

TIN MINING

KANGAROO HILLS MINERAL FIELD

Waverley + Kallawoa

ISRAEL + Ewan + KIRSTON + MT BROWN.

HISTORY

W.R. Pyne

Mining

Very little mining activity has occurred within the borders of the present Shire. However, immediately to the south-west lies the small tinfield of Kangaroo Hills; when a road was built up the range to provide vehicular access to the Mt. Fox agricultural lands and thus the mining field, the Hinchinbrook Shire Council agreed to maintain the road if Kangaroo Hills was added to its area. The Government gave its consent and the field was included in this Shire from 1911 to 1936.¹⁶² Nevertheless, this short span of time does not indicate the limits of Hinchinbrook's interest in Kangaroo Hills. With its discovery in 1883, Ingham believed that it had acquired that prize coveted by every coastal town, a mining hinterland. However, despite Ingham's proximity to the mines, access was blocked by the Seaview Ranges and until 1911 only pack tracks connected Kangaroo Hills with the coast.¹⁶³ Thus trade was siphoned away to Townsville, Ravenswood Junction (Mingela), and Charters Towers; this is reflected by the position of the local Department of Mines office, which was in Ingham, Ravenswood and Charters Towers at different times. However, considerable quantities of tin were shipped over the Council tramways through Ingham, and several lower Herbert planters, businessmen and pastoralists invested in the mines, among them R.M. Boyd, Frank Fraser, W.G. Ewan, Major Ricardo, W.C.C. Macdonald, W.S.C. Warren, and A.S. Cowley.¹⁶⁴ It was therefore in Ingham's interest to improve access to the field; some residents even suggested

¹⁶¹ TDB, 11 January 1966, 27 January 1966, 25 July 1966.

¹⁶² It was within the Dalrymple Shire before 1911, having been transferred there from Cardwell in 1894, and reverted to Dalrymple in 1936.

¹⁶³ The journey took about 12 hours on horseback. Diary of C.H. Powell, 1892, in possession Mrs. James, Currajong.

¹⁶⁴ The amount of Ingham investment was sufficient to induce several auctioneers and commission agents in that town to add the office of mining agent to their businesses, and an ore buyer set up business there in 1914. *Annual Report of the Department of Mines (A.R.)* 1914, p. 110; Pugh's Almanac, 1898 and 1901.

extending the Stone River and Mt. Fox tramways up the range, or laying a branch line from the North Coast Railway.¹⁶⁵ Eventually the Mt. Spec road removed the richer southern end of the field from Ingham's influence and that area is now served from Townsville. However, the field's long association with the Herbert warrants a detailed examination of its history.

The Kangaroo Hills mineral field lies on the dissected plateau behind the Seaview Range; it is bounded on the west by the Burdekin River and its tributary Douglas Creek, and is separated from the Star River field to the south-east by the Coane Range. Though it is in a rainshadow and on the Burdekin catchment, most of its creeks rise in the coastal ranges where high rainfall ensures a reasonable flow of water for much of the year. Geologically it consists of altered and severely folded sedimentary rocks with granite intrusions and recent basalt flows, including the extinct volcano, Mt. Fox. Except for the river flats the resulting landscape is steep and hilly. The economic minerals on the field consist of tin, copper, silver and wolfram, with minor quantities of iron ore,¹⁶⁶ lead, antimony, bismuth, molybdenum, zinc and gold. Tin is the most widely-spread mineral and has been exploited in four forms: alluvials, lodes, deep leads exposed by the weathering of the overburden, and leads covered by the basalt and sandstone which cap many high areas; it is mainly in the form of

¹⁶⁵ *Queenslander*, 4 March 1899, p. 419; *HRE*, 10 September 1928. The most ambitious scheme was one suggested by a London company interested in a mining property on Dotswood, for a connection from Ravenswood Junction to the proposed Chillagoe railway. The State government shortened it to Ravenswood Junction to Ewan, estimating the cost at £400,000. The engineer who conducted a flying survey for the scheme also considered a route from Ewan to Ingham but dismissed the idea of any line to Ewan as too expensive, particularly as concentrated tin could easily be transported by packhorse. Nevertheless he recommended a trial survey to "induce capitalists to invest", and this was carried out in 1900. Letter, N. Woods to T.J. Byrnes, Secretary for Mines, 11 June 1896; and Report upon a flying examination of country for railway purposes by G. Phillips, 10 February 1899, A/12386 Q.S.A.; *NQH*, 10 June 1901.

¹⁶⁶ The Townsville Chamber of Commerce was exaggerating somewhat when it spoke in 1918 of "vast iron deposits at Kangaroo Hills" for a proposed State steel works. Evidence, Royal Commission into a State Iron and Steel Works. *PP* 1918 Vol. 2, p. 1899.

cassiterite with some stannite. Copper¹⁶⁷ has been located in association with other minerals, but none of the deposits have proved payable below the zones of oxidisation and slight secondary enrichment at 100-150 feet. Silver was obtained from contact deposits in association with lead.¹⁶⁸ Most of the ore-bodies worked were small and discontinuous, occurring in shoots, pipes and veins in fissure lodes; the field was thus cursed with small patchy ore deposits, impermanent water, difficult terrain, and access problems caused by the Burdekin and its numerous tributaries and the steep Seaview Range. Circumstances warranted only small-scale enterprise and it is understandable that every large venture on the field came to grief.

While there were vague reports of alluvial tin and silver discoveries on the tablelands during the 1870s¹⁶⁹ the first official notice came in 1883, when the Ravenswood warden reported finds of alluvial and lode tin on John Allingham's Kangaroo Hills Station.¹⁷⁰ Edward Naven and John Regner located lodes on Douglas Creek,¹⁷¹ and soon after the Warden recommended a careful investigation of Oaky Creek and Running River to the south.¹⁷² By June 1885 there were over 100 miners making good wages from alluvial tin, principally about Oaky Creek; supplies were carried by pack horse teams from Ingham by the local storekeepers, Kenion and Co., who returned to the coast with tin for

¹⁶⁷ Principally found as azurite, malachite, cuprite and bornite, in association with galena and sphalerite.

¹⁶⁸ Keyser, Fardon and Cattler, *Ingham Geological Sheet*, pp. 6, 10, 21-24; Wyatt, *Townsville Geological Sheet*, pp. 21-25.

¹⁶⁹ *Queenslander*, 27 July 1872; 14 November 1891, p. 943; and A.G. Maitland, *Geology and Mineral Resources of the Upper Burdekin*, Queensland Geological Survey Publication (Q.G.S.P.) 71, 1891, p. 210.

¹⁷⁰ A.R. 1883, p. 197.

¹⁷¹ *Queenslander*, 23 May 1883, p. 825. J.V. Mulligan claims to have prospected the area between Douglas Creek and Lake Lucy to the north, and Running River, in 1883. He said the deposits of tin he discovered were too small for himself and his partner to work, but that the locations of his discoveries were afterwards rushed. J.V. Mulligan, "A Prospecting Trip on the Herbert", *Queenslander*, 12 November 1904.

¹⁷² *Queenslander*, 12 January 1884, p. 105. Tin was first reported from "Running Creek"; there is a Running Creek as well as an Oaky Creek just to the south of Kangaroo Hills, tributaries of the Star River, which makes some early reports confusing. e.g. A.R. 1883, p. 197.

export¹⁷³ though stores and a butcher's shop were soon established.¹⁷⁴ The small rush was intensified by the depression in the sugar lands, where men were being laid off.¹⁷⁵

Naven, Regner and another party had taken up their lodes under freehold tenure,¹⁷⁶ and in 1883 the Mineral Lands Commissioner reported that they had floated two companies, one in Sydney, to develop their properties.¹⁷⁷ Some of the ore was sent to Sydney, and apparently fetched high prices; the lodes themselves were valued well by observers.¹⁷⁸ Regner, Naven and Allingham¹⁷⁹ acquired the best properties and in 1886 floated another company in London, though evidence on their activities is meagre: the Commissioner noted in 1887 that no work had been done. A drought in the preceding year had also interrupted alluvial mining so that by the beginning of 1890 there were fewer than twenty miners on the field.¹⁸⁰

Despite this unpromising beginning, there was no doubt that the alluvial tin was rich and extensive, and the area was already dubbed a "poor man's field".¹⁸¹ In addition there had been finds of copper, wolfram and molybdenite. However, the next and most extravagant phase of the field's development was sparked by the development of silver lodes at Running River in 1890. The prospector, Richard Moss, was said to have discovered the deposits in 1871 but took no steps to work them

¹⁷³ In 1888, packing cost £10 per ton; the Commissioner noted that supplies were reasonably priced and plentiful. *A.R.* 1888, p. 79.

¹⁷⁴ *Queenslander*, 13 June 1885, p. 953.

¹⁷⁵ *A.R.* 1886, p. 62.

¹⁷⁶ The leases were freeholded under the 1872 Mineral Lands Act, repealed by an act of 1882. M. Drew, "Queensland Mining Statutes 1859-1930", in K.H. Kennedy (Ed.) *Readings in North Queensland Mining History, Volume Two* (Townsville, 1982), p. 131.

¹⁷⁷ *Queenslander*, 12 January 1884, p. 105; *A.R.* 1883, p. 197.

¹⁷⁸ *Queenslander*, 31 October 1885, p. 713.

¹⁷⁹ Allingham, who owned Hillgrove and Kangaroo Hills stations, and Ramsden of Valley of Lagoons both bought shares in several mines, including Mt. Brown. *NQR*, 21 May 1900 (in H.S.C. Collection).

¹⁸⁰ *A.R.* 1886, p. 62; 1887, p. 80; 1889, p. 84.

¹⁸¹ *Queenslander*, 4 June 1887, p. 903.

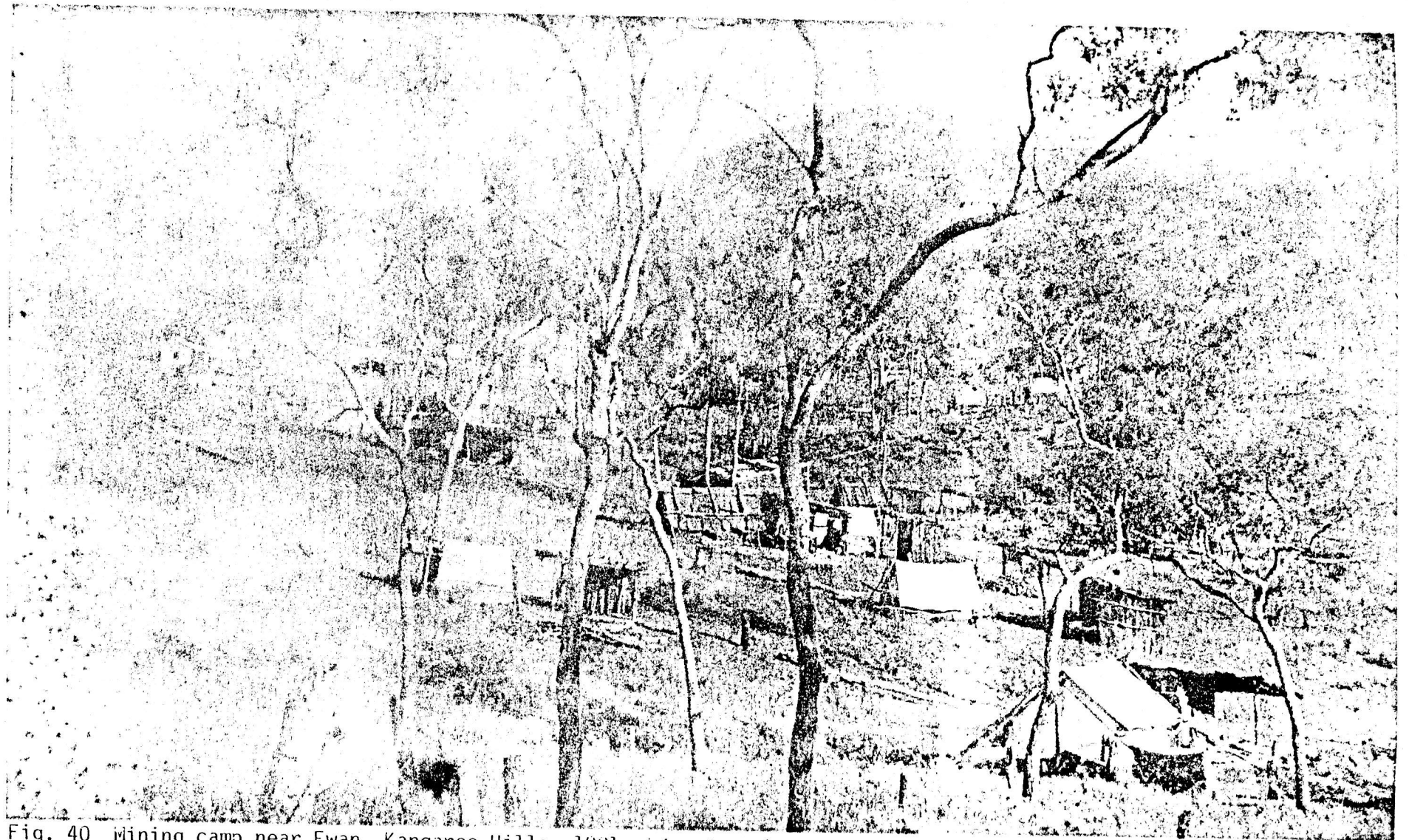


Fig. 40 Mining camp near Ewan, Kangaroo Hills, 1891. (Mrs James)

until 1890. In June of that year A. Gibb Maitland found that very little had been done: a few mines had been opened at a camp called Donnybrook, though the only real progress was at Coane and Clarke's Hidden Treasure.¹⁸² However, the country was in the grip of a silver boom and the mines were not long neglected. Southern and local investors showed their interest, its first manifestation being an attempt to take up large areas as coal prospecting leases.¹⁸³ Under the 1886 Mineral Lands (Coal-mining) Act, lessees could occupy up to 640 acres at sixpence an acre per year;¹⁸⁴ these were lodged with the Ingham Commissioner but the Warden for Ravenswood, W. Kelly Cusack, quickly detected and refused the bogus applications.¹⁸⁵ The principal offender, the Running River Mining Syndicate of Brisbane, formed a company and registered with a very moderate capital to work eleven leases. A rush set in and 100 new lease applications were made, mainly by syndicates from north Queensland towns such as Ingham, Hughenden and Charters Towers.¹⁸⁶ By September 1891 the working population was estimated at 1500 and the field was being "boomed" by comparisons with Broken Hill.¹⁸⁷ A new township, Ewan,¹⁸⁸ was

¹⁸² Maitland, *Upper Burdekin*, pp. 210-211.

¹⁸³ *North Queensland Mining Annual*, 1891, p. 40.

¹⁸⁴ Drew, "Mining Statutes", p. 132.

¹⁸⁵ *A.R.* 1891, p. 60. Until then Kangaroo Hills had been reported on by the Ingham Commissioner but from 1891-1893 the Ravenswood office supervised the field. After 1893 it was returned to Ingham's control; it was transferred to Charters Towers in 1923 when that centre was providing most of the capital for the field, but a projected main road between Charters Towers and Ewan was never built and in 1972 the office again reverted to Ingham. *A.R.* 1972, p. 18.

¹⁸⁶ *A.R.* 1891, p. 60; *North Queensland Mining Annual*, 1891, pp. 40-41.

¹⁸⁷ *Queenslander*, 14 November 1891, p. 943; 18 July 1891, p. 102. A government geologist in 1931 suggested that the lodes might be more accurately compared with Chillagoe's. J.H. Reid, "The Running River Silver-Lead Lodes, Kangaroo Hills Mineral Field", *Queensland Government Mining Journal (Q.G.M.J.)* 32, 374 (July 1931), p. 265.

¹⁸⁸ From an initial hotel and police station, the town rapidly grew to include four hotels, a butcher, baker and two stores, as well as the hotel, butcher and stores at Osborne's Camp nearby. The town was named for W.G. Ewan, one of the main investors in the Running River Company, at the suggestion of C.H. Powell, the company's assayer. *Queenslander*, 29 August 1891, 7 November 1891, p. 870; clipping dated 1953, held by Mrs. James, Currajong.



Fig. 41 Osborne's Camp, Kangaroo Hills, 1891. (Mrs James)

formed to accommodate miners who appeared more interested in speculation than mining.¹⁸⁹ A syndicate was formed to erect smelters, and in the meantime ore was shipped overseas from Townsville.¹⁹⁰ The White Star was sold to a Sydney company with a nominal capital of £10,000 and the Hidden Treasure was floated locally; the True Blue was on the Melbourne market and the Running River company was trying to sell some of its properties in Adelaide and Melbourne, asking £500,000 for mines on a new and undeveloped field.¹⁹¹ Representatives of B.H.P. visited to inspect the leases and though a local mine manager, J. Curtin Minns, agreed that the mines had not been tested at depth, he did claim that the Running River Company had the largest area of argentiferous land of any silver mining company in the world.¹⁹² Robert Logan Jack was sent to examine the field but before he could even submit his report, the Company collapsed.

There had been some indications by November that all was not well; the Melbourne syndicate interested in the True Blue had finally declined it and the Running River Company had found itself with too much land to work with its limited capital.¹⁹³ Disaster struck when an Adelaide syndicate broke off negotiations for the purchase of some of the Company's ground, purportedly on the advice of the B.H.P. experts.¹⁹⁴ The share prices fell, most of the southern shareholders defaulted on the next call, and the Company went bankrupt: £700 was due to the miners for wages and £175 to outstanding accounts.¹⁹⁵ The Company was immediately wound up with the intention of reconstructing; it applied for exemptions from the work provisions on its leases, but most were refused and the

¹⁸⁹ Unfortunately the silver production returns were included with Ravenswood's and so are not available for 1890-91, but Logan Jack suggests that scarcely 200 tons of payable ore were raised. R.L. Jack, *The Kangaroo Hills Silver and Tin Mines*, Q.G.S.P. 82, 1892, p. 2.

¹⁹⁰ *Queenslander*, 12 September 1891, p. 513. The smelters were to come from Ravenswood.

¹⁹¹ *Queenslander*, 25 July 1891, p. 475; 7 November 1891, p. 870.

¹⁹² *Ibid.*, 12 July 1891, p. 1145; 14 November 1891, p. 943; 19 December 1891, p. 1182.

¹⁹³ It had 463 acres.

¹⁹⁴ *The Week*, n.d. p. 12 (in North Queensland Vertical File no. 8, J.C.U. Library); *Queenslander*, 23 January 1892, p. 178.

¹⁹⁵ *Ibid.*, 23 January 1892, p. 178.

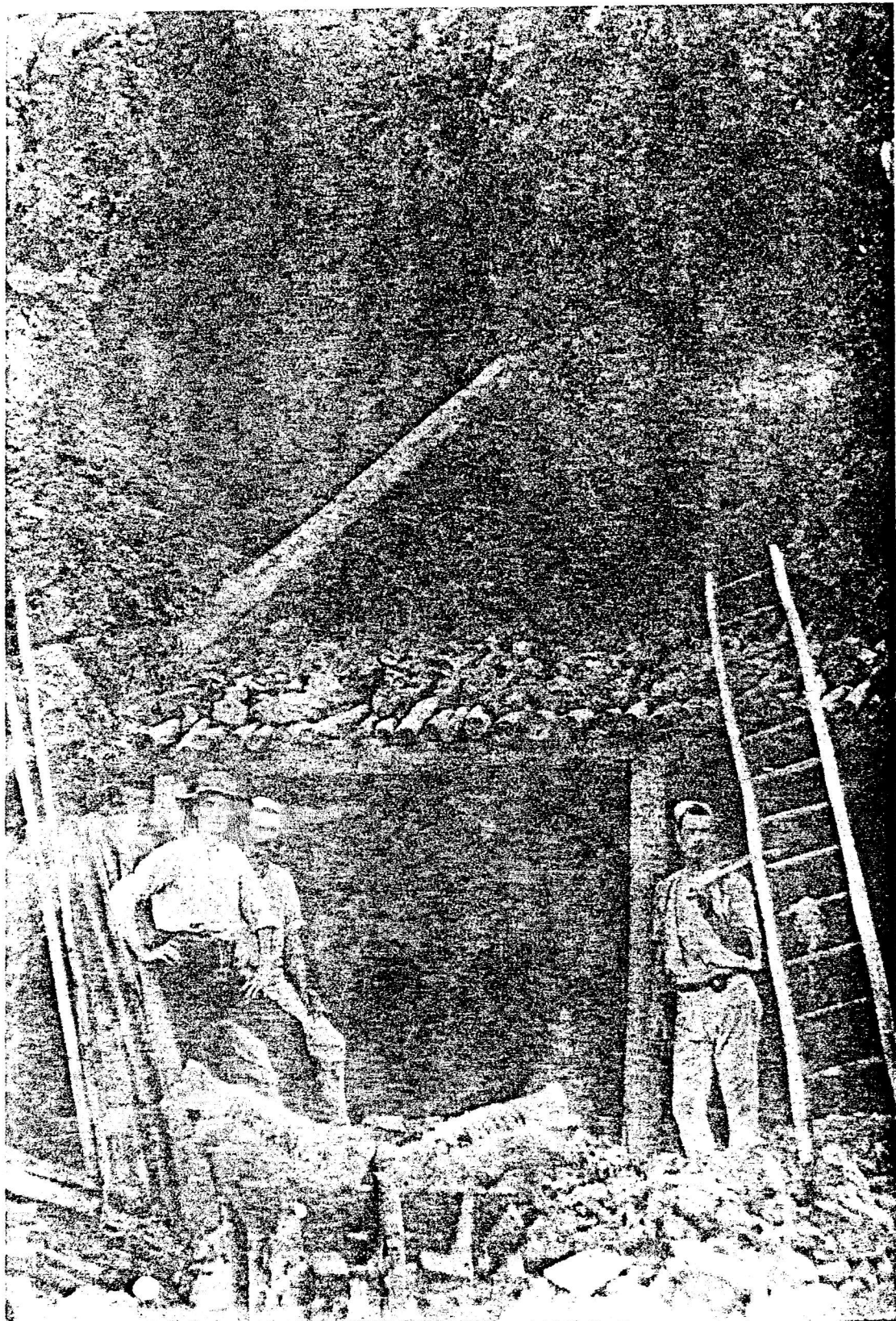


Fig. 42 Running River Company's mine, 1891. (Mrs James)

properties forfeited.¹⁹⁶ Ironically, Jack's report on the deposits was quite favourable, though it could have done little to counteract the general collapse of the silver boom late in 1891.¹⁹⁷ The immediate effect of the crash was a panic among the small syndicates, and depression on the field; the population declined rapidly and local storekeepers found themselves in an unenviable situation. By 1892 there were only six miners on silver and Ewan almost disappeared.¹⁹⁸ However, silver was not immediately relinquished, though attempts to revive the field all failed. The Running River Company was re-formed but did no work; the Caledonian was sold to a Hughenden group and Regner and Naven tried to develop large finds of silver and copper south of Running River, to no avail.¹⁹⁹ As the local miners were unable to obtain capital to develop their mines, they were gradually abandoned, though men such as John Lennox and George Rannie persisted for little result.²⁰⁰

During the furore over silver, there were some lode tin properties taken up which seemed to promise a greater degree of permanence. Mines at Mt. Brown near Ewan showed promise, but as the ore contained bismuth it was unsaleable in the colony and several tons had to be shipped overseas. The leases were temporarily abandoned with the collapse of

¹⁹⁶ *The Week*, p. 12. Mining leases carried conditions requiring a certain number of men to be employed in proportion to the amount of ground taken up; if the mine was experiencing problems it could be exempted from these provisions by the Mines Department, but normally failure to comply with the regulations led to forfeiture of the lease.

¹⁹⁷ Jack, *Kangaroo Hills*, p. 2; J.W. McCarty, *British Investment in Overseas Mining*, (PhD thesis, Cambridge, 1960), p. 32.

¹⁹⁸ *North Queensland Mining Annual*, 1891, p. 41; *Queenslander*, 13 February 1892, p. 320; *A.R.* 1892, p. 94. In 1901 a visiting government geologist found only two houses in the town. W.E. Cameron, *The Kangaroo Hills Mineral Field*, Q.G.S.P. 167, 1901, p. 1.

¹⁹⁹ *A.R.* 1892, p. 94; *Queenslander*, 2 April 1892, p. 630.

²⁰⁰ *Ibid.*, 28 May 1892, p. 1049; *A.R.* 1893, p. 98, 1895, p. 129. Lennox was the smelting manager of the Cloncurry Copper and Smelting Company in 1885, and came to Kangaroo Hills to set up an assay office during the silver boom. He and Rannie owned one of the Mt. Brown properties and became involved in every major venture on the field thereafter. *NQR*, 7 June 1915, p. 51; undated newspaper clipping (ca. 1891), held by Mrs. James, Currajong.



Fig. 43 Running River Company miners, 1891. (Mrs James)

the silver companies.²⁰¹ Alluvial miners in 1891 also discovered lode and alluvial tin in the Mt. Spec, Mt. Benham and Mt. Certainty areas. In the cool rainforests at the summit of the ranges, prospectors found water and alluvial tin in abundance, though they also contended with leeches, fleas, scrub ticks and stinging trees.²⁰² Machinery was ordered for the lodes, and in 1892 the Mt. Spec Tin Mines Co. was successfully floated on mainly local capital. However the leases went under exemption because of the difficulties of transport and mining in the dense wet scrub, and the low price of tin.²⁰³ Lodes in that area were again taken up by the Mt. Spec Tin Mining Company of Charters Towers²⁰⁴ in 1901 and a battery erected with much difficulty; this mine was also abandoned because of its inaccessibility and an influx of water which overwhelmed the pumping machinery.²⁰⁵ Prospectors also investigated the headwaters of Running River, and in 1900 a battery was placed at the camp there, Hidden Valley. Old alluvial areas were being re-worked and some wolfram lodes opened out, though these were overshadowed by the Ollera Creek wolfram rush on the coastal plain. Until tin prices rose in late 1898, alluvial mining was quiet and lode mining almost non-existent.²⁰⁶

1898 saw the lowest tin production since the field's discovery, yet 37 applications were received for tin and copper leases. Rich shoots of lode tin had been discovered on Oaky Creek by John Bowes and several companies were formed to work them;²⁰⁷ the largest was the Waverley Tin

²⁰¹ A.R. 1891, pp. 7, 60. It appears that the discoveries were originally made when the outcrops were pegged for silver. *Queenslander*, 7 November 1891, p. 870.

²⁰² A.R. 1891, p. 98; *NQH*, 24 August 1901. The certainty of permanent water in this region was its greatest advantage; there is even a reference to a water-wheel battery, at Gard Brothers' mine. However the scrub made prospecting for lodes difficult. R. Burla, "Scrublands and waterfalls, Mt. Spec" in R. Burla, (Ed.) *Following the Blazed Paths*, (Ingham, n.d.); and A.R. 1893, p. 98.

²⁰³ *Queenslander*, 7 May 1892, p. 870; A.R. 1893, p. 98.

²⁰⁴ Its nominal capital was £100,000; £3700 was expended on machinery and development.

²⁰⁵ A.R. 1902, p. 84.

²⁰⁶ *Ibid.*, 1894, p. 106. In 1896 the Commissioner refused to press the men for mining licences because of their poverty. A.R. 1896, p. 110.

²⁰⁷ A.R. 1898, p. 99; 1902, p. 84.

Mines Ltd. of Melbourne, registered in 1900, whose Chairman of Directors was Joseph Cowan Syme, a director of Mt. Lyell, the Commercial Bank of Australia, and the Silverton Tramway Company.²⁰⁸ Other companies took up the Planet, Volcanic and Douglas groups of leases.²⁰⁹ The Waverley Company spent some thousands of pounds opening its mines and constructing roads; in 1900 it erected a comprehensive ten-head battery for £10,000 and crushed 220 tons, but in five weeks the water supply failed. The Company then built a dam across Oaky Creek, and a sawmill at Mt. Fox to overcome the Waverley district's notable lack of timber. The Planet, Douglas and Freehold companies had delayed operations, apparently awaiting results from the Waverley venture, and in 1900 they also began work and a new township, Kallanda, was established nearby.²¹⁰ It consisted in 1901 of a hotel, a few stores which included a post office, some Chinese gardens and police lockup, transferred from Ewan.²¹¹ The site of the Waverley mines office also became a minor settlement with a hotel and store, and a school was opened there in 1905.²¹²

Though the Waverley Company had begun with a nominal capital of £150,000, shares worth £130,000 were retained by the promoters and the remainder was swallowed up by the difficulties of opening new mines in an inaccessible area. As the road to Townsville was often closed to teams for want of grass and water, most of the Company's tin went to Ingham by packhorse, causing extra expense; it was suggested that a "small show" like Waverley could not afford the £1000 salary it was

²⁰⁸ Supplement to the *British Australasian and New Zealand Mail*, May 1901, p. xxxviii; R.L. Nash, *Australasian Joint Stock Companies Yearbook*, 1913-1914 (Melbourne, 1914).

²⁰⁹ The Planet Company's capital was £100,000 in £1 shares. *NQR*, 21 May 1900, (in H.S.C. Collection). It appears that Lennox and Rannie were responsible for promoting the Waverley and Planet properties, and Lennox was one of the prospectors of the Douglas. He was also manager of Waverley 1901 to 1903. *NQR*, 21 May 1900; Cameron, *Kangaroo Hills*, p. 5; *A.R.* 1903, p. 89.

²¹⁰ *NQH*, 28 September 1901, p. 23; *A.R.* 1899, p. 14; 1900, p. 100; *NQR*, 21 May 1900.

²¹¹ *A.R.* 1901, p. 88. A visitor in 1900 called it a "blot on the landscape" and noted that he had never seen "such a pandemonium of fights and foul exhibitions as on payday in ... Kallanda". *NQR*, 21 May 1900.

²¹² *A.R.* 1901, p. 88; Report of the Department of Public Instruction, *PP* 1906 Vol. 1.

paying its manager, and the Warden noted that even the dam soon became useless for lack of funds to repair it.²¹³ Debentures were issued to provide a further £8666 in working capital, but the company failed and the shareholders, mostly Ingham and Melbourne investors, lost their money. The debenture holders formed the New Waverley Tin Mines Company.²¹⁴ At first the Company had refused to treat public stone but in 1902 this restriction was relaxed and in 1903 Frank Fraser,²¹⁵ the largest local shareholder, persuaded it to crush only for the public and let its mines on tribute because of the patchy nature of the ore-bodies and insufficient supply of ore to the mill.²¹⁶ However by then another mill, Poppendorf's three-stamp prospecting battery, was on Oaky Creek; as the Waverley mill was at the bottom of a gorge and served by a dilapidated tramway, it is not surprising that competition had arisen.²¹⁷ It was soon discovered that the tributors also could not keep the mill fully occupied and the company attempted to diversify by taking up leases on Red Hill, on tin-bearing alluvials capping the ridges, and erecting a battery.²¹⁸ In 1908 the Waverley mill itself closed and was put on the market for £500; the company was wound up in 1908 or 1909.²¹⁹ As Cameron²²⁰ had noted, too much had been spent on unproved mines in a remote area. It seems that the Planet Company's approach was more cautious and its manager was aware of the dangers of over-spending on such small and patchy ore deposits: the Planet, Douglas and Volcanic leases were forfeited in 1901-1902. However, the Waverley company had at least

²¹³ *NQR*, 21 May 1900; *A.R.* 1901, pp. 88, 90; *NQH*, 10 June 1901, p. 4; *Queenslander*, 21 September 1901, p. 579.

²¹⁴ *A.R.* 1901, p. 90.

²¹⁵ Fraser became manager without pay in Lennox's place, but resigned in 1908. Victoria In no. 580, 12 March 1908, CSR 142/1595, A.B.L.

²¹⁶ *A.R.* 1902, p. 84; 1903, p. 89; 1904, p. 83.

²¹⁷ *A.R.* 1904, p. 83. In 1905 the tramway was replaced by a road. *A.R.* 1905, pp. 158-9.

²¹⁸ *Ibid.*, pp. 11, 159.

²¹⁹ *A.R.* 1908, p. 90; List of mines, *A.R.* 1909, p. 139, 1910, p. 148. Between 1901 and 1905 the Waverley mill produced £25,000 worth of tin. *A.R.* 1905, p. 158.

²²⁰ *A.R.* 1905, p. 158.

opened up the field by building roads and batteries.

Another ill-starred venture was the attempt to exploit the copper-silver deposits on Kangaroo Hills. It seemed after 1898 that Lennox and Rannie's patience had been rewarded when they floated old silver-copper shows such as the Iron Mountain and True Blue Tunnel, re-opened their old silver mine the True Blue and developed a rich copper lode, Mt. Thekla, on Oaky Creek. To the south Regner, Naven and Ramsden opened out silver and copper deposits at Macauley Creek, in conjunction with John Moffat and Anthony Linedale. Until 1902 the principal mines, the Macauley group and the Thekla, sent ore by waggon to Townsville and thence Aldershot Smelters, or by packhorse through Ingham. Cartage costs were high and as copper prices declined in 1901, both considered erecting smelters to reduce the quantity of material shipped.

Inevitably the Thekla and Macauley group were amalgamated, and in 1902 the Kangaroo Hills Mining and Smelting Company was formed to erect smelting works on Running River midway between the mines. Cameron had inspected the properties in 1901, noting there seemed to be no potential difficulties in smelting the ore, though he had only examined the lodes above water level; and the Warden stated that there were suitable fluxes, firewood and fireclay for smelter bricks within reasonable proximity of

221

NQR, 21 May 1900; Register of mineral leases, Kangaroo Hills, 891-1900, A/22691 Q.S.A.

222

Cameron, *Kangaroo Hills*, p. 3; *NQR*, 21 May 1900. Moffat was one of north Queensland's biggest mining entrepreneurs, involved in copper at Hillagoe and Cloncurry and tin and silver in the Irvinebank, Montalbion, and Herberton areas. Other well-known Herberton men were also attracted to the field in 1898-99, including Phillip Foxlee, who interested himself in alluvial tin in the Mt. Benham-Mt. Spec area, and assayer J.J. Denny, who took up some of the Waverley lodes with the prospectors. S. Kerr, *John Moffat's Empire* (Brisbane, 1979), pp. 41-42; Register of Claims, Ingham Warden's Office, 1893-1921, MWO 12A/6 Q.S.A.; Railway report by G. Phillips, 10 February 1899, A/12386 Q.S.A.

223

NQR, 21 May 1900; *A.R.* 1901, pp. 14, 88-89. The Macauley Creek smelters were to be placed on the Burdekin, three miles away. The only other major copper company, the Running River Mining Co. NL of Melbourne, found itself unable to sell its properties because of the price fall and unable to work the mines for lack of capital.

224

A.R. 1902, pp. 18, 85. The Company's registered office was Townsville; it had a nominal capital of £30,000 in £1 shares. Register of joint stock companies, *Statistics of Queensland*, for 1903.

the site.²²⁵ Other copper shows in the vicinity of Ewan such as the True Blue and Monarch could be looked to for further supplies of ore. As the Company's directors included experienced miners such as Moffat and the local men Lennox and Rannie, the proposition was given high chances of success: Cameron had reported favourably on Mt. Thekla and one observer even compared it to Mt. Lyell. However, Cameron had also warned that little development work had been done on the mines and that the lodes gave no indication of permanence below water level.²²⁶

The smelter was completed in 1904; it consisted of a waterjacket furnace with a capacity of 60 tons a day, and all works were lit by electricity. The Warden was impressed by the plant but criticised the Company's decision to site it within Ewan township. However this seems merely to have accelerated the drift of population there from Kallanda and Waverley. A population of 200 supported two hotels, three stores, and two butcher's shops; in 1904 the Kallanda police station, including the assistant mining registrar's office, was returned to Ewan and in 1905 a school was built.²²⁷

In 1904 the smelters produced £1864 worth of copper, silver and lead, but the company collapsed for want of funds; like the Waverley group, it had spent too much on surface improvements at the expense of mine development. Other problems included a strike in April when the company tried to reduce wages, the cost of cartage from the mines, difficulty in obtaining coke,²²⁸ and smelting problems encountered in the refractory ores.²²⁹ Two attempted reconstructions failed and Moffat took over the properties on tribute; he hired a southern smelting manager, J.W. Ashcroft, and work resumed in April 1905, to no avail. As Cameron

²²⁵ Cameron, *Kangaroo Hills*, pp. 8-9; A.R. 1902, p. 85.

²²⁶ A.R. 1901, p. 14; Cameron, *Kangaroo Hills*, pp. 8, 9.

²²⁷ A.R. 1903, p. 90. The school opened in 1907, the same year the Waverley school closed. Report of the Department of Public Instruction, PP 1908 Vol. 1; Report of the Commissioner of Police, PP 1905 Vol. 1.

²²⁸ A.R. 1904, p. 83; R.L. Shepherd, "Introduction to Mt. Spec" in Burla (Ed.), *Following the Blazed Paths*, p. 7. Coke for the smelter was carted from Townsville. A.R. 1905, p. 161.

²²⁹ A.R. 1904, p. 83. The ore apparently had a deficiency of sulphur and iron, used in the smelting process as a fuel and chemical reagents to liberate the metals. It was hoped that sulphides at deeper levels would produce sufficient to redress the shortage. A.R. 1905, pp. 14, 161.

had predicted,²³⁰ the oxidised ores gave way to very low-grade primary sulphides and after working intermittently, the smelter finally closed down in 1906. Lennox and Rannie continued to mine the True Blue and Thekla for a few years more, sending their firsts to London and concentrating their seconds at the Mt. Brown battery; they abandoned the mines in 1908 when metal prices slumped.²³¹ Silver and copper have scarcely been touched on Kangaroo Hills since, unless in association with other minerals.

While the Waverley Company and the copper concerns were running their course, several smaller tin shows were being developed. The old freehold properties were floated as the Kangaroo Hills Tin-mining Company, though it languished for want of capital and a mill.²³² Another was the Black Cap at Hidden Valley, sold to the Black Cap Tin Mining Company, which acquired a mill for that part of the field.²³³ In 1903 the Gorringe Brothers, major shareholders in the old Mt. Spec company, moved their mill to Ewan and formed the Mt. Brown Tin Mining Company, Limited,²³⁴ to work the Mt. Brown lodes; it set about developing its properties with twenty miners and crushed for the public when convenient, causing small shows to open up around Ewan. However in 1905 it was discovered that the ore bodies did not persist into deeper ground and the mines were let on tribute, though they worked intermittently for several years.²³⁵ The battery continued to crush custom ore, and though crushing charges were considered excessive this was offset by the high price of tin. In fact by 1906 the company had paid its first dividend; in 1907 it even increased the battery plant and took up Mt. Kidston, a large tin

²³⁰ HRE, 18 September 1905, CSR 142/3414, A.B.L.; A.R. 1904, p. 83; 1905, pp. 14, 82; Cameron, *Kangaroo Hills*, p. 10.

²³¹ A.R. 1906, p. 90; 1907, p. 90; 1908, p. 90.

²³² Its nominal capital was £7000 in 4000 fully paid up and 3000 contributing shares. *Statistics of Queensland* for 1900.

²³³ A.R. 1905, p. 82. It was registered in Townsville in 1905 with a nominal capital of £5000 in 20,000 shares. The battery was transferred in 1912 to Hidden Valley. *Statistics of Queensland* for 1905; NQR, February 1912, p. 74.

²³⁴ A.R. 1903, p. 89. It was registered in Gympie with a nominal capital of £3000 in shares of 2/6 each. *Statistics of Queensland* for 1903.

²³⁵ A.R. 1904, pp. 82-83; 1905, p. 159.

deposit eight miles southeast of Mt. Brown. This property appeared so promising that the company decided to place a mill at the mine; the Waverley mill was purchased in 1908, but as tin prices were depressed the search for capital proved difficult and the battery and a dam were not finished until 1911.²³⁶ Prospectors responded by opening mines in the area and sending ore to the mill,²³⁷ and the Warden reported favourably on the venture until 1915; however the outbreak of war caused the complete collapse of the metal market and in 1915 the company's Mt. Brown battery was sold to McIntyre Brothers. Despite grants totalling £1000 in government aid for deep sinking and mining machinery during the war years,²³⁸ the company ran short of capital and in 1918 the Mt. Kidston battery was taken over by the Kangaroo Hills Tin Syndicate who moved it to Ewan.²³⁹

Lode mining continued on a greatly reduced scale. Most of the miners on the field confined their attention to small gougings or re-opening the shallower of the old shows; in 1913 only Mt. Kidston had a winding engine and at 217 feet was the deepest mine on the field.²⁴⁰ The Warden noted that prospectors usually picked out the richer ore with little thought to future development and abandoned their shows as soon as the shoots of ore pinched out. The tin lodes were notorious for small patchy ore-bodies and erratic occurrence, and the field had been subject to significant sliding and faulting, making the lodes even more

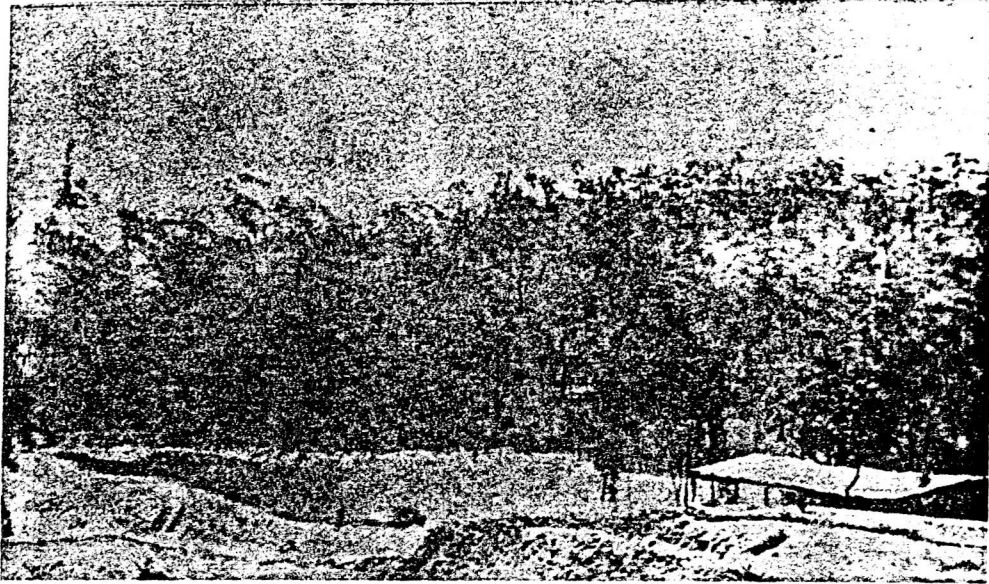
²³⁶ A.R. 1905, p. 11; 1906, p. 10; 1907, pp. 12, 90; 1910, p. 97; 1911, p. 104.

²³⁷ NQR, 19 August 1912; A.R. 1913, p. 120.

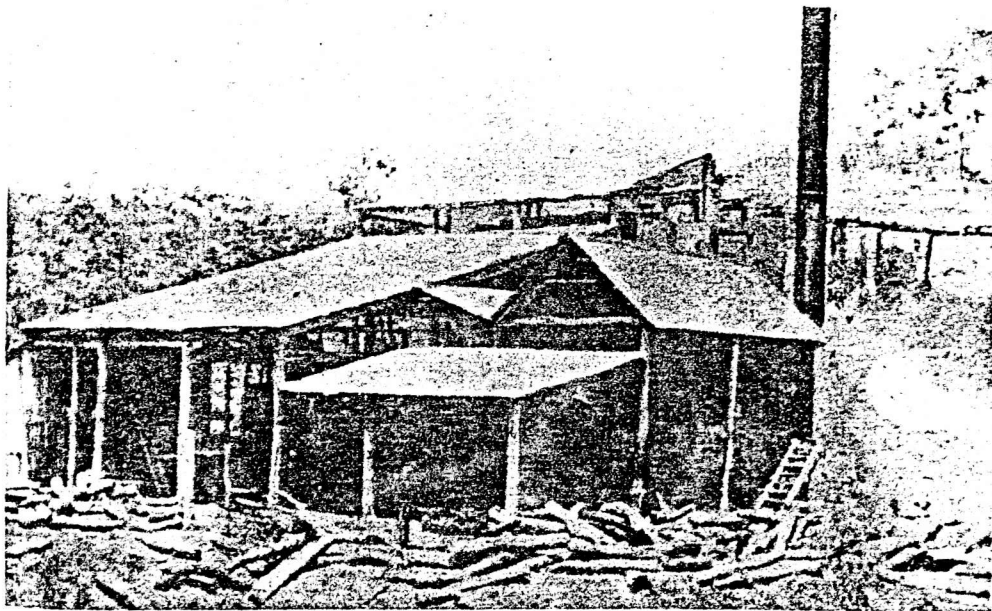
²³⁸ A.R. 1915, p. 16; NQR, 19 April 1915, p. 13; loans in aid of mining, Reports of the Auditor-general, PP 1917, 1918, 1919 Vol. 1.

²³⁹ This syndicate had the same manager as Mt. Brown, John Lennox. He began to manage Mt. Brown in 1908 with L. Gorringer; Rannie was a director. A.R. 1918, pp. 107, 154; 1908, p. 142; 1909, p. 15. One of the Mt. Kidston mines, the Dawn of Hope, was floated as the Mt. Crystal Tin Mining Company in 1917. It had very little capital and experienced problems in establishing a battery on the site; in 1920 it failed and appropriately in that year the main shaft at Mt. Kidston was reported fallen in. A.R. 1917, p. 108; 1918, p. 18; 1920, p. 98.

²⁴⁰ E.O. Marks, "Kangaroo Hills", Q.G.M.J. 14 (February 1913), p. 61; NQR, 29 December 1913, p. 32.



Figs. 44 & 45 Mt Kidston Mine and Battery, 1913. (*Q.G.M.J.* 14, 153
(February 1913), p.60)



difficult to follow.²⁴¹ The field received a setback during World War One with shortages of explosives, building materials and manpower. The Inspector of Mines noted that high wages in the meatworks and canefields were luring miners away; though he also noted that most returned with sufficient money to finance further prospecting, this was of little consolation to the larger mineowners who experienced regular labour shortages.²⁴² Despite these disadvantages, small scale prospecting for new lodes increased after 1910, resulting in more small batteries appearing²⁴³ and even a rush in 1912 to a locality called Watercress where large areas of granite were impregnated with specks and small veins of tin. The prospectors were forced to dolly their ore until 1914 when a few small mines had proven the area sufficiently for a three-stamp mill to be erected.²⁴⁴

1918 in particular saw an increase in prospecting activity; old mines near Ewan re-opened, including the Terrible Whale on Oaky Creek for which a battery was planned by the (Ewan) Tin Syndicate, but one of its members discovered the Shrimp lode and attention was transferred there. The mine proved promising and was sold to the Oaky Creek Tin Mining Syndicate who placed a battery on the site.²⁴⁵ Further discoveries in the area, the Sardine and Salmon, attracted Charters Towers investors: a syndicate floated the Sardine after prospecting and development, the company purchasing the mine for £15,000 cash and a controlling interest

²⁴¹ A.R. 1905, p. 159; 1919, p. 94; 1920, pp. 97, 98; 1921, p. 82.

²⁴² A.R. 1916, p. 107; 1917, p. 108; 1918, p. 179; 1919, pp. 142, 94.

²⁴³ There were five mills in the area in 1909. A.R. 1909, p. 90.

²⁴⁴ A.R. 1912, pp. 108-9, 1913, p. 13; 1914, p. 110; *NQR*, 19 August 1912. The mill was increased to five stamps in 1921 and in 1914 was augmented by A. Grey's mill, built from materials scavenged from the Waverley area. However, the Watercress mines were almost wiped out by depressed tin prices in 1922. *NQR*, 6 April 1914, p. 57; A.R. 1922, p. 78.

²⁴⁵ A.R. 1918, pp. 18, 107; 1920, p. 148; E.C. Saint-Smith, "The Ewan Tin Syndicate", *Q.G.M.J.* 22 (September 1921), p. 355. The mill was a good one, with much of its equipment practically new and its stamps at 1250 lb. were the heaviest on the field.

Fig. 46 Ore teams crossing Oakey Creek. (*Q.G.M.J.* 23 (September 1922), p. 354)



Fig. 47 Tunnel entrance and ore bins, Sardine Mine. (*Q.G.M.J.* 23 (September 1922), p. 353)



in shares to the vendors.²⁴⁶ The Brilliant Extended Gold Mining Company of Charters Towers took an option over the Salmon, only to abandon it the following year because of low ore grades.²⁴⁷ The Sardine North drew Brisbane and Charters Towers money and the Canary, discovered in 1921, was sold by a Charters Towers syndicate to the newly-formed Canary Tin Mines Company, NL.²⁴⁸ In 1921 also the Shrimp was sold to the Towers Tin Mining Company, NL. Several smaller mines opened in the vicinity, sending ore by drays and pack mules to the Shrimp battery or the Ewan mill; the revival attracted other interests to the field for alluvial and reef mining, and a company purchased the Birthday at Waverley to be worked as a large low-grade mine with a mill on site to save costs.²⁴⁹ Even the Mt. Brown mines were re-opened and a company formed to work one, though it was abandoned again in a year.²⁵⁰

As the countryside around Oaky Creek was unsuitable for a town site, the new mines mainly benefited Ewan whose battery was within five miles. The Mt. Brown Company's activities had prevented the expected rapid decline of Ewan after the smelters closed, and by 1922 the town had a school, hall, hotel, police station, butcher's shop and a store. A post office was included in the school and in that year a telephone

²⁴⁶ A.R. 1919, pp. 15, 95. Its managing director in 1922 was Lennox. E.C. Saint-Smith, "The geology and mineral resources of portion of the southern section of the Oaky Creek district, part two", *Q.G.M.J.* 23 (September 1922), p. 350.

²⁴⁷ A.R. 1920, p. 98. It then took up the Titanic for £3,000 and £2000 for ore already raised, and took out a pipe of rich stone to 95 feet. Falling tin prices in 1921 terminated the Company's interest in the field; in fact the company itself was wound up in 1923, having been losing money on its Charters Towers mine since 1916. J.H. Reid, "Charters Towers Gold Mines", *Q.G.M.J.* 18 (May 1917), p. 223; Register of Companies, Charters Towers, MWO 11A/T3 Q.S.A.

²⁴⁸ Saint-Smith, "Oaky Creek District, part two", p. 352; E.C. Saint-Smith, "The present condition of certain Kangaroo Hills tin mines, North Queensland", *Q.G.M.J.* 24 (June 1923), p. 203. The Sardine Tin Mines NL was registered in Charters Towers 9 February 1920, with a nominal capital of £12,400 in £1 shares; the Canary Tin Mines NL was registered at Charters Towers 27 November 1922 with nominal capital of £24,000 in 60,000 shares. *Statistics of Queensland*, 1920 and 1922.

²⁴⁹ A.R. 1921, 1922, p. 78; Saint-Smith, "Oaky Creek district, part two", pp. 349, 352. The Towers Tin Mining Company was registered in Charters Towers with a nominal capital of £40,000 in 80,000 shares.

²⁵⁰ A.R. 1924, p. 85; 1927, p. 15.

213

line was being strung from Hillgrove Station;²⁵¹ a branch of the C.W.A. was formed in 1923 and a site for an airstrip chosen, and in 1924 a School of Arts was established.²⁵² As a road trafficable for vehicles was provided by the Mt. Fox road after 1911, the Ingham ambulance could attend to medical emergencies. Small mining on other parts of the field also supported scattered businesses: Hidden Valley had a hotel, store and butcher, Allingham (Red Hill) and Waverley boasted boarding houses, and Prospector's Creek had a store. A store and hotel were re-established at Waverley after 1910.²⁵³ Mining and Progress Associations were also formed in this period to obtain better roads and mail services, and government assistance for mining.²⁵⁴

Settlement was encouraged by the success of the Oaky Creek mines, of which the Sardine proved to be the top producer, soon earning the accolade of the best mine on the field. Besides having several large lenses of rich ore, it also received more careful and systematic development than most mines on Kangaroo Hills. The Sardine and Canary struck water level and acquired winding machinery, and in 1923 the Sardine's production was worth £14,610 locally.²⁵⁵ As the Shrimp ore was lower-grade it was developed by a combination of tunnels, shafts and open-cuts and the costs of crushing and hauling were kept as low as

251

E.C. Saint-Smith, "Geology and Mineral Resources of portion of the southern section of the Oaky Creek district, Kangaroo Hills Mineral Field, part one", *Q.G.M.J.* 23 (August 19-2), pp. 311, 309. There is even mention of a "De Luxe Theatre", probably in the Hall. *HRE*, 18 October 1929.

²⁵²*Sixth Annual Report of the C.W.A., Northern Division*, (Townsville, 1929), p. 155; Saint-Smith, "Oaky Creek district, part one", p. 311; H.S.C. Minutes, 12 September 1922, 16 February 1924. A landing ground was cleared in 1920 but apparently proved unsatisfactory; the aerodrome had still not been cleared in 1939 and was probably built during the war. *HRE*, 2 November 1939.

²⁵³*HRE*, 23 May 1928; *A.R.* 1909, p. 90; 1910, p. 99. Red Hill was renamed Pineapple before the name was changed to Allingham. Joan Frew, *Queensland Post Offices 1842-1980 and Receiving Offices 1869-1927*, (Brisbane, 1981), p. 99.

²⁵⁴For example, the Kangaroo Hills Progressive League, 1914; Tableland Prospectors' Association, 1922; Ewan or Kangaroo Hills Progress Association, 1927; Hidden Valley Prospectors' Association, 1935; and Ewan Prospectors' and Progress Association, 1939. *NQR*, 4 April 1914; H.S.C. Minutes, 10 January 1922, 10 May 1927, 12 March 1935; *HRE*, 14 September 1939.

²⁵⁵*A.R.* 1923, pp. 83, 84.

possible.²⁵⁶ A slump in tin prices in 1924 and decreasing production resulted in the Towers Tin Mining Company and Canary Company going into liquidation; the Sardine North was also idle but the Sardine itself was fortunate to discover another large rich lens of ore, inducing the Sardine North to resume operations in 1926. The Sardine's new discovery provided its most successful year, and an air compressor and rock drills were installed.²⁵⁷ The mine continued as the mainstay of the field until 1929 when tin prices plummeted; when prospecting was unable to reveal further rich ore-bodies, it went under exemption. The Sardine North also met with little success in that year, despite a government subsidy, and even a drive into the Sardine's lease in search of a possible continuance of that mine's rich ore shoots failed.²⁵⁸ The Sardine was purchased in 1932 by J. and W. Reddie, who had already acquired the Shrimp.²⁵⁹ They also secured the Sardine North in 1933.²⁶⁰

The Depression brought about a period of greatly reduced metal prices from 1927 to 1933, and the population of the field declined dramatically.²⁶¹ Despite the suspension of the mining wages awards, and grants of prospecting unemployment relief payments from the State, tin was simply not payable at £40 per ton and men left for the goldfields or to work on the roads. The Warden even noted in 1929 that possum

²⁵⁶ Saint-Smith, "Oak Creek district, part two", p. 349; A.R. 1920, p. 98.

²⁵⁷ A.R. 1921, p. 81; 1925, p. 12; 1926, p. 12. By 1927 the mine had produced 1117 tons of tin for £147,866, and paid £58,000 in dividends. *Queensland Parliamentary Debates*, CXLIX, 29 September 1927, p. 321.

²⁵⁸ A.R. 1928, p. 67; 1929, pp. 14, 70. The Sardine produced between 1920 and 1930 10,186 tons of ore for 1443 tons of tin worth £174,395. It paid £62,000 in dividends. A.R. 1939, p. 95.

²⁵⁹ They purchased the Sardine for £600. A.R. 1933, p. 102.

²⁶⁰ A.R. 1930, p. 68; 1933, p. 101. W. Reddie was a qualified metallurgist who had graduated from the Charters Towers School of Mines in 1911. Reddie Bros. to Under Secretary for Mines, 20 November 1935 (in-letter no. 435), A/22217 Q.S.A.

²⁶¹ A.R. 1931, p. 72. The Ewan school closed in 1931. Report of the Department of Public Instruction, PP 1932 Vol. I.

Fig. 48 Towers Tin Mining Company's ten head battery. (*Q.G.M.J.* 23 (September 1922), p. 355)

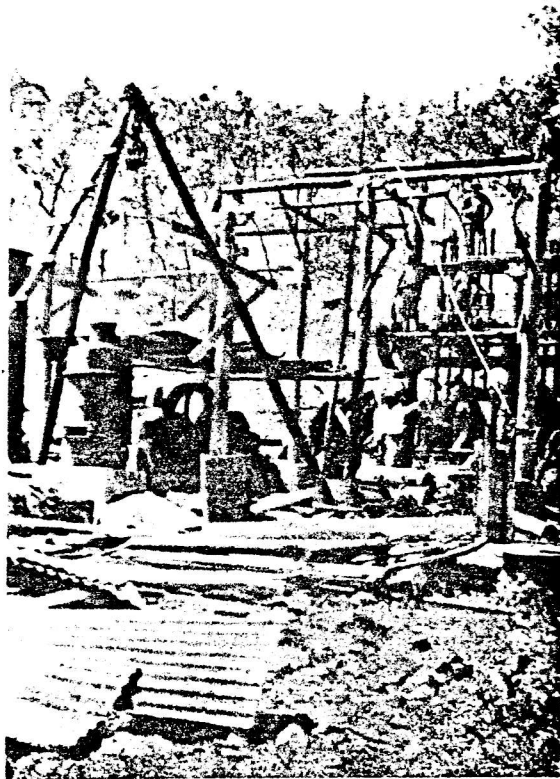
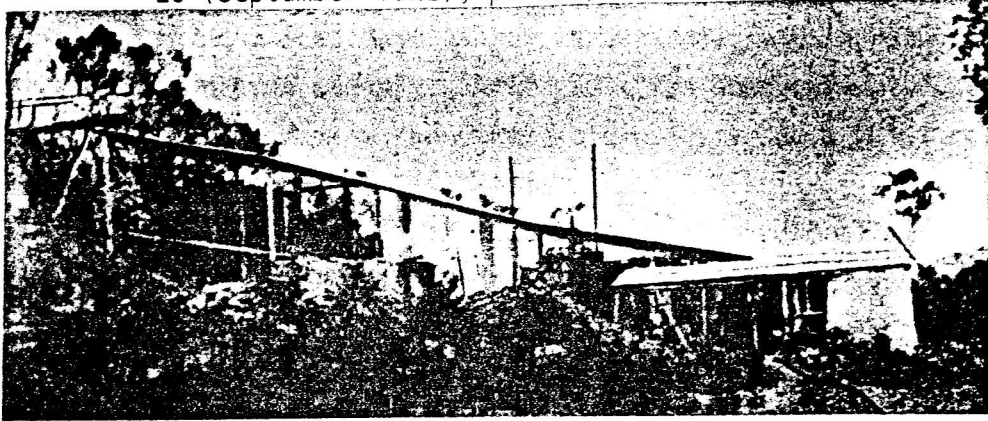


Fig. 49 The (Ewan) Tin Syndicate's Battery in course of erection, Shrimp Mine. (*Q.G.M.J.* 22 (September 1921), p. 355)

hunting was more lucrative than mining.²⁶² The mills by 1932 were hung up with the exception of the Shrimp Battery, which had been taken over by the Mines Department in 1924; it was leased to Reddie Brothers on the understanding that they crush for the public and despite recurring²⁶³ shortages of water, the Department and lessees found the arrangement satisfactory, thus keeping the mill working through the lean years for those few prospectors who remained.²⁶⁴ Reddie Brothers assisted by keeping crushing prices down as far as possible, and in return could crush their own ores cheaply.²⁶⁵ After 1934 the demand for industrial metals steadily increased, and the field experienced a quiet revival; by 1939, four mills were again active.²⁶⁶

While lode mining was moderately successful, alluvial tin was being won with increasing difficulty:²⁶⁷ 200 men searched for stream tin in 1905 but by 1909 numbers had fallen off appreciably and the Warden suggested that despoits were rapidly being exhausted.²⁶⁸ More effort was required of the miners to work poor or previously inaccessible ground. Many of the rock bars holding back reaches of water were blasted to expose the creek beds and elaborate provisions were made to work poorer

²⁶² A.R. 1929, p. 70; 1930, p. 103; 1931, pp. 72, 73; Report of the Department of Labour and Industry, *PP* 1935 Vol. I, p. 1129. The Warden estimated a minimum payable price for tin of £100 a ton. A.R. 1930, p. 68.

²⁶³ A.R. 1926, p. 74; 1932, p. 13. A Departmental advance to the Towers Tin Company had never been repaid. Reddie Bros. to Warden, 16 January 1940 (no. 783A), A/8312 Q.S.A.

²⁶⁴ Inspector of Mines to State Mining Engineer, 26 July 1934 (no. 34/997), A/22217 Q.S.A. Because it was considered uneconomic, the Department refused to construct a dam; however, it also assisted the renovation of the Northumberland mill at Hidden Valley in 1935. Inspector of Mines to Warden, 28 July 1937, A/8312 Q.S.A.; A.R. 1935, p. 96.

²⁶⁵ Reddie Bros. to Under Secretary for Mines, 20 November 1935 (no. 435), A/22217 Q.S.A. The Reddies were also agents for the ore-buyers, Kelly's Tin Smelters of Sydney, and held explosives for sale. Inspector of Mines to Warden, 17 February 1934, A/22217 Q.S.A.

²⁶⁶ A.R. 1934, pp. 96-7; 1937, p. 100; Warden to Under Secretary for Mines, 28 August 1939 (no. 683), A/8312 Q.S.A. Despite the revival, the Ewan school remained closed.

²⁶⁷ Up to 1916 the numbers of lode and alluvial claims were roughly even; between 1917 and 1921 however there were ten alluvial to 62 lode claims. Register of claims, 1893-1921, Ingham Warden's Court, MWO 12A/6 Q.S.A.

²⁶⁸ There were 48 miners in 1909. A.R. 1909, p. 91.

areas by sluices.²⁶⁹ Dams and long races replaced the earlier sluice-boxes and pans; pumps were used to drain those smaller waterholes not worth blasting.²⁷⁰ One sluicing claim on Pineapple Creek was described in 1914: water was diverted from further up the creek into a race, thus dispensing with the need for an unstable dam. Work consisted of simply forking away the stones from the sluice and though the ground was not rich, a considerable quantity could be sluiced in a day, making it very remunerative.²⁷¹ Another consisted of a race diverting creek waters into a flume nine feet above the claim so water for sluicing could be delivered onto any part of the ground.²⁷² Unfortunately miners could spend up to two years constructing dams and races, only to see them destroyed in summer floods such as those of 1911.²⁷³ However the continual replenishment of the alluvial tin by successive wet seasons washing new material into the creeks has meant that small miners have always returned when conditions were favourable.

There were also attempts by larger concerns to work the creeks. Southern visitors showed interest in the dredging prospects of Running River and Oaky Creek and 15 applications for dredge areas were received in 1907. This threatened the ordinary alluvial miners, who petitioned the Department of Mines not to allow the leases; however Cameron when sent to report found that in most cases the areas under dispute were not suited to small-scale alluvial mining because of the depth of ground. Only one dredge actually became operative, when Gorringer Brothers formed the Pilot Sluicing Company to work dredging areas on Sandy and Prospector Creeks. The plant cost £1,500; it worked for a brief time, but after tin prices deteriorated in 1908 the plant was allowed to fall into

²⁶⁹ This technique obviated the necessity for stacking washdirt for the next wet season, an uncertain and risky practice if the source alluvials had not been tested for their likely tin contents. *A.R.* 1911, p. 103.

²⁷⁰ *A.R.* 1909, pp. 15, 90-91. The alluvial flats beside the creeks were also worked for tin.

²⁷¹ *NQR*, 6 April 1914, p. 57.

²⁷² *A.R.* 1910, p. 98. The Warden noted that it even supplied water for domestic use and irrigation.

²⁷³ *A.R.* 1911, p. 103.

disrepair.²⁷⁴ High prices in 1918 encouraged a British company to take up leases on the upper Burdekin and institute a testing program, but it was not heard from again.²⁷⁵ A proposal to dredge the Five Mile Creek near Cardwell in 1927 proved equally abortive.²⁷⁶ Brief revivals between 1929 and 1940 saw dredging claims taken up on Camel Creek, Running River and Garrawalt Creek by the Adelaide Tin Exploration Company, Austral Malay Ltd and B.H.P. respectively, all to no result.²⁷⁷ On the other hand, small pumping and sluicing plants operated by alluvial miners were quite productive in this period.

Large-scale attempts to work the deep leads capping the high country at Red Hill and the Fifteen Mile were just as unsuccessful. Cameron had noted in 1905 that the deposits, usually in conglomerate or decomposed granite, only required sufficient capital to cart the wash to water, where it could be treated by ordinary alluvial methods. In fact many sluices were set up specifically for these gravels, while those in a cement matrix were treated at Frank Fraser's Red Hill battery. However, in such dry rugged country, cartage and water supplies were often a problem; the Warden also noted that the ground was wet and treacherous, requiring heavy timbering. The deposits were often drained and worked by tunnels, in combination with shafts down to the leads and occasionally open cuts to remove the whole of the overburden. While the deposits were known to be extensive, Cameron cautioned miners²⁷⁹ against expensive surface works without first testing their properties.

²⁷⁴ A.R. 1906, p. 11; 1907, pp. 12, 90, 171; 1909, p. 90. It was in fact a sluicing plant, not a bucket dredge.

²⁷⁵ A.R. 1918, p. 107.

²⁷⁶ The prospectors' hopes for a favourable result lay with the claims' proximity to a seaport and the North Coast Railway. They were abandoned when assays showed only 1.01 ounces of tin oxide per cubic yard. A.R. 1928, p. 66.

²⁷⁷ A.R. 1936, p. 89; 1938, p. 94; 1934, p. 114; 1939, p. 96; 1941, p. 80. Even now there are dredging leases on Running River near the township.

²⁷⁸ A.R. 1905, p. 160; 1920, p. 98. Often water drained from these mines would be used for sluicing; in 1911 the Cleopatra used water flowing from the Phoenix mine to this end. Many tunnels were over 300 feet long. A.R. 1911, p. 105.

²⁷⁹ A.R. 1905, pp. 159, 160.

Small miners had found the Red Hill deposits profitable as they carried no overburden of basalt and sandstone, and many of their claims were sold to the Waverley Company in 1905. A company was also formed to mine deep leads at the Fifteen Mile, building a tramway to the sluice and draining the country to be worked. Drought and low prices caused a setback but the Red Hill battery crushed for some years under Frank Fraser's ownership, occasionally putting through parcels of stone from other alluvial mines such as the Long Tunnel and Castles' Phoenix. The State government had already assisted miners in this area by offering a boring plant to test the deeper ground, but unfortunately it proved too cumbersome in the hilly country.²⁸⁰ In 1912 and 1913, a grant of £500 was made from the State prospecting vote to test deep leads at the Fifteen Mile, Red Hill and Graveyard Hill under the supervision of the Ingham Chamber of Commerce, which had taken an interest in the field's development.²⁸¹ A boring plant was purchased with part of the money; the miners met with some success at the Fifteen Mile, attracting others to this area,²⁸² but their efforts were overshadowed by a sluicing proposition set up by Frank Fraser at Red Hill. Having decided in 1913 that sluicing might be more economic than crushing, he visited sluicing operations such as Mt. Bischoff and Derby in Tasmania and purchased a powerful plant for £2,000, including pump, 300 feet of piping, an engine and 100 feet of sluice boxes. Unfortunately dry weather, industrial troubles and lack of skilled labour prevented it from working for any length of time. In 1921 Fraser removed the piping from the plant; the previous year the boiler of his Red Hill battery had been condemned, ending his involvement in the area.²⁸³ However the idea had been taken up by A. Castles at his Three Castles mine in 1919, and with government assistance he put in

²⁸⁰ A.R. 1907, p. 90; 1908, p. 90; 1909, p. 90.

²⁸¹ NQR, 10 February 1913. The Chamber also supported an application by the Mt. Kidston management for assistance. NQR, 22 November 1915, p. 80.

²⁸² A.R. 1913, p. 120; 1915, p. 109.

²⁸³ A.R. 1915, p. 109; 1916, p. 108; 1917, p. 108; 1918, p. 107; 1920, p. 98; 1921, p. 82.

a sluicing plant and dam on Fifteen Mile Creek.²⁸⁴ It was hoped this method would provide a way of working similar low-grade deposits in the vicinity and a Melbourne syndicate, the Magnum Tin Exploration Company, was sufficiently tempted to take up leases nearby. Boring tests showed unsatisfactory tin values and the company transferred its attention to Garrawalt Creek. This was an ominous sign for the Three Castles scheme, despite high hopes in 1924, when it was called the most promising show on the field.²⁸⁵ After a delay of two years because of drought, it was found that a trial run of 30,000 cubic yards would not repay the cost of pumping and sluicing. Despite ideas for improvements and an attempt to revive the plant in 1933, it was not worked again.²⁸⁶ However, the high alluvials have continued to receive small-scale attention; generally alluvial tin mining of any kind has tended to follow tin price fluctuations more closely than lode mining.

World War Two caused high prices for tin, copper and wolfram, but petrol rationing made the mining of poorer ores uneconomic; as many of the miners were operating at low levels of productivity, they were not exempted from call-up and manpower regulations. There was a severe decline in the population and the butchers at Ewan and Running River closed down when meat rationing was introduced.²⁸⁷ The townships thereafter almost disappeared: Ewan is now totally abandoned, Waverley comprises a small homestead and only Running River still holds a small population, supporting a school and post office. The only new discovery in this period was on the coastal plain at Helen's Hill, where Lee Brothers in 1939 discovered tin lodes in granite and quartzite. Some optimism was engendered by its proximity to a railway, but the nearest battery was at Ewan and so the mine was in the ludicrous position of having to send its ore up the Seaview Range for crushing.²⁸⁸ The lodes were also small and erratic, and though some leases were

²⁸⁴ A.R. 1919, p. 95. The plant included an auxiliary boiler from H.M.A.S. "Australia". A.R. 1924, p. 84.

²⁸⁵ A.R. 1922, p. 78; 1924, p. 84. It was floated into a company, the Three Castles Dredging Co.

²⁸⁶ A.R. 1927, p. 15; 1929, p. 14; 1933, p. 101.

²⁸⁷ HRE, 25 August 1942, 9 January 1943; A.R. 1942-1945, pp. 110, 111.

²⁸⁸ C.C. Morton, "Tin Discovery at Mt. Helen, Ingham", *Q.G.M.J.* 40 (June 1939), p. 185; HRE, 30 September 1939.

worked they did not last beyond a few years.

The mainstay of mining on the field has been the Reddie enterprise, and the family has continued to work the Sardine, Shrimp and other mines, crushing in the Shrimp Battery which it purchased in 1943. Some problems were encountered with the ore in the form of stannite, which contains copper, and iron sulphides, difficult to treat; flotation, roasting and leaching were tried to produce a saleable concentrate.²⁸⁹ With a rise in metal prices the copper in the ore actually proved to be a bonus and the Sardine has become a consistent producer of copper. The same high prices in 1947 encouraged Reddie Brothers to re-open the Mt. Moss and True Blue mines for silver-lead, and the Fortuna Mining Syndicate reconditioned Kruger's mill and worked the Trump. The resulting concentrates were sold overseas while silver-lead ore from Mt. Blister on Camel Creek was sent to Mt. Isa for treatment. This minor revival proved brief and in 1951 no silver or lead was being produced and the only copper came from the Sardine.²⁹⁰ In more recent years Metals Exploration North Ltd. and its subsidiary South Alligator Uranium have taken an interest in the field, and in 1979 the Warden reported that had most of the area not been covered by Authorities to Prospect, the number of leases would have increased significantly beyond the 101 in existence; the field seems set for another revival.²⁹¹

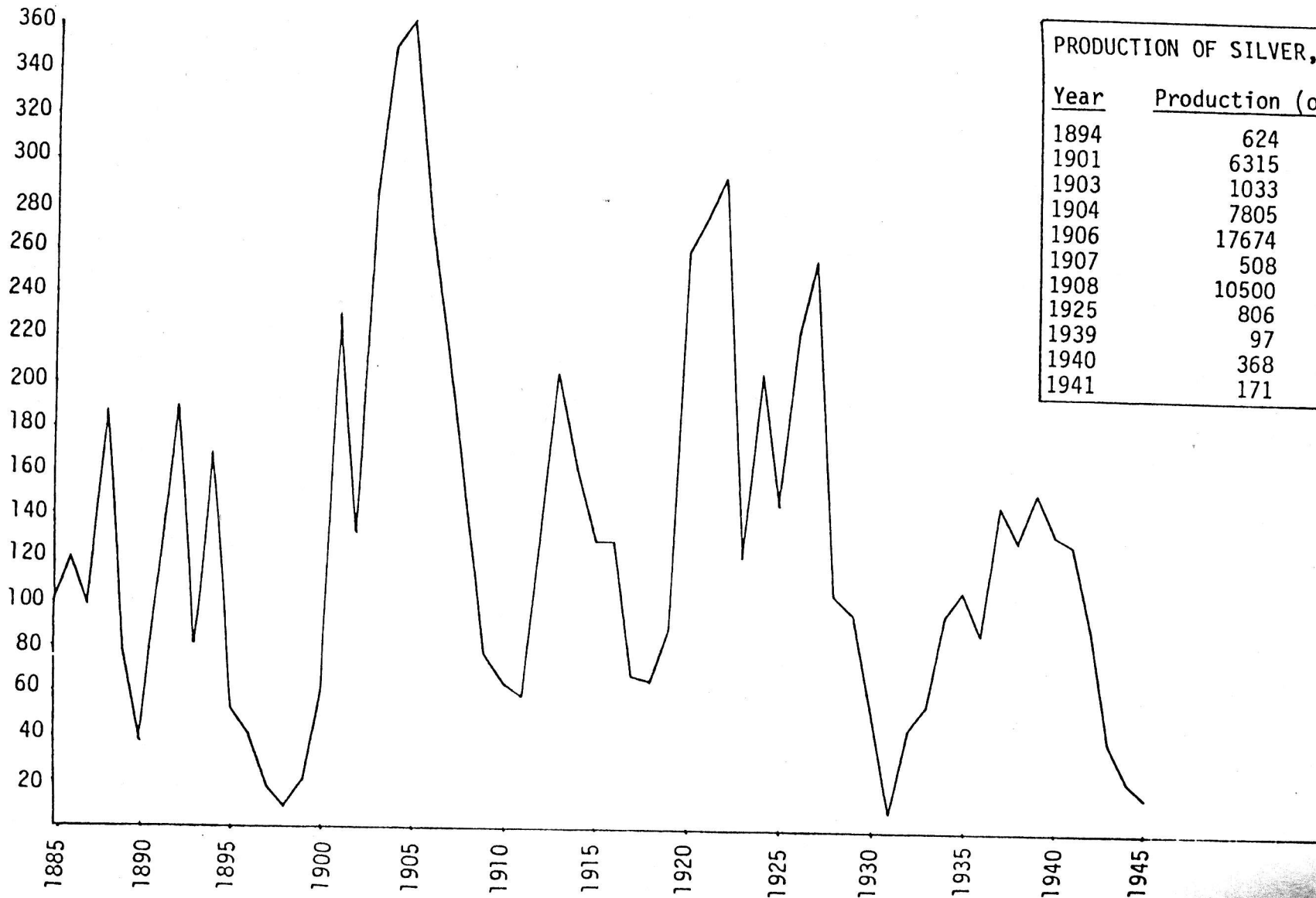
Kangaroo Hills has been mined for a remarkable variety of economic minerals, and its extensive tin deposits have ensured that a large number of small miners were provided with at least a livelihood. However its disadvantages - isolation and the small size of the lodes - have aggravated the effect of such mistakes as overspending on surface improvements and ore treatment plants at the expense of mine development. Many companies were handicapped from the beginning by paying too much for their properties, leaving insufficient working capital, and speculation has played an inordinately large part in the history of the mines. A combination of natural drawbacks, fluctuating metals prices and incautious mining policies have prevented Kangaroo Hills from becoming more than a minor field.

²⁸⁹ A.R. 1943, p. 163; 1942-45, p. 111.

²⁹⁰ A.R. 1947, p. 9; 1948, pp. 51, 52; 1951, p. 90. Some silver production continued spasmodically after 1954.

²⁹¹ A.R. 1979, p. 100.

Fig. 50 Tin production, Kangaroo Hills Mineral Field, 1885-1945.



PRODUCTION OF SILVER, KANGAROO HILLS		
Year	Production (oz)	Value (£)
1894	624	65
1901	6315	684
1903	1033	93
1904	7805	856
1906	17674	2295
1907	508	63
1908	10500	1050
1925	806	111
1939	97	9
1940	368	37
1941	171	22