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The Intervention That Wasn't: A New Look at the McArthur–ForrestCyanide Patent Conflict in Western Australia[1]

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ABSTRACT *The patented McArthur–Forrest gold extraction process played a significant role in facilitating gold recovery in Western Australia after 1897. The patent-holders failed, however, both to obtain income commensurate with their efforts and to extend their patent rights in Western Australia. This paper revises existing historical accounts of the cyanide royalties dispute in Western Australia in the light of new sources and focuses on industry–state relations and the respective strategic roles that industry and the state played in the resolution of the dispute. The paper also provides a new conclusion to the dispute's resolution in Western Australia.*

Keywords: cyanide process, cyaniding, gold mining, patent litigation, Western Australia.

Introduction

The invention of cyanide gold extraction technology is considered to be 'one of the most important metallurgical discoveries made in the last one hundred and fifty years'.[2] The developers of the process, Scottish chemist John Stewart McArthur and the two Glasgow physician brothers William and Robert Forrest, of the McArthur–Forrest Research Syndicate, found, first, that when potassium cyanide solutions were applied to reduced auriferous ore they selectively dissolved the gold from its matrix and, second, that zinc shavings or zinc threads could precipitate the gold out of the cyanide solution.[3] The syndicate provisionally patented the process in the United Kingdom in October 1887 and obtained full patents for both parts of the process in July 1888. (The two patents, known as McArthur–Forrest Patent B, covering the cyanide extraction process, and McArthur–Forrest Patent C, covering the zinc precipitation process, are, for simplicity's sake referred to in this paper as 'the cyanide patent' and 'the zinc patent', respectively.) In Australian mining centres, the Cassel Gold Extracting Company, the assignees of the McArthur–Forrest Syndicate, applied for and were granted protection of the invention[4] on the basis of the provisional specification alone, which contained only the general claim (known as Claim 1[5]) as to the action of the cyanide solution. The efficiency and simplicity of the process, especially when applied to tailings, slimes and concentrates, led, after initial resistance and technical difficulties,[6] to the rapid diffusion of the process throughout Australian mining centres. Once modified further, and together with other processes, cyanide extraction of gold increased recovery rates and reduced the cost of gold production significantly, especially from refractory ores such as the sulpho-telluride ores of the Kalgoorlie mines, and consequently increased the payability of low grade gold deposits.[7]

Major work on the diffusion of cyanidation in Australia has been produced by

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Lougheed, Todd and Hartley. Lougheed's pioneering studies[8] include an investigation of litigation over the patent rights in Australia. Todd explored the transfer of the process Australia-wide in the context of the colonies' regional 'cultural, institutional and resource differences',[9] while Hartley examined the diffusion of the technology in Australia, litigation over the patents generally and, in some depth, the Western Australian chapter of the conflict, as part of his investigation of metallurgical practice in Kalgoorlie between 1895 and 1915.[10] Notwithstanding this work, much remains unknown about the Western Australian struggle over the McArthur–Forrest cyanide patents.[11] Lougheed did not examine the Western Australian story in detail, while Todd's brief account incorrectly concluded that the state's legislative intervention in the dispute in the form of the *Patent Act Amendment Act* of 1900 saved Western Australian mining companies from having to pay royalties to the patent-holders.[12] Hartley pointed out that, in fact, the *Patent Act Amendment Act* of 1900 was never 'enacted', but he incorrectly inferred that this was so due to the ruling of the Privy Council in the test case mounted by the patent-holders (see below).[13] Hartley's account of the patent-holders' endeavour to obtain royalties from cyanidation in Western Australia ends with the Privy Council's December 1900 ruling that the 1895 amendment of the cyanide patent was invalid.[14] Yet the patent-holders applied to amend their cyanide patent in the wake of the Privy Council ruling, although they did not persist with this bid. According to Lougheed, the reason they did not persist was that their patent protection was due to expire in 1901 under normal circumstances.[15] According to the testimony of the patent-holders themselves, however, it appears that this was only part of the reason. They ascribed their failure to continue amending and extending the cyanide patent in the wake of the Privy Council's ruling not so much to the ruling as to the hostility revealed in the colony's passing of the *Patent Act Amendment Act*, considering which 'it would have been foolish for the company to continue to spend money with the object of obtaining an extension of their patent'.[16]

Clearly, the historiography of the defeat of the McArthur–Forrest patent-holders in the Colony of Western Australia remains problematic and warrants a re-examination. Some of the questions existing accounts leave unanswered concern reasons for and effects from the state's extraordinary step of intervening by way of retrospective legislation, in the form of the *Patent Act Amendment Bill*, on behalf of one faction in a dispute between two factions of capital. A more fundamental question relates to the degree of autonomy the state enjoyed in adopting its position on the cyanide dispute.

This paper pursues these questions by re-examining the dispute focusing on the strategic roles which the state and the gold mining industry played in the cyanide royalties dispute. By examining new sources, it also provides a new conclusion to this intriguing chapter in Western Australia's early mining history.

Legal Challenges Outside Western Australia

There were many challenges to the McArthur–Forrest patent rights in major mining centres around the world. Some of these Cassel lost, some it won. The full history of this litigation will not be repeated here as Lougheed, Hartley and Todd have described it in some detail. For the purposes of this paper, it is only necessary to note that legal proceedings which Cassel instituted in the United Kingdom in December 1892 against the Cyanide Gold Recovery Syndicate (Ltd) for patent infringement [the 'Pielsticker'[17] case] resulted, on appeal, in a finding by the English Court of Appeal of both novelty and utility in the McArthur–Forrest discovery. Nevertheless, the appeal was dismissed because of weakness in the patent specification, which included both Claim 1, the Provisional patent's general claim about the cyanide action, and Claim 2, referring to use

of dilute cyanide solution.[18] Consistent with British practice of the time, Cassel was allowed to amend the patent specification, which it did in the United Kingdom on 20 August 1895. (In 1896, by contrast, the Transvaal Supreme Court cancelled the patent owned by the Cassel subsidiary, the African Gold Recovery Company, by a majority of two to one on the grounds of lack of novelty and anticipation.[19] The decision was unrelated to any weaknesses in the specifications.[20] There was no appeal from the South African decision, and South African gold mining companies used cyanidation free of charge in the wake of the decision.[21])

Following the 1894 Pielsticker judgement, it was imperative for the patent-holders to amend registrations outside the United Kingdom.[22] In the Australian colonies, the patents had been assigned in 1892 to the Australian Gold Recovery Company (hereafter AGRC), a UK-based company in which Cassel held a one-third share and on the Board of which it had two representatives, including John McArthur himself.[23] Awareness of the importance of the cyanide process to the mining industry was by then so high in the Eastern colonies of Australia and New Zealand that the AGRC's requests to amend its specifications met fierce opposition in an attempt to void the patent. Following a protracted legal fight, which the AGRC won, the Victorian Government purchased the patent in early 1900 for £20,000,[24] as the New Zealand Government had done 3 years earlier, for £15,000.[25] Consequently, Victorian mine owners had to pay a small royalty to the government by way of repayment until 1905. In South Australia, the patent was amended and, after some resistance, the government, itself a user of the process, complied with the AGRC's royalty demands.[26] In New South Wales, the amendment was refused after lengthy and bitter litigation. The process was, therefore, royalty free in New South Wales.

The Western Australian Registration

At this point it is important to emphasize that Western Australian patenting law distinguished between patents and Letters of Registration granted in the colony. A Letter of Registration was a mechanism to extend full protection to foreign patents in the colony without having to register colonial patents by a process both long and cumbersome. Somewhat contradictorily, s. 49 of the colony's Patent Act 1888, which exempted Letters of Registration from these cumbersome provisions, also specified that all provisions applying under the Act to patents applied to Letters of Registration.

The Western Australian Registrar of Patents granted the Cassel Company Letters of Registration No. 189 on 17 April 1889, on the strength of Letters Patent No.14,174 granted in the United Kingdom.[27] When, in October 1895, the AGRC applied to amend the specifications, the Registrar of Patents obliged without question and without advertising the request and allowing objections to be heard. His interpretation of s. 49 of the Western Australian patent legislation was that it required amendments to colonial patents to be advertised and examined, but that once an amendment to a British patent had been accepted in England there was no need to advertise a request to amend Letters of Registration or invite objections to it in Western Australia. However, in an unusual procedure, the Registrar advertised the request to amend some 10 months after granting the amendment[28] and invited opponents to submit their objections. This pointless action was probably due to confusion over the legislation's precise meaning.[29] It earned both the Registrar and the government derision from industry and criticism from the Courts, which later had cause to examine his action.

Some in the gold mining industry attributed the approval of the amendment to departmental 'want of enquiry'.[30] Others, like A.E. Morgans, a conservative member of

Parliament, a mine owner himself and a previous President of the Coolgardie Chamber of Mines, blamed the approval of the request to amend on the timing of the request, 'before any of the important mines in Kalgoorlie were established or any idea of their great value was conceived'.[31] At the time the AGRC applied to amend its Letters of Registration (August 1895), the use of the process in Western Australia was still in its infancy, the colony having no more than five working cyanide plants.[32] Their number grew to 10 by 1896 and mushroomed thereafter as prospectors and claimholders in outlying areas clamoured for the new technology. By the end of 1897, some Kalgoorlie mines had made 'in principle' decisions to treat the ore locally and by cyanidation.[33] By March 1899, the use of the process was common and Mines Department records report the total number of cyanide vats on the Western Australian Goldfields as 252.[34]

The Struggle Over Royalties: *'the Chamber of Mines* v *AGRC'*

By 1897, the gold rush in Western Australia had peaked and the wave of financial speculation receded, as investors turned from the Western Australian, largely speculative mines to more profitable investments in the Transvaal, Rhodesia, and West Africa, as well as in South America, China and Russia.[35] At the same time, Western Australian gold production was rising, primarily due to the production of mines on the Golden Mile, an area of approximately one square mile in the Kalgoorlie district. As Bertola[36] has shown, however, the exceedingly high yield from the Kalgoorlie mines in their early years was often the result of selective forced mining of high yield ore by companies attempting to maintain share values and to keep the 'bears' at bay, to keep up dividend distributions and to generate working capital. By 1897, the management of the rich mines of the Golden Mile had passed locally into the hands of professional mining engineers[37] and metallurgists, among them some with extensive experience in cyanidation (see below). As they applied the cyanide process to large quantities of oxidized tailings remaining from processing by crushing and amalgamation, and to oxidized ore, a relatively simple procedure, experimentation proceeded to find an efficient and profitable way to treat their large reserves of complex sulpho-telluride ores, on which the long-term future of the mines depended.

In 1897, labour in the Goldfields was sufficiently organized, primarily under the banner of the Amalgamated Workers Association, founded in 1897 at a conference of miners unions in Coolgardie,[38] to begin remonstrating for improved safety, modifications to hours of labour and uniformity of conditions. By contrast, mining industry organization consisted of a collection of rival regional lobby and promotional groups competing for both infrastructure projects and direct assistance from government. The visiting *Economist* journalist James H. Curle pronounced the two main industry bodies, the rival Coolgardie and Kalgoorlie Chambers of Mines, 'rendered useless by local jealousies'.[39] Not until late 1900 did the two Chambers agree on amalgamation into one Chamber of Mines of Western Australia, a step they did not fully implement until early 1901.

The Kalgoorlie Chamber of Mines, representing the rich and largely British-owned mines in the East Coolgardie mining district, was to lead the fight against the cyanide royalties. Within its ranks were metallurgists, assayers and engineers, from both overseas and the Australian Eastern colonies, with good understandings of the importance of the cyanide process and with extensive cyanidation experience. Among them were L. W. Grayson, chief metallurgist of the Australia Associated and formerly in charge of the South Australian Government Cyanide works, J. V. Parkes, Manager of Hannan's Oroya and formerly South Australian Inspector of Mines and with cyanidation experience in South Australia and Queensland, William Feldtmann, formerly chemist to the

African Gold Recovery Company[40] (the equivalent of the AGRC in South Africa) and then Manager of Hannan's Brownhill Mine, and J. T. Marriner, 'the Cassel-trained metallurgist'[41] who was Manager of the Great Boulder Main Reef. So extensive was the cyanidation expertise available to the Kalgoorlie Chamber that in mid-1898 it could suggest 11 expert cyanidists to a New South Wales solicitor who requested help with a New South Wales action against the AGRC. Almost all of the experts the Chamber listed worked on the major mines and were members of the Chamber.

The recently established Kalgoorlie Chamber[42] resolved to take action against the cyanide patent-holders as early as 5 September 1897, probably partly in response to 'the patentees taking active measures to enforce their royalty'.[43] The Chamber was also responding to the establishing of a Royal Commission on Mining to investigate the multiple causes of goldfield discontent, in particular those that could give rise to turbulent disputes between mine owners and alluvialists. When forwarding its resolution to the government and the 'Royal Commission', the Chamber also asked the government to bear the expense of litigation to test the legality of the 'alleged' patent.[44] This demand for government-funded litigation was not exceptional in late nineteenth century Western Australia, when the state, playing a central role in the economy, provided a range of subsidies to industry, both directly and indirectly. In this instance, however, the Minister for Mines declined the request, defended the Western Australian registration of the cyanide patent arguing that so long as the patent held good in England, it would do so in the Colony.[45]

Undeterred, the Chamber produced and circulated a special report on the issue so as to inform and unite the fragmented mining industry behind it, then organized a deputation representative of all mining interests to Sir John Forrest, the colony's Premier.[46] The Chambers of Mines in existence at that time in Western Australia were the Kalgoorlie and Coolgardie Chambers, the Perth Chamber and the Norseman, Menzies, Cue and Mt Magnet Chambers. (The opposition to the paying of the cyanide royalty eventually also encompassed the various branches of the Mine Managers' Association and the Amalgamated Workers Association.) The Premier refused to meet the deputation, claiming that nothing would be gained by a deputation because the cyanide issue was one of law.[47] He was acting on legal advice that, following the 1895 amendment of the specification, the patent rights in Western Australia were 'impregnable'[48] unless the findings in the Pielsticker case could be reversed and that this could be done only on the 'most cogent evidence of lack of novelty'. The clear message from the government's lawyers was that it was futile to try and challenge the patent rights in the colony.

In response, the Chamber repeated its request that the government carry the financial cost of remedying a situation for which it was responsible.[49] Additionally, it suggested that the government should intervene because:

- the cyanide method was important for treating the telluride ores of the Golden Mile;
- the impact of a 5% royalty was significant, especially as a great deal of 'experimental work of a costly nature had to be carried out to make cyanidation more effective';[50]
- paying the AGRC deferred royalties would be disastrous for the companies;
- the New South Wales and Victorian governments were fighting the question and in South Africa the patent-holders had lost their claim; and
- the issue of the patents rights was a national one.

An unstated concern was the possibility of having to pay not only deferred royalties but also damages to the AGRC.

The government remained unmoved. It was probably unlikely that the mining lobby

could expect the government to defend an infringement action by challenging at great cost the legality of a patent it considered properly registered, especially in view of legal advice as to the futility of such a challenge. Moreover, if the government failed in defending mining companies' determined refusal to pay royalties and the case were lost, the government would have to buy the patent rights anyhow, as the New Zealand Government had already done and as the Victorian Government would later be forced to do.[51] Therefore, from the practical Premier's point of view, it was far better at this stage to hide behind the law and let the companies battle it out on the off-chance that the AGRC would lose. This was especially advisable as the rival Siemens patent-holders, who had obtained Letters of Registration in Western Australia about 4 months before the McArthur–Forrest registration on the strength of a New South Wales registration, claimed to have coverage identical to the AGRC's amended patent and more definite specification as to the dilution of the cyanide solution to be used. If Siemens' claim to priority were valid (and this had yet to be proved in court), it could void the McArthur–Forrest patent rights and replace them.[52] While this could leave the industry's problem unresolved, the Siemens patent rights on offer were at least cheaper than those of their rivals; Siemens' agent demanded only £20,000 for the patent rights.[53]

In the light of the government's refusal to take up the litigation, the Kalgoorlie Chamber began to urge the government to purchase the patent.[54]

The AGRC v Lake View Consols

The matter did, as expected, proceed to litigation. On 8 March 1898, the AGRC began a test case against the Lake View Consols for failure to pay royalties. In March 1899, Justice Hensman, with the consent of the parties, referred the points of law in the case 'for the opinion of the Full Court by means of a "special case" '.[55] Before the Full Court delivered its decision, however, the government attempted a far-reaching reform of patent legislation in Western Australia. The *Patent, Designs and Trade Marks Bill* of 1899, introduced into Parliament on 25 July 1899, departed from British patenting law and colonial patenting based on it in having a provision (Clause 14) for local examination for novelty.[56] The Bill had been planned for some years,[57] but only as a consolidation of several pieces of existing legislation into one.[58] Now, it required examination for prior knowledge and prior publication, especially in the colony, gave power to refuse patent where it appeared that the invention was not new and widened the grounds on which patents could be contested (Clause 17).[59] The Bill also facilitated challenges to patents by removing the £25 deposit required of challengers under existing legislation, 'in order to encourage to a certain extent any reasonable opposition … to the registration of a patent'.[60] Several issues with which the Bill dealt, including that of the relevance under existing legislation of prior use, knowledge and publication in the colony, were legal issues before the Full Court in the 'special case' in the *AGRC* v *Lake View Consols*.

Both government and opponents of the Bill repeatedly referred to the cyanide royalties dispute in the debate over the Bill. Claiming that the *Patent, Designs and Trade Marks Bill* followed the Queensland Act of the same name, the government argued that under such an Act, the AGRC's 1895 amendment of the cyanide patent would not have proceeded.[61] It also maintained that the Bill would protect patentees, and, more importantly, the 'investing public'[62] from fraudulent patent claims, possibly a veiled reference to the AGRC's claims. Opponents of the Bill in turn made oblique allusions to the infringement of the AGRC's patent rights and to the difficulties it faced in enforcing its rights as, for example, in this statement by Walter James, MLA and counsel to the AGRC:

> There seems to be no finality to the trouble of a patentee who has a valuable patent, and who has to fight persons who have means, or persons who by infringements earn sufficient money to make it worthwhile to harass by constant fighting, a person who receives a document for money, and which document should have some efficacy.[63]

The opponents of the Bill were quick to point out its Achilles heel: it did not require determinations of novelty to be conclusive and according to them, was therefore pointless; yet even so, it would require an enormous investment in staff to meet the new obligations. They reasoned that the government ought not to undertake the obligation of determining absolute novelty of patents, as it would mislead the public to consider patents guaranteed when they were not.[64] Most importantly, they highlighted the break with British patenting tradition that the Bill represented, thereby eventually rallying behind them the majority of the Upper House.

Apart from George Leake,[65] the leading opponents of the Bill were Walter James, F. M. Stone and Septimus Burt, the solicitors of the AGRC. However, as the rights of current patent-holders appeared to have been saved under the Bill,[66] it is not easy to interpret the Bill as an attack on the royalty rights of the AGRC, or to link the lawyers' opposition to an intention to protect their client, the AGRC, specifically. On the other hand, the Bill reduced the role of judicial determination of novelty and increased the role of the state in this process, a major change unlikely to appeal to lawyers working in the area of patent litigation.

Clearly the Bill was a response to the cyanide patenting controversy, as Forrest admitted subsequently.[67] Through a modicum of local examination and other measures, the government sought to reduce the number of colonial patent grants and registrations at a time when 'applications for patents were as thick as mulberries in a good season',[68] especially in mining. Overall, the Bill appears to have been a state intervention in favour of technological diffusion to assist the developing mining industry in the face of a rising number of patent applications. The Bill's focus on prior local knowledge, prior user and prior publication appears to have been a response to the charge of lack of enquiry into such matters that the mining industry had levelled at the government over its failure to stop the amendment of the McArthur–Forrest patent. The Bill lapsed when the Legislative Council insisted on striking out the novelty clauses, the core of the Bill.

The Supreme Court Decision in the 'Special Case'

The decision in the 'special case', the legal questions in *Australian Gold Recovery Company* v *Lake View Consols*, was handed down on 20 September 1899. The questions, raised by both sides, related to the interpretation of s. 49 of the 1888 Patent Act, which was concerned with Letters of Registration.[69] In relation to the 1895 amendment, the Court decided in favour of the AGRC. It concluded that though there had been irregularities in the procedure of amending the patent specification, these did not affect the validity of the patent 'as leave to amend is conclusive as to the right to make the amendment'. The Court also decided that prior use etc outside the colony prior to the granting of the British patent and in the period between the granting of the British patent and the Western Australian registration, could not be used by the defendants as a defence. Furthermore, evidence of the invalidity of the British patent could be raised against the local Letters of Registration, and, finally and significantly, common knowledge, prior use and publication in Western Australia in the period between the British patent and the local registration of 19 April 1889 could be used as a defence against charges of

infringement. (This was precisely the change the government had sought to achieve in its failed *Patent, Designs and Trade Marks Bill*.) Questions as to fees payable by the AGRC were also decided in its favour, while questions relating to the validity of the Siemens cyanide Letters of Registration were not addressed, as Siemens was not before the Court.[70] The upshot of the decision was that the AGRC had won on some important counts but had become vulnerable to claims of prior use, knowledge and publication in Western Australia before April 1889, for which the Siemens patent-holders were the main contenders.

The case proceeded by appeal and cross appeal to the Privy Council. At the Kalgoorlie Chamber's General meeting of 8 June 1900, Norbert Keenan, a solicitor, and legal manager of East Murchison United (a company managed by Bewick, Moreing and Co.) explained the grounds on which the appeal was made to the Privy Council. To those still wishing the government to buy the patent rights from the AGRC, he explained that 'under these circumstances he did not think the government could be asked to purchase rights which might after all not exist'.[71]

The pressure on the government to resolve the cyanide issue was growing and now emanated from sources other than the Chamber of Mines. A mining company in Marble Bar sought advice on how to avoid paying the royalty. The government had no answer other than to point to the court cases in progress.[72] As well, the Superintendent of Batteries, experimenting with the cyanide process at the Norseman Public Battery, wrote commenting on the peculiar position the government would occupy if, having accepted fees and registered the patent, it now refused to pay royalties.[73] A proposed contract from the AGRC, demanding a 5% royalty on gross value of bullion, was, in fact, sitting in the government's in-tray. The Mines Department was keen to resolve the hiatus. Relying on advice from the secretary of the Law Department,[74] the Undersecretary for Mines (H. S. King) suggested to the Minister for Mines (H. B. Lefroy) that 'our only course is to enter into an agreement with the Company'.[75] The Minister's response was to alert the Premier. Writing, 'I think you should know what is going on', he recommended that Cabinet approval be required before the Mines Department entered into any agreement with the AGRC for the use of their patent. To protect the government from prosecution by the AGRC without prejudicing the case before the Courts, it was resolved to defer royalties payment until the issues were resolved in the Courts and to write to the AGRC to that effect.[76] At the same time, the government continued general negotiations with the company.

The Industry Combines

The case before the Privy Council did not stop the AGRC from increasing the pressure on the users of its technology. On the contrary, the AGRC issued a total of 13 writs of injunction to both companies and their principals, mainly in May and June 1900. According to Richard Hamilton, President of the Kalgoorlie Chamber, the AGRC was 'harassing small companies' which were 'not in a position to oppose the claim of the AGRC'. At the same time, the AGRC was apparently targeting cyanide plants treating for the public and aiming for regional coverage, probably to ensure that all companies using the technology felt under threat and that many would enter licensing agreements to use the cyanide process or, alternatively would exert pressure on the government to purchase the patent. The advantage of a compromise involving a purchase of the patent even in the event of winning the Privy Council 'special case' was that it avoided lengthy and costly litigation.[77]

At a joint meeting on 24 July 1900, the Coolgardie and Kalgoorlie Chambers met

A. E. Morgans, MLC, owner of the Westralia Mt Morgans Mine and the target of an AGRC writ. The aim was to discuss an amendment in the Companies Duty Act 1899, for which the Chamber had been agitating for some time, as well as the cyanide royalty situation. Action on the first issue was urgent, Morgans informed them, as 'the next Parliament, which is to come into power very soon, would be very democratic in tendency and it would then be much more difficult to pass the Amendment Act such as they desire'.[78] The need to deal with the cyanide royalties issue would have been perceived to be equally urgent. In the amendment to the Company Act, the Chamber sought to reduce the tax Forrest had introduced on the profit of limited liability companies, operating in the colony. Gold mining companies fiercely resisted all claims on their income, but local managers opposed the cyanide royalty more determinedly than taxation, because they considered a measure of taxation inevitable and even necessary, though they wished to keep contributions as low as possible. Also, at this stage, there was no legal avenue through which to fight the tax the government imposed.

The Chambers' meeting with Morgans was crucial in determining the development of the cyanide dispute. It appeared that both Morgans and Hamilton had consulted with the Premier and that Morgans had brought a fully developed plan of action to the meeting. However, it was Hamilton, the President of the Kalgoorlie Chamber and manager of one of Kalgoorlie's richest mines, who first proposed that if the cyanide issue were 'to be fought out, it would be better for the companies concerned to consolidate their action and subscribe to a common fund for defence'.[79] Morgans proposed that they should combine in any event, for the fight or the compromise with the AGRC. On his own, he would strike a deal with the AGRC; however, if it were the intention to fight, he would join the combination and put up the necessary money.[80] A. E. Thomas[81] and E. Williams (of Bewick Moreing and Co. and the then President of the Coolgardie Chamber) expressed similar views.[82] The combination was thus critical in determining the response of the companies, many of which, on their own, were wilting under AGRC pressure.[83] That the companies were close to compromising with the AGRC is also evident from the government's preparations for settlement. Morgans assured the meeting that if a compromise were arrived at, 'the government would be prepared to buy out the patents and charge interest at, say, 4% on the outlay, and a small royalty on the output by way of a redemption fund, recouping themselves by installments of say 1% or even less'.[84]

These terms were extremely favourable to the mining companies. Morgans announced that the AGRC was prepared to meet with a committee of both Chambers to consider any offer from them. A settlement with the AGRC would no doubt have proceeded had the companies not combined and, by proposing to share their legal costs, sustained those who were wavering under AGRC pressure. An alternative to a compromise with the AGRC was a compromise with the rival patent holder Siemens whose patent Richard Hamilton suggested could be purchased for only £10,000.[85] The meeting, however, set all such suggestions aside for the time being and resolved initially to set up a Committee of both Chambers to deal with this matter and to cable the London Incorporated Chamber of Mines[86] for permission to subscribe to a common fund either to oppose the cyanide royalty or to enforce a compromise.[87] Contributions to the common fund were to be proportionate to gold production, with non-producing companies to commit whatever they could.[88]

Significantly, this was the first time in the history of the gold mining industry in Western Australia that the organised section of the mining industry committed its combined financial strength to achieve a specific goal (although the Kalgoorlie Chamber had already done so before 1900 for ongoing activities such as the control of goldsteal-

ing). The industry would do so repeatedly in relation to other patent-holders some years later. The proposed industry combination against the AGRC was inclusive of non-producers and small producers, and the funding of the defence fund was proportional to abilities to pay. In other words, rich mines were prepared to subsidize poor mines in order to bring about united action in a matter in which they had most to lose.[89] Their prime concerns were that a case brought against a small company by the AGRC would set a legal precedent for the industry as a whole and that compromises with small companies would strengthen the determination of the AGRC to pursue its royalties claim. The very forming of an all industry combination would also have had propaganda and psychological value, at the same time as it protected companies vulnerable to the rumour mongering of the 'bears', inevitably the richest mines, from the impact of such rumours on their share values. Such protection was especially important to Lake View Consols and Associated, two mines associated with Wright and Bottomley, now struggling to maintain high levels of output and the target of speculators' attacks.

Preparing for the Worst Case Scenario

It was inevitable that the opponents of the AGRC would develop strategies for all conceivable eventualities, including the worst outcome. The worst case scenario for the gold mining companies in the Privy Council's hearing of the 'special case' would be that the Judicial Committee of the Privy Council would agree with the Colony's Supreme Court that the amendment of the patent registration was valid or, in other words, that the procedure for amending Letters of Registration should differ from that of amending patents, an issue on which the Western Australian *Patent Act* was unclear. In such an event, the companies would be liable to pay royalties on cyanided gold from the time the process began to be used in Western Australia until the AGRC's 14 year registration expired in October 1901, unless a case challenging the novelty of the Western Australian registration were successful. A validly amended Letter of Registration would also allow the AGRC to apply to have the registration extended. Here, again, the difference between patents and Letters of Registration became an issue. Section 30 of the Patent Act 1888 laid down the procedure for extending a patent, which included an advertisement notifying intention to extend, submission of a petition to extend to the Governor in Council at least 6 months before the patent expired and referral to the Supreme Court for a hearing, but only if the Governor in Council 'shall be pleased' to refer it (s. 30 (3)). The legislation thus appeared to confer discretion on the Governor about referring a petition to extend a patent to the courts. If the courts found that the patentee had been 'inadequately remunerated' (s. 30 (5)), the Governor in Council could extend the term of the patent for another 7 or in exceptional cases, 14 years. The AGRC appeared to have a good case for an extension: it had not enjoyed a full 14 years' income from its invention in the colony because cyaniding did not begin in Western Australia until the late 1890s. The procedure for extending Letters of Registration, however, was less clear. Some contemporary legal opinion held that under s. 49 of the Patent Act 1888, extensions to patents in their country of origin would apply automatically also to their Western Australian Letters of Registration, compelling colonial authorities to extend them.

The government prepared for both eventualities in the *Patent Act Amendment Bill* introduced into Parliament in October 1900. In the event that the Privy Council decided that the Letters of Registration were to be treated as patents, the Bill sought to prevent the AGRC's petition to extend its patent rights from undergoing judicial review. The discretion about referring petitions for patent extensions to the courts was in some doubt

because s. 30 (3) of the *Patent Act* resembled a section in the colony's legislation referring to local Petitions of Right.[90] The refusal of the Forrest government to refer claims under Petitions of Right to the Supreme Court had long been a source of conflict between Forrest and the Secretary of State for the Colonies.[91] In 1898, in *Wilkinson* v *the Queen*,[92] the Supreme Court pronounced the conduct of the government in preventing a claim under a Petition of Right from reaching the Court 'arbitrary and unconstitutional'. The court ruled that 'the government had no right to refuse to send the case to trial',[93] notwithstanding the wording of the legislation. In the wake of this ruling and extensive correspondence with the Secretary of State for the Colonies,[94] the Governor's practice was to refer all petitions, including those under the *Patent Act* 1888, to the Supreme Court for consideration as a matter of course.[95] If the AGRC's petition for extension was to be prevented from reaching the Supreme Court, this practice had to be overturned. Clause 3 of the *Patent Act Amendment Bill* 1900 therefore ensured that 'it shall not be incumbent on the Governor to refer any petition for the extension of the term of a patent to the Supreme Court' and that he should not be required to provide a reason for refusal to refer. Clause 2 of the *Patent Act Amendment Bill* prevented an extension of the British patent from automatically flowing on to the AGRC's Letters of Registration in the colony. It also reduced the registration of all Letters of Registration to a single term.

When the Attorney General introduced the Bill, he was frank about the Bill targeting the AGRC and seeking to deprive the company of existing and possible rights to an extension of its patents. The Bill's other stated objectives were to free the government from having to purchase the Patent and to block all avenues for litigation open to the AGRC. R. S. Haynes, MLC, a key opponent of the Bill, pointed out that the government's objective was to 'pluck the pigeon so that he cannot fly'.[96]

Hartley has speculated that the government's own growing liability to pay royalties and the awareness that the purchase price of the patent could only increase as the Colony's gold production grew induced it to legislate against extension of patents past their normal 14 year lives.[97] While these considerations no doubt played a role, it is feasible that the inspiration for the *Patent Act Amendment Bill* originated from the combined Kalgoorlie/Coolgardie Chambers (now the Chamber of Mines of Western Australia[98]). Evidence supports this contention. During the Parliamentary debate on the Bill, mining politicians, at least eight of whom were then or had recently been members of the Chamber, readily attributed the Bill to themselves.[99] Alexander Forrest, MLA, the Premier's brother, owner of extensive mining interests and a member of the Chamber, stated outright that the 'mining community' 'were determined to resist this charge and to settle the matter [of the extension to the patent] in Parliament instead of before the Governor-in-Council or in the law courts'.[100] Opponents of the Bill repeatedly accused the Chamber of Mines or, more obliquely, 'mine owners'[101] of responsibility for the legislation, referred to the briefing of Members by the Chamber's lawyer[102] and even twitted: 'Are we here as representatives of the people or simply to do what the Chamber of Mines, through their members, desire?'[103] That the Chamber felt it owned the Bill is also apparent in the advice to the Chamber from Norbert Keenan, its lawyer, on 24 November 1900, that 'a goldfields party had now been formed in the Upper House and that the Chamber could rely on the support of 16, possibly 18 members [out of 30] of the Upper House, to pass the *Patent Acts Amendment Bill*'. Keenan worked closely with Parliamentarians to negotiate the *Patent Act Amendment Bill* through Parliament and orchestrated much of the legal and Parliamentary work around the cyanide issue. Later, the Chamber repeatedly claimed credit for the passing of the Bill.

Whether the Chamber inspired or proposed the *Patent Act Amendment Bill* is less pertinent than that, by 1900, the Forrest Government was involved in an unusual

relationship with the mining industry. On the one hand, the government was a beneficiary of the gold mining industry through an improved credit line and income derived from a variety of charges paid for by industry and the goldfields population. The industry was, without doubt, the engine driving the economic development of the colony. On the other hand, the state itself was a player in the industry through its system of public batteries in which the cyanide process was either used or proposed to be used. In addition, some government supporters had significant financial involvement with gold mining (even John Forrest himself was a speculator). Finally, mining politicians' support in the Lower and Upper Houses was important for the Forrest government's survival and initiatives in its final Parliamentary session. All these factors combined to shape the government's approach to the royalty dispute.

The Parliamentary Debate[104]

The Parliamentary debate, initially polite, became increasingly bitter as the government pushed the Bill through Parliament before the end of the session in a bid to anticipate the rising of Parliament and probably also to pre-empt the delivery of the Privy Council's decision as well as the AGRC's application for extension. An additional motive may have been to avoid receiving the AGRC's petition to Parliament, the essence of which was a request to insert a saving clause into the *Patent Act Amendment Bill* to protect its rights to extend the patent.[105] Both sides vied for the moral high ground, but the passing of the Bill was a foregone conclusion as its opponents were in a clear minority. Well before the debate progressed to the Upper House, however, the government learnt that the Bill would be reserved for the Royal assent, rather than assented to by the Governor. This did not deter the Premier from proceeding with the legislation. One reason was that he expected to be able to wear down the opposition of Downing Street to the Bill[106] as he had succeeded in doing in the past in other matters. Furthermore, legislative intervention had been demanded by both the influential *Kalgoorlie Miner* and the Kalgoorlie Chamber of Mines, and may have been considered of electoral advantage in a pre-election period. Finally, the Bill, once passed by both Houses of Parliament, was useful even if unproclaimed in arguing, for example, for a particular interpretation of existing legislation, should the matter reach court or even before it reached court, unorthodox though such practice would be.[107] Any one of these considerations was probably sufficient to induce the government to proceed with the Bill as if its assent were assured. Perhaps the most important effect from the passing of the Bill, however, whether assented to or not, was that it clearly signalled the capacity of the gold mining industry to harness the state to its cause, leaving the AGRC isolated in Western Australia and in no doubt as to the hostility of the environment in which it had to pursue other commercial interests and the extension of its cyanide patent. Later, in full knowledge that the Act never received the Royal Assent, the (reconstructed) AGRC attributed the abandoning of its attempt to extend the cyanide patent in Western Australia to the strong animus revealed by the passing of the *Patent Act Amendment Bill*.[108]

Throughout the debate on the *Patent Act Amendment Bill,* the government and its supporters flaunted their championing of the mining industry.[109] Both sides impugned each other's motives. Opponents of the Bill pointed to the interests in gold mining held by goldfields' members and Forrest supporters[110] and suggested a variety of venal motives for the introduction of the Bill.

More than half (nine out of 17) of the opponents of the Bill were lawyers, who appeared to feel genuine distaste at the Bill's retrospectivity and at the intrusion of executive power into an area of judicial assessment. Supporters of the Bill were, in turn,

not slow at pointing out that some of the key critics of the Bill were the legal representatives of the AGRC.

Two of the debaters stand out. One was F. W. Moorhead, MLA, an opponent of the Bill, who perceived early in the debate that the Bill was unnecessary from the gold companies' and the government's point of view, since to defeat the AGRC it was sufficient to entangle it in litigation until its patents expired. The other was A. P. Matheson, M.L.C., financier, entrepreneur and speculator in gold mining. He was a member of the Chamber who, though not a lawyer, presented a skilfully argued legal defence of the Bill. Matheson can be most closely identified as the voice of the Chamber (or its lawyers) in the debate. His key argument, at odds with and more subtle and legalistic than that of the government, was that the Bill was 'simply an explanatory Bill setting forth the intention of the framers of the Act, such as we know their intention to be',[111] and that it was continuous with existing legislation and not aimed at the AGRC. Such arguments were likely to gain the support of wavering conservatives in the Upper House.

The Bill passed by a majority of three to one at 8.45 a.m. on the 28 November 1900, after an all-night sitting in which the opposition filibustered and the government applied the gag. Yet, almost a month earlier, on 1 November 1900, the Secretary of State for the Colonies had cabled an unambiguous warning to the Governor concerning the Bill:

> Australian Gold Recovery Company states that Bill now before Parliament seriously affects their Patent Rights under the existing law and ask that if it be passed it may be reserved. They are sending petition by next mail. You will no doubt consider whether the Bill is one which your instructions require to be reserved.[112]

Thus, on 29 November, a day after the passing of the Bill, the Attorney General made an astonishing admission, which confirmed the arguments of his parliamentary opponents that 'the Bill may be considered as "extraordinary and important" inasmuch as it takes away statutory rights without compensation and manifestly prejudices the rights of subjects outside the Colony'.[113] The Bill was incontrovertibly contrary to the Governor's Instruction (Clause 7, sub-clause 7) which forbade the Governor to assent to any Bill which prejudiced the rights and property of Her Majesty's subjects not residing in the Colony, 'unless he shall have previously obtained her Majesty's instructions upon the said Bill'.[114] The Attorney General thus had no choice but to recommend that the Governor should reserve the Bill for Royal Assent.

It was only a short time later that the well-informed Keenan informed the Chamber of Mines that the Bill could founder and that it was necessary to take further action to secure its proclamation. He advised the public bodies on the fields to petition the Secretary of State for the Colonies[115] to recommend that the Bill receive the assent in the interests of the colony and the mining industry. Petitions to that effect were duly forwarded from the Kalgoorlie Chamber and the Municipal Councils of Kalgoorlie, Coolgardie, Broad Arrow, Kanowna and Norseman. The AGRC, in turn, petitioned to the contrary.

The Privy Council's Decision

In the interim, on 8 December 1900, the Privy Council delivered its decision in the *AGRC* v *Lake View Consols* 'special case'.[116] The AGRC had sought to reverse the Supreme Court's ruling that prior knowledge, user and publication in Western Australia between the date of the grant of the British patent and the registration date in Western Australia could void the patent or be a defence against the charge of infringement. The Privy

Council, however, agreed with the colony's Supreme Court ruling. It did so by construing the meaning of the statement in s. 49 of the 1888 *Patent Act* that Letters of Registration 'shall be deemed to be patents under the Act' to mean that such letters were colonial patents. As colonial patents they were subject to all the statutory provisions that applied to patents, including those that specified grounds for revocation, for example, prior publication etc in the colony. With this and other rulings, the Privy Council conclusively resolved the ambiguities in the Western Australian legislation relating to Letters of Registration. In relation to the validity of the 1895 amendment, the Law Lords characterized the written application in 1895 on behalf of the AGRC to amend the Letters of Registration as a request 'to record an amendment already made', not an application for leave to amend. This was also how the Registrar understood it; consequently he had not assessed the request or advertised it. According to the Lords, however, there ought to have been an application for leave to amend to give persons in the colony an opportunity and standing to oppose the amendment and to raise objections that may be specific to the Colony. Their conclusion was that the amendment was not duly applied for or recorded.[117]

The Denouement

A protracted legal wrangle in which the mining companies blocked the AGRC's attempt to amend the cyanide patent specification and also placed every conceivable obstacle in the way of extending the patent followed. Consistent with s. 24 of the Western Australian *Patent Act* 1888, the AGRC approached the Supreme Court for leave to apply to amend the patent. On 25 January 1901, the Court permitted the application to proceed but also required that the AGRC stay all other proceedings while the patent specification was being amended. Thereafter, however, it could amend its pleadings to make them consistent with the amended specification, but could not make claims for damages prior to the date the patent was amended. AGRC solicitor (S. Burt) advised the AGRC to discontinue rather than stay all actions on the assumptions that, first, thereby the company would gain 'less severe terms' and, second, similar conditions would be imposed by the Registrar of Patents[118] when the case for amendment came before him. All actions were, therefore, discontinued on 19 February 1901.

The amendment to the patent specifications that the AGRC was requesting in 1901 differed from that of 1895. This time the company sought to include in its claims a disclaimer of solutions stronger than one to four parts of cyanogen in 500 parts of water.[119] Gold mining companies from whom the AGRC had obtained samples of cyanide solutions during inspections ordered by the Courts under the discontinued proceedings claimed to fear that the 'ingenious'[120] wording of the new amendment indicated an intention to pursue further action against them.[121] Arguing along these and other lines, the mining companies therefore applied to the Court for a variation of the order of 25 January to ensure that no actions whatsoever could be brought by the AGRC for infringement prior to the date on which the AGRC applied to amend the cyanide patent. Pennefather, the former Attorney General who had introduced the *Patent Act Amendment Bill*, now was a Supreme Court Judge and readily approved the mining companies' request for variation on 7 May 1901.[122]

The timetable to which the AGRC now had to work to save its cyanide patent rights was tight. The legislation applying to extensions of patents required that the application be lodged 6 months before the expiry of the patent. The patent was due to expire on 19 October 1901. As early as 7 December 1899, the AGRC had signalled its intention to apply for an extension in the *Government Gazette*. First, however, the AGRC had to

amend its cyanide patent. In the wake of the Privy Council's decision, the procedure to amend Letters of Registration had to conform with the detailed Patent Office regulations applying to amendment of patents. The procedure was staged and it was possible to request extensions of time at different points. Under these conditions, the chance that the AGRC would succeed both in amending and extending the patent before it lapsed was very small indeed.

The mining companies defeated the application to amend the patent specification and to extend the patent by the carefully co-ordinated legal work of their lawyers, primarily the firm of Parker and Parker, with Norbert Keenan, the Chamber's lawyer, playing a key role. In the first instance, they sought to prevent the AGRC from amending its cyanide patent in order to ensure that the company would be unable to apply for extension of its patent, that it could not initiate new actions for infringement under the amended patent after the date of amendment, and that the patent would lapse without being amended. To that end, a total of 22 mining companies lodged objections to the request to amend, as did two individuals and the Siemens patentees.[123] In addition, consistent with their objections against amending the patent, the companies also initiated a petition to have the patent revoked. As grounds for revocation they each included all the outstanding unheard claims against the validity of the McArthur–Forrest patent rights from the Lake View Consols's defence in the *AGRC* v *Lake View Consols* case plus a number of new claims.[124] While all this was in progress, the cautious lawyers of the Chamber attempted to forestall any possible bureaucratic and administrative oversights that might ruin their carefully laid plans by writing to the Acting Clerk of the Executive Council, explaining to him the legal position in detail and suggesting grounds on which the Crown Law officers themselves should oppose hearing the petition of the AGRC for extension.[125] At least eight companies and two individuals also lodged caveats against the anticipated extension, as permitted under s. 30 (2) of the Patent Act.

By 18 February, even as the charade of attempting to amend the cyanide patent was still being played out, the Chamber's lawyer had learnt unofficially that the AGRC had abandoned the fight over its cyanide patent in the colony of Western Australia[126] and that the company 'would now probably fall back on their patents for Zinc precipitation'.[127] Not a day later, the AGRC initiated an infringement action relating to the zinc patent against the Lake View Consols. The action was discontinued on 28 October 1901, without proceeding to trial (it is not clear from the Western Australian records precisely how the action was resolved). The mining companies' fight against the cyanide royalties did not, however, end there. By October 1901, the reconstructed AGRC, now the Australian Mining and Gold Recovery Company (AMGRC), owned the Siemens patent rights in Western Australia.[128] Once again users of the cyanide extraction process in Western Australia were warned that unless they obtained a license within 30 days of the date of the notice, proceedings against them would be taken to prevent them infringing the patent and 'to recover damages for all past infringements'.[129] The Chamber's solicitors advised companies not to comply.[130] Consequently, the AMGRC issued writs against them, this time from London. Yet again the industry formed a combination of the 'principal producing West Australian gold mining companies',[131] this time centred in London, and engaged a firm of London solicitors to handle the litigation. It would appear that this litigation, too, did not progress very far, as there is no further mention of it in the Chamber's records. How it was settled again remains a matter for conjecture. What is clear, however, is that the AGRC or rather its successor, the AMGRC, had not exhausted its legal options and had not given up the fight entirely in the period following the Privy Council's decision and that it tried, by various means, to extract more of what it felt was its due in royalty payments.

Notwithstanding the abandoning in early 1901 of the AGRC's claims for royalties under its cyanide patent in Western Australia, the Western Australian Government continued to lobby to have the *Patent Act Amendment Bill* receive the Royal assent. The reason appears to have been its and the mining industry's continued concern that the cyanide patent would be extended. Thus, after Forrest's departure for Federal politics in 1901, his successor induced the Governor to cable the Secretary of State for the Colonies to press for assent to the Bill.[132] The reply from the Secretary of State was explicit: the Bill had received 'anxious consideration'; it was 'open to serious objections' on the grounds that it deprived holders of existing patents of their right to a judicial hearing, and finally:

> independent of existing patents it appears desirable that any patentee who applies for extension of his patent rights should have judicial hearing and not be able to suppose that his claim may be favoured or the reverse by political influence. As you are aware applications for extensions are always referred to the Judicial Committee of the Privy Council.[133]

In mid-1901, in response to a question in Parliament which revealed that the Bill had not yet received the Royal assent, the matter was handed to Walter James, now a Minister without portfolio in the short-lived Leake Government. James recommended that the Bill, to which he was opposed in principle, should be dropped.[134] In his declared role as counsel for the AGRC, he added that he saw 'no chance of an extension being granted under existing legislation', thereby confirming a continuity in policy with the preceding government and suggesting that the procedure for extending patents would lead the patent to lapse. At the request of the colonial government, the Bill was withdrawn.[135]

Conclusion

The basic facts about the outcome of the cyanide royalties dispute in Western Australia have long been known: the AGRC largely lost its fight to collect royalties during the first term of registration of its cyanide patent and failed to obtain a second term. Less well-known have been the reasons for the state's intervention in the dispute, for drafting and passing but finally not proclaiming the *Patent Act Amendment Bill*. The conclusion to this paper's examination of the respective roles of the industry and the state in the development and resolution of the cyanide royalties dispute is that it was the industry which planned, co-ordinated and carried out the opposition to the AGRC's royalty demands. Industry strategy included inducing the state to produce the *Patent Act Amendment Bill*. The state, initially reluctant to involve itself in the dispute, by 1899 had reasons to co-operate because a suite of considerations linked its interests closely with those of the mining industry. Yet its direct interventions on behalf of the industry both by way of the *Patent, Designs and Trade Marks Bill* 1899 and the *Patent Act Amendment Bill* failed, the first because of cultural and ideological attachments to British legal traditions, the second because of formal legal constraints exercised by the Imperial authorities, even on the eve of Federation, on the colonial state's ability to satisfy industry demands. Indirectly, however, the *Patent Act Amendment Act*, even while unproclaimed, was critical to the AGRC's abandonment of its royalties claims. The passing of the Act illustrated the AGRC's opponents' capacity to dominate the state and, consequently, the process of amending and extending the cyanide patent.

The conflict over the cyanide royalties united a hitherto fractured gold mining industry and furthered its awareness of its common interest and strength. The impli-

cation of this and other episodes in the early history of the gold mining industry for the legal, political and industrial history of Western Australia require further research.

A final question that this re-examination of the McArthur–Forrest patent dispute in Western Australia raises is: why did Western Australian mining companies resist so determinedly the AGRC's claims for remuneration, even to the extent of finally not availing themselves of a government offer to purchase the patent rights and to recoup the costs on terms the industry could hardly argue disadvantaged it? While it is not possible to answer this question definitively, it is possible to speculate that the industry preferred state resources to be used on the many infrastructure projects it required at this early stage of its development rather than on the purchase of patent rights, especially so close to their expiry. It is also likely that industry resistance was guided by assessment by astute lawyers of its chances in the test case against the Lake View Consols. In the final analysis, however, the action of the Chamber was a gamble, such as it would undertake repeatedly in the future, when mine managers, acting through their peak body, deliberately risked comparatively small amounts of capital in attempts to secure major savings of company profits.

Notes and References

1. The author thanks Bert Altena, Patrick Bertola and Arthur Weston for reading and commenting on early versions of this paper.
2. Richard G. Hartley, *A History of Technological Change in Kalgoorlie gold Metallurgy 1895–1915*, Ph.D. thesis, Murdoch University, 1998, p. 59.
3. Alan. L. Lougheed, 'Want of novelty and patent litigation: the case of the cyanide process of gold extraction, 1892–1902', *Prometheus*, 13, 1, 1995, p. 32; Hartley, *op. cit.*, pp. 13–4.
4. Queensland, which examined patent applications for novelty, was the only Australian colony to challenge the original application but registered the patent after the company amended the specification to include reference to dilute cyanide solutions (*Lougheed*, 1995, *op. cit.*, p. 33).
5. The complete specification included both Claim 1, the general claim, and Claim 2, the specific claim which stated that a dilute solution of cyanide had to be used (Hartley, *op. cit.*, p. 15).
6. Alan L. Lougheed, 'The cyanide process and gold extraction in Australia and New Zealand, 1888–1913', *Australian Economic History Review*, 27, 1, 1989a, pp. 50–3; Jan Todd, *Colonial Technology: Science and the Transfer of Innovation to Australia*, Cambridge University Press, Melbourne, 1995, pp. 128–30.
7. Lougheed, 1989a, *op. cit.*, p. 48.
8. Alan L. Lougheed, 'The Cassel Company, cyanide and the gold mining industry, 1887–1927', in *International Mining History Conference*, Melbourne, August 1985; Lougheed, 1989a, *op. cit.*, pp. 44–60; Alan L. Lougheed, 'The discovery, development and diffusion of new technology: the cyanide process for the extraction of gold, 1897–1914', *Prometheus*, 7, 1, 1989b, pp. 61–74; Lougheed, 1995, *op. cit.*, pp. 32–44.
9. Todd, *op. cit.*, p. 206.
10. Hartley, *op. cit.*
11. Martyn J. Webb and Audrey Webb, *Golden Destiny*: *the Centenary History of Kalgoorlie-Boulder and the Eastern Goldfields, Boulder*, City of Kalgoorlie-Boulder, Boulder, 1993, devote a chapter to the cyanide royalties dispute, but their account is not without its problems (see below, notes 12 and 104).
12. The same error also occurs in Ian Inkster and Jan Todd, 'Support for the scientific enterprise', in Roderick W. Home (ed.), *Australian Science in the Making*, Cambridge University Press in association with Australian Academy of Science, Melbourne, 1988, p. 102 and in Webb and Webb, *op. cit.*, p. 367 *et passim*.
13. Hartley, *op. cit.*, p. 28.
14. *Ibid.*, p. 30.
15. Lougheed, 1995, *op. cit.*, p. 39. Both Lougheed and Hartley accessed the Cassel Gold Extracting

Company's archives held by Chester County Records Office in the Archives of Brunner, Mond and Co. Ltd, which this writer was not able to consult.

16. *The Times,* London, 26 September 1902, p. 9.
17. Carl Pielsticker and Thomas Bowick, the principals of the Cyanide Gold Recovery Syndicate, may have been connected to Siemens, patentees of the Siemens Halske cyanide process (Simon Katzenellenbogen, 'Cyanide and bubbles: patents and technological change in gold and non-ferrous metals treatment', in Klaus Tenfelde (ed.), *Towards a Social History of Mining in the 19th and 20th Centuries:* Papers presented to the International Mining History Congress, Bochum, Federal Republic of Germany, 3–7 September 1989, C.H. Beck, Muenchen, 1989, p. 526).
18. Hartley, *op. cit.*, p. 18.
19. *Ibid.*, p. 19.
20. Lougheed, 1995, *op. cit.*, p. 38.
21. *Ibid.*
22. An exception was Queensland as the Queensland registration already conformed with the British amendment (see note 4). In New Zealand, Cassel had begun amending the specifications even before the judgment in the Pielsticker case was handed down.
23. Todd, *op. cit.*, p. 127.
24. Lougheed, 1995, *op. cit.*, p. 39; Todd, *op. cit.*, pp. 153–4.
25. Sybil M. Jack, 'The introduction of cyaniding in New Zealand: a case study of the role of technology in history', *Prometheus*, 2, 1, 1984, p. 32.
26. Todd, *op. cit.*, p. 148.
27. *West Australian Law Reports*, 1899, vol. 1, p. 170.
28. *Ibid.*
29. Much was made by the AGRC's opponents of the fact that Septimus Burt, Attorney General when the AGRC attempted amending its specifications, was also the AGRC's solicitor (Western Australia, *Parliamentary Debates* (*WAPD),* 27 November 1900, pp. 1917–9; Wilson's evidence, Western Australia, Royal Commission on Mining, *Report*, Govt. Pr., Perth, 1898, p. 450). F. M. Stone, Burt's legal partner, defended Burt, claiming that legislation left decisions about advertising etc to the Registrar of Patents (*WAPD* 27 November 1900, pp. 1917–8). Nevertheless, the belief that Burt had compromised himself fuelled industry indignation and some press comment.
30. Chamber of Mines of Western Australia (Inc.) (hereafter COM), Records, Checklist of Materials Awaiting Processing, Battye Library of Western Australian History, Kalgoorlie COM, *Letterbook 1898–99*, folio 53. L. Cullen to Sir John Forrest, Undated.
31. COM, *op. cit.,* Kalgoorlie COM, *Book 3*, Meeting 24 July 1900.
32. Hartley, *op. cit.*, pp. 23, 43, and State Records Office of Western Australia (SROWA), AN 350 Mines Department files (MD), Acc 964, 6346/1896.
33. COM, *op. cit.,* Kalgoorlie COM, *Letterbook, 1898–1899*, f. 51, Cullen to Scammell, 3 January 1898. This did not apply to the sulpho-telluride ore of some of the Kalgoorlie mines, which continued for some time to ship a large proportion of such ore to New South Wales and South Australia and even overseas for treatment (Hartley, *op. cit.*, Chapter 3).
34. *Ibid.*, pp. 22–3. Mines Department's reporting on returns from cyanidation was not detailed in 1898 because the Department sought to prevent embarrassment to companies who, though not parties to legal action against the AGRC, may later have had to dispute the royalty they owed to it (SROWA, AN 350, MD, Acc 964, 6332/1898, file note, Statist, 5 October 1898).
35. Patrick Bertola, *Kalgoorlie, Gold and the World Economy*, Ph.D. thesis, Curtin University of Technology, 1993, pp. 25–6.
36. *Ibid.*, pp. 31–2.
37. James H. Curle, *The Gold Mines of the World: Containing Concise and Practical Advice for Investors Gathered from a Personal Inspection of the Mines of the Transvaal, India, West Australia, Queensland, New Zealand, British Columbia, and Rhodesia*, Waterlow, London, 1899, p. 147.
38. Herbert J. Gibbney, *The Goldfields and the Labor Movement*, Typescript, Canberra, p. 4.
39. Curle, *op. cit.*, p. 149. The two chambers' rivalry partly related to the rivalry between the two towns of Kalgoorlie and Coolgardie, both wishing to be the Goldfields' capital.
40. *Ibid.,* p. 171. A referee pointed out that 'William Feldtman worked for Cassel in Brazil before the

cyanide process was discovered, and in South Africa before moving to the African Gold Recovery Company'.

41. Todd, *op. cit.*, p. 181.
42. It was established on 15 August 1896.
43. *Kalgoorlie Miner*, 23 August 1897, p. 2. There is no evidence that any legal action was initiated at this stage.
44. COM, *op. cit.*, Kalgoorlie COM, *Book 1*, Meeting 5 September 1897.
45. SROWA, AN 350, MD, Acc 964, 7639/1897, cover 17 September 1897.
46. Surveyor by training, expedition leader and longstanding senior public servant, Forrest was the colony's first Premier, from 1890 to February 1901, after which he served in Federal Ministerial positions.
47. COM, *op. cit.*, Kalgoorlie COM, *Letterbook, 1898–1899*, 10 November 1897.
48. *Kalgoorlie Miner*, 20 December 1897, p. 3.
49. COM, *op. cit.*, Kalgoorlie COM, *Letterbook* 1898–1899, Cullen to Scammel, 3 January 1898; also f. 53.
50. *Ibid.*
51. The Victorian Government purchased the patent around January 1900 (Todd, *op. cit.*, p. 154).
52. Siemens' agent also argued that his patent's more precise specification for the cyanide solution would allow him to cover all cyanide users so as to provide another defence against the AGRC's claims and that this was another reason the Government should purchase his patent (SROWA, AN 350, MD, Acc 964, 2607/1899).
53. *Ibid.* A definitive price for the McArthur–Forrest cyanide patent was not found in the records examined. Prices mentioned were £50,000 and £100,000, according to John and Alexander Forrest, respectively. Alexander's was probably a wild exaggeration.
54. COM, *op. cit.*, Kalgoorlie COM, *Letterbook 1898–1899*, f. 53, L. Cullen to Sir John Forrest (no date).
55. SROWA, Supreme Court (SC), WAS 577, Cons 3580, A no. 12 of 1898.
56. *WAPD*, p. 1190. The Bill was unclear about whether 'first and true inventor' meant first inventor in any part of the world or first inventor in Western Australia. Walter James pointed to a similar ambiguity in existing Western Australian patent legislation (*Patent Act* 1888), though in an earlier Patent Act of the colony the words had meant 'the first inventor in any part of the world', as in American legislation.
57. Ian Stone, *A History of the Western Australian Patent Office*, Master of Applied Science, Curtin University of Technology, 1988, p. 66.
58. *WAPD* 7 September 1899, p. 1190.
59. Some of the proposed changes were not introduced in Australia until 1902 and in England not until 1905.
60. *WAPD* 7 September 1899, p. 1188.
61. *Ibid.*, 13 September 1899, p. 1285.
62. *Ibid.*, 26 September 1899, p. 1420.
63. *Ibid.*, 7 September 1899, p. 1191.
64. *Ibid.*, 14 December 1899, p. 2880.
65. Forrest opponent, George Leake, Crown solicitor 1883–1894, was the leader of the Opposition between 1895 and 1900 and Premier and Attorney General between May 1901 and June 1902 (David Black and Geoffrey Bolton, *Biographical Register of Members of the Parliament of Western Australia*, Perth, Western Australian Parliamentary History Project, Perth, 1990).
66. *WAPD*, 26 September 1899, p. 1420.
67. *Ibid.*, 30 October 1900, p. 1329.
68. *Ibid.*, 11 December 1899, p. 2878.
69. The questions the two sides had raised in the 'special case' related to fees payable to maintain the AGRC's registration, whether the patent had been duly amended in 1895, whether common knowledge, prior user and prior publication outside the colony before the date of granting the patent in Britain and between the date of the British grant and the Western Australian registration could be used to void the patent, whether objections applicable to the British patent could be raised again in the colony, whether common knowledge, prior user and prior publication in Western

Australia after the date of the British grant and before the Western Australian registration could void the patent, whether the Siemens patent could be voided because it was granted on the basis of a foreign patent later than the AGRC's, and whether the AGRC's patent could be voided because the Siemens patent was registered before the AGRC's in the colony (*Western Australian Law Reports*, 1899, vol. 1, pp. 167–8).

70. *Ibid.*, pp. 176–7.
71. COM, *op. cit.*, Kalgoorlie COM, *Minute Books, Book 3*, Meeting 8 June 1900.
72. SROWA, AN 350, MD, Acc 964, 7639/1897, Undersecretary for Mines to H. G. Neill, 8 July 1898.
73. *Ibid.*, Memo, Superintendent of Batteries to Under Secretary for Mines, 11 July 1900.
74. *Ibid.*, 18 July 1900. The advice was a reiteration of the Supreme Court decision in the 'special case' of the *Lake View Consols* v *AGRC*.
75. *Ibid.* Memo Undersecretary for Mines to Minister for Mines, 19 July 1900.
76. *Ibid.*, 14 September 1900.
77. Unless it sold the patent rights, the AGRC faced such litigation, even if the Privy Council were to resolve the 'special case' in its favour, because it still had to prove infringement by the Lake View Consols, then establish the amount owing to it, while contending with the many objections put up by the defendants. Once the case against the Lake View Consols was established, it had to fight the same fight against every other infringer.
78. COM, *op. cit.*, *Minute Books, Book 3*, Minutes of Special Joint Meeting of the Coolgardie and Kalgoorlie Chambers of Mines, 24 July 1900.
79. *Ibid.*
80. *Ibid.*
81. Albert Ernest Thomas, Cornish mining engineer, originally in Western Australia on behalf of the New Austral Company (Paris), managed the Hill End Mine and the Vale of Coolgardie (Black and Bolton, *op. cit.*).
82. COM, *op. cit.*, Joint Meeting, 24 July 1900.
83. Just how many signed contracts with the AGRC is not clear. Companies that can be identified are those the AGRC sued in 1901 and later for defaulting on these contracts (details available from the author on inquiry).
84. COM, *op. cit.*, Joint Meeting, 24 July 1900.
85. Evidently Hamilton had been conducting some negotiations of his own.
86. A London umbrella body of UK-based mining companies including those with investments in Western Australia.
87. COM, *op. cit.*, Joint Meeting, 24 July 1900.
88. *Ibid.*
89. The AGRC demanded 5% of the bullion recovered from 'gold obtained directly from pulverised ore without amalgamation' and 7.5% for gold recovered from tailings previously amalgamated (Hartley, *op. cit.*, p. 43).
90. Ordinance 31 Vict. 7.
91. Western Australia was the only Australian colony to have such a discretionary provision in its legislation concerning Petitions of Right.
92. For details of Wilkinson's remarkable case see *West Australian* 7 April 1898.
93. *Ibid.*
94. *Correspondence respecting Petitions of Right from the Western Australian Lands Company Ltd and from Mr. William Wilkinson to Her Majesty the Queen, presented to both Houses of Parliament by His Excellency's Command*. Govt. Pr., 1898, Perth. I am grateful to Eddy Lutze for drawing this reference to my attention.
95. *Ibid.* and *WAPD*, 27 November 1900, p. 1915.
96. *WAPD*, 22 November 1900, p. 1854.
97. Hartley, *op. cit.*, p. 26.
98. The Coolgardie and Kalgoorlie Chambers agreed on the terms of their amalgamation on 14 October 1900. While the legalities of the amalgamation were not concluded until early 1901, the two Chambers were functioning as one at this point.

99. For example, *WAPD* 30 October 1900, p. 1331.
100. *Ibid.*, 30 October 1900, p. 1331 and 14 November 1900, p. 1663.
101. *Ibid.*, 30 October 1900, p. 1328.
102. *Ibid.*, 14 November 1900, p. 1663 and 30 October 1900, pp. 1331–2.
103. *Ibid.*, 27 November 1900, p. 1939.
104. Both Webb and Webb, *op. cit.* and Todd, *op. cit.* have played down the strength of the opposition to the Bill. Webb and Webb incorrectly claim that 'effectively' only one Member of Parliament opposed the Bill (p. 365). In fact the opposition to the Bill, quite apart from the self-interested James and Stone, was strenuous and significant, used several manoeuvres to try and delay the Bill and exhausted the arguments in well-prepared speeches, especially R. S. Haynes'.
105. SROWA, AN 2/1–4, PD, Acc 1496, 1573/1900.
106. *Ibid.*, Forrest to the Attorney General, 8 December 1900.
107. In fact, this is how the Chamber later used it in correspondence with the authorities, arguing that the passing of the Bill by Parliament had altered the interpretation of existing legislation.
108. *The Times*, 26 September 1902, p. 9.
109. *WAPD*, 16 October 1900, p. 1029 and 30 October 1900, pp. 1328–9 *et passim*.
110. *Ibid.*, 30 October 1900, p. 1327 *et passim*.
111. *Ibid.*, 27 November 1900, p. 1912.
112. SROWA, AN 2/1–4, Premier's Department (PD), Acc 1496, 1573/1900. It is likely that in early November 1900 the AGRC was aware of the Secretary for the Colonies' reaction to the Bill. It would, however, have been contrary to the rules of etiquette for it to share this information with the Opposition.
113. *Ibid.*
114. *Ibid.* The sum of the Governor's remaining powers in the self-governing colony were to reserve assent to colonial legislation which entailed 'changes in the constitution … , or which was of an extraordinary nature, or which dealt with the trade, currency, communications or defence of the empire' (Frank K. Crowley, *Forrest 1847–1918*, vol. 1. *Apprenticeship to Premier*, University of Queensland Press, St. Lucia, 1971, p. 226).
115. COM, *op. cit.*, Meeting, 1 December 1900.
116. *Law Reports House of Lords, Judicial Committee of the Privy Council*, 1901, pp. 142–52.
117. Other questions that the Privy Council settled were of lesser significance and they need not be discussed here.
118. Section 23 (10) of the Patent Act 1888 allowed amendment of patent specifications only when there were no pending actions for infringement or 'other legal proceedings in relation to a patent'.
119. SROWA, SC, WAS 577, Cons 3580, M no. 121 of 1901. Exhibit with affidavit by Griffin Cant Money, filed 25 September 1901.
120. *Ibid.*, M 121 of 1901 Affidavit by A. E. Morgans, filed 25 September 1901. In fact, the amendment appears similar to that described by Todd, *op. cit.*, p. 152, which the AGRC developed after objections by the Victorian Commissioner of Patents and on the basis of which the AGRC finally won the right to amend its specifications in Victoria.
121. SROWA, SC, WAS 577, Cons. 3580, A no. 12 of 1898, Affidavit by Draper 1 May 1901.
122. *Ibid.*, A no. 12 of 1898.
123. The presence of the Siemens patent-holders among the objectors confirms they were working in concert with the mining companies.
124. One of the new claims was that a patent granted to A. E. Morgans preceded the McArthur–Forrest registration. Apparently, however, the Morgans patent had lapsed.
125. SROWA, AN 2/1–4, PD, Acc 1496, Keenan to A/Clerk of Council, 18 January 1901.
126. COM, *op. cit.*, *Minute Books*, *Book 4*, Meeting, 14 February 1901.
127. *Ibid.*, *Minute Books*, *Book 4*, Meeting, 18 February 1901.
128. Western Australia, *Government Gazette*, *op. cit.*, 29 November 1901, p. 4814, registers the new proprietors of the Siemens patent from the 18 to 23 November 1901 as the Australian Mining and Gold Recovery Company.
129. *Monthly Journal*, COM, vol. 1, pt III, 1902, p. 47.
130. COM, *op. cit.*, *Sundry Books*, *Book 1*, Patent Meeting, 4 November 1901.

131. *Monthly Journal, op. cit.*, vol. 1, pt II, 1902, p. 28.
132. SROWA, AN 2/1–4, PD, Acc 1496, memo A/Undersecretary, Premier's Department to Governor's Private Secretary, 11 April 1901.
133. *Ibid.*, telegram, Secretary of State, 20 April 1901.
134. *Ibid.*, 15 July 1901.
135. *Ibid.*