

Tribute System and Cost Book Principle

—South Australian Copper Mining Business
in Mid-Nineteen Century—

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I

“Whereever a hole is sunk in the ground—no matter in what corner of the globe—you will be sure to find a Cornishman at the bottom of it, searching for metal,” runs an old saying. South Australia was no exception. The discovery of the first Australian metal mine at Glen Osmond, suburb of Adelaide, in 1841 was made by Cornish miners, and the Burra Burra mine which distributed fabulous dividends of 6300 percent between 1847 and 1864, 350 percent per year on average, was operated by Cornish captains and Cornish miners. The Moonta Mine, the first Australian mining company which yielded dividends over one million pounds, was kept also by Cornish captains, engineers and miners. The town was colored by Cornish tradition in every phase of life, and the Copper Triangle of Moonta, Wallaroo and Kadina, was called “Australia’s Little Cornwall.”

The Australian mining previous to the opening of big mining fields such as Broken Hill, Mt. Lyell and Mt. Morgan in 1880s was under the strong influence of Cornish mining. Cornish influence ran deep especially in South Australian copper fields in mid-nineteen century. Not only mine personnel, mining skill, mining terminology, employment system, company organization but social and cultural environment of mine settlements were Cornish-affiliated. This paper intends principally to examine the characteristics of Cornish employment system of tribute and Cornish cost book principle of company organization in South Australia of mid-nineteen century and to describe some features of Australian mining business in its cradle time.

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II

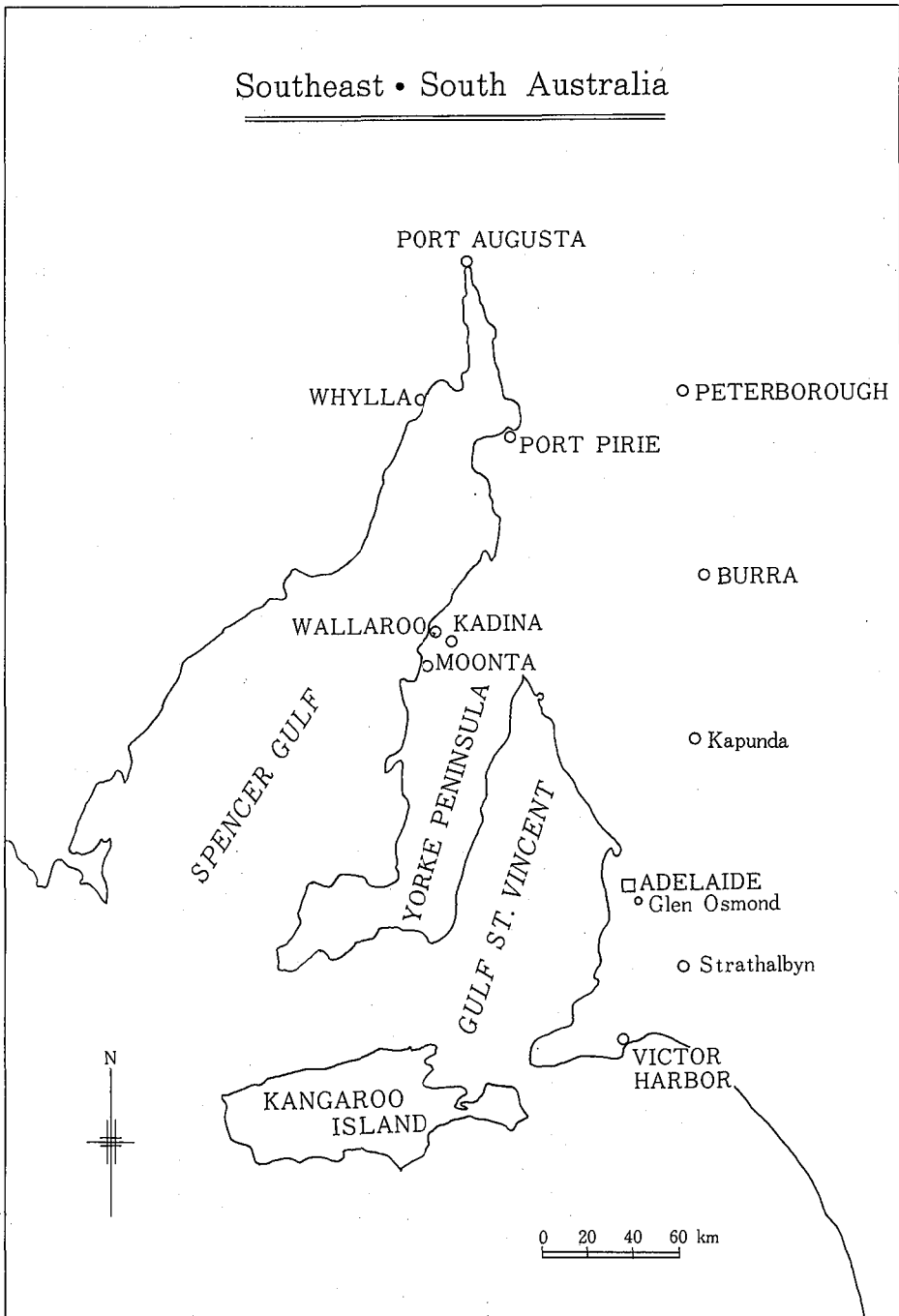
Cornwall, west end county of England, has a long history of mining over two thousand years.⁽¹⁾ The county was famed as a tin-producing district for a long time, but copper became to dominate the field since middle of 18th century, and in 1787 the total number employed in the copper mines of Cornwall amounted to 7,000 persons. In 1841 the number of men, women and boys employed in Cornish mines, at surface and underground, was estimated to be upwards of 27,000, and down to the sixties of the last century Cornwall was supplying more than three-quarters of the world's annual consumption of copper.⁽²⁾

The seeking of work in foreign fields was not new concept to Cornish miners. Already prior to 1778, miners from Cornwall had been sent to inspect the copper deposits of Lake Superior whilst in 1816 Richard Trevithick, Cornwall's great engineering genius, had sailed from Penzance for Chili and Peru. In 1830s, a small proportion of the adventurous Cornish miners continued to cross the Atlantic in search of work and higher wages at the copper mines of Cuba. During the 1840s many miners embarked at Falmouth for service at the mines in Brazil.⁽³⁾

It was, however, not until gold rush in California 1849 and later in Australia 1851 that the real exodus of Cornish miners began. During the 1850s and 60s, and still more during the 70s and 80s, because of the decline and crash in Cornish copper industry, there was a steady stream of Cornishmen carrying unique skill and knowledge to every mining camp in foreign fields.

South Australia which commenced colonization in 1836 was one of the fields which most attracted Cornishmen. In 1839 the Colonization Commissioners for South Australia appointed Issac Latimer, of Truro in Cornwall, as emigration agent for the sale of lands in the rising and important colony of South Australia and for conducting the emigration of labourers desirous of going to that flourishing and healthy country.⁽⁴⁾ There was no mention of mining at that time, but the "Hungry Forties" gave impetus to migration from Cornwall to South Australia.⁽⁵⁾ *The Adelaide Chronicle*, March 3, 1841 reported the strike of silver-lead ore at Glen Osmond by two miners from Cornwall.

The South Australian copper fields which most attracted Cornishmen in



mid-nineteen century were Burra Burra and Moonta. The Burra Burra copper mine, discovered in 1845, emerged as the principal employer of Cornishmen in the period to 1860.⁽⁶⁾ Six hundred Cornishmen even from the one parish of St Just arrived in 1847, and made their way northwards to the Burra Burra mine.⁽⁷⁾ Along with the Cornishmen and their mining skills came their Cornish "captains," grass captains in charge of surface workings, and underground captains respected for their knowledge of mining techniques. When the Cornwall and Devon Society was founded in Adelaide in 1850, the names of twenty mining captains were submitted for approval. Names such as Pascoe, Trewartha, Trestrail, Roach, Osborne, and Tyrell revealed their Cornish affiliations. The Burra Burra mine had its own town of Redruth with its Truro, St Just, Illogan, Mevagissey, Trembeth, and Tregony streets

Table 1 South Australian Mining Association 1845-1866

1 April~ 31 March next year	output of ores ton	dividends £	labour force person
1845	2,707	0	n. a.
1846	7,975	0	n. a.
1847	13,333	73,920	n. a.
1848	12,753	49,280	567
1849	13,167	49,280	727
1850	24,867	98,560	1,003
1851	16,082	12,320	1,042
1852	2,761	49,280	157
1853	4,048	24,640	167
1854	6,962	36,960	279
1855	9,859	24,640	605
1856	10,960	36,960	773
1857	12,027	49,280	909
1858	13,605	49,280	1,064
1859	13,515	49,280	1,208
1860	13,346	36,960	953
1861	9,968	36,960	762
1862	8,731	49,280	647
1863	8,301	24,640	649
1864	6,460	24,640	538
1865	5,936	0	515
1866	5,160	0	448

(Source) ◦ Minute Book of the Scrip-holder of SAMA, South Australian Archives, BRG 22, 959 & 960.
◦ Directors' Half Yearly Reports of SAMA, South Australian Archives. BRG 22, 25.

reading like a map of Cornwall itself.⁽⁸⁾ It is not surprising that Cornish captains and miners set up their own "Little Cornwall" at Burra Burra.

The Burra Burra mine's greatest captain Henry Roach was born in Redruth in Cornwall. He was appointed to the mine early in 1847 and remained Captain of the mine until his retirement in 1868. Under his superintendent, the Burra Burra mine of South Australian Mining Association yielded fabulous dividend of 6300% in 18 years between 1847 and 1864.⁽⁹⁾

Cornish mining methods were mechanically very primitive at the time of the discovery of the "Monster Mine" at Burra Burra. The pick, the gad and the shovel were the main means of extracting ore and horse-driven whims the main means of hauling the ore to the surface.⁽¹⁰⁾ Throughout the life-time of the mine, all work underground was carried out by candlelight — a stub of candle set in clay on the miner's hard hat or held in a spider of iron (iron gadget for holding candle) driven into the wall of the underground slope. The mine was never a deep mine — no deeper than 600 feet. Miners descended and ascended by means of ladders, and to climb 500 feet or so after completing a full shift underground was a severe tax on the strongest.

III

In the year 1860 to 1861, when the bloom of the Burra Burra was fading, wonderfully rich copper deposits were discovered at Wallaroo and Moonta, Yorke Peninsula, 100 miles from Adelaide. Cornish miners with their wives and families poured in from Burra Burra and Kapunda. Others from gold-fields of Victoria and other parts of Australia, but soon they were joined by the greatest influx of immigrants from Cornwall. The decline and crash in Cornish copper industry accelerated the exodus of Cornish miners to the copper fields of Yorke Peninsula. In 1865, a staggering 43 percent of persons entering South Australia were of Cornish origin.⁽¹¹⁾ Miners, mining captains and mining engineers stepped ashore at Port Adelaide and settled in Yorke Peninsula copper fields. They established thriving copper towns, Moonta, Wallaroo and Kadina. Isolated location contributed to create and keep the uniqueness of the communities, which were called "Australia's Little Cornwall."

The social and cultural environment of the mining settlements bore all the marks of a strong Cornish influence. Housewives in Little Cornwall prepared traditional Cornish foods, such as pasties. Cornish wrestling,

entertainment for the working-class Cornish, prevailed in Little Cornwall. Mid-summer bonfires, actually held in midwinter to correspond with midsummer's eve in Cornwall, were lit in the settlements. Cornish carols flourished and various kinds of banding, brass, fife and drum existed.⁽¹²⁾

The Moonta Mining Company, founded in 1861, dominated the field. The development and prosperity of the Company was to be attributed, to a great degree, to the exceptional management of Henry Richard Hancock. He began his mining career at the Cornish copper mine of Devon Great Consols, on the Devonshire side of the Tamar. He immigrated to South Australia in his 22 years to work at Wheal Ellen, near Strathalbyn, from where he moved to the Yelta mine, and he was appointed the Superintendent of the Moonta Mining Company. On taking charge in July 1864,⁽¹³⁾ Captain

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Table2 Moonta Mining Company 1863-1881

year ending March	output of ores ton	dividends £	labour force person
1863	8,770	64,000	311
1864	10,632	48,000	416
1865	14,183	80,000	964
1866	22,042	64,000	989
1867	21,910	96,000	989
1868	22,560	80,000	900
1869	16,537	32,000	1,065
1870	20,862	48,000	1,080
1871	18,049	32,000	1,145
1872	21,235	64,000	1,290
1873	22,753	136,000	1,322
1874	23,618	96,000	1,514
1875	22,230	40,000	1,461
1876	20,576	64,000	1,509
1877	22,690	64,000	1,687
1878	20,546	16,000	1,477
1879	19,634	0	1,275
1880	19,468	0	1,285
1881	20,664	0	1,283

(Source) ◦ Moota Mines Reports, 1038u, South Australian Archives.

◦ Minutes of the Proprietors of the Moota Mines, BRG 40, 543, South Australian Archives.

Hancock made a clean sweep of the staff and appointed a new set of officers, viz., Captains M. Deeble, William and Games Datson, J. Barkla and Mitchell, all of whom had migrated from Cornwall. He worked out a developmental plan involving the sinking of shafts and driving levels. He managed to raise the ore over 20 thousand tons soon in 1866, the same level as the highest time of Burra Burra in 1850 (table 1 and 2).

He introduced numerous technical innovations, such as the introduction of man skips (which enabled the miners to ride to surface, instead of having to climb up endless fathoms of ladders) and he invented Hancock Jig (used in the processing of the ores), and developed his own design of pneumatic drill.⁽¹⁵⁾ The Company enjoyed the fame of the first Australian mining company which yielded over £1 million dividends (Table 2).

IV

The influence of Cornishmen ran deep in various aspects of mining activities of South Australia in mid-nineteen century. Mining terminology was Cornish-inspired. Mine was referred to as "wheal," shaft bucket was a "kibble", a winding device a "whim," and so on. Underground workings and grass (also Cornish terminology for surface) workings were performed by Cousin Jacks (referred to as Cornishmen) under the supervision of captains (managers or foremen). Engine-houses were built by Cornish masons and the actual engines were constructed also by Cornish foundries—at first in Cornwall and later in South Australia.

The Cornish employment system of "tribute" and "tutwork" also prevailed in Burra Burra and Moonta. All the underground work of the mine was of two kinds: one was dead work carried on in the rock or metaliferous deposit for the purpose of trial and discovery, the other was productive labor which was employed in the actual breaking down and extraction of the ore. The dead work was named tutwork, and the raising of the ore was named tribute, and the mode of payment in each case being entirely different.

In tutwork, where the miner was employed in sinking shafts, winzes or driving levels, he was payed at so much per fathom (six feet), according to the work done; in tribute work he received a certain percentage on the value of the ore at the rate of so many shillings in the pound upon that value.⁽¹⁶⁾

The setting of pitches (portions of ground for tribute and tutwork) was made through auction on "survey" day. A pitch consisted of a section of the

mineralized ground, of strictly determined length and height. Each pitch was let by public competition for two months. A party or "pare" of two, or four, or more miners might take a pitch, or agree to work a certain extent of poor lode (a vein of mineral bearing rock) at a high percentage — perhaps 15 sillings in the pound, and in consequence of a sudden improvement in the lode they might make a large amount of money. On the other hand the reverse of this often happened, and the pare found themselves at the end of their contract indebted to the mine; that is, being allowed, under any circumstances, "subsist" ⁽¹⁷⁾ money, which at the Moont Mines was £1 a week per man — it sometimes happened that amount had not been earned.

Previously to the "survey" every part of the mine was visited and inspected by the underground captains, who afterwards consulted together and determined their plans of operations for the next "take" or period of nine weeks, registering in detail the work to be performed and what they considered a fair price to be paid for each separate item.

At one o'clock on the day appointed for the "survey" or "setting" the men assembled in front of the mine office. Capt. Hancock, attended by a clerk and two or three captains, mounted a platform, and called out in succession every "pitch" or piece of work to be performed in the mine. The pitches were numbered, and accurately defined, and the prices stated — the tutwork pitches at so much a fathom, and the tribute pitches at so much in the pound.

Each pare had the refusal of their old pitch, which in the majority of cases was retaken, the spokesman of the party signifying his assent to the terms offered by saying, "Put it down," whereupon his name was immediately appended to the description of the pitch in the selling book. If the price offered was refused, the pitch might then be taken by any other party.

There were two kinds of surveys held on the Moonta Mine, one denominated the little survey and the other the big survey, each taking place at intervals of about nine weeks. The former dealt almost exclusively with tribute bargains, the latter with tribute and tutwork ⁽¹⁸⁾.

The tributer may best be compared to a small farmer who rents his land from a big owner and makes a living from such produce of the land as remains over after he has paid his rent ⁽¹⁹⁾. The tributer's rent was one which varied according to the richness or poorness of his (underground) farm. Thus, if a tributer agreed to work a pitch for 12s. in the £, the remaining 8 s. may be considered as his rent paid to the adventurers (shareholders) of the mine. Tributer seldom owned any of the implements or materials he used;

for these were provided by the company, who charged him for the use of them. The tributer had to pay all the expenses connected with the winning of his produce. The cost deducted from the total earnings of the "pares" included not only candles, powder, fuse, barrels, nails, pick-hilts, shovels, and ether materials necessary for breaking the ore, but the tramming of it to the shaft, the drawing to surface, and the subsequent crushing, weighing, mixing, dividing and sampling of the ores by which the tributers' earnings were determined.⁽²⁰⁾

The tribute system was found to work admirably. While the tributers do all they can to enrich themselves, they must, at the same time, enrich the shareholders, unless they defraud their employers.⁽²¹⁾ In a pitch a tributer was more or less his own boss. He could go down late and come up early, or he could, if he so wished, work long hours, and if he stuck it rich, the reward was out of all proportion to the labour expended. All risks were on his shoulders.

Tributing was a business requiring keen judgement and close application. The tributer's very existence depended on his knowledge of the lode on which he was working, and an error of judgement in making his two-or three-monthly bargain might entail semi-starvation to himself and his wife and family. This conditions produced the "fine old race of tributers".⁽²²⁾ The born tributer would never take a tutwork contract from choice. He was quite independent and very proud of his job.

Without any certain method of exploration, mining was very precarious in South Australia of mid-nineteen century. There was no certainty beyond the present moment. Veins which were very promising when first opened sometimes fell off below, and occasioned immense loss to the shareholders.⁽²³⁾ On the other hand, mines which at the outset promised little came in time to yield large profits. Thus enormous fortunes were realized, and enormous losses suffered without any possibility of foresight and prudence. In this really adventurous character of situation, employment system of tribute answered the need for diversification of risks. Also in mines which had been partially exhausted, or where the lodes were small or rich in bunches, with barren parts between, tributers had always shown themselves the most valuable miners.⁽²⁴⁾ The tribute system could diversify the risks of mining adventure on the shoulders of tributers. From the shareholders' point of view, tributers were an invaluable asset.

V

The adventurous character of South Australian copper mining in its opening time of mid-nineteen century made the shareholders incline to employ the cost book principle which was also peculiar to Cornish mining. Unfortunately no records appear to show the evidence that the Moonta Mining Company adopted the system, but the South Australian Mining Association (SAMA) of Burra Burra was surely organized under the cost book system.⁽²⁵⁾

"The cost book system originated when tin was the only metal worked in Cornwall and Devon and mining or streaming operations were still small in scale. A group of working tanners would come together, obtain the rights to a mineral lode, and start operations with little or no fixed capital investment. To keep the accounts of their venture, assess and pay royalties, and occasionally to advance money, they employed a 'purser' who entered all inward and outward payments in the mine's cost book. This also bore the names and number of shares of all those involved in the venture and specified the rules and arrangements for its operation. Every one or two months the purser balanced the accounts and called a meeting at which profits were distributed, or calls made, according to these shares. As other minerals, such as copper and lead, came to be mined in the district, they also adopted the same form of organization"⁽²⁶⁾. According to the *Mining Journal*, Supplement, December 17, 1853, the logical definition of the cost book principle is that "The cost-book principle is a partnership, the conditions of which are contained in a cost-book". Under the system, a cost book should be opened, and the rules for the administration of the company should then be entered in the cost book, the shareholders would therein subscribe their names, and write the amount of interest, or number of shares which he would intend to hold in the adventure. They should receive profit as dividends or bear loss in proportion to his amount of interest, and additional call for capital payment should be made sometimes. But they might abandon their interest whenever they chose by refusing to pay calls.⁽²⁷⁾

The precise conditions of this system are not easy to ascertain. There are, however, some leading features clearly recognized in it. The cost book system was originally characterized by "unlimited liability, the absence of any fixed capital, and the right to transfer shares or relinquish interest

simply by written notice⁽²⁸⁾". Because of these characteristics, Burke and Richardson urged, one recurrent problem was the frequent distribution of profits at the expense of a reserve fund. At the same time, because of unlimited liability, the system discouraged large-scale capital investment by those unfamiliar with its working. The absence of a reserve fund exposed the mines to the full rigour of the price falls, whilst unlimited liability discouraged new capital investment⁽²⁹⁾. However, in practice a lot of modified rules had been introduced to control the liabilities of a shareholder in a cost book company. For example, a nominal value for each share was specified and the claims or calls were limited up to that value. In the case of SAMA to guard the shareholders against all probable liability, the prospectus proclaimed that "It is therefore proposed that there shall be no liability or responsibility whatever upon the holders of scrip, and no calls of any sort are ever to be made upon them beyond the amount of the £5"⁽³⁰⁾. A further safeguard to the liability of shareholders was provided by the strict limitation that "the Directors being only responsible to the Shareholders for the just expenditure of the amount entrusted to them"⁽³¹⁾. The company should not borrow, expenditure being conducted in cash rather than credit.

In principle, cost book companies were to be run as "ready money" enterprises and their activities were to be conducted on a purely short-time basis with a complete balancing of the books at the end of every monthly, two monthly, or half-yearly period of account. Any profits resulting from the last account would be distributed; any outstanding debts would be met by further calls on the shareholders; a new decision on whether or not to proceed for a further period would have to be taken — every period of account was technically a discrete event in itself⁽³²⁾. Thus, the absence of any fixed capital is claimed to have been the distinguishing feature of cost book companies. However, the more sophisticated became the mining, the less possible it was to settle all accounts at monthly, or two monthly, or half-yearly intervals, and inevitably sums due and owed to the companies came to be carried over from one period of account to another. To meet this continuity of account, the practice of retained profits, or reserve funds was introduced. They were held against specified future expenditures, or regarded primarily as a means of sustaining dividends for a rainy day, or later as a kind of insurance against mine accidents, sudden fall of metal price, and so on. In the case of SAMA the Deed of Settlement provided the clause 114 of reserved fund not to exceed £10,000, within the extent of one twentieth to

one half of profits in every year.⁽³³⁾ But actually the Company did not reserve any good sum from profits until 1853 when they opened Stock account (derived from profits) of £ 123,200.

The Burra Burra Mine was such a rich mine as it could not only distribute fabulous dividends, but reserve a large sum of Stock account. It is, hence, quite difficult to claim that the cost book principle might remarkably fit the running of SAMA; whatever company organization had it employed, it might have realized huge profits. It is, however, safe to say that the ready money principle of cost book system was, being a heavy restraint from business on credit, quite effective to cause a very harsh cost management. The practice of wage restriction and poor social policy at Burra Burra mine were the result of strict cost minimization efforts, which contributed to the maximization of dividends.⁽³⁴⁾ That is, cost book principle was quite effective to realize supreme order of shareholders' profits.

One of the advantages of the cost book system was its flexibility. Not only were the rules set by shareholders, but such rules could be altered according to circumstances. SAMA used to hold general monthly meetings of shareholders until August 1845⁽³⁵⁾ when SAMA obtained the Burra Burra mine and commenced export ores to Swansea and it proved impractical to settle the cost book by one or two months, and hence general meetings of shareholders were to be held bi-annually. The flexibility of cost book system also enabled SAMA to keep retained profits as much as £123,200, ten times of capital stock.

Another major advantage of the System was "the ability of the shareholder to contain and to recognize the extent of liability, and also the ability to drop an interest when danger bells began to sound"⁽³⁶⁾. An almost perpetual state of capital shortage, which was claimed to be the weakest point of cost book system, did not occur in the case of SAMA. The wonderfully rich ores from underground covered the demerit of the system. No such danger bells began to sound. No call was ever made on the shareholders.

VI

In Cornwall in mid-nineteen century, it was known that mines in the aggregate were a losing concern; and the quantity of copper annually extracted in Cornwall was not worth the money annually spent there on copper mining.⁽³⁷⁾ Mining was very precarious and adventurous. Mining, then,

being a lottery, with a few prizes and many blanks. The situation in South Australia of mid-nineteen century was nearly the same, although the probability might be much higher. Burra Burra and Moonta were rare cases of prizes. Even those rich mines were very small in comparison with the big mines of Broken Hill which were developed later in 1880s.⁽³⁸⁾ Cornish cost book principle was quite reasonable method of company formation in such situations.

Ore-extracting labor in the opening time of South Australian copper mining was not, or better to say, could not be, structured but it heavily depended on personal skills of individual miners. Tribute system of employment which was also peculiar to Cornish mining was hence admirably fitted to this context. The company shareholders could diversify high risks of their adventure on shoulders of tributers. The character and scale of South Australian copper mining in mid-nineteen century were thus within the scope of Cornish mining. They were, in other words, under the heritage of Cornish Mining.

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References

- (1) In the course of excavations at the famous 300-200 B.C. hill castle of Chun, near St. Just, there was discovered, in the year 1925, a series of small smelting-pits, in one of which lay a lump of metallic slag which an assay proved to be tin. A.K. Hamilton Jenkin, *The Cornish Miner*, 1972, p. 28.
- (2) *Ibid.*, p. 91-2.
- (3) *Ibid.*, pp. 323-5.
- (4) Ian Auhl and Denis Marfleet, *Australia's Earliest Mining Era: South Australia 1841-1851*, 1975, p. 36.
- (5) Philip Payton, *Australia's Little Cornwall*, 1978, p. 12.
- (6) As to the opening and management of the Burra Burra mine, see Masao Yamanaka,

- "The Opening of Australian Mining Business—SAMA 1845-1866"; *The Otemon Bulletin for Australian Studies*, Vol. 10, December 1984, pp. 1~29.
- (7) Peter Finch and Ian Auhl, *Burra in Colour*, 1979, p. 5. In 1854 there were 8824 assisted immigrants who arrived in South Australia from 104 counties of England, Wales, Scotland and Ireland. The biggest immigrant-supplying county during the year was Cornwall, which sent 708 persons. *South Australian Parliamentary Papers*, 1855-6, No. 28, Immigration and Emigration, 1854.
- (8) Ian Auhl and Denis Marfleet, *op. cit.*, p. 36.
- (9) Masao Yamanaka, *op. cit.*, pp. 21-2.
- (10) For further details see Masao Yamanaka, *op. cit.*, pp. 6-8.
- (11) Philip Payton, *op. cit.*, p. 14.
- (12) Oswald Pryor, *Australia's Little Cornwall*, 1962, pp. 99-172, and Philip Payton, *op. cit.*, pp. 21-3.
- (13) Minutes of the Proprietors of the Moonta Mines, South Australian Archives, BRG40, 543, 18/7/1864.
- (14) Hancock himself was not from Cornwall, but from Horrabridge near Tavistock in Devon, five miles on the other side of the Tamar River. Socio-economic bases of the district were, however, united with Cornwall. Mandie Robinson, *Cap'n 'Acock: Ruler of Australia's Little Cornwall*, 1978, pp. 1-49.
- (15) Philip Payton, *op. cit.*, p. 18.
- (16) At the Burra Burra Mines on March 31, 1851, there were 269 tributers and 116 tutworkers, and on September 30, 1858, 350 tributers and 138 tutworkers. Directors' Half Yearly Reports of South Australian Mining Association, South Australian Archives, BRG 22, 25, March 31, 1851 and September 30, 1858. The corresponding number of miners at Moonta is not available from the business records of the Moonta Mining Company held in South Australian Archives.
- (17) There was a custom of advancing money to the miners called "subsist", that they might live until the value of their two months' earnings was determined.
- (18) According to the report of the *Yorke's Peninsula Advertiser*, Tuesday, February 10, 1874, "Big Survey took place on Saturday, when the number of men who assembled in front of the office were computed at no fewer than twelve hundred. The spectacle of such a host of miners engaged in taking contracts either on tutwork or tribute, was a most interesting one, as showing the magnitude of the operations carried out by the chief mineral industry of the district".
- (19) A. K. Hamilton Jenkin, *op. cit.*, p. 205.
- (20) I could not find any case of mine pay bills at Burra Burra and Moonta, so here let me show the case of one of Cornwall mines. The ore sold for £89-10s-10d. for the party of 6 men for August, 1863, and as the tribute was 11s. 6d. in £, the share for the tributers was £51 : 9 : 9. From this sum the following items were deducted—candles costing £2 : 15 : 6; powder £1 : 3 : 4; fuse, hilts, shovels, cans, clay totally 11s. 2d.; smith cost £1 : 0 : 5; drawing £2 : 12 : 9; sample 9s.; subsist £16 : 14 : 0; doctor and club 8s.; barber and box 4 s.—total 25 : 18 : 2. They had only £25 : 11 : 7 to receive on payday. Adding the subsist to this amount, 6 men's total wages for the month were £42 : 5 : 7. Then each tributer earned £7 : 0 : 11 on average for the month. A. K. Hamilton Jenkin, *op. cit.*, p. 206.

- (21) A common fraudulent attempt is combination between two tributers, one of whom is working very rich and the other very poor ores. The worker of poor ores has perhaps bargained that he is to receive 13s. out of every 20s. worth of ore, while his friend who is working the rich ore is to get only 1s. out of 20. These two tributers agree to exchange some of their ores in the dark chambers of the mine, and then to divide their gross profits, which are of course very large. As, however, the captains of the mines have been brought up in them, they exercise a rigorous scrutiny into all suspected tricks of this kind. J. R. Leifchild, *Cornwall: Its Mines and Miners*, 1857, pp. 144-5.
- (22) A. K. Hamilton Jenkin, *op. cit.*, p. 224.
- (23) The case of Princess Royal Mining Company who owned south part of Burra Burra field was a good example. The Company mine, adjacent to the Monster Mine of South Australian Mining Association, looked very promising at the outset, raising very rich ores of 27~29% copper. The immediate exhaustion of rich ores betrayed the big expectation of the shareholders. Masao Ymanaka, *op. cit.*, pp. 4-6.
- (24) A. K. Hamilton Jenkin, *op. cit.*, p. 225.
- (25) With the exception of SAMA, "no records appear to have survived of South Australian Mines that adopted the principle. As little or no comment appears in published works in relation to the basis of mining company organisation, such companies would be difficult to even identify". Mel Davies, "Know Thine Antecedents—The Cost Book System and the South Australian Mining Association 1845-77". *Paper presented at the International Mining History Conference*, University of Melbourne, 27-30 August 1985, p. 18. The only evidence is *South Australian Parliamentary Papers*, 1862, No. 51. Report of the Select Committee of the House of Assembly on the present Mineral Laws together with Minutes of Evidence and Appendix, which reveals that several mines under cost book principle were working in South Australia.
- (26) Roger Burt and Norikazu Kudo, The Adaptability of the Cornish Cost Book System, *Business History*, Vol. 25, No. 1, March 1983, p. 31.
- (27) For further information on the Cost Book System see: A. K. Hamilton, *op. cit.*, pp. 304-11; J. R. Leifchild, *op. cit.*, pp. 136-7, 242-3; Danvers Godden and William N. Robertson, *Australian Mining Companies' Accounts*, 1902, pp. 1-2.
- (28) Gillian Burke and Peter Richardson, The Decline and Fall of the Cost Book System in the Cornish Tin Mining Industry, 1895-1914, *Business History*, Vol. 23 No. 1, March 1981, p. 4.
- (29) *Ibid.*, p. 4.
- (30) Prospectus of the South Australian Mining Association, *The South Australian Register*, Wednesday, April 16, 1845.
- (31) *Ibid.*
- (32) Roger Burt and Norikazu Kudo, *op. cit.*, p. 36.
- (33) Deed of Settlement, South Australian Mining Association, South Australian Archives, BRG40, 1250.
- (34) Board of Directors of SAMA made a severe control over cost management; directions of wage restriction and dismissal of mine manager because of incorrect analysis of ore, and very little infrastructure investment. See Masao Yamanaka, *op. cit.*
- (35) During four months between the foundation in April 1845 and the obtaining of the Burra Burra mine in August 1845, SAMA held general meetings of shareholders 12 times,

including monthly, adjourned and special meetings. Minute Book of the Scrip-holders of SAMA, SAA, BRG22, 959, April 5, 1845 to August 25, 1845.

(36) Mel Davies, *op. cit.*, pp. 17-8.

(37) J. R. Leifchiid, *op. cit.*, p. 245.

(38) The annual output of ores at Burra Burra and Moonta was 23 to 24 thousand tons at their highest period. On the contrary ore output of the corresponding period at Broken Hill was around 2000 thousand tons. H. Willoughby, *History of Broken Hill*, typed manuscript, 1952; The University of Melbourne Archives.