

## **The Kangaroo Island China Stone and Clay Company and its Forerunners**

‘There’s more stuff at Chinatown – more tourmalines, more china clay, silica, and mica – than was ever taken out of it’.

Harry Willson in 1938.<sup>1</sup>

### **Introduction**

In September 2016 a licence for mineral exploration over several hectares on Dudley Peninsula, Kangaroo Island expired. The licensed organisation had searched for ‘ornamental minerals’ and kaolin.<sup>2</sup> Those commodities, tourmalines and china stone, were first mined at this site inland and west of Antechamber Bay some 113 years ago. From March 1905 to late 1910, following the close of tourmaline extraction over 1903-04, the Kangaroo Island China Stone and Clay Company mined on the same site south-east of Penneshaw, and operated brick kilns within that township. This paper outlines the origin and short history of that minor but once promising South Australian venture.

### **Tin and tourmaline**

The extensive deposits inadvertently discovered during the later phase of tourmaline mining were of china (or Cornish) stone or clay (kaolin), feldspar (basically aluminium silicates with other minerals common in all rock types), orthoclase (a variant of feldspar), mica, quartz, and fire-clay. The semi-precious gem tourmaline had been chanced upon in a corner trench that remained from earlier fossicking for tin.<sup>3</sup> The china stone and clay industry that was poised to supply Australia’s potteries with almost all their requisite materials and to stimulate ceramic production commonwealth-wide arose, therefore, from incidental mining in the one area.<sup>4</sup>

About 1900, a granite dyke sixteen kilometres south-east of Penneshaw was pegged out for the mining of allegedly promising tin deposits. The farmer E.S. Bates junior and a local itinerant labourer, probably Bill Travers, who oft-times lived in a ‘humpy’ at Snapper Point, pegged out some claims. In late 1900 the Inspector of Mines, William Matthews, visited the ten forty-acre blocks of the mineral claims and from observation and samples discovered no tin oxide.<sup>5</sup>

The search for tin was soon relinquished, although the inspector reported that ‘several granite dyke formations’ carried tourmaline.<sup>6</sup> The events that were to continue with china stone and clay extraction began in 1903 when George Cox, a collector of valuable guano from American River islands, was harvesting equally valuable yacca resin inland from Antechamber Bay and chanced upon some quartz and an almost flawless blue tourmaline (*indicolite*) exposed by the weather in a corner trench that Bates dug for the tin mining syndicate.<sup>7</sup> The legend as it is told had Cox showing his gems in the bar of Anderson’s Hotel at

Kingscote. One of his listeners rode through the night to the locality of the find and pegged a claim to a large area. Soon some fifty prospectors had made their way to the site through the low, prickly shrubs, obdurate yaccas, and stunted trees of the undulating land and were at work digging prospecting pits and shallow adits (horizontal shafts) over a fairly large area.<sup>8</sup> Cox later sold his claim at a handsome profit to the Kangaroo Island Amalgamated Gem Syndicate.



View eastwards from the edge of the fenced former tourmaline and china stone and clay mine site, Dudley Peninsula (Photograph: author, 2016)

This syndicate was floated in December 1903 to acquire the leases and search licences of the Aorangi gem mine, and Buick's and Cox's claims, and other rights.<sup>9</sup> The memorandum and articles of association of the Kangaroo Island Amalgamated Gem Syndicate were adopted in December 1903. The forty-eight claims were managed for several months by the surveyor Sydney Cullingworth before he moved to employment with a mainland prospecting concern. In April 1904 the Government Geologist identified five tourmaline varieties found in the open excavations and shallow shafts of extensive decomposed granite of the area. They ranged over pink, blue and green colours, with black (*schorl*), not so valuable, 'in abundance'.<sup>10</sup>

William Kingsborough, an Adelaide broker with experience of South Australian and West Australian ore and precious gem mining, and Louis Suhard, an Adelaide manufacturing jeweller (of L.H. Suhard & Company), who had played for Norwood Football Club over 1878-80, obtained the option leases,<sup>11</sup> and Thomas Barnfield, Charles Wooldridge, W. Andrew, Suhard, and A. Rankine were appointed directors of the successor syndicate.<sup>12</sup> The English-born Thomas Barnfield had presided over its amalgamation with the Dudley Gem Syndicate in December. Barnfield had interests in South Australian mining and interstate investments; he was a one-time Adelaide city councillor, director of the Thebarton Distilling Company and of the Adelaide Crystal Ice Company, and was a member of the Adelaide Stock Exchange.

### *A new industry*

Some markets for Dudley Peninsula tourmaline had been established by the spring of 1904, inspection in Germany of the gems had been made, but the supply of consistently good stones was weakening. Assurance of greater commercial success was needed, so the forty-one year-old Joseph Provis, a Cornish mining engineer and chemist, and for six years an instructor in mineralogy at the School of Mines and Industries, Adelaide, was engaged to inspect the property.<sup>13</sup> Provis had taught mining science in England before coming to Australia in the 1890s, where he first taught at the Moonta and Kapunda schools of mines as a metallurgical chemist.

Provis was encouraging, and green, blue, and pink gem specimens were exhibited in Adelaide in March 1905 by the Chamber of Manufactures at Adelaide as a promising endeavour, but the original tourmaline pocket was soon exhausted and the gem syndicate agreed to voluntary winding up. However, Provis had found china stone and other pottery minerals at the mine in 'close association' within one and a half square kilometres and of 'unlimited quantities', which he brought to the notice of Adelaide speculators.<sup>14</sup> Barnfield became the Kangaroo Island China Stone and Clay Company's chairman of directors; he died in 1907 while in that position and was succeeded by George Milne, co-director with Louis Jessop.<sup>15</sup>



The mine entrance probably in 1904—in which two figures stand—is likely that photographed in 2016, below. The photograph is somewhat despoiled by pencil scribbles (JD Stow album, Penneshaw Maritime and Folk Museum)



The entrance at the far right side, now almost overgrown, is believed to have been to the tourmaline, later the main china stone, mine (Photograph: author, 2016)

William Kingsborough became secretary of the China Stone and Clay Company and later a director with Roland Strachan, whose business and management interests included the Globe Salt Company (which had harvested salt on Dudley Peninsula from the 1890s), and presidency of the Chamber of Commerce.



Thomas Barnfield (1842–1907) died at his residence, Hillgrove, Stanley Street, North Adelaide ('The Late Mr. T. Barnfield', *Chronicle*, 14 September 1907, p29).

Additions have been made below to the captions to the same three photographs published in 'Kangaroo Island: A Gem Field, and a Barley-growing Country', *Adelaide Observer*, 7 May 1904, p26.



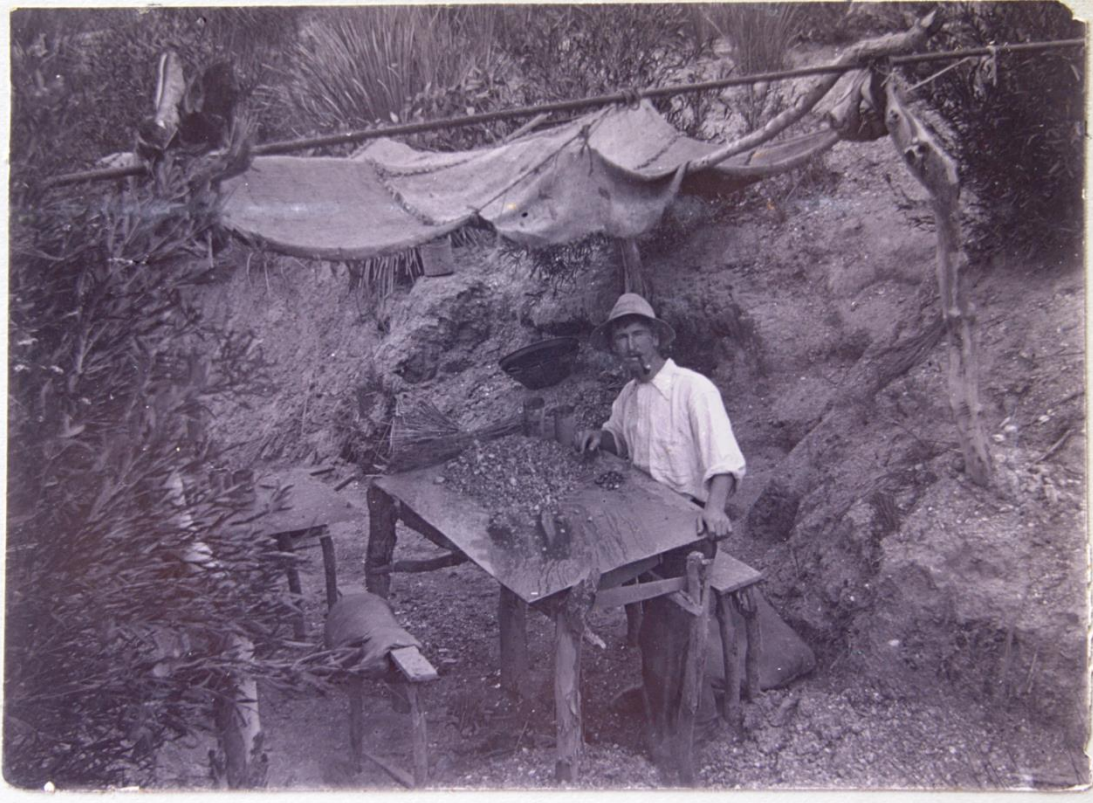
A causeway built in part of the gem field from mining spoil. Probably 1904 (JD Stow album, Penneshaw Maritime and Folk Museum).



The jigger for sifting gems from their matrix at the tourmaline mine (JD Stow album, Penneshaw Maritime and Folk Museum).

William Kingsborough was appointed liquidator in March 1905 of the Kangaroo Island Amalgamated Gem Syndicate, which soon afterwards auctioned its forty-acre Aorangi mineral claim through Theodore Bruce & Company together with equipment that was immediately taken over as useful in exploiting the clay deposits: a two-room weatherboard house, a four-wheel buggy, horse and harness, axes, adzes, saws, all mining tools such as striking hammers, boxes of tools, spades, long-handled shovels, picks and pick handles, gads (heavy iron wedges), tongs, anvils, sieves, buckets, hempen and wire ropes, jumping drill, grindstones, jigger plant (or rattler), boring plant, washing plant, two tents, two windlasses, dynamite and coils of fuse, and other equipment, including wheelbarrows, sorting table, and a saddle and bridle.<sup>16</sup>

The change from gem to clay mining appeared uncomplicated. Provis became general manager of the China Stone and Clay Company mines<sup>17</sup> and of the usually four main staff, including the overseer William Shakeshaft, all of whose exertions in the mines yielded materials requisite for secondary industry's production of telegraph insulators to fine china.



A ready provision for sorting gems after sifting and washing photographed in 1904 (JD Stow album, Penneshaw Maritime and Folk Museum). Seated on narrow benches under a hessian-bag shelter, two men could sort at the one time. Another work or lunch table is in the left, background. In 1903 a jovial party of local men and women visited the mine:

Some of the younger and more adventurous spirits ... made the journey down [the shafts] in a bucket ... We saw the ... washing and sorting carried on beside a dam constructed in the creek ... A dining room of bush construction [with roof and walls of interlaced branches] has been put up on the field ... The seats were ... rails – saplings of about 8 in. in diameter. We brought lunch with us.<sup>18</sup>

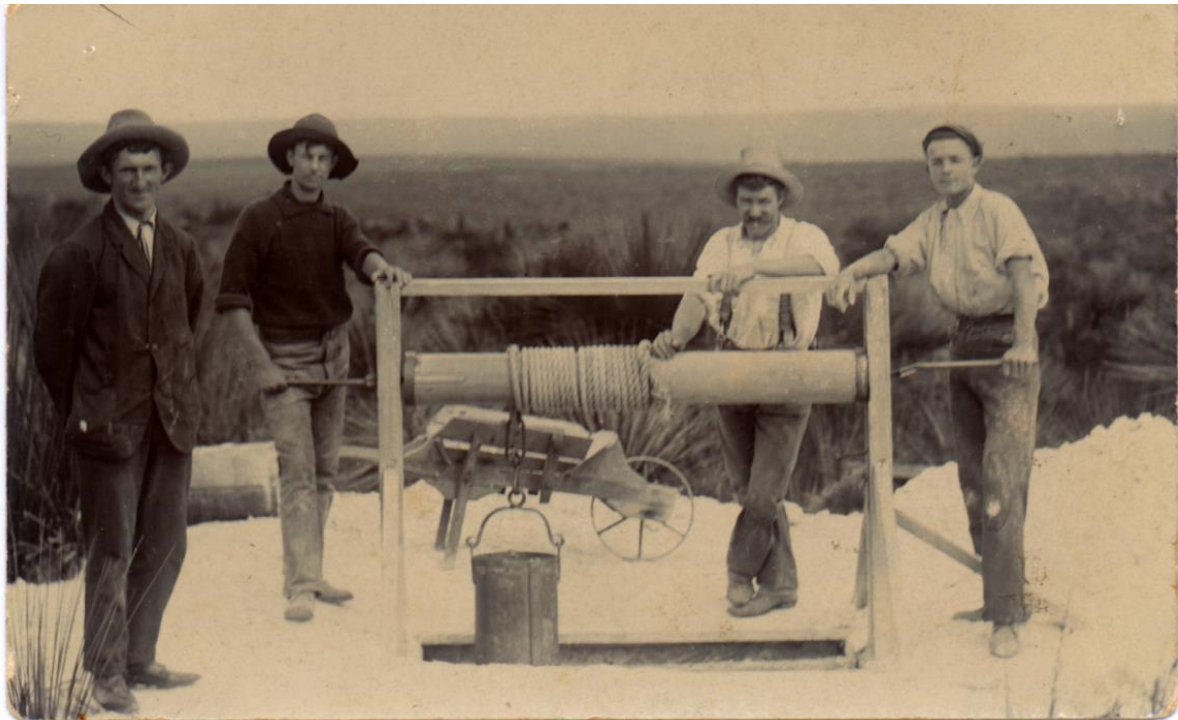


W.A. Kingsborough (1879-1937) ('Some Members of the Adelaide Stock Exchange', *Critic*, 27 March 1907, p7)

### The 'potters' millers'

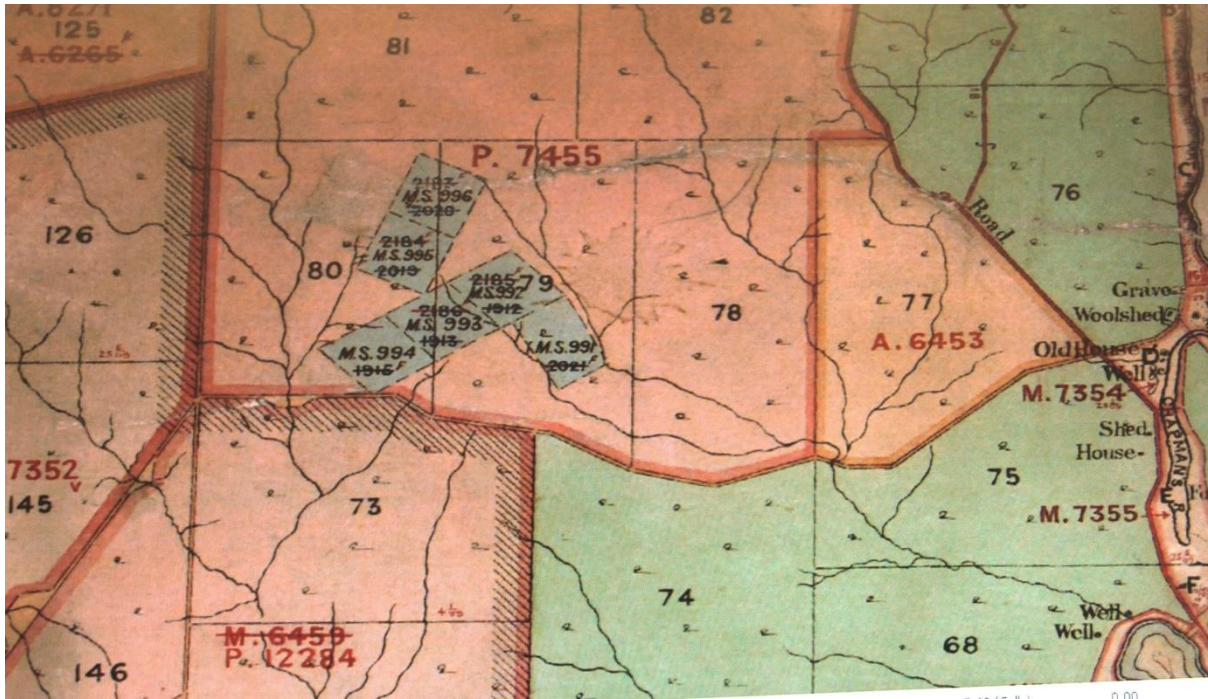
The mine produced pottery materials and the Penneshaw kiln manufactured building- and fire-bricks and industrial terracotta ware, providing a livelihood for at least forty local men in the company's peak years. The directors decided in May 1906 to erect works to make bricks and tiles. Although of central importance to the economy of Dudley Peninsula, albeit for a short time, the company's industry was hindered by sea freight costs and its distance from the mainland and its commerce. Telegraphic communication was difficult although possible, yet a telephone service to Penneshaw was not even planned before 1909.

Comparatively isolated though it was, the incipient industry stirred certain nationalist claims: its pottery mill was the first of its kind in the new commonwealth, and mining was worked with all Australian-made machinery (save for the Blackstone engine and the basalt crushing rollers it powered and a furnace). Regardless of this somewhat over-enthusiastic assertion about Australian readiness to provide the necessary specialist manufactures, an expanding commercial future for Dudley Peninsula and Penneshaw was expected.



Local men believed to be working at the china stone mine (Penneshaw Maritime and Folk Museum)





The mine leases (centre, in grey) were 4.8 kilometres west of the Cape Willoughby road. Chapman's River is to the right (Hundred of Dudley 1910–1928, GRS 6910–1, SRSA)

The following four rare photographs were taken on the visit to northern Kangaroo Island of fifteen ministers and members of parliament who left Glenelg on 8 February 1906. The same and similar photographs were published in the *Chronicle* (10 February 1906), probably taken by the same photographer.<sup>19</sup>



The china stone and clay mine. Water from the windmill was piped across into the machinery shed. Is it a basalt roller leaning against the shed, and an experimental brick wall, top right? The mine, at the lowest level of the basin-like grounds, gave gravitational access to trucks running from the diggings (J.C. Radcliffe Collection)



Open-cut mine and water pumping station, looking south. Fred Metters (1858-1937) began manufacturing water-pumping windmills at Adelaide with his 'Windmotor' in 1896. A shed runs behind on the perimeter. A few rail lines are laid. The woman in a hat in the lower right corner was no doubt a companion of the photographer. The tank is initialled JP/HB/K which John Radcliffe in a personal communication thinks with reason stands for John Provis, Hog Bay, Kangaroo Island (J.C. Radcliffe Collection)



China stone and clay mine hands assembled beside the boiler showing its fuel regulator or centrifugal governor 'balls', flue and fly wheel. Joseph (Joe) Seymour (in braces) became the father-in-law of Frank Abell who worked as a potter at Penneshaw's brickworks (J.C. Radcliffe Collection).



The thin water-pipe from the windmill to the shed is propped up on Y-shaped saplings along the front of the ore dumps; looking north. Both are difficult to distinguish (J.C. Radcliffe Collection)

The company's directors, versed in mining entrepreneurship and share markets, oversaw an island mining undertaking which promised greater economic influence than had most of the island's other mineral prospects and would potentially have competed in value only with the yacca resin and eucalyptus oil industries and on Dudley Peninsula have been second only to the salt extraction industry near American River.

### **Manufacture of the best china**

The China Stone and Clay Company leased over 202 hectares on section 79 in the Hundred of Dudley<sup>20</sup> and had search rights to an additional 18 square kilometres. The deposits gave all the necessary ingredients of porcelain, except bone: they included 'felspar of snowy whiteness',<sup>21</sup> china stone, silica, and pure quartz. Provis claimed this was the 'first time in the history of Australia that pure samples of silica of marketable value have ever been discovered here'.<sup>22</sup> By the end of 1905 some fourteen men were employed by the works,<sup>23</sup> by 1906, forty men,<sup>24</sup> and it is said that the mine and the Penneshaw kiln workforces totalled forty two years later.<sup>25</sup> At the first Commonwealth census (1911) 205 men were recorded on Dudley Peninsula.<sup>26</sup>

### *A royal commission*

In November 1905 at Adelaide Provis appeared before the Commonwealth Government Royal Commission on Customs and Excise Tariffs. He outlined the likely success of the industry and its provision of self-sufficiency to potteries in Adelaide, Melbourne and Sydney, to whom it was planned to ship materials in casks or bags from Hog Bay. Feldspar, for instance, was necessarily imported to South Australia, but about nine months prior to his hearing Provis discovered a very large dyke deposit at the mines and at the time of his hearing the company was installing the machinery to crush and grind feldspar for the market. The lag in time from ordering machinery from overseas and having it working on site must have been frustrating.

Provis had diligently approached virtually all potteries in Australia's eastern States to promote the industry that promised benefit to the whole of the Commonwealth. He declared at the hearing that he went to the Brunswick Pottery, Victoria, the Australian Tessellated Tile Company of Mitcham, Victoria, and had contacted Dalton and Capper of New South Wales. Provis related that most of the practical potters told him his island samples were 'the very thing they had been looking for'.<sup>27</sup> The company sought a guaranteed 20 per cent or more protective duty on manufactured articles and on the raw imported materials. William Holford, of South Australia's London Pottery Company at Maylands sought a 35 per cent duty on earthenware and pottery; he told the commission that the prejudice against the colonial article reached as far as importers instructing their travellers to represent local pottery ware as only 'good enough to make road metal'.<sup>28</sup> According to Provis, Holford misrepresented certain of the Kangaroo Island Company's claims;<sup>29</sup> he probably foresaw fierce competition from the island works once they were flourishing.

George Goyder, who became government analyst in the Crown Lands Department and lecturer on assaying, chemistry and metallurgy at the School of Mines and Industries,<sup>30</sup> had analysed the mine's 'Cornish clay' in its crude state as it came from the mine and concurred about its good quality.<sup>31</sup> High endorsement came from the former Staffordshire potter, Alfred Capper, founder in 1904 of the Australian Pottery Company at Longueville near Sydney. He visited the island for a closer inspection of the workings after making his own experiments and decorated ceramic 'jugs, cups, and teapots' with its materials: Capper claimed the mined raw materials 'were equal in quality to that found in England or on the Continent'.<sup>32</sup> In 1906 Provis showed a ministerial party visiting the mine 'several pretty china ornaments' made from the clay that probably were Capper's work.<sup>33</sup> Lionel Gee, of the South Australian Mines Department, reported on the mineral finds and proposed that in the future 'possibly the main china and pottery supplies of the Commonwealth may come from this district'.<sup>34</sup>



The partly infilled creek that runs through the former mine site (Photograph: author, 2016)

### *'Chinatown' in its heyday*

By October 1907 the works largely consisted of a mine manager's office and an engine house for a Blackstone stationary engine to drive the machinery for crushing. The English Blackstone engine was popular and reliable, well-considered in the early 1900s for irrigation pumping. Adelaide's Clutterbuck & Sons was most likely the agent for the mine's purchase.<sup>35</sup> A further large deposit of china stone and clay found west of the mine's machinery building was developed as open-cut;<sup>36</sup> by February 1906 two main shafts, to 30.4 metres depth, led from the main tunnel; in one, the Barnfield shaft – which made Provis 'jubilant' – all the materials needed for making a fine 'china cup' – except the customary ox or other bones – were found in proximity. This shaft was 201 metres from the machine room and uphill from the original gem shaft.<sup>37</sup>

Nearby finds were judged of exceptional quality for the manufacture of 'architectural tiles and terracotta wares'; and in early 1906, with another branch rail line laid, the company planned to use horses in place of manual truck shunting; by April horse wagons began to increase the open cut mine's output

and reduce production costs.<sup>38</sup> A silica shaft was sunk to a depth of six metres through soft alluvial clay and sand, necessitating timbering from top to bottom and the numerous drives and cross-cuts were prepared for an eventual all open-cut mine.



The china stone and clay mine. About 1905 (State Library of South Australia, B 11742).



The china stone and clay mine (JD Stow Album, Penneshaw Maritime and Folk Museum). Arthur Searcy, the then Assistant Clerk of the House of Assembly, was most likely the photographer. He was a member of the fifteen or so ministers and members of parliament who while investigating island land issues in 1906 visited the mine. Mr W.E. Frazer, a manager of the Bank of New South Wales, and Mr Brisbin from the United States accompanied the group: perhaps those men are pictured here.



Most likely a view at 180 degrees from the photographer's position for the image above (JD Stow Album, Penneshaw Maritime and Folk Museum)



Feldspar and china stone workings, Mineral Section 992, Hundred of Dudley (Courtesy of the Department of Manufacturing, Innovation, Trade, Resources and Energy, South Australia, GRS/10959, SRSA.) Reproduced in R Lockhart Jack, *Geological Survey of South Australia, Bulletin no. 12, Clay and Cement in South Australia*, SA Department of Mines, Adelaide, R.E.E. Rogers, Government Printer, North Terrace, 1926.





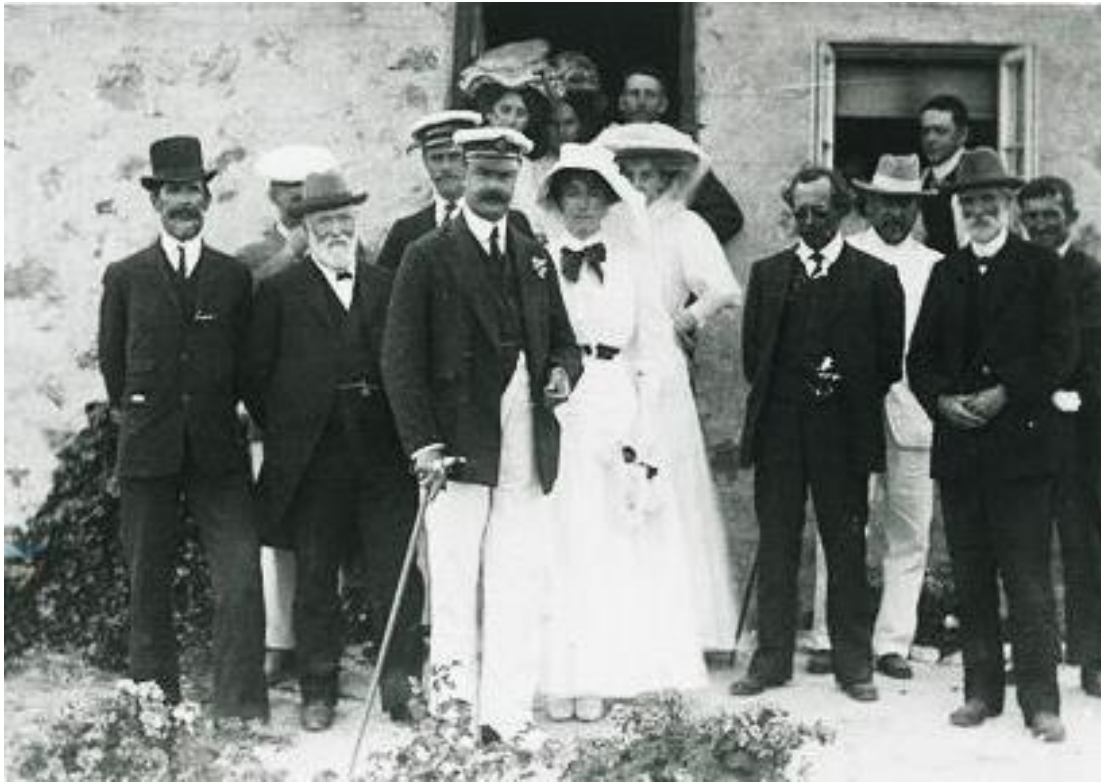
The 'Fireclay pit', Hundred of Dudley, was discovered in about October 1906 about half a kilometre on the rise north from the china stone diggings (Courtesy of the Department of Manufacturing, Innovation, Trade, Resources and Energy, South Australia, GRS/10959, SRSA.) Reproduced in R Lockhart Jack, *Geological Survey of South Australia, Bulletin no. 12, Clay and Cement in South Australia*, SA Department of Mines, Adelaide, REE Rogers, Government Printer, North Terrace, 1926.

To prepare it as the raw material for potteries, mined material was first run into classifiers in the machinery shed, then to the crushers, then to the dry-grinders (ordinary millstones) and calcined (burned) and washed, emerging fine and white as flour,<sup>39</sup> then bagged and branded for shipment. Material from the dry-grinder was sieved through silk for fineness if necessary before bagging or transfer into casks. At first the china stone, feldspar and silica were dry-ground separately. Provis tested samples from each bag of material in an E-size Battersea furnace made by the English Morgan brothers that was erected near his office, and sanctioned the quality of each bag.

### ***Some problems and achievements***

In September 1905 Provis asked the commissioner of public works for a crane to be erected on land at the shore end of the Penneshaw jetty as the jetty could not support the crane and its likely loads. A 5-tonne crane to offload machinery onto trollies was installed by October 1905, useful also for residents loading and unloading manures and stock.<sup>40</sup> A vexed government engineer-in-chief stated that Penneshaw's jetty was intended for landing passengers and light cargo only, being 'a striking example of the result of the popular demand for cheap construction ... and we did the best possible with the money available'.<sup>41</sup> Penneshaw's short jetty was built in 1902, but had little protection from high seas. As late as 1912 the district council reminded the South Australian Marine Board of its own idea to sink hulks filled with stones as a much-needed

breakwater off Penneshaw's reef.<sup>42</sup> The china stone company intended to build a wharf in front of the brickworks sheds where there was some shelter from the winds but it seems unlikely that they did so.



William Humble Ward (Lord Dudley), Australia's Governor-General, at the mines on 22 February 1909 (State Library of South Australia, B 17492.) The white-suited Arthur Searcy, on the right, president of the Marine Board of South Australia, recalled in 1929: 'When Lord Dudley was Governor-General the then Chief Secretary (Mr. [Andrew] Kirkpatrick) and I accompanied him in a round trip in the yacht *Adele* and the steamer *Governor Musgrave* ... I took them for a drive to the china clay mine.'<sup>43</sup> Captain Alexander Hore-Ruthven, a future Governor of South Australia, and at the time of the mine visit ADC to Lord Dudley, and his wife, were members of the party.

The basalt crushing rollers were made by Coombe & Company of Mark Lane, London, a firm that in the nineteenth century produced and imported to England millstones and grindstones and a host of associated tools.<sup>44</sup> They were most likely the first of the heavy cargoes and were running at the mines 'continuously' from late October 1905.<sup>45</sup> The engine to drive the mill arrived at Penneshaw on the steamer *Kooringa* in October 1905.<sup>46</sup> Some twelve months later a wet grinder ordered from Germany was installed to satisfy mainland potters' preference for wet-ground material. It was said to be the only one in the southern hemisphere.<sup>47</sup> To prevent the damp china stone, feldspar, and silica from contacting the grinder's iron and becoming discoloured its interior was lined with porcelain. Flint balls were added to aid mixing. By early 1906 the mine manager put in a new intermediate bearing on the basalt rollers' grinding spindle, resulting in a steadier motion and finer grinding.<sup>48</sup>



Penneshaw resident Dick Murray beside the mine's crushing stones and gearing—one lies in the left foreground—some time after the works closed. He is possibly holding a piece of china stone (Penneshaw Maritime and Folk Museum). Two edge rollers, 1.8 metres in diameter, ran on a third of 2.1 metres diameter set in concrete. A stationary engine powered the crown and mitre driving wheels. Each stone weighs some 3.5 tonnes. These now stand in the grounds of the Penneshaw Maritime and Folk Museum.

### **The brickworks by the sea**

William Mastin, works manager of the brickworks, oversaw its construction just south of the Penneshaw jetty head. By April 1907 a large drying shed had been erected; a second was soon built; and by autumn 1908 a second kiln was being built to join the small, circular experimental kiln – with a capacity for 3000 bricks – that was made by an Adelaide firm in order to test the company's wares. At this time over 1000 bricks were ready to be shipped on the SS *Karatta*.<sup>49</sup> Local farmers tendered for their bullock teams to transport machinery from Hog Bay across the bush tracks to the diggings and to bring the mines' fireclay and silica to the foreshore. Great improvement to the roads used for transporting to and from the mines was needed, some was made, but the ironstone gravel over clay bed soon deteriorated, especially in wet weather.



View of the brickworks from the Penneshaw jetty. About 1910 (Penneshaw Maritime and Folk Museum).



Penneshaw brickworks and jetty. View northwards. The mainland lies on the horizon. Probably 1908 (State Library of South Australia, B 50426). 'The works ... consist of a manager's office, engine house, two drying sheds (one 60 feet by 27 feet and the other 100 feet by 30 feet) a circular kiln which will hold about 23,000 bricks and a new kiln in course of erection which, when completed, will hold 35,000 bricks.' (Unohoo, 'Kangaroo Island China Stone and Clay Company', *Kangaroo Island Courier*, 3 October, 1908, p6a).

At the time, Australia imported an enormous quantity of firebricks.<sup>50</sup> The mine's high-quality fire clay was the residue of the washed white (china) clay. The brickworks was established to make this residue productive, and soon gained its reputation for producing bricks more fire-resistant than the high-quality Dinas (a silica brick from south Wales) and Stourbridge bricks.<sup>51</sup> Fresh water was pumped to the works by a semi-rotary machine from springs close by at the northern end of Hog Bay beach. After crushing the material passed down through perforations to a mixer from where it travelled to a vertical pug mill. Grog and water were added and the mix ran off at the bottom ready to be moulded into various shapes and sizes of brick, ceramic voussoirs (arched window heads) of different sizes, and other types of construction ware. Burning generally took four to five days at 1,500-1,600° F. The kiln cooled over a week. Bricks were then taken to the jetty by gravitation for shipment. Construction of the large new kiln used 4500 fire and ordinary bricks; it was able to turn out 20 000-25 000 firebricks monthly. In July 1908, at a short-lived peak production – although the promise was greater – only up to 23 000 bricks, stamped with the kangaroo logo, were fired at one time.<sup>52</sup> A notice on the Penneshaw kiln shed's seaward gable once faced all incoming shipping: it announced, 'KI Clay & Brick Co';<sup>53</sup> the company's fire-brick brand proclaimed its origins loudly and clearly.



Tapered block, probably a voussoir, made at the Penneshaw brickworks (Penneshaw Folk and Maritime Museum)



The elegant stylised curve and counter-curve of the brickwork's logo was impressed into the brick clay by metal stamps (Author's collection).

Dealings with Penneshaw residents were not always happy. Metalled road near Hog Bay was 'damaged by heavy [dray] traffic' that the district council said should be regulated during the wet weather and 'certain teamsters be warned that they must cart lighter loads or cease operations' until the roads are drier.<sup>54</sup> The company complained that teams were unable to pass lumps of stone on the road near Penneshaw Hotel 'without going through sand' and threatened that unless the obstacles were removed it would 'take steps in the matter': the company added that a road 3.6 metres wide for its teams 'should' be made alongside the existing one.<sup>55</sup> During construction of the brickworks the council asked the company to situate the men's tents closer to the shore, away from the road, and later asked the Marine Board (which refused) to erect a urinal nearby.<sup>56</sup> The benefit of local employment must have been weighed against such discontent.

### ***Products and exports***

In addition to firebricks it was planned to use the mining overburden in the manufacture for the wider market of crucibles (for ore smelting), ore scorifiers (to separate precious metal from scoria), muffles (fire clay ovens which prevent smoke from contaminating the material), potters' saggars (similarly, a protective fireclay box enclosing ceramic ware while it is being fired), and other refractory articles used extensively – some, in assaying, only once – in South Australia's mining industries; and Provis had made acid-proof ceramic jars.<sup>57</sup> In January 1906, the SS *Kooringa* loaded the first consignment of silica firebricks at Hog Bay, a quantity of clay, and sixty bags of crushed silica for Sydney and Melbourne and smaller amounts for local manufacturers.<sup>58</sup> Ten tonnes of crushed silica were sent earlier to the mainland on *Kooringa*. A trial shipment to London of three tonnes of mica did not elicit interest. Yet future business must have seemed bright: in Autumn 1908 the company put out tenders for clay-

carting from deposits in the west of the island in the Hundred of Menzies and from a clay bed in the park lands behind Hog Bay beach.<sup>59</sup>

A second shipment of firebricks, fireclay, and ball clay (raw clay as it is taken from the mine in bulk, usually for bodies of larger pottery articles), was sent to Port Pirie; in February 1908 the company had ten tonnes of silica and a large quantity of ball clay and fire clay ready for shipment to the Port Pirie smelting works of the Broken Hill Proprietary Company (BHP).

Charles V. Lawrance, an accountant and company secretary of the Adelaide firm Vinrace Lawrance & Son, represented the 'Kangaroo Island China Clay and Potteries Company' at Port Pirie in late 1907. He discussed use by BHP of Kangaroo Island products for retorts. BHP tested the ware and was satisfied with the results.<sup>60</sup> And BHP used a quantity of Kangaroo Island fire-bricks for lining its Port Pirie zinc furnaces.<sup>61</sup> Kingscote's *Kangaroo Island Courier* reported in October that the company was then supplying fire-bricks to 'Forwood, Down, & Co. and all the leading iron works in Adelaide' including the Islington railway workshops – but whether for testing or immediate general use is unclear.<sup>62</sup> Prospects were encouraging and the company appeared to have a glowing future.

For a short period the Penneshaw kilns produced roof tiles and hefty curved fire blocks. However, the demand for Kangaroo Island building bricks was not great, and although of excellent quality, the company's production in 1908 was some 5000 bricks produced over one and a half week-days. Bricks from those remaining after the company closed were used to build in Penneshaw township and surroundings. From 1908 to about 1911 Lewis E. Clark built his stone and brick store (at one time this was the Sealink Ferry's Kangaroo Island office) and attached residence with detached bakery oven at the rear, and with faith in Penneshaw's future he built the Sorrento guest house (later Seafront) in 1914. The Penneshaw kiln supplied some of Clark's building bricks and those for the corner store near his building on the esplanade. Reuben E. Bates noted in his diary for 26 April 1913: 'Carted bricks from the brickworks for Clark carted 2000 til dinner time.'<sup>63</sup> The company's wares were also used for some of the few local fireplaces and domestic ovens.<sup>64</sup>



Bullock cart drawing a load of company bricks westward over Jack's Creek crossing on its way south to the Salt Lagoon settlement (Penneshaw Maritime and Folk Museum)

### **The potter's craft**

The 1905 royal commission had asked Provis if the company intended to manufacture earthenware and porcelain.<sup>65</sup> He answered that Australian art schools produced good painters, but they did not find practical employment except in 'designing picture post-cards'. The encouragement of the china industry by adequate tariff protection would, he said, open employment in pottery decoration, and instead of 'making all girls milliners, dressmakers, or factory hands, they [and physically infirm people] could earn a [different] living'.<sup>66</sup> The company then currently supplied 'raw material for the potteries only', although it was more than likely, Provis added, that it 'will become potters ... providing we get encouragement [from a suitable tariff]'.<sup>67</sup> Asked, 'would it not pay your company to start pottery works upon Kangaroo Island?' Provis answered, 'I think it would; and no doubt they will do that ultimately.' Provis's replies about this added-value seem at best tentative. Provis also had reason to note that in 'the old country the spouts of teapots and the handles of cups are put on by child labour'.<sup>68</sup> Did he consider such employment for Kangaroo Island's youngsters, possibly to reduce the company's wages bill?<sup>69</sup>

After the royal commission hearing in November, Provis engaged the twenty-three year old Frank Abell, a former employee of J. C. Koster's Premier Pottery of North Norwood, to hand-craft jugs, bowls, waisted vases, and teapots at the Penneshaw brickworks. Abell made pottery there over 1907-08, although a family memory of him is as 'Foreman of the K.I. brickworks and agent for wheatgrowers on Island', apparently ignoring his pottery production.<sup>70</sup> Abell is



reputed to have played football for Norwood. Certainly he re-invigorated island interest in football, was elected captain of the Hog Bay Football Club in March 1909, and became known as the island's best umpire. Abell's former employer, John Koster, was the vice-president of Norwood Football Club in 1907. Perhaps he, or Louis Suhard, the former Norwood footballer, encouraged Abell to venture to the island. Even though he died in late 1904, Suhard's interest in the tourmaline mines might have extended to knowledge of the early discovery of the china stone deposits. Abell's obituary noted his trade as potter and alluded vaguely to the 'many samples of lovely earthenware vases, etc.,' that could 'still



The Penneshaw Brass Band was founded in 1910. Standing: George Cox, bandmaster, tourmaline mine licensee, and one-time Kingscote district council sanitary inspector, stands third from the left. Front row: Frank Abell, wearing a boater, squats on the far left (Penneshaw Maritime and Folk Museum)



Frank and Mary Abell at Penneshaw in the 1950s (Penneshaw Maritime and Folk Museum). Frank's wife, Mary Ann Seymour (who died in 1971), was the daughter of Joseph Seymour. Frank Abell built a cottage (still standing on the road to Penneshaw's cemetery) near the house and small farm of his wife's grandmother, Mary Seymour, daughter of Betty Thomas of Antechamber Bay, a Tasmanian Aborigine.

be seen in various [Penneshaw] homes.<sup>71</sup> The works also made 'Chequered clinker paving bricks, the first of this style in South Australia' for a short period,<sup>72</sup> but a New South Wales pottery firm was advertising this form from 1886, and the competition must have overwhelmed the southern producers.

### **The Franco-British Exhibition**

The China Stone and Clay company sent samples of its wares to the international trade fair, the Franco-British Exhibition, in 1908. William Mastin readied the company's exhibits for shipment to the Produce Department at Port Adelaide for forwarding to the London exhibition.<sup>73</sup> One case (and a photograph) of the exhibits went on the SS *Wilcannia* in late February.<sup>74</sup> At the exhibition they were awarded a diploma for gold medal. This exposure to a potentially wide trade was important. It was an opportunity to interest British potteries, and china clay had several other uses and therefore markets, in foreign and growing Australian industries. Leather dressers applied it for polishing, bleachers for filling calico, paper-makers to give body to printing paper in particular; and manufacturing chemists and druggists required porcelain ware for a variety of purposes. Eventually, the company calculated, it would produce not only bricks, but equipment such as gas retorts for gasworks (at that time most were imported



The Kangaroo Island China Stone and Clay Company trophy for the Franco-British Exhibition, London, was photographed at Penneshaw in 1908 before it was shipped. Samples included raw china stone, ground fire clay, raw and wet-ground silica, wet-ground feldspar, fluxed feldspar (used extensively for glazing ceramics), wet-ground china stone and, surmounted by split bricks, a fire brick and a silica fire brick stamped with the company logo (Penneshaw Maritime and Folk Museum).

to Australia), crucibles for ore-smelting, and assayers' furnaces. The Antipodean resource promised many applications not only within Australasia.

### The company's industry at a standstill

By November 1908 brick production had ceased due to waning sales. The following year prolonged heavy rains caused water over many parts of the island to ooze from where it had not been seen for thirty years, to spout 'out of the hillsides like fountains', force its way through cement floors, wash away sown paddocks, sweep away bridges and strand farmers on one side of a creek and their horses and implements on the other.<sup>75</sup>

Subsequently, the mining company's position plummeted further, for in the unusually heavy rains of 1910, particularly through July, flooding inundated the mines. (Table 1) Even had the mines not been forced into inactivity it is likely the workers would have stayed away to remedy as best they could the road and bridge washaways, loss of crops, and abandonment of homesteads along the river flats. Flooding compounded previous difficulties in shipping materials economically to mainland markets and led to closure of the mines and brickworks in November 1910. 'It was a big blow to [Penneshaw] when the works closed down.'<sup>76</sup> The enterprise was liquidated in January 1911.

1898	14.70	1899	14.93	1900	15.07	1901	14.33	1902	13.24
1903	18.25	1904	16.16	1905	20.82	1906	21.78	1907	16.36
1908	17.15	1909	19.75	<b>1910</b>	<b>37.93</b>				

Table 1. 'The Rainfall' in inches. The *Kangaroo Island Courier* (established in 1907) regularly published a comparative historical record of annual Kangaroo Island rainfall registered at the Kingscote post office. Note the unusually high rainfall in 1910 (*Kangaroo Island Courier*, 24 February 1934, p2)

At the clearing auction of the company's plant, Edgar Forwood of the Adelaide engineering firm of Walter W. Forwood and T.D. Down, bought for re-sale the up-to-date equipment that the firm had made for the clay company. The business of Forwood, Down and Company of Hindley Street, Adelaide, boilermakers and founders, had surged ahead through the production of mining machinery for the Northern Territory. The firm's connection to Kangaroo Island continued when, at various times in the 1920s and 1930s, it repaired and overhauled the locomotive boilers of the Commonwealth Salt Refining Company, the successor to the Globe Salt company's interests on Dudley Peninsula.

### A second life for clay mining?

The 'coastal bitumen strandings',<sup>77</sup> those 'waifs' of the shore<sup>78</sup> that had excited hope for petroleum oil discoveries on Kangaroo Island – the pitch-like substance used from the 1840s to caulk island boats – came to nothing, and interest could not be sustained in gold, silver-lead, and monazite finds and alleged coal deposits. The china stone and clay deposits, however, promised a future, and mining might have been resurrected six years after the mines closed, for during

the First World War, in 1916, the Australian government asked London's Imperial Institute of the United Kingdom, the Colonies and India to assess the quality of the clay and china stone. The reason appears to have been to interest British manufacturing firms in the deposits, perhaps for war purposes although this remains uncertain. This institute was established in 1887 to promote research beneficial to the Empire, including in those sciences that supported colonial and dominion commerce. South Australia's government geologist advised at the time that mining was feasible: the 'dyke rock could be mined by open cutting', and feldspar and china stone could be picked out with the possibility of recovering 'gem tourmaline and some merchantable mica'.<sup>79</sup>

The Imperial Institute requested samples weighing 50.8 kilograms each and was willing to publish the results of analyses of the materials in its *Bulletin* and also supply specimens to the special technical journals interested in clay products. In this way British capitalists specially interested in the production of clay and its use for industrial purposes in the UK, the Institute said, would be reached, with the possibility that some firms would be found to take up the question of developing the island's deposits.<sup>80</sup> Samples of Penneshaw pottery arrived at the Imperial Institute in 1916,<sup>81</sup> broken and in pieces but in sufficiently good condition for technical inspection of the clay body and the fine glazes produced by the company's minerals (manganese, iron oxides, rutile, and others). However one of the island's feasibly more successful industries was not re-started, and immediately before the Second World War, in 1938, the site of this potential 'Staffordshire of Australia' was described as a 'vast gravelly pit, tunnelled and hollowed out in all directions, once a scene of violent industry, and now overgrown again with low, tenacious scrub'.<sup>82</sup>



A family tourmaline 'search party' and picnic group at the mine. 1920s (State Library of South Australia, B 52719)

## Conclusion

A writer to the editor of the *Advertiser* in 1909 claimed that the Kangaroo Island company's 'mines and works were the pioneer works of their kind in Australia'.<sup>83</sup> Certainly this recognition was significant, and the mine's steam engine being 'the first erected on the island, as also the wind-mill, which supplies water for all purposes' were local precedents worth noting.<sup>84</sup> Frank Abell's pottery production had little chance to flower, yet had all else been equal, a long-term community of ceramic craftworkers might have been established on the island to exploit the company's resources.

Vigorous competition came from clay deposits increasingly exploited on the mainland from the nineteenth century onward: firebricks that smelters such as at Burra had made from the 1850s were manufactured over ever wider areas, the Littlehampton works near Mount Barker being but one producer. The Kangaroo Island company's potentially first-class goods were unable to compete against imported British and foreign ceramic ware, regardless of duty protection or lack of it. The company had little control over buyers' cultural prejudices. Importantly for the island the concentration and number of the company's workers was comparatively high, and the capacity and potential longevity of the China Stone and Clay Company mines had promised a robust future. Perhaps it still remains to be seen if present-day production would not be as handicapped as was the company's.

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<sup>1</sup> F.H. Legg, 'End of an Island Vision', *Advertiser*, 28 May 1938, p11f

<sup>2</sup> Entia Gems and Jewellery of Mount Crosby, Queensland, is licensed (no. 5474) to explore for those minerals for a two-year term to 7 September 2016 (Government of South Australia, Department of State Development, South Australian Resources Information Geoserver (SARIG), <sarig.pir.sa.gov.au>, viewed 2 April 2016. With a thank you to the geologist Graeme MacDonald). The only outcome of the exploration known to the author is a further flattening of the mine landscape by earth-moving equipment

<sup>3</sup> 'Tin on Kangaroo Island', *Advertiser*, 7 November 1900, p4b; 'Tin Mining on Kangaroo Island', *Chronicle*, 27 October 1900, p18d

<sup>4</sup> The author warmly thanks the committee members of the Penneshaw Maritime and Folk Museum for their frequent support and help, and the farmer-owner of the mine site for his permission to visit at Easter 2016

<sup>5</sup> 'Kangaroo Island Mineral Claims', *Adelaide Observer*, 17 November 1900, p14d

<sup>6</sup> I.M.R., 'Mineral Claims near Hog Bay', 26 November 1900, in HYL Brown, *Records of the Mines of South Australia. Fourth Edition*, compiled by C.E. Gee, Adelaide, C.E. Bristow, Government Printer, North Terrace, 1908, facsimile printed by the State Library of SA for the Department of Mines, 1966, p355

<sup>7</sup> Special Reporter, 'Kangaroo Island Gem Fields', *Evening Journal*, 14 October 1903, p2e-f

<sup>8</sup> Legg, 'End of an Island Vision', p11c-d

<sup>9</sup> Sometimes given – it seems with a weather-eye to New Zealand – as the Orangie Gem Company or gem claim (e.g. 'The Kangaroo Island Gem Field', *Advertiser*, 9 July 1903, p7g), and Aororangi Gem Company ('Kangaroo Island Amalgamated Gem Syndicate', *Chronicle*, 12 December 1903, p16b); but the Government Geologist Henry Y.L. Brown used the title Aorangi Gem Mine in his report of 1904 ('Kangaroo Island Gem Field', *Adelaide Observer*, 23 April 1904, p14b). The main gem syndicates were the Aorangie, Te Rangitiri, Dudley, and Ring ('The Island Gem Field', *Chronicle*, 5 December 1903, p11b)

<sup>10</sup> South Australian Department of Mines, *Geological Survey of South Australia. Bulletin no. 12. Clay and Cement in South Australia*, by R. Lockhart Jack, Adelaide, R.E.E. Rogers, Government

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Printer, North Terrace, 1926, p80; Walter Howchin, 'Geological Observations on some of the Localities visited by the "Governor Mus grave" Party in January, 1907', Royal Geographical Society of Australasia (SA Branch), *Proceedings*, vol 10, 1909, p206

<sup>11</sup> 'Australian Football', <australianfootball.com/players/player/louis%2Bsuhard/19170>

<sup>12</sup> 'Mining Meetings', *Advertiser*, 19 December 1903, p10d. A photograph of Barnfield and Kingsborough together in 1907 is in R.M. Gibbs, *Bulls, Bears and Wildcats. A Centenary History of the Stock Exchange of Adelaide*, [Norwood, South Australia], Peacock Publications, 1988, p149

<sup>13</sup> 'Meeting', *Register*, 21 September 1904, p9e; Noris Ioannou, *Ceramics in South Australia 1836-1986: From folk to studio pottery*, Adelaide, Wakefield Press, 1986, p277

<sup>14</sup> Special Reporter, 'Kangaroo Island', *Register*, 4 April 1908, p10a-c; Parliament of the Commonwealth of Australia, Customs and Excise Tariffs.– Minutes of Evidence of Royal Commission. Division VIII. – Earthenware, Cement, China, Glass and Stone, J Kemp, Acting Government Printer for the State of Victoria, vol 5, 1906 (hereafter Royal Commission), p119

<sup>15</sup> George Milne had pastoral interests but principally was a wine and spirit merchant of Milne & Co. L.A. Jessop was active in insurance matters

<sup>16</sup> 'Advertising', *Advertiser*, 2 March 1905, p12b. In early 1906 the Marine Board permitted Kingsborough to search for mineral oil on Kangaroo Island's Cape Borda lighthouse Reserve ('Marine Board', *Register*, 13 April 1906, p2f)

<sup>17</sup> 'A New Australian Industry', *Advertiser*, 3 February 1906, p11d; Noris Ioannou, *Ceramics in South Australia*, p277

<sup>18</sup> 'Mining in South Australia', *Register*, 10 September 1903, p5d

<sup>19</sup> 'The Kangaroo Island China Stone and Clay Company's Works', *Chronicle*, 10 February 1906, p30

<sup>20</sup> South Australian Department of Mines, *Geological Survey of South Australia. Bulletin no. 12. Clay and Cement in South Australia*, pp80–83

<sup>21</sup> 'The China Clay Industry', *Chronicle*, 27 April 1907, p42

<sup>22</sup> Royal Commission, p117

<sup>23</sup> 'China Clay on Kangaroo Island', *Chronicle*, 2 December 1905, p40

<sup>24</sup> Ioannou, *Ceramics in South Australia 1836-1986*, p279

<sup>25</sup> Legg, 'End of an Island Vision', p11e

<sup>26</sup> By 1921 the small population of Dudley Peninsula – most people lived in or near Penneshaw township – increased by fifty-seven from 1911 to 440 ('Population of the State', *Evening Journal*, 26 February 1912, p4h; 'Growth of Population', *Chronicle*, 1 October 1921, p33d)

<sup>27</sup> Royal Commission, 23 November 1905, p125

<sup>28</sup> 'The Tariff Commission', *Advertiser*, 16 November 1905, p3i

<sup>29</sup> 'The Tariff Commission', *Advertiser*, 24 November 1905, p7e

<sup>30</sup> Jan Todd, *Colonial Technology. Science and the transfer of innovation to Australia*, Cambridge, Melbourne, CUP, 1995, especially pp169–173. George Arthur Goyder (1855–1940) was the eldest son of South Australia's one-time Surveyor-General, G.W. Goyder. He probably taught at the School of Mines from its opening in 1889, and moved from the Crown Lands to the Mines Department when it was established in 1894

<sup>31</sup> 'The Tariff Commission', *Express and Telegraph*, 23 November 1905, p1e; Royal Commission, p121

<sup>32</sup> 'Kangaroo Island Pottery Clay', *Observer*, 6 January 1906, p47d

<sup>33</sup> 'Opening More Land', *Advertiser*, 6 February 1906, p7b

<sup>34</sup> An extract from Gee's report was published in 'Kangaroo Island China Stone and Clay Company', *Observer*, 1 December 1906, p24

<sup>35</sup> A Blackstone hot bulb stationary oil engine, for which Adelaide's Clutterbuck & Sons were the importing agents, is pictured in Western Australia in 'The Royal Agricultural Show at Claremont, Last Week', *Western Mail*, 10 November 1906, p28

<sup>36</sup> 'A New Australian Industry', *Advertiser*, 3 February 1906, p11d

<sup>37</sup> 'The China Clay Industry', *Chronicle*, 27 April 1907, p42a.

<sup>38</sup> 'Reports', *Observer*, 17 March 1906, p35c

<sup>39</sup> Royal Commission, 23 November 1905, p123

<sup>40</sup> Various correspondence in Marine Board GRG 51/17/947, 1905, SRSA; 'Hog Bay (Kangaroo Island.)', *Chronicle*, 4 November 1905, p14e

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<sup>41</sup> Alexander Moncrieff to the Commissioner of Public Works, Marine Board correspondence, GRG 51/17/947, 1905

<sup>42</sup> District Council of Dudley. Minute Book 13th December 1902 to 14th August 1920, meeting 6 April 1912, pp225-26, GRS11133/1/P, SRSA

<sup>43</sup> 'Out Among the People', *Observer*, 26 October 1929, p44

<sup>44</sup> A Penneshaw Maritime and Folk Museum web site entry states the rollers were made by Coombe [& Company of] Mark Lane, London, <[community.history.sa.gov.au/penneshaw-maritime-and-folk-museum](http://community.history.sa.gov.au/penneshaw-maritime-and-folk-museum)>

Coombe & Co's catalogue entry for the London International Exhibition on Industry and Art of 1862 held at South Kensington advertised the firm's 'French mill stones, flour machines, wire brushes, patent smut machines, general flour mill machinery' and noted it as builder 'of French millstones, and importers of French burrs' among many other products. See <[https://www.gracesguide.co.uk/1862\\_London\\_Exhibition:\\_Catalogue:\\_Class\\_VIII.:\\_Coombe\\_and\\_Co](https://www.gracesguide.co.uk/1862_London_Exhibition:_Catalogue:_Class_VIII.:_Coombe_and_Co)>

<sup>45</sup> 'Legislators on Tour', *Observer*, 10 February 1906, p37b

<sup>46</sup> 'Hog Bay (Kangaroo Island.)', *Chronicle*, 4 November 1905, p14e

<sup>47</sup> 'The China Clay Industry', *Chronicle*, 27 April 1907, p42a

<sup>48</sup> 'Mining News', *Advertiser*, 3 February 1906, p5e

<sup>49</sup> 'Hog Bay Notes', *Kangaroo Island Courier*, 7 March 1908, p3a

<sup>50</sup> See for instance J, Provis, 'Firebricks and the Metallurgical Industry', *Register*, 26 September 1907, p8f

<sup>51</sup> 'Kangaroo Island China and Clay', *Express and Telegraph*, 27 December 1907, p1f

<sup>52</sup> 'China Clay Works', *Kangaroo Island Courier*, 4 July 1908, p6f

<sup>53</sup> 'Kangaroo Island Views', *Observer*, 23 January 1909, p28

<sup>54</sup> District Council of Dudley, Minute Book, meeting 28 July 1906, p83

<sup>55</sup> District Council of Dudley, Minute Book, meeting 2 May 1908, p124

<sup>56</sup> District Council of Dudley, Minute Book, meetings of 7 September 1907, p108 and 13 June 1908, p127

<sup>57</sup> Royal Commission, p128

<sup>58</sup> 'Mining News', *Advertiser*, 19 January 1906, p7

<sup>59</sup> The Warden of Mines applied on behalf of the company. The district council permitted mining if it was followed by immediate filling (District Council of Dudley, Minute Book, meeting 22 February 1908). This 'claypan' was most likely well-used at an earlier time; it is identified in surveyor's Field Book no. 1237, 1881, p15, Lands Titles Office, Adelaide.

<sup>60</sup> 'Kangaroo Island China Clay', *Register*, 13 December 1907, p9d

<sup>61</sup> Legg, 'End of an Island Vision', p11d

<sup>62</sup> Unohoo [Spencer J. Skipper], 'Kangaroo Island China Stone and Clay Company', *Kangaroo Island Courier*, 3 October 1908, p6a

<sup>63</sup> R.E. Bates, diary, typescript, private collection

<sup>64</sup> 'Penneshaw Historical Notes', Penneshaw Museum

<sup>65</sup> Royal Commission, 23 November 1905, p127

<sup>66</sup> 'Tariff Commission', *Sydney Morning Herald*, 24 November 1905, p3f; 'The Tariff Commission', *Advertiser*, 24 November 1905, p7e-f

<sup>67</sup> Royal Commission, 23 November 1905, p127

<sup>68</sup> Royal Commission, 23 November 1905, p126

<sup>69</sup> Comment was made at the tariff commission hearing about the wages earned by Cornish mine workers (including children) compared to the higher wages paid in South Australia and their contribution to higher prices for goods ('The Tariff Commission', *Advertiser*, 24 November 1905, p7e)

<sup>70</sup> [Unknown], 'Thomas Family', n.d., typescript, in Jean Nunn's Kangaroo Island research material, [CD electronic], p1110

<sup>71</sup> 'Obituary. Mr. Frank Abel [sic]', *Kangaroo Island Courier* [incorporated in] *Glenelg Guardian*, 29 July 1954, p1

<sup>72</sup> Ioannou, *Ceramics in South Australia*, p279

<sup>73</sup> 'Franco-British Exhibition', *Register*, 5 February 1908, p7c. The Exhibition was officially opened on 14 May 1908.



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- <sup>74</sup> 'Franco-British Exhibition', *Advertiser*, 26 February 1908, p10f
- <sup>75</sup> 'Deluge at Hog Bay' and 'Floods on Kangaroo Island', *Chronicle*, 16 July 1910, p41
- <sup>76</sup> E.S. Bates, 'Mining on Kangaroo Island. Old Settler's Memories', *Advertiser*, 16 June 1938, p26e
- <sup>77</sup> Dianne Edwards, David M. McKirdy, and Roger E. Summons, 'Enigmatic asphaltites from the southern Australian margin: molecular and carbon isotropic composition', *PESA Journal* [Petroleum Exploration Society of Australia], no 26, 1998, p106. The authors give exhaustive consideration to the history, origin and oceanic movements of this substance, and I warmly thank D. McKirdy for this reference
- <sup>78</sup> Professor Ralph Tate's term cited by Walter Howchin, 'Further Notes on the Geology of Kangaroo Island', Royal Society of South Australia, *Transactions and Proceedings and Report*, vol 27, Adelaide, W.C. Rigby, December 1903, p86
- <sup>79</sup> R. Lockhart Jack, 'Report on the China Stone and Fireclay Leases, Hundred of Dudley, Kangaroo Island, 12 February 1917, in 'China, [sic] Clay and China Stone Deposits on Kangaroo Island', National Archives of Australia (NAA): A2, 1917/27, 1916-17, p3
- <sup>80</sup> Wyndham R. Dunstan, Imperial Institute, 3 November 1916, to the Official Secretary, Australian Commonwealth Offices, London, 'China, Clay and China Stone Deposits on Kangaroo Island', NAA
- <sup>81</sup> The maker of this pottery, its type and age are unfortunately unknown. Noris Ioannou speculated on the present existence of Kangaroo Island pottery (Ioannou, *Ceramics in South Australia 1836-1986*, p278)
- <sup>82</sup> Legg, 'End of an Island Vision', p11c. The author found no entries on the Kangaroo Island company's clays in *Bulletins* of the Imperial Institute for 1916, 1917, and 1918
- <sup>83</sup> Cornubia, 'China Clay Mines on Kangaroo Island', *Advertiser*, 24 February 1909, p10e
- <sup>84</sup> Cornubia, 'China Clay Mines on Kangaroo Island', p10e