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Author	工藤, 教和(Kudō, Norikazu)
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Cornish Mining during the World War II, 1939–45[1]

By

Norikazu Kudo

Abstract

This paper is a supplementary essay to the previous article on Cornish mining during the inter-war years. After a brief look at the objective position of Cornish mining in the world structure of tin industry, a chronology of the Cornish industry during the World War II when the market conditions changed drastically will be illustrated. During the inter-war years Cornish people tended to seek an industrial policy for the revival of their tin mining but the Government pursued a social policy to moderate social tension caused by unemployment. Then basic attitude of the Government to Cornish mining and the nature of the state aid during the war will be considered. A question as to whether the gap in their way of thinking between local people and the central Government was narrowed during the World War II is the main concern.

Key Words

the World War II, Cornwall, Tin mining, Demand and supply, State aid

Introduction

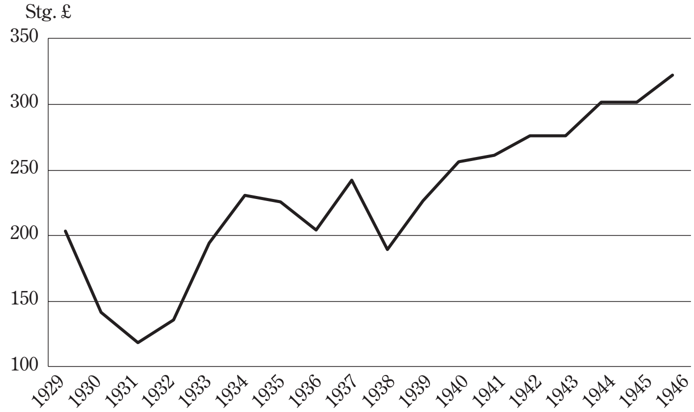
During the inter-war years (1918–38), Cornish tin mining which had a long history and was important in the local society and culture as well as economy sought the assistance from the Government to tide over the difficulties caused by the extreme fluctuation of tin price and fierce competition in the world tin market. There were two major occasions for Cornish mines to seek state aid desperately; crisis years of 1919–23 and those of 1930–33 while they continuously asked for some assistance to the Government throughout the inter-war years. Even after some stability in price came to them in the middle of 1930s, as shown in Figure 1, owing to the international agreements for the restriction of tin production since 1931, they requested the state aid by putting stress on the importance of domestic mineral resources for the national defence. But despite series of official committees' reports with recommendations of some state aid, they never got the notable aid from the Government except for the loans made to some mines based on the Trade Facilities Act.[2]

There was a fundamental discrepancy in the way of thinking between Cornish people and the Government. Cornish people tended to think that the revival and development of industry would be the best rescue measures for unemployment and asked for an industrial

[1] This paper is a supplementary essay to Kudo, 'Tin Mining' to illustrate an outline of the industry after the period observed by the former article.

[2] Kudo, 'Tin Mining', pp. 44–7.

Figure 1 Average Price of Tin Metal 1929–46 (London Cash per ton)



Source: W. Robertson, *Report on the World Tin Position with projection for 1965 and 1970*, p. 125.

policy with injections of state money or a guaranteed price by imposing duty on overseas tin so that they could have fund for development work essential to their continuous operation. It must have been a policy leading to redistribution of income from overseas colonial tin producers (competitors) and Welsh tinplate makers (the largest consumers) to Cornish miners. On the other hand, the Government, considering stable supply of tin ores from overseas countries including colonies and speculative nature of the industry, pursued a social policy for moderating the social tension caused by unemployment due to mine closures or cutting production. They provided relief benefit, 'doles', which would certainly assist sufferers by giving them the time to think of their future which may have led their eventual move to other economic sectors or even other parts of the world. It must have been a redistribution of human resources.[3]

In this paper, after a brief look at the objective position of Cornish mining in the world structure of tin industry, a chronology of the Cornish industry during the World War II when the market conditions changed drastically will be illustrated mainly based on articles of local newspapers and public documents. Then basic attitude of the Government to Cornish mining and the nature of the state aid during the war will be considered. A question as to whether the gap in their way of thinking between local people and the central Government was narrowed during the World War II is the main concern here.

1. Position of Cornish Mining in World Tin Industry

Position of Cornish mining in the world structure of demand and supply of tin is confirmed here with tables of figures.[4] The world production of tin ores in the 1930s was characterised by quota for each quarter of the year set by the International Tin Committee (ITC), originally referring to the production in 1929 as a standard. Signatory countries in the Scheme had to follow the quota. Cornwall was not a member because of its small

[3] Kudo, 'Tin Mining', pp. 49–51.

[4] In this section production figures for U.K. are regarded as those for Cornwall since most of U.K. tin ores came from Cornwall. Burt, *Mining in Cornwall*, p. 115.

Table 1 World Tin Ore Production (in terms of metal, long tons), 1929–46

	UK	Nigeria	Malaya	Australia	Bolivia	NEI	China	Siam	Belgian Congo	Others	Total	Share of U.K.	Share of British Empire
1929	3271	10734	69367	2239	46337	35920	5420	10517		29642	192000	1.7%	46.9%
1930	2488	8331	63975	1451	38160	35117	5196	11526	905	29417	175000	1.4%	46.1%
1931	598	7056	54893	1750	31138	27374	6191	12495	195	28539	149000	0.4%	45.6%
1932	1337	4320	29704	2138	21100	16789	7000	9276	68	29087	101000	1.3%	41.3%
1933	1542	3755	24844	2810	17000	12608	8226	10300	1950	32793	91000	1.7%	41.3%
1934	1999	5000	37624	2986	22835	19357	7878	10157	4356	36184	121000	1.7%	43.8%
1935	2050	6299	42291	3130	25002	20141	9700	9737	6132	41267	135000	1.5%	44.2%
1936	2099	9648	66659	3027	24091	30728	10400	12633	7303	47874	179000	1.2%	49.2%
1937	1987	10782	77192	3256	25128	39165	11100	15786	8133	55733	208000	1.0%	47.6%
1938	1999	8977	43361	3329	25371	27296	14934	14704	9669	58995	164000	1.2%	39.3%
1939	1738	9437	53290	3067	27215	27755	13079	15638	8147	56303	174000	1.0%	43.3%
1940	1619	12012	85100	3501	37940	43886	17104	17447	11800	67062	246000	0.7%	44.7%
1941	1508	12063	78000	3494	42050	51000	6862	15247	15700	56887	240000	0.6%	42.5%
1942	1364	12439	16000	2931	38291	8000	7700	7833	15800	47270	122000	1.1%	28.7%
1943	1359	12661	27000	2635	41523	14000	3708	5840	17025	40816	136000	1.0%	33.8%
1944	1289	12512	9309	2547	38720	6753	2160	3296	17326	33706	101000	1.3%	27.6%
1945	993	11224	315	2282	42487	948	3268	1775	17524	34326	89300	1.1%	22.4%
1946	849	10333	8432	2127	37618	6426	1930	1056	14634	25591	88400	1.0%	26.7%

Sources: Imperial Institute, *The Mineral Industry of the British Empire and Foreign Countries*, and from 1940 Colonial Office, *Statistical Summary of Mineral Industry.*

production. Some member countries like Bolivia sometimes could not meet the quota, then the remaining quota of the country became subject to further negotiation whether carrying over or reallocation. As shown in Table 1, Malaya (Federated Malay States, Un-Federated Malay States, and Strait Settlement), as the dominant producer with huge capacity of production in preceding decades, was most affected by the scheme of restriction. But her production had been the largest in the world followed by Netherlands East Indies (NEI), Bolivia, and Nigeria until 1941. Reflecting this, ore production of British Empire, *viz.* Malaya, Nigeria, Australia, and Cornwall, was significant in the world production with more than 40% of share in the 1930s. From 1942 to the end of the war, ore production of Malaya together with NEI and other South-East Asia countries dropped sharply with disruption caused by Japanese invasion upon the region.[5] On the contrary, ore production in Bolivia and newly emerging Belgian Congo was unchanged or even increasing.

The war forced fundamental change of the structure of supply of primary tin metal too. The war in European continent threw the region into chaos. Smelting in Netherlands and Belgium based on ores mainly imported from their colonies nearly came to a holt. Smelting in South-East Asia was also drastically cut down. As Tables 2-a and 2-b show, before the war most of the Malayan tin ores were smelted locally and exported to America and European continent. Since the imports of tin metal from Malaya became impossible from 1942, while smelting techniques for low-grade ores were improving, the U.S. Government rushed to operate newly constructed own smelting works to treat Bolivian ores most of which had been usually mixed with high-grade Nigerian ores for smelting in England. The result of

[5] *eg.*, Pahang Consolidated Company, *A History*, pp. 43–9, Tregonning, *Straits Tin,* pp. 56–9. Though some of mining equipment were destroyed by British companies immediately before their escape from the region, operation was taken over by 10 Japanese companies in Malaya. Yip Yat Hoong, *The Development of the Tin Mining*, pp. 290–4.

Table 2-a Production and Exports of Tin Metal, Malaya 1930–46 (long tons)

	Production	Exports (including re-exports)
1930	96762	97213
1931	87514	83704
1932	49945	47908
1933	46942	53931
1934	49637	50186
1935	60479	62248
1936	84616	83492
1937	95372	93106
1938	63746	61187
1939	80523	82089
1940	126945	130930
1941	125000	108896
1942	10000	na
1943	15000	na
1944	5000	na
1945	2500	na
1946	11533	7619

Note: Tin Metal; Ingots.
Source: Imperial Institute, *The Mineral Industry of the British Empire and Foreign Countries*, from 1940 Colonial Office, *Statistical Summary of the Mineral Industry.*

Table 2-b Exports of Tin Metal from Malaya by Countries of Destination 1933–7 (long tons)

	U.K.	U.S.A.	European Continent	Others	Total
1933	2655	31132	15371	4773	53931
1934	4703	26708	12646	6129	50186
1935	4080	40408	10191	7569	62248
1936	5564	59131	10743	8070	83157
1937	7319	64462	10475	10850	93106
Total	24321	221841	59426	37391	342628

Source: The Tin Producers' Association, *Tin-World Statistics 1938*, pp. 55–7.

this effort is clearly observed in increased figures for U.S.A. from 1942 in Table 3. Even though the wartime production was decreasing, U.K. had been a leading smelter in the world by smelting imported ores mostly from Nigeria and Bolivia until it was overtaken by U.S.A. in 1944. Basically, it was the same structure as the one in the mid-1930s shown in Table 4.

For two major countries in the world consumption of tin metal, U.K. and U.S.A., though figures used here for production and consumption do not exactly correspond with those for exports and imports, Tables 5-a and 5-b are compiled to get overall images of two countries. As shown in Table 5-a, U.K. was self-sufficient in primary tin metal throughout the period

Table 3 World Smelter Production of Primary Tin Metal, 1930–46 (long tons)

	U.S.A.	NEI	Malaya	Belgium	Netherlands	U.K.	Other countries	World
1930	289	14365	96762	704	1957	47800	7899	169800
1931	30	12957	87514	409	2524	36000	6114	145500
1932	17	8207	49945	731	3858	29500	4058	96300
1933	24	9016	46942	1385	4923	22600	3984	88900
1934	2	10252	49637	3340	13063	26500	4336	107100
1935	178	8064	60479	5213	16024	31834	8460	130300
1936	179	12396	84616	4638	21495	33776	8853	166000
1937	151	13455	95372	6407	27561	37540	9806	190300
1938		10096	63746	7024	25342	32107	10632	148900
1939	500	13342	80523	3965	14430	37269	11499	161500
1940	510	21767	126945	1500	1158	46656	16162	214700
1941	1839	19970	125000			41298	23562	211700
1942	16168	9625	10000			37279	28721	101800
1943	21489	15135	15000			31573	25342	108500
1944	30884	6069	5000			28589	21917	92500
1945	40475	844	2500			27549	16161	87500
1946	43500		11533	1405	945	29121	10376	96900

Source: W. Robertson, *Report of World Tin Position with projections for 1965 and 1970*, (International Tin Council, 1965), pp. 113–4.

Table 4 U.K. Imports of Tin Ore by Countries of Origin 1933–7 (long tons)

	Nigeria	Other British Countries	Chile	Bolivia	Other Countries	Total
1933	5261	1057	3931	15337	1818	27404
1934	7620	568	3934	25171	1294	38587
1935	8170	735	5368	28876	2058	45207
1936	12544	507	4159	32355	2389	51954
1937	14878	3117	5824	23680	2912	50411

Source: The Tin Producers' Association, *Tin-World Statistics 1938*, p. 108.

and even exported some of them to countries shown in Table 6. Though the war inevitably prevented U.K. from exporting tin metal to European countries and America, basic structure of supply and demand did not appear to change drastically. On the contrary, the largest consumer in the world, U.S.A. was always in a state of deficiency in domestic supply of primary tin metal, and it was usually made up by importing tin metal from South-East Asia, notably from Malaya. On disruption of the supply from Asia, as stated above, their operation with own smelting works to treat Bolivian ores was accelerated. Large imports of tin metal from 1939 to 41 reflected their aggressive policy for building stockpiles for the war. Recovery of secondary tin from scraps and substitution for tin by other metals may have been easing the burden of deficiency too.[6] Owing to vast stockpiles and newly started domestic smelting,

[6] Alvin Barber, 'Tin control', p. 270.

Table 5-a U.K. Production & Consumption of Primary Tin Metal and Exports & Imports of Tin Metal 1930–46 (long tons)

	(A) U.K. Production of Primary Tin Metal	(B) U.K. Consumption of Primary Tin Metal	(A) – (B)	U.K. Exports of Tin Metal (domestic produce)	U.K. Imports of Tin Metal (less re-export)
1930	47800	22598	25202	22913	4312
1931	36000	20939	15061	12087	6978
1932	29500	18509	10991	12839	2138
1933	22600	19964	2636	29216	2560
1934	26500	21073	5427	16918	7498
1935	31834	21427	10407	22996	8281
1936	33776	21860	11916	15419	5207
1937	37540	25971	11569	14833	8290
1938	32107	18290	13817	12281	7354
1939	37269	27279	9990	18523	2358
1940	46656	29225	17431	13687	312
1941	41298	30000	11298	6562	36
1942	37279	23478	13801	10164	
1943	31573	17631	13942	12251	323
1944	28589	18435	10154	3147	
1945	27549	16396	11153	9803	57
1946	29121	26598	2523	20600	634

Table 5-b U.S.A. Production & Consumption of Primary Tin Metal and Imports of Tin Metal 1930–46 (long tons)

	(A) U.S.A. Production of Primary Tin Metal	(B) U.S.A. Consumption of Primary Tin Metal	(A) – (B)	(C) U.S.A. Imports of Tin Metal	(A) – (B) + (C)
1930	289	76917	-76628	78585	1957
1931	30	62872	-62842	64404	1562
1932	17	35477	-35460	33702	-1758
1933	24	59693	-59669	63718	4049
1934	2	43638	-43636	38770	-4866
1935	178	62470	-62292	61966	-326
1936	179	68232	-68053	75643	7590
1937	151	72928	-72777	87802	15025
1938		48115	-48115	49494	1379
1939	500	66583	-66083	70102	4019
1940	510	72324	-71814	124810	52996
1941	1839	103386	-101547	140873	39326
1942	16168	56288	-40120	26588	-13532
1943	21489	46253	-24764	10547	-14217
1944	30884	59156	-28272	12900	-15372
1945	40475	55642	-15167	8320	-6847
1946	43500	54627	-11127	15559	4432

Note: Tin Metal; Blocks, ingots, bars, and slabs.
Sources: Production and Consumption; W. Robertson, *Report of World Tin Position with projections for 1965 and 1970*, (International Tin Council, 1965), pp. 113–5, Exports and Imports; Imperial Institute, *The Mineral Industry of the British Empire and Foreign Countries*, from 1940 Colonial Office, *Statistical Summary of the Mineral Industry.*

Table 6 U.K. Exports of Domestically Smelted Tin Metal by Countries of Destination 1933–7 (long tons)

	Soviet Union	Sweden	France	Spain	U.S.A.	Argentine	Others	Total Exports
1933	1125	685	1650	591	20397	679	4768	29216
1934	745	463	907	596	8963	729	4515	16918
1935	385	702	1613	506	13502	665	5623	22996
1936	30	631	1513	285	7825	644	4491	15419
1937	1526	614	1012	467	6002	471	4714	14806

Source: The Tin Producers' Association, *Tin-World Statistics 1938*, p. 107.

U.S.A. did not appear to suffer from shortage of tin metal during the war. (Table 5-b).

Where was the position of Cornish tin mining in the structure of demand and supply as a whole? During the war smelting works in Britain was able to continue to supply Welsh tinplate makers and other consumers with primary tin metal by smelting ores imported from Bolivia and Nigeria, and domestic tin ore from Cornwall as they did so in the 1930s. So far as judging from the figures shown above, while loss of Malayan tin mines gave a great damage to British investors in Malaya,[7] it did not seem to affect supply of tin ore to domestic smelters in Britain so severely. There should be wartime demand for Cornish tin, especially for supplying the loss of imports of tin metal, but to what extent it was essential will be a matter of question. Cornish tin was used for the barter agreement with Soviet Union in 1939,[8] which was later blocked by Germany. But except for this no news of Cornish tin appeared in the scene of world tin market. Though the importance of Cornish mining for national defence was advocated eagerly, so far Cornwall remained as a marginal producer during the war. The objective position of Cornish mines in the world production and even for British tin smelting did not appear to change so much during the war. A question as to whether Cornish mining people succeeded in overcoming this unfavourable situation for gaining the state aid must be asked.

2. Chronology of Cornish Experience 1939–45

Immediately before the war

Before proceeding to the observation of the wartime development, the situation of Cornish tin mining immediately before the war is considered first. After a sharp decline in the tin price in late 1937, ITC revised the standard tonnage and reduced the quota of signatory countries from 110% for the last quarter of 1937 to 70% and 55% for the first and second quarters of 1938 respectively.[9] East Pool and Agar Mine (EPA) which had been the most prosperous Cornish mine in the 1920s under the management of internationally famed company, Bewick, Moreing and Co., decided to take a course of closure of the mine due to

[7] *Corn.*, 15 Jan. 1942, p. 5. There were two major Cornish mining group called Redruth Group and Tronoh Group. John Hillman, *The International Tin*, p. 86. Tehidy Minerals had an investment worth £36, 547 in Malayan companies. *Corn.*, 16 Apr. 1942, p. 4.

[8] *WMN.*, 12 Oct. 1939, p. 5, Hillman, *International Tin*, p. 296.

[9] Hillman, *International Tin*, pp. 222–5. Tin Producers' Association, *Tin: 1938*, pp. 7–13.

the accumulated loss with deteriorating grade of ores.[10] Cornish mining people made a plea again to the Government for aid by fixing the price of tin, but it was unsuccessful like petitions which had been made before.[11] Retiring president of Cornish Institute of Engineers, A. R. Davies, said the attitude of the Government as 'Colonies first, not the people of Cornwall'.[12] At the time there were 5 mines working in Cornwall.[13] Major tin mines other than EPA, South Crofty and Geevor, were making profit even under unfavourable market conditions,[14] while the number of unemployment was increasing in the central mining districts.[15] Owing to the ITC operation including the formation of Buffer Stock the price recovered to £210 per ton in November 1938.[16]

1939

The year of 1939 began with the strike over working conditions and recognition of the trade union, Transport and General Workers' Union (TGWU), at South Crofty Mine.[17] It had continued for eight months until the very end of August, just before the war began.[18] Despite the severe disruption of production, the mine made a profit by working with reserved ores underground by non-union members under the favourable price of tin stirred by the anticipation of war.[19] Tehidy Minerals Ltd. which had been originally formed in 1919 to buy mineral rights of Tehidy Estate where major tin mines situated and later became the almost sole owner of the mineral rights in the central mining districts in Cornwall also made a profit mainly by royalties from tin mines and china clay quarries in Cornwall and also returns from the investment in Malayan tin mines.[20] They received £8,617 in mineral dues (royalties) and rents in Cornwall, and also received dividends and interest from investment in Malayan alluvial mines amounted to £2,816 in the year ending March 1940. They even blamed for restrictive ITC quota as depriving their Malayan companies of the opportunity of making profit by increasing production. On the contrary, Cornish miners were in favour of restriction as it was helping to maintain the favourable price of tin.[21] Therefore, just before the war in Cornwall, while there were mines like EPA suffering from deteriorating quality of ore, there were two profitable mines, South Crofty and Geevor, of which cost could meet the price. And there was a company which earned royalties and rents from domestic mines and dividends and interest from the investment in overseas mines.

1940

In 1940 above three major tin mines were suffering from acute shortage of labour, especially skilled miners, caused by recruiting to the army and increasing cost of mining material, notably coal.[22] As, while negotiating with ITC, the U.S. government began to

[10] *Corn.*, 24 Feb. 1938, p. 3.
[11] *Corn.*, 28 Apr. 1938, p. 2.
[12] *Corn.*, 7 Jul. 1938, p. 9, for reasons why the plea was rejected, Kudo, 'Tin Mining', p. 41.
[13] *Corn.*, 25 Aug. 1938, p. 5.
[14] Geevor: *WMN.*, 9 Jun. 1938, p. 11, South Crofty: *Corn.*, 23 Jun. 1938, p. 5.
[15] Average unemployment rates against insured population (16–64) over the 5 years till December 1937 for Camborne and Redruth were 25.1% and 38.1% respectively. CAB/24/26/7.
[16] *Corn.*, 3 Nov. 1938, p. 7.
[17] *Corn.*, 5 Jan. 1939, p. 5.
[18] *West Briton and Cornwall Advertiser*, 7 Sep. 1939, p. 7, *Corn.*, 7 Sep. 1939, p. 5. For details of the strike, Buckley, *A History of South Crofty*, pp. 165–8, Barton, *A History of Tin Mining*, p. 281.
[19] Buckley, *South Crofty*, p. 168, *Corn.*, 22 Jun. 1939, p. 2.
[20] *Corn.*, 13 Apr. 1939, p. 7.
[21] Corn., 28 Mar. 1940, p. 2.
[22] *WMN.*, 17 Apr. 1940, pp. 5,7, *Corn.*, 18 Apr. 1940, p. 6.

pursue a policy for increasing stockpiles by buying tin in the market, the price of tin rose significantly.[23] Securing skilled miners and enough capital to explore and develop new lodes became crucial tasks of the mines. To meet the wartime demand, EPA which once had made a decision to close the mine two years before succeeded in getting a direct assistance of money (in the form of debenture) for operation from the Ministry of Supply and the promise to secure the workforce for development work from the Ministry of Labour in August. It was the first time to receive this kind of direct state aid in the history of Cornish mining.[24] But problems remained. 'Can we get ideal management, ample capital, efficient labourer, and payable lodes?' was still fundamental question for Cornish mining.[25]

1941

Favourable tin price continued but cost of mining increased too, particularly due to labour shortage in 1941. No financial assistance except for EPA had been given to Cornwall. Even EPA which had had injection of capital from the Government in the previous year faced difficulty again due to the shortage of labour for development work and declared to close the mine in a few months.[26]

In this year, facing wartime demand for non-ferrous metal, Ministry of Supply asked the Council of Institute of Mining and Metallurgy (IMM) following questions.

> (to) give consideration to the general factors affecting the development of non-ferrous ore mining in the United Kingdom, such as the effect of taxation on mining enterprise, both in prospecting and development, the relation of the Geological Survey to such development, or any other factors which would ensure a more complete knowledge on the one hand of the mining resources of this country, and increase the facilities for their exploitation.

Collaborating with Cornish Chamber of Mines, the Council of IMM made a report as a reply to Non-Ferrous Metallic Ores Committee, Ministry of Supply.[27]

In the report, under the awareness of possible dying out of base metal mining in Britain if no remedial measures were taken even though there remained considerable opportunities to develop mines. They were convinced that there should be untouched mineral resources in deeper parts of active or abandoned mines, and they discussed not only a short-term problem for the wartime needs but also a long perspective of British metal mining. Firstly, they took the problem of tax system, saying that the tax system of Britain was more oppressive than that of any other British Dominions and Colonies. They recommended that expenditure for all underground development such as shaft sinking and pre-production work should be treated as a cost which would be allowed to recover for some years, *e.g.* ten years, and so would be exempt from the taxation of income tax and the wartime Excess Profit Tax. By this measure mining companies would secure the fund for further development.[28] Secondly, all mineral rights, way leaves and so on should be under the centralised control by the Mines Department to which applications for prospecting should be made. And arrangements of royalties should also be made under the administration of the

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[23] Hillman, *The International Tin*, pp. 303–4, 313–4.

[24] *Corn.*, 19 Sep. 1940, p. 4, 26 Sep. p. 5, Barton, *A History of Tin Mining*, p. 282.

[25] *Corn.*, 12 Dec. 1940, p. 3.

[26] Corn., 31 Jul. 1941, p. 5, Heffer, *East Pool*, p. 54.

[27] *Corn.*, 29 May 1941, p. 5.

[28] This question was discussed for a long time. Even after Income Tax Act 1945 which stipulated allowance of development cost, Commander Agnew (MP for Camborne) still argued for reform of the Act for mining companies in 1949. *Hansard*, 6 Jul. 1949, vol. 466, cc. 2284–93.

department. This measure was expected to promote introduction of cost reducing modern technology into mines by making fragmented mining setts combined to create extended mining sites which were thought to have affinity for new machinery. Thirdly, they recommended the promotion of Geological Survey and collaboration of mining engineers to find new mineral resources including barytes, fluorite *etc*. Fourthly, the promotion of technical and metallurgical research was strongly recommended. Further research for increasing the rate of recovery from Cornish tin ores was mentioned as a case. And lastly, the general importance of metalliferous mining was argued. According to the report benefit of keeping domestic mines should be considered not only from the viewpoint of profitability but also that of intangible effect; the engineers trained in British metalliferous mines could create the demand for British made mining machinery and equipment as they applied British mining technology to mines in other countries. Domestic metalliferous mines were undoubtedly providing a training field for engineers and a kind of testing fields for new machinery and equipment too. Cornish people welcomed this report as it particularly mentioned a research of tin recovery as an example. But again, the Government was slow to act, though it seemed to conduct a survey of possible lodes to be developed soon.[29]

1942

Japanese invasion upon the tin mining fields in South-East Asia changed the world positions of tin supply completely. Supply of tin as a strategic metal became ‘a matter of great urgency’.[30] Non-ferrous Metalliferous Ores Committee, Ministry of Supply opened its branch office in Cornwall in 1942 and appointed Cornish County Committee to work together.[31] Though the size of Cornish tin production could never compare with that of Malayan tin production, most of which used to be smelted in Penang or Singapore and exported to America, the prolonged war might have disrupted maritime transport of tin from Nigeria and Bolivia to Britain.[32] Cornish people at first expected an injection of state fund for development work which private companies could never carry out by their own, as Cornish Chamber of Mines had answered so to the Government inquiry more than twelve months before.[33] But it became apparent that the Government was not interested in a long-term policy for tin mining but in schemes for producing tin within twelve months by exploring alluvial deposits or re-working shallow abandoned mines while increasing production of three working mines, Geevor, South Crofty, and EPA.[34] The Government applied the Essential Works Order to these major mines to secure skilled workers with guaranteed minimum wages though it would make wages of miners higher than before in some cases.[35] Then the Government made contract with the mining companies to buy their

[29] *Corn*., 12 Jun. 1940, p. 5.

[30] *Corn*., 15 Jan. 1941, p. 5.

[31] *Corn*., 5 Mar. 1942, p. 5.

[32] *Corn*., 19 Feb. 1942, p. 4. According to the article of *Daily Telegraph* quoted in *Corn*. (29 Jan. 1942, p. 4) ‘Compare with Bolivia, the Belgian Congo or Nigeria, the output of the Cornish tin mines is small, estimated production in 1940 about 1,500 tons against Nigeria’s 16,250 tons, ... It is, however, believed that the Cornish producers could double their output if funds and labour are made available by the Government. .... any action will depend on the Ministry of Supply. Whole question is now being examined in Cornwall by the Ministry’s expert’.

[33] *Corn*., 15 Jan. 1942, p. 5.

[34] *WMN*., 19 Jan. 1942, p. 2. *eg*., Being asked about measures for helping tin mining industry in Cornwall, the Joint Parliamentary Secretary to the Ministry of Supply answered, ‘We are in negotiation with the three mines already in production and helping them in every way we can with labour and so on. Labour is very short, and until we can get these three mines producing full capacity, while we are still investigating the position of the others, we think it better to concentrate on the three and leave the others alone for the present’. *Hansard*, 17 March 1942, vol. 378, c. 41.

[35] *Corn*., 2 Apr. 1942, p. 4. For coping with the shortage of skilled labour; Noall, *Geevor*, pp. 105–8.

all tin ores produced at a fixed price which would enable them to make a reasonable profit after paying working cost. Even when the working cost exceeded the fixed price, the difference was to be compensated by the Government.[36] At this point virtually all active Cornish mines, for the first time in their history, were given the state aid even though under the controlled wartime economy. Later Oliver Lyttleton, Minister of Reconstruction, called it as 'half-nationalised'.[37]

1943

From 1943 onwards the future of British metalliferous mining became one of the popular subjects of discussion. T. Pryor, ex-president of IMM, delivered a lecture entitled 'Outlook for British non-ferrous mining after the war' at a meeting of the Royal Cornwall Polytechnic Society in February 1943. In his lecture he in the first place urged the Government to draw a big picture of the policy for the future of non-ferrous mining. Then he ascribed the failure of Cornish people in getting practical results from a series of recommendations made by the official reports since 1918[38] to 'the divergence of opinion not only in the member of any particular government but also in the minds of those practically engaged in the industry'. He emphasised the necessity of their unified attitude to the future of state aid. He also reminded them of Lionel Phillips' remarks made more than twenty years before that the role of the Government should not be involved directly in mining but construct the framework on which private companies were attracted to come to work.[39] Future of tin market with estimated stockpiles of America and Britain, 120,000 tons and 30,000 tons respectively 'if the war would end within two years' was also discussed among mining people.[40]

1944

Despite the wartime economic policy to promote the strategic industries, the production of tin in Cornwall did not increase remarkably though three active mines made profit in 1943–4. People even began thinking of exhaustion of Cornish tin.[41] Labour shortage was still acute problem. EPA decided to stop development work while only continuing mining operation due to labour shortage.[42] By the withdrawal of two major suppliers, Malaya and NEI, vastly accumulated stockpiles in America, and the improvement of technology to recover secondary tin together with the progress in substitution for tin metal, market conditions surrounding Cornish mining were completely changing. Cornish mining advisory committee[43] called for the state aid to rescue Cornish tin mining from extinction. They submitted a memorandum to the Ministry of Reconstruction, saying that unless the government intervened immediately after the war terminated British non-ferrous mining would become extinct. They proposed to set up Metalliferous Mines Commission which would take over the role of the current committee of Ministry of Supply to foster the metalliferous mining and metallurgical industries, and that for the development and exploitation

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[36] *Corn.*, 30 Jul. 1942, p. 4, 14 Oct. 1942, p. 4.

[37] *Corn.*, 2 Sep. 1943, p. 4.

[38] BPP; *Report of the Controller of the Department of Mineral Resources in the United Kingdom* (Ministry of Munition of War), [Cd. 9184] 1918, *Report of the Departmental Committee appointed by the Board of Trade to investigate and report upon Non-Ferrous Mining Industry*, [Cmd. 652] 1920. *Report of the Advisory Committee for the Metalliferous Mining and Quarrying Industry* (Board of Trade), (HMSO, 1932).

[39] *Corn.*, 22 Apr. 1943, p. 4.

[40] *Corn.*, 13 May 1943, p. 4.

[41] *Corn.*, 11 Jun. 1944, p. 4.

[42] *WMN.*, 20 Jan. 1944, p. 5.

[43] For the activity of this committee, Barton, *A History of Tin Mining*, p. 283, footnote 1.

of mineral deposits financial grants from the Treasury should be given. For Cornish mining the memorandum described as follows.

- As far as Cornwall is concerned, the first charge on the capital should be the maintenance as producing concerns of the Geevor (tin), South Crofty (tin and arsenic), East Pool (tin and wolfram), and a wolfram mine (Castle-an-Dinas).
- These mines are at present under the contracts with the Non-Ferrous Mineral Development Control of the Ministry of Supply, which contracts, when the present state of emergency is over, should be taken over by the Commission, with powers to make such modification as post-war circumstances permit.
- These mines alone employ some 1,300 persons, with a gross working expenditure of approximately £500,000, which money circulates in the county for the benefit of the community.
- In the years immediately before the war all these mines were working at a profit when they were selling their products in the open market, but post-war costs will be higher than pre-war, and if there were any substantial fall in metal prices the mines would have to close.[44]

A variety of ideas, from direct subsidy or buying up ores at fixed price to total nationalisation, were discussed for the future of Cornish mining this year.[45] As for mineral rights Commander Agnew M.P. for Camborne once asked to the Prime Minister, W. Churchill, whether the Government had the plan to nationalise mineral rights. Churchill's answer was clear-cut, 'No sir', and his basic attitude was like 'One swallow does not make a summer'.[46] IMM also made recommendations which were suggesting to form an independent committee on the future of base metal in Britain also taking up the immediate problems of taxation and collaboration with Geological Survey.[47]

1945

In 1945, The reply from the Ministry of Reconstruction to the Cornish mining advisory committee was not yet made.[48] Geevor and South Crofty were making profit, but EPA was struggling with deteriorating of ore grade.[49] Ministry of Fuel and Power appointed a small technical committee for the inquiry into the prospect of the Cornish tin mining 'to consider whether there is justification in the national interest for the granting of assistance from public funds for underground exploration at East Pool and Agar'.[50] EPA suspended mining operation in May and Ministry of Fuel and Power stopped the financial assistance to its pumping and rejected a proposed diamond drilling programme there in October.[51] Thus, EPA went to the process toward the final liquidation in 1947.[52] Pumping was taken over by adjoining South Crofty which subsequently acquired EPA sett.[53] As South Crofty had already acquired defunct Dolcoath sett in 1936, it became sole active company in the central mining districts in Cornwall. Together with survived Geevor Tin Mine at St. Just it continued to work with deposits found in deeper sections of both Dolcoath and EPA setts for another

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44 *WMN.*, 1 Apr. 1944, p. 2.
45 *eg.*, *WMN.*, 16 Aug. 1944, p. 4, 22 Aug. 1944, p. 2, *Corn.*, 7 Sep. 1944, p. 7.
46 *Hansard*, 15 Nov. 1944, vol. 404, ccl. 959–60, *Corn.*, 28 Dec. 1944, p. 3.
47 *Corn.*, 30 Mar. 1944, p. 4.
48 *WMN.*, 7 Apr. 1945, p. 6.
49 *WMN.*, 27 Feb. 1945.
50 *WMN.*, 21 Jun. 1945, p. 2.
51 *Corn.*, 31 May 1945, p. 4, *WMN.*, 5 Oct. 1945, p. 3.
52 Heffer, *East Pool*, pp. 57–8.
53 Buckley, *South Crofty*, p. 172, *WMN.*, 28 Dec. 1945, p. 2.

decades.[54] As the war ended, though the above stated contracts between the Government and companies were to be effective till April 1948,[55] assistance form the Government diminished without a definite policy for the future of Cornish industry.[56] Even the report of above stated technical committee was not published.[57] A survey report on West Country published in 1947 said , 'The prospects of recovery in tin-mining are by no means bright. Far-reaching measures are needed, and they may not prove of realisation without a decided measures of state interference'.[58] It was exactly to the point.

3. Main Points of Arguments for State Aid

As seen above, other than basic difference on measures for relief of unemployment, there were two main points in exchange of views on the importance of maintaining domestic tin mining; national defence, and a ground for training engineers and miners and experiment of new mining equipment though the latter was closely connected to the former.

National Defence

In 1938 a petition was made to Thomas-Inskip, the Defence Coordination Minister, putting stress on the importance of domestic tin mining for the national defence in case of disruption of ore supply from overseas. In that occasion, the plea was denied in saying that subsidy would be only considered on the strongest ground of defence interest and small fragment production of Cornish tin never satisfied this requirement. Colonial Office also strengthened this counter argument by giving priority to maintenance of the International Tin Agreement which was asking signatory countries to cut the production over the unilateral subsidy to domestic mining.[59] Despite this, Cornish people continuously repeated the same claim until the end of the war.

From the beginning of the war maritime transport confronted the risk of German submarine attack, and from the end of 1941 major tin fields in South East Asia fell into Japanese hand. The Government, for the first time in history, gave direct assistances to Cornish mines from 1940 onwards. But those measures were diminished as the war ended. It seems that they were only temporary measures in the wartime. It is hard to find any

[54] Buckley, *South Crofty*, pp. 203–10, Heffer, *East Pool*, p. 58, For details of working images, please refer to South Crofty (www.cornishmineimages.co.uk/south-crofty.uk-mine-home) last access, 23 Jun. 2020. For Cornish tin mining after the WWII, Burt, *Mining in Cornwall*, pp. 108–15.

[55] *Corn*., 22 Apr. 1948, p. 3.

[56] Negotiation with Ministry of Supply continued without results, *eg*., *Corn*., 6 Sep. 1945, p. 2, Buckley, *South Crofty*, p. 173. When the Union (TGWU) and companies (Geevor and South Crofty) once reached agreement to increase wages for all workers 1s. per shift providing that the Ministry of Supply would reimburse the extra cost to the companies in May 1946, unlike during the wartime, the Ministry rejected to reimburse extra cost. Therefore, the case was referred to the National Arbitration Tribunal in August 1946. LAB 83/169.

[57] To the question when the report of the committee would be published, newly appointed Minister of Fuel and Power, Emanuel Shinwell, said, 'changed circumstances and economic conditions resulting from the war call for a comprehensive inquiry into our metalliferous resources in the country and the best way of developing them in the national interest'. He proposed a new committee to inquire into the future of metalliferous mining in Britain. The prospect of Cornwall and the report of former technical committee would be included as a part of it. *Hansard*, 15 Oct. 1945, vol. 414, cc. 705–6w. Setting up the new committee and investigation took time, while the old committee's report was never published. *Hansard*, 26 Feb. 1946, vol. 419, *Corn*. 27 Mar. 1947, p. 4.

[58] Survey Committee of the University College of the South West, *Devon and Cornwall*, p. 287. Assistance for the tin industry in Cornwall was fully discussed by the Trade and Industry Committee on 'The Tin Crisis' in 1985–86. The committee's recommendations were based on the belief that the Cornish tin industry was worth saving. For detailed recommendations, see footnote 70. BPP., *The Tin Crisis*, Vol. 1, p. xxiii.

[59] Kudo, 'Tin Mining', p. 41.

fundamental changes in the Government's thinking of policy for tin mining during the war. Officially the Government told that tin mining was important in terms of national defence,[60] but, as a producer of tin ore, Cornwall may have been too small to regard as 'essential' though Cornish people insisted its crucial role. The role of tin in the war also affected the argument too. Unlike wolfram tin was not specifically an armament metal and its war uses were almost entirely an extension of normal industrial uses.[61] Therefore, it was only essential and 'strategic in terms of national economic efficiency' for the wartime industrial production not for warfare itself.[62]

Ground for training miners, engineers, and testing new equipment

The importance of domestic mining as a ground for training and development of skill of miners and engineers, and for making experiments of new machinery was insisted by Cornish mining people. The idea that engineers trained in Britain would create a demand for British made equipment was probably true. But the Cornish superiority in mining technology had been lost long time before though an eminent mining school, Camborne School of Mines, was there.[63] And this claim was argued from the viewpoint of whole domestic metalliferous mining along with problems of taxation, mineral rights, collaboration with Geological Survey, and so on. In other words, Cornish mining was able to express its own interests only as a part of overall metalliferous mining claims.[64] A long-discussed reform of taxation which would allow to recover development cost was indeed relevant to Cornish mining.[65] Collaboration with Geological Survey and promotion of further research into mining and metallurgy were welcomed as well, but unified administration of mineral rights by the Government was not main concern for Cornish mining because, so far as the central mining district where South Crofty and EPA were working was concerned, almost all mineral rights had concentrated in one company, Tehidy Minerals. And another working mine, Geevor at St. Just had no serious problems over mineral rights or royalty during the war. To attract further external capital into Cornish mining it was probably necessary, but unification of mineral rights under the Government control was not an imminent problem in Cornwall. On IMM report of 1941 which recommended unified administration of mineral rights, the chairman of Tehidy Minerals once said at the general meeting of the company, 'Meanwhile Tehidy Minerals does not press hardly on our few existing mines; and would be probably to co-operate with the Government if the recommendations of the IMM and Cornish Chamber of Mines should be considered as likely to give a longer lease of life to Cornish mines and to obviate the export of English money to purchase foreign tin'.[66]

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[60] *eg.*, Being asked about the restriction of drafting labour into South Crofty Mine, the Minister of Labour answered, 'The production of tin at home for essential war purposes is of first importance, and I am not aware of any reason which would justify me in placing special restrictions on the supply of labour to the South Crofty Mine', *Hansard*, 8 Jul. 1943, vol. 390, c. 5.

[61] Even a wolfram mine, Castle-an-Dinas, which was owned by South Crofty had no detailed agreement like tin with the Government, when the price of wolfram dropped from £315 to £245 per ton and the contract was broken in 1946, South Crofty suffered serious depletion of capital spent on development work of Castle-an-Dinas. *Corn.*, 5 Sep. 1946, p. 4, LAB83/169.

[62] Barber, 'Tin control', p. 270, Hillman, *International Tin*, p. 292.

[63] The same benefit was recognised in Trade and Industry Committee in 1986, but until that time much modernisation in equipment and method of mining had been made in survived Cornish mines. BPP., *The Tin Crisis*, Paras. 61–2.

[64] The Minister of Fuel and Power also considered tin mining industry 'as a part of a general inquiry', *Hansard*, 26 Feb. 1946, vol. 419. It was remarkable contrast to the Departmental Report in 1920 in which 6 out of 23 pages were devoted for tin and associated minerals.

[65] See footnote 28.

[66] *Corn.*, 3 Jul. 1941, p. 2.

4. Concluding Remarks

There were plenty of stockpiles of tin metal in U.S.A., which meant that there was not large demand for tin in the world market. U.K. also had some stockpiles and still was able to import ores to be smelted despite problems in maritime transport. Tin was not so 'strategic' in terms of munition as wolfram. There was no immediate necessity to develop or revive whole Cornish mines, but only to increase production of working mines as the supplementary resource. Therefore, the Government wanted to negotiate with three major working mines individually for the grant but not with Cornish Chamber of Mines.[67] Although unemployment in the region became one of the main problems after the war[68] it was not so acute in the wartime or even the shortage of labour was main concern. Most of miners of EPA were gradually transferred to South Crofty and Geevor on the closure of the mine.[69]

Future of Cornish mines only became to be considered as 'a part of strategic base metal' in Britain after the war. Ironically without massive subsidy[70] two survived mines, Geevor and South Crofty, made great progress after the war. South Crofty proved the value of projects which were once abandoned due to the lack of capital before the war. Modernisation of Geevor was remarkable. But no concrete policy for Cornish industry had been taken place until the end of their mining operation in the 1990s though occasional discussions like those at 'Tin Crisis' were made.[71] Even after Cornish mining sites became objects of industrial heritage there is a controversy on the policy for the future of old mining sites as tourist attractions.[72]

Would it be over-simplifying to conclude that tin mining was critically important in the mind of Cornish people, but, from its objective position in the world, its importance as an industry had already become marginal for the Government? The gap in the way of thinking for Cornish mining between Cornish people and the Government was not narrowed even in the wartime.

Furthermore, as suggested in my previous paper,[73] the question as to who was representing Cornish interests must be asked next. There were two kind of people in Cornish mining circle; on the one hand, there were people who received royalties from tin mines and

[67] *Corn.*, 19 Mar. 1942, p. 7.

[68] *eg.*, Prospect of coming new industries to the districts was welcomed by the people. *WMN.*, 2 Nov. 1946, p. 6, *Corn.*, 21 Nov. 1946, p. 3.

[69] *Corn.*, 31 May 1945, p. 4.

[70] Though at the collapse of tin market caused by insolvency of the Buffer Stock Manager of the International Tin Committee (a successor of the pre-war ITC) in 1986, the Trade and Industry Committee made following recommendations for Cornish tin mining. BPP., *The Tin Crisis*, Vol. 1, p. xxiii.

(14) ... it is for ITC member Government to deal with the collapse of the market on the industry in their countries.

(15) The Government is inclined to wait and see what happens. This will simply not do. If it waits for the tin price to settle before taking action, there will be no tin industry left in Cornwall.

(16) For Geevor, the only practicable long-term solution is an injection of capital by Government at £4 million per year for five years. An interest-free loan convertible into equity when the mine is operating profitably would secure for the taxpayer a share in success, and potentially enable the Government to recoup some of its capital in the future.

(17) Some short-term support is required to cover very low price levels while the market sorts itself. ...

(18) It is of supreme importance that the Government should begin negotiations with the industry on the possible types and amounts of aid and conclude them without delay. We believe that the Cornish tin industry is worth saving.

[71] BPP., *The Tin Crisis*.

[72] *eg.*, B. Zwergers, 'Gold Mine or Bottomless Pitt? Exploring Cornwall's Mining Heritage', *Journal of Tourism, Heritage & Services Marketing*, (Alexander T. E. I of Thessaloniki), Vol. 4, issue 1, 2018, pp. 15–22, (http://doi.org/10.5281/zenodo.1247534, last access on 29 Jun. 2020).

[73] Kudo, 'Tin Mining', pp. 50–1.

china clay quarries and dividends or interest from the investment in mines which were indifferent to their location, domestic or overseas, and on the other hand there were local people who lived on mining industry itself.

Footnote References

(1) Public Documents.

National Archives, Kew.

LAB 83/169 (the National Arbitration Tribunal 1946).

National Archives Online Collections.

CAB 24/26/7 (Cabinet, Committee on the Reports of the Commissioners for the Special Area*, Special Areas, Report of Interdepartmental Committee*, p. 43, 1937)

House of Commons Debates.

Searched in *Hansard* with*;* https://hansard.parliament.uk/, http://hansard.millbanksystems.com/.

British Parliamentary Papers (BPP).

Report of the Controller of the Department for the Development of Mineral Resources in the United Kingdom (Ministry of Munitions of War), [Cd. 9184] 1918.

Report of the Departmental Committee appointed by the Board of Trade to investigate and report upon the Non-Ferrous Mining Industry (Departmental Committee on the Non-Ferrous Mining Industry), [Cmd. 652] 1920.

Report of the Advisory Committee for the Metalliferous Mining and Quarrying Industry (HMSO, 1932).

Second Report from the Trade and Industry Committee, The Tin Crisis, Vol. 1, Report and Proceedings of the Committee, Vol 2, Minutes of Evidence and Appendices (Trade and Industry Committee, Session 1985–6).

(2) Newspaper.

Searched with The British Newspaper Archive, http://www.britishnewspaperarchive.co.uk/.

The Cornishman and Cornish Telegraph. (*Corn.*).

The Western Morning News. (*WMN.*).

(3) Journals.

The Mining Magazine.

The Mining Journal.

(4) Books, Articles and Statistics.

Anglo-Oriental Mining Corporation (ed.), *Tin: World Statistics 1929*, (London, 1929).

Barber, A., ‘Tin control in a Major War’, *Far Eastern Survey*, (Institute of Pacific Relations), Vol. 8, No. 23, (Nov. 22, 1939) p. 270.

Barton, D. B., *A History of Tin Mining and Smelting in Cornwall*, (Truro, 1967) reprinted by Wheaton, Exeter in 1989.

Buckley, J. A., *A History of South Crofty Mine*, (Redruth, n.d.).

Burt, R. and Kudo, N., ‘Not by Tin Alone: The Polymetallic Context of Primary Tin Production and Cornwall’s Role in the International Mining Industry’ in Ingulstad, M., Perchard, A. and Stori, E. (eds.), *Tin and Global Capitalism: A History of the Devil’s Metal, 1850–2000*, (Routledge, 2014), pp. 22–45.

Burt, R. with Burnley, R., Gill, M. and Neill, A., *Mining in Cornwall and Devon: An economic history of the mines, minerals, and mine management in the South-West of England*, (Exeter, 2014).

Heffer, P., *East Pool and Agar. A Cornish Mining Legend*, (Redruth, 1985).

Hillman, J., *The International Tin Cartel*, (London, 2010).

Imperial Mineral Resources Bureau (from 1925 Imperial Institute), *The Mineral Industry of the British Empire and Foreign Countries.* From 1940 Colonial Office, *Statistical Summary of the Mineral Industry* (HMSO).

Ingulstad, M., Perchard, A. and Stori, E.(eds.), *Tin and Global Capitalism: A History of the Devil's Metal, 1850–2000*, (Routledge, 2014).

Kudo, N., 'Tin Mining in Cornwall during the Inter-War Years 1918–38: A Chronology of Responses to the Changing Market Conditions', *Keio Business Review* (Society of Business and Commerce, Keio University), No. 50, (2015) pp. 25–53.

Noall, C., *Geevor*, (Geevor Tin Mines, Penzance, 1983).

Pahang Consolidated Company, *A History of Pahang Consolidated Company Limited 1906–1966*, (London, 1966).

Robertson, W., *Report on the World Tin Position with projection for 1965 and 1970*, (International Tin Council, London, 1965).

Tin Producers' Association, *Tin: World Statistics 1938*, (London, 1938).

Tregonning, K. G., *Straits Tin: a brief account of the first seventy years of the Straits Trading Company, Limited, 1887–1962*, (Singapore, c.1962).

University College of the South West (Exeter), *Devon and Cornwall, a preliminary survey* (Survey Committee Special Report, 1947).

Yip, Y. H., *The Development of the Tin Mining Industry in Malaya*, (Kuala Lumpur, 1966).