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November 20, 1956

AIR MAIL

Mr. R. E. Shinkoskey, Manager
Tacoma Plant

Dear Sir:

In the absence of Mr. Oscar Straus, I wish to advise you that the paper by Mr. D.A. Somerville, on the "History of the Tacoma Smelter", has been approved by the Publications Committee for presentation at the Seattle meeting, on December 17th, of the West Coast Minerals Association.

The only comment voiced by one member of the Committee was that no mention whatsoever was made in the article of the activities of Mr. H. Y. Walker at Tacoma when he was Manager of the Western Department.

Very truly yours,

Secretary to
Mr. Oscar S. Straus

cc: Publications Committee:
JDMacKenzie
RWVaughan
RDBradford
FWalker
CNWaterman
HFWilhelm

WRouillard - A/M
DASomerville "

C O P Y

Tacoma, Washington, November 8, 1956

Mr. Oscar S. Straus
NEW YORK OFFICE

Enclosed is the original and two copies of a paper on the history of the Tacoma Smelter prepared by Mr. D.A. Somerville.

If approval for presentation is granted, Mr. Somerville will use the paper for a talk to be given in Seattle December 17th before the West Coast Minerals Association.

Publication is not desired; the paper will be used only as a basis for a talk.

R. E. SHINKOSKEY

RES:S
Encs. (3)

cc: w/enc: JDMacKenzie
WGRouillard
DASomerville

HISTORY OF TACOMA SMELTER

Commencement Bay is a U-shaped section of lower Puget Sound. It is an excellent harbor deep enough for ocean-going vessels and is well sheltered. Most of you know the geography of the Sound, but at a risk of boring you, let's take a quick look. The southwest shore of Commencement Bay is six miles in length as compared with the northeast leg, which is three miles long. The Tacoma Smelter is situated one mile south of the tip of the southwest leg of the "U". Farther north and occupying the whole point of land is Point Defiance Park, noted for its beaches, boat facilities, flower, trees, and shrubs.

Access to the seven seas has been a potent factor in the plant's development. Some of the men who chose its site may have foreseen that seaborne cargoes of ores and concentrates, produced at widely separated operations, would be discharged at this plant's wharves for recovery of the contained metals. However, they could have hardly foreseen the number of faraway, foreign places from which the Tacoma Plant would receive its raw materials.

Ores and concentrates come into Commencement Bay from Eastern Canada, South America, Australia, the Philippines, the Isle of Cyprus, and Cuba. You can get the complete list in the index of the school geographies. The intake by rail includes tonnage from all the coast states, California, Utah, Idaho, our own state, Montana, and our neighbor to the north, the Province of British Columbia.

In the early 1880's the Northern Pacific Railroad began building westward from St. Paul toward tidewater in the Puget Sound area. The Coeur d'Alene Mines were being developed, as were those of the Republic District. Prospecting in the Cascade Range was in full swing.

In 1887 we find references in the press to a contemplated "large smelting works" to be built in Tacoma by a millionaire from St. Paul, Dennis Ryan. W. R. Rust, an ore buyer from Aspen, Colorado, looked over the possibilities that year. He evidently decided it was too soon to start such a business, for he returned to Aspen again. He came back to stay in Tacoma two years later. In the meantime, Ryan organized his

unimportant mining properties. Included in this original group were five smelters which are still operating. Plants at El Paso, East Helena, Omaha, the Globe Plant at Denver, and the Arkansas Valley Plant at Leadville make up this list. It is rather unusual that these smelters have kept operating at their original sites for such a long period.

The first president of Asarco was E. W. Nash, his executive committee including Henry H. Rogers, John G. Moore, Leonard Lewisohn, and Barton Sewell. In the Company's infancy it was beset by lack of money. The executive committee, seeking ways and means of cutting costs, consolidated several operations and shut down others. Competition was very keen.

Among their competitors was the firm of Meyer Guggenheim and Sons, who were expanding their smelting and refining business. Their ventures were sound and profitable. In March of 1900 the Board of the American Smelting and Refining Company appointed their president and vice-president as a committee of two to determine on what sort of a basis they could acquire the Guggenheim plants and goodwill. The Guggenheim's were not too receptive in the preliminary stages of the negotiations. Rogers and Lewisohn of the American Smelting and Refining Company's board took a dim view of the proceedings. After prolonged backing and filling, the negotiations were finalized. In addition to the consolidated group of its own operations, American Smelting and Refining Company took over plants at Perth Amboy, Monterrey, Mexico, and the Federal Plant at Alton, Illinois. It also acquired sixteen important mining properties. As M. Guggenheim and Sons were the stronger financially of the two groups, they acquired the larger block of stock and were dominant on the new board of American Smelting and Refining Company. The family provided leadership for the company from 1901 to 1941. During these years the Company built copper smelters at Hayden, Arizona, and El Paso. At Garfield, Utah, they constructed the plant which treats the output from Kennecott's open pit at Bingham. A lead smelter was built at Murray, Utah. The Baltimore Plant was acquired.

It is interesting to discover that Bernard M. Baruch conducted the negotiations by which American Smelting and Refining Company purchased the Selby Plant, a lead smelter across the Bay from San Francisco, and our own Tacoma Smelter in 1905.

As a plant of the American Smelting and Refining Company, Tacoma has seen many changes. At the turn of the century, as you well know, gold prospectors discovered copper properties in Alaska and British Columbia. Lead receipts from the Coeur d'Alenes declined and copper ores made their way to the plant in such tonnages as to demand attention.

The "Annual Report of Washington Geological Survey" of 1901 notes that the plant had three lead furnaces, whose combined capacity was about 400 tons per day, and one small copper blast furnace. It also reports a new copper blast furnace of about 200 tons daily capacity would be ready by May, 1902. The report sketches details of the smelting process and the plant equipment, mentioning particularly that power for the plant was from the Snoqualmie Falls Power Company transmitted at 22,000 volts. The total load was 460 horsepower.

In Alaska the Beatson Mine near the Kennecott property commenced copper ore shipments in 1901. Prior to 1902 one of the lead blast furnaces was used to smelt the copper ores to a matte and was called a copper blast furnace. In 1902 a blast furnace especially designed to smelt copper ores was completed, a converter was constructed, and converting the copper matte was first accomplished in that year. The blister was shipped to the East Coast to a refinery for treatment until 1905. After this, part of the blister was shipped to American Smelting and Refining Company's Perth Amboy Plant for refining.

In 1904 construction of an electrolytic refinery was begun at Tacoma. Before its completion, the plant had become a part of the larger Company. The project was pushed because of the opportunity of selling copper in Eastern Asia, and casting facilities were constructed as a necessary adjunct. The first shipment of ingots and ingot bars was made in May, 1905.

In the decade beginning in 1900, milling practice showed a marked improvement. More and more concentrating was done at the mines. Increase in concentrate receipts meant trouble with the finely ground minerals. In the lead side of the plant, these fine concentrates were satisfactorily handled by the sintering equipment whereby the particles were partially fused into chunks. This ceased to be even a minor problem with cessation of the Coeur d'Alene shipments in 1911 and the resultant closing down of the lead plant.

The fine copper concentrates continued to give trouble. Various measures to agglomerate them were tried. Finally, a brick machine was used to turn out bricks of concentrates and binder. The blocks were used in the copper blast furnaces until these were shut down in 1930.

Beginning in 1913 and extending through 1917, a very extensive construction program was followed. During this program practically the whole plant was rebuilt. To list a few items, a third copper blast furnace was added, a reverberatory furnace to handle concentrates was built with six Herreshoff roasters as necessary equipment for its operation, as well as two additional converters to handle the matte produced. The original electrolytic tankhouse was enlarged and two new ones added. Receiving and storage facilities were mechanized.

At this time the stack on the hill was built. It is a landmark which originally towered 573 feet above the base. Later, due to deterioration of the terra cotta cap, it was shortened to 562 feet. One of the first industrial electrostatic precipitators was built to trap the fine ore particles carried by the smoke stream before it enters the stack. Subsequently, two other large units have been added. Much of this improvement and additional facilities were occasioned by the requirement of furnace capacity to treat the tonnage from the Kennecott Mine on the Copper River in Alaska.

The next important improvement was the building of a new ore receiving wharf in 1923. This included erection of two large Gantry cranes which travel along the wharf and dig ore in the holds of ships. They discharge onto conveyor belts running the

The matte is tapped from the low point in the furnace and air blown through it in a converter. Siliceous ore is added and slags the iron off, leaving the blister copper which retains the gold and silver.

After purification in the anode furnace, the hot copper is cast into shapes called anodes, which are placed in the sulfuric acid-copper sulfate baths in the tanks in the electrolytic refinery.

In between these anodes are hung starting sheets of pure copper. The current dissolves the copper from the anodes and deposits it in nearly pure form on the starting sheets called cathodes. The gold and silver with all but a trace of impurity metals drop to the bottom of the tanks in the form of black slimes.

The pure copper cathodes are remelted and cast into commercial shapes. The slimes are smelted in a special small furnace to a gold and silver bar called dore'. These are shipped to the Selby Plant where the gold and silver are parted and sold.

All through the life of the Tacoma Plant there have been very few times when the big furnaces were down, other than for repairs. Labor relations have been good. There are about 126 men in the plant who have worked over twenty-five years for the Company, and the average service of all is about twelve years.

Some few statistics may interest you. Fuel oil used in 1955 amounted to 475,000 barrels. The electrical load was about 10,000 horsepower, and the annual payroll was five million, three hundred thousand dollars. There was an average of 1,040 employees working at the plant. The refinery capacity is about 110,000 tons of copper per year.

It seems we have come a long way from the first, when fifty employees made five tons of lead per day. Our ambition is to achieve a sound growth in the years to come and to always be of service to the mining industry.

It has been a privilege and a real pleasure to be with you today.