the transfer of the leases was not registered until May 1902. So, in total, the company obtained 37,372.7 fine oz of gold, worth approximately £158,834, during its tenure of the mine. This total was nearly double the 19,812.19 fine oz of gold, valued at approximately £84,202, won by Merton.

The crucial difference underlying the results obtained under the company’s management and under Merton’s management was not the amount and value of the gold won – the company won far more than Merton - but the costs incurred in winning it. Merton, despite a generosity which was legendary in the Mt Malcolm district and a predilection for the best quality machinery, ran a very tight operation. Although he paid his workers well – McDonald received £1 per shift at a time when the going rate in Kalgoorlie for a battery feeder was 10 shillings – he saved money by not employing ‘any other staff help’.

Merton testified in the Warden’s Court in September 1901 that, in all, he had spent £35,000 in ‘machinery, etc’. A rough estimate of his costs included in an unpublished report for Ashton Gold in 1990 arrived at much the same figure. By 30 June 1904, two and a half years after assuming control of the mine, Merton’s Reward Gold Mining Company Ltd had expended roughly the same amount as Merton.

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284 Young, *Under the Coolibah Tree*, p 204
285 Gold production record sheets, Stats, DMP. The amount of gold retrieved from the plates differs from that quoted on the previous page as gold was reported as bullion in 1902. The Statistics Branch subsequently amended their record sheets to show gold as fine oz.
286 McDonald, ‘Autobiography’, p 89. McDonald may have been mistaken in this as the *Malcolm Chronicle* reported in May 1900 that Harry Thomas, previously engineer at the North Star mine, had been employed in a ‘similar position’ at Merton’s Reward. *MC*, 5 May 1900, p 3
287 GML 638, Item 1507/99, p 25
in his two and three-quarter years’ tenure, but the company had received only £14,000
in income from gold sales and interest on funds on deposit.289

For three out of the five years 1903-1907 for which annual reports are available the
company was in deficit. The balance sheets for 1903, 1904 and 1907 show that
London expenses plus mine expenses, which included the working costs of ore
extraction and processing, maintenance, management, general expenses and the cost of
mine development, exceeded income by up to £20,300. The total expenditure for the
five years was approximately £145,930 but the total value of the gold won by Merton’s
Reward Gold Mining Company Ltd during its entire tenure of the mine was only
£158,834. Given that more than £20,000 was spent in capital expenditure on buildings,
plant and machinery to 30 June 1903 alone, it is obvious that the company was never
going to make money out of Merton’s Reward.290

Why was the company spending so much money on the mine? The most cynical
answer to that question would have to be because it could. By June 1903 four calls of
4s per share had been made on the partly paid shares, contributing £80,000 to the
company’s coffers. Charles Kaufman was on record as saying that extensive
development would be undertaken before the property was ‘offered to the English
investor’.291 Fred Morgan, the new manager appointed by Kaufman, for whom he had
previously worked at the Lake View Consols, busily employed new technical
personnel, purchased new machinery and began the orderly development of the
mine.292 The Nos 2 and 3 Underlay Shafts were deepened and the Main Shaft
expanded and sunk to over 300 ft as attempts were made to block out ore reserves.293
All this was in accordance with the perceived wisdom of responsible development of a
company-owned mining property. The problem at Merton’s Reward was that the
company was not dealing with a virgin proposition; Merton had already taken most of
the easily-won, near surface gold, which might otherwise have funded the orderly
development of the mine.

289 MRGM Co Ltd, 1st and 2nd Annual Reports. Mining Reports of the Stock Exchange of London
[MRSEL], Guildhall Library, London
290 MRGM Co Ltd, Annual Reports. MRSEL, Guildhall Library, London
291 MH, 25 January 1902, p 11
292 MC, 8 February 1902, p 2
293 MRGM Co Ltd, 1st Annual Report to end June 1903. MRSEL, Guildhall Library, London, pp 6-8
In the end, the disparity between the results obtained by Fred Merton and those obtained by Merton’s Reward Gold Mining Company Ltd is explained by the point reached in the life of the mine: the costs incurred by the company were so much higher than those incurred by Fred Merton not just because it was an English company, over-capitalised and with all the attendant company attitudes, but also because the nature of the ore and the geology of the ore deposit had changed. The company’s workings would be predominantly underground in primary sulphide ore.

When Merton finally departed to return to the eastern states he left behind one of the most powerful myths in the canon of Australian gold with origins grounded in fact but flying free as most good myths must. He also left a mine that would prove frustrating in its complexity not just to Merton’s Reward Gold Mining Company Ltd but to every other company that has tried to develop it further. The reconstruction of the mine, which follows in Part 2, will recount the progress of the mine through time and explore these crucial differences in ore type and mine management in some detail.
PART 2

Reconstructing the mine - Introduction

The first time that I set eyes on the 1907 blueprint composite plan of the Merton’s Reward mine workings in the late 1980s, I considered it, quite simply, the most horrendous mine plan I had ever seen. It still is – although as a geologist I have seen many mine plans before and since. Trying to disentangle the mine workings associated with four open cuts, three underlay shafts, a vertical main shaft and other minor shafts is challenging.

The problems also extend to the reports describing the mine. Until the company assumed management, there was no consistency in the naming of the various workings; the No 1 Open Cut, for example, was referred to as the No 2 Open Cut, the big quarry, and the bottom quarry by different authors. With additional conundrums such as a 200 ft level which is deeper than its 417 ft level, it is clear that this is a mine that needs straightening out. The main objective of Part 2 of this thesis is to take apart the old reports, maps and plans and to reconstruct Merton’s Reward, open cut by open cut and shaft by shaft, in order to demonstrate how and why the mine developed as it did within its historical context.

There is an oft-quoted maxim in mining geology:

No one has ever found a mine unless it existed at some previous time and was subsequently lost. Ore mineralisation is found, ore bodies are defined and mines are made.

The main factor that determines the successful making of a mine is the geology. Without favourable geology there can be no mineralisation, no ore body and no mine. Merton’s Reward is located within the Norseman-Wiluna greenstone belt, an arcuate

295 The 200 ft level is driven off the vertical Main Shaft, the 417 ft level off the No 2 Underlay shaft at 417 ft measured down the incline. See Plan 3 Merton’s Reward Gold Mine, Longitudinal section looking West.
swathe of ultramafic and mafic volcanic rocks laid down as vast submarine lava flows, with pockets of felsic to mafic volcanism and associated sedimentary rocks mainly derived from the felsic volcanics. The entire sequence was intruded by granitic rocks and suffered prolonged deformation resulting in major shear and fault zones. Proximity to these crustal-scale deformation zones (first-order structures) appears crucial in the development of gold deposits, which are commonly found in smaller scale fault zones (second and lower order structures) associated with the large-scale zones. The gold deposits of the Norseman-Wiluna greenstone belt are classed as Archaean lode gold deposits; Merton’s Reward is a typical example.297

The gold mineralisation at Merton’s Reward is contained in quartz veins in highly sheared, fine-grained, carbonated basalt. At first, E-W striking quartz veins, dipping at a low angle to the north, were considered the major orebodies. By 1900, five of these veins were being worked at Merton’s Reward and immediately adjoining properties. Then a second set of steeply dipping, north-striking veins was identified and found to be gold bearing. The two main N-S veins mined were roughly conformable with the country rocks and lenticular in nature.

In common with many Western Australian gold deposits, Merton’s Reward has undergone supergene enrichment, a process in which saline groundwater leaches metal ions – in this case gold – from primary ore deposits in the near surface weathering environment, carries them downwards and precipitates them at a lower level in the weathering profile, usually close to the water table. The gold deposit at that level becomes enriched by the addition of gold from above. Climate change to more arid conditions and prolonged erosion may expose the deposit at or close to the surface. Supergene or, as they are also known, secondary gold deposits have been important to the economy of Western Australia as they have provided the early cash-flow to pay for the development of major primary gold deposits associated with them, eg Plutonic and Sunrise Dam gold deposits.298

What distinguished Merton’s Reward from other gold deposits of the region was a fortuitous combination of local geology and topography. The two sets of veins – E-W striking with shallow dip to the north and N-S striking, dipping steeply to the east – had undergone supergene enrichment that had concentrated the gold with the result that rich outcrops were exposed at the surface. At least five of the relatively flat-lying E-W veins were located on the southern slope of a low hill. Where the gentle slope of the hill cut through these veins their outcrops had considerable width and lateral extent. Had the hill been steeper the width of the outcrops would have been reduced, more closely approximating the veins’ true width. This makes no difference in the long run to the amount of gold that might be obtained but does explain why initially there was so much ore exposed at the surface. Add to this the gold-bearing quartz-ironstone rubble, eroded from the veins, which gradually spread down the gently sloping hillside and the picture of Merton’s Reward as a hill of gold becomes clear. 299

So Merton’s Reward had favourable geology. The other major factor driving the successful development of the mine was its management, and here the most extraordinary aspect of the mine’s history comes into play. Fred Merton owned his mine outright.300 So long as he complied with government regulations regarding such matters as taxation, customs and the strictures of the Mining Act, he could do as he liked with his mine and his gold. He chose to run it as a one-man show. He could have employed staff but, according to McDonald, he did not do so:

[Merton] built up a full scale gold mine, together with treatment plant and managed himself, with Herb [Herbert Merton] as an offsider, without any other staff help, no engineer, surface or underground bosses, assayers, accountants or paymasters.301

It was as if the mine was his personal fiefdom. It was – it still is - incredibly difficult for anyone associated with the mining industry, either working in it, commenting upon it or just living in a mining town, to grasp the full ramifications of this situation for a mine of the size of Merton’s Reward.

299 NCH, 24 April 1901, p 69
300 Notwithstanding the transfer of all the shares in the leases, and thus legal ownership, to his wife Alice from December 1900 to November 1901, the mine clearly remained under Fred Merton’s control. Register of Gold Mining Leases [GMLs], Mt Malcolm District, Cons 4451, Item 076, SROWA. GML 638 Merton’s Reward North, Cons 964, Item 1507/99, pp 13-26, SROWA
301 As previously explained McDonald may have been mistaken in this. David McDonald, ‘Autobiography’, mss, undated, MN1124, Acc 3406A, Battye Library, Perth, p 89
The contrast in management style with that of Merton’s Reward Gold Mining Company Ltd could hardly have been starker. Bring in the professionals, install machinery, advance development to block out ore reserves – this was classic London company mine management practice, complicated in the case of Merton’s Reward by the appointment of five different mine managers in the six years for which the company actively managed the mine.

It was no coincidence that the management style and the nature of the ore body changed simultaneously. Merton recognised the limitations of his capabilities as one-man management – and the potential effect on his purse - as primary sulphide ore began to supplant secondary oxide ore as the source of the gold. The company could use investors’ money to access the technology and expertise necessary to exploit the changing conditions within Merton’s Reward gold mine.
Chapter 4
The mine as personal fiefdom

To reconstruct an old mine is to conjure from prosaic reports and flat drawings of mine workings the strange subterranean world of shafts, drives and stopes, of ladderways vanishing into darkness and creaking timbers holding back the slowly shifting rock. The development of the mine can be traced as shafts were sunk, levels established and cross-cuts and drives progressed ever further into the ground. The manner in which the mine developed reveals much about the men who shaped its development.

In this chapter the development of the Merton’s Reward gold mine from the discovery of gold in March 1899 to the mine’s sale in January 1902 – the period of Merton’s ownership - will be traced. Various aspects of the mine’s development will be assessed in the light of geological knowledge of the time and compared with best practice in contemporaneous mines.

The reconstruction that follows is based upon eye-witness accounts of the workings, reports tendered to the Mining Warden of the Mt Margaret Goldfield, company reports and the few surviving mine plans. As far as can be ascertained few of these documents were prepared by people with formal training in mining-related disciplines, reflecting the fact that few mines in Western Australia at the time were in the hands of qualified mining professionals. In the case of Merton’s Reward, the early visitors who recorded their impressions of the workings were mostly newspaper reporters. Where relevant, the recent exploration reports and plans, dating from 1981 to the present, will be used to illuminate and temper the observations of the old-timers.

First impressions

The initial puzzle concerning the gold deposit found at Merton’s Reward is why, given its location and size, it was not discovered earlier. As the Coolgardie Miner wrote:

It is simply astounding to think that in a portion of the country which has been populated for nearly three years, a deposit of stone containing £15,000 worth of gold
Towards the end of 1893, Bob McKenzie, Jim Ross, Mick Morisse y and Andy Clements, fully equipped for a long prospecting trip, departed The Island at Lake Austin, near Cue, travelling eastwards. They prospected methodically, finding traces of gold at sites including Mt Morgan, approximately 45 km ESE of Merton’s Reward, and Mt Margaret, further to the east, and establishing wells such as McKenzie’s Well, approximately 50 km from Merton’s Reward. The track they blazed passed close to the low hill on which Fred Merton found gold. Albert Gaston, who was amongst the first rush of prospectors to Merton’s Reward following the discovery, described the location as ‘a stony ridge close by an old beaten track made by dry-blowers on their way from Cue to Mt Margaret’. The hill was also close to the road north from Malcolm; its neglect was attributed to its proximity to both the prospectors’ track and the Malcolm road - ‘while hundreds have gone round it, very few have gone over this particular spot’. It fell to Fred Merton to be the lucky prospector who went over the hill and, more importantly, the astute prospector who recognized its potential.

The low hill that Merton rode across did not stand out as a possible source of gold. It was described by early commentators as gently sloping, rising about 50 ft above the surrounding plains, and not part of a range but ‘rather an outlier from the ranges which run through the northern mineral belt’. The *North Coolgardie Herald* wrote that it was ‘not at all like the typical hill one finds associated so frequently with the big mines of this State’. It was also covered in dense acacia scrub.

Merton’s own account of the find, given in an interview published in June 1899, described an extensive outcrop consisting of solid iron-stained quartz. At first sight,
his expectations of the outcrop were low; he was, therefore, agreeably surprised when he discovered that every piece of quartz he broke showed gold. The precious metal was finely disseminated throughout, ‘it being impossible to find a speck as large as a pin’s head’.311 This is characteristic of supergene gold deposits.312

From the evidence given in court by Robinson and the Flying Pig boys, it would appear that those present in camp that evening were not overly impressed by the stone which Merton brought in from his find. It was not until the following evening, after Merton had returned with new samples and Robinson had dollyed gold from the previous day’s specimens, that the full potential of the find dawned on the group. In the next two days, Merton and a ‘few old mates’, including Robinson and his son and most of the Flying Pig boys, relocated to Merton’s Reward.313

As the early descriptions of the area reveal, on the south slope of the hill there was a quartz ‘bluff’ forty feet long, five feet high and eight feet wide; estimates of the size of the bluff rapidly increased to a ‘portion of an immense reef fully one hundred feet wide’.314 By early May 1899 the North Coolgardie Herald wrote that gold had been obtained ‘for over a mile in a direct line’.315

In mid-April a reporter from the Malcolm Chronicle visited Merton’s Reward. At the time, Robinson was in charge of operations as Fred Merton was away arranging the purchase of the battery.316 The reporter stated that the reef was being worked in a large quarry by simply raking up the loose stone on the surface and bagging it. The work at the west end of the quarry had exposed a downturn in the shallow-dipping E-W vein to a steeply dipping structure striking N-S.317

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311 Interview first published in Morning Herald [MH], reprinted CM, 7 June 1899, p 6
313 It is possible that the acquaintanceship went back to boyhood in Beechworth as the names of two of the Flying Pig boys, Richard Lewis and George Moore, occur in the Register of Mining Claims for the Beechworth District, August 1855 to November 1857, held in the Burke Museum, Beechworth.
314 CM, 28 March 1899, p 7. Malcolm Chronicle [MC], 15 April 1899, p 2
315 Later in the same article the unknown writer exaggerated this distance further to two miles. NCH, 11 May 1899, p 3
316 Robinson was later described by the North Coolgardie Herald as not only an experienced practical miner, who had spent more than 30 years working in the mining industry throughout Australia, but also a man who ‘as he has run has read’, imbued with theoretical as well as practical knowledge. Ibid.
317 MC, 15 April 1899, p 2
The downturn and change of strike of the vein had a special significance for the men observing it. The *Malcolm Chronicle* commented that earlier:

> The opinion was expressed that it was a flat reef, and such being the case it could not be expected to go down to any great depth. Resulting from recent developments, however, appearances tend to upset that opinion, the reef now giving decided indications of being a true saddle-back, but confirmation of this, of course depends upon developments at a greater depth.  

The term saddle-back, or more commonly saddle reef, refers to a very particular type of gold occurrence always associated with sedimentary strata. Where sedimentary strata of different competencies are subjected to folding, the strata react differently to the pressure. The more competent or brittle layers such as sandstone or limestone may fracture, particularly in the noses of the folds, whereas the less competent layers such as shale will bend without breaking. The different layers also tend to separate along the bedding planes creating crescent-shaped cavities. These cavities in the noses of the folds provide conduits and sites of deposition for gold-bearing siliceous fluids. They effectively act as pressure shadows, areas of low pressure, into which the gold-bearing fluids flow. The reefs formed in this manner are saddle-shaped and are stacked over each other (see Figure 4.1). Saddle reefs are particularly characteristic of the Bendigo goldfield in Victoria, where they are hosted by Palaeozoic metasediments.

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318 *Ibid*. Although the reporter did not specify the source of this information, the description of the reef as a saddle-back must surely have come from Robinson, the experienced and knowledgeable mining man.

319 This is not the case at Merton’s Reward where the country rocks are metabasalts, although the degree of weathering at the surface can obscure the true nature of the rocks.


Assuming that Robinson had worked in the Victorian goldfields at some stage in his long career, he would have been well aware of the economic potential indicated by a saddle reef in outcrop. At Bendigo it had been found that a saddle reef at the surface was a good sign of further saddle reefs at depth. In just one of the thirteen adjacent anticlines forming the central zone of the Bendigo goldfield, 24 saddle reefs were encountered over a vertical depth of 2,200 ft.322 The predictability of repeats of the saddle reefs was a major factor in the success of deep shaft-sinking there; and the Bendigo goldfield was a major success, having recorded, to 1987, the highest total gold production in Australia after the Kalgoorlie field.323 If the reef being worked at

the surface at Merton’s Reward were a saddle reef, what might it promise for the future of the mine?

Although Warden Archibald Burt also referred to Merton’s Reward as resembling a ‘true saddle reef’, there is no evidence that Merton himself ever used the term to describe the geology of his find.324 What had been exposed for the first time at the mine was not a saddle reef but one of the steeply dipping N-S striking veins. These veins occur along the surface of shear planes and are nowadays referred to as shear-lode mineralization or shear lodes. In 1985 Nisbet described them as ‘steeply-dipping bodies usually less than 1 m thick’, fine-grained and highly foliated with abundant quartz-carbonate veining parallel to foliation. Gold grades in the shear lodes were generally greater than 1 oz/ton but dropped very rapidly in adjacent country rock to less than 1 g/t (0.0327 oz/ton).325

The most vivid description of the early workings at Merton’s Reward was published in the *North Coolgardie Herald* on 11 May 1899. As Merton was away, it was Robinson who once again showed the reporter around the mine.

The first sight of Merton’s Find is a revelation to a stranger. It resembles a potato field more than a goldfield, for on a flat at the foot of a hill are clumps of full bags in all directions. They are not filled with *pommes de terre*, but with stone, which have been picked up on the surface, but the surprise increases to paralysis when one hears that the said stone crushes 7 oz to the ton.326

The reporter estimated the value of the stone already crushed and awaiting crushing at about £7,000. No shaft had been sunk; the source of the stone was an open cut, only a few feet deep, ‘resembling nothing more than a stone quarry’. He continued:

In the quarry there is a reef which is making down splendidly, and both from the reef and the cap your representative napped stone. Every blow from the hammer revealed gold … The most extraordinary part about the hill is that nothing on it is barren. It does not matter what the peculiarity, what the appearance of a stone, pick it up, dolly it, hey presto! and gold appears.327

324 CM, 16 May 1899, p 4
326 NCH, 11 May 1899, pp 2-3
327 *Ibid*. The reporter was accompanied by a photographer but unfortunately none of his photographs has come to light.
The comments regarding the gold-bearing nature of the entire hill are interesting. Later in the year, Bewick Moreing employee R. Neil Smith listed as ‘auriferous bodies’, along with the reefs in the open cuts, a system of small quartz veins or ‘leaders’ that outcropped on the hillside north of the Nos 1 and 2 Open Cuts. Smith commented that:

The owner considers that they indicate the outcrop of a great lode 100 ft wide running North and South of which the flat veins in the open cuts are a component part.  

The problem with this is that Smith was not quoting Fred Merton. Merton would not permit sampling of his property but, in his absence, his brother allowed Smith ‘a cursory view’ of the mine. The unnamed brother, presumably Herbert, made all the statements quoted in Smith’s report. Was he expressing Fred’s opinion or his own? After all, it was in Herbert’s interests to talk up the property as he had pegged a lease (GML 669C) adjacent to GML 638C.

It is pertinent in this context to consider what was understood by the terms ‘vein’, ‘reef’ and ‘lode’. The term ‘vein’ has always had a very specific meaning; at its simplest a vein is the filling of a pre-existing fissure by one or more minerals precipitated from aqueous fluid. The terms ‘reef’ and ‘lode’ were not as clear-cut. Karl Schmeisser, in his 1898 treatise *The Goldfields of Australasia*, wrote that the term ‘reef’ was used throughout Australasia ‘as identical in meaning with “vein” or “lode”’. He subdivided veins into two types – simple quartz veins and ‘composite’ veins, stating that the latter were ‘those gold deposits which the Australian miner designates as lode formations’.

Jutson, writing in *The Mining Handbook of Western Australia*, defined a lode as ‘a reef, vein (or a series of small veins), or a more or less defined portion of the country rock containing metals or minerals of economic value’. In many Western Australian gold deposits, the gold mineralisation extended out of the veins into the country rock in sufficient concentration to render the country rock economically viable; the veins

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328 Smith, ‘Report on the Merton’s Reward and adjoining leases’, BM 104
329 Ibid
330 Register of Gold Mining Leases [GMLs], Mt Malcolm District, Cons 4451, Item 076, SROWA
331 M.C. Ihlseng, *Manual of Mining*, 3rd edn, John Wiley & Sons, New York, 1898, p 5. Ihlseng commented that the term had lost its original significance, ‘for formerly, the mineral system was supposed to bear a resemblance to the human circulatory system’.
333 J.T. Jutson, ‘Relation of the law to prospecting and mining in Western Australia’, in *The Mining Handbook of Western Australia*, Memoir 1, GSWA, 1919, pp 4-5
plus the mineralised country rock formed the lode. This does not appear to have been the case at Merton’s Reward where, as noted by Nisbet, gold values in the country rock adjacent to the veins fell away rapidly.

Did Fred Merton really believe that a lode 100 ft wide cut a N-S corridor right through his property? Most of the accounts that report Merton’s words at first hand record him being more circumspect in his opinion. In the June 1899 interview, Merton simply referred to reefs, running E-W and dipping north, in a ‘belt of gold-bearing country (which) has been proved for two miles’. The reef being worked was 100 ft wide and, according to Merton, would average over 5 oz to the ton.334

In the first flurry of pegging activity at Merton’s Reward the Flying Pig boys pegged GML 640C immediately to the south of Merton’s leases and Robinson GML 648C to the north.335 Each lease was pegged over one of the sub-horizontal, E-W striking veins, the rationale being that veins lying in the same orientation would, hopefully, prove equally rich. However, Robinson’s lease also exploited the possibility of down-dip extensions at depth of the veins on Merton’s property.336 With their shallow northerly dip, the veins would pass into his lease. Who could tell if they might not widen and grow richer at depth?

Meanwhile Samuels and party pegged GML 645C, gambling on the along-strike extension of one or more of the Merton’s Reward veins westwards into their lease.337 The three leases - 640C, 645C and 648C - were amongst the few surrounding Merton’s Reward to produce gold. Details of these leases and their official gold production are shown in Table 4.1; their location is shown in Figure 4.2. Although the official production records show no gold produced from GML 640C until 1905, Richard Lewis stated in the Warden’s Court in 1901 that the lease had yielded 56 oz from 111 tons of ore, at an average grade of 0.5 oz/ton.338

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334 CM, 7 June 1899, p 6
335 Register of GMLs, Mt Malcolm District, Cons 4451, Item 076. The original leaseholders of GML 640S were four of the Flying Pig boys - James McLean, Richard Lewis, William Sproule and George Moore. Sproule transferred half his shares to Donald McLachlan in September 1900.
336 The lease was registered in the name of Robinson’s son Walter.
337 John “Jack” Samuels, William Franklin, Richard Evans and Hiram “Ike” Nye. Register of GMLs, Mt Malcolm District, Cons 4451, Item 076
338 Application for 6 months’ exemption from labour, GML 640C, 14 August 1901, Warden’s Court – Evidence Books: Mt Malcolm, 26 July 1900 – 3 February 1909. WA Mines Dept AN17/Leonora, Cons 1456 Item 4, SROWA. The gold was probably recorded as gross weight.
Table 4.1. Official gold production from the early Gold Mining Leases in the immediate vicinity of Merton’s Reward Gold Mine.

<table>
<thead>
<tr>
<th>GML No</th>
<th>Date</th>
<th>Name of Owner</th>
<th>Name of Lease</th>
<th>Date of Gold Production</th>
<th>Total Gold Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>640&lt;sup&gt;C&lt;/sup&gt;</td>
<td>16.3.99</td>
<td>Lewis, R &amp; ors</td>
<td>Merton’s Reward No1 S</td>
<td>1905&lt;sup&gt;1&lt;/sup&gt;, 1909-10&lt;sup&gt;2&lt;/sup&gt;</td>
<td>125.5 tons for 55.83 oz</td>
</tr>
<tr>
<td>645&lt;sup&gt;C&lt;/sup&gt;</td>
<td>5.4.99</td>
<td>Samuels, J</td>
<td>Merton’s Consols</td>
<td>1899</td>
<td>23 tons for 68.27 oz</td>
</tr>
<tr>
<td>648&lt;sup&gt;C&lt;/sup&gt;</td>
<td>5.4.99</td>
<td>Robinson, W J</td>
<td>Merton’s Reward No1 N</td>
<td>1899-1900, 1904-05&lt;sup&gt;3&lt;/sup&gt;</td>
<td>282 tons for 207.61 oz</td>
</tr>
<tr>
<td>656&lt;sup&gt;C&lt;/sup&gt;</td>
<td>24.4.99</td>
<td>Snell, W A &amp; ors</td>
<td>Merton’s Reward W</td>
<td>1899</td>
<td>11.5 tons for 15.37 oz</td>
</tr>
<tr>
<td>664&lt;sup&gt;C&lt;/sup&gt;</td>
<td>15.5.99</td>
<td>Pickering, H J &amp; or</td>
<td>Merton’s South</td>
<td>1900</td>
<td>111 tons for 51.83 oz</td>
</tr>
</tbody>
</table>

**Notes**
1. As GML 1136<sup>C</sup> Merton’s Reward No1 S
2. As GML 1311<sup>C</sup> Toss Up
3. As Merton’s Boulder Ltd

**Sources**
Lease information from Register of GMLs, Mt Malcolm District, Mt Margaret Goldfield
Gold in fine oz from Production Record Sheets, Mertondale Mining Centre, Mt Malcolm District, Mt Margaret Goldfield

From Figure 4.2 it can be seen that, with the exception of GML 798<sup>C</sup> which produced a paltry 1.15 fine oz, probably floater, all the gold-producing leases lay within a N-S corridor, Merton’s ‘belt of gold-bearing country’, no more than 25 chains wide (approx 500 metres). The geological significance of this was first recognised in June 1900 by C. H. Wray, assessor of mining properties for Bewick Moreing and Company Ltd. He described a belt of soft decomposed schist approximately 500-600 ft wide running N-S through all the leases. This corridor is now recognised to coincide with the Mertondale Shear Zone, a splay (second-order structure) off the large-scale NNW-trending Keith-Kilkenny fault zone. Its sheared boundaries separate the altered and deformed basalts which host the gold mineralisation from the barren massive basalts and felsic volcanics of the surrounding country.

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<sup>339</sup> CM, 7 June 1899, p 6. 1 chain = 20.1168 m
<sup>340</sup> [C.H. Wray], ‘Report on Mertons No 1 North Lease, Mertondale, Mt Margaret Goldfield, Western Australia’, BM 104, 1900, DMP
Figure 4.2. Gold Mining Leases in the immediate vicinity of Merton’s Reward Gold Mine which have recorded gold production. (Adapted from 1905 survey plan of gold mining and other leases at Mertondale. DMP)
The total gold production for all the leases shown on Figure 4.2, excluding the original Merton’s Reward leases (RC 1C, GMLs 638C and 644C), was approximately 400 oz, whereas Merton’s Reward recorded official gold production totalling approximately 60,000 oz.341 More than any other information concerning Fred Merton and his mine, these stark figures demonstrate how well he judged the ground. But from where precisely within his leases did the gold come?

The source of the gold - a plethora of pits

In the previous chapter the early results of the crushings were discussed as they related to the myth of Merton’s Reward and were shown to be not quite as fabulous as the myth made out. For the reconstruction of the mine it would be instructive to establish from which vein each parcel of ore came.

Up to a point this would appear to be a straightforward exercise. Until December 1899 the monthly gold returns, as shown in Table 3.3, attributed the gold won to a single lease each month, either RC 1C or GML 638C; very conveniently, the No 1 Open Cut was located on the Reward Claim and the No 2 Open Cut just over the lease boundary on GML 638C. Hence, for the months of March, April and November, all the gold won came from the No 1 Open Cut on RC 1C; for June it came from the No 2 Open Cut on GML 638C. Or did it?

Figures supplied to the Malcolm Chronicle by Merton in March 1900 gave total gold production to date of 1,516 oz of smelted gold from 244 tons ore from the Reward Claim (at a grade of 6.21 oz/ton), and 2,673 oz from 1,050 tons from Merton’s Reward North (at a grade of 2.55 oz/ton).342 1,050 tons is the correct tonnage shown on the official gold returns from the first drop of the stamps of Merton’s battery in September 1899 to February 1900 inclusive; therefore all prior production must have come from the Reward Claim, as stated by Merton. But production for June was officially recorded as coming from GML 638C. Can this contradiction be resolved by finding some other way to establish the source of the gold? A detailed look at the development of the workings may shed some light on the problem.

341 Production Record Sheets for Mertondale Mining Centre, Statistics Branch, DMP
342 MC; 24 Mar 1900, p 2. The grades are calculated from Merton’s figures.
The first gold won would have been obtained from the quartz bluff Merton prospected on his first claim, the prospecting protection area that became the reward claim RC 1C, approved on 16 March.343 The bluff was, presumably, the quartz vein, or veins, which were excavated as the No 1 Open Cut (see Figure 4.3). Merton’s next lease GML 638C was not approved until 5 May 1899.344 Consequently, it may be safely assumed that all the gold won to the end of April – 855 oz from 107.5 tons of ore, at a grade of approximately 8 oz/ton - came from the No 1 Open Cut on RC 1C.345

Towards the end of May the Malcolm Chronicle commented on a second ‘lay of stone at the foot of the hill’ on which prospecting work had shown ‘extraordinarily rich prospects’.346 The Coolgardie Miner reported that a second cutting would commence at the end of June ‘four chains lower down’ to the south of the current working.347 Both these descriptions were, presumably, of the vein in the small open cut to the southwest of the No 1 Open Cut shown in Figure 4.3. This was probably the No 4 Open Cut (see Plan 4), although measurements from reports and plans do not correlate well.348 Its contribution to gold production could not have begun before late June or early July and was probably minimal. There were no reports of any workings on GML 638C; the June production could not possibly have come from it. Merton had reported the source of the gold correctly in his letter to the Malcolm Chronicle; the June returns in the Government Gazette wrongly attributed it to GML 638C.

343 CM, 7 June 1899, p 6
344 Register of GMLs, Mt Malcolm District, Cons 4451, Item 076
345 CM, 7 June 1899, p 6. If further confirmation is necessary, calculation of ore in sight using the original dimensions of the ‘quartz bluff’, 40 ft long by 5 ft high by 8 ft wide, gives approximately 120 tons.
346 MC, 27 May 1899, p 2
347 CM, 24 June 1899, p 6. 4 chains = 80.46 m.
348 On Plan 4 No 4 Open Cut is approximately 85 ft SSW of the No 1 Open Cut.
Figure 4.3. Detail of No 1, No 2 and No 4 Open Cuts, showing lease boundaries, from 1903 General Plan, Merton’s Reward G.M. Company (see Plan 1).
The high-grade ore won from the No 1 Open Cut in the months March – end June 1899 effectively became the cash-box that financed the development of Merton’s Reward under its owner’s management. When the battery it funded came online the No 2 Open Cut would supply the regular tonnages of somewhat lower grade ore needed to keep it running full-time.

From the moment that a working face was established in the No 2 Open Cut on GML 638C, it became impossible to know from which source the gold came unless Fred Merton proffered the information and Merton was remarkably reticent in this regard. The local newspapers were highly critical of the lack of information concerning his gold production. As the Malcolm Chronicle put it: ‘(publication) would attract attention and get Mertondale moving along’. 349 But Merton’s Reward would not really get moving until the legal dispute was resolved.

**Under Court Orders – Robinson and Merton**

Although McDonald wrote that Merton employed no staff help, we already know that this was not strictly true. For most of 1899 Robinson acted as manager of the mine, initially as Merton’s appointee, and subsequently under Court orders.

How far back the working relationship between Merton and Robinson extended is difficult to establish but there is circumstantial evidence that they had worked alongside each other in the Broad Arrow Goldfield in 1896. 350 In November 1898 Robinson came to the Deerah to inspect it with a view to buying it. Instead he and his son stayed, paid by Merton to assist on the lease. 351 The good working relationship established at the Deerah was transferred to Merton’s Reward. They knew and respected each other’s strengths. Robinson, the practical miner, was in charge of ore production and related geological and mining matters, whilst Merton, credited with ‘a

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349 MC, 18 Nov 1899, p 2
350 Surveys Register of GMLs, Broad Arrow Goldfield, DMP
351 The rate of pay for Robinson at the Deerah was £4 per week. His pay increased to £1 per day at Merton’s Reward, but that appears to have been the going rate for everyone employed there. Robinson’s evidence at Supreme Court Trial, 13-14 September 1899, and Statement of Costs, in Supreme Court of Western Australia Appeal Book, C No 53/1899 William Callagher (Plaintiff) and Fred Merton (Defendant), Cons 3580, WAS 577, SROWA
lot of metallurgical experience’, organized the purchase, erection and commissioning of the treatment plant, and attended to the business side of the operation.352

Apart from the comments in the newspapers and reminiscence literature, virtually nothing is known about the mining industry background of Robinson and Merton. The *North Coolgardie Herald* stated that Robinson had more than thirty years’ experience working in the mining industry throughout Australia whereas the *Malcolm Chronicle* credited him with ‘a wide and varied mining experience in different parts of the world’, but, given his common surname, an attempt to trace his career has been judged impractical.353 It is unlikely that Fred Merton, who was born in Beechworth, Victoria in 1868, received any formal training in mining-related disciplines although the opportunity existed.354 Two schools of mines had opened in Victoria by 1873 - Ballarat, opened in 1870, and Sandhurst (later Bendigo) – and a further eleven opened in the period 1887-90.355 Merton moved to New South Wales where he married Sydney resident Alice Thomson in January 1892.356 Although it is possible that he could have studied some mining-related subjects at a Technical College in New South Wales, it does not seem probable. Whatever knowledge Fred Merton possessed was more likely to have been gained by experience.357

The vast majority of men working in the mining industry in Australia at the time had no relevant education. Nash, in his biography of Herbert Hoover, explained Hoover’s conviction that, in ‘the new era of large scale, high-expenditure mining and advanced metallurgy’, university-educated geologists and mining engineers were more capable than the products of traditional English and colonial mining practice, a virtual apprenticeship system by which foremen were promoted ‘up from the ranks’.358 Haas described as ‘well entrenched’ in Australia the view that experience was the best qualification, so much so that it was even claimed that the most competent mine

354 *Victoria Register of Births*
356 *NSW Register of Births, Deaths and Marriages*.
357 One possibility is that Fred Merton may have worked with/for his eldest brother Thomas, inventor of the Merton furnace for the roasting of ores, at the Spottiswoode Refinery and Metallurgical Works. *Victoria Government Gazette*, No 120, 30 November 1900, p 4423
managers could not pass an examination. All this was about to change for the larger gold producers but for Merton’s Reward few of its managers ever had formal qualifications.

Whilst Merton attended to the mechanics of the planned battery, Robinson, as the geological expert of the team, selected the site for its erection. In any mining enterprise, the site for erection of the treatment plant is always chosen after careful consideration of economic factors, local topography and, most importantly, geology. Nowadays the geology of the site is frequently tested by a drilling programme almost as intense as that dedicated to the proving of ore resources as one of the cardinal sins in mining is to construct infrastructure over viable ore.

At first sight Robinson’s choice of location for the battery might seem strange. Situated on the northern flank of the hill, it was at least 1,100 ft as the crow flies from the No 1 Open Cut, even further along the sinuous railway which snaked past most of the workings around the hill to the battery (see Figure 4.4). There were, however, good reasons for the location. It was well removed from any of the E-W veins or their possible extensions on the surface, and therefore unlikely to cause sterilization of ore, whilst being in close proximity to new workings on the northern flank of the hill where, as the Coolgardie Miner reported, another open cut had revealed ‘the richest stone of all’.

The plan accompanying Wray’s report on Merton’s Reward No 1 North (see Figure 4.4) showed two small open cuts approximately 120 ft north of the summit of the hill, one of which was presumably the open cut described by the newspaper. They were located on two small N-S trending veins; this was the first intimation of the steeply dipping N-S veins as distinct entities, not as part of a supposed saddle-reef system. Their orientation would have kept them clear of the treatment plant. The lack of further information suggests that they did not live up to expectations.

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359 Haas, ‘Schools of Mines in Australia’, p 287. The context for this claim was discussion of the requirement for a Mine Manager’s Certificate to be issued in Victoria only after examination.
360 NCH, 11 May 1899, pp 2-3
361 This is, obviously enough, more crucial for an open pit mining operation than for an underground one.
362 CM, 24 June 1899, p 6
363 The open cuts and veins are not shown on the accompanying sketch section (see Figure 4.5) as they would lie in the plane of the section.
Figure 4.4. Merton’s No 1 North, General Plan, 1900. Note N-S veins on north flank of hill and rail track. (Merton’s Reward 11/290, DMP).
More importantly, the position of the battery revealed Robinson and Merton’s perception of the ore deposit and its future as a mine. Evidently they believed that the veins would continue down. The battery was located adjacent to, and slightly downhill from, the logical site for a vertical shaft to intersect the veins at depth (see Figure 4.5).\textsuperscript{364}

Merton’s Reward was, at least in the early days, a gloriously easy mine to work. The ore, described by David MacDonald as ‘mostly soft quartz’, was simply raked up and bagged.\textsuperscript{365} So easy was the work that, in September 1899, four men raised 210 tons of ore in just two weeks.\textsuperscript{366} For their efforts they were paid 2 dwt per ton, which, for 210 tons, worked out at £9 16s 10½d per man per week.\textsuperscript{367} The method of payment indicates that the men, Crenan and party, were employed as a contract team.

Merton employed both directly and through contract. Robinson, Herbert Merton and, later, David McDonald all earned £1 per day, a very generous rate of pay at the time.\textsuperscript{368} Charleton in his 1903 book \textit{Gold Mining and Milling in Western Australia} listed the rates of pay obtained at Kalgoorlie in 1900-1901. Drillers in wet ground, carpenters, fitters and blacksmiths received top rate of 15 shillings for an 8-hour shift whereas a battery feeder received 10 shillings, precisely half the sum that McDonald was paid for the same work.\textsuperscript{369} Merton appeared to make no distinction in rates of pay; all his direct employees received £1 per shift. And they received full pay even if they did not work a full shift.\textsuperscript{370}

\textsuperscript{364} A cynical observer might see self-interest in the positioning of the battery. The E-W vein on Robinson’s lease was located at its southern end, close to the boundary with Merton’s GML 638C. Was Robinson hoping to have the ore from his lease treated at the Merton’s Reward battery? If so, he would be disappointed. Because of the restricted water supply, Merton never toll-treated outside ore.


\textsuperscript{366} MC, 2 Sept 1899, p 2

\textsuperscript{367} MC, 26 Aug 1899, p 3. Calculation: 210 tons at 2 dwt/ton = 420 dwt = 21 Troy oz. At a gold value of £3 15s, 21 oz is worth £78 15s. £78 15s divided by 4 x 2 man weeks = £9 16s 10½d per man per week.


\textsuperscript{369} Shift bosses received £21 13s 4d per month, which equates to a daily rate of between 16 and 18 shillings. A.G. Charleton, \textit{Gold Mining and Milling in Western Australia}, E. & F.N. Spon, London, 1903, p 464

\textsuperscript{370} McDonald, ‘Autobiography’, p 81
In July 1900 Merton claimed to have ‘never employed less than forty men on average on GML 638C’, but gave no explanation for what he meant by this.\(^{371}\) We know that he started work with just four men, presumably the two Robinsons, father and son, and two of the Flying Pig boys: the number had doubled by the end of the month.\(^{372}\) Through April and May the number of men in the district increased rapidly but many were prospecting on their own account. However, by the beginning of June Merton had twenty miners working on the open cut extracting the last of the ore to go to the Richmond Gem battery.\(^{373}\)

It is difficult to determine how many men were employed on the mine at any given time unless Merton supplied the information, which he rarely did. The official production records published in the *Government Gazette* commenced reporting the average number of men employed per quarter in the Mertondale Mining Centre in September 1899; the figures were an average of 34 men employed above ground for the quarter, and 13 below ground.\(^{374}\) Obviously these figures were for all the mines in the Mertondale area.

By the December quarter, although the total for the average number of men employed had increased by only two, the balance between men employed above ground and those employed below had shifted. Of the total 49 men, 28 were employed above and 21 below ground.\(^{375}\) For once, the Warden’s letter book revealed how many of these men were employed at Merton’s Reward – 27 men above ground and 19 below.\(^{376}\) Merton’s Reward had commenced sinking.

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\(^{371}\) Affidavit 27 July 1900, to accompany Application for Exemption for GMLs 638C, 645C and 653C, 12 July 1900. GML 638C Merton’s Reward North, Cons 964, Item 1507/99, p 16, SROWA
\(^{372}\) *MC*, 18 March 1899, p 2. *NCH*, 28 March 1899, p 3
\(^{373}\) *CM*, 7 June 1899, p 6
\(^{374}\) *Government Gazette of WA [GGWA]*, No 51, MS No 1, 27 October 1899, p 3533
\(^{375}\) *Ibid*, No 7, MS No 4, 2 February 1900, p 347
\(^{376}\) Warden’s Office - Letter Books, Mt Malcolm, 20 September 1899-15 March 1900, Cons 1456 Item 14. These figures raise an interesting problem. Assuming they are correct, an average of just three men were working on the other twenty-odd leases in the Mertondale Mining Centre. At least five leases were under exemption but that still leaves a sizeable shortfall of miners.
Into the Unknown

Whereas nowadays every mining prospect would be thoroughly drill-tested in order to establish the size, shape and grade of the ore reserve prior to the commencement of any development work, in the 1890s and 1900s the vast majority of mines were untested at depth. Surface prospecting, shallow open-cutting and small trial shafts were the methods used to establish orebody geometry and grade. Decisions regarding the opening up of an orebody were, for the most part, acts of blind faith based on the assumption that the geometry and grade would remain constant, or even improve, with depth. If the orebody dipped at 70° to the east at the surface, hopefully it would still do so at 500 ft deep.

The crucial decisions to be made regarding how to open up an orebody concern the type, location and size of the main shaft. For a steeply dipping vein or lode a vertical shaft is the best option whereas for a shallow dipping vein an inclined shaft is preferable. The point at which the vein’s angle of dip favours an inclined shaft over a vertical one is not determined simply by the haulage distances from stopes to shaft and shaft to surface, but also by the complex interplay with such additional factors as the relative costs of sinking, equipping and operating for each type (generally cheaper for a vertical shaft), hoisting speed and tonnage raised per lift.377

Hoover, in his 1909 book Principles of Mining, expressed the view that inclined shafts, frequently referred to as underlay shafts in old mining plans and reports, were warranted for orebodies with dips between 75° and 30°. Above 75° a vertical shaft would be preferred, as it would also be for orebodies with dips less than 15° due to the excessive haulage distance required.378 The orebodies at the Sons of Gwalia and the Lancefield gold mines, both Bewick Moreing mines into which Hoover had considerable input, dipped at approximately 45°.379 Inclined shafts were sunk to work the ore and served successfully for many years, although eventually both mines were

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377 The hoisting speed in an inclined shaft is limited to approximately half that in a vertical shaft (3,000-3,500 and 6,000 ft per minute max rope speed respectively), because of the danger of derailing the skips, which run on a track. However, as the track partly supports the load, a larger tonnage can be hauled per lift. R. Peele (ed), Mining Engineers’ Handbook, John Wiley & Sons, New York, 1941, pp 10-84
379 J.A. Hallberg, Geology and Mineral Deposits of the Leonora – Laverton Area, Northeastern Yilgarn Block, WA, Hesperian Press, Carlisle, 1985, Table 9 following p 76
forced to construct internal inclined shafts at a revised angle as the orebody and main inclined shaft diverged at depth. In contrast, at the Zoroastrian gold mine, at Bardoc in the Broad Arrow goldfield, a vertical shaft was sunk to intersect the lode, also dipping at approximately 45°, at the 100 ft level. This worked adequately for the upper levels but, inevitably, as the mine reached the 300 and 400 ft levels the excessive haulage distance to the shaft became a problem.380

For orebodies with dips less than 30° and greater than 15°, Hoover advised that the orebody should be worked via an inclined shaft until the haulage distance up the incline becomes too great at which point a vertical shaft should be sunk located to take over working the orebody at depth.381 In the preface, Hoover explained that most of what he wrote was ‘the common heritage of the profession’; he was contributing little that was new.382 Professional wisdom of Merton’s time would have concurred with Hoover’s view of a combination of inclined shaft and vertical shaft as the optimal access for an orebody such as Merton’s Reward. The fact that Merton and Robinson were aware of this is revealed by the location of the battery.

At Merton’s Reward in late 1899, the main orebodies were perceived as the gently dipping E-W veins. Smith estimated the dip on the vein in the No 2 Open Cut as about 15° N and in the No 1 Open Cut simply as ‘very flat’.383 Work commenced in November on sinking an inclined shaft at the western side of the No 1 Open Cut.384 The 1903 Longitudinal Section looking West (see Plan 2) shows the shaft, referred to in most plans and reports as the No 1 Underlay Shaft, inclined at an angle of approximately 20°.

Theoretically, there are two options for the location of an inclined shaft relative to its orebody; the shaft may be sunk in the footwall or it may be sunk in ore, that is, within the orebody.385 Sinking in the footwall means that the entire orebody is available for mining whereas, if the shaft is sunk in ore, obviously a certain amount will be lost as shaft pillars. Such pillars could be substantial; Ihlseng, in the 1898 edition of his

381 Hoover, Principles of Mining, p 66
382 Hoover, Principles of Mining, p iii
383 Smith, ‘Report on the Merton’s Reward and adjoining leases’, BM 104
384 MC, 25 Nov 1899, p 2
385 For vertical shafts sinking in the hanging wall is also an option, although rarely pursued.
Manual of Mining, considered necessary 30-60 ft of unworked vein around a shaft for adequate protection of lives and the mine.\(^{386}\)

The main drawback to sinking in the footwall is economic. The cost of development is high not only financially but also in terms of time and manpower. The present mindset in the mining industry would always relegate such considerations to second place behind the long-term safety and security of men and mine. One hundred years ago in places as remote as the Mt Margaret Goldfield, the theory of best mining practice was never going to be as important as the economic imperative to produce gold to pay for the development of the mine and plant as quickly as possible. For many small to medium size mines the reality was that the owners, frequently prospectors or local syndicates, were forced to manage as best they could on their own resources. A case in point would be the Burtville Mining Centre, approximately 50 miles east of Malcolm, which was opened up about six months after Merton’s Reward. The North Coolgardie Herald reported that there were no big mines and no companies on the field; it was a prospectors’ district. The numerous quartz leaders being worked there were very rich but small. At the Cremorne gold mine three shafts were sunk, one vertical and two inclined. The No 2 shaft, sunk 85 ft on the underlay, ‘took down with it a reef varying in size from 9 in to 5 ft’. All the ore treated was the product of shaft-sinking operations.\(^{387}\)

In contrast the inclined shafts at the Sons of Gwalia and the Lancefield, the large mines in the field, were both sunk in the footwall.\(^{388}\) However, this may not necessarily be how they started out. Reporting in 1901 on the main underlay shaft at the Lancefield, the North Coolgardie Herald commented that ‘… the quartz broken in the shaft … (was) expected to be poor as coming from the extreme footwall of the lode’.\(^{389}\) In other words, the inclined shaft was sunk in ore along the contact of the ore and the footwall.

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\(^{386}\) Ihlseng, Manual of Mining, p 25

\(^{387}\) NCH, 24 April 1901, pp 108-109. Production records for the Cremorne show 368 oz gold won from 188 tons of ore treated. List of cancelled gold mining leases which have produced gold, Dept of Mines, Perth WA, 1954, p 121

\(^{388}\) Comparatively few reports on gold mines stated the position of an inclined shaft in relation to the orebody. For the Sons of Gwalia see Figures 1, 4 and 5 on Plate VII in: C.F.W. Jackson, Geology and Auriferous Deposits of Leonora, Mt. Margaret Goldfield, Bulletin 13, GSWA, Perth, 1904. For the Lancefield: M.R. McKeown, ‘Report on Lancefield Gold Mine Extended, Laverton, Western Australia’, unpublished report for Consolidated Gold Mining Areas NL, McKeown Collection, University of Melbourne Archives, 1953, p 3

\(^{389}\) NCH, 24 April 1901, p 104
country rock. Three years later the *Australian Mining Standard* reported two main incline shafts at the Lancefield; ‘the old one is down 220 feet on the underlay, and the new one being sunk has attained a depth of 180 feet’. The new shaft was almost certainly the work of the Bewick Moreing management installed at the mine in December 1903, and the one described in all subsequent reports.

Not surprisingly, at Merton’s Reward Fred Merton opted to sink in ore.

**The technical expert versus the enthusiastic amateur – a snapshot in time**

In the late spring of 1899 there were two visitors to Merton’s Reward. The first to arrive was R. Neil Smith on behalf of Bewick Moreing and Company Ltd. A graduate of the University of Melbourne, Smith had worked for the United Scotchman Goldmining Company at Norseman in 1896 and subsequently for the Kalgoorlie Metallurgical Works. In December 1897 he undertook a special project for the Geological Survey of Western Australia; his work was published as the Survey’s Bulletin 2 on the Kimberley and Pilbara Goldfields. By 1900 he was Professor of Mineral Engineering at the University of Hobart. In between these appointments he worked for Bewick Moreing. The precise date of Smith’s visit to Merton’s Reward is unknown but it apparently pre-dated the commencement of the inclined shaft.

The second visitor was May Vivienne, a former professional singer who was collecting material for a travel book *Travels in Western Australia: being a description of the various Cities and Towns, Goldfields and Agricultural Districts of that State*, first published in 1901. The date of her visit can be established as Friday 24 November 1899, just after work on the shaft began. Between the two accounts of these vastly

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390 ‘West Australian Mining Industry’, *Australian Mining Standard*, 8 December 1904, p 94
393 ‘Mr. R Neil Smith, MA FGS Mining Engineer, of Kalgoorlie was specially employed to report upon the state of Mining in the Kimberley district’. R.N. Smith, *I. The State of Mining in the Kimberley District…* Bulletin 2, GSWA, Perth, 1898, Preface
394 Records, Geological Society of London
395 The evidence for this date is as follows: May Vivienne stated that she visited Merton’s Reward ‘on Friday’ and descended the underlay shaft, noting its depth as 12 ft. She was so impressed with ‘this wonderful place’ that she pegged out an 18-acre gold mining lease for herself. The lease, GML 758 C Virginia, was applied for in the name May V. Buckley (presumably her married name), at the Mining Registrar’s office in Malcolm on Monday 27 November 1899. The *Malcolm Chronicle* reported the commencement of shaft-sinking in the edition of Saturday 25 November.
different visitors an informative picture can be drawn of the state of play in the mine towards the close of 1899.

The importance of Smith’s work on Merton’s Reward lies in the fact that it is the only geological report written by a qualified professional during the life of the mine. Smith listed the ‘known auriferous bodies’ as the quartz reef worked in the No 2 Open Cut (his No 1), the quartz reefs worked in the No 1 Open Cut (his No 2) and the small quartz veins or leaders. The country rock was described as, towards the top of the hill, ‘hard bluish schist’ whereas at the open cuts near the bottom it was ‘light-coloured and soft’. The No 2 Open Cut was 80 ft long. It exposed one quartz reef, striking E-W and dipping north at about 15°. At the western end, the vein abruptly turned downwards, striking N-S and dipping approximately 85° to the west. The open cut was excavated to a depth of 25 ft at this end following the steeply dipping vein down. The average width of the reef was about 18 inches but where it turned down, the width decreased to 3-6 inches.396

According to Smith, the No 1 Open Cut (his No 2) was 120 ft long and had not been excavated more than 6-8 ft deep. It exposed two quartz reefs about 6 ft apart, both striking E-W with a very flat dip to the north. The upper reef averaged nine inches wide but the width of the lower reef could not be measured as only its upper surface had been exposed. The lower reef was exposed in a small open cut to the SW of the western end of the main quarry (the No 4 Open Cut), where it showed some ‘comparatively coarse gold’. Elsewhere the two reefs were similar to the one in the No 2 Open Cut with gold in fine particles distributed very evenly through the quartz. Smith commented that there was no sign of these reefs turning down like the reef in the No 2 Open Cut.397 The supposed saddle reef was exposed in the No 1 Open Cut in April when the cut was about 40 ft long; at the time of Smith’s visit the open cut was 120 ft long. The ‘saddle reef’ had been mined out.

The quartz veins or leaders were ‘very small, short in length, disconnected and irregular in direction’. They ‘outcropped irregularly’ on the hillside north of the two

396 Smith, ‘Report on the Merton’s Reward and adjoining leases’, BM 104
397 Ibid
open cuts. No work had been done on them apart from some napping of the stone and a couple of exploratory potholes sunk a couple of feet. Rather than part of Herbert Merton’s ‘great lode 100 ft wide’, Smith speculated that they were probably part of the ‘system of leaders seen in the decomposed rock lying above the flat quartz reefs’ in the two open cuts; the thickness of these layers of decomposed schist he estimated at about 12 ft. He was doubtful that this material could be worked profitably:

I have seen such systems of small quartz veins in other parts of Western Australia, and although individual leaders were composed of rich stone, yet they were not large enough nor sufficiently near together to enable them to be extracted profitably.398

Given the ‘very small amount of work done’ and the cursory view of the mine afforded by Herbert Merton, Smith was reluctant to commit to a definite opinion of its value. However he estimated that, if the main quartz veins maintained constant value of 2.5 oz/ton and width of 12 inches for 50 ft below the existing faces along the total length of the reefs then exposed, some 300 ft, ‘the amount of stone in sight would be 1,000 tons and the total amount of gold 2,500 oz’. The ‘alleged “lode” material’, the quartz leaders, would boost the value of the property enormously if, as claimed by Herbert Merton, it was worth 15 dwt to 1 oz/ton.399

Smith’s cool, professional report is in marked contrast to May Vivienne’s exuberant account of her day at the mine. She recalled alighting from the morning mail coach at the foot of the hill and walking up to the battery where she found Robinson, who showed her around the mine, starting at the spot ‘where Merton picked up the first rich stone’. She observed plenty still lying there. In the open cut where the miners were digging out stone, she swung a pick to good effect, ‘striking rich gold at the first stroke’. She continued:

We then went down the underlay shaft, on the western side of the big quarry. It was 12 ft deep. I got down by means of a rope, two of the men at the bottom holding their spades against the sides of the shaft for me to put my feet on. I managed to make a successful descent and began to use the pick again with much success. I could see the gold running through the rock quite plainly, so, having permission to do so, dug out several nice pieces, after which I essayed to climb the rope to the surface again, and assisting myself by sticking my feet upon the jutting pieces of rock on the sides of the shaft, I soon got out of the rich hole. I then walked all over the hill and found many pieces of quartz lying about, all containing gold.400

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398 Ibid
399 Ibid
400 Vivienne, Travels in Western Australia, p 153
Both the *Malcolm Chronicle* and May Vivienne described the underlay shaft as situated on the ‘western side of the big quarry’; from the plans this has to be the No 1 Open Cut.\(^\text{401}\) The underlay shaft at the No 2 Open Cut was located on its eastern side.

May Vivienne commented that there were many other claims on the field but that ‘the one on the hill is the most valuable’; it gave ‘gold, gold everywhere’.\(^\text{402}\) Her estimates of the amount of gold already won from the mine (£40,000 worth) and of ore in sight (20,000 tons at 7-8 oz/ton) were wildly exaggerated in comparison with Smith’s sober valuations. The value of May Vivienne’s observations of Merton’s Reward lies in the life that they gave to the mine.

\(^{401}\) *MC*, 25 Nov 1899, p 2
\(^{402}\) Vivienne, *Travels in Western Australia*, p 153
Developing the mine

On 23 December 1899 the Malcolm Chronicle reported Merton’s intention to ‘...commence operations on the mine under quite different conditions, and to continue work on a quite extensive scale.' The Full Court had decided in his favour and he was assuming sole control. Whilst the ownership of the mine had been in dispute, what impetus was there for Merton to push ahead hard with development? The original 10-head battery had been ordered before Callagher laid claim to a half share in Merton’s Reward so it would make sense to have enough ore in sight to keep the battery working, but why do more than that if someone else would share the benefits?

Development of the mine in 1900 was rapid. Condensers were built to alleviate the water shortage, tramways were laid from the quarries to the mill and underground workings advanced. All reported details of development work in the mine for the period 1900-1901 are summarised in Table 4.2. Workings have been assigned to their correct location if it can be determined; if not, the details are spread across the possible locations. Note that all depths quoted are down the underlay, not vertical depth below ground, and the predominant use of the term lode to describe the orebody. In the text that follows the results and implications of this development work will be discussed.

On 10 March the Malcolm Chronicle reported three separate shaft-sinking operations at Merton’s Reward but only the water shaft on GML 653C (down 150 ft) can be located with certainty. Comparison with earlier and subsequent reports suggests that the underlay shaft in the ‘quarry on the breast of the hill’ was the No 2 Underlay Shaft and that the 35 ft shaft, to be sunk a further 100ft, was the No 1 Underlay Shaft, the one that May Vivienne descended.

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403 *MC*, 23 Dec 1899, p 2
404 All mention of Robinson in connection with the mine ceased even though the injunctions regarding receivership and management were not withdrawn until March 1900.
405 *MC*, 9 June 1900, p 2
406 *MC*, 10 March 1900, p 2
<table>
<thead>
<tr>
<th>Source and Date</th>
<th>Working</th>
<th>No 1 Underlay Shaft</th>
<th>No 2 Underlay Shaft</th>
<th>No 3 Underlay Shaft</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Shaft</td>
<td>Crosscut at 160 ft</td>
<td></td>
</tr>
<tr>
<td><strong>MC</strong></td>
<td>Underlay shaft 110 ft deep, put down from 'quarry on the breast of the hill'. Contract let for 100 ft of sinking in the '35 ft shaft': at 40 ft deep reef widened out to 6 ft: taking out 8 ft x 6 ft.</td>
<td></td>
<td></td>
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</tr>
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<td>10 March 1900</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>MC</strong></td>
<td>shaft down 90 ft</td>
<td>shaft down 180 ft</td>
<td>East in 30 ft</td>
<td>shaft down 106 ft</td>
</tr>
<tr>
<td>9 June 1900</td>
<td>lode in face 12 ft wide</td>
<td>lode in face 6 ft wide</td>
<td>lode 4 ft wide, worth 5 oz/ton</td>
<td>lode 6 ft wide</td>
</tr>
<tr>
<td></td>
<td>worth 2 oz/ton</td>
<td>worth 3 oz/ton</td>
<td>backs from this level to 100 ft will go 5 oz/ton</td>
<td>worth 2 oz/ton</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>West in 20 ft</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>lode 8 ft wide, worth 2 oz/ton</td>
<td></td>
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<tr>
<td></td>
<td>No stoping yet done, ore raised during development only. Grades are in oz/short ton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MC</strong></td>
<td>shaft down 106 ft or 116 ft</td>
<td>shaft down 190 ft</td>
<td>160 ft level (E or W not stated)</td>
<td>shaft down 120 ft</td>
</tr>
<tr>
<td>23 June 1900</td>
<td>lode in face 20 ft wide</td>
<td>lode at bottom 12 ft (or 19 ft) wide</td>
<td>lode 6 ft wide</td>
<td>lode 7 ft wide</td>
</tr>
<tr>
<td></td>
<td>worth 2.5 oz/ton</td>
<td>worth 3 oz/ton</td>
<td>est worth 50 oz/ton</td>
<td>worth 2.5 oz/ton</td>
</tr>
<tr>
<td><strong>MH</strong></td>
<td>shaft down 120 ft</td>
<td>shaft down 195 ft</td>
<td></td>
<td>shaft down 125 ft</td>
</tr>
<tr>
<td>12 July 1900, (as at end June)</td>
<td></td>
<td>lode 8 ft wide</td>
<td></td>
<td>lode 6 ft wide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>worth over 5 oz/ton</td>
<td></td>
<td>worth 2.5 oz/ton</td>
</tr>
<tr>
<td><strong>MH</strong></td>
<td>Bottom Quarry.</td>
<td>Main Quarry.</td>
<td>Top Quarry.</td>
<td></td>
</tr>
<tr>
<td>24 April 1901, (as at late 1900?)</td>
<td>Shaft down ~300 ft, dimensions 5 ft x 10 ft (h x w)</td>
<td>Shaft down ~200 ft</td>
<td>Shaft down 180 ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 ft deep, drive N in 150 ft, dimensions 20 ft x 15 ft, ore worth ~2 oz/ton</td>
<td>From 150 ft level, ore stopeed nearly to surface: av value of ore stopeed 3-4 oz/ton</td>
<td>Vein 6 ft wide, stopeed out</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>'This appears to be the richest part of the mine, the ore values being the highest, and the ore body the largest'.</td>
<td>Averaged 2 oz/ton for whole distance</td>
<td></td>
</tr>
<tr>
<td><strong>MH</strong></td>
<td>At 160 ft</td>
<td>On Reward N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 April 1901</td>
<td>Lode 7 ft wide</td>
<td>At 200 ft on the underlay, drive put in for 105 ft, Lode for that distance av width 5ft, av value 10 oz/ton</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Worth 7 oz/ton</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In early June 1900 Wray inspected and sampled Robinson’s lease GML 648C on behalf of Bewick Moreing. The detail on the plans included with his report suggest that he was also shown around the surface workings at Merton’s Reward but it is unlikely that he went underground. He gave no details of development at Merton’s Reward but acknowledged it to be of ‘very considerable value’. Although Wray impresses as unfailingly meticulous and professional in his work, in many instances he could report only what he was told.

Wray reported a maximum width for the E-W veins of 14 ft, at a point ‘160 ft on the underlay’. As the only underlay shaft sunk to that depth at the time of Wray’s visit was the No 2 Underlay Shaft, his width is at odds with the figure of 6 ft at 180 ft depth reported by the Malcolm Chronicle on 9 June. However, it is possible that in sinking the extra 20 ft the lode pinched from 14 ft to 6 ft.

Wray added two important observations to the body of knowledge about Merton’s Reward. As already noted, he identified the nature and limits of the belt of gold-bearing country at Mertondale. He also pointed out that the veins did not appear to extend far, 150 ft being the greatest length opened up. This was the first intimation that the veins at Merton’s Reward might prove of limited extent unlike the large continuous lodes at mines such as the Sons of Gwalia and the Lancefield. At the former, the main lode was worked over a 500 m strike length and from the surface down to 975 m vertical depth. The main lode at the Lancefield was worked for a strike length of 300 m tapering to 70 m at 339 m below the surface; deep drilling in the 1930s showed that the lode continued to 500 m in depth.

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407 MC, 9 June 1900, p 2. The Bewick Moreing report on Robinson’s lease considered the results of sampling to ‘have not been at all satisfactory’ and advised against proceeding with the option. [Wray], ‘Report on Mertons No 1 North Lease’, BM 104
408 [Wray], ‘Report on Mertons No 1 North Lease’, BM 104
409 Wray was the most prolific report writer for Bewick Moreing, having penned at least 126 out of the 160 reports held in the DMP. He was probably not recruited by Herbert Hoover as he appeared in WA in 1900 when Hoover was in China. However, he was an ardent admirer of Hoover, naming his son (born 1902) Herbert Hoover Wray, and writing in a letter sent to Hoover in 1915 (held in the Presidential Library) ‘Now then, young man, forward march to PRESIDENCY!’ Richard Hartley, pers comm.
410 [Wray], ‘Report on Mertons No 1 North Lease’, BM 104
411 MC, 9 June 1900, p 2
In July, Merton provided the *Morning Herald* with details of his costs. He stated that, despite paying higher wages than any other mine in the field, his milling and mining costs were respectively 4s 2d and 12s per ton, down from the 4s 6d and 16s 6d quoted in the *Malcolm Chronicle* on 9 June.\(^{414}\) A reduction of 4s/ton in mining costs in the space of five weeks hardly seems credible. It suggests that exceptional improvements in efficiency were made, although part of the dramatic decrease might have been due to a change from long tons to short tons in calculating costs.

The 9 June article specified the use of short tons to report the grade of the ore; it was the only time during Merton’s tenure of the mine that this happened.\(^{415}\) The short ton is smaller than the long ton (2,000 lb as against 2,240 lb); for a given volume of ore there are more short tons than long tons, hence the grade of the ore is reduced when reporting in short tons. Why change to a unit of measure that would effectively downplay the value of the mine? Because mining costs also appear reduced when short tons are used. However, it would seem odd if Merton had used short tons to calculate grade, as reported in June, but not mining costs.

Assuming that Fred Merton had not been using short tons at his mine prior to this, why would he suddenly do so? There may be no connection but his use of short tons coincided with Wray’s visit to Mertondale.\(^{416}\) Lou Hoover, Herbert Hoover’s wife, described Wray as a Californian Mexican.\(^{417}\) The short ton is used in the USA. It was also used by Bewick Moreing in many of the mines managed by the company for the favourable impression of mining costs it created. Did Wray give Merton some friendly advice?

The use of short tons in Australian mines was a contentious issue that will be revisited in the next chapter as it impacted the mine under the company’s management. For the mine under Merton’s management logic suggests that, this being the only time that short tons were specifically mentioned, it was the only time that short tons were used. But there is no way of knowing for sure.

\(^{414}\) *MH*, 12 July 1900, p 7. *MC*, 9 June 1900, p 2
\(^{415}\) *MC*, 9 June 1900, p 2
\(^{416}\) Both events were reported in the same edition of the *Malcolm Chronicle*, 9 June 1900
\(^{417}\) Letter, Lou Henry Hoover to ‘Papa’, ca 27 January 1902. Lou Henry Hoover Papers 0.9282 (Dairies) and 0.8169 (Personal Correspondence, 1874–1920), Herbert Hoover Presidential Library, West Branch, IA, USA (copy courtesy of Lenore Layman).
In the *Morning Herald* interview Merton went on to claim that in two or three months, when he had solved the water supply problem and had started stoping ore, he would be able to ‘show a clear profit on 3 dwt dirt’. This was an extraordinary claim. The average value of the gold from Merton’s Reward was £3 15s per oz so three pennyweights of gold were worth just over 11s. He was anticipating reducing his total costs to less than 11s per ton! In comparison, the manager of the Craiggiemore gold mine at Laverton in 1901 claimed that total costs of mining and processing would be covered by five dwt/ton; with the mine’s gold valued at £4 per oz, costs would be £1 per ton. In both cases, these were claims for what might be achieved – but what could be achieved?

Various sources give mining and milling costs for individual mines but it is almost impossible to draw valid comparisons between them as there was no consistency in the manner in which these costs were calculated and reported. For example, Charleton reported milling costs for the Ivanhoe in 1900 of 5s 5.335d per ton for 74,372 tons of ore; the costs were subdivided between eight items - labour, condensed water, salt water, tailings and returning water, fuel, quicksilver, stores, and repairs and renewals – with an additional cost of 1s 2.213d per ton for ore-breaking listed separately. For the Lake View Consols the milling costs were distributed between eighteen items, as were the costs for the Golden Horseshoe but for a different eighteen items. Similar difficulties arise with comparisons of mining costs.

Hoover recognised the value of comparisons of working costs between mines, or internally in one mine over various periods, as a check on efficiency but warned of the inherent problems in such comparisons:

> … the wide variations in physical and economic environment are so likely to vitiate conclusions from comparisons of statistics from two mines or from detailed works on the same mine, or even from two different months on the same work, that the greatest care and discrimination are demanded in their application.

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418 *MH*, 12 July 1900, p 7
419 Letter, C.H. Wray to Bewick, Moreing and Co, Kalgoorlie, 23 June 1901, BM 139, DMP. Wray was sceptical of the manager’s claim.
420 Charleton, *Gold Mining and Milling in Western Australia*, pp 227-228
421 *Ibid*, pp 224, 230
422 Hoover, *Principles of Mining*, p 171
He also pointed out that, since working costs are calculated for comparative purposes, they must include only ‘such items of expenditure as will regularly recur’. Development work is not recurrent, it is undertaken once only. As would most mine managers, Hoover assigned development outlay to capital expenditure.423

As sole owner of his mine, Merton was not obliged to keep his accounts in this manner. Until at least July 1900, all ore raised in the mine was from development work. If, as stated above, he expected his costs to reduce when he started stoping ore, then he must have attributed the expenses of the ore raised during development to mining costs not capital expenditure.

Merton’s mining costs of 12 s per ton were broadly comparable with the 1899 figures of 12s 6.85d and 11s 9.049 d per ton given by Charleton for the Ivanhoe and the Great Boulder respectively, but his milling costs at 4s 2d per ton were lower.424 With their far greater production, it might have been expected that the larger mines, operating in the comparatively well-serviced Kalgoorlie-Boulder area, would have the lower costs. However, as pointed out in the previous chapter, Merton apparently achieved outstanding efficiency in his battery.

What was the mine like? A reporter from the Malcolm Chronicle visiting in September described the hill as ‘torn about in all directions’, and presenting ‘the appearance of a rabbit warren on a large scale’.425 Photographs of the mine from the period confirm his description (see Figure 4.7). Mines Inspector J. Crabb pointed out to Merton in June 1901 that the hanging wall in the inclined shaft was ‘of a very treacherous nature’; it would need securing.426 Despite its appearance, however, it was apparently a safe mine. There were no reports of death or serious injury under Merton’s management.

423 Ibid, pp 171-172
424 Charleton, Gold Mining and Milling in Western Australia, p 197
425 MC, 29 September 1900, p 2
Although the *North Coolgardie Herald*’s ‘Special Mining Number’ was published in April 1901, the fieldwork for the mines of the Mt Malcolm district was probably conducted in October-November 1900. As indicated in Table 4.2, the article referred to the workings at Merton’s Reward as Bottom Quarry, Main Quarry and Top Quarry. The descriptions of the Main Quarry and the Top Quarry correlate well with accounts of development in the No 2 and No 3 Open Cuts respectively, and also with their depictions in later mine plans, but the description of the Bottom Quarry seems at variance with the No 1 Open Cut. None of the mine plans shows the underlay shaft down 300 ft or a drive going north from it but the July 1903 General Plan does show the underlay shaft down approximately 130 ft and a drive 120ft long at approximately 50 ft down the underlay going WNW. The outline of the shaft is continued as a

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427 The reporter commented that he was presenting the Lancefield mine at Laverton as it was in November 1900. *NCH*, 24 April 1901, p 103
428 The redrafted 1907 Composite Plan assigned this drive to the 52 ft level.
dotted line passing below the No 2 Workings to a depth of about 240 ft. Every other plan shows the shaft stopped at about 110-120 ft. Possibly the reporter misinterpreted a statement of intention by Merton to sink the shaft to 300 ft as work already completed.

At the time of inspection, ore was being quarried from the No 1 Open Cut. Incredible as it may seem, two men working there could keep the 20-head battery running 16 hours per day. The method of working was as follows:

Each man “jumped” a hole down to a depth of about 12 ft. The hole was then charged and fired, with the result that from 30 to 40 tons of milling “muck” was broken out. By this simple means the men found no difficulty in keeping the battery going.

The reporter noted that the ‘stone or lode matter carries a good deal of mullock’ but it was all sent to the battery and still returned a grade of 1 oz/ton. The ease with which the mine could be worked was a disadvantage to the town of Mertondale as only two men were needed where ‘under ordinary conditions 20 or 30 men at least would find employment’ (see Figure 4.8). In fact Merton’s Reward employed just 30 men; the small workforce was a major factor in Merton’s low mining and milling costs despite the generous rate of pay.

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429 The significance of this is unclear. Normally on a mine plan or section a dotted outline would indicate that the working concerned was either passing below or behind another working or that it did not lie in the plane of that section. This is not the case in this instance.

430 NCH, 24 April 1901, p 69

431 Ibid

432 Ibid, p 72
At the No 3 Underlay Shaft the quartz vein was accompanied by a ‘highly payable formation of great thickness’, which had not been worked. The author of the article speculated, as others had before him, that the whole hill was auriferous and that ‘probably the greater part of it will be put through the mill’. He concluded:

Although the development work done is small the mine is now entitled to hold a prominent place in the first half-dozen. As a matter of literal fact no development work has been done on the mine at all, for all drives and shafts have simply taken out ore.

However, not all ore raised came from drives and shafts or other development work. At the No 2 Underlay Shaft, ore had been stoped almost to the surface from the 150 ft level; it averaged 3-4 oz/ton. The reporter commented that ‘this appears to be the richest part of the mine, the ore values being the highest and the ore body the largest’.

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433 This sounds like Smith’s system of small quartz veins or leaders.
434 *NCH*, 24 April 1901, p 69
435 *Ibid*, p 72
436 *Ibid*
In mid-April 1901 the *Morning Herald* published another report direct from Fred Merton, in which he attributed development details of the workings to the Reward Claim and to the Reward North rather than to the Nos 1, 2 or 3 Workings. From the descriptions there is no ambiguity in assigning the additional developments to the Nos 1 and 2 Underlay Shafts (see Table 4.2). In describing the drive on the Reward North, which was in ore all the way, the newspaper made the point that 200 ft on the underlay was ‘equal to 100 ft vertical’. From the 1903 General Plan (see Plan 1) it can be seen that this drive was oriented N-S, exploiting one of the steeply dipping N-S striking veins; the 1903 Longitudinal Section (see Plan 2) marks it as on the West Vein. The average value of the ore along the drive was given as 10 oz/ton, a very good grade possibly indicating the point at which the N-S veins gained dominance as the source of the gold.\textsuperscript{437}

The last detailed report of work undertaken by Merton on his mine was in the form of a submission to the Warden’s Court on 28 September 1901 in support of an application for four months’ exemption on GMLs 638$^C$, 644$^C$, 645$^C$ and 653$^C$.\textsuperscript{438} Table 4.3 shows the work listed in the submission.

There are some peculiarities about this list. For GML 638$^C$, the descriptions of the five vertical shafts and two inclined shafts appear accurate but the open cut, which was presumably meant to be the No 2 Open Cut, was nowhere near 200 ft long. None of the mine plans shows any shafts on GML 644$^C$; the workings attributed to it were all located on RC 1$^C$. The vertical shaft on GML 653$^C$ was the water shaft.

\textsuperscript{437} *MH*, 16 April 1901, p 7
\textsuperscript{438} GML 638$^C$, Item 1507/99, p 25
Table 4.3. Work completed on Merton’s Reward Gold Mine, to 28 September 1901

<table>
<thead>
<tr>
<th>Lease no.</th>
<th>Shaft</th>
<th>Depth</th>
<th>Driving</th>
<th>Crosscutting</th>
</tr>
</thead>
<tbody>
<tr>
<td>638C</td>
<td>Vertical</td>
<td>40 ft</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Vertical</td>
<td>90 ft</td>
<td>200 ft</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Vertical</td>
<td>60 ft</td>
<td>-</td>
<td>100 ft</td>
</tr>
<tr>
<td></td>
<td>Vertical</td>
<td>80 ft</td>
<td>200 ft</td>
<td>150 ft</td>
</tr>
<tr>
<td></td>
<td>Vertical</td>
<td>40 ft</td>
<td>60 ft</td>
<td>50 ft</td>
</tr>
<tr>
<td></td>
<td>Inclined</td>
<td>300 ft</td>
<td>Connected with other shafts by driving listed above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inclined</td>
<td>200 ft</td>
<td>Connected with other shafts by driving listed above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Also 200 ft open-cut.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5,000 tons have been stoped and crushed from this lease averaging a little over 2 oz/ton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>644C</td>
<td>Vertical</td>
<td>30 ft</td>
<td>30 ft</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Also one open-cut, from which 6,000 tons have been crushed averaging 2 oz/ton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>645C</td>
<td>Vertical</td>
<td>120 ft</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>653C</td>
<td>Vertical</td>
<td>155 ft</td>
<td>350 ft</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: GML 638C Merton’s Reward North, Cons 964, Item 1507/99, SROWA

Merton submitted that the whole property had produced 22,450 oz gold from 11,200 tons of ore (the sum of the monthly official production records was 21,843 oz from 11,397 tons) and that £35,000 had been expended on it.439

A few days prior to the hearing in the Warden’s Court, the mining editor of the Morning Herald had spent two days being shown over Merton’s Reward by Merton himself. He wrote that:

… the most interesting work is proceeding in an underlie [sic] shaft, which is down 300 ft, where the entire face is in sulphide ore, glistening with pure gold.440

439 Ibid, GGWA, March 1899 – February 1902. The discrepancy in these figures is discussed in the Appendix in this volume.
440 MH, 20 September 1901, p 7
The best one-man show in Australia

Eleven thousand two hundred tons is not a lot of ore. As a volume it would occupy an Olympic swimming pool, 50 m by 25 m with water 3.37 m deep. Merton could have removed far more but he chose not to. This point is easily proved by the extent of the stoping shown on the 1907 Plan, in particular in areas of the No 2 Workings, much of which would have been accessible to Merton six years earlier. Some of the possible reasons for his decision to sell in late 1901 were discussed in the previous chapter but a critical look at his development of the mine might reveal how his actions in this regard drove the sale.

Merton took maximum tonnage from the No 1 Open Cut where the ore was easily worked and, at least initially, of high grade. He did not quarry it out completely. The picture for the No 2 Open Cut was similar but for the No 3 and No 4 Open Cuts Merton probably extracted all the viable ore. He sank three underlay shafts, all in ore, and, if the dimensions of the No 1 Underlay Shaft were standard for all three, of generous dimensions. The ore he extracted from the shafts was oxidised. At lower levels rich sulphide ore was exposed.

In the No 2 Workings Merton stope ore from the 160 ft level nearly to the surface. Pillars of ore were left showing good gold values and the width of the stope, at a presumed 50 ft, was not the full extent of the vein. Again Merton did not remove all the available ore. He also put in a 105 ft drive on the West Vein, extracting rich ore but leaving more visible.

In the No 1 Workings Merton put in a large drive on the 52 ft level which extracted a considerable tonnage of ore. It is less certain that viable ore was left; there does not appear to have been any later stoping from this drive.

The point of all this is that Merton left the mine looking good. He had excellent production records, evidence of low working costs and a mine that exhibited good gold values with the promise of readily available ore. Merton was not only astute enough to know that his mine would become more complex at depth and beyond his capabilities to manage on his own, but also shrewd enough to ensure that, when he came to sell,
the mine would sell itself. He judged his leaving of the mine perfectly. Albert Gaston
wrote that Merton had ‘the best one-man show in Australia’, a claim that would be
almost impossible to verify but, given that there were very few, if any, one-man
operations of the size of Merton’s Reward, one that could be true.441

In the Introduction to Part 2 I wrote that, as long as he observed all the regulations,
Merton could do as he pleased with his mine; it was his personal fiefdom. Should we
be surprised, then, that he chose to develop his mine along fairly conventional lines?442
Mining is one of the oldest professions; its practices have been carefully established
over millennia, utilising new developments in technology to effect improvements in
technique but essentially remaining unchanged. Merton followed the established
wisdom of generations of miners. In the following chapter the development of the
mine under the company’s management will be charted and analysed.

441 Gaston, Coolgardie Gold, p 178. I cannot name another one-man mine amongst all the ones I have
studied in the Mt Margaret Goldfield and elsewhere in WA.
442 In a mine of its size in that part of the Mt Margaret Goldfield at the time, Merton’s choice to develop
in ore would not be viewed as unusual.
Chapter 5  

The company mine  

At the end of January 1902 Fred Morgan assumed control at the mine on behalf of Merton’s Reward Gold Mining Company Ltd.\textsuperscript{443} The best one-man show in Australia became the property of a typical British mining company. In this chapter the continuing development of the mine will be examined in the context of this change. As a company mine, the development of Merton’s Reward was influenced by the structure and policy of the company itself and by the imperative to achieve a successful listing for it on the London Stock Exchange. The managers of the mine must also have influenced its progress, but only Henry Judd (manager November 1904 to July 1907) had sufficient time in control of the mine for his influence to be clearly observed. The most influential individual in the history of the mine in the company years was overwhelmingly the company chairman, Charles Kaufman.

However, the most important factor in the development of the mine was the geology of the Merton’s Reward ore deposit. As previously noted, the mine management and the nature of the orebody changed almost simultaneously. The steeply dipping N-S veins apparently supplanted the shallow dipping E-W veins as the main source of gold ore. And with increasing depth the ore itself changed from easily worked, secondary oxide ore to hard rock primary sulphide ore. Contemporary understanding of the geology of the orebody would prove crucial in the development of the mine.

With the mine in company hands, the sources of information relevant to its reconstruction also changed. All the large-scale historical mine plans date from this period; they can be compared with the reports prepared by the mine management for the company’s annual reports to the shareholders to build a reasonably detailed picture of what was happening in the mine. And it is in the detail of the workings and operations of Merton’s Reward that the rationale behind the mine’s development can be elucidated and the major influences on its history identified.

\textsuperscript{443} Malcolm Chronicle [MC], 1 February 1902, p 2
The company

The concept of the free-standing company was introduced by Wilkins to define the prevalent form of British direct investment overseas in the second half of the nineteenth and early twentieth centuries. Free-standing companies were legally independent units designed to direct and manage specific business operations abroad whilst retaining registration and headquarters in Britain. They were not controlled by an existing enterprise. Their purpose was, essentially, to raise capital by bringing together ‘profitable or potentially profitable operations overseas with British investors seeking financial opportunities superior to those at home’. Their main advantage was that they were subject to British law; for a British investor this was both convenient and reassuring.

The British Head Office of the free-standing company typically comprised a company secretary and board of directors, and little else. Many of the companies could be described as ‘little more than a brass nameplate some place in the City’. The duties of the directors were to appoint managers of the overseas business, to receive and consider reports, and to maintain prudent and efficient management of operations. Companies frequently appointed ‘ornamental’ directors, for example, a titled aristocrat or Member of Parliament.

Merton’s Reward Gold Mining Company Ltd conformed to this model closely although initially this was not apparent. The company was incorporated in London on 18 March 1902. No prospectus was issued as the company was not seeking a public listing; all the shares were allotted to Merton, Kaufman, the Rothschilds, and their respective nominees (as discussed in Chapter 3). The directors of the company were Joseph Nauheim, Chairman, Charles Kaufman and Charles Allard Jones. The Company Secretary was Augustus Newman and the Head Office at Bush Lane House

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446 Wilkins, ‘The free-standing company’, pp 264-266
447 Memorandum and Articles of Association, Merton’s Reward Gold Mining Company Limited [MRGM Co Ltd], Ms 18001, File 99B/408, London Metropolitan Archives [LMA]
on Cannon Street. Nauheim and Jones were both clerks – somewhat surprising choices as directors of a company capitalised at £300,000.

The key to understanding these appointments lies in the date of incorporation. Having sailed from Fremantle on 29 January 1902, Merton and Kaufman should have arrived in London on about 12 March. The company was set up fast. Expediency drove the selection of the directors. Joseph Nauheim was senior clerk in the firm of N.M. Rothschild and Sons; his standing in the firm is shown in his management of the liquidation on behalf of Lord Rothschild of the Frankfurt arm of the banking house, following the death of Wilhelm Carl Rothschild. It is possible that Jones also worked for N.M. Rothschild and Sons; both he and Nauheim were allotted shares on Lord Rothschild’s list of nominees.

Once the company was incorporated Kaufman and the Rothschilds could work towards a successful listing on the London Stock Exchange. They had time to select advantageous directors; they chose the ornamental. When the first annual report of the company was issued in 1903 the Board consisted of Charles Kaufman, Chairman, Lord Deerhurst and Major Arthur Griffiths. There is little evidence of Kaufman’s fellow directors having any knowledge of or connection to mining although Major Griffiths studied geology as part of his officer-training course at Sandhurst. The Mining Manual listed him as a director of the Red, White and Blue Gold Mining Company Ltd.

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449 Nauheim had at least one other directorship, on the board of the Fremantle Smelting Works Ltd., also with Kaufman and the Rothschilds. Skinner, *The Mining Manual*, 1902, p 86
450 *Morning Herald* [MH], 29 January 1902, pp 2, 4
452 Nauheim was also allotted shares on Kaufman’s list of nominees. Requests for allotment of shares, 8 April 1902, MRGM Co Ltd, Ms 18001, File 99B/408
453 MRGM Co Ltd, 1st Annual Report [AR] to end June 1903, Mining Reports of the Stock Exchange of London [MRSEL], Guildhall Library, London. Lord Deerhurst was presumably George William Coventry, Viscount Deerhurst, born November 1865, and son and heir of the 9th Earl of Coventry. Major Arthur Griffiths was the younger son of an impeccable military family, born in India in 1838, who could not have aspired to a commission in the army had it not been for the Crimean War. He ended his military career as Brigade Major at Gibraltar and commenced work in the prison service in 1870 rising from Deputy Governor to Governor and finally Inspector of Prisons. Griffiths was better known as an author; the British Library lists 47 titles to his credit between 1870 and 1907 including works on military history, studies of crime and punishment, and detective fiction. Book review: *Fifty Years of Public Service* by Major Arthur Griffiths, in the *New York Times*, 20 May 1905
454 Book review: *Fifty Years of Public Service*
and Lord Deerhurst as a director of the Tiflis Syndicate Ltd with interests in Russia. 455
Both men may have held directorships in companies in other economic sectors.

If Nauheim, Jones, Deerhurst and Griffiths fail to impress as appropriately experienced directors of a gold mining company, in Charles Kaufman the company had an experienced, if suspect, mining man. The American mining engineer and financier had the dubious distinction of having worked for both Whitaker Wright and Horatio Bottomley before branching out on his own. 456

Charles Kaufman was born in 1847. 457 Although the earliest School of Mines in the USA had opened at Columbia University in 1864, Kaufman, like many of his contemporaries, chose to train as a mining engineer at the Freiberg Bergakademie, Saxony, the oldest university of mining and metallurgy in the world. 458 Kaufman worked for twenty years in mines in the USA before arriving in WA in 1894 as manager for Whitaker Wright of the West Australian Exploration and Finance Corporation and of the London and Globe Finance Corporation. During his time with Wright he was involved in many mines including both spectacular failures, such as the Wealth of Nations, and huge successes, such as the Lake View Consols Ltd and the Ivanhoe Gold Corporation. 459

In December 1897, Kaufman took up a similar position with Horatio Bottomley’s London company, the West Australian Market Trust. 460 Launching the company with great fanfare in July 1897 Bottomley introduced him as his partner. 461 It is unclear how long the partnership lasted. By April 1898 Bottomley was in difficulties because of his own financial manipulations and the concerted bear attacks on his companies by other

457 Denis Cumming, ‘Engineers, metallurgists and other professionals in the WA mining industry’, ms, Denis Cumming Private Archive, Battye Library, Perth.
458 *Ibid*. Jeremy Mouat, ““Just now the ‘Merican expert is the Prominent Man”: American mining engineers and the Australian mining industry 1880s-1910s’, *Journal of Australasian Mining History*, vol 6, September 2008, p 137
459 Cummimg, ‘Engineers, metallurgists and other professionals in the WA mining industry’
460 *Engineering and Mining Journal* [*E&MJ*], vol LXIV, no 26, 25 Dec 1897, p 762
promoters, including Whitaker Wright and Hermann Landau. By the end of 1899 they had broken him.462

What is also unclear is the extent to which Kaufman was a party to the machinations by which the promoters such as Wright and Bottomley geared company flotation to ‘promotional and speculative profits in London’.463 He certainly wrote encouraging reports on the mines held by Wright-controlled companies but he may have gone further than this. In the second half of 1900 the Engineering and Mining Journal reported regularly on a ‘battle royal’ between Whitaker Wright and Charles Kaufman.464 The fight was on two fronts; Kaufman was attempting to oust the directors of the Ivanhoe Gold Corporation, including ‘his former friend and protector’ Wright, while the latter, through his London and Globe Finance Corporation, commenced legal proceedings against Kaufman for breaches of trust while he was agent of the corporation, alleging that he ‘played his own game’ and made big profits ‘by bearing the stocks of the various companies the corporation was interested in’.465

With the support of the Rothschilds, Kaufman succeeded in having two new directors appointed to the Ivanhoe board but the outcome of the court action has not been traced.466

There is a tendency in the presentation of Western Australia’s mining history to overlook the positive contributions made by American mining men prior to the arrival of Herbert Hoover and concentrate solely on the more negative aspects of their actions. In a letter to the Engineering and Mining Journal in 1897, Charles L. Taylor stated that ‘the faith which the Londoners have in WA, especially Kalgoorlie, was established by Americans, particularly Mr Chas. Kaufman’, attributing to him the introduction of

462 J.W. McCarty, ‘British Investment in Western Australian gold mining, 1894-1914’, University Studies in History, vol IV, no 1, 1961-62, pp 17-18. Bottomley ended up a prisoner in Wormwood Scrubs. Ironically Whitaker Wright did not survive him by more than a couple of years. The Lake View Consols ore scam and the attack on his hopelessly over-capitalised finance companies by the professional bear group, with whom he had once hunted, landed him in the Bankruptcy Court.
464 E&MJ, vol LXX, July-December 1900
465 Ibid, 17 Nov 1900, p 596
466 Ibid, 20 Oct 1900, p 476 and 27 Oct 1900, p 506. The action may have been settled out of court. As the London correspondent put it: ‘eventually this action will be compromised and ... the pot and kettle will cease to call each other black’. Ibid, 17 Nov 1900, p 596

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the cyanide process at the Lake View and Ivanhoe mines.\textsuperscript{467} Hartley, however, names Kaufman as one of the American mining engineers responsible for ‘prolonging some of the worst excesses that made the word “Westralian” a term of abuse in the mining press’, but concedes that he was a very competent engineer.\textsuperscript{468} A strong sense of ambivalence clings to accounts of Kaufman both in his own time and the present.

Setting up a company in 1902 was a different matter from doing so in the heady days of the mid-1890s. McCarty considered that ‘after 1900 speculation in London was confined to professionals’. There was little new investment so the companies were forced to turn to the mines themselves and to develop them with greater efficiency.\textsuperscript{469} This change is evident in the establishment of Merton’s Reward Gold Mining Company Ltd. No immediate attempt was made to float the company; indeed it was Kaufman’s expressed intention to ‘thoroughly open up the property in a systematic manner before placing it on the market’.\textsuperscript{470} The development work undertaken by Merton did not expose sufficient reserves of ore to satisfy the more demanding investment criteria of the London market at the time. The initial share allocations in April 1902 reveal that, of the 300,000 £1 fully paid shares, almost 91% were allocated to people who might be considered ‘professional’ as they had clearly established connections to the three main protagonists – Merton, Kaufman and the Rothschilds – or to businesses involved in setting up the company.\textsuperscript{471}

It is open to conjecture who, or which group, within the company were the main drivers of policy. Fred Merton was no longer a player; there is no evidence of his active involvement in either the mine or the company after the latter’s incorporation. Local management at the mine exerted considerable influence in mining matters but minimal influence on matters relating to the structure and policy of the company itself. In that area Kaufman and the Rothschilds held sway. Were they in agreement about the

\textsuperscript{467} E&MJ, vol LXIV, no 13, 25 Sept 1897, p 363. Charles Taylor was not a regular contributor to the journal; he was mine manager of the Arrow Brownhill Gold Mining Co. Ltd in 1896-97 and subsequently managed the Mt Margaret Reward Claim Ltd. He was also a director of Murrin Copper Mines Ltd. Skinner, \textit{The Mining Manual}, 1896-1904
\textsuperscript{469} McCarty, ‘British Investment in Western Australian gold mining, 1894-1914’, p 20
\textsuperscript{470} MC, 25 January 1902, p 2. The company was not floated on the London Stock Exchange until May 1905. \textit{The Times}, 3 May 1905, p 13
\textsuperscript{471} For the contributing shares nearly half of Kaufman’s allocation was made to four people whose background is unknown. No attempt was made to research their origins. Requests for allotment of shares, 8 April 1902, MRGM Co Ltd, Ms 18001, File 99B/408
direction to be taken? The Malcolm Chronicle reported that the Rothschilds had insisted on an independent inspection of the mine, undertaken by French mining engineer M. Weil in July 1902, before they would permit it to be placed on the market. Perhaps this signalled a difference in policy direction from Kaufman, or even a lack of trust? Weil reported that the mine needed £40,000 spent on it. Although the Malcolm Chronicle reported that this amount was ‘put up jointly’ by Kaufman and the Rothschilds, it was actually raised as calls on the partly paid shares. It was more money than Fred Merton had expended on the mine in his entire tenure.

There is no mention of the Rothschilds in the records of either the mine or the company after 1902. Although this could look like a split with Kaufman it is far more likely to reflect a willingness on their part to remain in the background and permit the experienced mining man, Charles Kaufman, to run the show.

Re-organising the mine – Fred Morgan

On taking charge of Merton’s Reward on 29 January 1902 Fred Morgan announced that some time would be spent in ‘re-organising matters’ at the mine before resuming full-scale production. He hired staff and advertised for engine drivers. He announced the impending erection of new machinery, including ore-bins, rock breakers and flying foxes for transporting the ore from the workings to the battery. To fund this initial work £7,000 was sent from the London head office. It was supplemented by the windfall of approximately £1,000 won from the clean-up of the plates and battery house floor.

At the first annual general meeting of the company, Kaufman stressed the need to make good the ‘serious defects’ found in the mine, including completely re-timbering
For such a major remodelling of the mine, was Fred Morgan the appropriate manager? Born in Auckland in 1866, he worked as a miner before promotion to underground foreman at the Broken Hill Proprietary Mine, then moved to Western Australia where he was one of the early prospectors/miners on the Kalgoorlie Goldfield. His experience led to the position of manager of the Lake View Consols gold mine, circa 1896-97, at the same time that Kaufman took over the mine on behalf of the London and Globe Corporation. Morgan’s was the classic English mining career trajectory deplored by Hoover but he had the advantage of having held responsible positions at two substantial mines in the Broken Hill Proprietary and the Lake View Consols.

Whilst the mine was renovated, development was to concentrate on sinking the Main Shaft. Kaufman wanted it sunk to the 500 ft level as rapidly as possible because he considered this to be ‘the level on which the mine can be most economically opened up and worked’. How could he be so sure? At most there was only one borehole sunk to 500 ft on Merton’s Reward and none of the veins identified so far would project lower than 400 ft onto the Main Shaft. Kaufman was giving expression to the free-standing mining company’s tendency to over-develop. For example, at the Bellevue gold mine in the East Murchison goldfield, a new vertical Main Shaft was designed to intercept the reef, which dipped at 60° to the west, at approximately 750 ft; the reef did not reach anything like this depth petering out at 400 ft. The geological perception of the day was that gold reefs improved with depth. The fact that so many failed to do so made no impression on this belief despite the protestations of professionals such as

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479 MC, 8 Jan 1904, p 2
480 Cumming, ‘Engineers, metallurgists and other professionals in the WA mining industry’
481 Arthur Reid, Those Were the Days, first published 1933, reprinted Hesperian Press, Carlisle, 1986, p 263. The connection with Kaufman continued beyond his Merton’s Reward days; from 1905 to 1909 Kaufman was director and Morgan manager of the Phillips River Gold and Copper Company near Ravensthorpe. Cumming, ‘Engineers, metallurgists and other professionals in the WA mining industry’
482 MC, 8 Jan 1904, p 2
483 The vein in the No 1 Workings, the furthest from the shaft, would have to extend 880 ft to intersect it and that is a stretch too far.
T.A. Rickard who vigorously refuted it in a paper in 1898 primarily concerned with indicator minerals for gold.\textsuperscript{485} He wrote:

To say that mines get richer in depth is, in such a region as West Australia, a cruel cynicism. If anyone is inclined to believe it, let him wander over the desert, and count the idle stamp mills which lie rusting in the sweltering sun, and the long succession of abandoned shafts which now serve only to water the passing camel train. By mere repetition of an untruth you may effect persuasion, but you do not alter the falsity of it.\textsuperscript{486}

Underground operations resumed at Merton’s Reward at the end of April 1902.\textsuperscript{487} Work progressed steadily but with little discernible result. Comparison of Merton’s last submission to the Warden’s Court with the first list of completed work submitted by the company showed small advances in the inclined shafts on GML 638\textsuperscript{C} and the water shaft on GML 653\textsuperscript{C}. The Main Shaft had been sunk 100ft with 317 ft of driving and 180 ft of crosscutting from it.\textsuperscript{488} Since sinking commenced before Merton left (but after his last submission to the Warden’s Court) it is impossible to determine how much of this work was completed by him and how much by the company.\textsuperscript{489} The battery re-commenced crushing on 30 June, but with ten head of stamps only.\textsuperscript{490}

Visible evidence of progress lay in the number of men employed in the Mertondale Mining Centre, which increased from 76 in the March quarter to 149 in the September quarter. As there was very little activity on any other lease in the neighbourhood at the time – the other lease-holders were awaiting results from the big mine before

\textsuperscript{485} T.A. Rickard, 1864-1953, was the ultimate mining expert. He came from a large family, the male members of which all seemed to have an association with mining. He graduated from the Royal School of Mines in London. From 1895 until 1902 he held ‘responsible positions in mining in several countries’, including six years as State Geologist of Colorado (1895-1901), and was also a highly regarded consultant to the industry. He then turned his career to writing and publishing, ending with the distinction of having been editor of three of the world’s leading mining journals, including the \textit{Mining Magazine}, which he founded in London with his cousin Edgar and Herbert Hoover’s support. It was the Rickards and the \textit{Mining Magazine} who in 1912 published Herbert and Lou Henry Hoover’s translation, the first in English, of Georgius Agricola’s 1556 Latin opus \textit{De Re Metallica}. N.W. Kirshenbaum, ‘T.A. Rickard and his California connections’, \textit{Newsletter}, Samuel Knight Chapter, Society for Industrial Archaeology, No 8, 1 April 1999, http://knightsia.org/newsletters/Issue 8.html#rickard [30/9/2012]  
\textsuperscript{486} T.A. Rickard, ‘The minerals which accompany gold, and their bearing upon the richness of ore deposits’, \textit{Transactions of the Institute of Mining and Metallurgy}, vol vi, 1897-98, p 202  
\textsuperscript{487} \textit{MC}, 2 May 1902, p 2  
\textsuperscript{488} Application for 6 months’ exemption/concentration of labour on GMLs 638\textsuperscript{C}, 644\textsuperscript{C}, 645\textsuperscript{C} and 653\textsuperscript{C}, 2 July 1902, Warden’s Court – Evidence Books: Mt Malcolm, 26 July 1900 – 3 February 1909. WA Mines Dept AN17/Leonora, Cons 1456 Item 4, SROWA  
\textsuperscript{489} \textit{MC}, 19 October 1901, p 2. The additional footage may not represent new work in the mine but simply better surveying of the workings by the new team.  
\textsuperscript{490} \textit{MC}, 4 July 1902, p 2
committing to further work on their ground – it can be safely assumed that most of these men were working on Merton’s Reward. Employment dropped to 114 men in the December quarter following the breakdown of the battery. It had recorded production for just three months when, in early October, it needed repairs and 60 men were laid off. It did not resume production until July 1904.

What was the effect of the extraordinarily long hiatus in gold production from the mine? The directive came from London that the mine should be opened up to the 500 ft level and ore reserves blocked out before resuming crushing operations, but was this the best policy for the mine?

In Chapter 3, the Leonora Gold Blocks was presented as an example of a mine worked by the book. Development work was carried out to block out the ore reserves from the 100 ft level upwards, whilst the shaft was continued to the 150 ft level. Then the battery was built. The established ore reserves were mined and treated simultaneously with continuing mine development. The crucial difference at Merton’s Reward was that it already had an established battery – to keep it idle was to deprive the company of income whilst developing the mine and to leave a valuable asset depreciating in value to no purpose. Granted there was still a water supply problem, but from autumn 1903 when the rains started, it is hard to see why the company could not have had 10 head of stamps working. In not doing so, the company was forced to expend the money raised by calls on the shares.

Towards the end of the year Morgan’s health failed. In what must have been a severe blow, Kaufman lost the experienced manager he knew and trusted, and was forced to find a replacement at short notice. The simplest and most convenient solution was to invite Thomas Weekley, the manager of Merton’s Boulder (formerly Robinson’s lease), to assume responsibility for Merton’s Reward.

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491 Government Gazette of WA [GGWA], No 31 MS No 31, 5 May 1902, p 1945, No 53 MS No 34, 8 Aug 1902, p 3240, No 73 MS No 37, 7 Nov 1902, p 4290 and No 9 MS No 40, 20 Feb 1903, p 310
492 MC, 10 Oct 1902, p 2. The numbers do not match up, but possibly some men had been re-employed by December.
493 The gold production records in GGWA were checked for every month.
494 MRGM Co Ltd, AR 1903, MRSEL, p 3
495 MC, 27 Feb 1903, p 2
It is hard to gain an impression of Morgan’s competence as manager of the mine; there is too little information. He issued no technical reports in his year as manager and his mine plans were taken over and up-dated by Weekley. He left Merton’s Reward in January or February 1903 to go on a long, recuperative voyage around the world.496

**Thomas Weekley – a stopgap solution?**

Comparatively little is known about Thomas Weekley. Apart from his time in Mertondale, there are only two other glimpses of his career – in 1897 as manager of the Menzies Consolidated gold mine and in 1911 as manager of the Fenian gold mine.497 There is no evidence to suggest that Weekley was a product of anything other than the English system of mine advancement through experience or that his career had ever intersected with that of Kaufman.

Weekley was appointed manager for Merton’s Boulder Ltd on 24 September 1901.498 On 18 February 1903 he applied for six months’ exemption on it; one week later he was manager of Merton’s Reward.499 It is possible that he remained titular manager of Merton’s Boulder whilst also managing Merton’s Reward – after all the Merton’s Boulder lease was under exemption.500

In July Weekley submitted the first detailed technical report on Merton’s Reward to the board of directors, outlining work completed to 30 June 1903. The total footage of development work to that date was 5,625 ft 6 in, an advance of 1,060 ft 6 in over the March total submitted to the Warden’s Court.501 Unfortunately Weekley did not differentiate between development undertaken by the company and that done by

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497 Cumming, ‘Engineers, metallurgists and other professionals in the WA mining industry’. Skinner’s *Mining Manual* lists Weekley as manager of the Menzies Consolidated in the 1896-1900 editions. The Menzies Consolidated first recorded production in 1897 and it went on to become one of the biggest producers in the Menzies District with approximately 250,000 fine oz from 500,000 tons of ore (1897-1926). *List of cancelled gold mining leases which have produced gold*, Dept of Mines, Perth WA, 1954, p 145
500 Thomas Weekley is listed as mine manager for Merton’s Boulder Ltd in Skinner’s *Mining Manual* in the 1905 edition, p 132
501 MRGM Co Ltd, AR 1903, MRSEL, p 6. Application for 6 months’ concentration on GMLs 638C, 644C, 645C and 653C, 4 March 1903, Warden’s Court – Evidence Books: Mt Malcolm, Cons 1456 Item 4
Merton, which means that there is no certainty that workings being described for the first time were new company workings. He did, however, include a matching mine plan, the July 1903 General Plan (see Plan 1), which sheds some light on the issue.

Of four prospecting shafts sunk on RC 1\(^C\), the No 4 Shaft (immediately to the NW of the No 1 Open Cut) struck a large quartz vein 6 ft thick at a depth of 88 ft.\(^{502}\) Driving to the SW on this vein at the 95 ft level gave an average value of 16 dwt/ton and an average thickness of 18 in over 45 ft. The vein was widening overhead; if it extended to the surface as anticipated, it would represent a valuable ore reserve.\(^{503}\)

The No 2 Underlay Shaft had been deepened to 425 ft. As it never went any deeper it can be safely assumed that it had passed out of the vein it had been following down. Crosscuts were put in at the 240 ft, 325 ft and 417 ft levels (measured on the underlay). A rich quartz vein was encountered 39 ft west on the 240 ft crosscut. It was oriented N-S and dipped steeply to the east.\(^{504}\) Designated the West Vein, it was also intersected on both the 325 ft and 417 ft levels.\(^{505}\) Drives were put in along the vein; the information obtained from this development work is summarised in Table 5.1, and its location is illustrated in Figure 5.1.

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\(^{502}\) For the locations of the prospecting shafts see Shaft Nos 1- 4 on the 1903 General Plan (Plan 1).

\(^{503}\) MRGM Co Ltd, AR 1903, MRSEL, p 6. From its description the vein would appear to be one of the steeply-dipping type, but its apparent NE-SW orientation is unusual for Merton’s Reward.

\(^{504}\) Merton had reported driving on the same vein in 1901; it had averaged 5 ft in width and 10 oz/ton in grade (see Table 4.2)

\(^{505}\) MRGM Co Ltd, AR 1903, MRSEL, pp 6-7
Table 5.1. Summary of development work and gold values on the West Vein off the No 2 Underlay Shaft, to 30 June 1903

<table>
<thead>
<tr>
<th>Crosscut</th>
<th>Driving</th>
<th>Thickness of vein</th>
<th>Gold, assay value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 ft level</td>
<td>N 275 ft</td>
<td>18 in</td>
<td>3oz 10 dwt</td>
<td>39 ft W of shaft</td>
</tr>
<tr>
<td>240 ft level</td>
<td>S ~60 ft</td>
<td>-</td>
<td>3 oz 4 dwt 18 gr</td>
<td>Av assay to 80 ft N from the crosscut</td>
</tr>
<tr>
<td>325 ft level</td>
<td>S 144 ft</td>
<td>18 in</td>
<td>1 oz 15 dwt 7 gr</td>
<td>Similar in size and value to 240 ft level</td>
</tr>
<tr>
<td>417 ft level</td>
<td>N 196 ft</td>
<td>12 in</td>
<td>1 oz 10 dwt</td>
<td>‘good values’ to 150 ft from crosscut</td>
</tr>
<tr>
<td>417 ft level</td>
<td>S 206 ft</td>
<td>12 in</td>
<td>2 oz 3 dwt 8 gr</td>
<td>Av assay for full 206 ft</td>
</tr>
</tbody>
</table>

Source: Merton’s Reward Gold Mining Co Ltd, 1st Annual Report to end June 1903.

The gold values were very promising. Winzes were sunk to test the continuity of the vein from the 240 ft level at a point 160 ft north of the crosscut down to the 417 ft level (Winze A, Fig 5.1) and from the 325 ft level at the crosscut down 48 ft, extending below the 417 ft level (Winze B, Fig 5.1). In both winzes the vein was continuous, its size and value in Winze B the same as in the levels above. Some stoping had been done on the vein above the 240 ft level where it was found to be 4 ft wide in places and worth 3 oz/ton. On the 417 ft level the vein extended for at least 350 ft, a greater length than on the higher levels. Although Weekley felt that this ‘augured well’, he noted that in the north drive the country was disturbed in places; the vein might not prove continuous.\(^{506}\) Once again, it is important point to note that, because of the shallow incline of the underlay shafts, even the deepest driving on this vein, on the 417 ft level, was only 130 ft deep vertically.\(^{507}\)

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\(^{506}\) *Ibid*

\(^{507}\) This was the depth at which the north drive eventually connected to the Main Shaft.
Figure 5.1. Detail from Plan 2 Longitudinal Section looking West, December 1903, annotated by author to clarify No 2 Workings. Note the comparative depths of the levels off the No 2 Underlay Shaft (left side) and the Main Shaft (right side). (Merton’s Reward 17/290, DMP).
The No 3 Underlay Shaft had been sunk in ore to a depth of 324 ft.\textsuperscript{508} For the last 100 ft the dip of the vein, which was 15 in wide, 60 ft high and ‘of good value’, flattened to horizontal (see Fig 5.1). The same vein was traced 204 ft northwards from the Main Shaft on the 100 ft level.\textsuperscript{509} In a winze sunk from the underlay workings to the north drive on the 100 ft level at a point 30 ft north of the Main Shaft, gold values from 2-5 oz were obtained. The average value in the north drive was 16 dwt 16 gr per ton. Weekley reasoned that there was ‘a considerable tonnage of high-grade ore’ in this area of the mine.\textsuperscript{510}

The Main Shaft had been sunk to 338 ft 6 in and enlarged to 12 ft by 4 ft 6 in, dimensions that allowed for a three-compartment shaft.\textsuperscript{511} Hoover, in his book \textit{Principles of Mining}, gave as ‘the economic minimum a shaft of three compartments, each four to five feet square’.\textsuperscript{512} Three compartments would permit two to be used for hoisting, ensuring that the winding engine was balanced – a descending empty skip or cage would assist in hoisting a full one. The third compartment would be used for services such as ventilation, wiring, water pumping and man-ways.

Plats were established in the Main Shaft at the 100, 200 and 300 ft levels, from which crosscutting proceeded as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>West</th>
<th>East</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 ft level</td>
<td>208 ft</td>
<td></td>
</tr>
<tr>
<td>200 ft level</td>
<td>150 ft, 123 ft</td>
<td></td>
</tr>
<tr>
<td>300 ft level</td>
<td>179 ft, 161 ft</td>
<td></td>
</tr>
</tbody>
</table>

Crosscuts are usually oriented to intersect the anticipated position of the orebody in the shortest distance, which is always at 90° to the strike of the orebody. As the E-W crosscutting demonstrates, the encouraging results on the West Vein had evidently influenced the company to target extensions and repetitions of it. The crosscuts on the No 2 Underlay Shaft were also oriented east and west, the lowest (on the 417 ft level, see Plan 1) extending an extraordinary 750 ft, which would have extended way beyond Wray’s 500-600 ft belt of decomposed schist, in the search for additional N-S veins.

\textsuperscript{508} An advance of 124 ft on Merton’s last figure.
\textsuperscript{509} This was the most northerly point reached in the mine to date.
\textsuperscript{510} MRGM Co Ltd, AR 1903, MRSEL, p 7
\textsuperscript{511} \textit{Ibid}
\textsuperscript{513} MRGM Co Ltd, AR 1903, MRSEL, p 7
Although Weekley considered the calculation of ore reserves difficult because ‘in most cases, only two sides (were) visible’, he gave an estimate of 5,000 tons in total, being 3,000 tons in the No 2 Workings, 1,000 tons in the No 3 Workings and 1,000 tons in the No 1 Workings including the No 4 Prospecting Shaft. There were also 300 tons of 2 oz ore at grass and 10,000 tons of tailings assaying 6 dwt/ton.\textsuperscript{514}

To 30 June 1903, 2,678 tons of ore were treated although in reality the battery worked only from July to September; the yield was 3,314.85 oz of gold bullion worth £13,253 6s 3d. Weekley claimed a cost per ton of £1 17s 3.9d – contrast this with Merton’s costs of 16s 2d per ton reported in July 1900! Mine development costs were £23,637 5s 2d and the loss transferred to the Balance Sheet was £24,329 7s 1d.\textsuperscript{515}

Although Weekley found the reported results encouraging, at the end of June 30 men were laid off.\textsuperscript{516} For the September and December quarters the number of men employed in the Mertondale Mining Centre were 43 and 42 respectively.\textsuperscript{517} With few of the other Mertondale leases under exemption, it is possible that less than 30 men were employed at Merton’s Reward. Development work (including shaft-sinking) continued and ore was stockpiled in readiness for the resumption of crushing. In October Weekley reported that £1,200 per month was being spent on development and mining alone.\textsuperscript{518}

At the first Annual General Meeting of Merton’s Reward Gold Mining Company Ltd, held in London on 30 November, the chairman’s address threw little light on progress at the mine from the end of June. The Main Shaft had reached 440 ft in depth, an air compressor had been installed and re-timbering was complete. Plans and specifications

\textsuperscript{514} Ibid, p 8
\textsuperscript{515} Apart from mine development costs other expenses contributing to the loss were working expenses (extraction and reduction of ore) £4,847 10s 5d, maintenance £143 18s 5d, management and general expenses at the mine £3,649 12s 5d, depreciation on plant, etc £2,223 4s 9d, London expenses £1,761 2s 7d and formation expenses £1,751 3s 5d. Ibid, pp 4-8
\textsuperscript{516} MC, 3 July 1903, p 3. There was no explanation for the reduction in the workforce.
\textsuperscript{517} GGWA, No 73 MS No 49, 4 Nov 1903, p 2954 and No 11 MS No 52, 19 Feb 1904, p 568
\textsuperscript{518} Application for 6 months’ concentration on GMLs 638\textsuperscript{c}, 644\textsuperscript{c}, 645\textsuperscript{c}, and 653\textsuperscript{c}, 21 October 1903, Warden’s Court – Evidence Books: Mt Malcolm, Cons 1456 Item 4. Weekley reported the cost of work underground as £24,997 and of machinery and surface equipment as £20,000.
were to be drawn up for a cyanide plant to treat the 10,000 tons of tailings already accumulated and to serve for future operations.519

What Kaufman failed to announce was any addition to Weekley’s 5,000 tons of total ore reserves. Given that the battery had processed 2,678 tons of ore in the three months July-September 1902, 5,000 tons represented no more than six months’ work. These simple statistics expose the mine itself as the driver of company policy not the Rothschilds, Kaufman or the mine management team. There were insufficient reserves of ore to attract investors when the company listed. The desperate need to find more drove what might otherwise be seen as excessive development. Put in this perspective, the exploratory 750 ft crosscut and the push to sink the Main Shaft to 500 ft become understandable.

Although the last record of Weekley as manager of Merton’s Reward was an application to the Warden’s Court in October 1903, he probably left circa February 1904 after one year there.520 It is almost as difficult to judge Weekley’s performance as manager as that of Morgan. With only one technical report covering eighteen months’ work, it is impossible to judge at precisely what point in any particular working of the mine the change of management took place. All the deepest and most remote development work must have been undertaken on Weekley’s watch. His results were solid and workman-like but hardly inspiring. Was Thomas Weekley a stopgap solution? His brief tenure may have been the result of a one-year contract, which was not renewed because Kaufman had other plans. Bewick Moreing was appointed to manage the mine.

Professional expertise – Erle Stafford Huntley and Bewick Moreing

In 1904 Bewick Moreing and Company Ltd, the British firm of consultant mining engineers and mine managers, took over management of Merton’s Reward. The company had evolved from its early days in Western Australia as engineering consultant and promoter to become manager of some of the mines it had promoted and

519 MC, 8 January 1904, p 2
520 Journal of the Chamber of Mines, Western Australia [JCMWA], Vol 3, pt 3, April 1904, p 96 and pt 4, May 1904, p 146. Application for 6 months’ concentration, 21 October 1903, Warden’s Court – Evidence Books: Mt Malcolm, Cons 1456 Item 4
of several others, including the Lake View Consols, the mine which made Whitaker Wright and then destroyed him. By the end of 1903, the company had established a reputation for turning around mines that had been poorly managed and returning them to profitability; it managed fourteen mines and was consulting engineer for several others. During 1904, it signed agreements to take charge of seven more, including Merton’s Reward. If there were anyone capable of achieving the results needed at the mine, it would surely be one of Bewick Moreing’s mining professionals.

The man selected by Bewick Moreing to take charge at Merton’s Reward was Erle Stafford Huntley. It is not known whether Huntley had a professional qualification but he was widely referred to as a metallurgist. Prior to his arrival in Kalgoorlie circa 1896 he had gained experience in Queensland at the Mt Shamrock mine, where gold was associated with tellurides of silver, bismuth and selenium. Huntley was the first person to recognise tellurium in the Kalgoorlie gold ores in May 1896. From 1896 or 1897 he was employed as metallurgist by the Ivanhoe Gold Corporation Ltd, where he almost certainly came into contact with Charles Kaufman. Huntley resigned from this position in June 1900.

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521 It was the successful rehabilitation of the Lake View Consols which cemented Bewick Moreing’s reputation for this type of mine rejuvenation. Hartley, ‘The 1904 watershed in Bewick Moreing’s Western Australian gold mining activities’.
522 Ibid
523 Bewick Moreing’s normal practice, when contracted to manage a mine, was to retain the title of General Manager for the senior regional manager, in this case William J. Loring (who had responsibility for all areas outside Kalgoorlie), and to use the title of Superintendent for the senior man at the mine, in this case, Huntley. As Huntley was the manager of the mine in exactly the same sense as Morgan or Weekley, he will be referred to as manager in this thesis. The only difference lay in an extra layer of reporting. Huntley’s reports went to Loring, who signed off on them before they went on to MRGM Co Ltd.
524 Mining Magazine, July 1912, pp 41-42, as reported in Hartley, ‘A History of Technological Change’.
525 Kalgoorlie Miner [KM], 20 June 1900, p 3. Arthur Holroyd is widely credited as the first person to report the presence of telluride in the Kalgoorlie gold ores but Huntley, with previous experience of tellurides at the Mt Shamrock mine in Queensland, was the first to recognize it. For analysis of the full story see J.J.E. Glover and J.C. Bevan, The Forgotten Explorers: pioneer geologists of Western Australia 1826-1926, Hesperian Press, Carlisle, 2010, pp 136-145; Hartley, A History of Technological Change’, p 85
526 His resignation coincided with the departure of Hewitson, the General Manager, and Barnett, the mine manager. The board of the Ivanhoe Corporation dismissed Hewitson ‘because he had not prophesied exactly what the output would be’. E&MJ, 20 Oct 1900, vol LXX, no 16, p 476. It is likely that Barnett was also dismissed, but this does not necessarily apply to Huntley. Hewitson was re-instated as consulting engineer in November 1900 after Kaufman’s coup had placed Francis Govett and another new director on the board. KM, 19 June 1900, p 3. E&MJ, vol LXX, October-December 1900
After a trip home to the eastern colonies, Huntley was appointed manager of the Anaconda copper mine at Murrin, starting there in late 1900 or early 1901. He was gazetted as a Justice of the Peace for the Mt Margaret Magisterial District in April 1901. When Murrin Copper Mines Ltd, a London company, acquired the Anaconda in 1902, Huntley was retained as manager. He resigned in October 1903 two months before the mine closed down. His appointment as manager of Merton’s Reward on behalf of Bewick Moreing was made in March or April 1904.

As far as has been ascertained this was Huntley’s first appointment with the company; it was made for good reason. He was ‘local’, having worked at the Anaconda, and he was highly experienced in gold ores, but, more importantly, Kaufman knew him from the Ivanhoe and would accept him.

It was standard Bewick Moreing procedure on being invited to take over the management of a mine to conduct a thorough inspection and test sampling of the workings. It would still be considered good practice today. However the sampling programme at Merton’s Reward was probably initiated immediately after the company had assumed control; its results are shown on the undated and unattributed Longitudinal Section looking West (Plan 3), which presumably accompanied the first Bewick Moreing report on the mine in April 1904.

From Plan 3, it can be seen that the sampling programme was not comprehensive. Sampling was concentrated on the West Vein as the only one ‘worthy of special notice’. Samples were taken at 10 ft intervals across the width of the vein. Ideally

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527 KM, 20 June 1900, p 3. MC, 9 March 1901, p 3 and 13 April 1901, p 2
528 GGWA, No 27, 12 April 1901, p 1420
529 ‘West Australian Mining Industry’, Australian Mining Standard, 8 December 1904, p 152. MC, 8 May 1903, p 2. JCMWA, Vol 2 pts 1-12 and Vol 3 pts 1-3
530 Warden’s Court – Evidence Books: Mt Malcolm, Cons 1456 Item 4. Australian Mining Standard, 8 December 1904, p 152
531 The Chamber of Mines first listed him as representative for MRGM Co Ltd in May 1904. JCMWA, Vol 3, pt 4, May 1904, p 146
533 Hoover strongly advocated the importance of careful and systematic sampling of mine workings in mine valuation, devoting the first eleven pages of Principles of Mining to this very topic. Hoover, Principles of Mining, pp 2-13
535 Ibid
they would have been channel samples but were probably chip samples. As Hoover pointed out, sampling is ‘hard, uncongenial, manual labour’ which ‘requires a deal of conscientiousness to take enough samples and to take them thoroughly’. High gold values were cut to reduce the nugget effect; for example, a value of 21 oz 1 dwt was reduced to 5 oz 1 dwt.

On the 240 ft level there was a cluster of high grades, including samples assaying 15 oz and 7 oz 4 dwt 8 gr, which extended to about 70 ft north of the crosscut. This cluster would have accounted for Weekley’s average grade of 3 oz 4 dwt 18 gr for 80 ft in the north drive (see Table 5.1). The vein above this cluster had been stoped to about 25 ft at the highest point. Sampling of the backs still showed some good grades but their average would have been lower than the average of values in the drive below. The high-grade cluster and the stoping were clearly located at the intersection of the shallow-dipping E-W vein of the No 2 Workings with the steeply dipping West Vein. This is a fairly common phenomenon; where two gold-bearing quartz veins intersect the gold grade is frequently elevated at, or around, the intersection. At the Bellevue, for instance, the effect was marked enough to warrant definition as a specific ore type – the intersection shoots. The assay values to the north of the point A on the 240 ft level (see Plan 3) were not encouraging.

On the 325 ft level, there was good correlation between Weekley’s average assay of 1 oz 15 dwt 7 gr for an average vein width of 18 in (see Table 5.1) and the average grade shown on the long section of 1 oz 8 dwt 8 gr for an average vein width of 1 ft 9 in, given that the latter included the sample reduced from 21 oz 1 dwt mentioned.

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536 The difference between channel and chip samples is basically size of sample. For channel samples, a channel about 10 cm wide by 5 cm deep is cut across the vein (or the strike of the mineralization) using a hammer and chisel or a small air-drill (or, nowadays, a circular saw). The cut rock is allowed to fall to the floor onto a sheet of material (strong canvas then, plastic now), from which it is collected and bagged. For chip samples, a line is marked across the vein and rock particles chipped off along it. Collection is as for channel samples. B.C. Scott and M.K.G. Whateley, ‘Evaluation Techniques’, in A.M. Evans (ed) *Introduction to Mineral Exploration*, Blackwell Science, Oxford, 1995, p 167

537 Hoover, *Principles of Mining*, p 5

538 I cannot discern the logic governing the reductions in grade; whereas the value of 21 oz 1 dwt was reduced to 5 oz 1 dwt. (approx. one quarter), a value of 4 oz 10 dwt was reduced to 1 oz 10 dwt (one third).

above.540 The correlation on the 417 ft level was, however, not good. Whereas Weekley had reported an average assay of 2 oz 3 dwt 8 gr for 206 ft south from the crosscut, Bewick Moreing’s value for a slightly longer distance (230 ft) was 13 dwt 5 gr. However, Weekley sampled over a narrower vein width than Bewick Moreing (12 in as against 18 in).

On the lower levels there was no clustering of high grades around the projected intersection of the shallow-dipping E-W vein with the West Vein. The explanation for this was, quite simply, that it had died at depth. This was one of the more important points acknowledged in the Bewick Moreing report which attributed to the shallow-dipping E-W striking veins the gold won by Merton, which ‘made this Mine so famous in the early period of its history’. Although ‘phenomenally rich’ in places near the surface, the veins had all become poorer with depth and, as far as could be ascertained from the inspection of the workings, had pinched out.541

The report considered the accurate estimation of ore reserves impossible, stating that, in its ‘present state of development the Mine looks like a 10-stamp proposition for a few months’. However it conceded that, when stoping began, more ore might become available. The only parts of the mine viewed favourably were the West Vein and the tailings dump, where about 12,000 tons of tailings (average grade 6 dwt 6 gr per ton) were available for treatment; the erection of a suitable plant was under consideration. The report concluded:

In view of the small size of the vein and the hardness of the ground, it is evident that the costs of development and also of mining must be excessive, and we fail to see how this Mine can be made to pay profits after the small ore reserve now in sight shall have been exhausted.542

In the light of this damning document, written less than a month after the commencement of the management contract, it is hard to see why Bewick Moreing persisted with it. It is not difficult to understand why the company entered into it - Merton’s Reward had all the characteristics of the type of mine that attracted Bewick Moreing’s attention, celebrity profile with highly profitable production for a few years,

540 The distances for each of these averages were 130 ft south from the crosscut for Weekley’s as against 140 ft south from the crosscut plus 10 ft north for Bewick Moreing’s.
541 Loring, ‘General Manager’s Report’, BM 104, pp 103-104
542 Ibid, pp 101-102
followed by a severe reversal of fortune - but why continue when the true state of affairs in the mine was revealed?

The answer may lie in another deal that Bewick Moreing sealed in the same month as the Merton’s Reward contract. This was the contract to manage the Golden Horse-Shoe Estates mine in Kalgoorlie. Hartley attributed to this and the Great Boulder Perseverance contract much of the blame for the 1904 watershed in the fortunes of Bewick Moreing and Company, Ltd.543

The Golden Horse-Shoe Estates contract was extraordinary – not so much a deal as a wager. In March 1904 Bewick Moreing contracted to reduce the working costs of the mine (exclusive of smelter costs) to 25s per ton, or less, by 31 December, a reduction of 15s (based on the last published costs of £2 per ton in 1903) in just nine months. If it failed to achieve this, it would forfeit the mine management fee of £1,000 per annum plus 1% of dividends (£3,500 at 1903 levels). The reduction was theoretically possible. The neighbouring mine, the Ivanhoe, for which Bewick Moreing acted as consulting engineer, recorded working costs of 23s 6d per ton in 1904, working the same lodes and using the same treatment processes as the Golden Horse-Shoe. However, a nearly 40% reduction in working costs in nine months would have been ‘a feat unequalled by Bewick Moreing on any of the working mines that the company had previously taken over’. 544

It was madness. Regardless of any other conditions imposed upon Bewick Moreing by Golden Horse-Shoe directors and the mine itself, anyone can see that it was in the latter company’s interests to have Bewick Moreing fail by a small margin. Let it reduce the costs but not to the extent required for payment. Who amongst the directors of the Golden Horse-Shoe Estates would have driven such a hard bargain and why would Bewick Moreing have agreed to it? The answer to the first question is, in all probability, Charles Kaufman; the answer to the second, that the Golden Horse-Shoe mine had since 1900 been the largest producer of gold in Western Australia. It would have bestowed great kudos on Bewick Moreing to be able to include it in the portfolio of mines under its management. And Kaufman knew it. Whilst he had the company

543 Hartley, ‘The 1904 watershed in Bewick Moreing’s Western Australian gold mining activities’, p 5
544 Ibid, p 73
eager to do business, why not bulldoze it into assuming the management of Merton’s Reward as well?

Hartley implicitly questioned Kaufman’s motive with regard to Bewick Moreing, pointing out that, if the record of mines with which he had been involved were considered, Kaufman’s management philosophy favoured ‘short term opportunism rather than long term conservative mining’ as practised by the company. Furthermore, he argued that, having already seen two of ‘his’ mines, the Ivanhoe and the Lake View Consols, ‘prosper under Bewick Moreing’s guidance’, Kaufman would not have welcomed it in a third. If that were so, why would Kaufman, and it could only have been Kaufman in this case, have offered them the management of Merton’s Reward? He needed their expertise at the mine.

Bewick Moreing may well have persisted with Merton’s Reward because they had no alternative if they wished to keep the Golden Horse-Shoe contract. Their solution was to take a low-key approach to Merton’s Reward. The second Bewick Moreing report stated that ‘general prospecting work’ was carried out in the mine until 22 April 1904 when all underground work ceased. After that date, ‘only the labour necessary to hold the leases was employed’. The men retained were employed in erecting the cyanide plant. The report gave a comprehensive account of all work undertaken, and costs thereof, for the year to 30 June. Obviously if all that Bewick Moreing had done in the mine was general prospecting, the vast majority of work described in this report was completed under Weekley’s management. The details of the development work are shown in Table 5.2.

545 Ibid, pp 79-80
546 In my view, Kaufman was much more pragmatic than Hartley presents him. This is not to say that he was not an extremely difficult customer. As far as the Golden Horse-Shoe was concerned Kaufman had the interests of the Fremantle Smelter, which treated Golden Horse-Shoe ore, to protect as well as those of the mine. But he could still recognize that there was much that Bewick Moreing could do to help the Golden Horse-Shoe mine, and even more so, Merton’s Reward.
548 Ibid. Since all underground work ceased by 22 April and thereafter only work on the cyanide plant was undertaken it is possible that Erle Huntley was not taken on as Mine Superintendent until mid-April with the objective, as a metallurgist, of supervising the cyanide plant construction and commissioning, in which case Loring, presumably, would have supervised the mine sampling and written the first report.
549 This report was strictly technical and business-like. It reported results of sampling during development but, unlike the first Bewick Moreing report, made no comment whatsoever on the geology of the mine. It evidently formed the basis of the Mine Manager’s Report in the second Annual Report of MRGM Co Ltd (issued in November 1904) but this did not include the pages of detailed development and costs.

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The gold values shown in Table 5.2 were generally higher in grade over narrower widths than the results shown on the Longitudinal Section (Plan 3). For example, on the 417 ft level, the 240 ft length sampled on the South Drive showed an average value of 50 dwt (2 oz 10 dwt) per ton for an average width of 13 in compared to 13 dwt 5 gr for a width of 18 in on the long section. As previously noted Weekley’s results for the same section were 2 oz 3 dwt 8 gr for an average width of 12 in, a result much closer in value to the one in Table 5.2.550

This section on the 417 ft level was considered to contain the ‘best body of quartz in the mine’; low gold values in the ‘sulphide formation’ alongside it would permit the mining of a greater width than the quartz alone.551 This first intimation of gold extending beyond the quartz veins into the country rock may have been only a localised phenomenon but, if it were more widespread, it could make a substantial difference to the viability of the mine.

550 There is not necessarily anything untoward in this. Faced with all the assay data giving values and widths, the mining professional uses his expertise to decide on the appropriate cut-offs and limitations on the data. The nature of the orebody, the minimum mining width and the frequency of the nugget effect may all be factors in the decision. The average assay values and widths are then calculated. Another mining professional faced with precisely the same raw data might chose slightly different parameters and thereby arrive at different, but equally valid, results.
Table 5.2. Details of development, 1 July 1903 to 30 June 1904

<table>
<thead>
<tr>
<th>Level</th>
<th>Locality</th>
<th>From (ft)</th>
<th>To (ft)</th>
<th>Feet driven</th>
<th>Gold values (per ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Shaft</td>
<td>North Drive</td>
<td>339</td>
<td>533</td>
<td>194</td>
<td>Traces</td>
</tr>
<tr>
<td></td>
<td>West Crosscut</td>
<td>144</td>
<td>150</td>
<td>6</td>
<td>No values</td>
</tr>
<tr>
<td></td>
<td>North Drive off West Crosscut at 47 ft</td>
<td>-</td>
<td>84</td>
<td>84</td>
<td>Av 6 dwt, av width 20 in</td>
</tr>
<tr>
<td></td>
<td>Winze off North Drive at 59 ft</td>
<td>-</td>
<td>35</td>
<td>35</td>
<td>Av 2.5 dwt, av width 3 ft</td>
</tr>
<tr>
<td></td>
<td>South Drive off West Crosscut at 47 ft</td>
<td>-</td>
<td>384</td>
<td>384</td>
<td>Very irregular</td>
</tr>
<tr>
<td></td>
<td>Rise off South Drive at 120 ft</td>
<td>-</td>
<td>45</td>
<td>45</td>
<td>No values</td>
</tr>
<tr>
<td></td>
<td>West Crosscut off South Drive at 258 ft</td>
<td>-</td>
<td>8</td>
<td>8</td>
<td>No values</td>
</tr>
<tr>
<td></td>
<td>Rise off West Crosscut at 47 ft</td>
<td>29</td>
<td>36</td>
<td>7</td>
<td>Av 9 dwt, width 1 ft</td>
</tr>
<tr>
<td>300 ft</td>
<td>North Drive off West Crosscut at 6 ft</td>
<td>-</td>
<td>194</td>
<td>194</td>
<td>Av 2 dwt</td>
</tr>
<tr>
<td></td>
<td>South Drive off West Crosscut at 6 ft</td>
<td>-</td>
<td>266</td>
<td>266</td>
<td>No values</td>
</tr>
<tr>
<td></td>
<td>South Drive off West Crosscut at 148 ft</td>
<td>5</td>
<td>51</td>
<td>46</td>
<td>First 3 ft: av 8 dwt, width 1 ft</td>
</tr>
<tr>
<td></td>
<td>East Crosscut off above</td>
<td>-</td>
<td>20</td>
<td>20</td>
<td>No values</td>
</tr>
<tr>
<td>400 ft</td>
<td>East Crosscut</td>
<td>-</td>
<td>112</td>
<td>112</td>
<td>From face, borehole drilled E 10 ft gave traces</td>
</tr>
<tr>
<td>500 ft</td>
<td>West Crosscut</td>
<td>-</td>
<td>6</td>
<td>6</td>
<td>No values</td>
</tr>
<tr>
<td></td>
<td>East Crosscut</td>
<td>-</td>
<td>110</td>
<td>110</td>
<td>Traces</td>
</tr>
</tbody>
</table>

**No 1 Opencut Workings**

- No 1 Air Pass
  - - 12 12 No values
- No 2 Winze
  - - 9 9 No values

**No 2 Underlay Workings**

<table>
<thead>
<tr>
<th>Level</th>
<th>Locality</th>
<th>From (ft)</th>
<th>To (ft)</th>
<th>Feet driven</th>
<th>Gold values (per ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>417 ft</td>
<td>North Drive off West Crosscut at 17 ft</td>
<td>196</td>
<td>230</td>
<td>34</td>
<td>Where quartz occurs - av 6 dwt</td>
</tr>
<tr>
<td></td>
<td>Winze on North Drive at 100 ft</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>No values</td>
</tr>
<tr>
<td></td>
<td>Winze on North Drive at 210 ft</td>
<td>-</td>
<td>44</td>
<td>44</td>
<td>No values</td>
</tr>
<tr>
<td></td>
<td>Rise off North Drive at 215 ft</td>
<td>-</td>
<td>21</td>
<td>21</td>
<td>No values</td>
</tr>
<tr>
<td></td>
<td>South Drive off West Crosscut at 17 ft</td>
<td>206</td>
<td>287</td>
<td>81</td>
<td>For 240 ft – av 50 dwt, av width 13 in; from 246 ft to face – occasional values</td>
</tr>
<tr>
<td></td>
<td>East Crosscut off South Drive at 246 ft</td>
<td>-</td>
<td>17</td>
<td>17</td>
<td>Traces</td>
</tr>
<tr>
<td></td>
<td>Winze off South Drive at 100 ft</td>
<td>-</td>
<td>20</td>
<td>20</td>
<td>Av 20 dwt, av width 6 in</td>
</tr>
<tr>
<td></td>
<td>Rise at 365 ft South of Main Shaft</td>
<td>-</td>
<td>22</td>
<td>22</td>
<td>Av 8 dwt, av width 2 ft</td>
</tr>
</tbody>
</table>

**No 4 Shaft**

- Winze from South Drive
  - - 17 17 Av 12 dwt, av width 1 ft

**Total** 1,807

**Sources:** Location and distances (columns 1-5) from Mine Manager’s Report in MRGM Co Ltd. 2nd Annual Report to end June 1904. Gold values (column 6) from Bewick Moreing and Co., *Merton’s Reward Gold Mining Company Limited, Annual Report for the year ended 30th June 1904.*
The Main Shaft had been equipped with a hoist and cages and sunk to 533 ft. Prospecting at depth, as Table 5.2 indicates, offered no encouragement. There was only a small tonnage of ore in reserve with very little prospect of opening up additional reserves. The author of the report commented that:

It would be a useless and costly operation to block out the ore merely for the purpose of measuring the tonnage, but it appears safe to estimate on a tonnage in reserve of 4,500 to 5,000 tons of an average value of 16 to 17 dwts per ton. This will probably be sufficient to keep ten stamps running for five or six months.552

In terms of future development, he considered the best prospect for opening up more ore to be in the southern part of the leases under ‘the old South workings’, by which he presumably meant the No 1 Open Cut and Workings. He therefore proposed continuing the South Drive on the 200 ft level.553 At the time the South Drive extended 384 ft; to come in under the No 1 Workings its length would have to be doubled. Despite Weekley’s favourable assessment of the area in 1903, this proposal seems premature. There was too little information about the orebody below 95 ft vertical depth to warrant driving in underneath it from such a distance.

Although Loring signed the report as General Manager for Bewick Moreing, Huntley presumably was its author. Whether his version was modified before submission to Merton’s Reward Gold Mining Company Ltd is not known. In fact, Huntley was barely visible in the records of the mine at this stage. However, his handiwork was. The cyanide plant (see Figure 5.2), construction of which he supervised, was started up on 5 July and the battery resumed crushing, with ten head of stamps only, on 15 July.554 And he gained some local fame in September when an audacious burglary attempt on the strongroom safe made him the hero of the day.555

552 Ibid, p 97
553 Ibid, p 96
554 MC, 3 June 1904, p 3
555 MC, 30 Sept 1904, p 2. This was Merton’s infamous safe with its two-ton Chubb door. Gordon Young later appropriated the story writing himself into Huntley’s role. G.F. Young, Under the Coolibah Tree, Andrew Melrose, London, 1953, pp 212-214
The report on the mine presented at the second Annual General Meeting of Merton’s Reward Gold Mining Company Ltd held in London on 29 November 1904 was essentially the second Bewick Moreing Report omitting the detailed gold values for each working and the cost sheets. Apart from the South Drive on the 417 ft level - ‘the best body of quartz’ discussed above - the gold values for the rest of the mine were summarised thus: ‘The other parts of the property show seams of quartz up to a foot thick and varying in value from traces to 1 oz.’ This statement, whilst not inaccurate, presented the results shown in Table 5.2 in the most favourable light possible. With only a paltry amount of interest on deposits as income to set against them, the total mine and London expenses for the year caused the Profit and Loss Account to blow out to a £39,336 14s 10d loss.556

556 MRGM Co Ltd, 2nd Annual Report to end June 1904, MRSEL
By the time the London meeting was held Bewick Moreing and Company had already relinquished management of the mine, handing over to Henry Judd in November 1904. As well as the detailed sampling programme, in its eight months as manager of Merton’s Reward the company had constructed and commissioned the cyanide plant and resumed milling. The cyanide plant had eight leaching vats and a capacity of 1,500 tons per month. The production figures for the mine in July-October 1904, the months under Bewick Moreing management, were as follows: Ore milled 3,712 short tons for 1,714 oz at a grade of 9.23 dwt/short ton and 5,830 short tons of sands treated for the recovery of 1,322 oz at a grade of 4.53 dwt/short ton. The value of the total gold won was £12,849.

As for Huntley, the invisible man, fortune smiled. By 1918 he was back in Queensland, the prosperous owner of a mine in the Cloncurry copper belt.

**The respectable mining company – Henry Judd**

With the arrival in late October or November 1904 of Judd as General Manager of Merton’s Reward, a remarkable transformation occurred in both the conduct and fortunes of the mine. Bewick Moreing had prepared the groundwork on which the company could build but had not believed in the mine. Under Judd’s management it surged ahead.

In Henry Alexander Judd AIME the company had finally acquired a man with impeccable mining credentials. He was an English mining engineer who worked in the USA for some years; his membership of the American Institute of Mining Engineers

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557 MRGM Co Ltd, 3rd Annual Report to end June 1905, MRSEL, p 3. The Golden Horse-Shoe Estates contract had already terminated; Bewick Moreing was dismissed as manager on 17 September 1904. Hartley, ‘The 1904 watershed in Bewick Moreing’s Western Australian gold mining activities’, p 77
558 *JCMWA*, vol 3 nos 5-10, May-October 1904. Grades were calculated from the data.
560 Judd first appeared as Manager of Merton’s Reward in the Chamber of Mines membership list in December 1904, which means that he probably took up the position in late October or November. *JCMWA*, vol 3, pt 11, December 1904, p 417. A sub-delegation Power of Attorney from Norbert Keenan, to whom the company had granted Power of Attorney in 1902, to Henry Alexander Judd, was dated 28 November 1904. Companies Office Registered Files, AN193/3 Acc 1370 File 40/02, Battye Library, Perth.
561 Many years later Gordon Young claimed credit for the management of the mine in this period but there is no evidence to support his claim. Young, *Under the Coolibah Tree*, pp 205-206, 216.
indicates that he was professionally qualified. In the early 1890s he worked for the mining engineering firm Eames and Judd in North Carolina. He left in 1896 bound for the WA goldfields, where he worked as manager of the Lake View Extended gold mine from 1897 to 1902, the Lake View South gold mine from 1897 to December 1903 and the Central and West Boulder gold mines from January 1899 to 1903. He was General Manager of the Robinson gold mine at Kanowna from February 1901 to December 1903.

In December 1903 Judd left Kalgoorlie for London. The warm compliments of his colleagues at his farewell at the Chamber of Mines suggest that this was to be a permanent departure. Yet somehow Kaufman, who knew him from his days at the Lake View Extended and Lake View South (the latter leases adjoined the Lake View Consols), persuaded him to return to Western Australia as General Manager of Merton’s Reward.

When Judd assumed control of the mine, what information did he receive from Bewick Moreing? Up to this point it has gone without saying that each successive company manager had received from his predecessor all the results and mine plans generated to date. With the handover from Bewick Moreing this may not have happened. The first report on the mine, which was so condemnatory, and its accompanying Assay Plan were probably intended as internal Bewick Moreing documents and never forwarded to Merton’s Reward Gold Mining Company Ltd. Amongst Judd’s earliest actions at the mine was the updating of the existing mine plans. There are two mine plans, a Longitudinal Section and a series of Transverse Sections both dated ‘complete to 30 November 1904’, which are effectively updates of the 1903 versions, not of Bewick Moreing’s 1904 Longitudinal Section with assays.

563 E&MJ, 14 December 1895, vol LX, no 24, p 567
564 He also served on the Kalgoorlie Roads Board and the local advisory board of the Kalgoorlie Electric Power and Lighting Corporation Ltd. Cumming, ‘Engineers, metallurgists and other professionals in the WA mining industry’. Reid, Those Were the Days, p 260. Skinner, The Mining Manual, 1900, p 1271. I am also indebted to Richard Hartley for access to his work-in-progress ‘Mining engineers, mine managers and metallurgists in Western Australia 1895-1930: Data sheets’.
565 JCMWA, vol 2, pt 11, December 1903, p 388
566 The November 1904 Longitudinal Section has been omitted from this thesis as it differs only slightly from the earlier versions. The Transverse Sections have also been omitted as they tend to show very little.
Subsequently, Judd initiated a complete rationalisation of the mine workings. The mine was re-surveyed and all workings were re-defined on a strict vertical depth basis, thus eliminating the irregularities such as a 200 ft level deeper than the 417 ft level! New terminology was introduced for the main orebodies within the mine. The West Vein became the Western Reef (or West Reef on plans) and the N-S vein in the No 3 Workings became the Eastern (or East) Reef.

Development within the mine advanced rapidly. For the year ended 30 June 1905, Judd stated that 1,751 ft of development work was completed, 1,584 ft of which was done under his management. The number of men employed on the mine increased from 30 to 120. Despite continuing water problems the mill was kept running sufficiently to record production every month from July 1904 to May 1906. During the first quarter of 1905 considerable expense was incurred in securing the old stope; those between the 90 and 140 ft levels (previously the 240 and 325 ft levels) on the Western Reef and between the 80 and 110 ft levels on the Eastern Reef had been left in ‘the most dangerous condition’.

Merton’s Reward Gold Mining Company Ltd finally applied for listing on the London Stock Exchange; permission was granted on 17 May 1905. The Financial Times did not include the shares in its stock market prices until 9 June when they were quoted at 15s per share. At the end of June the price was unchanged at 15s for both the fully paid and partly paid shares. With four calls of 4s each already made on the latter, this represented a loss of 1s per share; it should be remembered, however, that the majority of the original subscribers for the shares had received as a bonus one free fully paid share for each contributing share purchased. Almost everyone was still

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567 MRGM Co Ltd, AR 1905, MRSEL, p 6
568 WA Mines Dept Annual Report [MDAR] 1904, p 45
569 MRGM Co Ltd, AR 1904, MRSEL, p 7. The 110 ft level was formerly the 100ft level off the Main Shaft and the 80 ft level the drive above it that appeared to be the continuation of the No 3 Underlay Shaft as it flattened out (see Plan 3).
570 Since no prospectus was required the documentation related exclusively to the company itself – its articles of association, shareholders and the original agreement between Kaufman, the Rothschilds and the company. Request for a Settling Day, MRGM Co Ltd, Ms 18001, File 99B/408
571 The Financial Times, 10 June 1905. The price quoted was ¾ with no unit of currency stated. I have assumed that the pound sterling was the intended unit of currency.
572 Ibid, 27 June 1905
573 Request for a Settling Day, MRGM Co Ltd, Ms 18001, File 99B/408
ahead. But for the company, the market was placing a value of £210,000 on its assets and prospects as against its balance sheet valuation of £280,000.\textsuperscript{574}

In November 1904 the Royal Commission enquiring into the wild fluctuations in the values of shares in the Boulder Deep Levels and Great Boulder Perseverance mines heard evidence in Kalgoorlie. The membership of the Chamber of Mines of Western Australia was deeply concerned about the possible outcomes of the Commission but recognised that mine swindles did great harm to the mining industry and that the companies themselves must be more accountable. To further this aim the Chamber encouraged the simultaneous publication locally and in London of all reports of mining development and yields, suggesting that this could be done through the auspices of the Chamber itself.\textsuperscript{575} Some companies had already embraced this idea by publishing mining development news in the monthly reports of the Chamber; through 1905 many more followed suit.\textsuperscript{576} A combination of the drive for greater professionalism, as exemplified by Bewick Moreing, and the fear that, if they did not reform themselves, unfavourable legislation to regulate the industry would be passed by the Western Australian government, forced the mining companies towards improved transparency and accountability.\textsuperscript{577} The industry needed to be seen to be respectable in order to drive away the lingering demons of fraud and malpractice.

There are degrees of respectability. As far as can be ascertained Merton’s Reward Gold Mining Company Ltd complied reasonably well with government regulations; there were the occasional lapses, usually relating to safety issues in the mine, but nothing that resulted in proceedings against the company.\textsuperscript{578} Similarly it observed the statutory obligations imposed by company law and stock market regulations. The company became a member of the Chamber of Mines in March 1902; it complied with the Chamber’s request for production figures, submitting monthly yields, when there were any, from July 1902 to March 1906. Mining development notices were not

\textsuperscript{574} MRGM Co Ltd, AR 1905, MRSEL, p 4
\textsuperscript{575} \textit{JCMWA}, vol 3, pt 10, November 1904, p 377
\textsuperscript{576} Mining development notices expanded from 7 pages in November 1904 to 22 pages in August 1905!
\textit{JCMWA}, vol 3 1904 – vol 4 1905
\textsuperscript{577} \textit{JCMWA}, vol 3, pt 10, November 1904, p 377
\textsuperscript{578} The company was twice cautioned over the cavalier attitude of its workmen towards explosives. Mining Registrar’s Office – Defects on mines, 1902-05, Cons 1456 Item 54, p 83. Mining Inspectors’ Letterbooks: Mt Malcolm, 9 July 1902 – 31 January 1905, Cons 1456 Item 45, p 590
provided - hardly surprising given the difficulties encountered in establishing an adequate ore reserve for the mine.

The one area in which there was a consistent, but unrecognised, flouting of the regulations was in the reporting of gold production. As explained in the Appendix, every gold producer had to furnish monthly returns to the authorities. It was stipulated that long tons (Imperial measure) be used for the weight of ore treated but many companies that used short tons (American measure) internally and in company reporting failed to make the conversion when submitting their returns to the Mining Registrar. As a result the figures published in the Government Gazette and held in the Department of Mines, which purported to be in long tons, were in fact in short tons. They are incorrect, but there is no way of knowing this unless other sources are available for comparison.

Luckily, the Chamber of Mines was more pragmatic. Eventually realising that some member companies were ignoring requests for returns in long tons for publication in its journal, the Chamber specified long tons or short tons for each mine in its tables of monthly yields. Careful comparison of all sources of gold returns for Merton’s Reward has established that Merton’s Reward Gold Mining Company Ltd consistently used short tons. The government’s official gold production records and all previously published figures are wrong.\(^{579}\) However it is only the tonnage of ore treated that is incorrect; the amount of gold won should not be affected. My assessment of the gold production records for Merton’s Reward is presented in the Appendix.

As explained in the previous chapter the use of short tons distorts the grade of the ore produced; a grade of 2 oz per long ton of gold reduces to 1.79 oz per short ton, an appreciable drop in value. On the other hand, when the costs of mining and processing are considered, the distortion appears more favourable. Total working costs of 28s per long ton, for example, reduce to 25s per short ton. The apparent reduction in costs explains why so many of the Western Australian gold mining companies chose to use short tons as their unit of measure. The gold mines were in competition for finance

\(^{579}\) This includes the figures given in my report for Ashton Gold WA Pty Ltd, which have subsequently been quoted in many other company reports on the Mertondale area.
with those from South Africa and the USA; in both countries the short ton was widely used.\textsuperscript{580}

Of the 1,751 ft of development work undertaken at the mine in the year to end June 1905, 1,088 ft was completed on the Western Reef and 439 ft on the Eastern Reef, the remaining 224 ft being at ‘various other points’. Judd described the Eastern and Western Reefs as ‘two distinct channels of stone … the Western Reef being the best defined’. Each of the ore channels consisted of two separate lenses with varying thicknesses of country rock intervening. By systematic development Judd proved to his satisfaction that the hanging-wall of one lens was the footwall of the second.\textsuperscript{581}

It has already been noted that during Merton’s management of the mine the main sources of gold were the rich E-W veins (the intershear lodes) whereas during the company’s tenure the N-S veins (the shear lodes) became the principal targets. The two sets of veins were hosted by highly sheared, fine-grained, carbonated basalt (mafic volcanic). There was, apparently, no mine of comparable size with these characteristics in the Mt Margaret goldfield. To the east the gold deposits of Mt Morgans and Laverton occurred as quartz reefs or lodes within banded iron formation (BIF), or at BIF-mafic volcanic contacts. The gold deposits of the Leonora mining centre to the west occurred as lenticular shoots following the foliation of the host rocks, which, as at Merton’s Reward, were generally intensely sheared mafic volcanics. The shoots bore the same relationship to their host rocks as the shear lodes at Merton’s Reward but there were no significant cross lodes or intershear lodes.\textsuperscript{582}

The particular geometry of the Merton’s Reward ore deposit owed its genesis to what might seem a minor structural kink. Just north of Mertondale, the north-trending

\textsuperscript{580} \textit{JCMAW}, vol 3, pt 2, March 1904, p 8-9. I should admit to bias. My background is in exploration geology. The exploration geologist identifies prospective areas for possible mineralization, devises programmes of reconnaissance mapping, geochemical sampling, and geophysical surveying with a view to pinpointing specific targets and then manages the next phases of exploration, including drilling, until (hopefully) an ore resource is defined in terms of its tonnage and grade. Grade is everything to an exploration geologist. Only when the ore resource is handed over to the mining engineers, metallurgists and accountants do working costs become a factor in upgrading the resource to a mineable reserve.\textsuperscript{581} MRGM Co Ltd, AR 1905, MRSEL, p 7


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Mertondale Shear Zone flexed, curving to the east, creating a localised compressional jog in what was primarily a regional extension zone. Detailed studies of rock deformation in the field and in the laboratory over many decades have demonstrated that certain patterns of deformation will occur in response to specific directional stresses. Figure 5.3a shows an idealised strain diagram, based on these studies, illustrating how tension gashes open in the direction of compression. Structural studies by Swager and Johnston on the ore deposits of the Mertondale area found that the orientations of the gold-bearing veins were consistent with this model. En echelon extension veins (the intershear lodes) filled the tension gashes in the compression direction and shear lodes occupied some, but not all, of the bounding shears (see Figure 5.3b). This interpretation fits well with Judd’s description, and indeed with most of the historical evidence, as it allows for multiple veins between shears.


Fig 5.3a. Idealised strain diagram [based on field and laboratory studies].

DD’ = direction of principal shearing (the bounding shears).

PP’ and RR’ = directions of secondary shearing (not mineralised at Merton’s Reward).

Tension gashes open in compression direction. (After Swager)

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Fig 5.3b. Idealised plan view of the development of the intershear lodes at Merton’s Reward. (After Johnston)
For the financial year ended 30 June 1905, 6,641.3 fine oz of gold were produced from 18,602 tons of ore mined and milled, of which 7,580 tons came from the Eastern Reef and 11,022 tons from the Western Reef, all of it sourced from above the 210 ft level. The enlargement of the cyanide plant to 14 vats and the installation of a 3-4 ton filter press for the treatment of slimes in the last quarter boosted total gold production for the year to 10,600 fine oz. Total costs, including development and depreciation on plant, were £1 14s 9d per ton. The cost of the extra leaching vats, the filter press and other improvements to the plant was £8,028 7s 3d. Judd considered that the re-modelled plant would be capable of treating 4,000 tons of ore per month. But where was this ore to come from?

Judd’s estimates of ore reserves are shown in Table 5.3. Although he considered it inadvisable to ‘incur unnecessary cost’ by completely blocking out the ore, he still claimed to have been ‘most conservative’ in his estimates.

Table 5.3. Summary of Ore Reserves for Merton’s Reward at 30 June 1905.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Tons short ton</th>
<th>Average value dwt/short ton</th>
<th>Contents (fine gold) oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Branch Lode</td>
<td>6,429</td>
<td>7.20</td>
<td>2,314.44</td>
</tr>
<tr>
<td>East Lode</td>
<td>9,312</td>
<td>11.37</td>
<td>5,296.47</td>
</tr>
<tr>
<td>West Lode</td>
<td>15,546</td>
<td>11.69</td>
<td>9,087.19</td>
</tr>
<tr>
<td>Kaolin and Schist Lodes</td>
<td>45,000</td>
<td>7.00</td>
<td>15,750.00</td>
</tr>
<tr>
<td>Totals</td>
<td>76,287</td>
<td>8.51</td>
<td>32,448.10</td>
</tr>
</tbody>
</table>


Note: The Branch Lode is a mystery; this is the only reference to it. The East and West Lodes were the Eastern and Western Reefs; the Kaolin and Schist Lodes were part of the No 1 Workings.

585 On the Western Reef, 2,272 tons came from the No 1 Open Cut, some of which may have been stockpiled, and 1,698 tons from the No 2 Open Cut. Note that all Judd’s figures for tonnage are in short tons. MRGM Co Ltd, AR 1905, MRSEL, p 7
586 Sands treatment for the year yielded 3,299.1 oz fine gold from 16,127 tons of sands: slimes yielded 659.6 oz fine gold from 4,032 tons. Ibid, p 8.
587 Ibid. An amount of 15 percent was allowed for depreciation.
588 Ibid
Table 5.3 indicates a sizeable increase in ore reserves of 71,287 tons over the June 1904 figure. The bulk of the ore was centred on the No 1 Open Cut where Judd based his reserve calculation on the dimensions of its north face, 22 ft deep by 90 ft wide.\textsuperscript{589} The interesting feature of Judd’s figures is how close his gold content, 32,448.10 fine oz, came to the official production figure of 32,343.03 fine oz won from Merton’s Reward from 1905 onwards.\textsuperscript{590} For the year ended 30 June 1905, the mine made a profit of just under £12,000, enabling the company to reduce the deficit brought forward from the previous year to £27,042 3s 5d.\textsuperscript{591}

The mine was busier than it had ever been. In the December quarter the Mertondale Mining Centre recorded its highest employment figures - 111 men working above ground and 101 underground – the great majority of whom must have been employed at Merton’s Reward.\textsuperscript{592} However the water shortage remained a problem.\textsuperscript{593} As a result, at the end of January 1906 the filter press ceased operation, the slimes being allowed to accumulate in the tailings dam, and in May the mill had to be closed down. The State government contracted with the company to supply 30,000 gallons of water per day from Pig Well. Construction of a pipeline to Mertondale would take time but it was anticipated that the water would be available by the end of the year.\textsuperscript{594}

In his report for the year ended 30 June 1906 Judd noted a total of 2,281.5 ft of development work at an average cost of £3 2s 8.26d per foot.\textsuperscript{595} Work had focussed on the western lens of the Western Lode, the western lens of the Eastern Lode and the ‘southern lode in the Reward Claim’ (the Kaolin and Schist Lodes of the previous year).\textsuperscript{596} Most of the new work on the Western and Eastern Lodes cannot be located on the plans with any certainty; much of it consisted of extending existing drives or putting in rises which were subsequently stope out. However on the Eastern Lode 179 ft was driven on a new North Drive on the 110 ft level at the Main Shaft.

\textsuperscript{589} Ibid, p 7 
\textsuperscript{590} Production Record Sheets for Mertondale Mining Centre, Statistics Branch, DMP. The figure quoted includes production for 1905 and also from PAs and other leases over the Merton’s Reward ground from 1936 to 1964.
\textsuperscript{591} MRGM Co Ltd, AR 1905, MRSEL, pp 4-5
\textsuperscript{592} GGWA, No 21 MS No 75, 20 March 1906, p 921
\textsuperscript{593} MDAR 1905, p 46
\textsuperscript{594} MRGM Co Ltd, 4th Annual Report to end June 1906, MRSEL, p 3
\textsuperscript{595} These figures did not include coteaming (462 ft) and road cutting (80 ft, to the No 1 Open Cut).
\textsuperscript{596} MRGM Co Ltd, AR 1906, MRSEL, p 6
On the Reward Claim a road was constructed to access the southernmost workings. The No 4 Shaft was widened and fitted out with poppet legs and a winch in order to access four veins of quartz described in the previous year’s report. Shaft sinking (No 5 Shaft) was commenced to the north of the No 1 Open Cut to ‘open up at depth the indications of a lode formation in various shallow workings’ to the south and east within the cut. In the No 1 Open Cut itself there was, according to Judd, ‘a large body of low grade ore exposed’.  

Judd reported a total of 28,061 tons of ore milled (Western Reef 13,342 tons, Eastern Reef 10,978 tons and Reward Claim 3,741 tons) for a return of £26,456 2s 5d, which equates to 6,296.3 fine oz of gold. With the additional gold extracted by the cyanide plant and filter press, total gold recovered for the year was 9,872 oz, valued at £41,102 11s 5d. For the seven months during which the full plant was running (July 1905 - January 1906 inclusive), Judd claimed a total cost of 26s 9.56d per ton, an excellent result indicative of his managerial skills when compared with the 1904 Bewick Moreing contract to reduce the working costs of the Golden Horse-Shoe from £2 to 25s per ton! Judd added that, had water been available to run the mill full-time, costs would have been considerably reduced. As it was, the battery had worked the equivalent of 226 days full time. Not surprisingly, a reduced profit of £8,543 11s 4d was reported for the year; the deficit now stood at £18,498 12s 1d.

Compared with the previous year’s assessment, Judd was more guarded about the ore reserves, stating that:

I am not in a position to submit any definite amount as to the absolute total tonnage in sight, other than on the eastern reef – 4,891.7 tons, of an average assay value of 15.3 dwts. – and on the western reef – 16,075 tons, of an average assay value of 11.72 dwts per ton.

The mine surveyor estimated roughly 30,000 tons of ore as being blocked out on two or more sides and approximately another 40,000 tons as ‘probable ore’ exposed on one side only. In seven months the mill had processed 28,000 tons of ore; 30,000 tons would not last long when the water from Pig Well arrived. As always the impetus for the coming year was to increase ore reserves. Despite discouraging results on the

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597 Ibid, p 7
598 Ibid, pp 3-8
599 Ibid, p 7
600 Judd still felt that the estimates were made on a very conservative basis. Ibid, p 8
310 ft and 410 ft levels a winze was sunk in the east crosscut below the 510 ft level, with a crosscut east at its base, to test the ground at depth. The results were still not encouraging. \(^{601}\) Robinson’s old lease GML 648\(^C\) was acquired to cover any possible extensions of the orebody northwards but no underground development ever extended that far. \(^{602}\)

The mine manager’s report for the year ended 30 June 1907 was signed by Judd’s successor, W.S. Jones. Since he did not assume control of the mine until 29 July 1907, the work described therein was completed during Judd’s tenure. The total mine development for the year was 2,836½ ft, the vast majority of it on the Western Reef. This development work exposed no pay ore below the 210 ft level in the Western Reef or below the 140 ft level on the Eastern Reef; no work on the Southern Lode went below 116 ft. \(^{603}\) Although these comments applied to the work completed that year, they virtually held true for Merton’s Reward throughout its mine life. The one exception was a small area of stoping on the Western Reef off the rise between the 210 and 310 ft levels; the value of the ore obtained from this stope is unknown. \(^{604}\)

Gold production resumed in late January 1907 following the completion of the government pipeline from Pig Well. \(^{605}\) To the end of June the production figures for milling, cyaniding and filter pressing were as follows (see Table 5.4).

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\(^{601}\) MRGM Co Ltd, Longitudinal section looking west, early 1907? Merton’s Reward Plan 16/290, DMP. Plan 16/290 is a blueprint drawn in the same style, but at a different scale, as the blueprint sources (Plans 14/290 & 15/290) for the 1907 Composite Plan, Plan 4 in this thesis. These blueprints were signed by Henry A. Judd and, although undated, show dates and footages on some of the development work, presumably the additions as the master plans were updated in the mine office. The most recent date on these plans is 1 April 1907 (see Plan 4, 155 ft Intermediate Level, below No 2 Underlay Shaft), hence the 1907 date applied to them all.

\(^{602}\) MRGM Co Ltd, 5th Annual Report to end June 1907, MRSEL, p 7. The purchase price for the lease is unknown.

\(^{603}\) MRGM Co Ltd, AR 1907, MRSEL, p 7

\(^{604}\) This stoping is shown on Plan 3/290, not included in this thesis. (Merton’s Reward 3/290, DMP).

\(^{605}\) Water was no longer a problem at the mine. MRGM Co Ltd, AR 1907, MRSEL, p 7
### Table 5.4. Gold production and costs by processing stream, January to end June 1907

<table>
<thead>
<tr>
<th>Process</th>
<th>Tonnage treated tons</th>
<th>Cost per ton</th>
<th>Gold yield fine oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milling</td>
<td>12,958</td>
<td>8s 5.3d</td>
<td>1,686.88</td>
</tr>
<tr>
<td>Sands Plant</td>
<td>6,257</td>
<td>3s 1.8d</td>
<td>750.93</td>
</tr>
<tr>
<td>Slimes Plant</td>
<td>3,214</td>
<td>9s 9d</td>
<td>403.78</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>21s 4.1d</td>
<td>2,841.59</td>
</tr>
</tbody>
</table>

**Source:** MRGM Co Ltd, 5th Annual Report to end June 1907

For once it is possible to assess the performance of the mill as Jones stated that the 12,958 tons of ore treated contained 3,825.85 fine oz of gold (at a grade of 5.9 dwt/ton). The percentage recovery was a respectable 74%. In addition re-treatment of old tailings yielded 858.39 fine oz of gold from 6,190 tons of sands and slimes and 121.78 fine oz of gold were obtained from the battery plates upon their removal to make way for new plant. The total gold produced for the year was 3,821.76 fine oz with a value of £15,904 0s 2d.

From mid-May only 15 head of stamps were operational but the grade of the ore was high enough to ensure that all expenses were covered. However, for the full financial year, mine working expenses alone had exceeded the income from bullion sales. The company chose this year to write off all mine development expenses to the tune of £17,619 14s 2d, with the result that the Profit and Loss Account blew out again with a debit balance of £43,559 4s 7d forwarded onto the Balance Sheet.

In a remarkable display of honesty the author of the report admitted being unable to draw up any reliable estimate of ore reserves due to the irregular nature of the ore bodies and their gold content. Development work had ceased in mid May. Although no explanation was offered for this decision the report provided a clue:

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606 The calculation is 2,841.59 fine oz x 100/3,825.85 fine oz = 74.27%. Compare this with the figures of 58.9 – 70.2 percent for the Ivanhoe from 1898-1900 quoted in Chapter 3.

607 MRGM Co Ltd, AR 1907, MRSEL, pp 5-7

608 £16,096 4s 5d as against £15,904 0s 2d.

609 MRGM Co Ltd, AR 1907, MRSEL, p 5

610 Ibid, p 7
The greater portion of the development work carried out during the year at and below the 210 ft level was upon the assumption that the main chutes of pay ore dipped north, but this has been proved not to be the case.\footnote{Ibid, p 8}

The pay chutes referred to here lay within the lenses of the steep, easterly-dipping Western and Eastern Reefs; once again the frustrating nature of the Merton’s Reward orebodies was revealed. The development work had been Judd’s; the words of the report were clearly Jones’.\footnote{The writing style of the 1907 report differs from that of the 1905 and 1906 reports.} Was Jones saying that his predecessor had got it wrong?

Judd left Merton’s Reward in July 1907.\footnote{Judd’s subsequent career took him to Northern Nigeria circa 1910-11, in connection with the Filani (Nigeria) Tin Mining Company. \textit{The Times}, 8 Feb 1911} The reason for his departure was not publicly revealed but it is unlikely that he would have wanted to stay any longer.\footnote{The April notice probably means that Jones gave notification in March. \textit{JCMWA}, vol 7, pt 3, April 1908, p 109} Arguably he had not got it wrong; Judd’s managerial skills and experience achieved for the company, however temporarily, its objectives of substantial gold output at a profit and increased ore reserves, which facilitated the listing of the company on the London Stock Exchange.

\textbf{Into the shadows – Jones and the tributers}

William Samson Jones took up the position as manager of Merton’s Reward gold mine on 29 July 1907; he was last mentioned as representative of Merton’s Reward Gold Mining Company Ltd when the company resigned from the Chamber of Mines in April 1908.\footnote{The April notice probably means that Jones gave notification in March. \textit{JCMWA}, vol 7, pt 3, April 1908, p 109} There is very little information about either the man or the mine in this period. No background has been established for him as William Jones is too commonplace a name to trace effectively.\footnote{For instance, the William Samson Jones named as manager of Merton’s Reward in the Warden’s Court in March 1908 may or may not be the same person as the William Samuel Jones who managed the Augusta gold mine at Laverton from November 1912 to June 1914. Warden’s Court – Evidence Books: Mt Malcolm, Cons 1456 Item 4. Augusta Gold Mining Company NL, Companies Office Registered Files, AN193/3 Acc 1370.} Although lack of evidence hinders assessment of Jones’ brief sojourn as manager of Merton’s Reward, a sense of thoroughness and honesty pervades the limited existent reporting. His sole Mine Manager’s report contained more information pertinent to an assessment of the mine than most of his predecessors’ reports.
As for the mine, the 1907 Composite mine plans and Longitudinal Section (Merton’s Reward 14/290, 15/290 and 3/290, DMP) are the most recent plans surviving from its working life; the 1907 Annual Report was the last issued by the company. For 1907 the quarterly employment figures for the Mertondale mining centre fluctuated from 98 men in the March quarter to 57 men in September before increasing temporarily to 65 men in the December quarter, only to drop sharply again to 38 men in the March 1908 quarter.\(^{617}\) The monthly production figures for Merton’s Reward indicate that, from June 1907 onwards, the mine was being high-graded. The amount of ore milled per month dropped from 2-3,000 tons to less than 800 tons but the average grade of the gold won each month increased from 4-6 dwt/ton prior to June to 11.5\(-16.5\) dwt/ton from June to February 1908 inclusive.\(^{618}\) The grades were good but the small amount of gold produced could not cover mine expenses for long.

In March 1908 crushing was suspended. Jones appeared before the Warden’s Court requesting six months’ exemption on the company leases. He stated that all available supplies of payable ore were exhausted; the position was ‘very unsatisfactory’. The directors in London had been advised of the situation; they required time in which to consider their future policy. In the meantime the company had no objection to granting tributes ‘in any part of the mine which would not endanger the main or other shafts or any of the workings’.\(^ {619}\) When production resumed in June it was at the behest of the Merton’s Reward Tributing Syndicate, headed by John Eaton Reid.\(^ {620}\)

For most of the smaller mines in the outback tributes were let when the companies owning them needed a breathing space in which to assess their remaining options without running the risk of forfeiting the leases.\(^ {621}\) Frequently there were no options

\(^ {617}\) Production from other leases in the area for this period was minimal therefore most of the men listed in the employment statistics must have been working at Merton’s Reward. \textit{GGWA}, MS No 90 - 105, June 1907 - Sept 1908

\(^ {618}\) Grades were calculated from monthly production statistics in the \textit{GGWA}, 1907-1908, where tonnage was reported as long tons but is believed to be in short tons. Hence grades are believed to be in dwt per short ton. Total gold is the sum of gold produced by milling, sands and slimes treatment each month.

\(^ {619}\) Warden’s Court - Evidence Books: Mt Malcolm, Cons 1456 Item 4

\(^ {620}\) In February 1909 John Eaton Reid, manager for the tributers, stated that they had worked the leases for the ‘past eight months’, which would imply commencement in May 1908. GML 638\(^ {4}\) Merton’s Reward North, Cons 964, Item 1507/99, pp 107A-113, SROWA. \textit{GGWA}, No 48 MS No 105, 1 September 1908, p 2438

\(^ {621}\) Although Bertola argues that the introduction of tributing in company mines did not represent a dying industry or an attempt to salvage the last remnant pockets of ore in mines whose reserves were
left; gold production under tribute was the last gasp of a dying mine in the prevailing economic conditions.

The production records show that the amount of ore treated increased from 335 tons in June 1908 to a peak of 968 tons in November before falling again from 632 tons in December to just 100 tons in February 1909. The grades achieved were notably lower than in the last six months of Jones’ management, ranging from 9.23 dwt/ton in August 1908 to a low of 4.96 dwt/ton in December 1908. But the 100 tons of ore treated in February 1909 yielded 14.74 dwt/ton and 90 tons treated the following month 24.2 dwt/ton. For those two months the tributers were carefully picking high-grade ore.

In February 1909 Reid applied for three months’ exemption on the seven GMLs which then constituted the Merton’s Reward Gold Mining Company’s property on the grounds that there was insufficient ground opened up to employ the full number of men required under mining regulations; the syndicate needed to prospect new ground.

From his description of completed work it is clear that the tributers were working in the northernmost part of the mine. Confirmation is provided by comparing the 1907 Composite Plan with the 1985 resurveying of accessible mine workings by Eltin Mining Pty Ltd that shows additional workings to the north. On the 110 ft level (Level 1) a branch off the North Drive was extended northwards approximately 230 ft before turning WNW (bearing 297º) for roughly 50 ft. Similarly on the 140 ft level (Level 2) the drive was extended northwards and then turned on the same bearing for a distance of roughly 140 ft. From these drives stoping dipped approximately 45º on bearings varying from 005º-030º. The position and dip of the workings strongly

exhausted but rather a cost saving response to falling profits, his argument does not apply as well to the smaller mines in outback centres as to the large Kalgoorlie-Boulder mines ten years later. P. Bertola, ‘Tributers and gold mining in Boulder, 1918-1934’, Labour History, vol 65, Nov 1993, pp 54-55

622 GGWA, June 1908 – February 1909
623 The grades were calculated from the production figures in the GGWA, using the same method as in Table 5.8.
624 The company leases at the time were GMLs 638C, 644C, 645C, 648C, 653C, 1146C and 1178C. Seven leases would require 14 men working full-time. GML 638C, Item 1507/99, pp 107A-113
625 In 1985, Hunter Resources commissioned Eltin Mining Pty Ltd to resurvey and sample the Merton’s Reward workings. However at the time Hunter did not hold leases covering the southern part of the mine. Consequently the Eltin plan extends from just north of the No 2 Open Cut northwards. The Composite Level plan and Longitudinal Projection produced by Eltin are not included in this thesis.
suggests the presence of another payable E-W vein, somewhat more steeply dipping than the ones worked close to the surface further south.

These workings illustrate yet again the geological problem that beset the mine throughout its working life, and which continues to plague exploration geologists to this day – the orientation of the higher value ore zones within the deposit. Fred Merton had won his gold from the shallow-dipping E-W veins; Judd had identified as his target the north-dipping chutes of ore within the more steeply-dipping N-S veins. The tributers worked stopes on a vein more closely aligned with the E-W ones.

Reid was granted three months’ partial exemption on the leases on condition that ten men be employed at the mine during its term. The March quarterly employment figures showed five men employed above ground and five below at Mertondale. However, after March 1909 progress at the mine became less clear as the Government Gazette ceased publication of the monthly gold returns and quarterly employment figures. The annual production figures for 1909 and 1910 were low at, respectively, 2,767 and 3,677.50 tons of ore treated for 2,452.13 and 2,136.09 fine oz of gold.

The true believer

On 3 October 1910 the company resolved to wind up voluntarily. A liquidator was appointed. The last published accounts, for the year ended 30 June 1908, showed an increase in the debit balance to £68,140. But how bad was this result? How did the management of the company’s finances compare with others of the time?

626 The drill-hole plans from the 1980s and early 1990s are revelatory. The rule for exploration drill-holes is to direct them to intersect the target at right-angles. Ideally if the target is a vein dipping at, for example, 45º to the north, the drill-holes would be angled at 45º to the south. (Realistically the holes would be drilled at a steeper angle as vertical or near vertical holes are easier to handle and thus cheaper.) At Merton’s Reward drill-holes were variously angled to the south, to the west, to the east and to the north (one hole). There were even some vertical holes. There is no clearer indication that the ore deposit was not conducive to simple modeling.

627 Reid also reported 500 tons of stone crushed from the ‘Devil’s Chamber’. This is the only reference to what was presumably a large open stope. GML 638, Item 1507/99, pp 107A-113

628 After March 1909 the only published returns were in the WA Mines Dept Annual Reports.

629 The liquidator was E. Protheroe Jones with whom Kaufman sat on several boards of directors. Skinner, The Mining Manual, 1909, p 85

630 Ibid. The entry for Merton’s Reward Gold Mining Company Ltd gives only a brief summary of the final accounts.
The vast majority of Western Australian mining companies never paid their shareholders a dividend. In the period 1903-1906 just 31 companies, four of which worked mines in the Mt Margaret goldfield, paid at least one dividend greater than £1,000; Merton’s Reward Gold Mining Company was not one of them.\(^\text{633}\) Its shareholders were not going to get their money back unless the company sold its assets. It seems possible that parts of the plant were sold but, by 1910, the principal assets – the mine leases, valued at £202,258 17s 10d on the 1907 balance sheet – were unmarketable.\(^\text{634}\)

On the other hand, having paid the last call on the contributing shares in the 1907 financial year, the shareholders were not asked for additional funding. For several mines, including the Zoroastrian and the Bellevue, voluntary liquidation and company reconstruction were used as a means of raising additional capital to fund continuing development.\(^\text{635}\) Merton’s Reward was never in debt; each year’s balance sheet showed cash still available.\(^\text{636}\) Some companies, including the East Murchison United Ltd, took out bank loans and suffered the ignominy of foreclosure and forced sale of their assets.\(^\text{637}\) Merton’s Reward Gold Mining Company Ltd ran out of gold reserves exploitable by its operations before it ran out of money.

Of the seven remaining leases, three - GMLs 645\(^\text{C}\), 1146\(^\text{C}\) and 1178\(^\text{C}\) - were declared forfeit for non-payment of rent on 29 June 1911.\(^\text{638}\) The last four leases were transferred to Charles Kaufman.\(^\text{639}\) Of these, GMLs 648\(^\text{C}\) and 653\(^\text{C}\) were forfeited in July 1912 but Kaufman retained Merton’s original leases GMLs 638\(^\text{C}\) and 644\(^\text{C}\) until

\(\text{\textsuperscript{633}}\) The Ida H, Lancefield, Sons of Gwalia and Westralia Mt Morgans gold mines. Hartley, ‘The 1904 watershed in Bewick Moreing’s Western Australian gold mining activities’, pp 219-220

\(\text{\textsuperscript{634}}\) MRGM Co Ltd, AR 1907, MRSEL, p 4


\(\text{\textsuperscript{636}}\) For 1907, the last year that the full company accounts are available, the amount stood at £27,703. MRGM Co Ltd, AR 1903-1907, MRSEL


\(\text{\textsuperscript{638}}\) \textit{GGWA}, 29 June 1911, p 2416. These leases were the westernmost; the workings never extended onto them.

\(\text{\textsuperscript{639}}\) Register of Gold Mining Leases (GMLs), Mt Malcolm District, Cons 4451, Item 076, SROWA
his death in 1913. The last tribute agreement was registered in June 1912 to expire in May 1914. The original leases finally lapsed in June 1915.

The fact that Kaufman held on to the leases until his death is possibly the most surprising aspect of the Merton’s Reward story. Time and again the man was painted as a prize opportunist, only interested in the short-term gain. Is it possible that he truly believed in the long-term potential of Fred Merton’s find, despite the company’s substantial losses?

What is obvious is that Kaufman perceived Merton’s Reward as his mine. Although worked by a staff of professionals and financed by other people’s money, his actions conveyed an attitude of ‘mine as personal fiefdom’ almost as great as Merton’s. But attitude could not overcome the intrinsic differences between the two periods of mine ownership. Merton was the sole owner and the hands-on manager, throwing himself into the day-to-day workings alongside his employees, whereas Kaufman was always at arm’s length and responsible to his investors. And the geology favoured Merton. The high gold grades in the near-surface supergene ore liberated him to do as he pleased; the more difficult ore bodies at depth enforced greater discipline.

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640 *GGWA*, 2 July 1912, p 2412. The fate of the Reward Claim RC1C is unknown but Kaufman probably retained it as well.
641 Register of GMLs, Mt Malcolm District, Cons 4451, Item 076
642 John Sutherland, general manager of the Golden Horse-shoe Mine, acted as agent for Kaufman in the last years. GML 638C, Item 1507/99, pp 107A-113
Chapter 6
Conclusion

This study of Merton’s Reward gold mine in the period 1899 to 1911 presents an extraordinary episode in the history of Western Australia’s first gold boom. The combination of freakish surface geology and an exceptional prospector prepared to develop his mine as sole owner led to a bonanza which triggered an intense and persistent mythology.

The prime trigger of the myth was the disputed ownership of the leases. Callagher’s claim to one half interest in the property succeeded before a jury in the Supreme Court but was overturned on appeal. However contemporary newspaper reports slanted the case in favour of Callagher as his evidence was presented first in court and was used to set the scene; Merton’s side of the story got short shrift. Inevitably this biased reporting fuelled the cheated mate myth.

Other aspects of the myth, such as the spectacular gold production in the first year, are demonstrably the result of misinterpretation of previously published results or insufficient information. However some mythological strands are less easily undermined. There is evidence in the mine’s production statistics of manipulation of the results; this may have constituted fraud in the lead-up to the sale of the mine to the English company Merton’s Reward Gold Mining Company Ltd.

Typical prospector myths usually involve the success, or tragic failure, of larger-than-life characters: Fred Merton was no exception. Mythology apart, the story of Merton’s Reward would still be extraordinary. Fred Merton developed his find into a major mine as a one-man show. The gold production records of the Mertondale leases demonstrate his acumen as a prospector; Merton’s leases produced roughly 60,000 oz of gold whereas all the other leases in the area produced about 400 oz in total. Some of his decisions regarding the development of the mine may not have been best practice but were in line with other mines in the area at the time, including the Sons of
Gwalia. \(^{643}\) Merton purchased and constructed his own battery; the excellent figures for recovery of gold through the mill are testament to his ‘great mechanical ability and … metallurgical experience’. \(^{644}\) His mining and milling costs were very low despite paying higher wages than any other mine in the field and the mine’s safety record was outstanding.

Merton was criticised by some of his contemporaries for running the mine at his own convenience but there is scant evidence to support the claims apart from the reduced operations during his periodic absences in the eastern states. However as sole owner, he was perfectly at liberty to do as he pleased provided that he respected government rules and regulations. This situation, which I have termed ‘mine as personal fiefdom’, was highly unusual – possibly unique - for a mine of the size of Merton’s Reward.

Merton’s shrewd recognition of the limitations of his capabilities in the development of an underground mine exploiting primary sulphide ore combined with personal considerations to drive the decision to sell the mine. His timing was impeccable; the mine had excellent production records, low costs and visible gold showing in workings which were clearly not mined out. The sale was essentially a two-part process – prospector to entrepreneur, entrepreneur to company – in which Kaufman and Merton both took shares in the company Merton’s Reward Gold Mining Company Ltd. However, there was demonstrably an arrangement in place by which the sale price of the mine was artificially inflated. Merton received far fewer than the 100,000 £1 shares that he was believed to have collected although he may have been recompensed for the shortfall.

Merton’s Reward Gold Mining Company Ltd was incorporated in London in 1902. It closely conformed to Wilkins’ model of a free-standing British mining company with a Head Office in London and a board of directors which was largely ornamental. With the potential to raise £90,000 in calls on its contributing shares, the company appeared guilty of overdevelopment – a trait common amongst British mining companies in Western Australia. But in this case the furious development was driven by the need to


\(^{644}\) G.F. Young, \textit{Under the Coolibah Tree}, Andrew Melrose, London, 1953, p 203
establish sufficient ore reserves to facilitate listing of the company’s shares on the London Stock Exchange.

Complicating matters further was the unforeseen turnover in mine managers. With five mine managers in six years, it was difficult for anyone to come to grips with the main problem facing management at the mine – the crucial importance of an understanding of the mine geology.

Merton benefited from the fortuitous combination of surface geology and topography which distinguished Merton’s Reward from other gold deposits of the region. At first five of the shallow north-dipping E-W striking veins - four of them on Merton’s property - were encountered on the southern flanks of a gently-sloping hill that cut through them at a low angle exposing outcrops of considerable width and lateral extent. Supergene enrichment had concentrated the gold in the veins, which were subsequently eroded. The resultant gold-bearing quartz-ironstone rubble gently cascaded down the hillside providing a hill of gold whose riches could be raked up and shovelled into bags. Later the steeply dipping N-S striking veins were identified, promising a large continuous source of ore below ground.

The E-W veins which made Merton’s fortune and were the basis of the mine’s first heyday were found to extend laterally no further than 160 ft and no more than 250-300 ft down dip. Although ‘phenomenally rich’ in places near the surface, the veins became poorer with depth and pinched out.645 Of the two N-S veins exploited in the mine the company drove on the West Vein for over 400 ft at the 210 ft (vertical) level; gold values exceeded 2 oz/ton for at least half that distance. Higher gold values were obtained over a shorter distance on the 90 ft level. On the East Reef, distances driven were shorter but on the 110 ft level the vein was stoped for approximately 250 ft. Virtually no payable ore was found anywhere in the mine below the 210 ft level.

The mine’s second heyday was in the period 1905-1906 when English-trained mine manager Henry Judd was able to capitalise on the preparatory work of his predecessors

and the cyanide plant constructed by Bewick Moreing. During this time the company obtained listing on the London Stock Exchange and made a comfortable profit on its operations. But with decreasing ore grades at depth it could not last. Tributers were brought in to work the mine until the company resolved to wind up voluntarily in 1910. Although the company never paid a dividend and the shareholders were extremely unlikely to have received any returns on investment from sales of assets, the company’s financial record was better than many other free-standing British mining companies of the time which touched their investors time and again for additional funding in the chase for elusive gold.

A rigorous assessment of the official gold returns in comparison with production records reported in other sources (see Appendix) shows that total tonnage of ore has been overstated by approximately 6,500 tons due to the company’s consistent, but unrecognized, use of the American short ton (2000 lb) rather than the Imperial ton, or long ton (2240 lb). Whereas Merton won 19,812.19 fine oz of gold from 11,396.5 long tons of ore at a grade of 1.74 fine oz/ton in his slightly less than three year tenure of Merton’s Reward, the mine yielded 37,373.27 fine oz from 68,983.50 long tons at a grade of 0.54 fine oz/ton during its nine year ownership by the company. The production statistics clearly mirror the history of the mine.

After the company was wound up the gold mining leases covering the mining operations were transferred to Charles Kaufman, who held them until his death. This seems such an unlikely move for a man widely considered to be responsible for some of the worst excesses of mining industry manipulation in the 1890s that it brings into question our perception of the man and his motivation. Kaufman, like Merton, was a talented, but enigmatic mining entrepreneur, who considered the mine as much a personal fiefdom as Merton did. The most important shaper of the mine’s history was not, however, either of these individuals nor was it the mine’s administrative or technological structures but was rather the complex geology of the mine itself.
APPENDIX

Quantifying the gold from the mine

Part 1 – general notes on gold production records, yields and reliability

It is said that the reserves of a mine can never be accurately known until mining has been completed. It is debatable that the amount of gold that has come out of a mine can ever be accurately known. Official gold production records purport to quantify the gold yield from individual mines but are they reliable?

The regulations

Gold production records have been assiduously maintained by the Department of Mines for over one hundred years. Even before the establishment of the department, gold returns were submitted to the government through the wardens of the goldfields. Under the Goldfields Act as amended to 12 July 1893 every lease-holder was obliged to submit a quarterly statement of the ‘working and proceeds’ of the mine to the Warden of the district in which the mine was located no later than seven days after the end of the quarter.\footnote{The Goldfields Act, with regulations for the management of the Goldfields of the Colony; amended to 12 July 1893. Government Printer, Perth, p 59} However the designated form requested only the amount of gold produced, its grade and value. The major revision of the Act which culminated in the Goldfields Act 1895 changed this regulation by allowing fourteen days after the end of the quarter for submission and enlarging the form (Schedule 22) to include the number of men employed, the work done in sinking and driving, and the amount of ore treated as well as the standard name, number and acreage of lease or leases, and the amount, grade and value of the gold produced. Non-compliance could incur a fine not exceeding £10 or forfeiture of the lease.\footnote{The Goldfields Act 1895, with regulations for the management of the Goldfields of the Colony. Government Printer, Perth, p 85} There was also a requirement for battery managers to submit quarterly returns of all ore treated at their works.

The Goldfields Act 1895 as amended in July 1897, directed lease-holders to forward the results of any crushing or alternative method of treating gold ore to the Statist at the Department of Mines within 14 days of the results being known. The information
required, apart from name, number and location of lease by goldfield and district, was only quantity of ore treated, yield of gold and value of gold per ounce. No details of the treatment were required as this information was included in the quarterly statements, which were modified to divide the production into three treatment streams – ore milled, concentrates and tailings. The amended forms were still to be sent to the Warden.

Over time the reporting requirements underwent minor changes to make them more helpful for both mine and battery managers and the staff of the Department of Mines. In December 1898 monthly reporting was introduced in place of both intermittent and quarterly reporting as outlined above. The monthly forms were similar in content to the former quarterly ones. The new regulations took effect from 1 January 1899; from then on the gold returns for each month were to be submitted by the seventh day of the following month. The forms were modified in November 1899 to give more detail of the treatment plant used (eg number of stamps, number of vats etc).

In order to facilitate compliance with the regulations and minimize costs, during the last week of the month the Mining Registrar of each district forwarded to the holders of every lease, registered claim or public battery in the district two copies of the relevant form (Schedule 11 or 22) with a stamped addressed envelope for return to the Mining Registrar. The Mining Registrar would collate all the returns for his district for the month and forward them to the Statist in Perth, who would then arrange publication of all gold production figures in the Government Gazette. The lag-time between month of production and publication expanded to about three months in the early 1900s.

Until 1904 the gold production figures were quoted in tons of ore treated and ounces of gold therefrom. There appeared to be no need to specify Imperial measure; it was taken for granted that long tons would be used for recording the weight of ore treated. The gold produced was quoted as bullion, that is as impure gold, smelted but not refined. The value of the gold in pounds, shillings and pence gave its purity. From

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648 Grade was dropped from the form. The Goldfields Act 1895, with regulations for the management of the Goldfields of the Colony; amended to 1 November 1897. Government Printer, Perth, p 88
649 For example, adding the nature of treatment to the crushing returns. Government Gazette of WA [GGWA], 4 March 1898, p 543.
January 1904 fine ounces were introduced as the unit of measurement of the gold; this change obviated the need to quote the mint value of the gold.

Instead the new forms provided for inclusion of the value per ton of ore treated. This could be taken to mean simply the head grade of the ore going into the mill but in practice looks to have been more complicated than that. The increasing complexity of metallurgical processing meant that one month’s gold production might include gold won from newly mined ore, from retreatment of the previous month’s (or earlier) tailings and from slimes or slags which had been stockpiled for even longer. A common interpretation of the ‘value per ton of ore treated’ appears to have been to add all the amounts of gold won from the separate processing streams, which were reported separately, then divide by the tons of ore milled and convert the result from ounces to shillings. This value does not represent the grade of the ore.650

The *Government Gazette* appears to have ceased publication of gold returns after March 1909. Annual production figures were still available in the Mines Department and were published in the Department’s annual reports.

**The reliability of the published returns**

There was, quite patently, one huge flaw in this system of reporting – it was totally reliant on the honesty of mine and treatment plant managers and their workers. The amount of gold produced would not be in question as the gold would have been lodged at the bank for escort to Perth, but it could easily have been falsely inflated by the addition of gold from a different source during processing. The tonnage of ore from which the gold had been obtained may or may not have been accurately declared in the gold return submitted.

One frustrating problem with the accuracy of tonnage figures lies in the use of short tons by some mines. In late 1903 a circular was sent to all managers of gold mining

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650 For example, the production figures for Merton’s Reward for October 1904 were 893 tons of ore treated for 569 fine oz gold and 1357 tons of sands (tailings) for 365 fine oz gold. The value of ore treated was 88.17 shillings.

\[
\frac{(569 + 365)}{893} = 1.046 \text{ fine oz per ton} \\
1.046 \times 84 = 87.86 \text{ shillings.}
\]

Note that the tonnage of sands treated was greater than that of ore! *GGWA*, 4 January 1905, No 1, p 8
companies and lease holders informing them of the change in January 1904 to fine ounces for reporting of gold produced and stressing that ‘tonnage should be returned in standard tons of 2240 lbs, and not in short tons of 2000 lbs’.\footnote{Circular reprinted in \textit{Journal of the Chamber of Mines, Western Australia [JCMWA]}, Vol 2, pt 9, October 1903, p 315} However, some mines chose to ignore this directive and continued to report in short tons on the official forms. The figures were then unwittingly transferred into the official records as if they were in long tons. Obviously there is no way of identifying those gold records in which this occurred unless a separate source of production figures can be found. Company reporting usually included annual production figures for the mine but is of no use for comparative purposes unless the type of tons (long or short) was specified.

Another source of production figures appeared in early 1902 when the Chamber of Mines began publishing the gold returns for its members’ mines. It recognized the problem with long and short tons but eventually acknowledged the intractability of some mine managements by printing tables which allowed for submissions in either type of ton. Hence for the 80-100 mines which contributed their production records to the Chamber it can be established in which type of ton they were reporting at a given time; comparison of the monthly figures with those published in the \textit{Government Gazette} will show whether the official gold production records were correctly or incorrectly reported as long tons. Unfortunately Merton’s Reward gold mine was one of the offenders, using short tons from 1902 until at least 1906 when it ceased publishing its results in the Chamber’s \textit{Journal}, so the official gold production records for this period are incorrect.

It is widely considered by the mining fraternity that the official gold production records of the Mines Department under-estimate the amount of gold which came out of every mining property in the state, sometimes by quite a large margin. This belief is based on the observed discrepancy between the size of the holes in the ground and the tonnage of ore supposedly produced from them. The small producer Enniskillen/Lady Harriet/Mary Mac just south of Laverton is a good example. Official production records indicate 43,860.1 tons of ore treated for 10,502.27 fine oz gold; the size and type of workings in the hillside at Enniskillen suggest the tonnage of ore extracted was
In this instance, an independent report on the mine accessed in the University of Melbourne Archives quoted historical production of 60,000 tons of ore at 9 dwt per ton, with ‘a considerable tonnage’ treated by earlier lease-holders ‘of which no record was obtainable’. Oddly, the earlier lease-holders owned the leases for which the official gold production of 43,860.1 tons was recorded. 43,860.1 plus 60,000 tons comes very close to the estimated 100,000-ton hole in the hillside. Given the massive identity crisis with lease and mine names in the South Laverton area it seems likely that in this case production has been wrongly attributed to another lease at some stage.

The Government was well aware that not all gold was reported. In discussing the difference between the returns of gold as reported to the Mines Department and the ones compiled by H.M. Customs, the Government Gazette suggested that the discrepancy in the 1890s was due to the fact that the latter institution had a longer history of recording gold produced; the Mines Department’s collection of returns was a relatively recent innovation. As a result, up until about 1896, no sound basis for a comparison existed; the discrepancy was subsequently assumed to be due to the fact that ‘the whole of the gold won from the soil is not reported to the Department’.

The reason for this could quite simply be that some, probably small, producers were failing to file their gold returns.

Theft was, obviously, a problem for many of the mines but large quantities of stolen gold could not easily be sold without attribution to a source. That obstacle could be overcome by using a legitimate GML as a surrogate source for the stolen gold.

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652 Peta Chappell, ‘A historical report on the Mary Mac gold mine (both of them) and associated areas’, unpublished report for Hill Minerals NL, 1989. The area had a massive identity crisis with the names of GMLs changing frequently or the same name being used on different areas of ground.


654 GGWA, 29 December 1899, p 4323. Gold could only be sold to a licensed or registered buyer, usually the banks, the mint or recognized dealers. From the comments above, it would appear that buyers were reporting more gold bought each year than was reported to the Mines Department as annual production.

655 In the 1970s and 80s a favoured method of laundering the proceeds of organized crime involved purchasing gold from the Mint with ‘hot’ cash, melting it down and rough casting it in sand and/or crushed quartz, mixing it with ore from a small mine on a legitimate GML, having the ore processed and selling the gold produced back to the Mint.
Despite their questionable reliability, the official gold production figures, as reported by the Department of Mines and the Government Gazette, provide the best record of the output of a mine or lease; frequently they are the only record of a particular mine’s production. Faith has to be maintained that the majority of lease-holders were basically honest and that the records, whilst never likely to be one hundred percent accurate, are not too removed from reality.

**Part 2 – Merton’s Reward gold mine**

The official gold production records as reported each month in the Government Gazette for Merton’s Reward from March 1899 to February 1902 - the period of Fred Merton’s ownership of the leases - have been presented as Table 3.3. Total gold production was 21,842.85 oz gross weight from 11,396.5 tons of ore. The only full production figures available for comparison are those provided by Merton to the Warden’s Court in late September 1901; these were 22,450 oz from 11,200 tons in total. The discrepancy in the tonnage might be due to the brief use by Merton of short tons for reporting as specified by the Malcolm Chronicle in June 1900. The approximately 600 oz difference between Merton’s figures and the official records cannot be accounted for, although it was possibly the result of over-zealous rounding up of figures by Merton in his submission to the Warden’s Court. In my view the official figures for this period should be accepted as the more reliable.

With the introduction in January 1904 of fine ounces as the unit of measurement of the gold, all previous annual totals of gold produced for individual mines were converted from bullion to fine ounces. For Merton’s Reward total gold production from March 1899 to February 1902 became 19,812.19 fine oz from 11,396.5 tons of ore.

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656 GML 638C Merton’s Reward North, Cons 964, Item 1507/99, SROWA
657 *Malcolm Chronicle [MC]*, 9 June 1900, p 2. If the official tonnages for May and June 1900 are assumed to be in short tons and the conversion to long tons is made, the total tonnage would reduce to 11,278.64 long tons, within an acceptable margin of error.
658 I tried rounding up each month’s production to the next hundred ounces of gold and arrived at a total of 22,400 oz.
659 Production Record Sheets for Mertondale Mining Centre, Statistics Branch, DMP
Ownership of the leases passed to Merton’s Reward Gold Mining Company Ltd in March 1902. From that date to March 1906 both the Government Gazette and the Journal of the Chamber of Mines of WA published production figures for the mine. As can be seen from the figures in the tables below in all but seven months the tonnages submitted to the Department of Mines and to the Chamber were identical despite the former purporting to be measured in long tons and the latter in short tons. For three of those months the mine was managed by Bewick Moreing and Company Ltd, who correctly submitted production figures to the Mines Department in long tons. Jones, in his Mine Manager’s Report submitted just three weeks after he had taken over from Judd in 1907, specified the use of short tons, which indicates that Judd had also used short tons. 660 Given that Kaufman was American it is highly likely that Merton’s Reward Gold Mining Company Ltd used short tons for its production figures throughout its tenure of the mine.

The table of production figures which follows is split into sections reflecting changes in the reporting standards. In each section the column headed Tonnage on the extreme right shows what I consider to be the most reliable estimate of ore treated in long tons.

<table>
<thead>
<tr>
<th>Date</th>
<th>Production (GGWA)</th>
<th>Production (JCMWA)</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ore treated tons</td>
<td>Gold therefrom oz</td>
<td>Ore treated tons</td>
</tr>
<tr>
<td>March 1902</td>
<td>251.05</td>
<td>not reported</td>
<td>990</td>
</tr>
<tr>
<td>July 1902</td>
<td>990</td>
<td>994.9</td>
<td>882</td>
</tr>
<tr>
<td>August 1902</td>
<td>882</td>
<td>826.5</td>
<td>806</td>
</tr>
<tr>
<td>September 1902</td>
<td>806</td>
<td>1494.3</td>
<td></td>
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<tr>
<td>Total</td>
<td>2678</td>
<td>3566.75</td>
<td>2678</td>
</tr>
</tbody>
</table>

Notes: The gold recorded for March was obtained from the clean-up of the plates. The type of tons was not yet specified in the production tables in JCMWA.

With the conversion from gross weight to fine ounces I estimate that the production figures for 1902 should be 3,108.87 fine oz of gold from 2,391.07 long tons of ore.

By the time Merton’s Reward resumed production in July 1904, the use of fine ounces and long tons was specified for gold returns by the Department of Mines whereas the Chamber of Mines was accommodating both types of tons. Monthly production figures from both sources for the period July 1904 to March 1906 are as follows:

660 MRGM Co Ltd, 5th Annual Report to end June 1907, MRSEL, p 6
Notes: Bewick Moreing wrongly reported July 1904 production to the Mines Department in short tons. The August figures in GGWA were shown as 938 long tons (which equals 1050 short tons) less 61 long tons overstated in July. The corrections are made in the Tonnage column.

The discrepancies in tonnage in January and December 1905 and January – February 1906 cannot be accounted for. Similarly the differences in gold values submitted in some months are inexplicable, although for February 1905 the Chamber commented that the returns were made in gross weight of bullion. In my view the official figures for the amount of gold won should be accepted as the most reliable, thus production figures for the period July 1904 to March 1906 should be 19,821.32 fine oz won from 37,644 long tons of ore.

From April 1906 onwards the company did not submit its production figures to the Chamber of Mines but continued submitting incorrect figures for tons of ore treated in its gold returns to the Mines Department. The Merton’s Reward Tributing Syndicate assumed responsibility for gold returns in June 1908. Since there is no other

<table>
<thead>
<tr>
<th>Date</th>
<th>Production (GGWA)</th>
<th>Production (JCMWA)</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ore treated</td>
<td>Gold therefrom</td>
<td>Ore treated</td>
</tr>
<tr>
<td></td>
<td>long tons</td>
<td>fine oz</td>
<td>short tons</td>
</tr>
<tr>
<td>July 1904</td>
<td>572</td>
<td>453</td>
<td>572</td>
</tr>
<tr>
<td>August 1904</td>
<td>877</td>
<td>816</td>
<td>1050</td>
</tr>
<tr>
<td>September 1904</td>
<td>970</td>
<td>833</td>
<td>1090</td>
</tr>
<tr>
<td>October 1904</td>
<td>893</td>
<td>934</td>
<td>1000</td>
</tr>
<tr>
<td>November 1904</td>
<td>1063</td>
<td>879</td>
<td>not reported</td>
</tr>
<tr>
<td>December 1904</td>
<td>1093</td>
<td>858</td>
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<td>January 1905</td>
<td>1553</td>
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<tr>
<td>February 1905</td>
<td>1542</td>
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<td>1542</td>
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<tr>
<td>March 1905</td>
<td>1652</td>
<td>1013</td>
<td>1652</td>
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<tr>
<td>April 1905</td>
<td>2589</td>
<td>936.9</td>
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<tr>
<td>May 1905</td>
<td>2651</td>
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<td>June 1905</td>
<td>2759</td>
<td>1232</td>
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<tr>
<td>July 1905</td>
<td>2957</td>
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<td>August 1905</td>
<td>3170</td>
<td>1158.95</td>
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<tr>
<td>September 1905</td>
<td>2900</td>
<td>1036.22</td>
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<td>October 1905</td>
<td>2829</td>
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<td>November 1905</td>
<td>2543</td>
<td>1132.15</td>
<td>2543</td>
</tr>
<tr>
<td>December 1905</td>
<td>2109</td>
<td>972.54</td>
<td>2362</td>
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<tr>
<td>January 1906</td>
<td>2312</td>
<td>844.92</td>
<td>2590</td>
</tr>
<tr>
<td>February 1906</td>
<td>2694</td>
<td>771.24</td>
<td>3017</td>
</tr>
<tr>
<td>March 1906</td>
<td>2033</td>
<td>668.3</td>
<td>2033</td>
</tr>
</tbody>
</table>
information regarding the type of tons used for reporting it has to be assumed that the syndicate were correctly reporting in long tons.661

<table>
<thead>
<tr>
<th>Date</th>
<th>Production (GGWA)</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ore treated tons</td>
<td>Gold therefrom fine oz</td>
</tr>
<tr>
<td>April 1906</td>
<td>1608</td>
<td>342.39</td>
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<td>May 1906</td>
<td>1660</td>
<td>475.4</td>
</tr>
<tr>
<td>June 1906</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 1906</td>
<td></td>
<td>33.58</td>
</tr>
<tr>
<td>August 1906</td>
<td></td>
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<td>September 1906</td>
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<td>123.54</td>
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<td>312.34</td>
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<td>December 1906</td>
<td></td>
<td>231.44</td>
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<td>January 1907</td>
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<td>February 1907</td>
<td></td>
<td></td>
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<tr>
<td>March 1907</td>
<td>2802</td>
<td>793.1</td>
</tr>
<tr>
<td>April 1907</td>
<td>2662</td>
<td>802.9</td>
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<td>May 1907</td>
<td>2982</td>
<td>538.3</td>
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<tr>
<td>June 1907</td>
<td>2147</td>
<td>450.47</td>
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<tr>
<td>July 1907</td>
<td>652</td>
<td>461.14</td>
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<tr>
<td>August 1907</td>
<td>784</td>
<td>552.73</td>
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<tr>
<td>September 1907</td>
<td></td>
<td>797</td>
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<td>October 1907</td>
<td>697</td>
<td>437.23</td>
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<td>November 1907</td>
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<td>615</td>
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<td>December 1907</td>
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<td>568</td>
<td>356.74</td>
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<tr>
<td>February 1908</td>
<td></td>
<td>580</td>
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<td>March 1908</td>
<td>287</td>
<td>236.46</td>
</tr>
<tr>
<td>April 1908</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 1908</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 1908</td>
<td>335</td>
<td>202.46</td>
</tr>
<tr>
<td>July 1908</td>
<td>653</td>
<td>254.55</td>
</tr>
<tr>
<td>August 1908</td>
<td>650</td>
<td>299.92</td>
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<tr>
<td>September 1908</td>
<td></td>
<td>773</td>
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<tr>
<td>October 1908</td>
<td>840</td>
<td>256</td>
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<tr>
<td>November 1908</td>
<td></td>
<td>968</td>
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<tr>
<td>December 1908</td>
<td></td>
<td>632</td>
</tr>
<tr>
<td>January 1909</td>
<td>362</td>
<td>163.85</td>
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<tr>
<td>February 1909</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>March 1909</td>
<td>90</td>
<td>108.9</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td>9774.98</td>
</tr>
</tbody>
</table>

661 In a submission to the Warden’s Court, the syndicate reported tonnage treated under the headings ‘battery’ and ‘cyanide’. The former category was subdivided into ‘mine’ and a word which is illegible, possibly ‘dump’. Total tonnage for the battery was identical to that quoted in *GGWA*. GML 6387, Item 1507/99, p 107
Hence in the period April 1906 to March 1909 the mine produced 9,774.98 fine oz of gold from 22,811.93 long tons of ore.

After March 1909 government publication of gold returns was limited to the annual figures for each mine included in the annual reports of the Mines Department. For April to December 1909 the official figures were 2,105.7 fine oz from 2,215 tons of ore, and for 1910 and 1911 total production was 2,562.4 fine oz from 3,921.5 tons of ore.

The production figures generated by my assessment of the reliability of the official records for Merton’s Reward gold mine are summarized below:

<table>
<thead>
<tr>
<th>For the period:</th>
<th>Ore treated long tons</th>
<th>Gold therefrom fine oz</th>
<th>Average grade fine oz/ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 1899 G February 1902</td>
<td>11,396.50</td>
<td>19,812.19</td>
<td>1.74</td>
</tr>
<tr>
<td>March G December 1902</td>
<td>2,391.07</td>
<td>3,108.87</td>
<td>1.3</td>
</tr>
<tr>
<td>July 1904 G March 1906</td>
<td>37,644</td>
<td>19,821.32</td>
<td>0.53</td>
</tr>
<tr>
<td>April 1906 G March 1909</td>
<td>22,811.93</td>
<td>9,774.98</td>
<td>0.43</td>
</tr>
<tr>
<td>April G December 1909</td>
<td>2,215</td>
<td>2,105.70</td>
<td>0.95</td>
</tr>
<tr>
<td>1910 G 1911</td>
<td>3,921.50</td>
<td>2,562.40</td>
<td>0.65</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>80,380</strong></td>
<td><strong>57,185.46</strong></td>
<td><strong>0.71</strong></td>
</tr>
</tbody>
</table>

These figures give totals for the period 1899 to 1911 of 57,185.46 fine oz of gold won from 80,380 long tons of ore in contrast to official production figures of 57,184.89 fine oz from 86,873 supposed long tons. The difference in the amount of gold is negligible (approximately 0.5 oz, probably attributable to differences in mathematical rounding procedures) but the difference in tonnage of approximately 6,500 tons is significant.
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*Malcolm Chronicle*

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*North Coolgardie Herald*

*The Colonial Goldfields Gazette* (London)

*The New York Times* (New York)

*The Times* (London)
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