Ironfest 2019

20th year

April 27th and 28th at Lithgow Showground

Bea Pierce

13 hrs ·

Yay!! Catbus is now a thing - he's safely stabled and ready to roll tomorrow. You know, no artist truly works alone, especially not when making something of this scale. Big thanks to my family - it's been a group effort! Maia has contributed much of her furry costume making knowledge and made his nose. Kai has helped lug stuff and help me take the skin on and off multiple times (believe me - it's heavy and like wrestling a dead bear) and of course my partner in crime as always is Adam, who had the engineering challenge of constructing the frame and making it all work!

Bea Pierce - Jellybumps

*The **Catbus** (Nekobasu) (referred to in the film as Neko no basu) is a character in the Studio Ghibli film My Neighbor Totoro, directed by Hayao Miyazaki. It is a large creature, depicted as a grinning, twelve legged cat with a hollow body that serves as a bus, complete with windows and seats coated with fur, and a large, bushy tail. The character's popularity has led to its use in a spinoff film, toys for children, an art car, and being featured in the Ghibli Museum, among other products and influences.*

A window stretches to become a door when a person would like to board it to travel. With its multiple caterpillar-like legs, it runs, flies, bounces, and hops across forests and lakes to reach its destination, making whole rice fields sway in its wake. Its eyes shine a yellow light brightly like headlamps to guide it. Mice with glowing eyes suspended next to its destination sign on its back and from its rear serve as tail lights. The Catbus is seemingly able to take its passengers to any destination they desire, even if the passenger (or the bus itself) lacks the knowledge how to get there; as is the case when Satsuki needed to find her sister, Mei.

With its large elongated smile and its ability to appear and disappear at will, the Catbus is reminiscent of the Cheshire Cat from Alice in Wonderland. Often used to transport Totoros, in the film it makes an exception to help O-Totoro, the main Totoro, who is also the biggest. O-Totoro calls the Catbus and asks it to help Satsuki find her lost sister Mei. As Satsuki boards it, its destination sign changes to "Mei." After the sisters are reunited, the Catbus volunteers to whisk Mei and Satsuki over the countryside to see their hospitalized mother. After Satsuki and

Mei return home, the Catbus finally leaves them, its body fading into the evening shadows.

Why Catrbus

Bea Pierce: *Because the theme this year is Once Upon a Time, we're with NSW Furs and we're all big Studio Ghibli fans*

We're also big Terrey Pratchett and Discworld fans, hence Rincewind and the Luggage.

https://steamcommunity.com/groups/NSW_Furs

Rincewind making some last minute repairs to the Luggage, which didn't travel so well. Poor Luggage.

Rincewind is a fictional character appearing in several of the *Discworld* novels by Terry Pratchett. He is a failed student at the Unseen University for wizards in Ankh-Morpork, and is often described by scholars as "the magical equivalent to the number zero". He spends most of his time running away from bands of people who want to kill him for various reasons. The fact that he's still alive and running is explained in that, although he was born with a wizard's spirit, he has the body of a long-distance sprinter. Rincewind is also renowned for being able to solve minor problems by turning them into major disasters. His unique "skill" is implied to be due to being the chosen one of "The Lady", the anthropomorphic personification of luck (both good and bad).

Rincewind was portrayed by David Jason in the film adaption of *The Colour of Magic*[1] and Pratchett said in an interview that he unwittingly took Rincewind's name from "Churm Rincewind", a fictitious person referred to in early "'Beachcomber" columns in the *Daily Express*.

Rincewind has the ability to pick up the essentials of foreign languages quickly and fluency only slightly less quickly, and appears to have the ability to blend in with any situation. During *The Colour of Magic*, when he was projected into a universe that may or may not have been our own, he assumed the role of a nuclear physicist. In keeping with his nature, the role was as a physicist who specialized in the 'breakaway oxidation phenomena' of certain reactors—or, to put another way, what happens when those reactors caught fire (Terry Pratchett served as the press officer for several nuclear power plants before he became a full-time writer). Rincewind speculated on the nature of science, expressing in *The Colour of Magic* the hope that there was something "better than magic" in the world, and speculated on the possibility of harnessing lightning, for which he was mocked by "sensible" Discworld citizens. Rincewind is also fairly streetwise. He is often depicted as a harsh critic of the selected stupidities surrounding him, even though he can't help but comply with whatever absurdity that arises. For example, in the computer games starring him, he consistently spotted the ludicrous events around him and would then make jokes and puns to the unaware participants. He also seems to display, despite his apparent failure as a wizard, a fairly extensive magical knowledge, recognizing various spells, magical artefacts and concepts throughout his escapades.

Some of Rincewind's talents once stemmed from a semi-sentient and highly destructive spell that had lodged itself inside his mind and scared off all other spells (mentioned in *The Colour of Magic* and *The Light Fantastic*; though it must be stated that even without the spell's interference he was still an extremely incompetent wizard). The spell occasionally tries to make itself heard whenever Rincewind is going through a stressful time; as he was falling to his near-death, he said the first seven out of eight words of the spell.

In *Sourcery* and *Unseen Academicals* Rincewind claims that he never knew his mother as she ran away before he was born.

Rincewind has received several titles during his stay at the Unseen University; some of them because nobody else wants them, others to keep him busy doing work unrelated to magic.[3] These titles and their accompanying tenure include the condition that he cannot have any salary, influence, or opinions. They do, however, include meals, his laundry done, and (as a

result of all the impressive-sounding but essentially meaningless titles that have been bestowed upon him) up to eight buckets of coal a day during the entire year.

Concept and creation[edit]

Pratchett has said that Rincewind's job is "to meet more interesting people", saying that there is not much he can do with a character who's a coward and doesn't care who knows it. Pratchett noted that one of his major problems was that he has a "lack of an inner monologue".

catbus in museum exhibit in Japan.

Ryan Hyde - Flickr: Where in Japan will the Cat Bus take you?

From a traveling exhibit on Japanese Animation in Kalamazoo.

In a land far, far away, there was a Kingdom hidden deep within a lush valley where a fire breathing dragon turned the very rock to molten steel. It was here, at the centre of the dragon's lair, that the clans would gather each year at the changing of the season when the leaves streamed red and gold from the trees, and the breeze scattered their richness across the land.

This magical valley was called The Kingdom of Ironfest.

In the twentieth year of the reign of the Kingdom, all creatures great and small, all clans, civilised and wild, are heralded to gather to create the magical story of "Ironfest - Once Upon a Time" in this, the twentieth year of The Kingdom of Ironfest 2019.

Words: Vicki Hartley

A Short History of Ironfest

Ironfest began as a glorified art exhibition held in a number of shops in the East End Main St of Lithgow. The first Ironfest ***celebrated the birth of steel in Australia in Lithgow*** *and involved around 30 artists and performers. It also attracted around 400 people.*
The following year it was expanded to include a number of venues outside of Main St including the Small Arms Factory Museum, the State Mine Museum, Talisman Gallery, and the Blast Furnace Park; involving around 70 participants and attracting 700 visitors In 2002/03 it moved to the State Mine Museum and in this fabulous setting became a real festival involving around 300 people (artists, performers and re-enactors) and attracting in

excess of 3,000 visitors.
In 2004 it was forced (because of parking and traffic concerns) to move to its current home the Lithgow Showground where it has grown exponentially; in 2017 involving over 2,900 participants and attracting close in excess of 17,000 visitors.
It has had an immeasurable effect on Lithgow's post-industrial image transforming it from a dirty old coal mining town into a place where quality events take place; many of Ironfest's participants and acts are now involved in numerous Council run events and locals are proud to promote their town as somewhere worth visiting.
Ironfest is made possible by our generous sponsors.

https://ironfest.net/

Lithgow Blast Furnace

From Wikipedia, the free encyclopedia

*The **Lithgow Blast Furnace** is a heritage-listed former blast furnace and now park and visitor attraction at Inch Street, Lithgow, City of Lithgow, New South Wales, Australia. It was built from 1906 to 1907 by William Sandford Limited. It is also known as **Eskbank Ironworks Blast Furnace site**; **Industrial Archaeological Site**. The property is owned by Lithgow City Council. It was added to the New South Wales State Heritage Register on 2 April 1999.*

History: ***1875 to 1900***

Lithgow's association with its iron and steel works was another of this city's big manufacturing eras. Its iron and steel works commenced in October 1875 when the first iron smelting took place. Ore had been discovered by Dan Williams on Eskbank land which was then leased by Enoch Hughes, ***who had previously worked at the Fitzroy Iron Works at Mittagong.***

RANDOM NOTES.

[BY A WANDERING REPORTER.]

IX.

THE last branch of industry, though certainly not the least in importance, should the anticipations of the projectors be at all realised, to which I have to call attention is that of iron smelting. The production of iron in this colony has long excited the attention of gentlemen anxious to develop the resources of the colony, ***and I am afraid to say how many thousands of pounds have been sunk in the endeavour to establish the Fitzroy Iron Works at Nattai.***

Through a variety of circumstances, which I need not here refer to, that endeavour has hitherto proved a failure, though certainly not from any defect in the ore itself. The last trial of the furnace, made by a gentleman specially sent out from England for the purpose of con-ducting the works, proved even more disastrous than any which preceded it, the furnace

"bear"-ing up in an incredibly short period. This has been said to be due first to the peculiar character of the ore — a red hematite — of a very rich and valuable description, which turns out "white iron" of the best character; and next from the coal being a pure anthracite, and, as such, altogether unfitted for dealing with ore of this special kind.

THE LITHGOW VALLEY IRON WORKING COMPANY.

The reference of the remarks with which I have commenced this letter to the subject with which I am about to deal will readily be perceived as I go on with my description, not so much of what is being done, as of what it is proposed to do.

The works of this company are situated on the northern side of the railway line, and nearly opposite to Greg's hotel. Owing to the time which has elapsed between my visit to the spot, and the publication of this letter, very much more has been done that I was enabled to report when I was there. However, I shall confine myself to what I then saw, leaving it to some one of your many correspondents to post you up as to the actual advance made to date. The property consists of 100 acres, leased from Mr. Thomas Brown, of Esk Bank. Within some twenty feet of the railway line, a shed 120 feet long and 24 feet wide has been

constructed for drying bricks, and men were just then employed for the purpose of making them. Fire bricks for the furnace were to be made in the first instance, and after that ordinary bricks for the construction of offices, residences, &c. Immediately contiguous to the shed a Chilian mill is erected, for grinding the fire-clay prior to its being used in the brick-making. This clay is to be obtained in quantity on the very spot on which the Chilian mill is erected, whilst nature almost seems to have pointed out this spot specially as one on which to erect works of this description. Sandstone of the best quality for building purposes is there; at a depth of only 6 or 8 feet, a seam of excellent coal for coking 14 inches thick has been found, lying on a 6-feet seam of fire clay, and below that again is a bed of common clay suitable for ordinary brickmaking, overlying the main seam of coal, which crops out lower down towards the Farmer's Creek, at a distance of some 50 yards. With regard to the fire-clay, I have before mentioned that the Messrs. Lloyd declared it to be equal to any thing of the kind they had met with in their experience; and I may now say that the manager of this company Mr. Enoch Hughes, who has had many opportunities of judging of the materials required in iron smelting has passed a similar judgment upon it. So convinced indeed was he of its superiority, that he caused a few bricks to be made for the purpose of testing

by different persons. One of the these was sent to the Mint, and was returned to Mr. Hughes with the certificate that "it was not to be melted."

These, however, are not all the advantages of the locality, for ironstone is to be found on the ground, of the description known as the "clay band," whilst in the hills adjoining, the red silicious ironstone is to be had in abundance. In fact, the railway cutting, immediately adjoining the bridge by which Bell's line of road is carried across the railway line, has laid bare a belt of ironstone, of the "clay band" character, and about 4 feet thick, though divided by two narrow bolts of micaceous sandstone. The supply of ironstone, however, will not be drawn exclusively from the valley, for in order to avert the difficulties which have stood in the way of the progress of the Fitzroy mines, the clay bands of the valley will be mixed with the "red hematite" of Mount Victoria, the "micaceous" ore of Tarana, and the "magnetic" ore of Mount Lambie, as it is con-ceived that the combination will be much more readily dealt with than would any one of the ores separately. By way of showing the quality of the ore, I will give you a few of the assays made by Mr. Charles H. Cawse, of Bathurst, on the part of the company, before they decided upon taking the matter up. No. 1. schistose, impregnated with bitumen — black band — from Bowenfels, gave 21.75 per cent. of iron; No. 2, red silicious iron ore, from Mount Victoria, gave 13.10 per cent.; No. 3, micaceous iron ore, from Tarana, gave 25.9 per cent.; No. 4, magnetic iron ore, from Mount Lambie, gave 58.6 per cent.; No. 5, clay ironstone (clay band), from Wallerawang, gave 39 per cent.; No. 6, ditto, from Lithgow Valley, gave 49 per cent.; No. 7, ditto, from Mount Victoria, gave 21.3 per cent.

It will thus be seen that ironstone of very high percentage, and in any quantity, is to be had in close proximity to the railway line both up and down, and that the only thing which now remains is to test the applicability of the coal to the purposes of iron smelting. Mr. Hughes is most decidedly of opinion that it will prove all that can be desired; whilst from its so well answering the purpose in the copper smelting furnaces, the inference would certainly be that it would be equally as efficacious for iron smelting. With regard to limestone, the nearest point at which it can he procured is the limestone reserve, situated some six or seven miles from the Wallerawang station, but it is believed that no very large quantity of this will be required, as there is a kind of silicious schist on the ground, which it is said will answer admirably as a flux for the ironstone, when mixed with a pro-portion of limestone.

Having thus dealt with the material, let me now go on with my description of the works. The furnace, the foundation for which was just dug out when I was on the ground, is to be erected in close proximity to the old adit, by means of which, as I mentioned in a former letter, the Esk Bank colliery, was originally worked. It will be 45 feet high, or with the foundation and furnace bed, 55 feet, and being placed by a hill side, will have a convenient run in for feeding at the top. It is planned to be 12 feet across the boshes, and at this size, with the mixed ironstone it is

intended to use, it is calculated that it will run to something like 120 tons of iron per week. The engine for working the blast furnace, and the blast furnace itself, will of course be in close proximity to the smelting furnace, and the creek being close handy, a plentiful supply of water, for all necessary purposes will be readily obtainable.

There is of course, in all matters of this kind no test like actual experience, and calculations which are so easily made on paper, are but too often liable to be capsized by some little adventitious circumstance which was thought to be too insignificant in the first instance to be taken into account; but as far as this company is concerned, I honestly believe that the only question to be solved is that of the suitability of the coal. Should this prove what it is expected to be, their calculations, which have been shown to me, and which have been made not by one, but by several gentlemen well up in the iron smelting business, go to prove that even with the present heavy charges for haulage per train, iron could be produced at Bowenfels from the valuable ores in the vicinity, at such a price as would enable it to be sent home to England, and sold there at a lower rate than English iron is now fetching. The company intend in the first instance to produce nothing but common pig iron; but as the works progress, and the character of the various ores are better comprehended, some of the best white iron will no doubt be run from the Mount Victorian hematite. This kind of iron is very much in demand for the shoes of the stampers of quartz-crushing batteries, and for other work where more than usual durability is required, and there exists a very large demand for it not only here but in California. But handsomely as the production of this quality of iron will be sure to pay, the company are acting wisely when they deter-mine to mix the ores, and thus produce, at first, only the ordinary pig for casting purposes.

The gentlemen who have started this company, some eight or ten only in number, I believe, will certainly do a great service to the colony if they succeed in establishing this very valuable industry in the colony; whilst, as far as Lithgow Valley is concerned, they will render it a place of the first importance in New South Wales. With this company a success, there will be sure to be iron smelting furnaces erected in connection with every one of the coal mining companies in the valley, for by that means they will at once be able to convert their coal into the merchantable article of iron, and will thus be altogether independent of any extraneous demand, whilst the valley itself will become a scene of busy life, and add no small amount to our annual wealth.

I had intended to make some remarks upon the coal and ironstone beds in the vicinity of Wallerawang, but this subject has been so recently treated exhaustively by a scientific pen that no observation of mine could be of any value in a field where I, from my particular occupation, can only be a gleaner. RANDOM NOTES. (1875, January 2). The Sydney Morning Herald (NSW : 1842 - 1954), p. 7. Retrieved from http://nla.gov.au/nla.news-article13349127

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stampers of quartz-crushing batteries, and for other work where more than usual durability is required, and there exists a very large demand for it not only here but in California. But handsomely as the production of this quality of iron will be sure to pay, the company are acting wisely when they determine to mix the ores, and thus produce, at first, only the ordinary pig for casting purposes. The gentlemen who have started this company, some eight or ten only in number, I believe, will certainly do a great service to the colony if they succeed in establishing this very valuable industry in the colony ; whilst, as far as Lithgow Valley is concerned, they will render it a place of the first importance in New South Wales. With this company a success, there will be sure to be iron smelting furnaces erected in connection with every one of the coal mining companies in the Valley for by that means they will at once be able to convert their coal into the merchantable article of iron, and will thus be altogether inde-pendent of any extraneous demand, whilst the valley itself will become a scene of busy life, and add no small amount to our annual wealth. I had intended to make some remarks upon the coal and ironstone beds in the vicinity of Waller-awang, but this subject has been so recently treated exhaustively by a scientific pen that no observations of mine could he of any value in a field where I, from my particular occupation, can only be a gleaner. The Tourist (1875, January 9). *The Sydney Mail and New South Wales Advertiser (NSW : 1871 - 1912)*, p. 53. Retrieved from http://nla.gov.au/nla.news-article162493025

Also in —Sydney Mail. THE LITHGOW VALLEY IRON WORKING COMPANY. (1875, January 16). *The Burrowa News (NSW : 1874 - 1951)*, p. 4. Retrieved from http://nla.gov.au/nla.news-article103373252

The foundry was erected nearby after Hughes convinced James Rutherford, of Cobb & Co. fame, from Bathurst to become involved. The other principal shareholders were the NSW Minister for Public Works, the Hon. John Sutherland and Dan WIlliams, an engineer from Canada who worked on the Lithgow Zig Zag railway project.

PARLIAMENTARY PAPERS.

RAILWAY RAILS AND IRON.

THE following reports on quality of the railway rails supplied by the Park Gate Iron Company, and upon iron castings, &c., have been ordered by the Legislative Assembly to be printed. They are addressed to the Commissioner -

Sydney, May 14,1875.

Sir,-In compliance with the instructions of the Hon the Minister for Public Works conveyed to us in your letter of the 12th March, 1875 (No 75-325), in which you state that it was his desire to obtain from skilled persons not In the employ of the Government, a report as to the quality and condition of certain rails which have

been supplied by the Park Gate Iron Company to the Railway Department, and whether the same are in accordance with the specification under which they were ordered,—we have now the honour of submitting the following report

2. The course adopted by us in this investigation has been as follows, viz:—

(a.) To subject a number of the rails, taken indiscriminately, to the tests referred to in the specification under which they were made, and the tabulated result of these experiments will be found in Appen-dices A, B, and C

(b.) To examine the particular rails which had been laid down on the permanent-way of the existing lines of railway, and which it was asserted had in a very short period of time either required to be turned or removed as utterly unserviceable, and subject them to additional tests.

(c) To examine those gentlemen in the colony who from their experience in iron manufacture, we considered capable of giving an authoritative opinion on the subject of our inquiry, and the reports of those gentlemen together with their evidence, will be found in Appendices D, E, F, G, and H. We also called upon the engineer in charge of the permanent-way of the Southern and Western lines, the superintendent of permanent-way of the Northern railway and the Resident Engineer on the Goulburn extension for reports (See Appendices I, J, and K .)

(d) Personally to examine the fifteen miles of rails which have, been laid down on the Southern extension and subjected to five months of actual traffic by the contractor in the conveyance of permanent-way material, water, ballast, &c

(e.) Also with the view of ascertaining the general condition of the rails, and whether they had been properly straightened &c., before leaving the works to make a careful inspection of all the stocks of these rails now at the Sydney Railway Station, testing several as a fair sample of the whole (See Appendix L.)

3 With regard to the first portion of our inquiry, we may state that ten rails were taken indiscriminately from ten stacks lying at the Redfern Station each having the brand of the Park Gate Company upon it, and these were submitted to carefully conducted experiments under our immediate supervision, at the works of Messrs. P.N. Russell and Co , of this city.

4. In clause 16 of the specification it is stated that the rails are to be subjected to the following tests:—

" The rail to be placed with the head upwards on two solidly bedded iron supports, placed 3 feet 6 inches apart in the clear, and to support in the centre, for a space of five minutes, a weight of 12 tons, without showing any permanent deflection after removal of the weight the rail must then, under the same conditions support a

weight of 30 tons without fracture. The rail is then to be nicked round and broken in the straightening press with the head downwards. The fracture thus obtained must show a fine granular homogeneous texture in the head down to the shoulder—the web and flange munt exhibit a clean fibrous fracture, and there must be no signs of imperfect welding or other defect.

" One of the two portions of the rail to be then laid down with the head upwards on iron supports, 3 feet 6 inches apart in the clear, fixed on solid foundations, and subjected to one blow of an iron weight of 10 cwt, falling from a height of 7 feet. The rail must show no signs of fracture after this test "

“We have, as will be seen by the annexed tabular statements, Appendices A, B and C, loosely followed the modes above prescribed for testing the rails All the rails experimented upon withstood satisfactorily the test of sup-porting a weight of 12 tons, between supports of 3 feet 6 inches apart, without any permanent deflection being occasioned thereby, but it will be observed that several of the rails were fractured before the loading by actual weight, or the pressure from the hydraulic press reached the specified weight they were to withstand of 10 tons, breaking in every case short off, more like a piece of cast than malleable iron.

“After nicking them round, the rails broke at a pressure varying from 13 to 22 tens, and the fractures invariably exhibited a course crystalline grain on the head, web, and flange and little or no fibre was observable in the flange or web, which contained a large quantity of dirt, proving clearly to us that the iron throughout employed in their construction had not been properly worked, nor was of the quality specified in clauses 7,8, 9, and 10, which status that—

" The slab for forming the head of the rail to be made of the best mine iron, specially selected for hardness and toughness and made into a bloom thoroughly and closely worked together on all sides under the hammer, then re-heated to a welding heat and rolled into a bar of 9 in wide and 2 in thick. This slab must in all cases be the full length and width of the pile.

" The slab and side pieces for forming the flange and shoulder to be of the best qualify of No. 2 iron, such as shall produce a strong, tough, fibrous iron The inter-mediate bars are to be made of such mixture of ores, being all mine iron, as shall produce good strong, tough, puddled iron of the best quality for the purpose, and not exceeding ¾ of an inch in thickness, and of such widths as properly to break point.

" This pile, 9 inches x 10 inches, is to be rolled into a bloom, which is to be re-heated to a welding heat and then rolled into a rail "

7. When subjecting the rails to the test of a weight of 10 cwt, falling a distance of 7 feet, as per specification, we found that four out of the eleven exhibited slight

fractures, as will be seen by the tabular statement of the experiments in Appendix B, a result which is in our opinion and additional proof of imperfect manufacture, '

8. In order to obtain further proof regarding the quality of the iron of which these rails were composed, and as the mode of piling and working, which had been adopted in their manufacture, we had several pieces cut from the rails, the ends planed up and placed in a solution of strong acid, which had an effect of destroying the inferior parts of the iron in a manner that will be better understood by a reference to the prints we had taken from them, as shown in Appendix M. The samples or pieces of rail are also forwarded herewith.

9. With the view of obtaining some information with regard to the way these rails withstood in actual practice the ordinary wear and tear of the traffic when laid down on the existing lines», We availed ourselves of the power vested in us by the Hon. the Minister for Public Works, and communicated direct with the engineer, who is in immediate charge of the permanent way of the Southern and Western Railways and were favoured with the memorandum from Mr. William Mason, C.E.. which will be found in Appendix J. This return, it will be observed, shows that out of ten rails laid down in the Sydney yard on the 28th of last September, one had to be reversed in a little over six weeks, two in ten weeks, two in a little under five months, and one in twenty-two weeks, while three had to be renewed in about seventeen weeks and another in twenty-two weeks.

10. It will be gathered from Mr. Bewick's report (Appendix J) what his short experience of these rails has been where laid down in the Newcastle yard of the Northern railway. He states that two placed where the traffic was exceptionally heavy had been " completely worn out " in seven weeks, and others in from two to eight months, but odds that there is considerable difference in the quality of the rails, some as yet showing no signs of giving way.

11. When we state that the average "life" of iron rails in England on those portions of the lines where there is an ordinary amount of traffic is about ten years; in and near London it is from two to three years; on the Continent, from twelve to fifteen years; and in Sweden, with less traffic than in England, from fifteen to eighteen years; and that, in this colony, some of the Barlow rails, laid down on the Sydney and Parramatta, were down fourteen or fifteen years- the results given by Messrs. Mason and Bewick can hardly require any comment from us. We have seen the rail referred to by these gentlemen, and knowing how impossible it is that any very great mistake as regards time could have been made, from the fact that the rails have not been seen much longer in the colony, we must express our great surprise at the very unsatisfactory quality of the rails to produce such results.

12. We examined the rails referred to in the reports of Messrs. Mason and Bewick as having been taken up and condemned as perfectly useless, and found that the heads appeared completely crushed in, that they were split up longitudinally, and

exhibited great exfoliation on the sur-face, this proving by the test of actual wear that both the metal of which they were composed was not of the best, nor had it been worked in accordance with the terms of the specification.

13. We both examined and obtained reports (see Appendices D, C, F, G, and H) from Mr. Thomas Bladen, manager of the Pyrmont Bridge Ironworks, Sydney; Mr. S. B. Daniel, 1st assistant manager at Messrs. Sharp, Stewart, and Company, of Manchester; Mr. Thomas Francis; Mr. Enoch Hughes, manager of the Lithgow Valley Ironworks; and Mr. David Smith, manager of the Fitzroy Iron Works Company, at Nattai. All those gentlemen have had great experience in iron manufacture, and two have, in addition, been practically engaged in the making of rails. Their reports speak for themselves, and we would only observe that they fully bear out the opinion we had come to as to the inferior quality of these rails.

14. As the best test for rails is that of actual wear from traffic running over them, we considered it most important that we should visit and inspect the 16 miles of line which has been laid with these rails during the last five months on the southern extension between Goulburn and Yass, and we may state that a better constructed piece of permanent way we have never previously witnessed. At the commencement of the single-headed or flange rails, supplied by the Park Gate Iron Company, and up to 134 miles 20 chains, we found a number of the rails flattening on the head, and giving signs of shelling off at the edges, although they have only been in use some five months for ballasting and conveying the permanent-way material to the works in progress. Some of the rails had flattened on the head l-'i'Z of an inch, and the joints closing from l-8'o*an inch to 3-10 of an inch. The traffic consists of the contractor's engine, 15 tons, and four trucks, each loaded with 6 tons of rails, running once a day, and returning with ballast. The Government goods engine has nlao been running for water over this portion of the line, for a distance of about two miles from Goulburn, once a day for about six weeks. Wo forward herewith a sample of the shieling which we took from off the rails. The contractor's engine, with the four truck, at present runs once a day, with about twenty tons of rails or sleepers, for about 16 miles. The ballast wagons, about four times a day for short distances of from two to three miles, have been running for about four months. Eight miles from Goulburn we inspected several rails laid on a gradient, that have only been in for about two months, and found that they were very much flattened on the head, and shieling off considerably.

15. At the end of the line, about 16 miles from Goulburn, we inspected a large number of these rails on the ground, and found them all more or less buckled and twisted, which will necessitate their being straightened before they can be put in the work, involving the expense of unloading from the trucks at the straightening press, straightening and hammering, and reloading to be conveyed to their destination-all of which we estimate will cost from £46 to £o0 per mile. We also found that many of the rails were wider on the flange than others, so that the sleepers had to be cut to allow them to go into the notch prepared by the machine

for that purpose, the twisted rails, when screwed down on the sleepers, threw the head out of line. We remained at the straightening press and saw two rails straightened and hammered; one Required twelve pinches vertically, and twenty-six 8¡dewaja, which took twenty-six minutes' time of four men; the other required nineteen pinches and fourteen minutes time. The average number of pinches required to straighten the rails are twenty, and the time twenty-three minutes, or twenty-six rails per day, with-one press and four men.

16. We inspected a 21 foot rail that had been broken across the head in straightening at the inner bolt-hole, The fracture showed the iron at the head to be more like cast than malleable iron, a coarse grain, and Boort. The flange, however, was of good fibrous iron, of a much better quality than any of those tested by us in Sydney. (See sample.) Another, which broke off at about 2 foot from the side, when undergoing the operation of straightening, exhibited on the contrary a very coarse iron, with no fibre. We were informed by the contractor, Mr. D. Williams, that about twenty of these rails had then been broken up to this date (30th April). Our inspection fully bore out the statement of the resident engineer (Mr. Firth) that “76 per cent of the rails require straightening before being laid down." (See Appendix K.)

17. We also held a survey on a quantity of those rails that were lying at the railway station, Sydney, and found a large number of them were buckled and slightly twisted; and we are of opinion that the same were never properly straightened previous to leaving the company's works. The results of our testing a few of these rails will be found in Appendix L.

18. Having given very careful consideration to the whole subject of our inquiry, we are constrained to state that we consider the rails manufactured by the Park Gate Iron Company to be of a very inferior quality. That the iron of which they are composed, although perhaps of a fair duality originally, is very Impure and badly worked: and it is our opinion that very few would last twelve months if laid down on the permanent-way of our existing lines of railways.

We find that the specification has been carefully drawn up with a full knowledge of all the requirements in the manufacture of this class of rail, and that had it been strictly adhered to in this case there could have been no possibility of any cause of complaint, either as regards the ranks of the rails or the quality of the iron of which they were, composed.

We have, &c.,

JOHN STRUTH.

ALEX, BHOWN.

JOHN RUSSELL.

Sydney, May 14,1875.

Sir,-In compliance with the instructions of the Honorable the Minister for Public Works, conveyed to us in your letter of the 2nd April, No. 412, in which you request us to extend our inquiry to the quality of the fastenings, spikes, screws, fish-plates, and bolts and nuts, supplied by the Patent Nut and Bolt Company, the Ebow Vale Iron Company, and the Darlington Iron Company, for the extension from Goulburn to Yass, we have now the honour of submitting the following report.

2. We had several cases of bolts and nuts, spikes, screws, and fish-plates cent from the railway station, Sydney, to the works of Meters, P. N. Russell and Co, and which were carefully tested under our immediate supervision, with the following result -

" Ono case screws, marked P.N.& B. Co. over 334." We cut several of the heads, both cold and hot, and find the same are solid, and not welded on. The iron is of fair quality, but would not stand the test as specified in clause 1 of the specification. The samples tested we forward herewith.

" One case spikes. No. 808, P.N.&B.Co. over 312 " We find the heads are solid, but have been forged out of round iron and doubled down to form the head, and not forged out of square iron, as is usual. The iron is of fair quality, but would not stand the test as specified in clause 1 of the specification. The samples tested we forward herewith.

"'One case bolts and nuts, marked P.N.&B.Co. over 27." We find the bolts are well made, and the iron is of fair quality, but would not stand the test as specified in clause 1 of the specification. The samples tested we forward herewith.

" One case fish-plates, marked D.I.Co." In this case we found one plate of fair quality, sample No. 4, bent to on angle of -15 degrees, and then straightened, exhibiting a fracture at the back ; sample No. 5 is of good fibrous iron ; the quality of iron in samples Nos. 3 and 6 is rather coarse and little fibre, , The samples tested we forward herewith.

We tested three fish-plates, marked E.V. 74, as per samples NOB. 7,8, and 9, forwarded herewith. Those . we find vary in quality, and wo consider them as a fair sample of the whole.

3. We also examined the fish-plates, bolts and nuts, screws, and spikes, that are now being need on the extension Goulburn to Yass, and found as follows :

The fish-plates marked D.I. Co, have been principally used. We broke several of them and found the iron very bad, some breaking under the blow of a hammer without being nicked (See samples-marked Nos 1 and 2, forwarded herewith)

The bolts and nuts, screws and spikes, we found similar to those we had tested in Sydney.

4. From the forgoing testes we are compelled to state that the fish-plates, bolts and nuts spikes, and screws, as supplied by the respective companies referred to, have not been manufactured in strict accordance with the specification for the supply of same.

We have, &c,

JOHN STRUTH,

ALEX. BROWN, JOHN RUSSELL. PARLIAMENTARY PAPERS. (1875, June 3). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 3. Retrieved from http://nla.gov.au/nla.news-article13355830

The Lithgow Valley Iron Works (later the Eskbank Ironworks) then consisted of a blast furnace, foundry and two bar rolling mills with the necessary fitting and smiths' shops. About 18,000 tonnes (20,000 short tons) of pig iron was made initially from local ores, which was converted into rails and bars. Work was carried on intermittently, until it was decided to pull down the blast furnace and convert the castings into merchant iron.

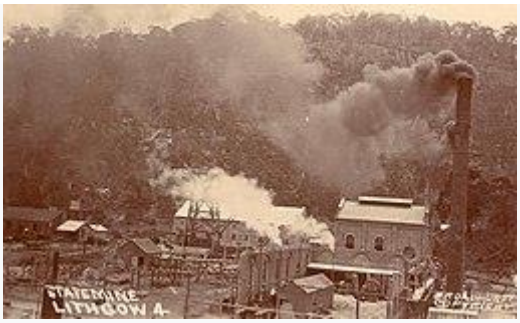
In May 1880 in the *Lithgow Report* it stated that the Eskbank Ironworks were working at the rate of four miles of rails per week. The new rails stood the test of 36 tonnes (40 short tons), the required standard being 27 tonnes (30 short tons). The blast furnace was in full swing and 91 tonnes (100 short tons) per week of iron was anticipated.

The original blast furnace at the Eskbank Ironworks closed in 1882, and it is reported that James Rutherford - to avoid the temptation to ever reopen it - in the dead of night, used two dray-loads of blasting powder to blow it up. After the blast furnace closed down, the rolling mills were used to re-roll old iron rails into merchant bars. In 1886, William Sandford, leased the rolling mills at the Eskbank Ironworks to roll rails and then bought the ironworks in 1894.

The Lithgow Blast Furnace was erected by William Sandford in 1906-1907, a short distance from the Eskbank Colliery which he had purchased outright in 1892. The construction of this later furnace over one kilometre (one mile) away from the Colliery was widely criticised, but its proximity to the railway and its size, providing scope for expansion, made it an understandable choice. It was constructed for the sole purpose of smelting iron from ore. It is a popular misconception that the site was also

an ironworks. Indeed the Eskbank Colliery furnace, which had been operating since 1875, is often confused with Sandford's later furnace.

After a layoff the mills at the Eskbank Ironworks were restarted on 30 July 1894. The old system had been discarded and the mills had now commenced on a partially co-operative principle, which it was expected would cheapen production and give better results generally. During the cessation of work the plant was added to and improved, in this way the sheet mill now starts equipped to produce nearly double its former product. An order for 91 tonnes (100 short tons) of spike iron, to be supplied at the rate of 9.1 tonnes (10 short tons) weekly, had been obtained **from the Railway Commissioners**. The company soon found themselves with an overdraft of about A£60,000 and had decided on closing the works when Sandford took them on lease in 1885. He added mill after mill, with powerful shears, furnaces, boilers and rollers, so that now the mills were fully equipped for the work they had to do. Output for all classes of finished iron and steel for the three years ending 31 December 1901 averaged over 6,400 tonnes (7,000 short tons) per annum. It did not cover more than a small percentage of what was imported into Sydney.



The blast furnace, pictured c. 1900-27, by William Broadhurst;

(Source:SLNSW).

Broadhurst, William Henry, 1855-1927 - http://www.acmssearch.sl.nsw.gov.au/search/itemDetailPaged.cgi?itemID=796561

The works and sidings occupied a space of about 5 hectares (12 acres), situated between the Main Western Railway Line and Farmer's Creek, being connected with the main line at Eskbank Station, with sidings all round the works. Sand for the works was obtained from Farmer's Creek, close by, and loam for the foundry from a paddock adjoining the works. Within the ironworks' fence is a colliery adit, where the coal was drawn out by an engine, and the same skips drawn around the works, so that coal was only handled once, into the skips; and the same skips were tipped into the furnace bins in the ironworks. Coal was thus used fresh from the colliery, and bore comparison in heating qualities with most of the English coals. On the siding to the works was situated the steam sawmills, where timber of any ordinary size could be cut and delivered to the works.

To heat the iron for the mill, four large furnaces were used, each capable of heating from 4.5–5.4 tonnes (5–6 short tons) of iron per shift. Attached were large horizontal boilers for raising steam by the waste-head from the furnaces. There was a great deal of equipment on site including immense Cornish boilers, weighing 20 tonnes (22 short tons) for raising steam by the waste heat from the furnaces. There was a 1.4-tonne (1.5-short-ton) steam hammer, massive shears for cutting up rails into lengths,

a large gantry, 91 centimetres (36 in) horizontal condensing 130-kilowatt (175 hp) engine and giant fly-wheels with 9 metres (30 ft) diameters, weighing 36 tonnes (40 short tons).

The No. 2 Sheet Mill had a 32-tonne (35-short-ton) flywheel. In the fitting shops were lathes, screwing, drilling and punching machines, nut and bolt machines, and a complete spike-making machine, where spikes for the Railway Construction Department had been made the previous three years. The foundry department had two large travelling cranes, a large and small cupola and an air furnace. There was also a large Siemens melting furnace, for dealing with scrap, scrap and pig iron. It was complete with a steam travelling crane capable of lifting 6.4-tonne (7-short-ton) cast iron moulds and large wrought iron ladles. Cement used in the works was mostly made at the Cullen Bullen Company's lime and cement works, about 16 kilometres (10 mi) from Lithgow There was another mill principally for rolling sheets for galvanising and corrugating sheets up to 4 metres (12 ft) long and 27 gauge.

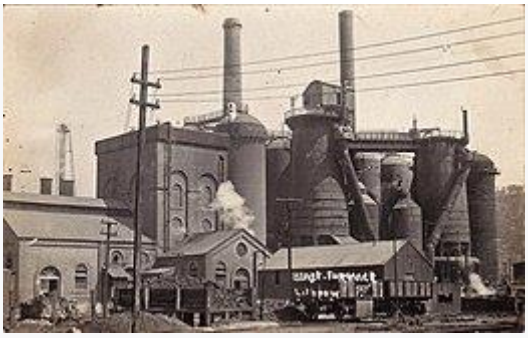
Since 1901

On 24 April 1901 Sandford organised a gala dinner to announce that he and his son Esk had successfully tapped the first viable quantities of steel produced in Australia at the Eskbank Ironworks. He had been working Eskbank since the 1880s, and although tapping steel was a triumph, he was nearly exhausted by it. Sandford felt iron and steel were basic commodities and needed to be boosted, and tried every which way to protect and support his venture. While Lithgow's coal miners were free traders, iron workers and their bosses were protectionists, so, to advance his cause, Sandford ran as a protectionist against Joseph Cook in the 1901 federal parliamentary election. He then tried to convince the NSW government to take over the works.

Finally, when a tender for steel and iron supply became available he bribed three parliamentarians, including WIlliam Holman, to win the contract. Part of that deal included the construction of a blast furnace, to enable production of pig iron for steel. Sandford complied.

The Blast Furnace was "blown in" on 13 May 1907. It was Sandford's proudest moment and won him the title of the father of the Australian steel industry. His relations with workers were relatively harmonious and beneficent and the Eskbank estate was, to him, a satisfyingly noisy and smoky place. However behind the scenes, Sandford was financially and mentally strained. He could not raise capital but was unwilling to cede his management to external investors such as John Lysagth Ltd., and although Charles Hoskins and his brother George looked at the plant, they pulled out when they saw the state of the books.

The Commercial Banking Company of Sydney, which had underwritten the operation, foreclosed on the ironworks on 9 December 1907, although it kept the Blast Furnace running. With 700 out of work, the Premier invited the Hoskins brothers to take over the Lithgow iron and steelworks. Although the complicated deal ensured Sandford's debts were paid and he received enough money to guarantee his financial security, he was devastated and felt deceived by Charles Hoskins. His parting with the Lithgow community was sad for him, his wife Caroline, the workers and their community.



Blast Furnaces at Lithgow. Because there are two furnaces shown, this photograph was taken, between 1913 and 1928, during the period the Hoskins owned the plant.

The furnace was officially opened by the premier of New South Wales on 13 May 1907. William Sandford Limited soon ran into financial trouble and could not fulfil its contract to supply the government with pig-iron, so in 1908 the company was purchased by Hoskins Bros, owners of the premier manufacturer of iron pipes in Australia. They made few initial alterations to the Blast Furnace, although the ironworks underwent substantial changes. The Hoskins also succeeded in having Sandford's government contract transferred to themselves and extended until the end of 1916. Their success prompted them to build 80 coke ovens and a second blast furnace at the eastern end of the site in 1913. The second furnace was a near replica of Sandford's original construction. Fifteen coke ovens were added shortly afterwards to cope with the extra fuel requirements.

The Hoskins were highly active in the development of the ironworking industry and staunchly opposed the growth of unionism. The Hoskins were clear-sighted about the technological problems of the steel and ironworks, and the labour issues, and had considerable business acumen, but Charles Hoskins was impatient and imperious and provoked industrial unrest as soon as he set foot in Lithgow in 1908. He was also a protectionist, and although his negotiations with government over tariffs were never entirely successful, he did manage to get the Eskbank enterprise onto a solid footing before the surge in production caused by World War I.

The outbreak of WWI saw considerable expansion in operations, although Lithgow's monopoly on iron smelting was about to be seriously challenged by BHP, who opened their Newcastle plant in 1915. However, the opening of a Small Arms factory in Lithgow ensured that the Hoskins' works flourished. A great deal of their profit was ploughed back into the expansion of capacity at the steelworks. In 1923 a fifth blowing engine was added to the original furnace. At 360 tonnes (400 short tons), it was the largest in Australia.

In the mid 1920s, the decision was taken to move operations to Port Kembla, where the natural resource and transport network were more attractive. The Lithgow site was abandoned in 1928, although the last employees were dismissed in 1932.

The site was bought by the Lithgow City Council and was opened to the public as The Lithgow Blast Furnace Park in 1988.

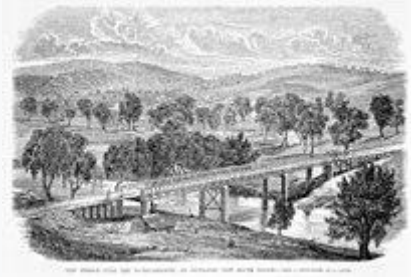
*The **Fitzroy Iron Works** was the first Iron Smelting works in Australia, built in 1848.*

From 1848 to around 1910, various owners and lessees attempted to achieve profitable operation but ultimately none succeeded. The Fitzroy Iron Works itself was a commercial failure, but it played a part in laying the foundations of the later success of the Australian iron and steel industry. It was important in the growth of the township of Mittagong, New South Wales, Australia.

Just southwest of the current Mittagong town, the original mine deposit was located just South of the Main Road. The Iron Works were established on the North side old Hume Highway and Mt Alexander. The site of the blast furnace had always been known but the existence of remains of the iron works was not. During excavation work for a new Woolworths store in 2004, the remains of the Iron Works were found. The site was excavated and researched, and the new development was expanded to incorporate the historic artifacts. The displays are viewable in the under-ground car park area.

The Fitzroy Iron Works led to the growth of the town of Mittagong and, in particular, the part of that town once known as 'New Sheffield'. Building allotments in 'New Sheffield' were sold by the company in 1865, to provide additional funds, due to the difficulty in raising capital. The name of Bessemer Street in this area of the township recalls the iron-making past of Mittagong, as do Ironmines Oval and Ironmines Creek, both of which lie between the sites of the original iron works and the blast furnace. Also located within the area formerly know as 'New Sheffied' is Lake Alexandra, a man-made lake that was originally built to provide water for engines on a tramway operated by the Fitzroy Iron Works. During the time that the iron works land was owned by the Mittagong Land Company, more building allotments were sold,

The lion is the symbol of Mittagong and of its public school Some of Mittagong's sporting teams are known as the Mittagong Lions and use the lion as their symbol The particular design used most commonly - known as the 'Fitzroy lion' - is very similar to that of the commemorative door-stops cast at the Fitzroy Iron Works in 1864.



Newly built **Prince Alfred Bridge** at Gundagai in 1867. Etching of the new bridge from a photograph by Mr. A. Smith, jun., of Adclong. Published in The Illustrated Australian News for Home Readers 26 November 1867

The iron cylinders used in the piers of the Prince Alfred Bridge over the Murrumbidgee River at Gundagai are made of cast-iron from the Fitzroy Iron Works. Although no longer a part of the Hume Highway, the bridge - opened in 1867- still stands.

The **Prince Alfred Bridge** is a wrought iron truss and timber beam road bridge over the Murrumbidgee River and its floodplain at Gundagai, New South Wales.

The bridge was named for the then reigning Queen Victoria's son, Prince *Alfred, Duke of Saxe-Coburg and Gotha*, and was built to carry the Great Southern Road (now the Hume Highway) across the Murrumbidgee. It has existed in three forms, with only the main spans across the river itself being common to all three.

As opened in 1867 the bridge had a total length of 1,030 feet (313.9 m), consisting of three wrought iron truss spans each of 103 feet (31.4 m) across the river, two timber southern approach spans each of 30 feet (9.1 m), and twenty-three timber northern approach spans each of 30 feet (9.1 m), rising on a gradient of 1 in 30 from the level of the floodplain.

It was the first iron truss bridge to be built in New South Wales,[3] The pin-jointed Warren truss section is the second-oldest metal truss bridge in Australia. It was *designed by William Bennett, Engineer and Commissioner for Roads and constructed by Francis Bell.*

The Fitzroy Iron Works itself was a commercial failure, but it played a part in laying the foundations of the later success of the Australian iron and steel industry.

The blast furnace built at the Fitzroy Iron Works, in 1863-64, was the first blast furnace in Australia. Enoch Hughes, who supervised the construction of that blast furnace at Mittagong, is the same man referred to as being at the Lithgow Valley Iron Works (later known as the Eskbank Ironworks) at Lithgow. In 1875, he built another blast furnace at Lithgow, which operated until 1882. During his second period at Mittagong, during the year 1868, the Fitzroy Iron Works rolling mills produced the first iron plate rolled in Australia, and Hughes also claimed to have rolled the first iron rails there. After Hughes, in late 1868, came Thomas Bladen, who later also worked as the government's inspector at the Eskbank Ironworks, where he clashed with Hughes who had become the works' manager there..

William Sandford leased the Fitzroy Iron Works to roll rails in 1886. While there, he had made what was probably the first galvanised iron sheet manufactured in Australia, around September 1886. After nine months, in 1887, he relocated his operations to the Eskbank Ironworks at Lithgow. He owned the Eskbank Ironworks, in 1901 when it first made steel and when its new blast furnace – the first truly modern one in Australia - entered service in May 1907. Sandford is viewed, justifiably, as the father of the iron and steel industry in Australia. A later owner of the works at Lithgow transferred the operation to Port Kembla - where steel is still made today - between 1928 and 1931.

Thus there is an unbroken link from the pioneering efforts at the Fitzroy Iron Works, via the Eskbank Ironworks, to Port Kembla and the modern iron and steel industry in Australia.

The Fitzroy Iron Works is commemorated by a memorial erected in 1948 at the site of the blast furnace and the remains of the iron works uncovered in 2004 with interpretive signage. The only complete structure that is a remnant of the iron works is 'Ironstone Cottage', a sandstone cottage on the Old Hume Highway, which was once used by managers of the iron works.

LITHGOW. (Mercury)

ACCIDENT AT THE IRONWORKS.—A nasty accident occurred to Mr. A. Jackson on Wednesday last, at the Ironworks. He was engaged at the punching machine, and by some accident put his finger where the plate ought to be, and had the bone badly broken. Owing to some delay in obtaining medical assistance the wound was a very painful one. CRICKET MATCH AT TARANA.—The Cooer-wull United Club sent a strong team to Tarana on Monday, and gave that redoubtable club a thrashing, the first they have received this year. The Tarana boys didn't seem to appreciate the turn of the tide. STRANGE FIRE.—On Monday last, while Mr. and Mrs. Dallow were at the Manchester Unity Picnic their house caught fire, and was completely burned down before assistance could be obtained. The house was not of much value, but the furniture was good and new, and its destruction is a serious loss to the young couple.

NEW INDUSTRIES FOR LITHGOW.—The smelting works at Eskbank are being prepared for work, and operations will commence in a few weeks. Besides this, we learn that Mr. R. Aston, who is an old resident of Lithgow, has undertaken the making of half a million hand made bricks, which will be burnt at the Lithgow Pottery Works. These two works will provide labour for at least 50 men, no small addition to our operatives.

NEW INDUSTRY AT WALLERAWANG.—The Wallerawang people are likely to have an industry started in their neighbourhood, which will be a welcome addition to their business enterprises. Mr. E. Hughes has selected some splendid limestone land at Piper's Flat, and purposes entering upon lime-burning on a large scale. Although four or five miles the other side of the Junction, the railway passes by the frontage; so that it will be easily made available for export. Mr. Hughes has already got tenders out for the fencing. LITHGOW. (1882, January 11). *Bathurst Free Press and Mining Journal (NSW : 1851 - 1904)*, p. 2. Retrieved from http://nla.gov.au/nla.news-article65078449

Enoch Hughes, arrested last evening at Woolloomooloo Bay by detective Powell, on warrant charging him with bigamy, was remanded until this day week. CENTRAL POLICE COURT,—WEDNESDAY. (1864, October 6). *Empire (Sydney, NSW : 1850 - 1875)*, p. 5. Retrieved from http://nla.gov.au/nla.news-article60555669

Enoch Hughes, on remand, was again brought up for bigamy. About six months ago the defendant and his brother were employed as partners in making bricks. A dispute arose between the two brothers in the presence of Mr. Latter, with whom they were living. High words ensued, and one brother said to the other, "I'll dispose of you on a charge of bigamy. You had no right to marry the woman with whom you are now living while your former wife is alive." The prisoner replied, "I had a right, and was justified. My first wife committed adultery with young Darbyshire." Mr. Latter, present witness, further deposed that he knew prisoner's reputed wife in Melbourne, when she had a paralytic stroke, in 1859; went to England, and died shortly afterwards. The real question in dispute, and much previous evidence had been taken on it, was, whether the prisoner had really married the second wife during the lifetime of his first wife. The case was adjourned for one

week. CENTRAL POLICE COURT.—THURSDAY. (1864, October 21). *Empire (Sydney, NSW : 1850 - 1875)*, p. 5. Retrieved from http://nla.gov.au/nla.news-article60555811

Enoch Hughes, on bail, on a charge of bigamy, was again brought up, and the case was argued by Mr. Windeyer for the defence, and Mr. Hellyer for the prosecution. It may be remembered that the prisoner's first wife was seized some years ago with an apoplectic fit in Melbourne, and went to England for the benefit of her health. The prisoner having heard that his first wife died, contracted a marriage with his present wife. From what had subsequently transpired, it was contended for the prosecution that the prisoner had married the second wife before the death of the first who, if anywhere, was in England; at all events she was not in the colony. Detective Powell deposed that he served a subpœna on the prisoner's wife at Balmain, on Tuesday last. He asked the prisoner if his wife was at home; he replied no, she had gone to Sydney. She was near her confinement, and he had been advised not to permit her to attend at the police court. Powell then returned to Sydney to look for her, but not being able to find her he returned to Balmain the next morning (Wednesday), and went to defendant's house and again inquired for his wife. He again replied that she had gone to Sydney, and he therefore left the subpœna at defendant's residence. Thomas Henry Hellyer deposed that he issued the summons just read, for the appearance of the defendant's wife. Mr. Hellyer asked for a further remand in order that a proper summons might be issued, and if she did not attend, he would apply for a warrant. Mr. Windeyer objected. Mr. Hellyer then read the summons again, and having found it not incorrect, applied at once for a warrant. Mr. Windeyer opposed, and contended that it was not a case for either a warrant or remand, as the defendant's wife was not competent to give evidence against her husband. Besides, it was evident the second wife could give no evidence as to the first wife ; and she did not wish to come forward, nor did she (the second wife) believe herself to be outraged. The magistrate (Mr. Birrell) said he would allow the warrant to issue, but he should not compel her to answer any questions. The case was finally postponed till Friday next, it being understood if the second wife was prevented, from confinement, from attending, the warrant was not to take effect. CENTRAL POLICE COURT.—THURSDAY. (1864, November 4). *Empire (Sydney, NSW : 1850 - 1875)*, p. 8. Retrieved from http://nla.gov.au/nla.news-article60558216

Enoch Hughes, for bigamy, on bail, was again brought up. Mrs. Hughes deposed that Mr. Hughes was her husband, but Mr. Birrell objected to Mr. Hellyer asking the question **whether she was married on 29th August, 1861**. Mr. Birrell further objected to any questions being asked of present witness Mr. Windeyer objected to the witness signing the depositions. Mr. Birrell ordered the female witness to sign them. A contention arose ; witnesses were frequently ordered out of court and recalled. The case was not concluded. CENTRAL POLICE COURT.—FRIDAY. (1864, November 12). *Empire (Sydney, NSW : 1850 - 1875)*, p. 5. Retrieved from http://nla.gov.au/nla.news-article60556070

EMBEZZLEMENT.—James Darbyshire was charged with embezzling the sum of L25 from his employer, Mr Enoch Hughes. The prosecutor deposed that the prisoner

was in his employment for some time. He entered it about 18 mouths since, and remained with him for a year. On the 2nd of September witness gave the prisoner a cheque for L25 to take to the Bank of Victoria, for the purpose of getting it cashed. He took it there, and returned about three or four o'clock, saying that he had not got it cashed. Witness did not remember what reason he gave, but thought it was that the bank was closed. Upon witness asking him to return the cheque, prisoner said it was of no use, and that he had torn it up. Prisoner left his employment in February, and witness gave him a cheque for the amount of his account in full, which was L66 15s. From information afterwards received, witness stopped the cheque, and about the 21st of April, went to the bank to see how his account stood. He then found that the prisoner had cashed the cheque for L25 on the 20th March. Witness had been sued on the cheque for L66 15s in the County Court by a Mr Cleghorn, and had to pay it. Cross-examined by Mr F. Stephen : He was not in partnership with the prisoner. He was to get some share in the profits on the fence at the Botanical Gardens. The cheque for L25 was given before that was completed. He afterwards worked for witness at L3 per week. They never had more than one contract together, which was on the Melbourne and Saltwater Railway. Mr Stephen ad-dressed the Bench for the defence, and said that, notwithstanding the L25, the prosecutor still owed the prisoner L6. The Bench thought the case was one in which no jury would convict, although there were rather suspicious circumstances connected with it. They therefore discharged the prisoner. POLICE. (1860, May 11). *The Age (Melbourne, Vic. : 1854 - 1954)*, p. 6. Retrieved from http://nla.gov.au/nla.news-article154844074

The case of bigamy against Enoch Hughes was finally dismissed. CENTRAL POLICE COURT.—SATURDAY. (1864, November 14). *Empire (Sydney, NSW : 1850 - 1875)*, p. 3. Retrieved from http://nla.gov.au/nla.news-article60556873

NINNIS V. HUGHES.

The plaintiff, James Ninnis a watchmaker, sued Enoch Hughes for £401 12s., the balance of an account stated between them. Mr. Wood was for the plaintiff; and there was no appearance on behalf of the defendant. Verdict for the plaintiff for the amount sought. The Court afterwards adjourned until Saturday. LAW REPORT. (1864, November 14). *The Argus (Melbourne, Vic. : 1848 - 1957)*, p. 7. Retrieved from http://nla.gov.au/nla.news-article5738858

FITZROY (Iron Mines and Works)—Office, George-street Manager of Works : Enoch Hughes. MIXING COMPANIES. (1864, December 31). *Sydney Mail (NSW : 1860 - 1871)*, p. 7. Retrieved from http://nla.gov.au/nla.news-article166651333

BALMAIN FIRE-BRICK AND CLAY WORKS.—Among the many new branches of colonial industry which are springing up in various parts of the colony,

there are few of greater prospective importance to our commercial prosperity than the manufacture of a good, sound fire brick. A good fire-brick is the first step towards our success in the manufacture of pig and maleable iron— fire-bricks being esteemed as the principal article re-quired in the construction of those iron works which are now being pushed forward with increased impetus. It was by accident that we visited on Saturday the fire-brick and clay works recently erected by Messrs. Hughes and Son, at Balmain, on land belonging to Mr. Darvall. The works are situated near Mr. Booth's saw mills, and are now in full working order, producing fire-bricks of a very superior description and quality. A large number of the bricks already made have been severely tested and found to stand equal, if not superior to the fire-bricks imported from the mother country. The pine of clay from which the bricks are made, is upwards of twelve feet in thickness, and is obtained on the spot, underlying the freestone. The clay is first ground between two pairs of rollers, and then worked up by a pugmill, which is made ready for use in five minutes' time. The machinery is driven by a fourteen-horse-power steam engine, and the whole of the engine, as well as the pug-machine, have been got up by Mr. Enoch Hughes, late of the Fitzroy and Pyrmont Iron Works. It has long been a source of complaint among practical men connected with the iron trades, that the making of good fire-bricks should have been so long retarded in this colony, especially fire-bricks of different sizes to suit bakers, as well as copper and steam companies. Bricks are now being made at Balmain, suitable to any kind of furnace, the bricks ranging in size from 9 to 36 inches long, and in squares and tiles, the former up to 30 inches square, the latter to 30 inches in length. During the process of making these bricks they are all laid on flues heated by fire, and are ready for burning twelve hours after being made. There are upwards of 3000 square feet of flues already laid down, and the proprietors say they can turn out from twenty-five to thirty thousand bricks weekly, and at such a price that must seriously interfere, if not entirely stop, the importation of fire-bricks. This is legitimate competition, and will require no factitious aid in the shape of protection. Much credit is, no doubt, due to Mr. Enoch Hughes for the manner in which he has pushed forward not only this fire-brick manufactory, but other works of commercial importance within the last two years.

It is said that Mr. Enoch Hughes can claim to be the first iron-maker in Australia. In 1860, the Dudley-street Rolling Mills (Melbourne), were imported and erected by him, and afterwards sold to the present proprietors, Messrs. Carn [Cairns] and Co. After this, Mr. Hughes gave his attention to the Fitzroy Iron Mines, which had been so long at a standstill. Mr. Hughes succeeded in putting those works in motion and left on account, we are informed, of the lessee not being able to carry out his contract with the company. After this the erection of the Pyrmont Iron Works was commenced by Mr. Hughes, but owing to some misunderstanding on the part of others connected with those works, Mr. Hughes left, in September last, and since that time has erected the Balmain Fire-brick Works. Mr. Hughes has not relinquished the iron manufacture for fire-bricks, but has sent to England for plans of the machinery necessary for the making of pig iron and galvanised iron roofing,

the works for which are to be erected in Sydney. No title (1865, March 27). *Empire (Sydney, NSW : 1850 - 1875)*, p. 5. Retrieved from http://nla.gov.au/nla.news-article60568304

THE FITZROY IRON MINES.

A PARTY of about fifty gentlemen, consisting of the directors of the company and of others interested in the advancement of colonial productions, left Sydney by special trains for Nattai, on Tues-day afternoon, where the works are situated. Arrived at Picton, the company had made provision for the conveyance of the large number of visitors, first by an omnibus brought from Sydney, next by two of Cobb's coaches hired from the pro-praetor, and third by taking as many places as were

available in the mail. By these means the visitors were landed at Nattai shortly after midnight, and were distributed in tens and twelves as they could be accommodated amongst the adjacent inns. On the following morning, shortly after 10 o'clock, the foundation-stone of a building intended for a school-house and place of worship was laid in the township of New Sheffield, on a plot of ground given by the company for the purpose. About a hundred persons assembled to witness the ceremony. The proceedings commenced by the Rev. George Lane, the Wesleyan minister of the Berrima Circuit, giving out the 620th Hymn, which was sung by the assembly ; after which the Rev. B. Chapman read a portion of Scripture and prayed. Mr. Lane then de-posited in a cavity a bottle containing a copy of the Sydney Morning Herald and Empire newspapers of the 24th instant, a copy of the Christian Advocate and Wesleyan Record of the same date, the preacher's plan for the Berrima Circuit, and a document printed on parchment, as follows : -The foundation stone of this building, designed for a school-house and place of public worship in connection with the Wesleyan Methodist Church, New Sheffield, was laid by Ebenezer Vickery, Esq., of Sydney, on Wednesday, 24th May, in the year of our Lord one thousand eight hundred and sixty-five, being the forty-sixth anniversary of the birth-day of her Majesty Queen Victoria, and the twenty-ninth year of her reign. Sir John Young, K.C.B., being Governor-in-Chief of New South Wales ; Rev. James Swanton Waugh, president of the Australasian Wesleyan Methodist Conference; Rev. Henry H Gaud, Secretary of the Conference, and Chairman of the Goulburn District : Rev. George Lane, minister of the Berrirna Cir-cuit ; J. K. Hampshire, Esq., treasurer of the Building Fund. The land on which this building is erected was given by the Fitzroy Iron Works Company, the following gentle-men being the directors and trustees thereof : - Ebenezer Vickery, chairman ; John Frazer, vice-chairman ; Abraham Davy, Thomas Chalder, Simon Zollner, William Griffin, directors ; Moritz Baar, William George Ainsworth, trustees. Mr. LANE said that the land on which they were about to erect the building was the gift of the Fitzroy Iron Mining Company, and that the chairman of that company, Mr. E. Vickery, had kindly consented to lay the foundation-stone. Mr. E. VICKERY, having performed the ceremony of laying the stone in the prescribed manner, addressed the meeting as follows : - They would

perhaps excuse him for saying on such an occasion as the present that he regarded the establishment of an iron manu-factory as a circumstance of national importance, since the benefits arising from it could not he confined to its immediate promoters. Thus, benefiting as it must the community at large, every patriot must rejoice in the favourable prospects that were now dawning on the Fitzroy Ironworks Company. It appeared to him that one of the errors into which the population of New South Wales had fallen had been the almost ex-clusive reliance it had placed on the production of wool, tallow, hides, and gold, to the neglect of those all but inexhaustible supplies of mineral wealth with which the Maker of the universe had endowed this highly-favoured colony. And, further, he desired to recognise in the afflictive dispensations with which the colony had been visited during the last four or five years — he referred to floods, to drought, to scab in sheep, disease in cattle, failure of crops — he desired te recognise in these the finger of an all-wise Providence pointing the people to other sources of employment and wealth. He considered, therefore, that the promoters of this iron undertaking were in a safe and right track, and need not be backward in asking God's blessing upon it as a commercial en-terprise. Now they might very reasonably expect that a large and increasing population would be at-tracted here, and that a town of considerable importance would rapidly spring up in the locality. When he paid his first visit to the Fitzroy, early in May last year, most of the operatives appeared demoralised. The drunkenness, cursing, fighting, and Sabbath-desecration in the neighbourhood of the hotel at which he then put up were painful to contemplate. The children — and there were plenty of them — ap-peared neglected ; whilst the adults were generally men living in the practice of those sins which, if un-repented of, would inevitably exclude them from the kingdom of God. Now, how incalculably beneficial were the institutions of the Christian Sabbath and Christian ordinances, if observed. The Sabbath was wisely ordered as a day of rest for men's bodies, but their minds required to be occupied, and unless attracted by the ordinances of the sanctuary, they would too often be attracted by society of a debasing character. It appeared to him, then, to be of vital importance, and of the greatest consequence, that in the formation of a new community provision should be made for the reception by the young of those teach-ings and admonitions which were adapted to their years, and that the elevating influences of Gospel ordinances should be brought to bear upon those of more mature ages ; and he for one should esteem it no honour to be associated in any enterprise that disregarded claims such as these. The building to be erected here on ground presented by the Fitzroy Iron Company was to be appropriated on week days for education in secular knowledge. It would be frequently available on week evenings for the cultivation of literature, with the arts and sciences. They would see by the plan prepared by the excellent manager of the company that provision had been made for a small library and reading room for the use of working men in the evening. Now all these were means by which many might very properly and laud-ably attempt to improve the character, reform the manners, and promote the social happiness of their fellows. But on the Sabbath the building would be devoted to still higher purposes — the

religious in-struction of the young, and the conduct of Divine worship for all ages. Here men of all classes, high and low, would assemble to worship, to confess their sins to God, and to implore that pardon and salvation, which all so much needed. He prayed that this effort might be eminently successful ; that many in the building to be erected here might, by the preach-ing of the truth and the discoveries of the gospel, be led to think, and to think to some purpose ; that they might have the powers of their understanding en-larged, their hearts softened, and their moral sensi-bilities excited ; and that their affection and desires might be elevated from that which was sensual, and material to that which was spiritual and in-tellectual ; in a word, might experience the regenerating grace of the gospel, and become the subjects of that religion which could and did fit and dispose men for every kind of benevolence, im-provement, and knowledge, the effect of which, on the temper, conduct, and disposition would be most happy, binding man to man, and man to God. He rejoiced to take part in this movement, because he knew the people were anxious for educational and religious advantages, and were willing to contribute handsomely towards it ; and because he believed that religion and education were essentially necessary to the social welfare, the moral, and the spiritual salva-tion of every community. It augured well for the future of New Sheffield that the first stone of the town was one laid to the honour and glory of God, and that, before a foot of land had been sold for the township, some provision had been made for the education and religious wants of the future community. The Rev. H. H. GAUD (chairman of the Goulburn district) briefly addressed the meeting, and a portion of the 736th hymn was sung. A collection was then made, amounting to £24, which, with the subscriptions promised (including £5 from his Excellency Sir John Young), would make a total of about £140. The proceedings were closed by the benediction, pronounced by the Rev. H. H. Gaud. The visitors now proceeded to examine the works, over which they were shown, and the working of the various portions was explained by Mr. Hampshire, the working manager of the company. After having thus visited the works, they all assembled round the blast furnace in order to witness the operation of tap-ping and running off of the melted ore into the pigs into which they are usually cast. After this they all proceeded to the site of the proposed township, where an excellent lunch, provided by Mr. Cripps, was laid out in the large shed constructed for the drying of bricks. The assemblage had now increased to close upon three hundred persons, and these by going in relays, managed to take the sharp edge off the appetite that the cold frosty air of this elevated region had generated. After hunger was so far satisfied as to allow of attention being given, Mr. E. Vickery, as president on the occasion, drew the attention of the company to the fact that this was her Majesty's birthday, and in proposing her health, he trusted that those present would greet the toast with an extra bumper. He gave, " her Majesty, the Queen," and the toast was drunk with the greatest enthusiasm. THE PRESIDENT gave " Sir John and Lady Young,"

with a brief allusion to the interest taken by his Excellency in all that could benefit the colony. The toast was drunk with hearty cheers. Mr. G. A. LLOYD rose to propose a toast which he knew they would all warmly respond to. They had drunk

the health of her Majesty, and he was sure there had not been one present whose heart had not responded to the toast, and they had drunk the health of the Governor who had visited the ground and shown a very great interest in the work ; now it became their duty to toast that which had caused the work to go on, and had brought them together — he meant the undertaking itself. (Cheers.) The large number of visitors here present to-day was certainly under a great compliment to the directors for the handsome manner in which not only this lunch had been provided, but also all the arrangements which had been made for their comfort. Something of what the company had done those present had been able to see, but this was only a very small instalment of what they would do hereafter. There were gentlemen who had sunk their fortunes in the undertaking, and who were so fully identified with it that nothing but success would ever satisfy them. The warmest wish of his heart was that the company should succeed as it ought to suc-ceed, and if ever an enterprise deserved success it was this. They had heard this morning from the gentle-man who laid the foundation-stone of the school, that he believed that Providence had had something to do with the opening up of our mineral resources, and that floods, drought, scab, and other infections they had suffered were, in the hands of the All-wise, only instruments leading us on to sources of new and unexplored wealth. He believed that there was a great deal more in this than was generally thought about ; and he was happy to find that the gentlemen who had embarked their capital in this undertaking had been led in the way indicated upon a means of wealth that was almost without limit. It had been, indeed, a gratifying sight to him, as it had no doubt been to dozens of others, to see the furnace tapped, and the metal run out into what so well and so favourably to the colony represented a new and promising source of wealth. He would now call upon them for a bumper to drink, " Success to the Fitzroy Iron Mining Company." The toast was drunk amidst prolonged cheering. Mr. E. VICKERY returned thanks on behalf of the Company, the Board of Directors, and himself. If there was anything he disliked, it was making a speech, and he should not, therefore, attempt to make one now. They must, therefore, imagine all they would desire to hear said when he told them that both he and the directors were much gratified at the way in which the success of the company had been drunk, and that they were greatly obliged to them for it. Mr. E. CHAPMAN said he had been requested to pro-pose a toast, which was one that, however willing he might be, he felt just then quite incompetent to do full honour to, as the toast not being in the pro-gramme he was quite unprepared for it. It was " Health and success to the working men of the mines." (Cheers.) He was a working man himself, and all hie sympathies and best wishes were with the true working man — the intelligent, the hard-working, and right minded worker. (Cheers.) From the specimens of the class he had seen since he had been on the mines, he could assure the meeting that he admired very much the style of working man they had here. Admiring them and sympathising with them as he did, he would remind them that it was from their ranks that all our great and true nobles of the day had sprung. Our Arkwrights, our Watts, our Stephensons, our Brunels, had all sprung from the ranks of the working men.

(Cheers.) The polished marble, however beautiful, was hewn in the first in-stance from the rough block, and the owners of the names he had pointed to were but the polished speci-mens of the same men they had seen to-day. Hold-ing these views in regard to them he would impress upon them the necessity for encouraging improve-ment amongst themselves, and a kindly manner to-wards each other and towards their employers. Their welfare and the improvement of their children had been thought of by their employers, as was witnessed by the building of which the foundation-stone had been that day laid, and they ought to reciprocate the feeling. (Cheers.) Their first aim, their first duty should be to respect themselves. Let them do that, and they would command the respect of their fellow-men. (Cheers.) The toast was drunk amidst much cheering. Mr. HAMPSHIRE, manager of the mines, returned thanks. As to the remarks about working men, they were the men and the real men. He did not wish to speak egotistically, but he might be allowed to remark that he did not think that there was another man in the colony who could have done here what he had done. He had risked his health, and had not spared his time or his labour over the works, but he had got over that, and been successful, and he believed they would give him credit for knowing what he had to do and how to do it. He was sorry they had not been so successful with this morning's tapping as he could have wished ; there had been some little difficulty with one of the buyers that had thrown the furnace back, or else he could have shown them some-thing better. They all new that he had had a great deal to contend with at first, everything was against him, and all had to be done. But he came there to make iron, and make it he would, even though he had had to stop up there for nothing. He had made it, and he did not intend to stop until he was able to show them such steel as they were little aware of. He intended to be the first steel producer, as he had been the first iron maker, in New South Wales. He ouce more returned them his thanks. The company now proceeded to the spot appointed for the sale of the land, when Mr. Threlkeld, the auctioneer, having held forth upon the advantages offered to purchasers, and having answered the many questions put to him, at once proceeded to the sale. The competition was keen and was sustained ; the frontages to the main road, which were put up at the upset of £25 per allotment, realising from £125 to £70 each. The whole of the allotments offered were sold without a single exception, and it was observable that the large majority of the buyers were persons who in-tended to build and reside on the land, in different lines of business, and workmen and others employed on the mines. The sale concluded, the visitors from Sydney took their places, after only a brief delay, in their conveyances provided, and reached Sydney by the special train kept at their disposal shortly after 2 a.m., on Thurs-day. Everyone expressed himself delighted not only with the trip, the change of air and scene, and the beautiful appearance of the country, but, also with the promising character of this incipient branch of industry that promises one day to be of so much importance to the country.

Eight more cylinders for the Gundagai bridge have been cast at the Fitzroy Iron Works, and are now en route for their future resting place - in the bed of the overflowing Murrumbidgee. These cylinders will make a total of ten cast, two of which were placed in their position on the south bank of the river some two months ago. THE SYDNEY MONTHLY OVERLAND MAIL. BY THE MAIL STEAMER JEDDO. (1865, August 21). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 5. Retrieved from http://nla.gov.au/nla.news-article13117767

FITZROY IRON MINES — TRAMWAY BETWEEN THE WORKS AND MINE.

Fitzroy Iron Works, Nattai.

[BY OUR SPECIAL REPORTER.]

IT must be nearly a quarter of a century ago since the Fitzroy Iron Mines — 80 miles from Sydney, on the Great Southern Road — were taken up and fortunes were supposed to be looming large before those gentlemen who wore favored with shares in the first venture.

I have before me a mass of information, much of it of a wearisome character, relating to the history of these mines, which are situate in the district I am now visiting. The story is the old, old one. It has often been said that almost every Australian pioneer manufactory or industry has in the first instance resulted in failure, sometimes in great loss, and not in frequetly in positive ruin to many. Unfortunately, the Fitzroy Iron Mines are no exception to the rule. "We have "the e'er true tale" of the man who discovered the mine, the speculators who took up the land and floated it into a company-how wealthy men in Sydney wore induced to go into it how English capitalists followed their examples -how costly machinery was purchased and erected - how still more costly theoretical men, with some knowledge but little experience, were sent up to manage the mine-how almost equally costly men, with much old country experience, followed-how both classes blundered or quarrelled with the directors, or among themselves-how meanwhile the shareholders were repeatedly called upon to pay up and how at last the works came to a stand-still, and many were ruined. Then came another era of still more costly mismanagement, when shafts were sunk almost all over the then largely-extended property of the company in search of coal ; when long drives were made into the mountain side ; when men with the most reckless disregard of the laws of geology sank every where but the right place for coal ; how everything was done on a system utterly at variance with all established rules ; how others tried meanwhile to smelt the ore in a truly original manner, the natural result being that the furnaces got choked and the perverse molted iron would not come out ; and how the most ruinous results followed to the second set of shareholders.

The last, but by no means the least, of the blunders made in attempting to these mines is shown in the accompanying engraving. Here is a picturesque scene certainly of a horse tramway over the mountain. It is almost beyond belief that this

tramway, about a mile in length, and constructed at a cost of-I am almost afraid to say how many thousands of pounds, was started from the mine and finished before it was established that there was coal at the other end ! The result was of course another miserable failure. This tramway may be regarded ns the culminating point of a great series of blunders. It has been abandoned of course, for it is now proved that although there is a little coal at the terminus it is not worth anything for smelting purposes.

I do not intend in this article to do more than point out that it is impossible the present proprietory can fail to profit by the lessons these facts teach ; and to state that at length a bright prospect of a long and successful career is before the company under the present management. Notwithstanding that at last success is undoubted, one cannot help sympathising with the pioneers who lost so heavily, and have now no prospect of sharing in the profits. Fitzroy Iron Works, Nattai. (1876, March 18). *Australian Town and Country Journal (Sydney, NSW : 1870 - 1907)*, p. 20. Retrieved from http://nla.gov.au/nla.news-article70589912

The Government have accepted the tender of Mr. Enoch Hughes, for the removal of the old Post Office in George-street, to make room for the new building. The sum of £255 is to be paid by the contractor for the material. The work of demolition has been commenced. The Electric Telegraph Office is to be removed at the end of this month, to the premises opposite, at present occupied by Mr. Bate, draper. THE SYDNEY MONTHLY OVERLAND MAIL. (1865, July 21). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 5. Retrieved from http://nla.gov.au/nla.news-article13116420

NEW INSOLVENTS.— Enoch Hughes, of Pyrmont, engineer. Liabilities, £1340 1s. 9d., of which £614 12s. 9d. is secured. Assets, £590 10s. Mr. Sempill, official assignee. LOCAL AND PROVINCIAL. (1865, August 16). *The Goulburn Herald and Chronicle (NSW : 1864 - 1881)*, p. 2. Retrieved from http://nla.gov.au/nla.news-article100828719

la the Supreme Court of New South Wales.

IN INSOLVENCY.

In the Insolvent Estate of Moses Hughes, of Glebe street, Glebe, near Sydney, brick manufacturer, trading as " Moses Hughes and Son."

SINGLE AND ONLY MEETING.

WHEREAS the Estate of the abovenamed Insolvent was, on the 21st day of August, 1865, placed under sequestration by order under my hand : I hereby appoint a Single Meeting of the Creditors of the said Insolvent, to be holdenbefore me, or before the Registrar in Insolvency, at the Court Boom, King-street, Sydney, on Friday, the 8th day of September next, to commence at 10 o'clock in the

forenoon, or as soon afterwards as the course of business will permit, for the proof of debts against the said Estate, and for the collection, administration, and distribution of the same ; that the Insolvent may account for his Insolvency; for directing the Official Assignee whether the Insolvent will be allowed to retain for his own use, his household furniture, wearing apparel, beds, bedding, and tools of trade, or any part thereof respectively : And as it now appears that the goods and effects of the Insolvent, available for the payment of his debts, are less in value than £100, notice is hereby given, that unless it be shewn at said Single Meeting that these goods and effects exceed the value of £100, the Chief Commissioner will summarily proceed to rank the debts which shall then be proved, and will -direct the proceeds of the Estate to be forthwith distributed by the Official Assignee accordingly.—Dated at Sydney, the 23rd day of August, a.d. 1865.

GEORGE HIBBERT DEFFELL,

Chief Commissioner of Insolvent Estates.

ARCHIBALD CAMPBELL,

Registrar in Insolvency. Official Assignee—John Piper Mackenzie.

A stone with the following inscription marks the grave of an old resident of Merewether:—

Sacred
to the memory of
MOSES HUGHES,
Died March 22, 1879.
Aged 76.

Looking for that blessed Hope and the glorious appearing of the great God and our Saviour Jesus Christ.

Also
ELIZABETH WHYLEY,
His beloved wife,
Died May 5, 1880,
Aged 75.

Henceforth there is laid up for me a crown of righteous, which the Lord, the righteous judge shall give me at that day, and not to me only but to all them that love His appearing.

Mr. Moses Hughes came to Sydney about 37 years ago, and started manufacturing fire bricks at Fitzroy, and then went to Balmain, where he also carried on business. Thirty-five years ago he started the business of Hughes and Drury as fire brick makers at Merewether. Four years later, Drury left the business, and Mr. Moses Hughes continued, adding the manu-

The brickworks, near the Junction, the property of Messrs. Hughes and Drury, have been in full work for years past, and from this establishment our Newcastle builders obtain the most of their supplies. This establishment produces excellent bricks of every ordinary description, and there is always a good demand for them. Since Welham's pottery (in the immediate vicinity) ceased to be carried on, Messrs. Hughes and Drury have deemed it necessary to extend their business by manufacturing drain pipes and tiles, and for this purpose they are about erecting suitable machinery. Unfortunately the proper description of brick-clay is not procurable in the locality, and the proprietors have, consequently, to incur considerable expense in carting it thither from a certain distance. They have, however, the advantage of a good supply of water within a few

yards of the establishment, an indispensable requisite to brickworks. The allotments at the Junction, purchased some time ago from the A. A. Company, are being built upon, and we are glad to notice that the houses that have been already put up are not of the most ordinary class of structures as are in the neighbourhood, but, on the contrary, are substantial buildings. Immediately opposite the Junction Inn, and about fifty yards from it, Mr. Henry Parker, lately in the service of Mr. Merewether, is building a commodious brick public-house, the walls of which are up about eight or ten feet above the foundation. When completed, the house will be a somewhat imposing one, as contrasted with the erections in the immediate vicinity, Building materials are laid down on several other of these allotments preparatory to commencing raising structures thereon. Within the next twelve months we are likely to see a little village here, the nucleus of which is already laid. It is thought, however, that an additional public-house is not needed in this locality, there being two already within a few yards of each other. BURWOOD AND THE JUNCTION. (1869, October 2). *The Newcastle Chronicle (NSW : 1866 - 1876)*, p. 2. Retrieved from http://nla.gov.au/nla.news-article111161196

BURWOOD. The village of Burwood is situated about two miles from Newcastle, on the Burwood Estate, the property of E. C. Merewether, Esq., upon which there is upwards of 2700 acres of superior coal land, adjoining the A. A. Company's Collieries, which Company is now working a portion of one of the coal seams-a continuation of the famous Borehole seam. The village contains about 1500 inhabitants, most of whom are coal miners and workmen engaged in various local manufactories. There is a Public School and three churches. The Bur wood Smelting Works, the Victoria and Red Head Collieries are situated on this property. There is also a large pottery, the property of Mr. Hughes, where firebricks, tiles, and other com modities, are manufactured. The coal from the mines, is conveyed to Newcastle by train, and their communication between the latter city, two and fro, with omnibusses and other vehicles. BURWOOD. (1875, August 7). *Miners' Advocate and Northumberland Recorder (Newcastle, NSW : 1873 - 1876)*, p. 8 (MORNING.). Retrieved from http://nla.gov.au/nla.news-article142007080

NEWCASTLE.

Mr. T. B. Slater, solicitor, an old and respected resident of this city, died yesterday; also, Mr. Moses Hughes, owner of extensive pottery and brick works at Burwood. NEWCASTLE. (1879, March 29). *The Sydney Mail and New South Wales Advertiser (NSW : 1871 - 1912)*, p. 503. Retrieved from http://nla.gov.au/nla.news-article162807526

In the Supreme Court of New South Wales.

ECCLESIASTIOAL JURISDICTION.

In the Will of Moses Hughes, late of Newcastle, in the Colony of New South Wales, fire-brick manufacturer, deceased.

NOTICE is hereby given, that after the expiration of fourteen days from the publication hereof, application will be made to this Honorable Court, by Elizabeth Hughes, of Newcastle, in the Colony aforesaid, the executrix named in the will of

the above-named deceased, that probate thereof may be granted to her as such executrix.—Dated this 8rd day of April, a.d. 1879.

HENRY JOSEPH BROWN, Proctor for said Executrix, Newcastle.

Ellis & Makinson, his Agents,

89, Elisabeth-street, Sydney. ECCLESIASTICAL JURISDICTION. (1879, April 4). *New South Wales Government Gazette (Sydney, NSW : 1832 - 1900)*, p. 1546. Retrieved from http://nla.gov.au/nla.news-article223117442

In the Supreme Court of New South Wales.

ECCLESIASTICAL JURISDICTION.

In the will of Moses Hughes, late of Newcastle, in the Colony of New South Wales, potter, deceased.

NOTICE is hereby given, that after the expiration of fourteen days from the publication hereof, application will be made to this Honorable Court by Charles Boscawen Rawland, of Newcastle, gentleman, and Thomas Dent, of Burwood, near Newcastle, innkeeper, the executors named in the will of the abovenamed deceased, that probate thereof may be granted to them as such executors.—Dated this 1st day of July, A.D. 1880.

H. J. BROWN,

Proctor for said Executors,

Newcastle.

By Ellis & Makinson, his Agents,

75, Elizabeth-street, Sydney. ECCLESIASTICAL JURISDICTION. (1880, July 2). *New South Wales Government Gazette (Sydney, NSW : 1832 - 1900)*, p. 3296. Retrieved from http://nla.gov.au/nla.news-article223772343

In the estate of Moses Hughes Potter, Berwood Pottery, Newcastle, New South Wales, deceased.
ALL claims against the above estate must be forwarded to the undersigned on or before the 1st day of February, 1881.
THOMAS DENT, Newcastle, G., B. RANCLAUD] Executors 17th November 1880. In the estate of Moses Hughes Potter, **Berwood Pottery**, Newcastle, New South Wales, deceased. (1880, December 24). *New South Wales Government Gazette (Sydney, NSW : 1832 - 1900)*, p. 6670. Retrieved from http://nla.gov.au/nla.news-article223700835

HUGHES **MOSES** 7364/1879 father: THOMAS DIED NEWCASTLE NEWCASTLE

Mr. Moses Hughes came to Sydney about 37 years ago and started manufacturing fire bricks at Fitzroy and then went to Balmain, where he also carried on business. Thirty five years ago he started the business of Hughes and Drury as fire brick makers at Merewether. Four years later Drury left the business and Mr. Moses Hughes continued adding the manufacture of potteryware to the work. He was the first to introduce pipe making by machinery in this district. Mr. Moses Hughes died in 1879 and the business was then carried on by his son, the late Mr. Samuel Hughes who died in 1900. Another son Mr. Moses Hughes still survives and resides in Merewether. The works are carried on by Mr. Henry Hughes, a son of the late Mr. Samuel Hughes on behalf of his mother and another grandson Mr. F. Hughes is employed at the works. THE CATHEDRAL CEMETERY (1902, April 19). *Newcastle Morning Herald and Miners' Advocate (NSW : 1876 - 1954)*, p. 7. Retrieved from http://nla.gov.au/nla.news-article135347992

FUNERAL.

THE Friends of MR. SAMUEL HUGHES are respectfully invited to attend the Funeral of his deceased Mother, ELIZABETH HUGHES : To move from her late residence, Melville-street, Junction, THIS (FRIDAY) AFTERNOON, at half-past 3 o'clock. ARCHIBALD HAY, Undertaker. Family Notices (1880, May 7). *Newcastle Morning Herald and Miners' Advocate (NSW : 1876 - 1954)*, p. 3. Retrieved April 27, 2019, from http://nla.gov.au/nla.news-article133854043

In the Supreme Court of New South Wales.

Sheriff"s Office, Sydney,

19th September, 1914.

Gardner v. Hughes, Richard Samuel.

ON Tuesday, the 27th day of October, 1914, at 12 o'clock, noon, unless the writ of fieri facial herein be previously satisfied, the Sheriff will cause to be sold by public auction, at the Court house, Newcastle,—All the right, title, and interest of Richard Samuel Hughes, the defendant herein, of, in, and to,— All the share and interest to which he is entitled under the the will of Teresa Ann Hughes, late of Merewether, in the State of New South Wales, widow, who died on the 28th May, 1911. The will is dated the 15th October, 1909, and probate thereof was granted on the 14th July, 1911, to Elizabeth Ann Hughes of Merewether aforesaid, as eiecutrix of the said will.

Terms, Cash.

C. E. B. MAYBURY,

Sheriff. BRAYE &. COHEN, Plaintiff's Attorneys, Newcastle.

By their Agent,—B. K. COHEN, Sydney. Gardner v. Hughes, Richard Samuel. (1914, September 23). *Government Gazette of the State of New South Wales (Sydney, NSW : 1901 - 2001)*, p. 5801. Retrieved from http://nla.gov.au/nla.news-article228099448

The Burwood Pottery Works. An Important Industry. A Visit of Inspection. Manufacture of Pipes. Output of Bricks. Resources of the Establishment.

LOCAL INDUSTRIES.

FEW people in this district have a knowledge of the importance and extent of some of the leading industries established here. Indeed, it is a characteristic of human nature for people not to trouble themselves as to how the other half of the world lives. It is, therefore, not surprising that the im. portance of the Burwood Fire-brick and Pottery Works should have escaped notice. The extent of the works, however, and their importance are so great that a short description .ofthem will be of interest. The industries of this district are rapidly assuming large proportions, and the rapid growth of the city and district warrants the prophecy that their importance will increase to even a greater extent than at present,

DESCRIPTION OF THE WORKS. The Burwood Pottery Works are the property of Mr. Samuel Hughes, and are situated within a couple of hundred yards of the Junction, and about two miles from the Newcastle Court-house. The position is therefore, it will be seen a very convenient one. and the carriage of goods thence to the railway station is an easy matter. The premises cover about an area of leasehold land, for which an annual rehtal of £14'is paid, and the machinery with which the place is fitted .up is of the latest and most improved description. The sheds for drying are very extensive, and suitable for their object. Indeed, it can safely be said that these pottery works have more drying sheds than any other in New South Wales.

THEIR IMPORTANCE. That the works are the most important of the kind outside of Sydney is acknowledged, and with the exercise of a little enterprise and energy, they would soon be able to compete with those in the metropolis.

MACHINERY. On entering the works the first thing that attracts the notice of the visitor is a steam pipe and collar machine. This machine is a perfect specimen of the engineer's craft, and is in splendid working order. It is one of Forsaith's direct steam pipe and collar machines. and is capable of turning out any sized pipes of from 3in to 2ft 6in in diameter. The average turnout of pipes from this machine is 200 an hour. It is fed with clay from the upper floor, and is' entirely automatic in its operations, the only labour required being that necessary to control its action and to supply the clay. 'Each pipe as it is made is perfect in every way, and .nothing. has

to be done to it beyond glazing. The machine is very simple in its action, and is easily kept in good repair.

SAMPLE OF THE WORK. It was with this machine that Mr. Hughes manufactured some 400 drain pipes, 2ft. tin. in diameter, recently for the Newcastle Borough Council, and it may be mentioned, as proving the excellence of the work, that out of the 100 pipes manufactured only ten were unsaleable. Mr. Hughes is the first proprietor of pottery works in the Australian colonies to manufacture pipes of this description and size, and it is extremely probable that there is not 'another machine in the colony capable of performing the work. AT WORK. There is something very attractive in watching the working of this machine, and the rapidity with which it turns out well made pipes is astonishing. . OTHER MACHCINES. . The pipes having been made by this machine are. carried to the drying sheds, where they remain until placed in" the kilns. A second machine of a similar description, but not capable of such large' work as that already, mentioned, is on the premises, and will be found very useful. , ,:A PUG MILL. Going a little farther on, the visitor has this attention directed to a powerful pug mill, in which the clay is prepared for the pipe-making machine. This pug mill is exceeding strong, and supplies sufficient clay to make from 8000 to 10,000 PLASTIC BRICKS DAILY. This mill is an improvement upon the old-fashioned 'machines of a similar nature,' and 'the greater 'amount of work it is able to perform 'shows that the alteration has been considerably for the better. The other machines are all suitable for the work they are required to perform. Among them are one of Kennedy's patent dry brick machines, by which from 20,000 To 25,000 BRICKS A DAY can be manufactured, and one of Forsaith's brick and pipe machines. A brick and tile press of a new pattern is also worthy of notice.

TRE IMOTIVE POWEU. These machines are driven by two powerful engines, one of which is 30 horse-power and the other 16 horse.power. In connection with the engines are two large and new boilers, one of which has a pressure of 90lb. to the square inch and thile other 660 lb. to the square inch. Two pairs of powerful large rollers and a large disintegrator are of a now pattern and are capable of doing all that is required of them.

LOCAL WORK. All the machinery work was entrusted to the firm of Messrs. Morison and Bearby, and it is only due to them to say that it has been executed in a way that gives every satisfaction. In an adjoining shed are a lathe, drilling machine, and other appliances, so that all repairs are done on the premises. Close by is a hay and corn shed, in which is a chaff-cutting machine. Here the fodder for the six draught horses is kept, and the shed is also useful for other purposes.

AN INCREASED TRADE. The apparatus and machinery are complete. Indeed, quite capable of accomplishing much more work than they are at present made to do. An even more extended trade than that at present enjoyed by Mr. Hughes could be easily obtained. In fact, the trade must increase. The Northern district, in

common with many other parts of New South Wales, is at present undramned; and drainage works must shortly receive that attention which their importance demands. That being so, the pipe-making trade will undoubtedly receive a great impetus.

CONTRACTS.

Already Mr. Hughes has entered into contracts to supply the Government Railway and Roads and Bridges Departments, the Newcastle Borough Council, the Wallsend, Merewether, and Carrington Councils, and many other municipalities of the district, as well as the principal contractors. Some idea of the value of the property may be gathered from the fact that during the past eight years the proprietor has expended no less than £12,000 on this works. Last year over twelve miles of pipes were made.

THE KILNS. A mention of the kilns in which the pipes are prepared for the market should not be omitted. These kilns are three in number, and are of a substantial character. They are very large, being 22ft in diameter in the clear, and are sufficient for all the work that will be required. THE CLAY PITS. In connection with his works Mr. Hughes has a ten years' lease of throe acres of land from the A A. Company, and on this land is a seam of excellent clay 25 feet in depth. At present the clay used in the works is obtained from the common ago; but the clay on the leasehold laid hold from the A.A. Company is of a superior quality.

OTHER BRANCHES OF THE TRADE. Although for some time past pipe-making has been principally conducted by Mr. Hughes, the works are replete with the necessary appliances to carry on the other branches of the trade, such as bricks, the manufacture of syphons, fancy pipes, chimney-pots, & , and all that is required to further develop the trade is the introduction of the well-made articles into the market. The success Mr. Hughes has already met with has been so great that he is justified in believing in the further success of the works. With the excellent clay obtained close at hand, with the cheap coal he is able to obtain in the district, with the low rent he has to pay, and with his splendid machinery, Mr. Hughes is able to compete with any works of the kind in the colony. On Friday, March 29th, Messrs. J. Greer and Son will offer the property for sale, on account of the proprietor's approaching visit to England. It is expected that there will be a largo attendance of capitalists who are willing to invest money in what is without doubt a profitable and increasing industry. The Burwood Pottery Works have obtained a reputation for good work, and the trade already obtained can, by judicious management, be greatly increased. It is a growing and flourishing industry, which must, if judiciously managed, extend with the increasing demands of this populous district.

The Burwood Pottery Works. (1889, March 16). *Newcastle Morning Herald and Miners' Advocate (NSW : 1876 - 1954)*, p. 3. Retrieved from http://nla.gov.au/nla.news-article138838869

Deaths – NSW BDM's
HUGHES **SAMUEL** 6132/1900 parents MOSES ELIZABETH registered at MEREWETHER

Deaths. HUGHES.---June 9th, at his residence, Pottery Works, Merewether, Samuel Hughes, aged 59 years. Family Notices (1900, June 11). *Newcastle Morning Herald and Miners' Advocate (NSW : 1876 - 1954)*, p. 4. Retrieved from http://nla.gov.au/nla.news-article136473546

CENTRAL POLICE COURT.

TUESDAY.

BEFORE their Worships the Police Magistrate, Messrs. Pinhey, E. A. Levy, Austen, and Murphy.

Thirteen prisoners were brought before the Court, seven of whom were discharged.

John Frazer was summarily convicted of having stolen a chair, valued at 10s., the property of John Watson, and, being an incorrigible thief, was sentenced to be imprisoned three months.

Archibald McAllister, for having in a public place made use of obscene language, and William Lyons, for riotous conduct, were each sentenced to pay a penalty of 10s., or to be imprisoned forty-eight hours.

Margaret Smith was sentenced to be imprisoned seven days, and Mary Johnston fourteen days, as idle and disorderly persons.

Enoch Hughes yesterday appeared on summons to answer an information, in which he was charged by John Fitzpatrick with having, on the 30th August, wilfully and corruptly given false evidence, upon oath, before the Registrar of the Insolvency Court. The prosecution was conducted by Mr. Windeyer, and the defence by Mr. Darley. Archibald Campbell, Registrar in Insolvency, produced the papers in the estate of Enoch Hughes, an insolvent, and those in the insolvent estate of Moses Hughes ; does not know Enoch Hughes personally, but a person of that name signed the deposition produced at the second meeting in Enoch Hughes's estate, in which he deposed : "I never was in partnership with my father, Moses Hughes ; the goods in Fitzpatrick's account were ordered by me as my father's agent ; I did not guarantee the payment." John Fitzpatrick, the prosecutor, deposed that he is a coppersmith, carrying on business in Sydney, and in 1864 had dealings with Enoch Hughes, the defendant ; attended the second meeting in his insolvent estate to prove a debt of £54 6s. 8d. in respect of which debt defendant gave evidence that that was his father's debt ; that he was not in partnership with his father when the work was done ; and that he ordered the goods as his father's agent ; if he swore that he told me, at the time of giving the order, that he did so as his father's agent, it is false ; in the beginning of 1865 the debt of £54 6s. 8d. was contracted ; he said his father and himself are commencing in partnership to make bricks or tiles, and

that he had bought an engine and boiler from Mr. Marshall, and that he wanted one to do some work for him; he gave the particulars of the work, and witness executed it ; there was no agreement as to the amount, but £54 6s. 8d. was the value of the work done ; afterwards defendant told him that his father wished to introduce one of his brothers as a partner in the firm, but that he was not agreeable to it, and had seen Mr. Darvall for the purpose of having the lease made out to himself, in-stead of to his father and himself ; before this he had several times promised to pay the £54 6s. 8d.; shortly after the work was completed defendant handed him a circular headed "Moses, Hughes and Son," and said "Here is one of our circulars;" witness took proceedings in the District Court against defendant for the recovery of the debt of £54 8s. 6d., but before it came on for trial, defendant sequestrated his estate. On cross-examination, the witness said that he sued Moses Hughes in the amount of this account, and on re-examination said that he also sued the defendant, Enoch Hughes. Messrs. Pitt and Read were examined, and defendant was committed to take his trial, being allowed bail for his appearance. CENTRAL POLICE COURT. (1865, October 11). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 2. Retrieved from http://nla.gov.au/nla.news-article13120129

PERJURY.

Enoch Hughes was indicted for wilful and corrupt per-jury, the alleged offence having been committed in an examination in insolvency whilst prisoner's estate was under sequestration.

Prisoner pleaded not guilty, and was defended by Mr. Darley.

Mr Butler stated the case for the Crown. The charge was based on evidence upon oath given by prisoner at an examination before the Registrar in Insolvency, on the 30th August, 1865. The statements then falsely sworn to were as follows :—" I never was in partnership with my father, Moses Hughes; the goods mentioned in Mr. Fitzpatrick's account were ordered by me as my father's agent; I told Mr. Fitzpatrick, and also his man, at the time I ordered the greater part of them, that I was only my father's agent; I did not guarantee payment."

Archibald Campbell deposed : I am Registrar in Insolvency, and have acted in that capacity for three years; I was appointed by proclamation in the Gazette; I produce the surrender, the order, and the schedule in the sequestrated estate of Enoch Hughes ; the order is signed by Mr. Deffell, who was then acting as Commissioner ; I was appointed by him to take proof of debts; a second meeting of creditors was held on the 30th August, 1865 ; a creditor, named Fitzpatrick, tendered a proof of debt, and prisoner was examined and sworn before me. [Prisoner's deposition was admitted in evidence.]

John Fitzpatrick deposed : I am a coppersmith ; I have known the defendant and have had dealings with him ; I appeared at a meeting of defendant's creditors to prove a debt; I handed in an affidavit, with an account which represented dealings I had had with him ; my claim was £54 6s. 8d. ; in the first dealing I had with defendant, he said that his father and himself had taken a piece of land from Darvall, at Balmain, and were going to commence business as brickmakers ; he said that himself and his father were in partnership, and he gave me a circular similar to the one produced, which purported to give a list of prices of bricks made by '"Moses Hughes and Son;" he has premised to pay me repeatedly; he stated that his father wanted to bring one of his brothers into the firm but that he (defendant) objected to it, and that he would get the deeds transferred from Mr. Darvall to himself only ; when the debt was contracted I understood that he was the principal, and when he was ordering the goods he said he would pay ; a clerk of mine, named Grant, was present at the ordering of some of the goods ; it is not true that the goods in my ac-count were ordered by defendant as his father's agent ; it is not true that at the time he ordered the greater part of the goods that he told me or my man Grant he was his father's agent.

By Mr. Darley : My affidavit was filled up at 10 o'clock in the morning, before I saw Mr. Campbell, the Registrar, and before defendant was examined ; about the end of 1864 I supplied defendant with some galvanized iron, and charged him with it ; I had no dealings with his father, and did not know him ; the accounts were sent to "Mr. Hughes"—that was to Enoch Hughes ; the account handed to me is in my clerk's handwriting ; when he handed me the circular, defendant said "Here is our circular ;" defendant did not say to me, in the month of December, at the settlement of accounts, or at any time, "All accounts between you and me are now settled ; in future, all transactions are between you and my father."

Walter Robert Grant, clerk to last witness, deposed : I was present when defendant ordered goods of Mr. Fitzpatrick ; defendant came in the ordinary way and ordered the goods ; I never heard him say that he ordered the goods as his father's agent, and he never told me so.

By Mr. Darley : There are several men in Mr. Fitzpatrick's employment ; I opened an account for "M. Hughes ; " I told Mr. Fitzpatrick so ;—[an account was put in evidence in which "Mr. M. Hughes, Balmain," was charged with certain goods.]—I believe I settled an account with defendant in December '64, or January '65 ; that was after the goods represented by £54 6s. 8d. were ordered ; I think I was present at the first time these goods were ordered.

By Mr. Butler : The date of the bill to "M. Hughes," handed to me by prisoner's counsel, is December 7th, 1864 ; I only knew the defendant at the time, and cannot say how I came to put "M. Hughes' " name there.

Thomas Hales deposed : I am agent for the Wallsend Coal Company ; prisoner came to my office in March, and made statements for the purpose of getting credit ; he said that he and his father were partners in a brickworks, at Balmain; he never told me he was agent for his father in this transaction; I saw both M. Hughes and the defendant, and they promised to pay. The matter was put into the hands of Mr. Brown, the solicitor ; after execution was issued prisoner left the following memorandum at my place :—"We are prepared to give you our acceptance for your account at one month. Please let us know if this will suit, and oblige yours respectfully, Enoch Hughes. April 24th, 1865." They afterwards made an arrangement with Mr. Brown for the payment of £10 per month, and the first instalment of £10 was paid by Mr Darvall's cheque. Prisoner became insolvent, and Moses Hughes disappeared.

Morrice Birkbeck Pell, professor at the Sydney University and barrister-at-law, deposed : I acted for Mr. Darvall when he went to England, in the month of May last; I agreed with defendant that he was to receive £100, in consideration that he renounced all claim in the brickworks at Bal-main; the agreement was signed by defendant, as also was an acknowledgment for the receipt of the £100 ; he told me that they had taken a contract with the Government in the name of M. Hughes and Son; he also told me that the capital in the concern was put in by himself, and that his father put no money into the business; he said, in one conversation, that even after he got the £100 I paid him, he lost money by the business ; he once said, that before he appeared as a partner, it would be necessary for him to go through the Insolvent Court; in May last, he spoke to me at Mr. Darvall's chambers, and said that he was anxious the lease should be drawn up in such a way that, in the event of his fathers death, the lease might revert to him, and that his brother Tom had no interest whatever in the concern. [Witness handed in letters addressed to Mr. Darvall respecting the property at Balmain which were signed M. Hughes and Son—the signature being in the writing of defendant. There was also a promissory note, dated 15th May, '65, signed "Moses Hughes, and Enoch Hughes." A document, dated 3rd of January, 1865, and others of subsequent dates were signed Moses Hughes by his agent, Enoch Hughes, and were receipts for money paid by Mr Darvall.]

By Mr. Darley : I have carried on the brick works at Balmain since Mr Darvall left on my own account, and for my own benefit; I paid Enoch Hughes £100 for his interest in the concern; I don't re- member that Mr Darvall ever told me that Moses and Enoch Hughes were not partners; I was not acting for Mr Darvall at the time I got rid of the Hughes, there was an arrangement between Mr Darvall and myself in contemplation at that time.

George Reid, coal merchant, deposed : I sold coal to defendant; the cheque handed to me dated April 20, 65, and signed "M. Hughes and Son," was given to me by prisoner in payment on account.

By Mr Darley : The cheque was dishonoured, prisoner told me that he was about changing his bank; I was after-wards paid, he told me he was a partner with his father, and that his father was going to give him a certain sum of money to go out of the business; I could have given further evidence at the Police Court, but I was not asked; I admit saying at the Police Court "I can't say that he (defendant) told me he was a partner."

John Murphy deposed : I am a blacksmith ; I had business with defendant, on one occasion he told me that the business was carried on as Moses Hughes and Son's, and I understood that he was a principal in the business.

By Mr. Darley : He paid me the cheque signed Moses Hughes and dated 1th January.

Walter Grant recalled, disposed : There is an account in the ledger against Mr. Hughes, dated 23rd November, 1864, that is the only account in the name of Hughes; there is no account in the name of M. Hughes.

For the defence, Mr DARLEY called and examined—

Moses Hughes, who deposed : I am the father of the defendant; sometime in 1864 I entered into an agreement with Mr Darvall about some land at Balmain; the document handed by me, and addressed to Mr Darvall, was written by my son Enoch at my request; he was never a partner with me in the brickmaking; I had a partner; he was my son Samuel; I entered into possession before December, and was out of the property in May; the engine belonged to my son Enoch Hughes, who put it up ; he was often over there, and was engaged at the Fitzroy Iron Works ; I gave the I. O. U. produced for £80 to Enoch Hughes in respect of the engine on the 15th December, 1864 ; on the 26th of January, 1865, I gave the I. O. U. for £20 to Enoch Hughes for fixing the engine ; both I. O. U.'s were paid on the 26th of May by the cheque given by Mr. Pell to the prisoner ; on the 24th May Mr. Pell agreed to pay me £87 for the stock ; I employed defendant to get orders for me, and I believe Mr Pell employed him after I left, for the same purpose; prisoner kept the accounts for me, at different times Mr Darvall lent me money and prisoner received it ; I was present at a suit in the District Court, and heard Mr Darvall swear that me and my son were not partners.

By Mr. Butler : I was living at the Glebe when Mr. Hales sued me ; I was not examined when my son was brought up at the Police Court ; I was in town then ; if my son Enoch said he was a partner it was a lie ; if he said that he had an interest in the concern it was not true ; the signatures to the document now put into my hands are those of my son Enoch and myself. [The document was as follows :—"On demand, we jointly and severally agree to pay, on th2 order of Mr. J. B. Darvall, the sum of £420, sterling, for value received.—Moses Hughes, Enoch Hughes"].

By Mr. DARLEY : Defendant did not sign that as a partner, but as a surety for me.

Samuel Hughes deposed : I was in partnership with my father, at Balmain, and worked there constantly; my brother Enoch was not a partner at any time.

Daniel Hely deposed : I am a boiler maker ; I did not work at the brick yard at Balmain; prisoner gave me the order.

Mr. DARLEY, in his address to the jury, contended that Enoch Hughes had acted simply as the agent of his father, and referred to a document produced by Pell, and received in evidence, which contained four several endorsements dated January, 1865, in acknowledgment of the receipt of money from Darvall on his (Moses Hughes' account), the receipts being signed "Moses Hughes, by his agent Enoch Hughes." The account charging "M. Hughes" with the goods showed that the defendant must have told Fitzpatrick that he was acting merely as agent for his father; with reference to the allegations of Fitzpatrick and of the prisoner respecting the agency of the latter, it was oath against oath. Fitzpatrick had a number of men in his employment, and there was no evidence that "his man" had not been told by prisoner that he was ordering the goods on account of his father. Defendant in promising to pay the account merely offered to become surety for payment by his father. He relied on the uncontradicted testimony of Moses and Samuel Hughes as proof that defendant was not a partner ; the documents produced by Pell, and the date of his payment of the £100, and the date of the payment by Moses Hughes to Enoch Hughes of the I. O. U. 's corroborated their evidence. The interest defendant had in the business was not a partnership interest, but a lien on account of the steam engine. He submitted that the case for the Crown had broken down, the only evidence in its sup-port being the uncorroborated testimony of Fitzpatrick, and his evidence had been rebutted both by oral and documentary evidence.

Mr BUTLER replied : This was the first time that the name of Samuel Hughes had been mentioned, although this case had been for a long time before the Court. Moses Hughes recognised the debts of Enoch; a judgment had been obtained against them in the District Court, and they entered into an arrangement to pay one debt by £10 instalments. The assertion of partnership was audacious and preposterous to the last degree. The I. O. U.'s were concocted for the purposes of this trial. In one of the documents signed by the prisoner, and addressed to Darvall, he agreed to part with all his interest in the "buildings and machinery for brickmaking on your land for £100." What right had prisoner to sign all agreements and documents on behalf of the firm if he were not a partner; and why did not prisoner at his examination at the Insolvent Court, say that Samuel Hughes was a partner if that had really been the fact? The evidence of Fitzpatrick and Grant clearly established the guilt of the prisoner.

His HONOR reviewed the facts of the case, and commented upon the evidence at great length, pointing out the bearing of the documentary and other testimony upon the several allegations set forth in the indictment. Perjury could not be assigned except the charge were supported by the evidence of two witnesses, or by the testimony of one witness corroborated by strong circumstantial evidence. He left it to the jury to determine whether or not they believed the prisoner guilty of the charge upon the several allegations contained in the indictment, namely—I never was in partnership with my father Moses Hughes—the goods in Mr. Fitzpatrick's account were ordered by me as my fathers agent—I told Mr. Fitzpatrick, and also his man, at the time I ordered the greater part of the goods, that I was only my father's agent—I did not guarantee the payment.

The jury returned a verdict of guilty in respect of the first three allegations, and Mr. Butler offered to take a verdict of not guilty on the last.

During the trial, some point of law as to the admission of evidence and the appointment of the Registrar arose, and these were reserved for argument before the full Court.

Prisoner was remanded until Monday for sentence. An application for bail was made by prisoner's counsel. It was arranged that the points reserved should, if possible, be brought before the Supreme Court on Tuesday next ; and, in the event of their not being then argued, his Honor said that he would consent to allow bail—the prisoner in £500, and two sureties in £250.

The Court adjourned at its rising until Saturday morning. His Honor intimated that the jury summoned for No. 1 Court will be required to attend at 10 o'clock on Saturday (tomorrow) morning. The jury summoned for No. 2 Court will not be required until Monday. CENTRAL CRIMINAL COURT. (1865, December 15). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 2. Retrieved from http://nla.gov.au/nla.news-article13123183

Marriage of Samuel to sister of Roderickina? – in 1865

1002/1865 HUGHES SAMUEL MACDONALD ANNIE SYDNEY

Deaths

HUGHES **MOSES** 10020/1904 MOSES ELIZABETH MEREWETHER
HUGHES **SAMUEL** 6132/1900 MOSES ELIZABETH MEREWETHER
HUGHES **THOMAS** 10338/1893 MOSES ELIZABETH NEWTOWN

The death is announced of 'Mr. Samuel Hughes, of the Merewether Pottery Works, a very old resident of 'that suburb. The deceased gentleman had been ailing for some time. CURRENT NEWS. (1900, June 11). *Newcastle Morning Herald and Miners' Advocate (NSW : 1876 - 1954)*, p. 4. Retrieved from http://nla.gov.au/nla.news-article136473521

Funerals. THE FRIENDS of Mrs. THOMAS HUGHES are kindly invited to attend the Funeral of her dearly-beloved HUSBAND, to move from Prince Alfred Hospital,

THIS DAY. Monday, at 9 a.m., for C. E. Cemetery, Rookwood. JAMES WEEKS, Undertaker, 96 King-street, Newtown. Tel. No., 9. Family Notices (1893, January 9). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 10. Retrieved from http://nla.gov.au/nla.news-article13892758

[Notice of Application for a Certificate of Conformity.]

In the Supreme Court of New South Wales.

IN INSOLVENCY.

In the Insolvent Estate of Enoch Hughes, of Pyrmont, near Sydney.

To the Official Assignee and Creditors.

TAKE NOTICE, that I, Enoch Hughes, intend to apply to His Honor the Chief Commissioner of Insolvent Estates, at the Court Room, King-street, Sydney, on Tuesday, the 5th day of October next, at II a.m., or as soon after-wards as the course of business will admit, that a Certificate be granted to me, under and according to the provisions of the Acts 5th Victoria, No. 17, 7th Victoria, No. 19, and 25th Victoria, No. 8.—Dated this 30th day of August, 1869.

ENOCH HUGHES.

BY PIGOT & TRICKETT, his Attorneys, 129, King-street, Sydney. IN INSOLVENCY. (1869, August 31). *New South Wales Government Gazette (Sydney, NSW : 1832 - 1900)*, p. 2208. Retrieved from http://nla.gov.au/nla.news-article225586246

In the Supreme Court of New South Wales. (18,759)

IN INSOLVENCY.

In the Insolvent Estate of Enoch Hughes, of Charles-street, Newtown, late of Piper's Fiat, near Lithgow, ironmaster.

FIRST AND SECOND MEETINGS.

WHEREAS the estate of the abovenamed insolvent was, on the 13th day of May, 1884, placed under sequestration by order under my hand: I hereby appoint a First Meeting of the creditors of the said insolvent, to be holden before me, or before the Registrar in Insolvency, at the Court, Phillip-street, Sydney, on Friday, the 6tli day of June next., to commence at the hour of 11 a.m., or as soon afterwards as the course of business will permit, for the proof of debts against the said estate : And 1 appoint a Second Meeting, to be holden as abovementioned, at the same place, on

Friday, the 13th day of June next, to commence at 11 a.m., for the further proof of debts, and for the election of a Creditors' Assignee, if required, and that the insolvent may account for his insolvency.—Dated at Sydney, the 27th day of May, A.D. 1884.

GEORGE HIBBERT DEFFELL,

Chief Commissioner of Insolvent Estates.

ARTHUR HENRY,

Registrar in Insolvency. Official Assignee—Lancelot Threlkeld Lloyd. IN INSOLVENCY. (1884, May 30). *New South Wales Government Gazette (Sydney, NSW : 1832 - 1900)*, p. 3509. Retrieved from http://nla.gov.au/nla.news-article221672535

Mr Enoch Hughes, connected with the iron trade at Lithgow, has failed, with liabilities about £90,000, and assets which are set down at £5000 in excess of that amount. GENERAL TELEGRAMS. (1884, May 16). *Geelong Advertiser (Vic. : 1859 - 1929)*, p. 3. Retrieved from http://nla.gov.au/nla.news-article149143509

New Insolvents.

Newcastle Morning Herald and Miners' Advocate (NSW : 1876 - 1954) **Wednesday 28 May 1884** p 2 Article

... ,632. ***Enoch Hughes***, ironmaster, late of Lithgow. Liabilities, £77,718; assets, £82,001.

HUGHES.—On the 14th August, at Railway-place, Williamstown, Enoch Hughes, late of the Victorian Railways, aged 70 years. Family Notices (1884, August 15). *The Age (Melbourne, Vic. : 1854 - 1954)*, p. 1. Retrieved from http://nla.gov.au/nla.news-article193384433

THE Friends of the late Mr. ENOCH HUGHES are respectfully informed that his funeral is appointed to take place TO-MORROW (Saturday), the 16th inst, in the Williamtown Cemetery, leaving his late residence, Railway-place, Williamstown, at 3 o'clock p.m.
HENRY LONSDALE , Undertaker, Williamtown. Family Notices (1884, August 15). *The Age (Melbourne, Vic. : 1854 - 1954)*, p. 8. Retrieved from http://nla.gov.au/nla.news-article193384438
ROYAL WILLIAMSTOWN LODGE,
No. 4567, M.U.I.O.O.F.
The Members of the above Lodge and the Order in general, are requested to follow the remains of our late Brother, ENOCH HUGHES, to the place of interment, Williamstown Cemetery.
The funeral is appointed to leave his late residence, Railway Place, at three p.m. (this day). J. D. LAMONT, N.G. Advertising (1884, August 16). *Williamstown Chronicle (Vic. : 1856 - 1954)*, p. 3. Retrieved from http://nla.gov.au/nla.news-article68596201

HUGHES.—On the 10th March, at No. 7 Flower-street, Essendon, Catherine Hughes, relict of the late Enoch Hughes, of Williamstown, in her 81st year.
HUGHES. —The Friends of the late CATHERINE HUGHES, relict of the late Enoch Hughes, of Williamstown, are respectfully invited to follow her remains to the place of interment in the Williamstown Cemetery.
The funeral will leave her late residence, No. 7 Flower-street, Essendon, THIS DAY (Saturday, 11th instant), at one o' clock, passing North Williamstown about 3 o'clock. Family Notices (1899,

March 11). *The Argus (Melbourne, Vic. : 1848 - 1957)*, p. 1. Retrieved from http://nla.gov.au/nla.news-article9521366

MANUFACTURE OF STEEL RAILS.

To the Editor.

SIR,—I notice in this day's EVENING NEWS an ex- tract from a London paper on the subject of steel rails, and the price at which they can be purchased f. o. b. at a port in England, viz., £4 to £5 per ton, which, no doubt, is the lowest price ever known or

likely to be. Being aware that tenders are invited for the manufacture of steel rails in the colony, the par-ticulars of which I forwarded to a member of the Iron and Steel Institute of England, from whom I have been asked to furnish particulars of the iron and coal mines of New South Wales, and their position, &c., having visited during the last two months the principal mines on the Southern and Western railways. Being the erector of the Fitzroy and Esk Bank ironworks, and having smelted during the last 18 years some thousands of tons of iron ores, of different classes, from 20 per cent up-wards, I consider myself competent of judging the quality of any iron ore or material required in the manufacture of iron or steel rails. The particulars as to situation and price of material I challenge any competent authority to contradict. The localities are as follows :—

Fitzroy, 77 miles from Sydney, Esk Bank, 97 do ; Piper's Flat, near Wallerawang, 110 do. Cost of producing steel rails at Fitzroy Ironworks:— Quantity of iron ore used to make one ton of hematite pig iron, average 43 percent., 2 tons 15cwt 1qr 17lbs; cost per ton, 3s 6d—9s 9d ; quantity of coal used to the ton of pig iron, 1 ton 15cwt; cost per ton, 10s—17s 6d ; quantity of limestone used to the ton of pig iron, 16cwt 1qr ; cost per ton, 10s—8s 1½d ; cost of labour one ton of pig iron, 12s ; cost of general contingencies, 4s ; total, £2 11s 4½d. Cost of pig iron to the ton of steel rails, 1 ton 4cwt—£3 1s 8d ; cost of labour to the ton of finished rails, £1 7s 6d ; cost of general contingencies, 5s—total, £4 14s 2d. Cost of producing steel rails, at Piper's Flat, near Wallerawang ;—Quantity of iron ore used to make 1 ton of hematite pig iron, average 40 per cent., 2 tons 15cwt 1qr 17lb; cost per ton, 9s—£1 4s 11½d. Quantity of coal used to 1 ton of pig iron, 1 ton 15cwt; cost per ton, 5s—8s 9d. Quantity of limestone used to the ton, 16cwt 1qr ; cost per ton, 5s—4s ¾d. Cost of labour on producing one ton of pig iron, 12s. Cost of general contingencies, 4s. Total, £2 13s 9¼d. Cost of pig iron to 1 ton of finished steel rails, 1 ton 4cwt ; cost per ton, £2 13s 9¼— £3 4s 6d. Cost of labour to 1 ton of finished steel rails, £1 7s 6d. Cost of general con-tingencies, 5s. Total, £4 17s. Cost of Producing Steel Rails at Eskbank Ironworks, Lithgow :—Quantity of iron ore used to make one ton of hematite pig iron, average 40 per cent., 2 tons 15cwt 1qr 17lb ; cost per ton, 12s 6d—£1 14s 8d. Quantity of coal used to one ton of pig iron, 1 ton 15cwt ; cost per ton, 5s— 8s 9d. Quantity of limestone used to the ton of pig

iron, 16cwt 1qr ; cost per ton, 9s—7s 4½d. Cost of labour on producing one ton of pig iron, 12s. Cost of general contingencies, 4s. Total, £3 6s 9¼d.—Cost of pig iron to one ton of finished steel rails, 1 ton 4cwt ; cost per ton, £3 6s— £4 0s 1d. Cost of labour to the ton of finished steel rails, £1 7s 6d. Cost of general contingencies, 5s. Total, £5 12s 7d.

The above quantities of materials for the making of pig-iron are taken from the furnace book of one of the largest works known, from an average of ten years' working.

The price for labour is the average paid at Esk Bank for three years. Having stated the price at which steel rails can be produced at the above works, it now remains for proprietors of other coal and iron mines in the colony to give an estimate of what the same class of material can be supplied, and the locality. I am aware that there are other mines in the colony, both in the north and at Wollongong, which I visited some 12 years ago. As to the cost of plant required, I am expecting specification and cost of plant capable of furnishing 400 tons of steel rails per week.

ENOCH HUGHES, Manager and Partner Esk Bank Iron Works, Lithgow. March 21. MANUFACTURE OF STEEL RAILS. (1884, March 24). *Evening News (Sydney, NSW : 1869 - 1931)*, p. 7. Retrieved from http://nla.gov.au/nla.news-article109868463

[Notice of Application for a Certificate of Conformity].

In the Supreme Court of New South Wales. (18,769)

IN INSOLVENCY AND IN BANKRUPTCY.

Re Enoch Hughes, formerly of Pyrei's Flat, near Lithgow, ironmaster, but now of Charles-street, Newtown.

To the Official Assignee and Creditors.

TAKE NOTICE that Enoch Hughes the abovenamed insolvent, intends to apply to His Honor the Judge in Bankruptcy, at the Court, Chancery-square, Sydney, on Tuesday, the 22nd day of September next, at 11 a.m., or as soon afterwards as the course of business will admit, that a certificate of discharge be granted to him, under and according to the provisions of the Acts relating to Insolvency.—Dated this 19th day of August, 1891,

REGINALD CHARLES ALLEN,

Solicitor for the Insolvent,

LITHGOW (Mercury.)

Lithgow Pit. — There is nothing of importance to chronicle this week concerning the work of extinguishing the fire at the Lithgow Valley colliery. Matters are progressing slowly, but it is thought surely. Operations are considerably retarded by the heavy falls of coal which have taken place at various points, these in some cases still retaining the heat, which has to be reduced by water before the obstacles can be removed. The boiler has now been reached, but the fire has not yet been completely extinguished.

Compensation for, Injury. — Last year, whilst the track between Katoomba and the Fish River Caves was in course of construction, a ganger named P. O`Mara sustained a fracture of the skull, through a piece of rock from a blast striking him. Though ho recovered from the injury, he was seven months out of work, in addition to the loss of wages, medical attendance was an expensive item. He appealed repeatedly to the Government for compensation, but without success. Mr. Targett has recently represented the case to the Minister, who has awarded £37 compensation.

Lithgow Pottery. — We reported last week that a temporary stoppage of work had; taken place at the Lithgow pottery for want 'of water. We are glad to learn that the rain has removed the difficulty, and that the pottery and brick works are now in full swing.

Serious Casualty at the Ironworks. — On Wednesday morning one of the best known of the ironworkers, James Lawson, who has long resided at Lithgow, was engaged among others re-rolling rails for 360 ton Government contract, when he was struck by a splash from the rolls, by which he was very seriously burned. As a rail went through a splash of unusual proportions flew out, supposed to have been caused by some foreign matter being embedded in the molten iron. The unfortunate man was standing in front of the rolls, and before he had time to step on one side the fiery missile burst against his chest and over his face, running down and lodging at his belt, inflicting severe burns where it touched. He was conveyed to his home as soon as possible, and according to latest accounts we are glad to learn he is progressing as well as can be expected.

The Melbourne Gas Company has just finished the largest gasholder in the colonies. The completion of the giant was celebrated by a luncheon. The Governor of New Caledonia is at present on a visit to the interior of the colony. Lithgow (1886,

April 24). *Bathurst Free Press and Mining Journal (NSW : 1851 - 1904)*, p. 3. Retrieved from http://nla.gov.au/nla.news-article62015959

LITHGOW STEEL FURNACES

LITHGOW. Tuesday.— Slemen's open-heath steel furnace (the only one in Australia, and which has been comparatively recently constructed at a cost of many thousands of pounds) has been shut down, owing to a cable offering steel bars delivered at the works at about 25s per ton under the price at which local steel can be produced. It appears that, owing to the great demand for steel in other parts of the world during the past three years, the price has been ruling high; so that the Eskbank works had a chance. The demand having fallen off abroad, the price of the commodity is now so low that the works are unable to compete. The steel is made partly from Imported pig Iron, and until there is a duty on the imported finished steel bars, the furnace will not be started again. The directors of William Sandford Limited, decided on Thursday that, in view of the uncertainty of the tariff, it was not expedient to so any further with the new work or erecting machinery on the ground, until the tariff was definitely fixed; consequently the men engaged on the new work have been suspended. The governing director, Mr. William Sandford, says that he would never have started the new work, which means an outlay of £50,000, had he not been fully satisfied of having a tariff sufficient to cover the extra cost of manufacturing here. If there is no tariff on the above lines, all the new work will be stopped. *LITHGOW STEEL FURNACES (1901, October 30). Evening News (Sydney, NSW : 1869 - 1931), p. 6. Retrieved from http://nla.gov.au/nla.news-article112575254*

Enoch Hughes

Enoch Hughes opened the Victorian Iron Rolling Mill in Melbourne in 1860 and later was to play a major role in the establishment of iron and steel works at Lithgow, New South Wales.

Born Dudley, Worcestershire, England, 1829. Died 1884 or 1893. Apprenticed to iron works 1843; worked as tradesman till 1857; to Melbourne 1859; opened Victorian Iron Rolling Mill, Melbourne 1860; to Mittagong as manager Fitzroy Ironworks; leased mill briefly 1868.

AN ARGONAUT OF AUSTRALIAN IRON.

THE LATE MR. ENOCH HUGHES.

With the furnace of the Eskbank Ironworks in full blast, and the establishment of the iron industry in Australia practically a settled thing, fresh interest is created in the history of treating ore in this country and the multitudinous difficulties which had to be surmounted before Mr. Sandford succeeded in bringing his enterprise to such a successful issue.

Foremost in that small devoted band of enthusiasts who persisted in believing in the capabilities of Australia as an iron producer was the late Mr. Enoch Hughes,

who died in Melbourne in 1893, when manager of the Australian Gas Retort and Firebrick Manufacturing Company of that city. From the age of 14 Mr. Hughes was associated with the iron industry. Born in Dudley, Worcestershire, England, he entered the local ironworks on leaving school, and for 14 years occupied positions of increasing importance in the iron producing districts of Great Britain. When he left England for Australia he was engaged at the Spring Vale works, where 1000 tons a week was turned out. A few days after landing in Melbourne in 1858, Mr. Hughes found that in the State of Victoria was an immense quantity of scrap iron, which for lack of opportunities to turn it to profitable use was obtainable at a figure ridiculously low as compared with the prices ruling in Europe. This was Mr. Hughes's opportunity. He lost no time in importing the necessary plant and establishing the first mill in Victoria for the manufacture of bar iron. The works situated in Dudley-street, West Melbourne, were carried on under his management for some years, and at the present day are still in operation.

When he disposed of his interest in these works three years later Mr. Hughes was approached on behalf of a Melbourne syndicate to visit and report upon the Fitzroy Iron-works at Mittagong. His observations gave such promise that a lease of the works was taken, and he guaranteed to produce pig-iron at the rate of 100 tons a week before the expiration of 12 months. This undertaking he carried out successfully, producing the first pig-iron in New South Wales on November 8, 1863. Mr. Hughes remained at the Fitzroy Ironworks until the expense of working and the restricted local demand for iron led to them being closed down, when he super-intended the erection of the machinery of the Pyrmont Ironworks, and for a time managed this concern. After spending a year in the firebrick manufacture, Mr. Hughes visited Lithgow Valley, and there established the works, of which he remained manager from 1875 until 1882. In the last year of his management 7476 tons of pig-iron were produced.

During the following year Mr. Hughes returned to the Fitzroy works at Mittagong, and converted large quantities of the pig-iron made 16 years previously into bar iron, and at a later date he joined Mr. Sandford in securing a lease of the same property for five years to carry out a contract to re-roll 30,000 tons of rails for the New South Wales Government. At the conclusion of this contract Mr. Hughes assumed control of the Onehunga works in New Zealand. From 1887 until 1891 he acted as manager of these works, relinquishing the position only to take up the position with the Melbourne firebrick manufacturing concern, which he held at the time of his death.

Mr. Hughes was a gentleman known and respected throughout every branch of the iron trade in Australia and New Zealand, and his name will go down in the industrial history of the Commonwealth as one of those whose indefatigable perseverance in the face of tremendous difficulties did much to pave the way for the success inherited by a later generation. AN ARGONAUT OF AUSTRALIAN IRON.

(1907, May 16). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 8. Retrieved from http://nla.gov.au/nla.news-article14857226

THE PARTNERSHIP heretofore existing between ENOCH HUGHES, JESSE MIGHELL, and WILLIAM ABELL, as brickmakers, at Brunswick, is this day DISSOLVED by mutual consent. All debts due to or by the late firm up to this date will be settled only by the undersigned, who will be responsible for no debts incurred after this date by the aforesaid Enoch Hughes.
J. MIGHELL. W. ABELL. May 29th, 1858. Advertising (1858, June 3). *The Argus (Melbourne, Vic. : 1848 - 1957)*, p. 3. Retrieved from http://nla.gov.au/nla.news-article7295597

NOTICE.—I, the undersigned ENOCH HUGHES, do hereby give notice, that the alleged NOTICE of DISSOLUTION of PARTNERSHIP which appeared in The Argus and Herald, Melbourne newspapers, on the 3rd and 4th June instant, was inserted without my knowledge and consent, and without my signature, that William Abell, in the said notice mentioned, is not a partner in the said firm, and that the said partnership between Jesse Mighell and me, the undersigned Enoch Hughes, carrying on business under the style or firm of MIGHELL and HUGHES is NOT DISSOLVED: And I hereby caution all parties against paying any debts or sums of money, or giving any credit to the said Jesse Mighell and William Abell, under the firm of Mighell and Abell, without my consent : And I further caution all parties indebted to the said firm of Mighell and Hughes that I shall hold them responsible for their respective debts in the event of their being paid to the firm of Mighell and Abell.
Dated this 5th day of June, 1858. ENOCH HUGHES. Advertising (1858, June 7). *The Argus (Melbourne, Vic. : 1848 - 1957)*, p. 8. Retrieved from http://nla.gov.au/nla.news-article7295765

ENOCH HUGHES, late brickmaker, Brunswick,— send your address G.H., office of this paper, Important news for you. Advertising (1858, November 26). *The Argus (Melbourne, Vic. : 1848 - 1957)*, p. 1. Retrieved from http://nla.gov.au/nla.news-article7305262

Deaths.
HUGHES.—April 10, at his residence, 88 River-street, South Yarra, Melbourne, Enoch Hughes, beloved husband of Roderickina Hughes, aged 62 years. Family Notices (1893, April 21). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 1. Retrieved from http://nla.gov.au/nla.news-article13905696

HUGHES.—April 10, at his late residence, 88 River-street, South Yarra, Enoch Hughes, aged 62 years. Sydney and New Zealand papers please copy. Family Notices (1893, April 20). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 1. Retrieved from http://nla.gov.au/nla.news-article13930955

CITY COUNCIL.

The Argus (Melbourne, Vic. : 1848 - 1957) **Tuesday 17 May 1859** p 5 Article

... -livan, £83 1s. 9d. " 6. Supplying 25 street foot-bridges according to sample.—Mr. ***Enoch Hughes***, £4 9s. 6d

Contracts Accepted … 400 locks, to be imported from England, for the Yarra Bend Lunatic Asylum, Enoch Hughes, 135l ; GOVERNMENT GAZETTE. (1859, September 17). *The Argus (Melbourne, Vic. : 1848 - 1957)*, p. 5. Retrieved from http://nla.gov.au/nla.news-article5688254

HUGHES V. BROWN.

This was an interpleader suit to try the ownership of certain goods levied upon by defendant in satisfaction of a judgment obtained by him against plaintiff's son. Plaintiff in that action had sued for work and labour done, and **obtained a verdict against Enoch Hughes (present plaintiff's son), and, that judgment being unsatisfied, he levied upon certain property at Balmain, owned, as he believed, jointly by father and son.** The assumed partnership was now disproved, and his Honor gave a verdict for plaintiff, and ordered that the Sheriff's officer should surrender possession of the premises. Mr. Rowley for plaintiff, Mr. M. C. Stephen for defendant. METROPOLITAN DISTRICT COURT. (1864, December 24). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 7. Retrieved from http://nla.gov.au/nla.news-article13109926

HUGHES v. BROWN.—This was an interpleader suit by Moses Hughes against defendant, who had placed a bailiff in possession of plaintiff's premises at Balmain to recover £13 17s., the verdict which defendant had obtained in an action against Enoch, son of Moses Hughes, for wages and costs of the action instituted for wages in assisting to put down rollers and other machinery for the making of fire brick. Moses Hughes, the plaintiff was occupying some land at Balmain, conditionally, from Mr. Darvall, M.P., and the son Enoch discovered on the land a valuable kind of clay for making fire bricks. The plaintiff being a brickmaker employed his son Enoch, who was an iron manufacturer and an engineer, to put down some machinery for making the fire bricks, and the son employed defendant, as alleged, to be paid when the sale of the bricks commenced. Defendant, in a previous suit, obtained a verdict for wages, and not obtaining them put in an execution on plaintiffs' premises, under the belief that the plaintiff and the son were partners. The partnership between father and son was now disproved, and plaintiff complained that the bailiff retaining possession of the premises, prevented the sale of the bricks. His Honor granted a verdict for plaintiff, and an order for the sheriffs officer to surrender possession. Mr. Rowley for plaintiff, and Mr. M. C. Stephen for defendant. METROPOLITAN DISTRICT COURT.—FRIDAY. (1864, December 24). *Empire (Sydney, NSW : 1850 - 1875)*, p. 2. Retrieved from http://nla.gov.au/nla.news-article60563139

TO THE EDITOR OF THE HERALD.

SIR,—I have read with pleasure Mr. Enoch Hughes's letter in you issue of 24th instant, on the subject of iron manufacture, and hope with him the day is not far distant when that industry will be in active operation here.

It is well, however, as he invites criticism, to correct any errors he may have fallen into, so as to modify to some ex-tent that sanguine expectation of immense profits which appears to have taken so great a hold on the public mind.

He says coal (an important item of expenditure) is to be had for 5s. per ton unscreened, and 2s. for " fine," or screenings, whereas the lowest market price here is 6s. 6d. and 3s. 6d. per ton respectively, making a difference in cost of coal for every 120 tons iron produced of £24 15s. I am not competent to give an opinion on the other portions of his estimate, but would point out an error in his calculations of 120 tons at £1 14s. 2d, allowing for misprint shewing £171 instead of £205—difference £34—thus reducing the profits in these two items alone by £58 15s. every week —rather discouraging to expectant shareholders.

Yours truly,

ONE WHO KNOWS THE PRICE OF COAL.

Newcastle, 26th April. TO THE EDITOR OF THE HERALD. (1872, April 29). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 3. Retrieved from http://nla.gov.au/nla.news-article13256583

MEREWETHER. On Tuesday, the 19th of December, at the Primitive Methodist Church, Brown-street, **Mr. Charles A. Hughes, third son of the late Mr. Enoch Hughes (late of Lithgow and New Zealand), married Miss Lizzie Sage, youngest daughter of Mr. Abel Sage, of the Junction. The ceremony was performed by the Rev. J. Foggon. The bride was very becomingly dressed in pale grey cashmere trimmed with corded silk and lace to match, with veil and wreath of orange blossoms. The bridesmaids were Misses Millie Sage and May Burns, nieces of the bride. Mr. Samuel Hughes, brother of the bridegroom,** acted as best man, and the bride was given away by her father. After the ceremony the party left the church and went for a short drive. Then they returned to the Junction, and between 40 and 50 guests sat down to a wedding breakfast at the residence of Mr. William Burns, brother-in-law of the bride. Dancing and singing were then indulged in, the music being supplied by Mr. F. Turner. The Burwood Band, under the leadership of Mr. Campbell, to mark their appreciation of the newly married pair, played several pieces, which were greatly enjoyed. The party broke up in the small hours, everyone wishing Mr. and Mrs. Hughes long life and happiness. MEREWETHER. (1893, December 29). *Newcastle Morning Herald and Miners' Advocate (NSW : 1876 - 1954)*, p. 8. Retrieved from http://nla.gov.au/nla.news-article133322400

Enoch Hughes, a British ironmaster possessed of a corrosive, big talking personality, had worked at the blast furnace in Mittagong and brickworks in Sydney before heading to Lithgow. He tried to start the Great Western Iron and Coal Company at Piper's Flat, but drove his investors away so the valuable resources there were never developed. Hughes then turned his attention to

Lithgow, leasing 100 acres of the Eskbank estate from Thomas Brown.

Hughes successfully smelted iron at Eskbank on 1 January 1875. His venture was aided by an enthusiastic entrepreneur, Daniel Williams, a NSW Government rail contractor, who formed the Eskbank Iron Company, with Brown, William Whitney, John Sutherland and American Cobb & Co. founder James Rutherford. Rail manufacture and rolling became its core business, boosted by the successful supply of 60 tons of cast iron for columns, riveted plate girders and light tram rails to the Sydney International Exhibition.

After local coal proved unsuitable for coking, Hughes sought ore from further afield, adding to costs. His plant, the construction of which remains a deep mystery, was inefficient. Williams became ill in 1880 and Hughes tried to hide his technical problems, jeopardising government contracts.

To stabilise the business and reduce the price of coal being supplied to the plant, Rutherford bought the entire Eskbank Estate—ironworks, land and collieries— from Brown for £45,000. Hughes left in 1883, though remained a vexatious litigant.

As with the coal industry, many workers came from the Black Country of England and brought their industrial culture with them. They worked extremely hard, in a sometimes deadly enterprise. Along with the industrial culture came strikes and although Rutherford developed the Eskbank Iron Workers Co-operative Association in 1882, to keep the plant running, employer and employees often feuded. However, both were affected by cheap iron imports and both were protectionists. Rutherford was apparently easy to get along with, and his subdivisions of the Eskbank Estate eased housing shortages. Ironmaking was further developed by William Sandford, who took over in 1886.

The full story of iron making is told by the Furnace, Fire and Forge Heritage Trail, a partnership between Lithgow State Mine Museum, the former Lithgow Historical Society, Lithgow City Council and the NSW Heritage Office, launched in 2006. Key sites to pick up the trail are the Blast Furnace Park and State Mine Gully, where the State Mine Heritage Park and Railway is based.

http://www.lithgow.com/historyavenue/1875_ironMaking.html

A painful accident occurred to a son of Mr. E. Hughes, manager of the iron works, on Monday. The lad was shifting iron, and a rail fell on one of his arms and broke it.
LITHGOW. (1880, July 29). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 5. Retrieved from http://nla.gov.au/nla.news-article13465006

THE HISTORY OF IRON SMELTING IN AUSTRALIA (Continued from December Bulletin)

THE HISTORY OF IRON SMELTING IN AUSTRALIA

The story of early iron smelting in Australia was one of insurmountable economic difficulties due primarily to the transport problems in bringing the raw materials to the most suitable location for the smelter. The Colonial Governments considered that the infant manufacturing industries being developed at the time could not afford to pay a premium for iron over the price for the material landed in Australian ports. This imported iron came out as ships ballast. Although the Governments were impressed with the achievements of producing iron from local raw materials they would not protect the infant iron industry. A policy of free trade was maintained and all attempts at iron production were doomed to run at a loss.

The density of iron thus weighed heavily against it, notwithstanding that the first iron ore discovered in Australia was recognised after rocks of ore had been considered heavy enough to be used as ship's ballast.

The history of the five furnaces in Tasmania, three in Victoria, one in South Australia and seven in New South Wales that had a life of less than twenty years is thus one of exploratory or experimental attempts to demonstrate the feasibility of producing iron from native raw materials rather than an economic exercise in the production of iron. They all failed because no one was prepared to buy the iron at a price equal to or higher than the actual cost of production. These 16 furnaces were built and operated from 140 years ago during the 80 years from 1848 until 1928.

New South Wales

In New South Wales, as elsewhere, the initial discovery of minerals was usually accidental. The explorers, squatters and pastoralists set the pattern of settlement but, with little disturbance of the land, would only discover any mineral deposit if it occurred as a rocky outcrop. Surveyors, road makers and railway constructors had increased opportunities for discovering minerals exposed in cuttings and other excavations. It was thus in 1833 that Surveyor Jaques discovered pure ironstone in a cutting made for a creek crossing on the Southern Road at Nattai, near the present Mittagong, and the bridge became known as the Ironstone Bridge. The incentive to produce iron from these deposits came with the move to build railways from Sydney, the Great Southern Railway being planned to pass close to the location of the ore deposits

Thus in 1848 the first iron smelted in Australia was produced in a Catalan type furnace built in two months. A cast iron stove and wrought iron spades were manufactured from the iron produced and

exhibited in Sydney. One of the spades was used in the turning of the first sod at the commencement of construction of the railway from Sydney to Parramatta. The spade still exists today.

The name of the mine was changed from Ironstone Bridge to the Fitz Roy Iron Mine after the Governor, following his visit to the plant in 1850. The Fitz Roy Iron Mining Co. was formed in 1851. The Catalan furnace was fired with charcoal but it was realised that a cheap source of suitable coal would have to be found if smelting was to be conducted on a large scale. Only poor quality coal was found in the vicinity, the nearest of satisfactory quality being 18 miles to the south west near Berrima. Smelting continued intermittently until 1855, when three tons of wrought iron had been produced, but operations ceased with the fracture of the tilt hammer used in the production of wrought iron.

The company was incorporated in 1854 into the Fitz Roy Iron and Coal Mining Co. With extra funds rolling machinery was purchased in England, but this did not arrive in Australia until 1857. After a change in ownership the new plant was installed, then in 1860 yet another new company was formed, the Fitz Roy Iron Works Co. Renewed activity at the works came with the leasing of the plant in 1862 to B.W. Lattin who engaged an experienced English ironworker, Enoch Hughes as furnace manager. Hughes had helped establish the Victorian Iron Rolling Mills in Melbourne in 1860. The Catalan furnace was restarted so that a demonstration could be made of the capability of the new m1lls to produce iron bars of acceptable quality, resulting in orders for rails for the Great Southern Railway being lodged by the Government.

In 1863 construction of a blast furnace commenced. The furnace was of sandstone and firebrick construction with a 28 feet square lower part 23 feet high and a circular upper part a further 23 feet in height, the structure being reinforced with steel bands. The hearth diameter was four feet and the output was expected to be 60 to 80 tons per week. The furnace commenced operation in July. 1864 but Lattin surrendered the lease and Hughes left in August. However by May 1865, hot blast had been introduced to the furnace using a coal fired stove and some 2,400 tons of iron had been produced by June, 1865 at rates of 60 to 120 tons per week. The iron however could not be sold at a profit so the plant was closed in April, 1866.

A final attempt at ironmaking was made by an English company formed 1874 under the name of the Fitzroy Bessemer Steel and Hematite Iron & Coal Co. Ltd. The furnace was equipped with a closed top to recover the furnace gases to be used as fuel to heat the hot blast and it was decided to replace the local high ash anthracite fuel with Lithgow splint coal and Bulli seam coke, the railway having been opened from Sydney to Lithgow and Goulburn during 1869. The furnace was finally blown in again in February, 1876 and produced 3273 tons of iron ore the nine months by when it was shut down in March, 1877 due to the high cost of the long distance transport of the fuel and flux. The furnace was demolished in 1927.

In 1884 the works were sold to a new company known as the Mittagong Land Co. and in 1886 William Sandford leased the rolling mills with the object of producing sheet iron and rerolling rails for the Government. Sandford had come to New South Wales in 1883 from a rolling mill in Bristol to set up a wire netting plant on the Parramatta River for John Lysaght. In 1885 he went to Mittagong to inspect the Fitz Roy Ironworks and took a lease of the rolling mills in 1886. He soon realised that neither the plant or the location was suitable for iron production and rolling, and in 1887 went to

Lithgow. There he was more impressed with the plant and found James Rutherford equally eager for him to have a seven year lease of the plant.

James Rutherford, the New South Wales manager and main shareholder in Cobb and Co., had been persuaded by Enoch Hughes and Dan Williams that Lithgow, with its coal deposits, was an ideal location for an ironworks. Williams, with the contract to construct the Government railway west of Lithgow, had unearthed what appeared to be iron ore in one railway cutting and limestone in another.

Enoch Hughes had left Mittagong in 1868 and established an iron foundry in Pyrmont in 1871 before meeting Williams and Rutherford in 1874. Rutherford and Williams leased coal bearing land from Thomas Brown, the owner of the Eskbank Colliery, commenced construction of the Eskbank Ironworks and laid the foundation stone for a sandstone blast furnace on New Years Day, 1875. The furnace was 55 feet high and equipped with a hot air oven. With a hearth diameter of the order of 3 feet 6 inches, the furnace was considered capable of producing 100 to 120 tons of iron per week. The fuel came from the local Eskbank Colliery but the ore was from a variety of sources the most distant being near Blayney, 77 miles away to where the railway had been completed in 1876.

Hughes was the manager when the furnace was lit in December, 1875. It could have been unfortunate that this furnace was built at the time when the Fitzroy Bessemer Steel and Hematite Iron & Coal Co. furnace at Mittagong was ready for the final and most successful run, however competition did not eventuate. The Mittagong furnace finished in 1877 at the time that the Lithgow furnace was able to achieve continued operation. It produced 8,800 tons of iron in five years until it was closed down in 1882 for the usual reason, a failure to show a profit. Rutherford was so disappointed at the failure of his project that he is reported to have taken two wagonloads of blasting powder to the site in the dead of night and blown the furnace up so that he would not be tempted to repeat his folly of starting it in the first place. Thus ironmaking at Lithgow and indeed in New South Wales, ceased and was not to recommence for a further 25 years.

After the demolition of Rutherford's blast furnace, his rolling mill plant was still rerolling old iron rails to produce merchant bar and rails for the new tramways of Sydney. In 1886 after finding the rolling mills at Mittagong inadequate, Sandford was quite impressed with the plant at Lithgow and to their mutual agreement first leased the mills from Rutherford for seven years, then purchased the works outright in 1894. By this time the railways were importing steel rails in place of iron rails as they were scrapped and in anticipation of the end of free trade with Federation in 1901, Sandford built a four ton Siemens-Martin open hearth steel furnace and tapped the first steel in Australia in April, 1900.

In December, 1904 the Government called tenders for the supply of all Government re~uirements in iron and steel in New South Wales for seven years, provided 90% of the iron was produced from local raw materials. Sandford being the only bidder, he was given the contract and immediately proceeded with the purchase of a steel plate blast furnace from England. The furnace was 75 feet high with the shaft supported on ten cast iron columns. With a hearth diameter of nine feet and hot blast supplied by three Cowper stoves the furnace was capable of producing 1000 tons of iron per week. The stoves and boilers were heated with blast furnace gas, the furnace top being closed with a single bell operated by a steam cylinder. J N L.Souther, B.Met.E.M.Aus. I.M.M. - 22 May lllawarra Historical Society

Colonial Enterprise In Iron Smelting

Helen Hughes

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Births Search Results

HUGHES **SAMUEL W** 5514/1863 ENOCH RODRICK I BERRIMA

HUGHES **CHARLES A** 2555/1865 ENOCH RODERICK I BALMAIN

HUGHES **EMILY I** 6492/1868 ENOCH RODUCK I BERRIMA

HUGHES **ELIZABETH W** 4994/1870 ENOCH RODERICK ST GEORGE

HUGHES **GEORGE ALFRED** 3773/1872 ENOCH RODERICINA NEWTOWN

HUGHES **RODERICK LITHGOW** 12551/1875 ENOCH RODICKINA HARTLEY

Her death

HUGHES **RODERICKINA** 15907/1910 father's name (MCDONALD) 77 YRS REDFERN WATERLOO

Manufacture and erection of wrought iron tanks, pumps, pipes, and steam-engine, for water supply on the Melbourne and Sandhurst line of railway, £2190, Enoch Hughes. GOVERNMENT GAZETTE. (1862, June 7). *Leader (Melbourne, Vic. : 1862 - 1918, 1935)*, p. 12. Retrieved from http://nla.gov.au/nla.news-article196392072

HUGHES.—December 11, at her residence, 62 Bourke-street, Redfern, Roderick Ina [Roderickina] Hughes, aged 77 years. Interred St. Kilda, Melbourne. Family Notices (1910, December 15). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 6. Retrieved from http://nla.gov.au/nla.news-article15205130

Deaths.

HUGHES.—April 10, at his residence, 88 River-street, South Yarra, Melbourne, Enoch Hughes, beloved husband of Roderickina Hughes, aged 62 years. Family Notices (1893, April 21). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 1. Retrieved from http://nla.gov.au/nla.news-article13905696

HUGHES.—April 10, at his late residence, 88 River-street, South Yarra, Enoch Hughes, aged 62 years. Sydney and New Zealand papers please copy. Family Notices (1893, April 20). *The*

Sydney Morning Herald (NSW : 1842 - 1954), p. 1. Retrieved from http://nla.gov.au/nla.news-article13930955

HUGHES - In loving remembrance of my dear husband, Enoch Hughes, who died at South Yarra on the 10th April, 1893.—Inserted by his loving wife and sons, Andrew E., Samuel W., Charles A., George A., Roderick Lithgow Hughes, and daughters, Emmeline, Elizabeth W. Hughes. Family Notices (1894, April 10). *The Age (Melbourne, Vic. : 1854 - 1954)*, p. 1. Retrieved from http://nla.gov.au/nla.news-article192194011

AMERICAN TOOLS.

TO THE EDITOR OF THE ARGUS.

Sir,—Will you again allow me a small space in your journal to reply to the letter of your correspondent "A. H. Newell," which appeared in your issue of the 6th inst. I am surprised that Mr. Newell should ask for proofs of the statements I have previously made, as they are facts acknowledged by everybody but himself. I have neither time nor inclination to solicit the testimony he desires, and I presume Mr. Newell is well aware that no respectable wholesale hardware importer would acknowledge in the public journals that his " American branded tools" were imported from England, although if Mr. Newell called upon them they would admit the fact to him, and he would find that the majority of them imported entirely from England. The tools exhibited by Mr. Elliott at the Royal Society's meeting consisted of axes, shovels, spades, forks, &c., but while the best and most improved specimens of American make were brought, those of English manufacture were the worst that Mr. Elliott could possibly have chosen ; the comparison, therefore, was as unfair as his concluding remarks were unjustifiable ; for I believe there are very few persons who think "that it is necessary for England to make an effort or she will be outdone by the Americans." Why did not Mr. Elliott exhibit Lindon's or Edwards' tools in comparison with his American ones? Dees Mr. Newell know any manufacturer in the United States who can turn out superior agricultural implements to those made by the Messrs. Ransome, of Ipswich, or Howard, of Bedford?

There were several gentlemen at the meeting of the Royal Society before referred to who expressed their opinions decidedly in favour of the English made tools, and one went as far as to state that he could do us much work with the English fork in a day us with the other in a week, and while the latter would last only 10 days the former would last 10 years Mr. Newell says the United Slates are not customers to Wolverhampton or Birmingham for such tools as come out here from America ; I have not the pleasure of knowing what those tools are, but I know that the United States are good customers in Wolverhampton and Birmingham for all kinds of mining and agricultural implements, and even for " Collins's" axes, spades, shovels, &c.

In conclusion, I am willing to admit that certain improvements or modifications in these tools are of American origin ; but what I contend for is, that such improvements or modifications have been adopted by the English manufacturers, and it remains quite a matter of opinion whether the English or American make is the best ; for my own part (and I have had some experience both in the use and manufacture of these tools), I should certainly prefer an English tool, no matter of what description, as being the best and most durable.

ENOCH HUGHES.

Rolling Mills, Dudley-street, August 8. AMERICAN TOOLS. (1860, August 11). *The Argus (Melbourne, Vic. : 1848 - 1957)*, p. 6. Retrieved from http://nla.gov.au/nla.news-article5687760

Smelting in the Western District.

(FROM OFFICIAL RECORDS.)

LITHGOW VALLEY COMPANY'S BRICK WORKS, &C.

THE Lithgow Valley Coal Company have erected near their coal mine large works for the manufacture of earthenware pipes, fire-bricks, terra cotta, and all descriptions of pottery. A powerful disintegrator, pipe and brick machine, pug mills, &c., with all the

latest improvements, have been ordered in England. Sheds and a substantial well-built stack 60 feet in height, as well as an arched kiln, and 35-horse power engine and boiler are already erected. Pending the arrival of the machinery, pipes, tiles, &c, are being made by machines driven by horse-power. The pipes and tiles are of superior quality. To complete the works tramways are to be laid down, one to bring coal from the tunnel mouth to the kilns, and convey back manufactured goods to the railway siding for loading into waggons. Another tramway will bring fire and other clays to the disintegrator and pug

mills.

They have also during the year erected near the tunnel mouth a 6-horse power engine for drawing the skips out of the mine, and are drawing out about 3 tons of coal at one time. A weighing machine has likewise been put up near the screens.

ESK-BANK IRONWORKS, LITHGOW.

The Eskbank Ironworks, Lithgow, are erected on coal property belonging to Thomas Brown, Esq., at Lithgow Valley, adjoining the Great Western Rail-way,

and are situated about 95 miles from Sydney, 50 miles from Bathurst, and 97 miles from Orange. The blast furnace is 55 feet in height and 12 feet across the boshes, and is driven by a 70-horse power horizontal engine, with hot air oven, and all other appliances necessary for a first-class blast furnace.

Last December they were producing pig-iron at the rate of about 100 tons per week. The iron ores used are clay-band, from the property on which the works are erected, brown hematite from Back Creek, near Blayney, situated about 77 miles west from the works by rail (the Great Western Railway running through the deposit) ; also red silicious hematite from the Company's property at Mount Wilson, alongside the Great Western Railway, and about 12 miles from the works, and brown hematite from the Clarence Tunnel, adjacent to the Great Western Railway, and about 7 miles from the works. Limestone is procured from Piper's Flat, a distance of 14 miles from the works, and 7 miles from the Wallerawang Railway Station. The coal used is the Eskbank Colliery splint coal, burns to a white ash, and is procured from a 10 feet 6 inches seam adjacent to the blast furnace. The company have also erected during the year a foundry for making their own castings for the rolling mills, furnaces, &c. The rolling mill consists of a 100 horse power engine, 18-inch mill, six puddling furnaces, one ball furnace, and two mill furnaces, a Nasmyth steam hammer, and all the necessary appliances for converting pig into bar iron on the pre-mises ; and they are now importing and making the plant necessary for the manufacture of galvanised iron. Enoch Hughes, Esq., is the manager.

ESK-BANK SMELTING WORKS.

The Eskbank Copper Smelting Works have made about 630 tons of refined copper during the year from copper ores procured from Wiseman's Creek, near Bathurst, and splint coal procured from Thomas Brown, Esq., Eskbank Colliery.

VALE OF CLWYDD COLLIERY AND EMU SMELTINGWORKS.

A brick shed with four flues has been erected for drying and making fire-bricks for the Emu Smelting Works, belonging to Thomas Saywell, Esq., and let by him to Messrs. Newton, Bensusan, and others. This company have made a considerable quantity of refined copper during the year, the copper ore coming from the Northumberland Copper Mine, at Dirty

Swamp, near Lock's Platform, and some from the Frogmore Mine, in the Southern District. They have also erected a lime-kiln near the smelting works and coal pit. A township has been laid out, and a commodious hotel completed within a short distance of the colliery and smelting works.

" The Manager Lithgow Valley Iron Company to the Colonial Secretary.

" Eskbank, May 26,1879.

" Sir,—I have the honour to acknowledge receipt of your communication, having reference to a letter published by one Joseph Williams, in the Evening News of the 16th instant, concerning the reception that met himself and other immigrants on their presenting themselves at the Eskbank Ironworks in search of employment.

" In reply, I have the honour to inform you that I know nothing of the letter referred to by Mr. Williams, and never caused the publication of any letter without my name being signed to it; I know nothing of any person of that name ever having applied to me for employment. There were six immigrants who came out in the Pericles at the time stated by the person named Joseph Williams ; three are still employed by this company in the Valley—having made homes for themselves and families ; the other three left the works on strike, and would not work for 14s. per day, which the men at that time were earning, and on making inquiries I find that no such person as Joseph Williams came out in the ship along with these men, nor can I find such a name in the books or pay sheets ; if such a person came on the works he came under an alias, and at no time can I recollect sending word to the Immigration Agent that I wanted fifty men ; but if the demand for and the price of iron was now what it was at the time stated by Mr. Williams (nineteen months ago), I could employ 150 more men of the right sort than I at present employ.

" I subjoin the names of the men now in the Valley :— Samuel Turner, Charles Goodwin, and Christopher Goodwin.

" Our rates of wages at the present time are as follows :— Carpenters, 11s., bricklayers 11s. to 15s., blacksmiths 10s. to 11s., fitters 9s. to 11s., rollturners 10s. to 12s., moulders 10s. to 13s., puddlers 18s. per ton, furnace-keepers 12s., and labourers from 6s. 8d. to 7s., 7s. 6d., and 8s. per day. This rate of wages is three times that paid for the same class of work in other countries, the productions of which we have to compete against. How long this may continue will depend entirely upon the time the shareholders will supply the time and money required to carry it on without any return for same. I have, &c.,

" ENOCH HUGHES, Manager.

" Lithgow Valley Iron Company." " The Manager Lithgow Valley Iron Company to the Colonial Secretary. (1879, May 30). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 3. Retrieved from http://nla.gov.au/nla.news-article13435686

The IRON TRADE and MR. W. M. FOOTE'S

STATEMENT of the LATE CONFERENCE.

TO THE EDITOR OF THE HERALD.

Sir,—I notice in your Herald of the 3rd instant a report of same utterances of a Mr. Foote, who says that the great causes of the failure of these industries in this colony were " ignorance, bungling, stupidity, and mismanagement," and further on in the report he says, "No iron, in the proper sense, had been manufactured in the colony."

Now I beg to state that in 1863, as partner and manager in the Fitzroy Ironworks, I undertook to erect the blast furnace, and to produce 100 tons of pig iron per week, which contract I faithfully carried out, and produced the quantity agreed on from the native ore, which was afterwards converted into castings and bar iron. Again, for work done at Lithgow, I quote the report from Department of Mines, for 1881, as follows :—

" The large increase in the make of iron during the past year, is most gratifying, and indicates the success which has attended the enterprise of the Esk Bank Company. The return furnished by the company's manager (Enoch Hughes), shows that during the year the blast furnace was worked for only five months and 17 days, and that the output of pigiron was 2737 tons 12cwt., valued at £10,950 8s. ; while the output of bar, axle, and rail iron was 3351 tons, valued at £31,056 12s. 6d. ; of castings, 220 tons, valued at £4011 10s. 8d. ; and of bolts and nuts, of 51 tons 10cwt., valued at £1759 1s. 6d " More than this, the rolling mills and general castings for the works were all made from the native pig ; and one of the flywheels now running, weighing 10 tons, was cast on the works direct from the blast furnace, and from native ore, without being re-melted.

As to the "bungling, stupidity, ignorance, and mismanagement" spoken of by Mr. Foote the company knew nothing until we imported some theorists of the Technical College lecturing type and such a class of theorists have ruined our iron-manufacturing efforts from that time to this.

To quote the words of Samuel Blackwell, one of England's greatest ironmakers, that gentleman says :—" From theorists, schemers, and would-be ironmakers, oh ! good Lord, deliver us, for they are worse than the plagues of Egypt."

Your favour, in justice to one of our grandest industries, and to those who have worked hard at them for 30 years, will be greatly appreciated by kindly inserting this letter. I am, &c.,

ENOCH HUGHES.

Partner and Manager Esk Bank Ironworks. Station-street, Newtown, August 13.

The IRON TRADE and MR. W. M. FOOTE'S STATEMENT of the LATE CONFERENCE. (1885, August 15). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 8. Retrieved from http://nla.gov.au/nla.news-article13595313

LITHGOW (NEW SOUTH WALES) INDUSTRIES.—NO. I. : ESKBANK IRON WORKS. THE LITHGOW, a rapidly rising town situated on the Great Western Railway at the base of the Blue Mountains, promises to become a busy hive of industry, at once the Birmingham and the Stourbridge of New South Wales. Our Sydney contributor has lately paid a visit to the place, and has made some sketches of its industries, the first of which we reproduce in our present issue. Of the town itself we may mention that it is situated 96 miles west from Sydney, and has a population of about 2,200 souls. There are four collieries on the township, the output of which last year amounted to 120,000 tons. There are also two copper-smelting companies, iron works, pottery works, brickmaking establishments, lime kilns, steam saw-mills, and a tweed factory. The iron-working establishment is that of the Eskbank Iron Company, of which Mr. Enoch Hughes is the manager and part proprietor. The company has been in existence six years, and all of its plant was made on the ground. At present it is chiefly engaged rolling rails for the tramways of Sydney. The company received a first prize at the Melbourne Exhibition for double-head rails. Iron ore is found in the valley, and at Newbridge, whence it is brought by rail. The works have 12 furnaces at work, and more are in course of erection. There is a new blast furnace capable of turning out 100 tons of metal per week. The coal used is taken from the company's own mine near the works.

LATE MR. W. HINGLEY

LONG AND HONORABLE CONNECTION

WITH LITHGOW AND DISTRICT

Mr. Walter Hingley, of Inch-street who died in Lithgow hospital yesterday afternoon in his 85th year, had been a resident of the town for slightly more than 60 years. He will be remembered by a younger generation as a citizen who took his responsibilities seriously and a keen interest in the welfare of his fellow man. The late Mr. Hingley was born in Staffordshire, and came to Australia on the sailing ship Scottish Hero. It was characteristic of the young man that he helped where he could, and during the voyage he acted as school master to the child passengers, be-sides supervising the welfare of the occupants of the men's quarters. **At Lithgow his cousin, the late Enoch Hughes, was proprietor of the iron works, and for a time he was employ-ed there as an engineer**. Mr. Hingley became associated with the Railway Department when he was engaged at the Rydal loco, depot, and thus began a connection with a service in which for more than half a lifetime he displayed rare gifts. As a locomotive engine-driver he soon showed his skill, and it was always to his credit that he shared his wide knowledge with younger men ahd helped them, by example and advice, to achieve success. A senior driver, Mr.

Hingley had new engines placed in his charge, and in the course of time he was given the proud task of handling trains in which Vice-Regal representatives and other dignitaries travelled. He re-tired 24 years ago, and later served for some years as librarian of the Railway Institute. Mr. Hingley was a foundation member of the Workmen's Club, a small group that is dwindling yearly. He was also an early member of the local branch of the Druids' Order. As a young man he took a keen in-terest in trade union affairs, and al-ways worked to improve the lot of railwaymen. He was a lifelong member of the Methodist Church in which he was a keen worker. To the widow, Mrs. Henrietta Hing-ley, of 17 Inch-street, and other relatives the sympathy of the community will be extended in the loss of an exemplary husband and father. Members of the family are Mr. Walter Hingley (Spooner-street), Mr. Albert Hingley (Mort-street), Mrs. G. Collins (Concord), and Miss Elsie Hing-ley (17 Inch-street). Miss Elaine Guest, of 17 Inch-street, has been associated with the family since childhood. Mrs. S. H. Skidmore, of Pitt's Paddock, is the only sister of the deceased. The funeral is being held this after noon, interment to take place in the Methodist portion of Bowenfels cemetery. Messrs. Matthews and Lemon have the arrangements in hand.

GRACEFUL TRIBUTE "Days Run On Time" "Loco" writes on behalf of Lithgow loco. enginemen:—It is with regret we learn of the passing of an old friend and comrade, whom railway-men of Lithgow must recognise as one of the best and most stalwart pioneers. How many are there who can re-member the terminus of the main western line being at Rydal? Yet it was the loco. depot at Rydal where the late Walter Hingley commenced on the railways, it was here also that he first met his wife, to whom we offer our deepest sympathy. Few loco. enginemen of Lithgow may be aware that Mr. Hingley was one of the pioneers of the N.S.W. Drivers, Firemen and Cleaners' As-sociation, which in later years be-came what is now known as the A.F.U.L.E. One of the founders of the local branch, he was its first secretary, and occupied that post for many years. Locomen at the time used to hold their meetings in the railway barracks just off Inch-street. It was while the late comrade fil-led this position that he was associated with the celebrated "round robin" petition to the then Railway Commissioner, a petition in which the signatories placed their names all round the paper for fear of victimisation. I am sorry I have not time to look up the records to supply the correct dates, but this would be round about 1887. Always a keen and fearless advocate of the rights and privileges of his workmates, he was ever ready to lend a helping hand to those in distress and make the path a little easier for those who found the going hard. Ever ready with his advice in technical matters to budding drivers and firemen, he in that way rendered valuable service to his fellow-men. Those of the older school will heave a sigh at the passing of a gallant gentleman, whose loyalty, honesty and generosity were as true to label as the pottery which, comes from his native Staffordshire. We trust that the traditions and example of service set by him in his career as a railway engineman will not be overlooked by the younger generation, who, I am sure, like me, must appreciate the value and service of the work of our pioneers, to whom we owe much of the conditions which we enjoy to-day. So we

say: "Vale, old comrade! Your day's run made on time, well done; your rest is well earned!" The height of human wisdom is to bring our tempers down to our circumstances and to make a calm within, under the weight of the greatest storm without. —Defoe. LATE MR. W. HINGLEY (1940, October 17). *Lithgow Mercury (NSW : 1898 - 1954)*, p. 3 (EDITION 1). Retrieved from http://nla.gov.au/nla.news-article220789121

COBB AND CO. HELP LITHGOW

How Ironworks Came Into Being

LION HEART OF JAMES RUTHERFORD

The name of Cobb and Co. is generally associated solely with the old coaching days of the colony, and very few are aware that the company was also largely interested in the establishment of the iron and steel industry in Lithgow. Yet this is a fact, and, had it not been for the financial assistance that Cobb and Co. was able to give, the steelworks in this district would have perished in early infancy. Mr. James Rutherford was managing director of the coaching company and made frequent visits to Lithgow. It was on one of these that he made the acquaintance of Mr. Daniel Williams, a contractor, who was then engaged on the work of duplicating the railway tracks over the Blue Mountains. Williams was fired with possibilities of opening up ironworks in the valley, and in the course of many long conversations imparted much of his enthusiasm to Mr. Rutherford, who probably foresaw, in the extensions to the railway services then being push-ed ahead, an end of his coaching business in this district.

The result was that he enlisted the support of Mr. Enoch Hughes, an iron expert, and obtained 100 acres of iron lands on a 50 years' lease. A company was formed, with shares at £500 each, and the support of many prominent citizens, including the Hon. J. Sutherland, Messrs. R. Kelly, O. Phillips arid Thomas Denny, solicited. Mr. Sutherland was appointed first managing director of Eskbank Iron Co., at a salary of £750 a year. The venture was not the success anticipated, however, and a few years saw Mr. Rutherford and his colleagues indebted to the banks for the large sum of £29,000. Mr. Rutherford, in the meantime, had gone to America to study iron manufacture and other phases of the industry there, and on his return the directors agreed to purchase the coal lands of Mr. Thomas Brown, who was getting six shillings a tori for his product. The price was £45,000 for 840 acres, together with five shares in the iron project. The purchase was made with Cobb and Co.'s money, which was lying in the bank, and repayment was to be made within six months at 8 per cent. The very next meeting, however, repudiated the contract, and Mr. Rutherford then decided to take over the purchase, reducing the price to five shilling per ton. The company purchased 27,000 tons that year and then threatened legal action unless the original offer was completed. This was done in January, 1882. The company owed Mr. Rutherford £27,000 and gave a six months' promissory note for that amount. The Commercial Bank of Sydney had be-fore

then called attention to the over-draft, which amounted to £75,000. This the Daniel Williams Estate and Mr. Rutherford took up, bringing the total, with other owing liabilities, to £100,000, and reduced the overdraft by £20,000. At this time the concern had lost all the money invested, and owed £130,000 in addition. Mr. Rutherford then took charge, and in 12 months had it on a paying basis. In eight years time, despite a six months-strike, he had paid the whole of the £130,000. Eventually the business was taken over by Mr. Sandford, later by Messrs. G. and C. Hoskins, Ltd and finally by Australian Iron and Steel. These interesting facts were dis-covered by Mr. W. Foster, M.A., during a search of records relating to the early history of this district. COBB AND CO. HELP LITHGOW (1931, February 9). *Lithgow Mercury (NSW : 1898 - 1954)*, p. 4. Retrieved from http://nla.gov.au/nla.news-article221851760

SUPREME COURT.

Tuesday, 24th June, 1862. OLD COURT.—SITTINGS IN BANCO.—Trinity Term. Third day.

(Before their Honors the Chief Justice, Mr Justice Williams, and Mr Justice Molesworth.)

IN THE ARBITRATION OF ENOCH HUGHES AND RICHARD BLEASBY.—Mr Higinbotham applied for an attachment for non-performance of an award made by arbitrators between these parties. They had entered into partnership to establish a factory for rolling sheet iron, and the Board of Land and Works had granted them a piece of land on the south bank of the Yarra on license. Some disputes subsequently arose, and arbitrators were appointed to decide their differences, who found the value of the land at £356, and decreed that Hughes should have the option of taking it in fourteen days, on payment of that sum to Bleasby. On his refusing to take up the land, the arbitrators decreed that Hughes should convey it to Bleasby, and pay him £12 10s 6d, a portion of the rent then due. Attachment granted. SUPREME COURT. (1862, June 26). *The Age (Melbourne, Vic. : 1854 - 1954)*, p. 5. Retrieved from http://nla.gov.au/nla.news-article155010959

ESK BANK IRONWORKS. LITHGOW.
Notice to Carters and Others having Dealings with the Company.
Mr. Enoch Hughes does not hold a Lease of the above Company's Land at Lithgow, and has no authority with reference thereto. The Hon. John Sutherland, as Managing Director, and those persons employed by him only, are authorised to deal with the property of the Company.
(Signed) R. P.ABBOTT,
Solicitor for the Company. Advertising (1882, February 24). *Evening News (Sydney, NSW : 1869 - 1931)*, p. 3. Retrieved from http://nla.gov.au/nla.news-article107985924
ESKBANK IRONWORKS, LITHGOW.
NOTICE TO CARTERS AND OTHERS HAVING DEALINGS WITH THE COMPANY.
Mr ENOCH HUGHES does not hold a Lease of the above Company's land at Lithgow, and has no authority with reference to it. The Hon. JOHN SUTHERLAND, as Managing Director, and those persons employed by him only are authorised to deal with the property of the Company.

(Signed) R. P. ABBOTT.
Solicitor for the Company.
With reference to the above advertisement, I certify that Mr. ENOCH HUGHES, therein mentioned, is the manager of mines and works of the Eskbank Ironworks, Lithgow, duly appointed by deed of partnership, dated the 25th day of September, 1874, and is one of the original lessees of the Lithgow Ironworks and Estate from Mr. THOMAS BROWN. Mr. Hughes has a larger interest in the partnership property than the Hon. John Sutherland, and on all these grounds is fully justified in cautioning all persons (even those employed by Mr. Sutherland) from carting stone or pipeclay shale from the property of the partnership without his authority and consent. I think it necessary to mention this is not a "company, limited," but simply a PARTNERSHIP.
Dated this 23rd day of February, 1882.
WILLIAM HELLYER, Solicitor for Enoch Hughes,
107, Elizabeth-street, Sydney. Advertising (1882, March 4). *The Sydney Morning Herald (NSW : 1842 - 1954)*, p. 8. Retrieved from http://nla.gov.au/nla.news-article13506242

HUGHES.— On the 11th May, at his sister's residence, No. 20 Herbert-street, Albert Park, Enoch Hughes, aged 31 years. Family Notices (1890, May 14). *The Age (Melbourne, Vic. : 1854 - 1954)*, p. 1. Retrieved from http://nla.gov.au/nla.news-article196974345

The Friends of the late Mr. ENOCH HUGHES are respectfully invited to follow his remains to the place of interment, Melbourne General Cemetery. The funeral is appointed to leave his sister's residence, No. 21 Herbert-Street, Albert Park, THIS DAY (Wednesday), the 14th inst., at half-past 10 o'clock a.m. Family Notices (1890, May 14). *The Age (Melbourne, Vic. : 1854 - 1954)*, p. 8. Retrieved from http://nla.gov.au/nla.news-article196974326

The Age (Melbourne, Vic. : 1854 - 1954) **Wednesday 22 May 1861** p 5 Article

... . Iron fencing, Botanical Gardens £637 10s, ***Enoch Hughes***. Removal and re-erec tion of forage store at

GOVERNMENT GAZETTE.

The Age (Melbourne, Vic. : 1854 - 1954) **Saturday 12 October 1861** p 6 Article

... . Iron seats, Botanical Gardens, £56, ***Enoch Hughes***. Two pheasant-tries in the Royal Park, £298

JOHNSTON—HUGHES.—On the 18th of December, at the Congregational Church, by the Rev J. J. Halley, JOHN MILLER, Engineer, of this town, youngest son of the late Captain Jas. Johnston, of Fifeshire, Scotland, to SARAH, only daughter of Enoch Hughes, Engineer, of this town. Home papers please copy. Family Notices (1874, January 3). *Williamstown Chronicle (Vic. : 1856 - 1954)*, p. 4. Retrieved from http://nla.gov.au/nla.news-article68588684

HOW THE WORKS WERE STARTED

TWO GRATEFUL COLONIALS MR. RUTHERFORD'S LOSSES

In view of yesterday's ceremony, it is interesting to recall that Mr. James Rutherford, the Squire of Here-ford, was one of the founders of the Eskbank Ironworks, and that but for the financial support which he ac-corded it in the earlier years of its career it is not improbable that the iron industry would be absent from the coaly town of the Blue Mountains to-day.

Chatting with a NATIONAL ADVO-CATE reporter, a few days ago, Mr. Rutherford narrated some interesting historical facts concerning the works.

ORIGIN OF THE WORKS. "In 1874" he said, "I made the acquaintance of the late Mr. Dan Williams, who was at that time carrying out the contract of doubling the railway track through Lithgow Valley, and we decided, as the result of several discussions, that, as the colony had been good to both of us, we would give vent to our feelings of gratitude, and do something for the colony by establishing an ironworks at Eskbank. We — - ' our preparedness to risk £ the project. Having met Enoch Hughes, who professed to be an iron expert, we secured, through him, a lease of 100 acres on terms of 50 years. The trio was joined by the late Hon. John Sutherland, the late Mr. Robert Kelly, of Newtown, the late Mr. J. O. Phillips of Bathurst, and the late Mr. Thomas Denny, late of London. A start was made with so many £500 shares and calls were made as required.

ACQUIREMENT OF COALFIELDS

"Fairly good progress was made for several years, when I foresaw that in order to ensure continued success we would have to acquire coalfields of our own. With our own capital, I then purchased for £45,000, 800 and odd acres of coal land on either side of the railway for a distance of two or three miles, and supplied the Company with coal at 5s. per ton, instead of 6s. 6d. per ton, as we had previously been pay-in g With the blast furnace in operation, this reduction in the price of coal meant a considerable saving in the production of iron.

A HUGE OVERDRAFT

"As time wore on other business precluded me from paying much attention to the works, but everything appeared to be going on all right, until one morning I received a letter from Mr. T. A. Dibbs, General Manager of the Commercial Bank of Sydney, which read something like this: "My dear Mr. Rutherford, I find that the Eskbank Iron Company's account is now overdrawn by £75,ooo, and with-out some tangible security I shall be obliged to advise my Board not to allow it to be increased." This startling intimation came as a surprise to me, as the last balance-sheet seen by me disclosed an overdraft of only £25,000 to £30,000, and on that occasion I had complained that I would stop the Company's coal ac-count unless the money was forth-coming. I received promissory notes for the large amount owing, and in due time it was paid. On receipt of Mr. Dibbs' letter, I immediately

perceived that the payment of this huge sum (£75,000) as well as the floating liabilities of £25,000 must devolve upon Mr. Dan Williams and myself.

THE COMPANY DECEIVED

I immediately went to Lithgow, and, taking stock as well as I could, I found that the Company had been deceived. Hon. John Sutherland, an old gentleman nearly laid on the shelf, was managing director at the time, at a salary of £750 a year. Mr. Enoch Hughes, who was the original manager of the works, had been too much for the Honorable John, supplying him with false returns of stock and material in hand, so as to make his account balance. His returns showed that the stock was worth something like £84,000, whereas, according to the real valuation, it was worth less than £20,000. Mr. Dan Williams had gone to the old country ill, and Mr. Edwin Weinholt, came down to represent him. The new man was anxious to pay the money up, sustaining a loss in the process, and dispose of the property. The amount of money owing was so much that I could not afford to lose it at that time, and, as a result of the stand taken by me, the property was not sold. We then went to Sydney, where we saw the manager of the Commercial Bank, who was generous enough to say that if we reduced the overdraft by £ 20, 000 he would allow us six months without asking for any more.

MR. RUTHERFORD AS MANAGER

"The whole of the partners, with the exception of Mr. Dan Williams, were then still connected with the works. Immediately afterwards, however, Hon. John. Sutherland, finding how things had gone, resigned the managership, and I was elected managing director pro forma. Mr. Kelly next retired, and soon afterwards I discharged Mr. Hughes.

On September 29, 1882, I became manager of the property, and, at the end of the year had it on a paying basis—that is to say, I was not losing money, but was not paying interest on the large sum that was owing. There was a large foundry engineering shop at the works. I secured a five years' contract from the Government for re-rolling old rails at the rate of 5000 tons a year. Nearly all the water tanks along the railway from Albury to the Northern boundary, were made at the works, and the bylinders for the large bridges at Dubbo were cast there. "While I was recruiting my health in England in 1885, the representatives of Mr. Dan Williams' people and the gentlemen representing my interests called a meeting and decided to sell the property. They advertised it, and handbills were distributed, but as soon as I arrived home I stopped the proposal, and carried the works on myself.

ADVENT OF MR. SANDFORD.

"It was about the latter end of '86 or beginning of '87 that Mr. Sandford made his advent, in quest of some waste plant. He came from Mittagong, but as I had been

there many years before, and assured him that there was not sufficient ore there to make iron, Mr. Sandford eventually took a lease of the Eskbank works from me. I leased them to him on royalty. Mr. Sandford went to work there at a nominal salary—what he called 'bread that cheese '—£5 a week. I believed had Mr. Sandford was the man, and everything—plenty of energy and determination—with the exception of money to carry on the works. He met the right sort of man when he met me, because if I did not have the money, I had the credit. He carried on these works under me until 1890. In the meantime, I had paid off all that large sum of money, with the exception of that £20,000 paid by us when I was notified of the big over-draft.

MR SANDFORD PURCHASES THE WORKS.

'Mr. Sandford purchased the works from me in 1890 for £70,000, after I had paid off all the debts, amounting to £100,000 or more. Mr. Sandford was thus able to make an unfettered start. I wish to impress upon the public that I did not dispose of the property to Mr. Sandford because I did not think it would pay. On the other hand, I had every faith in the possibilities of the place, and in support of this I must refer to the fact that I purchased an additional 1200 acres of coal land, which would afford a supply for 150 years. Failing health and a surfeit of other business induced me to effect the sale."

BEFORE THE SALE

Mr. Rutherford reverted to what had taken place before the property was under lease to Mr. Sandford, and before the sale was effected. Continuing he said : "I caused the old blast furnace to be knocked down, as soon as I found it had got so much in debt. It only made 70 tons of iron a week, as com-pared with 500 tons turned out by other furnaces then in existence, and we found that we could import pig iron at about half what it would cost to produce it by this slow process. Later on, when we got the sheet mill—which I had indented four or five years previously—going, the Reid Government gave us a blow by removing the £2 import duty, which had been in oper-ation from time immemorial. The Chamber of Commerce meted out similar treatment to us. The merchants had been selling galvanised iron in Sydney at £21 per ton, but as soon as the sheet mill started they reduced it and reduced it until they brought it down to £16 a ton. This was irrefutable evidence that the free trade merchants did not sell articles at what they could import them for, but at what they could rob the public of. If there were no manufactories in a country, the free trade merchants took advantage of the fact by keeping up the prices. In the case referred to they had been selling iron for £21 and £22 per ton, but as soon as it was being manufactured in the State it fell to £16, and even then the merchants made a good profit. There is no doubt that the protection on iron even now offers so much encouragement to the manufacture of iron that it will not be 20 years before there are furnaces in every State in the Commonwealth. That is what protection does. The great-est protection in the world that merchants

have for themselves is free trade. They can do what they like then. "If the Government had not touched that duty of £2 which had been on ever since I knew the country, there would have been four sheet mills working at Lithgow for the last 15 or 20 years.

I forgot to mention that while I was carrying on the works they were idle for about six months owing to a strike. THE ONLY SURVIVOR Mr. Rutherford is the only survivor of the founders of the works, the growth of which, from the unpretentious start which he gave them, to their present mammoth proportions, has filled him with delight, although he considers that with protection in their earlier stages they would be of greater magnitude still. Mr. Rutherford expressed the hope that Mr. Sandford would make all the money, and more, than he (Mr. Rutherford) had lost, ten times over. He deserves all he can make.

JAMES RUTHERFORD Esq, J.P. (Only surviving founder of the Eskbank Ironworks.)

TRAMWAYS OF NEW SOUTH WALES.

At the present time, when the subject of tramways is exciting more than ordinary attention, the following inte-resting report will be regarded as having been opportunely written :—

" Department of Public Works, Railway Branch,

Sydney, 1st September, 1880.

"Sir,—I have the honour to supplement my report, for 1879, upon the railways of the colony, with a report upon the introduction and working of tramways in the city and suburbs of Sydney.

"Mr. D. K. Clark, C. E. (whose exhaustive treatise upon the construction and working of tramways is a recognized book of reference) says very truly, that tramways have been developed by dint of sheer hard work and persistency ; and that they are now an accepted means of transport, urban and suburban, sanctioned by experience, approved and adopted by the public.

" The first public tramway established in this country was constructed and opened for traffic as far back as December, 1861. A select committee of the Legislative Assembly, for whose consideration and report 'The Pitt-street Tramway Bill' was referred, gave it as their opinion that the construction of a tramway to the semi-Circular Quay would lessen the cost of conveying railway stock and goods to and from the railway terminus, and also facilitate the passenger traffic. They did not coincide with the objections which certain witnesses, whose evidence was taken by them, urged in opposition to the proposal, but considered that there were no difficulties which could not be overcome by proper arrangements, and, recognising the importance of affording within the city additional facilities for railway traffic, they recommended that the experiment of constructing a tramway from the Red-fern Station along Pitt-street to the Circular Quay should be fairly and fully tried.

"One of the conditions of this experiment was that, in working the line, recourse should be had to horse traction only. It was at first proposed to use the discarded 'Bar-low railway rails ' for this tramway, but, ultimately, Captain Martindale, who was then Commissioner for Rail-ways, requested the Inspecting Engineer in England, Captain Galton, R.E., to select such rails as his experience and the opportunities which his position naturally afforded him of judging would point out as the best, and also to select and forward two carriages for passenger traffic. This order was fulfilled in a far from satisfactory manner. The two tramcars sent out

were so much injured in consequence of bad packing that they had to be repaired and strengthened before they could be used, and the rails selected and forwarded ('Train's patent tram rails,' the step-rail used to this day in America) were found to be unsuitable; the step of the rail from its flange was only 5/8 of an inch, whereas the flange of the wheels intended to run between the stop and the flange of the rail was one inch. To remedy this defect the remarkable expedient was resorted to of reversing the rails with, as might have been expected, very unsatisfactory results to the ordinary vehicular traffic. The line, moreover, was opened before it was consolidated, at least this was the reason afforded for the large expenditure that had to be incurred to keep it in repair ; and subsequent inquiry showed that the working expenses, in the first eight months of its operation exceeded the earnings by over 38 per cent.

" Very soon after its completion, the public, and more earnestly the shop proprietors of Pitt street, began to complain of the inconvenience it occasioned, and on the 25th July, 1862, a select committee of the Legislative Assembly was appointed, with power to send for persons and papers, to inquire into and report as to the desirability of its removal. The committee submitted a progress report in December, 1862, but contented themselves with recommending the resumption of the inquiry at some future time.

"It was not till November 1865, that the inquiry was resumed; public dissatisfaction with the tramway had, in the meantime, greatly increased, more especially as regarded the manner in which the rails had been laid down ; and when, on the 7th November, 1866, the report of the select committee, which recommended that the rails be taken up and finally removed, was adopted by the Legislative Assembly the decision was hailed with general satisfaction.

In the meantime, street tramway construction in other parts of the world had been undertaken with varying success. In America, and in some of the continental cities of Europe, they were pronounced to be completely successful. Mr. Train constructed the first street tramway in England, at Birkenhead, using the step-rails. In 1860 and 1861, he laid down similar short lines in London—Bayswater Road and Kennington Road having been selected for the experiment. After a brief experience of the inconvenience of the step-rails (an inconvenience which was aggravated in the case of the Sydney tramway by their having been laid inside out) the lines laid in London were removed, whilst the Birkenhead tramway and one or two others were only rescued from a similar fate by the timely substitution of flat-grooved for step rails. The grooves in the new rails were sufficiently roomy to afford free play for the flanges of the wheels, at the same time being sufficiently narrow to prevent the wheels of common road vehicles from entering them. The construction of tramways in England, and even in London, was not however, discouraged for any lengthened time. In I865 they were constructed in Liver-pool, by consent of the Corporation and in 1868, Parliament passed an Act giving encouragement to the construction of tramways, thus affording the highest

testimony in favour of these systems of conveyance. Before the close of 1870 there were 55 miles of street tramway opened for traffic in London and its immediate neighbourhood, the North Metropolitan, while in the United Kingdom the length of these lines at the close of 1873 exceeded 200 miles, and double that extent had been authorised.

"I particularly take 1873 as a period for marking the progress made in the extension of tramways, a second attempt having been made in that year to introduce them into Sydney. Mr. J. D. Larsen, C. E., who was the engineer and promoter, had been largely engaged in England and on the Continent in constructing tramways with flat-grooved rails, which offered no obstruction whatever to the ordinary street traffic. To carry the project into effect, a bill was introduced into Parliament in November, 1873, for the incorporation of the Sydney and Suburban Street Tramway Company, with a capital of £95,000. The proposal embraced the laying down of tramways (for horse traction only) on seven routes, some identical with, and the others somewhat similar to, the lines which after an interval of seven years, the Government has now been authorised by Parliament to carry out. The bill, after being read a first time, was referred to a select committee of the Legislative Assembly for consideration and report. Their report, with the evidence given, was laid before the House on 19th December, 1873, but no subsequent action was taken to promote the measure further, and the project was abandoned.

"Four years afterwards, viz., in December, 1877, another attempt was made to establish street tramways in Sydney ; the project was promoted by the Omnibus Company—the usual formula was gone through of introducing a bill into Parliament, which was read a first time, and referred to a Select Committee of the Legislative Assembly for inquiry and report. The report was made on the 20th March, 1878, but it was not till February, 1879, that further action was taken; the second reading of the bill was then moved, but the House was counted out.

"The evidence, however, in favour of tramways which had been given at these inquiries and the discussions which followed served to reconcile the public to the re-establishment in Sydney of this mode of transport. The proposal to construct a railway from Redfern Station to the Circular Quay, by a route which must necessarily have cost, at the lowest computation, one million and a half of public money, had not met with popular favour, notwithstanding that the want of adequate means of conveyance between the railway station and the business portions of the city was felt to be, by the large and increasing population of the suburbs, a great and growing inconvenience. The additions to the traffic, moreover, which reasonably was expected to take place upon the opening of the International Exhibition and during its continuance would, it was considered, greatly enhance the difficulty experienced in providing the means of transport. At this juncture the Government, upon your recommendation, determined upon submitting a bill to Parliament for the construction of a line of tramway from the Redfern station to

Hunter-street via Pitt-street, Bel-more Park, and Elizabeth-street—a length of one mile and 45 chains.

"The prejudice, however, entertained by the public against tramways, engendered by their experience of the line in Pitt-street, was still so great that it was thought expedient, in order to secure the passing of the measure, to accompany the proposal with an assurance that, as the tramway was required to meet only a special emergency, it should be taken up as soon as the Exhibition was over and provision had been made for the construction of a railway line to the central portion of the city.

"Upon these terms the first reading of the bill was carried by a large majority, the ayes being 31 and the noes 10. As the limited time at disposal for the construction of the line did not admit of a day's delay, this division, which took place on the 13th March, 1879, was accepted as an indication that the bill would be passed. Orders were at once given by cablegram for the importation from America of the rolling stock estimated as requisite for the conduct of the traffic , viz., four steam motors and six tramway-cars. The source from which the rails should be obtained was a question of great difficulty. Time did not admit of steel rails being imported from England, because although for the rolling stock required we could wait until September in which month the Exhibition was to be opened, it would be necessary to have the rails and fastenings supplied as the work of construction proceeded, and it was indispensable that they should be on the ground not later than June. In this difficulty, Mr. D. Williams offered to roll the rails in the colony (at the Esk Bank Iron Works) if supplied with old iron rails for the purpose. The offer was accepted, and the rails, which were designed to the 'Larsen' pattern, 62 lbs to the yard, were successfully rolled. **They have, however proved to be far from durable**, but this must be attributed to the bad English iron of which they were made, rather than to any defect in their manufacture. The "Larsen" rail, moreover, was originally designed for a horse tramway. The rolling load over the rails, if horse-power instead of steam-power had been adopted, would have been consider-ably less, and the life of the rails would have been proportionately greater.

"The estimated cost of the line (without the pavement which was proposed at first to be dispensed with, or shed and workshop accommodation, but inclusive of rolling stock) was £14,000. The actual cost was £22,269, the increase being caused by the paving of the road subsequently found to be necessary, and the expense of providing shed and workshop accommodation, which was also indispensable.

"As the line was to be an experimental one, the success or failure of which would, in a large measure, determine the question of the adoption of street tramways for the city of Sydney, it was considered desirable that it should be con-structed in the most perfect manner, and equipped with the best known appliances for working the traffic. It was decided that steam would furnish the best motive power, and although the superiority of steam power over horse traction for tramways was not

by any means universally admitted—in fact, not only its superiority but its adaptability was denied by many—the result has shown that the decision was wise and judicious.

"The railway engineers of the department, although they suggested and surveyed the route to be followed, expressed a disinclination to be connected with the carrying out of the work, and the Government appointed Mr. Gjedsted to superintend the construction of the line. Mr. Gjedsted, who was at the time employed as a draftsman in the office of the Engineer-in-Chief, had been engaged in tramway construction in England, Ireland, and Denmark, and had come to the colony in 1873 with Mr. Larsen to assist him in the project of establishing tramways in Sydney.

"In his book on tramways, Mr. Clarke says, 'there exists a sentiment, which is somewhat prevalent, that tram-way engineering is but a humble branch of the profession. The sentiment, born of self-complacency, is delusive; tram- ways cost half as much as railways, and they earn more money by the mile; they have involved as much blundering as railways; like railways they have exhausted reputations, and, unassuming and unobtrusive as they are, tramways have been the subject of a wide range of experience.'

"The line from Redfern to Hunter-street, which was successfully carried out, by day labour, under Mr. Gjedsted's superintendence, was opened for traffic on 16th September, 1879, the day prior to the opening of the Inter-national Exhibition, and at once became popular. In the 106 days which followed between the date mentioned and the close of the year, 443,341 passengers were conveyed upon it, equal to a daily average of 4182. Its success, financially, was found to be correspondingly great, and although the cost of renewals and the decrease of traffic following upon the close of the Exhibition, will, no doubt, abate the large return which the net results, at the close of 1879, showed the line to be paying upon the capital invested, the transactions to this date disclose a sufficient margin of profit to prove conclusively that tramways in Sydney, under efficient and economical management, can be made very profitable undertakings. In the appendix will be found a statement, giving in detail the capital cost of the line, and particulars of its revenue and expenditure to 31st December, 1879.

"The success of this experimental line revived the project of the Sydney Omnibus Company to establish tramways in the principal streets and suburbs of Sydney; but popular opinion was in favour of tramways being constructed and worked by the Government rather than by private enter-prise. The reasons which were given in favour of this course may be briefly summarised as follows :—1. The tramways, if constructed by the Government, would be of a more durable nature, and more complete in their arrangement and equipment. 2. The rates of conveyance would be more permanent, local causes not being allowed to affect them to the same degree, and the fluctuations so often pre-vailing with undertakings in the hands of private

companies would be avoided. 3. Greater civility and attention would be assured from the employees, as they would be more directly the servants of the public. 4. The Government, looking only for a fair return on the capital invested, would make more moderate charges than a company whose aim would be to obtain as large dividends as possible for its shareholders. 5. A company would not construct a line unless assured that it would yield an immediate return upon its outlay, and thus tramway accommodation would be denied to many places the future prosperity of which would be dependent upon increased means of communication.

"You will doubtless, sir, remember the number of deputations which waited upon you on this subject, especially a large and influential one, including in its numbers the representatives of no less than twenty-two suburban municipalities, all of them desirous that the new system of steam tramways established by the Government should be continued under its control, and extended to their respective districts.

"The natural arbiter for deciding the question was, of course, the Parliament of the country. On the 25th November, 1879, the 'Sydney City and Suburban Tramway and Omnibus Company's Bill' was brought in; and two days afterwards, you, sir, formally moved,—'That the House should resolve itself into a Committee of the Whole, to consider the expediency of bringing in a bill to empower the Government to construct tramways.' This was assented to on the 19th February, 1880, and the bill was read a first time on the 24th of that month.

"In the meantime the bill of the company had been referred to a select committee for consideration and report. On the 26th February, 1880, the committee reported and laid the evidence they had taken on the table of the House; the bill, however, was finally withdrawn on the 30th April following, on which date the order for its second reading was, by resolution of the Assembly, discharged from the business paper. The measure of the Government, which was entitled ' A Bill to authorize the construction and maintenance of tramways along certain streets and high-ways in the city and suburbs of Sydney and elsewhere,' after passing through the usual intermediate stages, was finally assented to on the 28th April, 1880.

" The following is a list of tramway routes which that Act (43 Victoria, No. 25) authorizes to be carried out :—No. 1. A line to commence in Elizabeth-street at Hunter-street, then passing along Elizabeth-street, Liverpool-street, Oxford-street, and Old South Head Road, and terminating in this road at or about Moncur-street. No. 2. A line to branch off the line in Oxford-street, thence passing along Crown-street and Cleveland-street, and terminating at Randwick Road. No. 3. A line branching off the line at Darlinghurst, then passing along Botany-street, Randwick Road, and Avoca-street, and terminating in this street in Rand-wick. No. 4. A line to branch off the line at Darlinghurst, then passing along Darlinghurst Road, and terminating opposite William-street. No. 5. A line to branch off the line at Paddington, thence passing along Piper-street and Upper Ocean-street, and terminating at Woollahra. No. 6. A line to be a continuation of line No. 1, to

commence at Paddington, then passing along Old South Head Road, Brisbane-street, and Cowper-street, and terminating at Charing Cross, Waver-ley. No. 7. A line to commence in York-street, at Charlotte-place, then passing along York-street, through Druitt-street, along George-street, across the railway bridge, and along Parramatta-street, and terminating at the Glebe. No. 8. A line to branch off the line in Parramatta-street, then passing along Regent-street, Botany-street, and Botany Road, and terminating at the tollbar, Waterloo. No. 9. A line to commence at the Glebe, branching off the line No. 7, then passing along Newtown New Road, New-town Road, across Railway Bridge, Newtown, along the Enmore Road towards Marrickville, and terminating in that municipality. No. 10. A line to commence at the Glebe, at the termination of line No. 7, then passing along the Glebe Point Road, and terminating in this road at the Glebe Point. No. 11. A line to branch off line No. 7, in Parramatta-street, then passing along Harris-street, and terminating at the intersection of this street with John-street at Pyrmont. No. 12. A line branching off line No. 9, at the Railway Bridge, Newtown, then passing along Cook's River Road, and terminating at Cook's River, parish of St. Peters. No. 13. A line to commence at the termination of line No. 8, in Waterloo, then passing along the Botany Road, and terminating at a place called Banks' Meadows, at Botany Bay. No. 14. A line to branch off the Glebe Point line, No. 10, and then passing through the suburb of Forest Lodge, and terminating at Camper-down. No. 15. A line to commence at the Railway Station, Campbelltown, passing along the Camden Head, through the township of Narrellan, across the Camden Bridge, and terminating in the town of Camden.

" By the 2nd section of the Act authority is given for the construction of tramways along any other route or routes within the city of Sydney and suburbs thereof which may be approved by the Governor with the advice of the Executive Council; and by the 4th section authority is given, under like approval, for the construction of tramways from points along the line of any Government railway to places distant not more than 50 miles therefrom, but it is provided in regard to these latter lines, that before they shall be commenced, the plans and books of reference of the routes which they are to follow shall be laid before and be approved by Parliament.

"In the Loan Act of 1880, assented to on the 12th July, the sum of £600,000 was provided for the construction of the tramways, authorized by the Tramway Act, and no time was lost in commencing some portion of the works and ordering the necessary rolling stock for carrying on the traffic as soon as the lines should be completed. Portions of lines No. 1 and 3, from Hunter-street along Elizabeth, Liverpool, and Oxford streets, and thence by Botany-street, through Moore Park, to a point opposite the gates of the Randwick Racecourse, have been nearly completed, and will be opened for traffic in a few days; and a tender has been accepted for the construction of the lines to Woollahra and Waverley, and also from Oxford-street and along Crown-street to Cleveland-street.

"In the appendix will be found a statement of the con- tract price for these lines, and particulars of their respective forms of construction.

"Notwithstanding that tramways have been the subject of a wide range of experience, the best mode of constructing them is still a vexed and unsettled question. It is admitted by tramway engineers that, in consequence of the imperfect state of the permanent way, there is scarcely a town tramway in the United Kingdom on which locomotives could be economically employed; and Mr. Henry Vignoles, civil engineer, has stated that even for horse traction it is evident to all engineers who study the subject carefully, that there are many defects, extending to the latest improvements, in the permanent way of tramways.

"Mr. R. Price Williams, who is an accepted authority on iron ways, stated, so lately as April last, at the spring meeting of the Institution of Mechanical Engineers, 'that engineers were now feeling their way with regard to the permanent way of tramways just as they did in the case of railways. Many members could remember, as he did, the time when Mr. Bridges Adams gave an exhaustive paper on the permanent way of railways. A great variety of designs were then discussed, all of which (Mr. Adams' included) had since disappeared.' Mr. J. D. Larson, C.E., whose design of rail was adopted for the line between the Railway Station and Hunter-street has recently abandoned it for a rail better adapted for steam traction; and he points out that lines constructed with the lighter rail have been unfairly handicapped by being called upon to perform duties for which they were never designed or constructed; for, by the substitution of steam traction for horse-power, in addition to the rails having to carry three times the load, all the tractive force is transferred from the roadway to the rails.

"The question of the proper weight of rail which should be used for tramways worked by steam traction was also discussed recently before the institution referred to, Mr. B. C. Brown, C.E., gave expression to his belief that 'very few, even of those tramways which had never had an engine on them, were fit for anything. He had to look at this tramway question, not only as an engineer, but also as a town councillor, and it appeared to him that whatever system had been adopted, almost all roads were made far too light, not so much for the tramway work, as for the other work that came upon them * * * * heavily loaded vehicles, once crossing a tramway, might so injure it as to make it very awkward for either cars or engines passing over it afterwards.' While these views found support at the hands of Mr. T. R. Crampton, C.E., who gave it as his opinion that a tramway road should be much stronger, not lighter than the ordinary railroad, Mr. Henry Vignales, C.E. (whose design of railroad rail has been so extensively adopted) says, with regard to economy in the cost of construction, that 'No system, however perfect, can be favourably entertained by shareholders unless the first cost can be shown to be moderate. It is well known that some of the tramways in the metropolis are now being renewed, almost regardless of cost, with rails weighing 90 lbs. per yard.' And

he adds,—' I should feel ashamed to tell any Board of Directors that rails weighing 90 lbs. per yard were necessary for a tramway.'

" I have thought it advisable to quote some of' the varying authoritative opinions upon which the whole body of engineers seems to be divided, in order to show that nothing very definite or final, in regard to either the form and weight of rail or the best mode of constructing tramways, has yet been arrived at. With this information before me, I was not unprepared to learn from our tramway engineer (Mr. Gjedsted), that he proposed to abandon the form of rail used in the Elizabeth-street line—(the 'Larsen' rail,— abandoned also by its original designer as being too light for steam traction), and to substitute a heavier rail, designed in some respects to 'Barker's form of rail,' but differing from it in many important points.

"With your concurrence, tenders were invited for a small quantity of these rails, to be made from colonial mined iron, sufficient to test, in a practical way, their adaptability to our requirements, as to which I was in some doubt.

Though urged to do so, I have refrained from recommending that steel rails, as designed by Mr. Gjedsted, be ordered from England, considering it essential, on the grounds of economy and prudence, that we should first be satisfied that the design of rail is a suitable one, before any large expenditure for the requisite supply is incurred. About 5000 tons will be required for the tramways authorized, and their cost, delivered in the colony, will not be less than £50,000.

" Only one tender was received for the rails to be made from colonial mine iron, viz., that of Mr. Enoch Hughes, of the Eskbank Iron Works; his price is £11 5s. per ton for 420 tons, delivered at the Redfern Railway Station. These rails are being used for the line in Oxford and Botany streets, and also for the double line in Elizabeth-street.

" MOTIVE POWER FOR WORKING TRAMWAYS.

" The uncertainty which exists as regards the proper form and weight of rail, and the best mode of constructing tramways, extends also to the motive power to be used in working them. It seems to be generally agreed that mechanical power will, to a greater extent than has hereto-fore been the case, supersede horse traction; and with this object in view, several mechanical appliances have been and are still on their trial, while some have already been abandoned as not fulfilling the recognized requirements.

" The conditions imposed by the English Board of Trade to admit of locomotives being used in the streets of London are—that there must be no visible smoke or steam, no visible fire no noise of either blast or machinery, and no visible working parts. The object of all these restrictions is to avoid frightening horses or annoying the public.

" The speed is limited to eight miles an hour, and the Board of Trade requires that a speed indicator always visible to the driver, a governor, brake-power sufficient to stop the engine in its own length, and a bell or whistle for signalling, be in use on all tramways worked by steam.

" The types of tramway engines already established are (1) the independent locomotive class, (2) the combined engine and car, (3) the fireless locomotive, using steam, and (4) the compressed air engine. There are also gas engines, and engines worked by electricity, but these have not yet been brought into practical use.

" Mechanical power, as applied by the fireless locomotive and the compressed air engine, requires the employment at the terminus of the tramway of a fixed engine for supplying steam or for compressing air. Where compressed air is used as a motive power, it has been found by experiment that the resultant efficiency of the running engine, as compared with the stationary air-compressing engine, rarely exceeds 30 per cent.; consequently the difference in cost, under the most favourable conditions, will be as 3 to 1 against compressed air. This difference is sufficient to justify us for the present in discarding the idea of com-pressed air as a motor for tramway purposes. The same objection applies, though not perhaps to the same extent, to the hot water or fireless engine, invented by Dr. Lamm, of America. Several modifications of this type have been tried with varying success. The chief reason that its use has not been extended is doubtless the financial difficulty, that is, the cost of working.'

" It is clear that recourse must be had to the ordinary steam motor until further experience shall have demonstrated the superiority of engines worked by compressed air, gas, or electric power, or of the fireless locomotive. The question as to whether it is more advantageous to have engine and car combined, or a separate motor, depends much upon the character of the work to be performed. In cases where the number of passengers to be carried exceeds the number that can be accommodated in one car, then an independent engine of sufficient power to haul two or three cars would seem to be not only preferable but necessary; where, however, the traffic is light and constant, nor liable to be occasionally increased beyond the carrying capacity of one car, 'the combined engine and car' has advantages which should not be overlooked. The most important of these advantages is that, as the necessity for increased adhesion arises, this essential is supplied by the cause which. renders it necessary, viz., the increased weight of additional passengers, the wheels of the motor acquiring, through this additional weight, the necessary adhesive power to overcome the resistance.

" The number of passengers travelling between the suburbs of Sydney and the city, was known to vary considerably at different hours of the day, and it was therefore desirable to import the independent motor for our tram-ways, as being more efficient for all purposes than the combined engine and car. Four of them, as

previously stated, were ordered from the Baldwin Company at Philadelphia, for the line from the Redfern Station to Hunter-street; and six additional motors, with improved gearing and fittings, was subsequently ordered from the same firm when the extension of the tramway system was decided upon. It is estimated that sixty motors will be required to work the traffic on the tramway lines which have been authorized. A photographic view of one of the motors, with cars attached, forming an ordinary tramway train running in Elizabeth-street, will be found in the appendix.

" In submitting this resume of the history of the intro-duction of tramways in New South Wales, and the present aspect of the system as established in the United Kingdom, I feel I am entitled to congratulate you upon the success which has so far attended the scheme of steam tramways for the city and suburbs of Sydney, and to express my belief that when the initiatory difficulties (inseparable from the introduction of all new undertakings) shall have been overcome, steam tramways in New South Wales will confer upon the colony all the numerous advantages which have followed their introduction in other parts of the world.

" I have the honour to be, Sir, your obedient servant,

" CHAS. A. GOODCHAP, Commissioner for Railways.

" The Hon. John Lackey, Secretary for Public Works.