

Exporting Electrodes to Australia in the 1930s: Sawada Shigeo, Okura & Company, and Tokai Electrode

Oshima Hisayuki and Simon James Bytheway
Takachiho University/Nihon University

Abstract

Using the internal records of trading companies operating in Australia that were seized by the Australian government after the Japanese attack on Pearl in December 1941, the present study examines the role played by Okura & Company and its Managing Director in Sydney, Sawada Shigeo, as intermediaries in the development of a potential Australian market for Japanese electrodes in the interwar period. International trade in foreign markets required Japanese manufacturers to respond “flexibly” to the terms, conditions, and practices of the new markets into which they were exporting, especially in relation to any technological difficulties (real or perceived) with their products. General trading companies (like our example, Okura & Company) were employed to provide essential market information and to bridge any “gaps of recognition” between Japanese manufacturers (like our example, Tokai Electrode Manufacturing Company) and their new, non-Japanese clients. The interwar experience of “market development” in Australia was integral to the remarkable success of Japan’s export-oriented industries during the postwar reconstruction period, when electrode manufacturing quickly became an important export industry for Japan.

Introduction

Proceeding from the *Japanese Companies Records in Australia Project*,¹ the following study examines the role played by Okura & Company and its local Managing Director in the export of industrial products to Australia in the 1930s, using the export of artificial graphite electrodes as a case study. The significance of examining the Japanese industrial exports to Australia can be briefly summarized as follows. From the perspective of industrial exports, we may classify Japan as an exporter of “light industrial products,” such as electric fans, sewing machines, or bicycles, and including semi-finished products and miscellaneous goods. These light industrial products were commonly

¹ The primary research material cited below was held, and gradually made public, by the National Archives of Australia (NAA). In 2018, procedures were undertaken for the donation of these materials to the National Archives of Japan, and the records of Japanese companies that were seized by the Controller of Enemy Property of Australia is now stored, and open to the public as the *Zaigō Nichikei kigyō kiroku purojekuto*, at the National Archives of Japan. See The Japanese Companies Records in Australia Project, *Ōsutoraria kokuritsu kōbunsho-kan kyūzō nikkei kigyō kiroku gaido* [The Guide to the Japanese Company Records previously held by the National Archives of Australia] (Tokyo: Zaigō Nikkei kigyō kiroku purojekuto, 2019); and more recent works on interwar trade between Australia and Japan which attempt to build upon these foundations, such as Keishi Okabe and Simon James Bytheway, “Exploring Emerging Markets: Mitsubishi and Early Japanese Automobile Exports to Australia, 1930-1937,” in *Japanese Research in Business History*, 40, (December 2023), pp. 64-78. doi: <https://doi.org/10.5029/jrbh.40.64>; and Simon James Bytheway and Oshima Hisayuki, “1930 nendai ni okeru Nihon kōgyō seihin no Ōsutoraria shijō kaitaku-shi – Ōkura shōji ni yoru Tōkai denkyoku seihin yushutsu no jirei –” in *Shōgaku Shusha*, 91:2, (September 2021), pp. 1-16; the Japanese-language precursor to the part-translation and synthesis presented here.

exported from Japan - in great volumes - during the interwar period. The four major export destinations for Japanese industrial goods in 1937 were identified as being: (1) China, the Kwantung Leased Territory, Hong Kong, and Manchuria; (2) other Asian areas; (3) Latin America, Africa, Middle East, and Oceania; and (4) Europe and North America. When considering these destinations as potential markets for industrial products, the industrialized countries of Europe and North America typically had the highest barriers to market entry, while Manchuria, the Kwantung Leased Territory, Hong Kong, and China had the lowest barriers, owing to Japan's overt political influence and colonialism in East Asia. Latin America, Africa, Middle East, Oceania and the rest of Asia can be considered to have markets that were somewhere in between these commercial extremes. In reality, the export markets for Japan's light industrial machinery, generally technologically inferior to that of the developed Western nations, was almost entirely limited to Manchuria, the Kwantung Leased Territory, and China. The growth and development of export markets during the interwar period, therefore, necessitated Japan entering into direct competition with Western industrial nations, and involved the targeting of high-income markets, such as Australia and New Zealand.²

The export of industrial products was, in fact, the most advanced component of what the historian Tanimoto Masayuki has called "global market-oriented industrialization." It was also the most direct precursor to Japan's postwar export of manufactured finished goods to the markets of the capitalist West. Indeed, Japan's prewar industrial exports to Australia exemplify an early phase of "market development" (*shijō kaitaku*) occurring in a high-income country, with markets more like those of Europe and North America than China or Southeast Asia.³ Of course, it must be remembered that Japan's drive for new exports put its manufacturers in direct competition with those of the more advanced Western economies at a time of growing geo-political uncertainty. Given the difficulties, the pioneering export of carbon products to Australia during the interwar period help to explain the remarkable development of exports from Japan in the postwar period.

The Growth of the Carbon Industry in Japan, 1896-1941

An overview of electrodes and the manufacture of natural or artificial graphite electrodes in Japan is fundamental to understanding the backstory of their export to Australia. An electrode is a solid electric conductor that carries electric current into non-metallic solids, liquids, gases, plasmas, or vacuums. Electrodes may be made from any conductive material, depending on the nature of the application, but typically graphite, light metals (such as titanium or aluminum), or noble metals (such as platinum, gold, silver, or copper) are used. As an excellent conductor, graphite has a very high melting point, enabling it to be used to conduct electricity in high temperature reactions without melting or changing state. There are extensive deposits of naturally occurring graphite found all around the world, which are easily obtainable and can be mined. Moreover, graphite can be created synthetically from a wide range of carbon-containing materials, including acetylene, petrochemicals, coke, and (historically, the most intensely mined mineral) coal. Thus, graphite's excellent conductivity, and relative abundance in comparison to metals (especially the noble metals), makes it a cost-effective, convenient option for use in the industrial manufacture of electrodes.⁴

The carbon industry, under which the manufacture of graphite electrodes is usually categorized, is often called the "black industry" or the "dark art" in Europe and the United States because it uses black carbon, natural graphite, and coke as its raw materials. As with most ceramic products, the raw materials are crushed and kneaded to

² Tanimoto Masayuki, "Nihon no yushutsu bōeki to Ōsutoraria ichiba - zakka kōgyō-hin ni chūmoku shite -", in Amano Masatoshi (ed.), *Ōsutoraria seifu sesshū shiryō o chūshin to suru senzen Nichigō kōeki no shakai keizai-shi kenkyū: Kenkyū seika hōkoku-sho* (2012), pp. 70-71.

³ Ibid, p. 71.

⁴ "Why are Electrodes made of Graphite," The MBI website, <https://www.mbrashem.com>, accessed 11 January 2024.

make a base mix, which is then fired, sintered, and graphitized, as necessary, to make industrial products. The raw materials, and most of the manufacturing machinery and equipment, used to make these industrial products are relatively simple. Moreover, manufacturing technology in the carbon industry does not generally involve chemically complex processes.⁵ Artificial graphite electrodes are made from the basic types of petroleum coke, such as needle coke, honeycomb coke, sponge coke, and shot coke, as well as pitch coke, with pitch, tar, and other materials used as binding agents to hold the electrode together. The coke undergoes the processes of molding, purification, sintering, graphitization (at temperatures exceeding 3,000°C), and finishing, with the resultant electrodes being used mainly for iron- and steelmaking in electric arc furnaces. Similarly, natural graphite electrodes are made with natural graphite, using pitch, tar, and other materials used as binding agents, which undergo forming, milling, sintering, and finishing processes. These are mainly used as electrodes in higher temperature applications, such as ferroalloy steelmaking and calcium carbide production in electric furnaces.⁶

Although “graphitization” facilities for the manufacture of graphite electrodes were first built in Germany during the First World War, the industrial production of highly stable and conductive artificial graphite electrodes advanced more quickly in the United States than in Germany. Some two decades earlier, Edward G. Acheson (1856-1931) patented a method for producing artificial graphite for use in electric arc furnaces in 1896, establishing the Acheson Electrode Company in 1899.⁷ In 1902, the Acheson Electrode Company first began manufacturing artificial graphite electrodes at its newly built Niagara Plant in New York state. By 1906, its technological prowess in research and development enabled it to achieve the “breakthrough” mass manufacture of a large, industrially sized electrode that was 8 inches in width and 48 inches long.⁸ In Germany, the Siemens-Schuckert Company (hereafter Siemens) started research into the production of artificial graphite electrodes around 1913, somewhat later than the Acheson Electrode Company. After the war, Siemens exported their artificial graphite electrodes to the global market as the “cheaper, next best thing” to American-made electrodes.⁹ After its establishment in 1918, the Tokai Electrode Manufacturing Company (*Tōkai denkyoku seizō gaisha*, hereafter Tokai Electrode) entered the carbon industry with the technological support of Siemens from 1921 onwards. Although the partnership was frustrated by persistent technical difficulties, well-renumerated cooperation led to the large-scale, on-site manufacture of artificial graphite electrodes (for the steelmaking industry) during 1927. Tokai Electrode’s move into artificial graphite electrode production, despite its manufacturing base having been previously focused on carbide, ferroalloy, and other materials, was apparently influenced by strong growth in Japan’s nascent steel industry.¹⁰ The demand for electrodes particularly increased after the Manchurian (Mukden) Incident of September 1931, when the concerted, empire-wide implementation of import substitution (*yunyū daitai*) programs led to an unprecedented rise in Japan’s electric steelmaking capacity. The initial production of electrodes, however, could not keep pace with the needs of the burgeoning steelmaking industry. In fact, only a third of the annual demand for artificial graphite electrodes (approximately 300 tons) could be met by domestic production in 1931, with the rest of the artificial graphite electrodes having to be imported from the United States.¹¹

⁵ Nihon tanso kōgyōshi hensan iinkai, *Nihon tanso kōgyōshi*, (Tokyo: Tanso kyōkai, 1966), p. 5.

⁶ Ibid, p. 78.

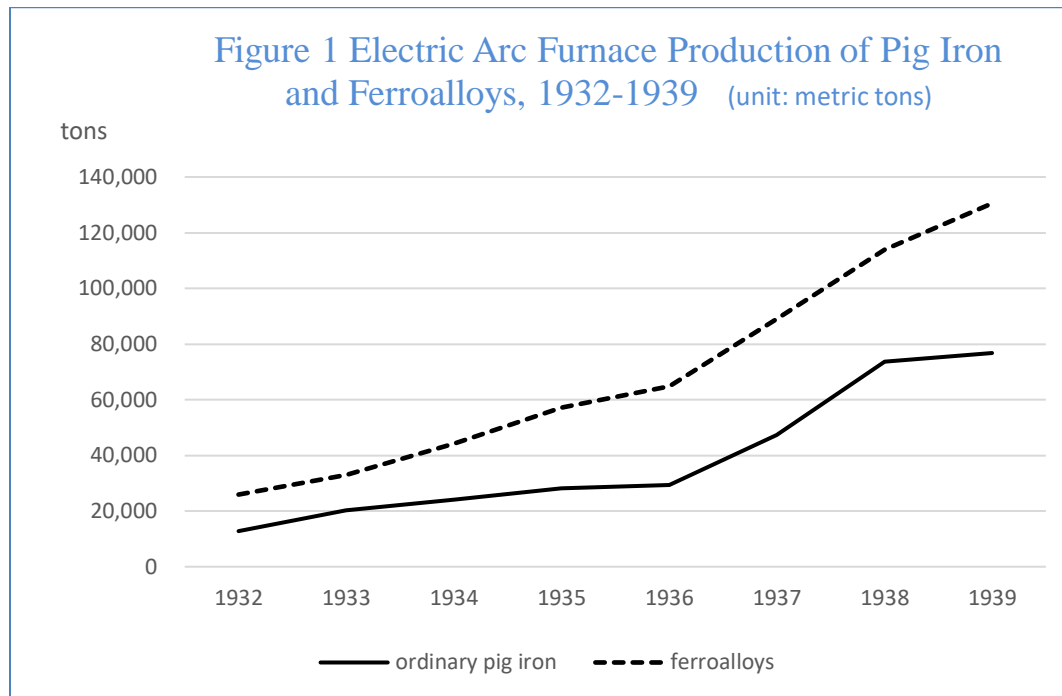
⁷ Use of the Acheson Electrode Company name was officially discontinued after 1928, when it merged with the National Carbon Company, although the Japanese continued to refer to “Acheson” in their discussions of electrodes and other general correspondence. See “E. G. Acheson,” The ElectroChemical Society website, <https://www.electrochem.org>, accessed 11 January 2024.

⁸ Nihon tanso kōgyōshi hensan iinkai, *Nihon tanso kōgyōshi*, p. 84.

⁹ Tōkai kaabon, *Tōkai kaabon 65 nen shi* [The 65-year history of Tōkai kaabon], (Tokyo: Tōkai kaabon, 1983), p. 8.

¹⁰ Nihon tanso kōgyōshi hensan iinkai, *Nihon tanso kōgyōshi*, (Tokyo: Tanso kyōkai, 1966), p. 88.

¹¹ Ibid, p. 90.



Source: *Nihon tanso kōgyōshi hensan iinkai, Nihon tanso kōgyōshi* (Tokyo: Tanso kyōkai, 1966), 91.

The increased production that accompanied Japan's emerging wartime economy, however, encouraged a vexed "oversupply" of industrial materials. Critically, new uses for graphite electrodes in industries such as aluminium refining and calcium carbide production, soon led to a rapid expansion of manufacturing infrastructure by existing companies and the establishment of many new companies. The end result was a dramatic increase in the production of graphite electrodes for a more than four-fold increase in ferroalloy and steel making between 1932 and 1939 (see Figure 1).

Unsurprisingly, a number of Japan's large industrial combines (or *zaibatsu*) planned to enter interrelated carbon and electrical industries, leading to some notable joint ventures with foreign companies.¹² Ultimately, these efforts led to the establishment of more than ten companies specializing exclusively in the manufacture of electrodes, with a further sixty or more other companies manufacturing carbon brushes, current collectors, electric motors/generators, electrodes, and other carbon-related products.¹³ Owing to production increases by these companies, domestic demand for electrodes during 1936 was approximately 900 tons per month, whereas Japan's electrode production capacity had sky-rocketed to 3,460 tons per month, with seven major companies (Tokai Electrode, Nippon Carbon, Toyo Carbon, Showa Electrode, Nippon Denko, Ibigawa Electric, and Chuo Electric) fiercely competing to take the lead in Japan's carbon industry at that time. In 1935, the average price for one ton of artificial or natural graphite electrodes rose from 542 yen to 547 yen, but in 1936 it fell from 573 yen to 553 yen, and in 1937 it fell further to 512 yen. As a result of these falling prices on the domestic market and dramatic production increases (noted above,

¹² Well-known "Japanese" appliance makers, such as Fujitsu, Ryobi, and Toshiba, are all exemplars of foreign capital being imported through technological exchange. See Simon James Bytheway, *Investing Japan: Foreign Capital, Monetary Standards, and Economic Development, 1859-2011*, (Cambridge: Harvard University Asia Center, 2014), pp. 165-71.

¹³ Tōkai kaabon, *Tōkai kaabon 65 nen shi*, (Tokyo: Tōkai kaabon, 1983), p. 91.

see Figure 1), Japan's premier electrode manufacturers urgently tasked general trading companies like Okura & Company with finding or "developing" new export markets for them in high-income countries.¹⁴

Ultimately, the rapid technological development of Japanese electrodes as the premier product of the carbon industry needs to be acknowledged. A standout article in Japan's main trade paper praised Tokai Electrode for its ability to manufacture "the largest class [of electrodes] for use in the largest electric furnaces" despite "starting about 20 years behind the world's highest-standard Acheson electrodes." Pointedly, the company's "great achievement" was said to be that it had caught up with its rivals to such an extent that their "...[technical] differences were reduced to about a 5-year gap in one fell swoop" (*ikkyo ni sonosa wo yaku 5 nen ni chijime eta*).¹⁵ That is, owing to technical cooperation with Siemens and its long-term investment in research and development, Tokai Electrode was able to manufacture goods of comparable standard to those of the world's most advanced electrode makers. What is more, these continued technological improvements allowed Japan's general trading companies to consider the export of its products, despite anticipating intense competition from more established European and American manufacturers.

Okura & Company and the Export of Electrodes to Australia, 1890-1936

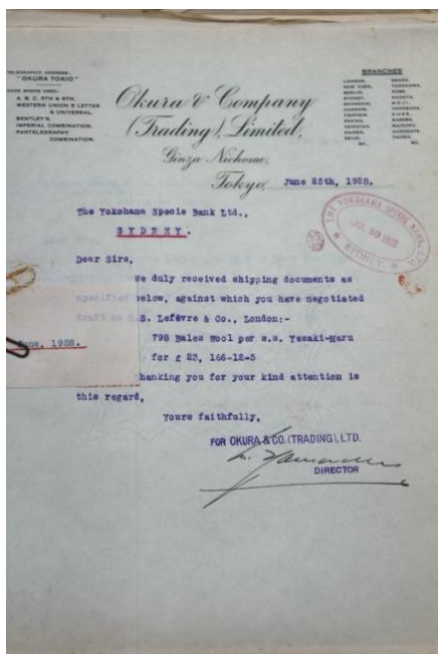


Figure 2 Okura and Company correspondence with Yokohama Specie Bank, Sydney 1928. Courtesy of the National Archives of Japan.

That something so simple as the excess production of artificial graphite electrodes led to their sudden export may seem banal, but "overproduction" was the catalyst for Japan's new trade in carbon products. The general trading company responsible for directing these pioneering exports from August 1936 was Okura & Company (Trading) Limited (Figure 2). Okura & Company (*Okura shōji gaisha*) was a medium-sized company that originated from the Okura-Group Store (*Okura-gumi shōkai*), which had been founded in Tokyo by Okura Kihachirō (1837-1928) as a purveyor of dry goods in 1873. Okura & Company entered the Australian market in 1907, relatively early for a Japanese company, although F. Kanematsu & Company (*Kanematsu shōten*) opened its Sydney branch much earlier, in February 1890. Nevertheless, Okura & Company liked to think of itself as a pioneer.¹⁶

Okura & Company made significant inroads into the Australian market during the interwar years, largely owing to the efforts of Sawada Shigeo (1890-1940), its talented and cosmopolitan Manager, and later Managing Director, based at Endeavour House, 33 Macquarie Street,

¹⁴ Nihon tanso kōgyōshi hensan iinkai, *Nihon tanso kōgyōshi*, p. 93.

¹⁵ "Ichi hayaku ōgata denkiro – kokunai jikyū madeno kushindan, *Sangyō Keizai Shimbun*, 19 January 1944.

¹⁶ Amano Masatoshi, *Senzen Nichigō bōekishi no kenkyū*, (Tokyo: Keisō shobō, 2010), p. 111; "A Well-Known Merchant," *Sydney Stock and Station* (NSW), Tuesday 29 Aug 1905, p. 2; and Kaneko Fumio and Watanabe Wataru, "Okura zaibatsu no kenkyū (6)" [Research on the Okura Zaibatsu (6)], in *Tōyō keidai gakkaiishi*, 107, (1978), p.45. Please note that Mitsui & Company (*Mitsui Bussan*) also entered the Australian market during 1907.



Figure 4 Shigeo Sawada c. 1915.
 Kan Studios. Gelatin silver photograph on paper.
 19.0 x 12.9 cm
 National Portrait Gallery of Australia
 Gift of Ron Wylie 2007

Sydney (Figure 3).¹⁷ Sawada, “known the world over as Mr. Sam Sawada,” first rose to prominence in the wool industry when he was appointed as one of 19 official wool appraisers in New South Wales (NSW), Victoria, and Tasmania by the Prime Minister of Australia W. M. Hughes on 23 January 1917, just two years after arriving in Sydney (see Figure 4).¹⁸ Along with contemporaries like Ijima Shigeyosu, Isokane Taizo, and “Kitty” Kitamura Maresuke, Sawada proved to be a fluent and gifted middleman, bridging not insignificant commercial and cultural divides. Marrying the daughter of Nelson Illingworth, a prominent Sydney sculptor in 1924, Sam and Thelma Sawada became well-known among those connected with wool and shipping interests, the city’s business fraternity, and of course, its Japanese community.¹⁹

At that time, Japan was one of Australia’s most important trading partners, and Okura & Company’s business was contingent on buying Australian wool in order to fulfil its military and government contracts in Japan. Significantly, Okura

& Company did not actively expand its business interests in Australia much beyond primary products like barley, wheat, flour, hides, and pelts. Even during the First World War, when many Japanese trading companies were opportunistically expanding the scope and scale of their international operations in the absence of European rivals, Okura & Company seemed content to focus on its role as a buyer within the wool industry in Australia.²⁰



Figure 3 Endeavour House, 33 Macquarie Street, Sydney.
 Courtesy of the City of Sydney Archives: A-00015261

¹⁷ The office staff of the Sydney consisted of approximately twenty people with four or five staff having been sent from Tokyo and the rest being locals. Typically, there was gendered division of labor with Japanese males supervising the mostly female, and thence lower-paid, Australian typists and office workers.

¹⁸ “War Precautions (Wool) Regulations,” Commonwealth of Australia Gazette [Issue No.13], Friday 26 January 1917, p. 137; “Mr. S. Sawada,” Queensland Country Life (Brisbane, Qld), Friday 12 January 1940, p. 11; and see “Shigeo Sawada,” National Portrait Gallery website, <https://www.portrait.gov.au/people/shigeo-sawada-1890>, accessed 11 January 2024.

¹⁹ Conspicuous on the Sydney social circuit, keenly playing tennis, golf, and bridge, Sam and Thelma Sawada lived and entertained at their “Hakone” Residence on Badham Avenue, Mosman. Their names often appeared, most flatteringly, on the society pages of the local newspapers.

²⁰ Nakamura Seishi, “Taishō Shōwa shoki no Ōkura zaibatsu”, in Keiki shigaku, 15:3, (1980), p. 57. Suzuki & Company (Suzuki shōten) is perhaps the most conspicuous example of a Japanese trading company that profited from the changed circumstances of the First World War. See “History,” The Suzuki & Company website, <https://www.suzukishoten-museum.com>, accessed 11 January 2024.

Although Okura & Company's activities in the Australian market were second only to Kanematsu in terms of wool trading – the foundation of its business – before the First World War, the trading company had failed to develop any private-sector demand for Australian wool in Japan. Fundamentally, its business model revolved around supplying the government-owned Senju Mill in Tokyo ever since the mill's establishment in 1879. After the 1914-1918 war, Okura & Company's standing as a general trading company in Australia thus declined in comparison to the more dynamic Mitsubishi Trading Company (*Mitsubishi shōji gaisha*), and other Japanese traders such as Mitsui & Company (*Mitsui bussan*).²¹ Moreover, Okura & Company's reliance on wool and relatively poor commercial performance also reduced its chances of entering into the market for manufactured textile exports – the mainstay of Japanese exports to Australia in the 1930s – and motivated the company's directors to seek other, more novel items suitable for export.

Against a background of relative commercial decline, Okura & Company thus attempted to promote the sale of artificial graphite electrodes as a new Japanese export during the latter half of 1936. At that time, it must be remembered that there was an apparent overproduction of electrodes (or excess capacity) in Japan's domestic market, with the leading manufacturers capable of making more than 1,000 tons per month. The Export Department at Okura & Company's head office had taken the lead in exploring overseas sales channels for Tokai Electrode's products, and the company's executives asked their manager in Sydney to aggressively promote electrode sales because they believed that there was great potential to develop them in Australia. In a letter to Sawada, their Sydney manager, the export of artificial graphite electrodes was posited as nothing less than "...the best of all exports" (*yushitsuin naka no hakubi*) as it was a product that few other trading companies were involved with and, as a result, large profits could be anticipated.²² Moreover, electrodes "...being synthetic graphite or consisting principally of synthetic graphite for electro-chemical purposes or for use in electric furnaces" could be imported freely, without attracting tariffs, or opposition from local electrode manufacturers who focused on producing different products, such as electrodes for arc welding.²³

Abel Lemon & Company and the Import of Electrodes to Australia, 1936-1937

The export of artificial graphite electrodes to Australia by Okura & Company was also facilitated by its close working relationship with Abel Lemon & Company, an Australian trading company. Abel Lemon's business model revolved around importing goods directly into Australia from overseas through direct purchasing, direct chartered transport, and then (on)selling these products in the major cities of Australia. Abel Lemon's main sources of income during the interwar period included the importation of goods from leather processing plants (tanneries), metal foundries, heavy industry, the chemical industry (notably chlorine imports from the major chemical producer, La Porte Industries Limited of the United Kingdom), and "direct imports" to Australia's nascent food industry.²⁴ By Okura &

²¹ Amano Masatoshi, *Senzen Nichigō bōekishi no kenkyū* (Tokyo: Keisō shobō, 2010), p. 113.

²² Export Department to Sawada Shigeo, "Export of Artificial Graphite Electrodes made by the Tokai Electrode Company," 10 November 1936, *Okura shoji*, NAA kyūzōshiryō, SP1098/9, Box 28-1.

²³ Tariff Board, "Tariff Board's Report on Carbon Manufactures of all kinds, including Carbon Blocks-Tariff Item 181(C) 29th April, 1935," (Canberra: Commonwealth of Australia, 1935), p. 5. doi: https://parlinfo.aph.gov.au/parlInfo/download/publications/abledpapers/HPP052016004201/upload_pdf/HPP052016004201.pdf; and see Tariff Board, "Tariff Board's Report and Recommendations on Manufactures of Metals, N.E.I. 9th February, 1933," (Canberra: Commonwealth of Australia, 1933), p. 6. doi: https://parlinfo.aph.gov.au/parlInfo/download/publications/abledpapers/HPP052016001158/upload_pdf/HPP052016001158_1932-33-34_126.pdf

²⁴ The business of its successor company, Abel Lemon Distribution Propriety Limited, is now firmly focused on importing food and food related products for Australian consumers, primarily from Europe and Asia. See "History: First 100," Abel Lemon website, <https://www.abellemon.com.au>, accessed 11 January 2024.

Company's own evaluations, Abel Lemon & Company, having contacts right across heavy industry, was "eagerly making efforts to promote the electrode business" and was poised to play an important role in its developing market.²⁵

British, American, and German products were, however, already widely used in Australia. Thus, the import of Tokai Electrode's products meant having to compete against well-established, world-leading brands, like the "Acheson electrodes" manufactured by the National Carbon Company. The composition and value (in British pounds) of Australian imports of carbon products, by country, was researched and reported by the Sydney branch of Okura & Company to the Export Department at its head office in Tokyo (see **Table 1**).

Table 1 Australian Imports of Carbon Products

(unit: Pound sterling)

Country	1934-35	1935-36	1936-37
United Kingdom	20,967	16,552	15,135
Canada	2,248	10,771	20,416
Austria	-	-	113
France	2,741	2,818	2,104
Germany	12,329	14,354	17,171
Japan	-	-	851
Spain	-	-	106
Sweden	-	-	58
United States of America	16,231	13,741	12,257
Other Foreign Countries	317	473	40
Other Commonwealth Countries	-	34	-

Source: Sawada Shigeo to Export Department, *Ōkura shoji*, NAA kyūzōshiryō, SP1098/9, Box 20.

In addition to imports from the U.S. and Germany, combined imports from Canada and the United Kingdom dominated electrode sales in the Australian market. Unsurprisingly, the relative share of imports from Japan, as a latecomer, was vanishingly small. In response to the situation, the Sydney branch of Okura & Company enthusiastically redoubled its efforts to sell Tokai Electrode products. Necessarily, Okura's representatives in Sydney had to somehow coordinate their actions with those of the electrode's manufacturer in Japan. Unfortunately, however, Tokai Electrode seems to have hardly been aware of commercial conditions, required standards, or established business practices in Australia. And if the challenge of uncoordinated and inflexible trading positions were not enough to contend with, the Sydney representatives of Okura & Company were soon to be exasperated by the arrival of new competition from Japan.

²⁵ Sawada Shigeo (Sydney Branch) to Export Department, "Order of Ferro Silicon from Abel Lemon," 24 November 1936, *Ōkura shoji*, NAA kyūzōshiryō, SP1098/9, Box 45.

The “Extra Nipple” Problem and Mitsubishi’s Trading Offensive, 1936-1937

When Tokai Electrode initially began exporting its products to Australia, Abel Lemon & Company was concerned about Japanese rivals, such as Mitsui & Company and the Mitsubishi Trading Company, infiltrating and then taking over the market. Tellingly, Abel Lemon requested that Tokai Electrode export its products to Australia without displaying their usual trademarks on the wrapping paper and packing boxes, and asked Okura & Company to refrain from mentioning the “Tokai Electrode” brand name, so that Mitsubishi or Mitsui would remain incognizant of their efforts to garner sales in Australia and New Zealand. Sawada was optimistic about competing against American products in the Australian market, and confidently wrote that Abel Lemon’s fear about Mitsubishi and Mitsui were groundless, in that “no other company is able to do the same kind of business as Okura & Company.”²⁶ Nevertheless, Okura & Company’s lack of local industrial knowledge and experience became a major liability in its plans to establish export markets, and these shortcomings clearly expressed themselves in their so-called “extra nipple” problem with Tokai Electrode.

A nipple is the joint at the end of an artificial graphite electrode that allows it to be attached to the electrode post in an electric arc furnace. Artificial graphite electrodes used in electric arc furnaces, and in other electrochemical industries, are fastened by threading a graphite nipple onto the end of the electrode rod at its coupling (see Figure 5). Especially in electric arc furnaces, graphite electrodes are subjected to shock and bending loads owing to the repulsive forces between electrodes generated by the transmission of extremely high ampere currents. As a result, the nipple joints of graphite and artificial graphite electrodes often broke prematurely during use.²⁷



Figure 5 The Tokai Artificial Graphite Electrode with Nipple, c. 1937

Tōkai denkyoku, *Tōkai denkyoku 35 nen shi* (Tokyo: Tōkai denkyoku, 1952), p. 172

In the Australian market, European and American manufacturers had, for the convenience of their customers, included nipples in the product price when supplying artificial graphite electrodes. Tokai Electrode, however, haughtily opposed the adoption of this business practice for its products in the Australian market. In response, Sawada wrote candidly to Okura & Company’s Export Department, “Whereas the manufacturers of the Acheson [the National Carbon Company] electrode calculate the price of their nipples based on the degree of electrode sales... Our price is absolutely too high, and the quality is so low in comparison... that it is impossible for us to move forward with [sales to] our customers.”²⁸ Sawada’s report emphasized that since an increase in the volume of nipple exports was an

²⁶ Sawada Shigeo (Sydney Branch) to Export Department, “Order of Ferro Silicon from Abel Lemon,” 24 November 1936, *Ōkura shoji*, NAA kyūzōshiryō, SP1098/9, Box 45.

²⁷ Imamura Yoshio, Sato Sennosuke, Kaminaga Kazuhiko, Nagai Tsuneo, and Sakai Mottos, “*Denkyoku-yō nippers setsuzoku-bu no ōyō bumpy no dō mekki-hō ni yoru sokutei*”, in *Ibaraki University Faculty of Engineering Research Bulletin*, 23, (1975), p. 83.

²⁸ Sawada Shigeo (Sydney Branch) to Export Department, “Extra Nipples,” 6 July 1937, *Ōkura shoji*, NAA kyūzōshiryō, SP1098/9, Box 45.

inevitable part of electrode exports, Tokai Electrode should negotiate with Australian companies to sell them “extra” nipples, like its famous American rival (whose products were, according to Sawada, higher in quality and lower in price).

In addition, Sawada’s correspondence from Sydney also revealed that the Mitsubishi Trading Company’ was trying to sell rival Japanese products, other than those of Tokai Electrode, and thus an increased supply of nipple exports was essential for establishing new sales channels. As Abel Lemon & Company had initially feared, Okura & Company’s actions had evidently attracted the attention of its Japanese rivals, who were also exploring the possible export of artificial graphite electrodes and other carbon products to the Australian market.²⁹

The market for artificial graphite electrodes in Australia was, however, quite limited. In terms of iron and steel production, Australia was a relative latecomer, with its industry being many decades behind that of most other industrialized economies. In response to the disruption of British imports caused by the First World War, the Broken Hill Proprietary Company Limited (BHP) was established in Newcastle, NSW, at the urging of an unnamed state government minister, and began operations in 1915.³⁰ Despite widespread economic recession following the war, associated overproduction, and a period of industry-wide rationalization in the 1920s, Australia’s steel industry continued to grow. Indeed, its economic performance and competitiveness increased throughout the 1930s to such an extent that by the late 1930s, with the exception of high-grade and specialty steel, its production costs were lower than those in the United States. Moreover, the promotion of nonferrous metal production requiring the use of electric arc furnaces, encouraged BHP to acquire the Australian Iron & Steel (AIS) steel mill in Port Kembla in 1935, and in doing so become Australia’s leading steel producer.³¹

According to the Sydney Branch of Okura & Company’s report, there was no demand for artificial graphite electrodes by BHP, and of the three other steelmakers in New South Wales, only two of them could be persuaded to try Tokai Electrode’s products. Despite Okura & Company’s “tough” sales situation in Australia, Tokai Electrode remained extremely reluctant to do anything about increasing its supply of “extra” nipples to Australia. In a polite but firm statement to Okura & Company, Tokai Electrode explained that it had “absolute confidence in its products” (*heisha seihin ni zettai no jishin*) and did not anticipate any product failure, breakage, or other problems. If there was a lot of breakage owing to the design or operations of the furnaces in Australia, Tokai Electrode said that it would not increase the supply of nipples to customers unless they were firmly committed to using their products. The manufacturer, however, saw no reason to promise the delivery of extra nipples with its electrodes *before* the prospective clients had entered into transactions (and actually purchased) Tokai Electrode’s products. And anyway, the nipples themselves were always sold separately (in Japan) and thus needed to be ordered as distinct, individual items by their customers. In short, Tokai Electrode were not interested in negotiating the sale of extra nipples. The

²⁹ Sawada Shigeo (Sydney Branch) to Export Department, “Extra Nipples,” 6 July 1937, *Ōkura shoji*, NAA kyūzōshiryō, SP1098/9, Box 45.

³⁰ For an introduction into the history of steel production in Newcastle, NSW, and Australia, see Jay Christopher, *A Future More Prosperous: The History of Newcastle Steelworks 1912–1999*, (Newcastle: Broken Hill Proprietary Company Limited, 1999); and the dated, but authoritative Helen Hughes, *The Australian Iron and Steel Industry, 1848–1962*, (Melbourne: Melbourne University Press, 1964); and N. R. Wills, “The Growth of the Australian Iron and Steel Industry,” in *The Geographical Journal*, 115, no. 4/6, (1950), pp. 208–18. doi:10.2307/1790154.

³¹ Ishida Takao, *Ōsutoraria no kin’yū keizai no hatten* [The Financial and Economic Development of Australia], (Tokyo: Nihon Keizai hyōronsha, 2005), pp. 286–287; and Ishigaki Nobuhiro, “*Ōsutoraria tekkō-gyō no seiritsu katei*” [The establishment of the Australian steel industry] in Kotono Takashi (ed.), *Ōsutoraria keizai no keisei katei* (Tokyo: Keisō shobō, 1972), pp. 124–128, 144–157. Thirty-four years later, in 1979, BHP acquired, John Lysaght (Australia) Propriety Limited as a wholly owned subsidiary. Also in July 2002, BHP’s steel industry in Australia became a subsidiary of a new BHP Group and became BlueScope Steel Limited. See “Our History,” BHP website, <https://www.bhp.com>, accessed 11 January 2024; and “About Us,” BlueScope Steel Limited website, <https://www.bluescope.com>, accessed 11 January 2024.

company's statement ended with them confidently claiming that there was an absolute "qualitative difference" between their products between and those of other Japanese electrode manufacturers.³²

All that Tokai Electrode said may well have been true. Nevertheless, their inability to respond to the requests and perceived needs of their potential Australian clients was deeply problematic for Sawada. Somehow lost in the correspondence was the fact that Tokai Electrode's proud and unyielding stance was *itself* an obstacle to the development of Okura & Company's business interests in Australia.

Sawada Shigeo and Tokai Electrode's "Displeasing" Attitude, 1936-1937

In his capacity as a Managing Director of Okura & Company, Sawada Shigeo's response to Tokai Electrode's correspondence from 26 July 1937 was nothing short of scathing: "We are extremely displeased (*hanahada zannen*) with Tokai Electrode's attitude." He continued: "We have recently been informed by a friend of the Consulate General [in Sydney] that your company has asked the consulate to investigate the local market while choosing to ignore us."³³ Trying to act behind Sawada's well-connected back in Sydney was foolish. Sawada may have conspicuously lived his own version of the "Australian dream," but he was a counsellor of both the Japanese Chamber of Commerce and the Japanese Society in Sydney. His older brother, Sawada Renzo, was one of Japan's most distinguished diplomats, and between the both of them they knew almost everyone working at the Japanese consulates in the most commercially important Australian states.³⁴ Unmistakably, Tokai Electrode's indiscreet inquiries to the consulate, in effect asking local Japanese diplomats to conduct independent research for them on the Australian market, showed a marked distrust of Okura & Company's operations in Sydney.

Another *continuing* source of dissatisfaction for Sawada was the way in which the electrodes were exported to Australia. Transported in wooden boxes, Tokai Electrode presumably complied with requests to export its products without their usual trademarks, but for whatever reason, the protective packing was now inadequate (see Figure 3). The real kicker, however, was in Sawada's conclusion: "...the quality of your products is no match (*teki ni arazaru ni*) for those of the Acheson Company" and Tokai Electrode's "overconfidence" (*kashin*) in the quality of its products threatened to result in the loss of all the in-roads that the Sydney Branch of Okura & Company had been striving to make for them in the Australian market.³⁵

Nevertheless, from beginning to end, Tokai Electrode remained obstinate about *not* increasing the delivery of its nipples to Australia. Searching to find a way around the impasse, Okura & Company's Export Department in Tokyo had decided to maintain its electrode export drive by including an "additional 10%" supply of nipples with each purchase, free of cost to the customer. In effect, Okura & Company were absorbing the costs of supplying these "extra nipples" in all of their Australian transactions. Just to make sure everyone in Okura & Company was now on the same page, the remedial policy was clearly spelt out in an official directive sent from Tokyo to their Managing Director in Sydney.³⁶

³² Tokai Electrode Company to Okura & Company, "Regarding Extra Nipples," 26 July 1937, *Ōkura shoji*, NAA kyūzōshiryō, SP1098/9, Box 13/2. Tokai Electrode claim to make products of superior quality, but they seem reticent to say anything about their prices or "cost performance."

³³ Sawada Shigeo (Sydney Branch) to Export Department, "Additional order for electrodes," 7 September 1937, *Ōkura shoji*, NAA kyūzōshiryō, SP1098/9, Box 20.

³⁴ "Shigeo Sawada," National Portrait Gallery website, <https://www.portrait.gov.au/people/shigeo-sawada-1890>, accessed 11 January 2024.

³⁵ Sawada Shigeo (Sydney Branch) to Export Department, "Additional order for electrodes," 7 September 1937, *Ōkura shoji*, NAA kyūzōshiryō, SP1098/9, Box 20.

³⁶ Export Department to Sawada Shigeo, "The Issue of Extra Nipples," 20 August 1937, *Ōkura shoji*, NAA kyūzōshiryō, SP1098/9, Box 13/2.

Okura & Company's Renewed Attempts at Electrode Exports, 1938-1939

Efforts by the Okura and other Japanese trading companies to sell electrodes in Australia achieved relatively modest, and often uncertain results. In the last years of the 1930s, however, the regular import of Japanese electrodes became especially challenging. Nevertheless, a letter from Sawada to his head office in late 1938 describes transactions for electrodes as having “finally gotten on track” (*yoyaku kidō ni norikake*). Apparently, “...while sales of other products are sluggish, electrodes are the only product that generate a considerable amount of money and shows promise in the future.”³⁷ Not manufactured textiles or clothing, sewing machines, bicycles, or motor cars, but artificial graphite electrodes!³⁸

What concerned Sawada though, was that while electrode exports were *at last* making progress in Australia, Japanese production levels were plateauing with a declining capacity to export, presumably caused by increases in military-related, domestic demand for artificial graphite electrodes. Obviously, an unfortunate, embarrassing, and potentially disastrous turn of events for the traders at the Sydney Branch. Given that the export of artificial graphite electrodes looked to become increasingly problematic, and that supply problems were liable to intensify as the wartime situation in Japan grew steadily worse (and centralized, economic planning became entrenched), Abel Lemon & Company, lobbied Okura & Company to investigate the feasibility of exporting *natural* graphite electrodes to Australia.³⁹

Contrary to Sawada's hopes and the optimism of Abel Lemon & Company, however, the demand for Japanese electrodes in Australia decreased, while domestic demand for artificial graphite electrodes continued to expand in Japan. Ultimately, the supply of electrodes to Australia seems to have dried up by mid-1939, as evidenced by correspondence from Okura & Company's Export Department. Nevertheless, in their message of 28 June 1939 to Sawada, the Export Department announced, “Recently we have come to realize significance of maintaining the Australian market” and claimed that owing to the “eagerness” of the Sydney office, “...we have continued to campaign on your behalf with Tokai Electrode at every opportunity.”⁴⁰ It seems that Okura & Company had been told by Tokai Electrode that they were ready to allocate a “certain quantity of planned production” to Australia, and “ready to study” a 400-yen discount from their Japanese price of 1,700 yen per ton. But it was all contingent on two pressing questions: “What is the quantity that you can definitely purchase ...and what is the maximum price we can expect to receive?”⁴¹

Frustratingly, Sawada's reply, and later reports to Tokyo are still being searched for.⁴² What Sawada thought about the future direction and prospects of trade between Australia and Japan, the outbreak of war in Europe, and much else, is a source of great conjecture and interest. Having lived in Sydney for 25 of his 50 years, however, Sawada died suddenly on 7 January 1940. Being both mourned and celebrated in his adopted country as “not only a good

³⁷ Sawada Shigeo (Sydney Branch) to Export Department, “Various circumstances concerning the Australian import business,” 18 November 1938, *Okura shoji*, NAA kyūzōshiryō, SP1098/9, Box 20.

³⁸ For a discussion of Japanese initiatives in the prewar export of automobiles to Australia, see Keishi Okabe and Simon James Bytheway, “Exploring Emerging Markets: Mitsubishi and Early Japanese Automobile Exports to Australia, 1930-1937,” in *Japanese Research in Business History*, 40, (December 2023), pp. 64-78. <https://doi.org/10.5029/jrbh.40.64>.

³⁹ Sawada Shigeo (Sydney Branch) to Export Department, “Various circumstances concerning the Australian import business,” 18 November 1938, *Okura shoji*, NAA kyūzōshiryō, SP1098/9, Box 20.

⁴⁰ Export Department to Sawada Shigeo, “The matter of electrodes,” 28 June 1939, *Okura shoji*, NAA kyūzōshiryō, SP1098/9, Box 13/2.

⁴¹ Export Department to Sawada Shigeo, “The matter of electrodes,” 28 June 1939, *Okura shoji*, NAA kyūzōshiryō, SP1098/9, Box 13/2.

⁴² Despite looking for Sawada's final reports among Okura & Company documents from January 1939 to January 1940 we are unable to reveal anything further here.

Australian, but a big Australian,” his ashes were divided between Japan and Mosman. If there is anything good to say about his death, perhaps it is that he was spared from seeing the outbreak of war between Japan and Australia.⁴³

The Tokai Electrode Company’s sudden change in demeanor was very likely to have been influenced by the Japanese government’s new export promotion policies of the era. Put succinctly, the Ministry of Commerce and Industry (*Shōkōshō*) had conducted intensive research into the promotion of wartime trade and how best to proceed. Its minister from 1934 to 1939, Hatta Yoshiaki (1879-1964), proposed “...the issuance of compulsory export orders (*yushyutsu meirei no hatsudō nado*) for applicable products” and publicly announced that the imperial Japanese government was set to “take concrete steps” (*hitsuyō naru sochi*) to promote Japanese trade overseas.⁴⁴ That said, the above measures were announced as part of a larger government policy (albeit in a smaller, ministerial publicity campaign), and Tokai Electrode’s interest in continuing or resuming its exports to Australia most likely stemmed from a deepening commercial awareness of the importance of maintaining footholds in foreign markets.

Interwar Connections and Postwar Reconnections, 1951-1961

The Japanese interwar experience of exporting electrodes was relatively brief and, as related above, often contentious during the politically fraught and economically difficult 1930s. Nevertheless, the example of Tokai Electrode’s “successful” exports to prewar Australia (by its own reckoning) encouraged the resumption of its sales to foreign markets in the immediate postwar period when the export of Japanese manufactures can be said to have had really begun in earnest. Following Japan’s surrender in the Second World War, Tokai Electrode resumed production and quickly increased its manufacturing output in response to reconstruction demands during 1946. As a result of a sharp, postwar decline in demand for steel by Japan’s automobile industry, and the induction of economic depression associated with the so-called “Dodge Line” of 1949-1952, there was a renewed push for Tokai Electrode to find new customers for its products in overseas markets such as South America, Europe, India, and Australia. In 1952, a “foreign section” (*gaikokuka*) was established within Tokai Electrode’s sales department, and by the late 1950s, the export ratio of the company’s products had rapidly increased, accounting for some 30% to 50% of all its sales (see **Table 2**).

Sweden provides a concrete example of the seemingly outsized impact that interwar experiences had on product exports during postwar period. Tokai Electrode’s products were apparently exported to Sweden, via Okura & Company’s Berlin Branch, at around the same time they were being sold in Australia through the Sydney Branch. Although information about these sales is still scarce, a managing director at Tokai Electrode recounted in a round-table discussion that when he visited Sweden on New Year’s Day 1951, the manager of a major Swedish trading company told him that Swedish importers placed orders for Tokai Electrode’s products based on their pre-war performance and experiences.⁴⁵ Much more historical research on Japanese enterprise in the interwar period needs to be done before anything definitive can be claimed here. Nevertheless, a case may be made that the “market development” efforts of trading companies *before* the war had a definite impact on the resumption of Japanese exports *after* the war.

⁴³ See “Sawada,” *Daily Telegraph* (Sydney, NSW), Tuesday 9 January 1940, p. 11; “Obituary,” *Sydney Morning Herald*, (NSW), Wednesday 10 January 1940, p. 18; and “Mr. S. Sawada,” *Queensland Country Life* (Brisbane, Qld), Friday 12 January 1940, p. 11.

⁴⁴ “Yushyutsu meirei kōryō” [A consideration of Export Orders], *Chūgai Shōgyō Shimbun*, 14 May 1939.

⁴⁵ Despite enquiries in Sweden, the personal details remain unclear. Apparently, Ueda Yuji (18??-19??) was quoting one “Geruberuherosu” or Gerber Heros? See Nihon tanso kōgyōshi hensan iinkai, *Nihon tanso kōgyōshi*, (Tokyo: Tanso kyōkai, 1966), pp. 708-709.

Table 2 Graphite and Carbon Electrode Production for Tokai Electrode, 1953-1959

(unit: metric tons, in thousands)

Year	Domestic Market	Export Market	Total	Export ratio
1953 first half	1,347	222	1,569	14.1%
1953 second half	1,498	446	1,944	22.9%
1954 first half	1,464	301	1,765	17.1%
1954 second half	1,401	363	1,764	20.6%
1955 first half	1,657	154	1,811	8.5%
1955 second half	1,943	918	2,861	32.1%
1956 first half	2,067	1,183	3,250	36.4%
1956 second half	2,546	1,800	4,346	41.4%
1957 first half	2,640	854	3,494	24.4%
1957 second half	2,953	1,420	4,373	32.5%
1958 first half	2,138	1,739	3,877	44.9%
1958 second half	2,064	1,719	3,783	45.4%
1959 first half	2,478	2,434	4,912	49.6%
1959 second half	3,676	1,607	5,283	30.4%

Source: Tōkai kaabon, *Tōkai kaabon 65 nen shi*, p. 175.

Conclusion

The research presented here stems from a growing awareness that the export of industrial products to Australia in the interwar period was a pioneering example of market development, achieved by a relatively inexperienced Japanese trading company in direct competition with established European and American manufacturers. Moreover, the mixed experiences and prewar failure of these efforts was, in effect, a vital precondition for the development of full-scale industrial exports to advanced, capitalist markets in the postwar period.

Up until at least the early 1930s, American, British, and German companies involved in the manufacture of artificial graphite electrodes were technologically superior to all their would-be competitors and thus the products of the budding Japanese companies were inferior, even those for use in Japan's specialized, domestic market. The growing use of electric arc furnaces in the iron and steel industry, however, led to a rapid increase in demand for electrodes – and great technical innovation – during the mid-1930s. So much so that by 1936, the “overproduction” of electrodes in Japan had caused a glut in the market, which in turn, led to them being imaginatively exported, or depending on one's perspective ‘dumped,’ overseas.

In attempting to develop sales opportunities in high-income economies during the interwar period, we reiterate that Japanese companies needed to find viable sales prices for their products in order to compete against technologically superior, Western products. Often, some commercial flexibility was needed in order to “make the sale” and get the trade moving. Of course, it was not easy for a manufacturer like Tokai Electrode, whose own

commercial experiences were limited to domestic sales in an isolated and autarkic economy, to recognize the international competitiveness of their products in target export markets, such as Australia or Sweden, let alone to negotiate a new line of business and trade. The role played by general trading companies like Okura & Company was *precisely* to bridge the gap in recognition between Japanese manufacturers and their non-Japanese clients *in order to promote exports* to new and emerging markets overseas.

That said, our study has revealed that Japanese electrode manufacturers were, when left to their own devices, patently unable to recognize the international competitiveness of their products in nascent export markets during the 1930s. Thus, the Sydney Branch of Okura & Company, with the cooperation of Abel Lemon & Company, were both tasked with the job of finding new Australian clients for Japanese industrial products. All the necessary information for foreign “market development” had to be conveyed to Japanese manufacturers like Tokai Electrode by the export departments of general trading companies, often through offices headquartered in Tokyo. Quite simply, the export of artificial graphite electrodes from Japan to Australia *would not have been possible* without the cooperation of both Japanese and Australian trading companies acting as intermediaries for Japanese manufacturers. Ironically though, Japanese trading companies perceived each other, rather than American or European concerns, as being the main rivals in their grand contest to develop new markets in Australia and New Zealand. That notwithstanding, personalities like Okura & Company’s conscientious, honest-to-a-fault, and cosmopolitan Managing Director in Sydney, Sawada Shigeo, worked hard to match the very different needs of Japanese and Australian companies in the earliest stages of their commercial interaction. It can hardly be stressed enough that when Sawada first came to Sydney, in 1915, Japan was one of Australia’s key trading partners. Moreover, both countries were *de facto* allies through their imperial and strategic connections with Great Britain during the First World War.

Even when the export of electrodes had become difficult owing to increased domestic demand, Sawada Shigeo, and subsequently Okura & Company, urged Tokai Electrode to continue its participation in the new and promising trade. Tokai Electrode’s belated acceptance of the need to change its practices and discount prices for its clients overseas may have simply been in reaction to new national policies calling for compulsory export orders, but we have presented compelling evidence – indicative of a growing awareness by Tokai Electrode – of the importance of maintaining trade links with customers in foreign markets. Whatever the case, the final point exemplified by electrode exports to Australia is that the troubled, and relatively short-lived, small-scale experiences of interwar trade led Japanese industry towards embracing full-scale, international exports after the Second World War. Indeed, building upon an awkward legacy, Tokai Electrode and Japan’s other major electrode-making companies redoubled their efforts after the war, with manufacturing output growing to such an extent that within a decade or so of having resumed electrode production they had proudly reinvented themselves as “export producers” in a burgeoning, neo-mercantilist economy.

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