Beyond the Tin Mines

Coolies, Squatters and New Villagers in the Kinta Valley, Malaysia, *c*.1880–1980

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SINGAPORE
OXFORD UNIVERSITY PRESS
OXFORD NEW YORK
1988

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TIN MINING AND SQUATTER FARMING, c.1880-1941

FORMAL British rule in Malaya began in 1786 when the island of Penang was claimed for the British Crown. British control was next established over the island of Singapore in 1819. Not long afterwards in 1826, the Straits Settlements was proclaimed bringing together the two islands and the territory of Malacca as a single British colony. Approximately fifty years later, the British also assumed control of the Malay state of Perak located on the west coast of Peninsula Malaysia. This takeover was formalized through the signing of the Pangkor Engagement of 1874.

Similar treaties were subsequently signed with Selangor, Pahang and Sungai Ujong. In 1896, Perak, Selangor, Pahang and Negri Sembilan (comprising Sungai Ujong and other surrounding districts) were brought together as the Federated Malay States (FMS). From here on, it was relatively easy to extend British domination to the rest of the Malay states. Following the Anglo-Siamese Treaty of 1909, the northern Malay states of Perlis, Kedah, Kelantan and Trengganu were made part of British Malaya. In the case of Johore, British rule was formally accepted in the state in 1914.

The introduction of British administration into the Federated Malay States and subsequently the Unfederated Malay States as well, facilitated the penetration of the Malayan economy by the British in the twentieth century. This process was further stimulated by the arrival of immigrant labour from China, India and Indonesia. By the time the Second World War broke out in the Far East, Malaya was Britain's most profitable possession and the world's major producer of rubber and tin. Rubber trees could be found in almost all parts of British Malaya. But tin mining was mainly concentrated in the FMS, above all in the Kinta District of central Perak.

The Question of Labour Supply

During the first two to three decades after the discovery of the rich tin fields in Kinta in the early 1880s, the major constraint to the further development of the mining industry was an inadequate supply of labour. In 1898, for instance, when there were already 45,468 labourers at work in the Kinta mines, W. H. Treacher, the British Resident of Perak estimated that at least 20,000 more coolies were needed "to effectively work the land already alienated for mining purposes".[1] Some years later in 1907, E. W. Birch, then Resident, similarly commented on the labour supply which for him "had not kept pace with the opening of the country or with the increase in the price of tin".[2] The problem was particularly acute because the vast majority of mines, at least until the 1900s, largely depended on labour-intensive excavation methods.

Overwhelmingly dominated by the Chinese at this stage[3], tin mining was principally conducted in **lombong** or open-cast mines. Since the

karang (tin-bearing earth) was found just a few feet below the surface of the alluvial Kinta Valley floor, it could be easily dug out by use of a **cangkul** (broad and deep hoe). Using baskets, another group of coolies carried the karang to the sloping **palong** (sluice box) mounted on a wooden scaffolding where it was washed, a stream having been diverted to flow down the palong. By having another group of coolies stir the karang as it flowed down the palong, the heavier tin ore soon collected in the ruffles placed at various intervals along the palong. Only the waste, called "tailings", was washed away. A last washing was done in a **lancut** (wash box) which was a coffin-shaped trough working on the same principles as the palong. The crude concentrate was then dried and smelted to produce the ore. By the additional use of a **cin-cia** (chain pump) driven by a water wheel or worked manually, water could be removed from the mine pit. In so doing, the lombong method of mining was operational to a depth of some 30 feet if necessary. This was suitable enough to extract the alluvial deposits.[4]

Tin mining at this stage was extremely labour-intensive. And this was true not only in the case of lombong mines but also in **lampan** (ground-sluicing) and underground alluvial mining, the latter adopted when the karang was more than 30 feet deep. These were the two other major forms of mining adopted by the Chinese. In the case of lampan, the karang was simply hoed down from the hillside and thrown into a small stream to separate the tin-ore from the waste material. In the case of underground mining, shafts were sunk into the ground and the sides lined with thin planks buttressed with timber. Except for a crude windlass used for hauling up the tin-bearing karang, the only other implement used was the cangkul.[5]

As can be seen from the description above, minimal capital expenditure was necessary to start a mine. The most expensive item was the cin-cia in the case of lombong mining and the windlass in the case of underground mining. It was the cost of labour that was the most expensive item in production. According to one estimate, on a lombong mine which employed about 50 coolies, wages constituted approximately 80 per cent of total production costs.[6]

However, under the existing system of wages and the so-called "truck system", such costs did not need to be taken into account until a later stage.[7] In the first instance, coolies were not paid until the ore gained had been smelted and sold. This occurred every six months or so. To maintain themselves during this period, the employer provided them with food and other provisions, the cost of which was finally deducted from their wages. The truck system facilitated this process. By entering into an agreement with an "advancer" to whom the ore gained would be sold, the mine owner received credit for the necessary food, provisions and even mining implements. Although the cost of these items provided by the advancer was way above market rates,[8] nevertheless it was a means which allowed the Chinese miner to operate a mine with little initial capital. In 1903 a British official noted that after raising an initial loan of $5,000 (which was to acquire the mining lease, construct a kongsi-house and purchase a cin-cia), the Chinese miner could actually depend on credit to extend his operations to a total cost of some $25,000, that is some five times more than his initial outlay.[9] This particular case, it should be noted, already involved a relatively large initial sum of

money. In the case of small mines, even less money was needed to get started.

Initial capital therefore was not a problem at this stage. Wages constituted the major item of expenditure. Given the system of wages and the availability of credit under the truck system, such expenditure could be met. In the 1890s when alluvial tin was still easily accessible and in large quantities and tin prices were rising, labour-intensive methods were adequate and paid handsomely.[10] The problem in promoting greater production was the shortage of labour.

To spur on production, the twin policies of encouraging Chinese immigration and the mechanization of the industry were actively promoted by the colonial authorities. For instance, in 1900 the Resident General of the Federated Malay States proclaimed that: "The general policy of the British Advisers has been...to attract capital - European, Chinese and others; to encourage the immigration of Chinese, Indian and other labourers; [and] to assist the development of the mineral and agricultural resources of the States."[11]

Already, between 1881 and 1900, no less than 1.5 million Chinese immigrants came to Perak and Selangor.[12] In Kinta, the population grew rapidly from an estimated 4,000 in the early 1880s to 58,587 in 1891, to 122,737 in 1901, and to 184,693 in 1911.[13] That year Kinta emerged as the most densely populated district in the Malay states, and in terms of population size, the largest as well.[14] Of this 1911 population, approximately 72 per cent, or 133,436, were Chinese immigrants. But equally important, only 41,487, or 22.5 per cent, were females. The proportion of females within the Chinese population was probably even lower. The relative absence of children under fifteen years of age was also noticeable. Children only constituted 11.2 per cent of the total Chinese population in Perak.[15] Hence Kinta's population was essentially made up of Chinese who were single adult males - not uncharacteristic of pioneering migrant societies. In this regard it was a highly unstable population. In the absence of families, secret societies emerged as one of the most important social institutions among the Chinese. Similarly, opium smoking, gambling, prostitution, drinking and fighting also characterized early Chinese society in Malaya, including in the Kinta.[16]

Another important feature of the early Chinese immigrants was that the majority were initially indentured labourers.[17] They had been recruited and brought over from south-eastern China by coolie brokers who had also paid for their fares. Upon arrival in Malaya, these coolies were then "sold" to wealthy Chinese who needed labourers for work on their mines, estates and other enterprises. Because of much demand, the prices paid for them usually exceeded the cost of their fares. The coolies were "contracted" to these wealthy Chinese **towkays** until they had redeemed themselves of their debts. This practice was extremely pervasive in the Larut mines which were opened in the early 1840s. By the time the Kinta mines were opened in the 1880s, most of these coolies were no more under contract. However, because of the system of wages described earlier and the continuation of habits like opium smoking, opium often being provided in lieu of wages, the workers remained tied to their employers.[18] In this sense at least, labour could not be considered "free", a situation of which would-be European miners were well aware. In 1899, the mining labour force for Perak totalled some 50,000. This

had increased to 107,864 by 1911. (Table 1.1). It further increased to an all-time peak of 126,361 in 1913.[19] Of these more than two-thirds were on Kinta mines.[20] This indicated that the vast majority of the single male Chinese in Kinta were employed on the mines. In turn, the majority of these coolies must have been tied to their Chinese employers. It was partly for this reason as well as for the general desire to increase overall production that European mine owners and the colonial government began promoting the mechanization of the mining process as well.

The Turn to Mechanized Production

Just as the Chinese mines were characterized by labour-intensive methods, the new European mines, especially from 1900 onwards, were significant for the various labour-saving mechanical devices utilized. The introduction of these devices, however, involved numerous "false starts" between 1880 and 1900. Subsequently, after various adjustments were made to the imported machines to render them suitable to the Malayan enviroment, large-scale mining under European auspices began to take off. The major concern here is not to trace how this was achieved[21] but to emphasize the labour-saving implications of these various machines.

The monitor, for instance, supplied with either a natural or artificial head of water at high pressure, was capable of breaking the karang through hydraulic sluicing at a tremendous rate. In this way there was no need to rely on coolies to break it down with cangkuls which was an extremely slow process. Likewise, the introduction of the gravel-pump enabled the karang to be raised up a palong mechanically, again making the use of coolies redundant. The use of centrifugal pumps run by steam engines rather than the cin-cia was certainly a more efficient way to remove water from the mine pit.

But the most revolutionary machine introduced was, of course, the bucket-dredge which was first successfully set up on a European-owned mine at Batu Gajah in 1912. It not only made hydraulic sluicing and lifting the karang unnecessary but the use of the palong as well. Floating on a water-filled mine, its chain of buckets dug into the karang and lifted it on to the dredge where, through the use of jigs, tin ore was separated from its waste. Its scale of operation was large but the number of workers needed extremely small.

The rapid introduction of these machines, and in particular the dredge, resulted in an increasing mechanical capacity in the tin mines. Starting from an estimated 3,500 horsepower (hp) capacity in 1904, the overall mechanical capacity rose steadily to 18,397 hp in 1913, a year after the first dredge (which itself had a 500 hp capacity) was floated.[22]

Using the official conversion rate of equating one horsepower to eight labourers (as used in the Mining Code for determining labour requirements), the labour equivalent provided by machines in use in 1913 totalled some 147,176 labour units. It clearly surpassed the number of labourers actually employed in Perak mines that year which stood at the state mining industry's all-time peak.[23] (See columns A, B and C in Table 1.2).

Because of shipping problems during the First World War, only eight additional dredges had been floated by 1916. However, the numbers increased rapidly over the next decade. In 1923, prior to the tin boom of

Table 1.1

Tin Production, Price and Employment in Perak, 1910-1941

Year	Production (in pikuls)	Price per pikul (in dollars)	Employment
1910	421,344	71.51	91,165
1911	437,338	93.90	107,864
1912	477,238	103.30	118,409
1913	493,970	99.57	126,361
1914	497,758	73.44	96,740
1915	466,637	78.17	94,865
1916	457,666	87.53	82,534
1917	414,002	108.74	68,521
1918	386,131	150.62	78,621
1919	368,071	120.68	64,760
1920	368,105	150.67	50,622
1921	352,414	85.04	47,117
1922	366,408	80.64	45,726
1923	415,162	101.75	61,655
1924	500,119	124.19	63,794
1925	516,583	131.77	68,000
1926	515,794	144.60	70,287
1927	609,840	144.93	77,418
1928	689,976	114.18	68,499
1929	749,918	104.37	65,411
1930	700,510	72.89	50,876
1931	572,645	60.29	33,486
1932	289,834	69.76	23,736
1933	252,554	99.99	23,042
1934	374,186	114.41	31,550
1935	420,790	111.32	32,596
1936	655,838	100.39	44,284
1937	753,900	119.75	47,530
1938	419,294	95.43	30,641
1939	444,461	114.44	41,636
1940	822,629	129.92	52,606
1941	614,695*	135.51	47,514

Sources: **ARs Mines Department**, various years; **ARs FMS Chamber of Mines**, various years; and International Tin Council, **Statistical Supplement 1969/70**, London, 1971.

* January-September only.

Table 1.2

Increasing Mechanization in Perak Mines, 1904-1923

Year	A Machines (in hp)	B Labour Equivalent (A x 8)	C Actual Labour Employed	D Total Labour Units (B+C)	C/D	E Total Output (in pikuls)	E/D Output per Unit (in pikuls)
1904	3,500	28,000	90,812	118,812	0.76	443,503	3,733
1905	4,000	32,000	98,870	130,870	0.75	446,779	3,414
1906	4,900	39,200	107,057	146,257	0.75	435,943	2,981
1907	5,626	45,008	118,863	163,871	0.72	431,390	2,632
1910	13,018	104,144	91,165	195,309	0.47	421,344	2,157
1911	15,316	122,528	107,864	228,848	0.47	437,338	1,911
1912	16,124	128,992	118,409	247,401	0.48	477,238	1,929
1913	18,397	147,176	126,361	273,537	0.46	493,970	1,806
1914	28,390	227,124	96,740	323,864	0.29	479,758	1.481
1915	39,927	319,416	94,865	414,281	0.23	466,637	1,126
1918	39,616	316,928	78,621	395,549	0.19	386,131	976
1919	37,889	303,112	64,760	367,872	0.18	368,071	1,000
1920	40,990	327,920	50,622	378,542	0.13	352,107	972
1921	38,733	309,864	47,117	356,981	0.13	352,414	987
1922	40,985	327,884	45,726	373,610	0.12	366,408	981
1923	49,968	399,744	61,655	461,399	0.13	415,162	899

Source: Calculated from **ARs Perak**, various years.

Notes : 1. Complete data for other years not available.
2. The mechanical capacity of machines was more accurately assessed after 1914.

the mid-1920s, 32 dredges were in use in Perak. Two others were being constructed and still another two on order from Britain. By 1928, following the boom and just before the Great Depression set in, there were 59 dredges in use, 12 others under construction and 7 others on order. (Table 1.3). Indeed, these new dredges were also larger and more efficient than those introduced in the 1910s which, in many cases, were themselves improved upon.[24] Consequently, mechanical capacity in the mines further increased. In 1923 it totalled some 50,000 hp in Perak. By 1929 it had reached 124,721 hp. (Table 1.2).

Over the same period (1913-1923) the absolute number of coolies employed in the mines also dropped by about half: from 126,361 to 61,655. And whereas in the mid-1900s, actual labour employed constituted about 75 per cent of total labour units utilized in the mines, by the early

Table 1.3

Number of Dredges in Perak, 1913-1928

Year	In Use	Constructed	Ordered
1913	1	-	-
1916	9	-	-
1922	30	6	2
1923	32	2	2
1924	34	3	-
1925	31	8	30
1926	36	12	32
1927	48	9	15
1928	59	12	7

Source: **ARs Perak**, various years.

1920s it comprised only 12-13 per cent. Even in 1927 when 77,418 people, the highest recorded during the boom, were employed, actual labour employed constituted only 9 per cent of total labour units utilized (Table 1.2).

It is clear then that mechanization, especially the introduction of the dredges, led to the displacement of tens of thousands of coolies from the mines. Table 1.4 indicates that coolies on the open-cast mines were most severely affected. Whereas employment in dredges and on hydraulicing mines rose between 1904 and 1929, the reverse was true in the case of the open-cast mines where it fell from its peak of 99,654 in 1913 to an estimated 8,000 by 1929, on the eve of the Great Depression. Before reviewing what happened to the displaced coolies, let us first examine why the open-cast mines failed even to maintain their previous production levels. For, indeed, their production level dropped both in relative as well as absolute terms.

The Demise of Labour-intensive Open-cast Mines

There are several inter-related developments which contributed towards the demise of the open-cast mines, in particular those operated by small Chinese miners who did not resort to the use of mechanical devices in any substantial way. These include the exhaustion of areas with easily accessible surface tin deposits, and the introduction of new laws, policies and administrative practices which sought to control the Chinese population as well as to promote more scientific and less wasteful mining, one of the means of bringing about the latter being the initiation of general forfeiture proceedings by the government.

As early as 1903, when the price of tin had dropped to approximately 25 per cent lower than that some ten years previously,