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DEPARTMENT OF JUSTICE

WAR DIVISION

ECONOMIC WARFARE SECTION

REPORT ON

JAPANESE COAL CARBONIZATION INDUSTRY

April 30, 1943

Submitted by: Allan Trumbull
Economic Warfare Section
Department of Justice
Seattle, Washington

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Economic Warfare Section
War Division
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Washington, D. C.

Confidential Report
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Re: Japanese Coal Carbonization Industry
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JAPANESE COAL CARBONIZATION INDUSTRY

I. INTRODUCTION

The purpose of this report is fourfold: (1) to present a brief background of the development of coal carbonization in Japan, (2) to supply detailed information about the carbonization plants of SHOWA STEEL WORKS CO., LTD., and NIPPON YUKA KOGYO K.K., (3) to describe the location of carbonization plants now under construction in Manchoukuo and to indicate certain concerns on Honshu expanding their production, and (4) to furnish information on the Japanese low temperature coal carbonization program.

II. IMPORTANCE OF COAL CARBONIZATION TO THE JAPANESE WAR EFFORT

Coal carbonization is important to the Japanese war effort because (1) it provides fuel (coke) to basic industries, and (2) it furnishes by-products (gas, tar, ammonia, and light oil) which are used as raw materials for dyes, drugs, explosives, poison gas, disinfectants, solvents, and other products. It was estimated that the 2164 ovens, including those under construction, of the Japanese coal carbonization industry would consume over 9 million tons of coal or one-fourth the annual production in 1936. Beginning in that year, new plants were constructed and the capacity of existing plants increased. The new plants are: NIPPON YUKA KOGYO K.K. and plants in Manchoukuo whose names are not known; the existing plants increasing their capacity are: SHOWA STEEL WORKS CO., LTD., TSURUMI STEEL AND SHIPBUILDING CO., LTD., and NIPPON STEEL TUBE CO., LTD.

Since 1933, the Japanese have concentrated upon low temperature coal carbonization in order to obtain fuel oil to compensate for the scarcity of natural petroleum. In 1936, it was estimated that low temperature carbonization plants, including expansions, would have a total charging capacity of 2240 tons of coal per day.

III. BOTTLENECKS IN JAPANESE COAL CARBONIZATION

The coal carbonization plants located in the Tokyo area obtain mineral coal from Hokkaido. Since the distance between this area and Hokkaido is great and since the transportation facilities are inadequate, efficient and speedy production is impossible. Carbonization plants in Manchoukuo, although surrounded by an abundance of coking coal, are wholly dependent upon the South Manchuria Railway for delivery. If the operations of this railway were interrupted, the production of coke, by-products, iron and steel would be materially diminished.

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IV. DEVELOPMENT OF JAPANESE COKE INDUSTRY

The history of coke manufacturing in Japan falls into four periods: (1) a trial period prior to 1903; (2) an imitation period to 1915; (3) a creative period from 1916; and (4) a conspicuous expansion period from 1936. The first may be described as a time of small ovens; the beehive and the Coppee, with no demand for by-products.

The next was one of importation and imitation, especially the Koppers Oven. Small batteries of Coppee and Halely ovens, however, were built. This second period also saw the construction of the large regenerative by-product coke ovens at Miike in 1913 and at Yawata in 1914.

Like so many of the Japanese industries, the coke industry received a spurt from World War No. 1. This was largely due to the unusual activity of the iron and steel industry. Three Japanese ovens also were introduced during this third period: the Kurado[1] in 1916, the Okamoto in 1918, and the Miike in 1924.

Finally, a coal carbonization expansion program has been under way since 1936. New Plants have been built and the capacity of existing plants increased. For example, informant[2] advised that between 1938 and 1940, new plants were under construction in and around the Fentien Province of Manchoukuo[3] and that NIPPON YUKA KOGYO K.K. were building a plant at Kawasaki.[4] Furthermore, such concerns as SHOWA STEEL WORKS CO., LTD., NIPPON STEEL TUBE CO., LTD.,[5] and TSURUMI STEEL AND SHIPBUILDING CO., LTD.[6] have increased their capacities[7]. Thus, to comply with the "New Order in Asia" policy, iron, steel and allied industries have demanded more coke for fuel; chemical and allied industries have demanded more coke by-products for raw materials for dyes, drugs, explosives, poison gas, disinfectants, solvents, etc.

Japanese progress in coke development may be discerned from these figures:[8] 916 ovens were producing at the end of 1920, 1407 ovens were in use in 1928, and 1564 were in operation in 1934. With these under construction, together with the previous ovens, it was estimated in 1936 that there will be a total of 2164 ovens having a carbonizing capacity of over 9 million tons of coal per year.[9]

With two or three exceptions, Japanese coal is of the Tortiary period. Because this type is high volatile and contains much ash, and because it produces a fingery and brittle coke, many problems had to be solved to make a

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1 A reproduction of the old type of Koppers Oven.
2 Throughout this report Mr. C. H. Case, the principal source of information, will be called "informant".
3 See p. 4
4 See p. 6
5 NIPPON KOKAN K.K.: see Exhibit C.
6 This concern was formerly the ASANO SHIPBUILDING CO., LTD., Yokohama.
7 See p. 8
8 Kuroda, T., "The Coke Industry in Japan", Fuel in Science and Practice, Vol. 15, No. 7, p. 189 (July 1936)
9 id.

satisfactory coke. The answer at the present time seems to be a combination of mixing three or four kinds of coal and of installing special washing apparatus.[10]

The annual production of coal in Japan is estimated around 40 million tons.[11] Fifteen percent (or 6 million tons) is consumed by the carbonizing industry, the remaining 85% (or 34 million tons) is used as fuel in its natural form.[12] It was estimated that if the coke ovens under construction in 1936 were completed, together with what was consumed by the retorts of the gas companies, some 25% (or 10 million tons) of Japanese coal will be carbonized.[13]

As a result of experimentation, it has been concluded that to obtain cokes of a desirable size, like that of the fist, the best height for an oven is 4 m. and the best width is 400 mm.[14] Of a total of 1246 coke ovens constructed since 1930, 25.44% are less than 400 mm. in width; 59.47% are between 400 to 450 mm.; and 15.09% are over 450 mm.[15] In 1936 it was reported that 431 ovens were under construction,[16] With the exception of 30, which are less than 320 mm., all are 400 mm.[17]

The more efficient collection of by-products, namely, ammonium sulphate, benzole, and coal tar has received a great deal of attention, especially from the chemical industry. In 1934, 50,500 tons of the ammonium sulphate obtained was 0.9 to 1.24 % of the coal charged; 220,000 tons of coal tar amounted to 3.7 to 5.5% of the coal charged; and 49,000 tons of crude benzole was 0.97% to 1.7% of the coal charged.[18] Distillation of tar and benzole, furthermore, is being developed; in fact, the Japanese are attempting to use motor benzole as a fuel for airplanes and automobiles.[19]

Coke oven gas yields hydrogen, an important element to the hydrogenation and nitrogen fixation industries. Since these industries are expanding, the demand for coke oven gas will be increased.

V. SHOWA STEEL WORKS, LTD.

1. Location of the By-Product Coke Plant

The main office and plants are at Anshan, Manchoukuo. The principal plants are situated between the stations of Anshan and Rituzan on the main line of the South Manchuria Railway. As shown in Exhibit B, this main line serves not only to identify the coke installations, but also to distinguish them from the myriads of other buildings. The coke plant buildings are the structures nearest to the tracks of the South Manchuria Railway. The buildings extend from S.W. to N.E.

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10 id.; washing apparatus was installed in the coke plant of SHOWA STEEL WORKS. See p. 5
11 ibidem at p. 192
12 id.
13 id.
14 ibidem at p. 188
15 id.
16 id.
17 id.
18 ibidem at p. 190
19 id.

(OVER)

This site was chosen for two reasons: first, having to depend upon railway transportation for coal from the surrounding collieries, SHOWA took advantage of the S.M.R., and second, efficient plant lay-out demanded that the coke plant be located in the most convenient place for the iron smelters.

2. Background Material

The control of SHOWA and thus the coke plant is lodged in the MANCHURIA INDUSTRIAL DEVELOPMENT COMPANY, a semi-official organization governed by a special law of the Hsingking government.

According to 1940-1941 figures,[20] SHOWA has a paid-up capital of 200 million yen. The company employs some 30 thousand persons, 23 to 25 thousand being Chinese and the balance Japanese. Fifteen hundred men are employed in the coke plant, 10% (150) being skilled.

3. Expansion Program of SHOWA STEEL WORKS

Pursuant to the plan of the MANCHURIA INDUSTRIAL DEVELOPMENT COMPANY to exploit the resources of Manchoukuo, SHOWA in 1936 undertook an extensive expansion program. Among other things, this consisted of 4 blast furnaces and 432 Otto coke ovens, together with coal preparation machinery.

Between 1938 and 1941 the 4 blast furnaces, each having a 700 ton capacity, were installed. This added 2800 ton capacity, together with the 1500 ton capacity of 4 old blast furnaces, makes a total capacity of 4300 tons.

Such an increase in pig iron production necessitated an increase in coke production. To obtain this, a plan calling for three units of 144 ovens each was designed. Each unit was to have 4 batteries, each battery 36 ovens. When informant arrived in 1938 to assist with the installations, 3 batteries (98 ovens) were already in operation and 4 more batteries (144 ovens) were producing at the end of 1938. It is assumed that the 3 units of 432 ovens were in operation sometime in June or July, 1941. Having left SHOWA before the expansion was finished, informant learned of the completion and operation from certain SHOWA coke men at the Imperial Hotel in Tokyo. He likewise was told of the operation of the 4 new blast furnaces. The installations for coke as well as pig iron, therefore, were producing in June or July, 1941.

4. Description of the By-Product Coke Plant

The lay-out of the coke plant is roughly illustrated in Exhibit B. Coal is received at the coke plant in railroad cars which dump into a track hopper feeding onto a conveyor running to the coal preparation building. This building is the typical tall, pitch roof, steel frame structure with a corrugated metal exterior. It houses the various kinds of machinery for crushing, mixing, and washing. Apparatus for the latter operation was part of the recent installations, since Japanese coal is high volatile and contains much ash. Such apparatus also permits the mixing of different quality coals.

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20 Kawata, T., Glimpses of the East, 1940-1941 Edition. Tokyo, 1940, Ch. Manchoukuo, p. 17.

From this building the prepared coal is delivered by conveyors to storage bins above the oven batteries. These bins or bunkers are constructed of reinforced concrete. From the hopper bottoms of the bins, the coal is drawn into a charging car propelled by a motor on rails along the tops of the batteries and under the coal bins.

Prior to the expansion, SHOWA had 6 batteries of Koppers regenerative ovens. Four batteries of 160 ovens were installed in 1919 to 1920; one battery of 50 ovens was installed in 1928; and one battery of 6 ovens was installed in 1930.[21] Between 1936 to 1941, 432 Otto ovens were added. The refractory materials for the Ottos were silica brick.

The by-product recovery buildings are steel framed with brick curtaining; have steel roof trusses and a roof of either tile or transite board.

Power for the coke plant is derived from a steam plant at Buzyun.

5. Productive Capacity

To sustain the 44,300 ton production of pig iron per day, the SHOWA coke plant is able to charge 10,000 metric tons of coal per day. The 432 Otto ovens have a capacity of 8000 metric tons per day when using a 19 hour coking time. The 4 batteries of 160 old Koppers, on the other hand, have a capacity of 2000 metric tons per day when using a coking time around 22 to 24 hours. The one battery of 50 Koppers and the other single battery of 6 Koppers were worn out and thus idle when informant was there. However, upon leaving, he saw sufficient brick on hand to rebuild them.[22]

6. The SHOWA Coal Supply

Having no coal mine of its own, SHOWA is entirely dependent upon the collieries of the surrounding vicinity. Thus coal is transported by rail from Buzyun, Honkeiko, Peipiao, Kaiping, and Yentai. The coal fields at Fushun are of no value since the coal is not coking coal.

Informant also advised that the company had coal storage facilities for about an 18 to 24 hour run.

7. Destination of SHOWA'S Coke

All of the coke produced is consumed as fuel. This statement may be amplified by saying that the production of iron requires three essential materials: the ore, the flux, and the fuel. Experience has demonstrated that coke constitutes the best fuel. Thus, the SHOWA coke plant is a vital auxiliary in the production of iron and steel.

8. Vulnerability

Besides the possible coal bottleneck which might be developed, the most vulnerable spot from the sabotage and bombing angle is the precision-made

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21 See Exhibit A. This information was verified by informant.

22 Exhibit A indicates the ovens in question.

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gas handling machinery. Informant was asked regarding the effect of destroying coke ovens. He replied that the Japanese can resort to the Kurado, the Miike, or the Okamoto types if necessary. The gas handling machines, on the other hand, would be almost impossible to replace because (1) they no doubt were imported, and (2) duplication of the precision machinery could not be undertaken within sufficient time.

VI. NIPPON YUKA KOGYO K.K.

1. Location of the Coke Plant

The coke plant is situated in the industrial area of Kawasaki, a city in Kanagawa-Ken. Exhibit C indicates the precise location.

2. Background Material

The plant is under the domination of KANEGAFUCHI SPINNING CO., LTD.,[23] and SHOWA FERTILIZER CO., LTD.[24] It is capitalized at 10 million yen.

The coke plant constitutes the last of three units in an expansion program. That is, NIPPON YUKA installed three new units: a tar distillation plant, a hydrogenation plant, and a coke plant. Besides preparing the plans, informant and his company undertook the construction, commencing in 1939, When informant last saw the plant July 25, 1941, the first battery of 15 ovens was 70% completed, and the second and last battery of 15 was 10% completed.

Inasmuch as the plans were left with NIPPON YUKA, informant believes that the plant is now in production.

3. Number of Employees

The officials of NIPPON YUKA expected to employ around 150 men.

4. Description of the Plant

A rough sketch of the plant - Exhibit C - has been prepared by informant. Because it was incomplete when he left, only the proposed set-up could be indicated.

However, since informant believes it to be in operation, the ensuing description will be expressed in conformance with his opinion. Coal is received at the plant by steamers docking some 1000 feet from the coal preparation building. After it is unloaded on the dock, the coal is fed onto an 800 foot belt conveyor.[25] This conveyor delivers the coal to the preparation building for crushing, mixing, and washing.

The plant is composed of two batteries of Curran-Knowles ovens. Each battery has 15, thus making a total of 30 ovens. They are made of steel and brick, built horizontally and the refractory material is silica brick. Reinforced concrete is the material used in the construction of the other buildings.

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23 KANEGAFUCHI BOSEKI K.K., Sumida-Cho, Munkojama, Tokyo
24 SHOWA HIRYO .K., Ajimoto Building, 7 Takara-Cho, 1 Chrome Kyohashi-Ku, Tokyo.
25 See Exhibit C.

Power is received from a grid which serves the entire Kawasaki industrial area.

5. Productive Capacity

On a 12-hour coking time, NIPPON YUKA ovens are capable of charging 500 metric tons of coal per day.

6. The NIPPON YUKA Coal Supply

Securing mineral coal constitutes a perceptible bottleneck. It is obtained from the Yubari coal fields in Hokkaido,[26] and transported by water to Kawasaki. The coal is unloaded on a dock some 1000 feet away, and an 800 foot conveyor carries it to the coke plant. (See above)

7. Destination of NIPPON YUKA Coke

The sole consumer of the coke is SHOWA FERTILIZER COMPANY. It is used as a source of water-gas.

VII. NEW COKE INSTALLATIONS IN MANCHOUKUO

1. Honkeiko Plant

While visiting Honkeiko, informant saw an iron and coke plant. It had one blast furnace with an estimated capacity of 200-250 tons. The coke plant consisted of two batteries of small Koppers Ovens. Each battery had 30 ovens making a total of 60. The estimated capacity was 400-500 metric tons of coal per day.

2. A Plant in the Vicinity of Honkeiko

In the spring of 1940, informant was on a trip in the Honkeiko Area. He said that he saw large numbers of men working on a steel and coke plant, located in the country about five miles on the railway north of Honkeiko. He commented that the acquisition of precision-made gas handling machinery might have developed into a bottleneck, since such apparatus was usually imported.

VIII. NEW COKE INSTALLATIONS ON HONSHU

1. NIPPON STEEL TUBE CO., LTD.[27]

Informant declared that when he left in July 1941, NIPPON STEEL TUBE CO., LTD., was installing new ovens and blast furnaces. It originally had two batteries of Kuroda ovens capable of charging 1000 metric tons of coal per day, and two old blast furnaces.

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26 SHOWA FERTILIZER CO. has an interest in the YUBARI coal fields.
27 NIPPON KOKAN K.K., 2030 Watarida, Kawasaki; See Exhibit C.

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2. TSURUMI STEEL & SHIPBUILDING CO., LTD.[28]

Informant knows that new blast furnaces and coke ovens were being installed, but can give no further information.

IX. THE JAPANESE LOW TEMPERATURE CARBONIZATION PROGRAM[29]

Informant neither observed nor heard anything about the utilization of this system. He did, however, make two comments: (1) If the Japanese are employing this system, it no doubt was stimulated by the Germans since (a) they use it extensively to obtain fuel oil, and (b) Japan is abounding in German technical advisors; and (2) Japan is attempting everying possible to augment her oil supplies.

Low temperature coal carbonization in Japan may be divided chronologically into two periods: the first, from 1920 to 1933, and the second, from 1933 to date.

The industrial possibilities of low temperature coal carbonization were not fully recognized until 1920 when the Imperial Fuel Research Institute was established.[30] Prior to this time, some semi-coke or "gara" had been used as a domestic fuel. When research proved that the greatest proportion of products of carbonization was semi-coke, large scale production was sought, the plan being to supplant charcoal. Thereafter two plants were built: The OSAKA CARBONIZATION COMPANY and the KAIJIMA CARBONIZATION COMPANY.

Because of its inferior properties, semi-coke failed to replace charcoal as a domestic fuel. This fact, together with the depression, doomed low temperature coal carbonization. In fact, in 1933 the OSAKA plant shut down. Thus, it was soon perceived that this process was uneconomical if the object was to supply semi-coke.

As it affected other industries, so did the "New Order in Asia" reflect itself in low temperature coal carbonization. With the enforcement of this policy, the second chronological period in the development of this system commenced. The stimulant was Japan's scarcity of natural petroleum, 90% of the consumption depending upon imports.[31] Upon learning of German success in producing a fuel oil from low temperature coal carbonization, efforts in Japan were redoubled to achieve the same success. Accordingly, marked developments occurred. First, the Government encouraged progress through subsidies; secondly, new fields for utilizing semi-coke were discovered.[32] These were three: (1) a raw material for the manufacture of synthetic chemical products, (2) a material to blend with coking coal to produce a high grade metallurgical coke, and (3) a product to prepare water gas by gasification.[33]

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28 TSURUMI STEEL & SHIPBUILDING CO., LTD., Yokohama, was formerly the ASANO SHIPBUILDING CO., LTD.

29 In a letter dated March 30, 1943, Mr. James S. Martin desired information relative to the Japanese low temperature coal carbonization program.

30 Ban, Y., "Recent Developments of the Low-Temperature Carbonization Industry in Japan", The Transactions of the Chemical Engineering Congress of the World Power Conference - London, Vol. 3, p. 120 (June 1936)

31 ibidem at p. 121

32 ibidem at p. 122

33 id.

As a result of the new objective to produce fuel oil, the low temperature coal carbonization process began to expand. In 1936, three plants were in operation and a fourth near completion.

1. OSAKA CARBONIZATION COMPANY[34]

The first plant to be considered is the OSAKA CARBONIZATION COMPANY now controlled by KAIJIMA CHEMICAL INDUSTRIES COMPANY.[35] It treats ONOWA coal to produce a high-quality smokeless solid fuel. Lump semi-coke is sold under the name of "MIKUNITAN" as a charcoal substitute; while low temperature tar is sold for creosoting oil in wood preservation. The plant treats about 50 tons of coal per day.

2. YEIAN WORKS[36]

The YEIAN WORKS, the largest in Japan, was the first to employ successfully low temperature coal carbonization in the synthetic chemical industry. It was built in 1932 by the CHOSEN NITROGEN FERTILIZER COMPANY, LTD.[37] In 1933, however, control was transferred to the CHOSEN COAL INDUSTRIES COMPANY, LTD.[38]

The plant possesses four sets of modified LURGI retorts, each capable of handling 150 tons of coal per day. Regarding its products, the semi-coke is sieved. All coke over 25 mm. in size is used to generate water gas, while fines are employed for boiler fuel or briquette making. Further, low temperature tar is distilled to yield benzole, tar oil, and pitch. From the tar oil, solid paraffins and acidic oils are separated. Water gas generated by gasification of lump semi-coke is employed in the synthesis of alcohols, especially methanol which is oxidized to yield formaldehyde. This condensed with creosals is separated from tar oil to produce artificial resins.

3. NAIHO WORKS[39]

The NAIHO WORKS is under the control of the SOUTH KARAFUTO COLLIERY AND RAILWAY COMPANY, a branch of the MITSUBISHI MINING CO. The plant is situated at the NAIHORO COLLIERY in South Karafuto. The coal used is a low-grade bituminous. The works has two sets of LURGI retorts, each capable of treating 165 tons of coal per day. Four more sets were expected to be installed in the near future.

Of the 100,000 tons of coal annually carbonized, the yield in by-products is: 1000 tons of benzole, 2000 tons of solid tar, 5000 tons of fuel oil, 600 tons of solid paraffin, and 53,000 tons of semi-coke. "As it is intended to

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34 Information from Ban, Y. op. cit., p. 124

35 This company may be connected with KAIJIMA TANKO K.K. (KAIJIMA COAL MINING CO., LTD.) No. 2 Karato-Machi, Shimonoseki.

36 Information from Ban, Y. op. cit., pp. 124-125

37 CHOSEN CHISSO HIRYO K.K., a subsidiary of NIPPON CHISSO HIRYO K.K., #1 Sozo-Cho, Kita-Ku, Osaka. Kawata, T., Glimpses of the East 1940-1941 Edition, Tokyo, 1940, Ch. Japan, p. 115

38 CHOSEN SEKITAN KOGYO K.K. (CHOSEN COAL INDUSTRIES CO., LTD.), Capitalized at 10 million yen. Supra note 33

39 Information from Ban, Y., op. cit., pp. 125-126.

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establish synthetic chemical industries, such as methanol and ammonia, to insure the disposal of semi-coke, it is expected that a great chemical plant based on the low temperature carbonization of coal, like that of the YEIAN WORKS, will be realized in the near future."[40]

4. WANISHI WORKS[41]

The fourth plant, the WANISHI WORKS, is dominated by the NIPPON IRON MANUFACTURING COMPANY. It commenced operations early in 1936, using KAKUDA coal from the YUBARI field. This plant is employing a new system of carbonizing designed to carbonize dust coal. The semi-coke produced will be blended with the bulk of coking coal and carbonized to prepare a high-grade metallurgical coke.

The plant has two revolving retorts with the following dimensions:

	Diameter	Length
Upper inclined revolving retort	1920 mm.	22,112 mm.
Lower horizontal revolving retort	2400 mm.	23,260 mm.

Four sets of retorts were under installation in 1936. The capacity of each set was expected to be about 100 tons per day.

5. Table of Plant Capacity

Plant	Present Capacity of Coal Per Day	Expansion Capacity of Coal Per Day	Total Capacity of Coal Per Day
OSAKA	50 tons		50 tons
YEIAN	600 "		600 "
NAIHO	330 "	660 tons	990 "
WANISHI	200 "	400 "	600 "
TOTALS	1180 tons	1060 tons	2240 tons

X. SOURCES OF INFORMATION

Mr. C. H. CASE, COAL CARBONIZING CO., 1220 St. Paul Avenue, Tacoma, Washington.

> Mr. Case is an engineer engaged in the construction and installation of coal carbonization plants. From 1938 until July 35, 1941, he was in the Japanese Empire constructing and installing coke plants, mainly the coke plants of Showa Steel Works, Ltd. and Nippon Yuka Kogyo, K.K. All of his drawings, plans and notes were confiscated before leaving Japan.

Kawata, T., Glimpses of the East 1939-1940 Edition, Tokyo, 1939.

Kawata, T., Glimpses of the East 1940-1941 Edition, Tokyo, 1940.

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40 ibidem at pp. 126-127
41 ibidem at p. 126

Kuroda, Taizo, "The Coke Industry in Japan", Fuel in Science and Practice, Vol. 15, No. 7, pp. 186-192 (July 1936).

Ban, Yoshisoda, "Recent Development of the Low-Temperature Carbonization Industry in Japan", Paper No. E10, The Transaction of the Chemical Engineering Congress of the World Power Conference - London, Vol. 3, pp. 120-130 (June 1936).

XI. LEADS

Mr. HERMAN A. BRASSERT, 60 East 42nd Street, New York City

Mr. BRASSERT, President of H. A. BRASSERT & Co., is familiar not only with the Japanese iron and steel industry in Manchoukuo, but also with the coke industry. According to informant, he should be able to supply information about new coke plants in Manchoukuo.

Mr. VICTOR JURGENS, a MARCH OF TIME photographer.

Mr. JURGENS was in Manchoukuo in the latter part of 1938 or in the early part of 1939 taking pictures for the MARCH OF TIME. Informant declared that he took some pictures of the SHOWA STEEL WORKS as well as other places in Manchoukuo.

Mr. KORLHAUS

Mr. KORLHAUS, asserted informant, installed the #3 blast furnace at SHOWA STEEL WORKS. He might be contacted through H. A. BRASSERT & CO.