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SUPPLEMENTARY REPORT ON

OJI SEISHI KABUSHIKI KAISHA

(OJI PAPER MANUFACTURING CO.)

February 16, 1944

Supplement to Report #3150 (SE-37)

Submitted by: Charles T. Caddock
Economic Warfare Section
Department of Justice
New York, New York

TABLE OF CONTENTS

Economic Warfare Section
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Washington, D. C.

Confidential Report
February 16, 1944 (N.Y. #279)
Re: Supplementary Report on Oji
Seishi Kabushiki Kaisha
(Oji Paper Manufacturing Co.)
Submitted by: Charles T. Caddock
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SUPPLEMENTARY REPORT ON OJI SEISHI KABUSHIKI KAISHA

(OJI PAPER MANUFACTURING CO.)

I. Introduction

The Oji Seishi Kabushiki Kaisha (Oji Paper Manufacturing Co.) of Tokio produces between 75% and 90% of all paper and wood pulp in Japan. It operates more than 40 mills in Japan, Korea, and Manchukuo and monopolizes the production and sales of wood pulp and paper in these countries and in the Far East. The Oji Company, which was founded in 1872, embraced in 1940 a vast organization of forestry units, land-holding firms, sales agencies, wood-pulping plants, railroad lines, company towns, water power sites, hydro-electric plants and paper factories, and was reported to employ directly and indirectly in its various enterprises several hundred thousand people.

Oji's importance is further underlined by the large and varied use of paper and wood pulp in Japan for clothing, housing, etc., and by the vital part it plays in the Japanese cellulose and explosives industry. The military uses of paper in the United States and the current pulp shortage place these materials high in the ranks of essential war supplies.

The following report is submitted as a supplement to a report by J. S. Harlow (Department of Justice, Seattle, Washington August 4, 1943) and a memorandum by E. B. Price (Department of Justice, Denver, Colorado September 2, 1943) on the Oji Paper Manufacturing Co.

II. Products

The products listed by the Oji Company in the years immediately preceding the outbreak of war included all types and grades of pulp and paper.

Pulps were groundwood, sulphate kraft, bleached and unbleached sulphite and rayon. Rayon pulp was considered the most important by 1939; the Japanese government plans called for an increase in Oji's rayon pulp production and for new rayon pulp mills in Manchukuo.

Paper products were listed by the Oji Company as:

> "cigarette paper, carbonizing tissue, condenser paper, Bible paper, printing and newsprint, art book, simili, writing, bond, ledger, foolscap, postcard, drawing, blotting, cover, packing and wrapping, glassine, imitation parchment, M. G. cap, colored, match, kraft, strawboard, manilla board, etc." (Oji catalogue - 1935)

Oji's products today are undoubtedly limited to the paper required by Japan's war economy. The company which supplied the largest share of Japan's peacetime paper is probably supplying the largest part of the increased war paper needs of industry, the military and the home front, from the packing for military food and ammunition to the cigarette paper and newsprint for domestic consumption.

No information was available as to what use Oji Company made of the by-products of its vast pulp industry, - such products as raw wood sugar from wastewood for food, fodder or wood alcohol; and the sulphite waste liquor which can be used for binding agents, cement, dyes, tanning, yeast, and fertilizer.

III. Production Capacity

Oji's production of pulp and paper is variously reported as being 70% to 80% of Japanese production[11]; 80% of all the paper and pulp manufactured in Japan in 1939[11]; 95% of the pulp and paper produced in the Orient before the war[12]; and 90% of Japan's production in 1940[1]. The estimated tonnage figures for production of the Oji Company in 1940 were stated to have been 850,000 to 900,000 tons of paper and 900,000 to 1,000,000 tons of pulp, with the present production at least 20% greater than that of 1940[1].

A. Paper

Actual figures for the Oji production of paper were not available. Listed below are (a) the annual production capacity of the Oji Company's mills in Japan and Karafuto (Saghalien) from 1934 to 1939[9], and (b) the total production of paper in Japan for the same years[7]. The figures in (a), (the annual production capacity as stated by the Oji Company), are in the opinion of an informant[1], at least 15% to 20% higher than actual production figures of the company.

	(a) Stated annual production capacity of Oji mills in Japan[9]	(b) Annual production of paper in Japan[7]
1934	796,900 tons	795,738 tons
1935	924,070 tons	859,819 tons
1936	1,002,682 tons	912,424 tons
1937	999,825 tons	1,064,513 tons
1938	999,825 tons	974,227 tons
1939	999,825 tons	1,200,530 tons

(The stated annual capacities of the individual Oji mills in Japan are listed in Section IX of this report, pp.).

Production of paper in Korea and Manchukuo was reported as negligible, activity being directed to the production of pulp. No figures for paper production in Korea or Manchukuo were available except for the Oji Company's mill in Shingishu, Korea, the annual capacity of which was stated to be 16,000 tons in 1934 and 20,000 tons, 1937 - 1939[7].

The total Japanese paper production was stated to be adequate to the demand; it was used principally for home consumption, and for export to China and the South Pacific markets.

B. Pulp

In 1937 Oji's production of pulp in Japan and Karafuto was reported as 786,100 tons[5], and in 1939 as 919,100 tons[11]. The latter figure was broken down as follows:

Paper (chemical)	pulp -	488,100 tons
Mechanical	pulp -	329,000 tons
Rayon	pulp -	102,000 tons
Total		919,100 tons

Figures for other years were not available.

The total Japanese production of wood pulp from 1934 to 1939 was as follows[16]:

	For Paper	For Rayon	Total
1934	691,800 tons	18,200 tons	710,000 tons
1935	724,000 tons	33,400 tons	757,500 tons
1936	747,400 tons	55,200 tons	802,600 tons
1937	829,700 tons	57,300 tons	887,000 tons
1938	851,900 tons	103,300 tons	955,200 tons
1939	1,071,730 tons	182,800 tons	1,200,530 tons

(over)

The Oji Company as well as the other Japanese pulp and paper companies, were not, in 1940, self-sufficient in pulp production for paper and rayon. Pulp had been imported from the United States, Canada and Scandanavia to meet the demands which increased as the rayon industry grew in Japan. From 1926 to 1930 imports of pulp to Japan were about 11% of the total supply; in 1937 about 35%. In 1938 the government Four Year Plan for expansion of productive power and mobilization of materials aimed at Japanese self-sufficiency in pulp by 1942. A 20% increase in production of pulp for paper, and a 320% increase of pulp for rayonwere to be attained by 1942[16].

The annual consumption of pulp for paper and rayon in Japan was estimated as 1,360,000 tons in 1937, and 1,650,000 tons in 1942[16].

To meet the increased requirements in pulp production, the Oji Company formed new companies to establish mills in Manchukuo in 1937 and thereafter. The mills did not bear the name of Oji, but of the new Oji-controlled companies. (These mills are described in Section IX of this report, pp.).

Figures for Oji's share of the production of pulp in Manchukuo were not available. The total Manchukuoan pulp production was reported in the Japan Year Book, 1940, as:

1934	13,737 tons
1935	13,718 tons
1936	13,171 tons
1937	15,011 tons
1938	44,000 tons

In 1939 the total capacity of the pulp mills in operation in Manchukuo was stated as 110,000 tons, but due to the difficulties of logging, transportation and securing coal for the mills, the 1939 output was estimated as 50,000 tons. As part of the Manchukuoan Five Year Plan, the mills in Manchukuo were to produce 300,000 tons of wood pulp annually by 1942. For this increased production, reeds and soya bean husks as well as wood were to be used as raw material, and rayon pulp was to be the principal type of pulp produced.

The Oji Company, according to a letter, (Osaka 1 July 1938, from Mr. F. C. Taylor[1], Rayonier Company, to the San Francisco office), "heretofore produced practically all the usuable rayon pulp made in Japan". The company has undoubtedly extended its rayon pulp manufacturing activity in Manchukuo since the outbreak of war, just as it increased the rayon pulp production in the Noda, Tomarioru and Shikuka mills in Karafuto (Section IX, p.).

Of the chemical wood pulps, rayon pulp can be most easily converted into nitro-cellulose for the explosive industry. Equipment producing rayon pulp can be converted to produce pulp for gun powder in eight hours; three or four months would be necessary to so convert bleached sulphite equipment; and twelve months for unbleached sulphite. How much of Oji's pulp is used in the explosive industry could not be determined.

IV. Raw Materials

Raw materials required by the Oji Company for the manufacture of pulp and paper may be classified as (A) fibrous and (B) non-fibrous material.

A. Fibrous Material

Wood is the chief source of fibrous material for the manufacture of pulp. To supplement the wood supply in meeting the increased Japanese pulp demands, marsh reeds, rice straw, rice hulls, soya bean husks, mulberry stalks and bagasse (waste sugar cane after grinding) are reported as being used in some of the Japanese mills erected, or proposed, in 1937 - 1938, especially in Manchukuo.

Northern and archangel spruce, Japanese red and black pine were stated to be the most used of Japanese trees. Information was not available as to exactly which species of tree is used at which Oji mill. Prior to the war, Oji imported large quantities of hemlock and spruce from the United States and Canada. Since this supply has been cut off, it has probably been replaced by pine, larch and spruce from Siberia, Korea and Manchukuo.

The Wood Resources of the Japanese industry consist of the forests of Japan, Karafuto (Saghalien), the maritime provinces of Siberia, Korea, Manchukuo and Taiwan (Formosa).

In 1930 the United States Department of Commerce stated that "approximately 73,400 square miles or 50% of the total land area of Japan proper is covered with forests".[6] Of these forests, 23% of the trees were coniferous, 43% broadleaf and the remainder mixed[7]. When the forests of the islands of Honshu, southwestern and northeastern Hokkaido became insufficient to supply the growing pulp demands for timber without exploiting the forests, Oji established mills on the east and west coasts of Karafuto to use that island's forests, 90% of which were said to be spruce. The trade bulletin, quoted above stated in 1930 that "approximately 97% of the total cut [of wood for Japanese pulp] has been coming from the islands of Hokkaido and Karafuto".[6]

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Since 1930 the Japanese government has made great efforts to conserve the forests in Japan but the increased demands for pulp have infringed on the conservation policy.

It was stated[1] that in 1939 the Emperor's Imperial forests on Hokkaido were being cut for the pulp industry.

It was reported also in 1939[1] (Osaka letter, 27 June 1939, Rayonier Corporation inter-company correspondence)[1]:

> "H. R. McMillan Company sold 6,000 M B M Brereton Scale pulp wood logs to Ataka & Co. Ltd.....to be delivered to a paper pulp mill near Nagoya owned by Oji Paper Company. It is stated that the cost of Pacific coast logs delivered at Nagoya are cheaper than Oji can deliver logs from Saghalien [Karafuto]".

In February 1940, the "Cellulose Industry in Japan" reported that:

> "Saghalien authorities have strictly restricted the felling of Saghalien wood to be forwarded to other land" because "overfelling of pulp-wood in that land was apt to cause the ruin of the land".[14]

To supplement the wood supply from Hokkaido and Karafuto, the timber of Korea and Manchukuo offered vast new sources. Both have large forest lands but no figures were available to show how much of Oji's present wood supply comes from these sources.

The forest area of Korea is said to cover about 9,300,000 hectares, located chiefly near the sources of the Yalu, Tumen and Taidong rivers, in which regions the Japanese began forestry in 1910.

In Manchukuo, where the Japanese have been active in forestry only since 1931, the forest resources are estimated at 22,000,000 hectares, with the principal regions located at the foot of the Changpai mountains; along the upper reaches of the Sungari, Mutan, Tumen and Yalu rivers; in the Hailin district, between Harbin and Pogranichnaya; and the Sansing district in Kirin province.

About 46% of the Manchukuoan-Korean forests are coniferous woods (larch, pine and spruce etc.), and 54% broadleaf woods (beech, oak, poplar).

There are, however, factors which prevent these forests from being an easy source of supply for mills in Japan. Long periods of non-supervision of forest lands and of overcutting of timber have devastated the most accessible areas. The long, hard freezes of the extremely severe winters and the floods in spring make the logging season short and difficult. Spruce, most sought for the pulp industry, makes up only 3% of the coniferous wood and is difficult to find. Transportation facilities for pulp wood were being developed as rapidly as possible in 1937 - 1938. Priority has been given to the expansion of the heavy industries in Manchukuo and lumbering, pulping and lighter industries have suffered.

In spite of these difficulties, the Japanese consider that "the Manchurian forest only has the key to the self-sufficiency of wood pulp in the Far East".[14] With Manchukuoan and Korean timber-resources made accessible, and reckless exploitation of the Hokkaido and Karafuto forests, Japan would be (and probably is at present) more than self-sufficient in timber for pulp.

B. Non-fibrous Material

All of the non-fibrous raw materials required by Oji are available in Japan.

The sulphur or pyrites, lime, limestone, soda ash, caustic soda, silicate of soda, salt cake, and chlorine necessary for pulp manufacture, and the clay, alum and resins for treating paper are available in quantity in Japan.

Water, also an essential raw material, has been provided for by choosing building sites for Oji's mills on rivers.

V. Employment

The total number of employees of the Oji Company in the forests, mills, transportaion, etc. is estimated[1] to be about one million, of which 30% to 35% are women. Information was not available to make possible a breakdown of the above figure for the percentages of workers in company owned woodlands, pulp mills, paper mills or the various operations within each.

Mill workers are recruited from the local inhabitants, in mill localities; technical workers for the laboratories from the universities. (Each pulp mill has its laboratory, the largest and central one of the Oji Company is in the Company's oldest mill in the town of Oji.)

The Oji Company maintains company towns for its employees in which houses are provided for families, rent being paid to the company, and dormitories for girl workers.

Women received a salary of an equivalent of about $8 per month plus lodging, food, and work-uniforms.

The machine tenders in mills received an average of $20 per month plus work clothes. Men engaged in bleaching, more skilled than machine tenders, received about $25 per month. Ordinary chemists in the laboratories received from $35 to $50 per month and the very good ones about $100 with retirement compensation. And all company workers received frequent bonuses, - three months salary at New Years etc.

Before the war, Oji employees worked ten hours per day.

A shortage of both skilled and unskilled labor in the Oji Company was reported in 1938[1].

VI. Power

Each of the Oji mills is listed[9] as being supplied with steam and electric power in 1937. Each mill erected since that year is probably likewise supplied. A power plant of some sort is an integral part of each mill. Steam is a requisite of every pulp mill.

> "Each mill produced not only its own power, generally by the hydro-electric process, but also provided electric power for considerable communities and industries surrounding them".[12]

Of the power stations referred to, twelve are listed by Oji as operated by the company:

In Hokkaido

Chitose No. 1 Station
Four Generators 3,125 K.V.A. each
Two Generators 6,250 K.V.A. each

Chitose No. 2 Station
One Generator 2,500 K.V.A.

Chitose No. 3 Station
One Generator 3,125 K.V.A.

Chitose No. 4 Station
Two Generators 1,625 K.V.A. each

Shiribetsu No. 1 Station
Three Generators 2,300 K.V.A. each

NY #279

In Hokkaido

Shiribetsu No. 2 Station
Three Generators 3,200 K.V.A. each

Eniwa Station
One Generator 2,250 K.V.A.

In Shizuoka-ken

Uruigawa No. 1 Station
One Generator 1,700 K.V.A.

Uruigawa No. 2 Station
Two Generators 2,500 K.V.A. each

Uruigawa No. 3 Station
Two Generators 2,750 and 1,000 K.V.A. respectively

Kumakubo Station
One Generator 520 K.V.A.

In Gifu-ken

Kaore Station
One Generator 2,500 K.V.A.

.....

Informants could offer no information concerning the power plants.

A power plant built in 1910 to service the Tomakomai mill was described in that year as a plant

> "with reservoir, located 14 miles distant (northwest of Tomakomai) at Lake Shikatsu. This lake is 800 feet above sea level, and as the paper plant at Tomakomai is only a few feet above the nearby Pacific Ocean, excellent power facilities have been provided. Already [November 1910] a 15,000 HP power plant has been developed to which 7,500 HP will be added. As the paper plant requires only 8,000 HP, it is proposed to sell the surplus for commercial purposes", 13

(over)

VII. Manufacturing Processes

The Oji Company using wood as the principal ingredient for its pulp and paper manufacture, carries the process of paper production from the felling of timber to the finished product. For the various manufacturing processes involved, it uses the methods of the western world.

A. Wood Pulp

Logs, cut by "slashers" with the bark removed in "barking drums", are put through "grinders" or "chippers" depending upon the ultimate nature of the pulp to be made, (a) mechanical or (b) chemical, both of which are produced by Oji.

(a) Mechanical or Groundwood pulp is, as its name implies, pulp produced by mechanical process. Logs, clean and bark-free, are placed in hand-fed or automatic "grinders", where they are held in place by pressure against a rotating stone and the wood fibres removed by abrasion.

(Groundwood pulp, mixed with chemical pulps, is used chiefly for newsprint and cheap wrappings; paper of low strength and poor color. The Tomakomai Mill was Oji's largest producer of groundwood pulp.)

(b) Chemical pulps are pulps produced by cooking the wood, at high temperatures and under steam pressure, in an acid or alkali in order to free the cellulosic fibres from the non-fibrous constituents of the wood. The three common processes used for producing chemical pulps are (1) sulphite, (2) soda and (3) sulphate all of which are used by the Oji Company. For each of these processes, the wood is prepared by being cut into uniform chips in "chippers".

(1) Sulphite Process

The sulphite process is essentially an acid process. The cooking liquor is prepared by producing sulphur dioxide gas by burning either sulphur or pyrites in air under controlled conditions; the gas, freed from dust and cooled, is absorbed in water in the presence of limestone, magnesium carbonate or milk of lime, giving a bisulphite containing an excess of sulphurous acid. Wood chips mixed with this liquor in large "digesters" (vertical, cylindrical pressure vessels of steel plate) are cooked under steam pressure. The resultant pulp is washed, bleached and prepared for the paper mill, rayon manufacturer, etc.

(Sulphite pulps, the most widely produced by Oji, are used for a larger variety of purposes than any other pulps - rayon, plastics, fine papers, etc. Sulphite pulp can easily be processed for use in the explosive industry.)

(2) Soda Process

The soda process, (which was the first chemical method of processing wood pulp), is an alkaline process. The cooking liquor is prepared from sodium carbonate and quick lime, producing sodium hydroxide in which the wood chips are cooked in "digesters" under heavy steam pressure at a high temperature. After cooking, the residual liquor ("black liquor") is evaporated, the residue burnt and sodium carbonate recovered which is re-utilized for subsequent digestions; sodium hydroxide or sodium carbonate must be supplied for each new digestion to maintain the strength of the cooking liquor.

(Soda pulp produces a paper of low strength, high bulk, opacity, absorbency and good printability.)

(3) Sulphate Process

The sulphate process is a modification of the soda process. The procedure is the same except that instead of adding sodium hydroxide or sodium carbonate to the sodium carbonate secured in the recovery process, sodium sulphate (salt cake) is used. The liquor in which the woodchips are cooked is a mixture of sodium hydroxide and sodium sulphide, the latter from reduction of sodium sulphate (salt cake). (Salt cake is cheap and the resultant pulp has a better yield and strength, though color is poorer, than pulps from soda process.)

(Sulphate pulp produces a paper of high strength, poor color; used chiefly for wrappings. Sulphate pulps are called "kraft" pulps, kraft, the German word for strength, having probably been first applied by C. F. Dahl, the first to experiment with salt cake for pulp in Danzig in 1879.)

(over)

The pulps resultant from the chemical processes proceed through various stages of washing and bleaching. The object of pulping being the production of cellulose, the pulp from the "digesters" must undergo purification, physical and chemical. Physical purification removes splinters ("shive"), stones, dirt etc.; chemical purification, (bleaching), removes color, lignins and other compounds not removed in the cooking process. The destined use of the pulp determines the extent of the purification.

After washing and bleaching, the pulp is ready for the paper mill, rayon manufacturer, etc. If pulp is to be shipped from the pulp mill, drying processes must follow to prepare it for shipment.

B. Paper Machines

Pulp for paper proceeds to "beaters" (large iron or concrete vessels) in which it is rolled and beaten to separate the fibres and prepare them for the paper machine. The character and type of the paper to be made is determined by the beating process; here sizings, fillers, colors etc. are added to the pulp, and the degree of beating regulated depending on the paper to be made.

From the beaters, the wet pulp flows to the paper making machines, of which there are two general types, Fourdrinier and Cylinder, both of which are used by Oji. The main features of the paper making machine are essentially the same now as when it was invented in 1798, by Louis Robert. A machine improved in 1803 by Bryan Donkin was run in an English mill owned by the Fourdrinier brothers whose name has since been used to describe this type of machine.

Pulp flows onto a moving endless wire belt which is shaken as it moves to interlock and mat the fibres while water drips through; the sheet of pulp is transferred to a belt of moist felt to travel through and over a series of rollers for smoothing and drying, to emerge as finished dried paper.

The Cylinder type of paper machine has a revolving wire cloth-covered hollow cylinder, partly immersed in a vat containing the pulp. Water passes through the wire, leaving on the surface of the cylinder a layer of pulp which is picked off on a small roll, transferred to a felt, from which point the procedure is like that of the Fourdrinier machine.

Of the processes outlined above, the sulphite process is the one most used by the Oji Company, supplying pulp not only for paper but also for rayon, staple fibre and nitration. The groundwood process is also widely used, since Oji supplies most of the newsprint for Japan's large consumption.

The use for which the pulp is destined and the type of wood to be processed are the principal factors determining the employment of the above processes.

(A chart showing the pulping processes in diagram form is attached as Appendix A.)

VIII. Mechanical Equipment

The mechanical equipment required for the processes outlined above present no problems for the Oji Company. Heavy machinery, electric power, boiler capacity and auxiliary equipment such as power transmission, pumps and piping, ventilating, machine shop and maintenance equipment - all can be readily supplied by Japanese industry.

A. Pulp

The machinery, digesters, and equipment used in pulp production, imported by Oji from Germany, England, Sweden and the United States, prior to 1930, have since been manufactured by Japanese industry. Equipment for pulp production, once installed, is of long life. A "slasher" is a large rotating saw arranged to cut logs to any desired length. A "barking drum" is a large rotating, hollow,. metal cylinder in which the logs are rubbed together to remove the bark. A "grinder" is usually a rotating stone to grind the logs for mechanical pulp. A "chipper" is a rotating disc carrying heavy knives to chip the wood for chemical pulp.

The "digesters", pressure vessels for the cooking of chemical pulp, are the largest of pulp making equipment. They are built usually of welded plates of iron or steel, and are lined or unlined depending on the pulping process to be used. The largest (used in the sulphite process) are 80 feet high by 20 feet in diameter. Which of Japan's heavy industries manufacture digesters could not be discovered.

The tubs or vessels for washing and bleaching and the presses for de-watering or drying pulp for shipment are of simple construction.

In a sulphite pulp mill, an acid plant is necessary to prepare the cooking liquor. A tower in which limestone, magnesium carbonate or milk of lime can absorb the sulphur dioxide gas is perhaps the outstanding feature of the acid plant. (In photographs of pulp mills, the tower serves as a distinguishing characteristic of chemical pulp mills.)

(over)

In a soda or sulphate mill, a chemical recovery plant is necessary in order to recover the sodium carbonate by evaporating the spent cooking liquor.

B. Paper

The paper machines are the Fourdrinier and the Cylinder types, of varying sizes. Like equipment for pulp manufacture, the equipment for paper mills was also bought in Sweden, England, Germany or the United States until 1930-1931 when Japanese makers began supplying the industry.

No information could be secured from informants as to which foreign or Japanese concerns have been suppliers of the heavy machinery used by the Oji Company. In Okura Company's files, Boving & Company of England is noted as having formerly been active in equipping both sulphite and sulphate mills in Japan. (Letter June 2, 1937 to Okura, New York from G. L. M. Hellstrom, President, Paper Mill Equipment Ltd. Montreal, (Canada formerly Manager of Boving & Company, London.)[15] The equipment for the Tomakomai mill was supplied in 1910 by the American firm of Bagley Sewall, Watertown, New York (Journal of Industrial Chemistry, November 1910.)

In 1935 the Oji Company listed the number of its grinders as 117; digesters, 65; Fourdrinier machines, 117; and Cylinder machines, 8. It was not possible to discover the present numbers.

IX. Mills

Listed below are forty-four mills, of which thirty-one bear the name of the Oji Paper Manufacturing Company, and thirteen the name of other companies either wholly or partially owned by the Oji Company. Thirty-six of the mills are located in Japan proper and Karafuto (Saghalien), two in Korea, and six in Manchukuo. Twenty-four produce both pulp and paper, eleven produce pulp, and nine paper.

The list is divided into two sections, Section A giving the mills of the Oji Company and Section B the mills of other companies in which Oji has control or interest. All available information has been recorded for each mill.

As far as could bedetermined, all the mills are in production, even those in southern Japan to which raw materials must be transported. The mills nearest the source of wood supply are the most important, principally the ones on the island of Karafuto. Of these, in the opinion of one informant[1], three are vitally important:-

the Shikuka, Noda, and Tomarioru mills, which combine to produce at present the largest supply of wood pulp for Japan. Their production capacity has probably been greatly increased since the outbreak of war, especially for rayon pulp, which would make them the potential supply center of cellulose for the explosive industry.

Because of their importance, these three mills are here described apart from the general lists.

Shikuka Mill

The Shikuka (Shisuka) mill, considered by informants to be the most important of all the Oji mills, is listed as a mill of the Nippon Rayon (Jinken) Pulp Company. The company was organized in April, 1932, capitalized at ¥20,000,000 paid up, and financed by the Oji Company. Mill operations began at the end of 1935, using Karafuto (Saghalien) pulp wood as raw material. The production capacity for 1939 was reported[1] as 38,000 tons of rayon pulp and 20,000 tons of kraft pulp. This production was said to have been increased by 1940. In 1939, its installed machinery was seven digesters.

The mill is located in Shikuka, northeastern coast of Karafuto, on the shore of the bay (harbor), and on the southern side of the small river which flows across the northern edge of the town. The mill buildings are of natural colored concrete, built on flat lands, and in 1940 no other large buildings were in the vicinity. It was said to be camouflaged and protected by anti-aircraft guns. (Since it produces rayon pulp, the part of the mill housing the digesters, the most vulnerable spot, as in all mills producing chemical pulp, would appear in photographs as the highest structure.)

In the Harlow report[11], this mill is described as located "at the mouth of the Cheronoi and Horonoi rivers"....."the single largest mill in the [Oji] chain, a mill having access to the finest Japanese timber-bearing region and producing the highest grade of pulp. This Shisuka plant was undergoing expansion in 1937".[11] The report also states that an informant, Dr. Howard Martin, University of Washington, Seattle, had supplied Naval Intelligence with a picture and full description of this plant.

Noda Mill

The Noda mill of the Oji Paper Company is said to have begun operations in 1932. The annual production of bleached sulphite was announced as 22,500 tons in 1935, and the installed machinery as two digesters. The exact increase in present production capacity could not be determined. In June, 1938 the production of rayon pulp was begun, and the 1939 production was stated as 12,000 to 15,000 tons. The mill also produced paper, - an annual production capacity of 22,500 tons in 1935.

NY #279

The mill is located in Noda, (northwestern Karafuto), in the northwestern corner of the town, on the northern side of a small estuary, and near the shore of the bay.

A photograph of this mill is attached hereto as Exhibit #30. The photograph shows the north side of the mill; the river is on the south side; railway on the west side; and the harbor (bay) on the northwest side.

Tomarioru Mill

The Tomarioru mill of the Oji Paper Company began operations before 1932. Its announced annual capacity for 1935 was 46,000 tons of bleached and unbleached sulphite pulp, and 5,600 tons of paper; and its installed machinery, five digesters and two pulp machines. Production of rayon pulp was said to have begun in 1932 and to have reached an annual production of 30,000 tons by 1938.

The mill is located in Tomarioru, northeastern Karafuto, on the outskirts of the northeastern corner of the city, on the northern bank of a small river.

A photograph is attached as Exhibit #31. The photograph was taken with camera facing northeast; mill buildings on the river face south.

A. Mills of the Oji Company

The mills of the Oji Company are listed below in the order used by the company in its catalogues, advertising, etc. This order is also used in the "Paper Makers Directory of All Nations".[9] Photographs of the mills submitted with the Harlow report[11] and the Price memorandum[12] bear numbers which correspond with the numbers of this order. The significance of the order has not been determined; it may be chronological in the order of establishment of the mills.

Recorded for each mill are: the location, the products(paper and/or pulp), the installed machinery, and the annual production. The figures for the latter are those published in the "Paper Makers Directory of the World"[9] editions 1934 to 1939; below these figures are given, in parenthesis, the figures published by the Oji Company for 1935, because the Directory figure for 1935 is the same as that for 1934.

Power for all of the mills in stated to have been electric and steam.

NY #279

OJI MILLS

Mill Location	Product	Machine No.	Machine Size	Machine Kind	Annual Production
1. OJI MILL Oji, Tokyo	Book, map, printing paper	1 2	84" 98"	F.* F.	1934 - 17,000 tons '36 - 20,928 tons '37-'39 - 21,000 tons ('35 - 20,340 tons)
	(No information was available as to whether this Oji Mill, the original mill of the company, is the same as - or connected with the powder factory referred to as the "Oji Plant" in the Price memorandum[12] [a. pp.3-4]. The government paper mill is also located in Oji [northwest Tokyo], 300 yards from the railway station; it produces bank note, stamp, bond, printing, and hand made paper.)				
2. JUJO MILL Oji, Tokyo	Book, bond, drawing, magazine paper	3 1 1 1	86" 100" 112" 168"	F. F. F. F.	1934 - 47,000 tons '36 - 60,000 tons '37-'39 - 60,000 tons ('35 - 58,140 tons)
3. KAMEDO MILL Kamedo, Tokyo	Cover, blotter, vulcanizing paper	1	60"	F.	1934 - 1,800 tons '36 - 2,685 tons '37-'39 - 2,250 tons ('35 - 2,680 tons)
4. SENJU MILL Ryogoku, Tokyo on Sumida river	Printing, straw-board and Japanese paper	1 1 1 1	74" 86" 110" 118"	C.** C. F. F.	1934 - 24,500 tons '36 - 32,069 tons '37-'39 - 32,500 tons ('35 - 31,050 tons)
	Groundwood pulp	2	Grinders		1937 - 3,200 tons
5. EDOGAWA Ichikawa, Tokyo, on Yedo river	Book, printing and simili paper	3	108"	F.	1934 - 39,000 tons '36 - 27,458 tons '37-'39 - 27,500 tons ('35 - 26,710 tons)
	Groundwood pulp	1	Grinder		1937 - 1,300 tons

*Fourdrinier
**Cylinder type machine

(over)

Mill Location	Product	Machine No.	Machine Size	Machine Kind	Annual Production
6. FUJI #1 MILL Fuji, Shizuoka-ken	Book, printing,	1 1 1	84" 86" 98"	F. F. F.	1934 - 17,500 tons '36 - 18,304 tons '37-'39 - 18,800 tons ('35 - 17,050 tons)
	Groundwood and sulphite pulp	4 Grinders 4 Digesters			1937 - 12,100 tons
7. FUJI #2 MILL Fuji, Shizuoka-ken	Printing, kraft, simili paper (News-1935)	1 1	84" 86"	F. F.	1934 - 20,500 tons '36 - 25,054 tons '37-'39 - 25,000 tons ('35 - 24,680 tons)
		2 Grinders			Not reported
8. FUJI #3 MILL Fuji, Shizuoka-ken	Cover, poster, simili paper and ivory manila board	1 2 1 1	75" 88" 92" 110"	F. C. F. F.	1934 - 21,750 tons '36 - 32,908 tons '37-'39 - 33,000 tons ('35 - 26,405 tons)
	Groundwood pulp	2 Grinders 2 Digesters			1937 - 28,600 tons
9. SHIBAKAWA MILL, Fuji-kawa, Shizuoka-ken	Newsprint	2	84"	F.	1934 - 12,250 tons '36 - 7,107 tons '37-'39 - 7,100 tons ('35 - 7,075 tons)
		3 Grinders 3 Digesters			Not reported
10. IWABUCHI MILL Iwabuchi, Shizuoka-ken	Cigarette, tissue paper	1	73"	F.	1934 - 600 tons '36 - 1,212 tons '37-'39 - 1,225 tons ('35 - 830 tons)
11. NAGOYA MILL Nagoya	Wrapping	1	120"	F	1934 - 4,000 tons '36 - 4,367 tons '37-'39 - 4,500 tons ('35 - 4,175 tons)
	Sulphite pulp	1 Digester			1937 - 4,100 tons)

NY #279

Mill Location	Product	Machine No.	Machine Size	Machine Kind	Annual Production
12. NAKATSU MILL Nakatsugawa, Gifu-ken	News, book, printing, wrapping and match paper	3 1	100" 108"	F. F.	1934 - 20,000 tons '36 - 24,739 tons '37-'39 - 25,000 tons ('35 - 24,085 tons)
	Groundwood and sulphite pulp	7 Grinders 2 Digesters			1937 - 23,000 tons
13. FUSHIKI MILL Fushiki, Toyama-ken	Newspaper, wrapping, rotogravure, colored, match paper	1 1 2	72" 88" 100"	F. F. F.	1934 - 15,500 tons '36 - 18,908 tons '37-'39 - 20,000 tons ('35 - 19,315 tons)
	Groundwood pulp	7 Grinders			1937 - 18,800 tons
14. KYOTO MILL Kyoto	Printing and book paper	1 1 1	74" 88" 100"	F. F. F.	1934 - 11,000 tons '36 - 11,454 tons '37-'39 - 11,500 tons ('35 - 11,450 tons)
15. MIYAKOJIMA MILL Osaka, on Yodo river	Bible, cigarette, carbonizing, tissue, glassine, imitation parchment, bond, fine printing paper (celluloid and tissues, 1934)	3 3 1	74" 93" 97"	F. F. F.	1934 - 13,000 tons '36 - 20,046 tons '37-'39 - 20,000 tons ('35 - 16,110 tons)
16. YODOGAWA MILL Osaka, on Yodo river	Cigarette, condenser, glassine, photographic body paper	1 4	40" 73"	F. F.	1934 - 2,750 tons '36 - 5,058 tons '37-'39 - 5,000 tons ('35 - 4,760 tons)
17. KANZAKI MILL Kanzaki, Hyogo-ken	Book, writing, coating, flint, Japanese paper, manila board	1 1 1 1 1	65" 72" 74" 85" 94"	F. F. F. F. F.	1934 - 16,500 tons '36 - 22,325 tons '37-'39 - 22,250 tons ('35 - 22,175 tons)

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NY #279

Mill Location	Product	Machine No.	Size	Kind	Annual Production
17. KANZAKI MILL (cont'd)	Groundwood pulp	2	Grinders		1937 - 5,700 tons
	Art paper, coated manila board	4	Coating		1934 - 10,000 tons '36 - 13,378 tons '37-'39 - 13,500 tons
18. KUMANO MILL Shingu, Wakayama-ken	Book, ledger, writing, foolscap and simili paper	1 2	113" 86"	F. F.	1934 - 14,000 tons '36 - 20,564 tons '37-'39 - 20,500 tons ('35 - 19,205 tons)
19. KOKURA MILL Kokura, Fukuoka-ken	Book, writing, ledger, foolscap, simili paper	2 1	100" 108"	F. F.	1934 - 29,000 tons '36 - 34,908 tons '37-'39 - 35,000 tons ('35 - 34,900 tons)
20. YATSUSHIRO MILL Yatsushiro, Kumamoto-ken	News, wrapping	2 1	110" 142"	F. F.	1934 - 34,000 tons '36 - 32,541 tons '37-'39 - 32,500 tons ('35 - 31,300 tons)
	Groundwood and sulphite pulp	5 Grinders 1 Digester			1937 - 31,000 tons
21. SAKAMOTO MILL Sakamoto, Kumamoto-ken	Book, writing, rotogravure, news, simili, wrapping paper	7 (6 till 1937)	100"	F.	1934 - 26,000 tons '36 - 31,565 tons '37-'39 - 36,500 tons ('35 - 32,920 tons)
	Groundwood and sulphite pulp	4 Grinders 2 Digesters			1937 - 20,000 tons
22. TOMOKOMAI MILL Tomokomai, Hokkaido	News, wrapping	2 2 6	98" 100" 142"	F. F. F.	1934 -130,000 tons '36 -168,913 tons '37-'39 -169,000 tons ('35 -138,025 tons)
	Groundwood and sulphite pulp	50 Grinders 5 Digesters			1937 -157,000 tons

NW #4-19

Mill Location	Product	No.	Size	Kind	Annual Production
22. TOMOKOMAI MILL (cont'd)	(In an article in the Journal of Industrial Chemistry, November, 1910 (vol. 2) T. Sammons, British Consul General, Yokohama, reported that the Tomokomai Mill was completed in August, 1910 at a cost of $4,000,000. The total cost of machinery was $1,000,000; all but 3% was made at Bagley Sewall Co., Watertown, New York. The daily output was upward of 70 tons per 24 hours. The timber areas included state and railroad lands in addition to privately owned tracts. The wages paid the ordinary laborer in this mill were approximately $15 per month. The boiler capacity was 3,000 HP from ten Miyabara naval boilers. The buildings were brick with concrete floors.)				
23. EBETSU MILL Ebetsu, Hokkaido	News, wrapping paper	1	86"	F.	1934 - 67,500 tons '36 - 76,837 tons '37-'39 - 77,000 tons ('35 - 74,970 tons)
	Groundwood and sulphite pulp	14 4	Grinders Digesters		1937 - 74,000 tons
24. KUSHIRO MILL Kushiro, Hokkaido	News, M.G. caps, colored paper	3 1	100" 142"	F. F.	1934 - No report '36 - 31,042 tons '37-'39 - 31,000 tons ('35 - 30,600 tons)
	Groundwood and sulphite pulp	7 1	Grinders Digester		1937 - 33,800 tons
25. ODOMARI MILL Odomari, Karafuto	Easy bleaching sulphite pulp	2 1	Digesters Pulp machine		1934 - 15,000 tons '36 - 17,700 tons '37-'39 - 18,000 tons ('35 - 17,000 tons)

(over)

Mill Location	Product	Machine No.	Machine Size	Machine Kind	Annual Production
26. TOYOHARA MILL Toyohara, Karafuto	Wrapping paper	1	98"	F.	1934 - 2,500 tons '36 - 5,551 tons '37-'39 - 5,550 tons ('35 - 5,550 tons)
	Easy bleaching sulphite	5 Digesters 2 Pulp machines			1934 - 18,800 tons '36 - 44,600 tons '37-'39 - 45,000 tons
27. OCHIAI MILL Ochiai, Karafuto	Kraft, cement bag paper	1 1 1 2 1	76" 98" 110" 116" 120"	F. F. F. F. F.	1934 - 62,000 tons '36 - 45,769 tons '37-'39 - 46,000 tons ('35 - 45,215 tons)
	Kraft pulp and easy bleaching sulphite pulp	11 Digesters 1 Pulp machine			1937 - 81,000 tons
28. SHIRUTORU MILL Shirutoru, Karafuto	News, book, simili paper, manila board	1 2	102" 142"	C. F.	1934 - 42,000 tons '36 - 54,518 tons '37-'39 - 54,500 tons ('35 - 54,360 tons)
	Groundwood and unbleached sulphite pulp	3 Grinders 5 Digesters 2 Pulp machines			1936 - 51,500 tons '37-'39 - 77,000 tons ('35 - 50,000 tons)
29. MAOKA MILL Maoka, Karafuto, (at harbor)	Book, writing, simili, Japanese paper	1 1 1 3 1	64" 86" 97" 108" 112"	F. C. F. F. F.	1934 - 27,500 tons '36 - 47,007 tons '37-'39 - 47,000 tons ('35 - 43,000 tons)
	Bleached sulphite pulp	4 Digesters			1934 - 7,200 tons '36 - 32,700 tons '37-'39 - 33,000 tons
30. NODA MILL Noda, Karafuto	Printing, simili paper	1	142"	F.	1934 - 14,000 tons '36 - 17,312 tons '37-'39 - 18,000 tons ('35 - 16,360 tons)

Mill Location	Product	Machine No.	Size	Kind	Annual Production
30. NODA MILL (cont'd)	Bleached sulphite pulp and rayon pulp	2	Digesters		1934 - 4,500 tons '36 - 22,400 tons '37-'39 - 22,500 tons ('35 - 22,000 tons)
	(Reported April, 1939 to be making 14,400 tons rayon pulp, 6,300 tons paper pulp for 1939)[1]				
31. TOMARIORU MILL Tomarioru, Karafuto (at harbor)	Wrapping	1	86"	F.	1934 - 3,500 tons '36 - 5,577 tons '37-'39 - 5,600 tons ('35 - 4,340 tons)
	Bleached and unbleached sulphite, rayon pulp	5 2	Digesters Pulp machines		1934 - 42,000 tons '36 - 45,800 tons '37-'39 - 46,000 tons ('35 - 45,000 tons)
32. ESUTORU MILL Esutoru, Karafuto (at harbor)	Book, simili, news, wrapping, M.G. caps	2 1 1 3 1 1	69" 86" 108" 110" 120" 142"	F. F. F. F. F. F.	1934 - 45,000 tons '36 - 78,218 tons '37-'39 - 68,250 tons ('35 - 64,295 tons)
	Groundwood, unbleached sulphite, rayon pulp	4 4 1	Grinders Digesters Pulp machine		1934 - 4,800 tons '36 - 17,700 tons '37-'39 - 69,000 tons ('35 - 42,000 tons)
33. CHOSEN MILL Shingishu, Korea	M.G. caps, wrapping	3	134"	F.	1934 - 16,000 tons '36 - 19,984 tons '37-'39 - 20,000 tons
	Sulphite pulp	2	Digesters		'37-'39 - 18,000 tons

(over)

B. Mills of Companies Controlled by Oji

The mills of the companies bearing names other than Oji but controlled by that company are described below, divided as to location in Japan, Korea, and Manchukuo.

1. Japan

(a) Shisuka Mill of the Nippon Rayon (Jinken) Pulp Industry Company (described on page 15.)

(b) Marifu Mill of the Sanyo Pulp Industry Company.

This company, a subsidiary of the Oji Company, was organized in April, 1937, capitalized at ¥20,000,000 (¥5,000,000 paid up). The plant was reported completed in 1939. The proposed capacity was 20,500 tons of rayon pulp, which was increased to 40,000 tons in 1940. The raw material was Japanese red pine and Canadian pulp wood.

The mill was located in Marifu-cho, Kuga-gun, Yamaguchi prefecture, Japan.

(c) Ishimaki Mill and Tsuchizaki Mill of Tohoku Shinko Pulp KK. (Tohoku Pulp Development Company Limited.)

This company was organized in January, 1938, capitalized at ¥50,000,000, a joint investment of the Oji Company and the Tohoku Development Company. Two mills were contemplated, each with a capacity of 25,000 tons of paper pulp and rayon pulp (35,000 tons rayon, 15,000 paper), using Japanese red pine and Canadian pulp wood as raw material. Construction of the mills was begun in late 1938, and operation began in 1940. Paper pulp was to be made first, rayon pulp later. The estimated production of the two mills for 1940 was 20,000 tons.

The Ishimaki mill was located at Ishimaki (Ichinomiya) City, Miyagi prefecture (Miyazakiken) Japan; and the Tsuchizaki mill at Tsuchizaki-cho, Akita City, Akita prefecture, Japan.

2. Korea

(a) Kisshu Mill of the Hokusen Seishi Kagaku Kogyo KK. (North Korean Paper & Chemical Industry Company).

The above company was organized in April, 1934, capitalized at ¥20,000,000 (10,000,000 paid up) with the Oji Company controlling 50% of the stock. Construction was begun on the mill in November, 1936, and production in 1937. The capacity in 1938 was 22,000 tons of rayon pulp. In April, 1939, the installed machinery was reported as seven digesters (which fact indicates a much greater production figure than 22,000 tons).

The mill is located in Eihokumen, Kisshu, Kankyo-hokudo, Korea.

3. Manchukuo

(a) Tonka Mill of Nichiman Pulp Company KK.

This company was established by Oji interests, capitalized at ¥10,000,000 (5,000,000 paid up). The mill supposedly began operation in late 1938, with a capacity of 15,000 tons. The estimated 1939 production was given as 10,000 tons rayon pulp and 5,000 tons paper pulp, using Manchurian wood as raw material.

The mill location was reported only as Tonka, Manchukuo.

(b) Yingkow Mill of the Japanese-Manchukuo Pulp Company Limited.

The only available information about this company was that it was financed by the Oji Company who began construction of the mill in late 1937. The proposed annual capacity of the mill was 10,000 tons of rayon pulp, using reeds as raw material.

(c) Kokusai Pulp Company

The company was established in 1938 under joint investment of Oji Company, Kanegafuchi Spinning Company and the Kokusaku Pulp Company, capitalized at ¥60,000,000, half invested by the Manchurian government and half by the three named companies.

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The annual capacity for the mill was stated as 23,000 tons of rayon pulp. No information was available as to the mill or its location.

(d) Anto Mill of the Oryokko Seishi KK (Oryokko Paper Manufacturing Company Limited).

The company was organized in May, 1919, capitalized at ¥50,000,000 (40,000,000 paid up). The Oji Company was a large shareholder. Mill operations were begun in 1920. The annual production capacity was 17,000 tons of paper pulp, for which Korean and Manchukuoan timber was to be used as raw material. In 1937, production was reported as 12,618 tons of chemical pulp, 2,293 tons of mechanical pulp. Machinery installed in the mill was reported in 1938 as three digesters and two grinders.

The mill was located in Rokudoku, Anto Suburb, Anto City, Antoken, Manchukuo.

(e) Kowfengtsu Mill and Sishantien Mill of the Chinchow Pulp Manufacturing Company.

The company was established in 1939 by the Oji Company with a capitalization of ¥30,000,000. Five hundred hectares of marsh reed fields in Panshan and Chinchow prefectures were purchased by the Oji Company in March, 1939. The reeds were to be used as raw material to produce 15,000 tons of chemical pulp per year.

Location of the mills was stated only as Kowfengtsu and Sishantien, Chinchow prefecture, Manchukuo.

X. History of the Oji Company

A complete history of the Oji Seishi Kabushiki Kaisha would constitute a history of the machine-made paper and pulp industry of Japan. From its beginning as a pioneer in the industry, the Oji Company has expanded to dominate the pulp and paper field in the Japanese Empire.

The company was organized in 1872 by the Mitsui, Ono and Shimada groups. Viscount Eiichi Shibusawa, an official in the Ministry of Finance, recognizing the importance of the paper industry, had prevailed upon these three groups to venture into the new industry. The company was capitalized at ¥150,000 and a factory was established in Oji, located northwest of Tokio City between Akabane and Tabata. Operations were begun in June, 1875, using rags as fibrous raw material and British and American methods of manufacture.

In 1887 the Oji Company increased its capitalization to ¥500,000. Two years later Oji established the first mill in Japan to manufacture scientific sulphite pulp in Kita, Shizuoka Prefecture. This prefecture held advantages for the developing paper industry in its forests, and water supply, at the base of Mt. Fuji, for it was during the years 1878 to 1894 that wood pulp began replacing rags for paper manufacture.

In 1894, the already flourishing business of Oji and other paper manufacturers received a stimulus when, due to the Sino-Japanese War, paper consumption increased in Japan and with it the production of paper. The Russo-Japanese War of 1904 caused an even greater increase in both domestic consumption and production, especially of newsprint and magazine paper. Oji, to meet these demands, established mills on the island of Hokkaido where forests were abundant.

World War I caused still more expansion and development in the industry. Increased Japanese pulp requirements were met by importing pulp from Norway, Canada and America. The war made this importing difficult, and the period 1914 to 1920 saw the establishment of pulp mills on the island of Karafuto (Saghalien).

By 1920 the Oji Company was the strongest and best managed of the many paper producers in Japan. It effected a merger in 1922 with the Chosen Paper Company, in 1923 with the Ogura Company, and in 1924 with the Toyo Company and the Hokkai Kogyo Kabushiki Kaisha (North Sea Industrial Company).

The nearest rivals to the Oji Company in the industry were the Fuji Seishi and the Karafuto Kogyo Kaisha (Saghalien Industrial Company). The Fuji Company, in 1920, had merged with Yokkaichi Paper Company and the Tokio Cardboard Company, and in 1922 with the Nihon Kagku Shiryo Kaisha (Japan Chemical Pulp Company). In 1926 the Karafuto Company had merged with the Kyusho, Naganoshima and Chuo Paper Companies.

These three (Oji, Fuji and Karafuto) were the companies which were competing for national supremacy in the Japanese paper industry in 1929. In that year the president of the Fuji Company, Yoshichi Asanizu, died; his family disposed of his 300,000 shares of stock which were acquired by the Oji Company and the Fuji Company became a subsidiary of Oji.

The Karafuto Company, which had been the smallest and youngest of the three rival companies, found it impossible to meet the competition of the Oji-Fuji combination. In 1932 the Okawa family, directors of Karafuto, resigned and the company was amalgamated with the Oji Company. At the same time the Fuji Company was officially merged into the Oji Company.

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The result of this amalgamation was an Oji Paper Manufacturing Company in 1933 capable of producing 90% of Japan's total output of paper and pulp, a company monopolizing in Japan the production and sales not only of paper but of pulp as well, and the export (to China and the Pacific area) of both. The growth of the rayon and allied industries gave an added importance to the monopoly of pulp.

At the time of the merger, the Oji Company had a subscribed capital of ¥65,916,650, and operated thirteen plants. The Fuji Company, whose subscribed capital was ¥77,700,000, operated fifteen mills. The subscribed capital of the Karafuto Company was ¥70,000,000 and the number of its mills was six.

The twenty-one plants of the two companies were taken over by the Oji Company. By the terms of the amalgamation, the total capital of the new Oji Company was ¥149,988,000.

In 1936 this figure was raised to ¥300,000,000, making the Oji Company, according to the Osaka Mainichi, 3 August 1938, "the second largest privately owned stock company in Japan, second only to the Tokio Electric Light Company".

The company continued to expand. No information was available, however, as to its activity since the outbreak of war. Such a large and important organization would be compelled to conform to the expansion plans made by the government to satisfy its war requirements. To quote the Osaka Mainichi, 3 August 1938:

> "The Oji Company is indeed contributing greatly toward the enhancement of Japan's national power and toward the stabilization of the life of the people in general".

Officers

Chiefly responsible for the development of the Oji Company since World War I is Ginjiro Fujiwara who was its president until 1938.

Mr. Fujiwara, one of Japan's outstanding industrialists, is regarded with high esteem by all informants who knew him well. He is reported to have been entirely out of sympathy with the war-minded government and to have "been at loggerheads with it many times". 12

He was born in June 1869; graduated from Keio University in 1891; became associated with Mitsui Bank; transferred to Mitsui Bussan Kaisha and served as manager of its Shanghai, Amoy and Taihoku branches before becoming associated with Oji Company. He was elected to the House of Peers in 1929; and in 1940 was made Minister of Commerce and Industry. (He is the author of a book entitled "The Spirit of Japanese Industry".)

NY: #279

The officers of the company as listed in 1935 were:

President: Ginjiro Fujiwara
Vice President: Kikujiro Takashima
Managing Directors: Tadashi Adachi
Kozo Suhara
Yozo Matsumoto
Jiro Tanaka
Kenichi Inouye

Directors: Shuntaro Ohashi
Fusajiro Abe
Hihachiro Tanaka
Shu Inouye
Tetsuo Okawa
Teikichi Hitotsuyanagi
Kojiro Majima

On December 24, 1938, Kikujiro Takashima was elected president of the company, Fujiwara chairman of the Board of Directors, and the Directors as follows:

Senior Managing Directors: Kenichi Inouye
Tadashi Adachi
Kozo Matsumoto

Junior Managing Directors: Zirouemon Tomita
Ikuma Yamanouchi
Junichirō Kobayashi
Totaro Kato

There is no conclusive evidence available to prove that the present Oji Company is "controlled by the Mitsui interests" as is stated in the Harlow memorandum[11], and by G. C. Allen in "The Concentration of Economic Control in Japan"* & 16 Mitsui and Mitsubishi are generally accepted to be the largest and most powerful of the great family enterprises ("zaibatsu") which control the economic life of Japan. Mitsui was one of the three groups founding the Oji Company in 1874, and is a share holder in the Oji controlled paper and pulp companies organized in 1937 and thereafter. How much of the stock of the Oji Company is at present controlled by Mitsui could not be determined.

* Economic Journal; XLVI, June 1937, pp. 271-286.

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SOURCES

1. F. C. Taylor, Rayonier Inc., 122 East 42nd Street, New York City. Mr. Taylor spent nineteen years in Japan engaged in the rayon business; he returned to the United States in December 1940. He is well informed on the pulp industry in Japan, was well acquainted with Ginjiro Fujiwara, Oji president, and visited many of the Oji mills.

2. Dard Hunter, Paper Museum, Massachusetts Institute of Technology, Cambridge, Mass. and Chilicothe, Ohio. Mr. Hunter is an international authority on the history of paper making, the author of many books on the subject. He was last in Japan in 1933. His trip, the primary interest of which was the hand-made paper industry, was arranged by officials of the Oji Company.

3. George Nelson, President, and

4. Howard Clayton, Vice President, Stevens-Nelson Paper Corp., 109 East 31st Street, New York City. Both Mr. Nelson and Mr. Clayton have visited Japan but are not familiar with the Oji mills.

5. "The Paper Industry & Printing in Japan" - P. D. Perkins (1940 - Harbour Press).

6. Trade Information Bulletin 672, U. S. Department of Commerce (Bureau of Foreign Domestic Commerce).

7. Japan Year Book, 1939, 1940.

8. "Glimpses of the East" - N.Y.K. Line, 1939 - 1940.

9. "Paper Makers Directory of All Nations" (Dean & Son, London), vol. 1934 to 1940.

10. "Wood Pulp", Julius Grant (Leiden, Holland, 1938).

11. Report on Oji Paper Co., J. S. Harlow (Department of Justice, Seattle, Wash., 4 August 1943).

12. Memorandum on Oji Paper Co., E. B. Price (Department of Justice, Denver, Colo., 2 September 1943).

13. Journal of Industrial and Engineering Chemistry, vol. 2, Nov. 1910, (Tomakomai Mill, T. Summers, British Consul General Yokohama).

14. "Cellulose Industry in Japan" Feb. 1940, (Trade bulletin published in English in Tokio).

15. Japanese Trading Co. files, U. S. Alien Property Custodian Warehouse, 27 Cliff Street, New York City.

16. "The Industrialization of Japan & Manchukuo" - Schumpeter, Allen, Gordon, Penrose. (Macmillan, 1940).

EXHIBITS

The exhibits attached hereto are photographs reproduced from the 1935 Oji Company's Catalogue. They are numbered to correspond to the order in which Oji Company listed its mills.

The photographs submitted in the Harlow report and the Price memorandum were reproduced from the same catalogue or negatives; both sets of photos bear numbers, and the Price memorandum states "the numbering of the pictures was by the informants, and has no significance". The numbers correspond with the order in which Oji Company listed its mills. (This same order is followed below and in Sec.XI, pp. 17 to 23).

Informants agree that the pictures were taken about 1933 or 1934. Except for the Noda and Tomarioru Mills (described on pp. 15, 16.) informants could supply no information to aid in locating the mills.

LIST OF EXHIBITS

1. Oji Mill
2. Jujo Mill
3. Kamedo Mill
4. Senju Mill
5. Edogawa Mill
6. Fuji #1 Mill
7. Fuji #2 Mill
8. Fuji #3 Mill
9. Shibakawa Mill
10. Iwabuchi Mill
11. Nagoya Mill
12. Nakatsu Mill
13. Fushiki Mill
14. Kyoto Mill
15. Miyakojima Mill
16. Yodogawa Mill
17. Kanzaki Mill
18. Kumano Mill
19. Kokura Mill
20. Yatsushiro Mill
21. Sakamoto Mill
22. Tomakomai Mill
23. Ebetsu Mill
24. Kushiro Mill
25. Odomari Mill
26. Toyohara Mill
27. Ochiai Mill
28. Shirutoru Mill
29. Maoka Mill
30. Noda Mill
31. Tomarioru Mill
32. Esutoru Mill
33. Chosen