



REFINING DEPARTMENT

November 14th, 1930

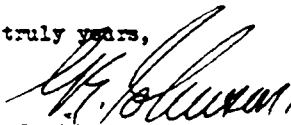
Mr. Frederick Laist,
General Metallurgical Manager,
Anaconda Copper Mining Company,
Room 1720 - 25 Broadway,
New York, N. Y.

Dear Mr. Laist:-

The East Chicago Chamber of Commerce will publish on December 10th, their Annual Review Number. This particular issue will be devoted to the transportation facilities and advantages at East Chicago to its industries. They have requested each industry to prepare a brief article outlining their use of the local transportation facilities in connection with the operations at East Chicago. The attached write-up has been prepared along this line and is submitted for your approval.

I understand that Mr. Thayer may not be in New York during the week ending November 22nd. The Chamber of Commerce desires to have approval of the final write-up not later than November 19th.

Very truly yours,



G. E. Johnson,
Superintendent.

GEJ/s
CC: Mr. B. B. Thayer
Encl.

The operations of the International Lead Refining Company and the Anaconda Lead Products Company at East Chicago represent the final bringing into marketable form and the distribution of materials that have originated at far distant places. No materials of local origin enter into the product or take any essential part in the operation, other than fuel and a small amount of fluxing material. Comparatively little of the final product is consumed in local industries. Good fuel, labor and suitable fluxes are obtainable on satisfactory terms in East Chicago, however, numerous other localities could offer equal advantages in fulfilling these requirements; - it is principally as a center of transportation and distribution to all parts of the United States that East Chicago is well adapted for the location of this industry.

The Anaconda Copper Mining Company's production of lead is derived from the treatment of the complex lead-copper-zinc ores of the Western United States. The majority of these ores contain the three metals mentioned in the form of sulphides, and in addition recoverable amounts of gold and silver.

The ores are first concentrated by flotation, producing three or more products, one of which is a lead concentrate, containing the greater part of the lead and silver from the ore, with small amounts of the other metals as impurities. The complete separation of zinc and lead by concentration is difficult and a certain amount of the lead from the ore is contained in the zinc concentrate.

The lead concentrate is smelted at the plant of the International Smelting Company at Tooele, Utah, an Anaconda subsidiary. The lead and silver are recovered in the form of a "bullion" containing approximately 98% lead, 60 ozs. silver per ton and small percentages of antimony and other impurities. - This bullion is shipped to the International Lead Refining Company at East Chicago for refining.

The zinc concentrate is treated at the Anaconda plants at Anaconda and Great Falls, Montana, for the production of electrolytic zinc. The lead remains in the residue after the extraction of the zinc. This residue is smelted at the East Helena plant of the American Smelting and Refining Company and the resulting bullion, similar to Tootle Bullion in analysis, is shipped to East Chicago for refining.

The East Chicago refinery is also to some extent a custom refinery for lead bullion purchased from other sources. Lead residues and drosses from all plants of the Anaconda company are treated, and limited quantities of scrap battery plates, lead drosses, and secondary materials are purchased.

The plant is a Parkes process lead refinery of 96,000 tons' annual capacity, producing common desilverized pig lead, antimonial lead, and dore' bullion.

Three railway lines enter the plant - the Indiana Harbor Belt Railroad, the Baltimore & Ohio Chicago Terminal Railroad and the Pennsylvania Railroad.

The lead bullion produced at Tootle, Utah is molded into rectangular blocks weighing 4 tons each, loaded into open gondola cars and shipped by rail to East Chicago. At the Refinery the blocks are unloaded with tongs by an overhead crane, as shown in Figure 2, and are melted down in kettles holding 135 tons of molten metal.

The antimony is separated from the lead and silver and is concentrated and placed in marketable form as an alloy with lead, known as Antimonial or "Hard" Lead. This is cast into 75 pound pigs and loaded into box cars for shipment.

The addition of antimony hardens and increases the physical strength of lead, and gives it the property of producing castings of beautiful sharpness and fidelity. Antimonial lead is used in the manufacture of storage batteries, bearing metals, type metal, ornamental novelties and a great variety of other applications.

The silver and gold are removed from the lead and, in the form of an alloy of the two metals known as dore' bullion, are shipped by express to the Raritan Copper Works at Perth Amboy, New Jersey, an Anaconda subsidiary. Here they are separated electrolytically and placed in marketable form.

The lead, freed of impurities, is cast into 96 pound pigs, loaded into box cars and shipped. Figure 3.

The applications of lead are extremely varied and include industries in all parts of the United States; notwithstanding this fact the plants producing refined lead are comparatively few in number and transportation facilities for raw material and finished products are essential factors in their operation.

One of the most important applications of lead is in the production of White lead for use in paint. Here again the elements entering into the product have little to do in determining the best location for its manufacture. White lead is a basic carbonate of lead, containing lead, water and carbon dioxide; no materials in any way peculiar to the Calumet Region enter into its production, however the product is distributed to paint manufacturers in all parts of the United States, and in the facilities that it affords for such distribution East Chicago is pre-eminently fitted for the location of this industry.

Anaconda White Lead is an exceptionally pure white lead produced by a unique Electrochemical process developed by the Anaconda Lead Products Company at their East Chicago Plant. The process is the invention of the late Elmer A. Sperry, internationally famous as an inventor and particularly known to Chicago as the designer and donor of the Lindberg Beacon.

Refined lead for the white lead process is cast in rectangular anode plates at the Refinery and is delivered to the White Lead Plant by a small industrial railway joining the two plants. The anodes are placed in electrolytic cells where the lead is dissolved and converted into white lead. Though the anodes are of refined metal, the lead alone enters the white lead, which flows continuously from the cell, leaving behind even the minute amounts of other metals contained in the anode. The composition and character of the white lead are under close chemical control during its production in the cell. The white lead is next washed and dried mechanically under the same close supervision and is finally pulverized and barreled for market. The standard package is a barrel of 600 pounds net weight. These are loaded into box cars and bound into a compact unit with steel straps to avoid damage in shipment. Figure 4.

The properties of Anaconda White Lead are as striking as the process which produces it. Its extreme purity and brilliant whiteness are linked with exceptional hiding and covering power and smooth working qualities.

These properties have created a wide demand for Anaconda White Lead and shipments ranging from a few pounds to many carloads are made from the East Chicago Plant. The product is valuable and easily damaged, shipments such as those to the Pacific Coast via Atlantic ports and the Panama Canal, require prompt and careful handling to avoid delay and loss. The superior transportation facilities at East Chicago are a decided advantage to both the producer and user of Anaconda White Lead.