

OREGON FURNACES MARVELOUS SMELTER

Black Butte Plant Successfully Generates Gas From Wood Fuel and Reduces Cinnabar in From a Third to One Fourth of Usual Smelting Time.

ALL NOXIOUS GASES ELIMINATED FROM THE DRAUGHT

Manager W. B. Dennis, the Well-Known Mining Engineer, Crowned Two Years' Experiments in Mercury Metallurgy With Some Remarkable Improvements Over Scott Plant.

An Oregon man has perfected a smelting furnace that seems destined to command national attention among the mining fraternity. W. B. Dennis, manager of the Black Butte mercury mine, Lane county, is crowning two years' experiments in the metallurgy of cinnabar with a reduction plant that has already received encomiums from prominent engineers, and which, when further perfected, is assured the homage of all cinnabar operators. The furnace has probably a broader field, for the principle of generating gas from a wood fuel has been sought by smelters handling gold, copper and silver ores in the preliminary work by Mr. Dennis. It seems to be established that he is able to generate any heat desired for fusing ores from a wood fuel, and this is attained at an economy never approached by his predecessors.

Frequent mention has been made of the experiments at the Black Butte the past two years. Especial interest has centered there during the past winter in a general way. The management was satisfied with the new plant; that the heat desired was produced from wood; that the efficiency of the new furnace exceeded that of the Scott continuous furnace, and that the time for smelting cinnabar ores had been reduced materially. The result of work for the past few weeks has been even more satisfactory than the first experiments, and Manager Dennis expresses more positive confidence and has the assurance of prominent experts who have recently visited the plant that he has worked out a meritorious principle. The results achieved in handling Black Butte ores have been highly satisfactory, and last evening the man who has spent many thousand dollars on a new reduction idea was willing to give a general outline of what he had achieved. Details of the new furnace are not given to the public yet, nor will they be until experiments have progressed further, and the rights of the Black Butte management have been more fully protected by patent.

In the old Scott continuous furnace, which is the common furnace used in the mercury mines of California, the ore is charged at the top of a brick structure 40 feet high, passing by degrees from one apron to another until the slag floor is reached, the heated blast ascending through the ore in its descent. Mercury is volatilized in the course of ore fusion, the blast carrying the gaseous mineral being conducted to a condensing chamber, where the mercury is precipitated in several chambers. At the bottom of these condensing chambers of the Scott furnace is found heaps of soot impregnated with mercury, and this mass must be worked over by mechanical or hand methods to extract the metal. All of the mercury could not be worked out of the soot in this way, and in efficient smelter practice it is necessary to briquette the residue and recharge it into the furnace. The cost of hand extraction, briquetting and recharging where a resinous fuel was used, as in Oregon, became a heavy item of expense.

HIGHLAND PLANT IS TO BE ENLARGED

Manager Sorenson Here to Buy Additional Mill for Immediate Installation.

HE IS ACCOMPANIED BY EASTERN ASSOCIATES

Promising Young Mine That Has Been Brought Out in About Two Years.

One of the concentrating mills of eastern Oregon which has been doing good work the past year is soon to have a capacity of 10 tons in 24 hours. This is the Highland plant. General Manager N. J. Sorenson is in the city to buy the additional machinery, which is to be installed immediately, and within the next 60 days the Highland is expected to be producing concentrates at the capacity of the new plant. An Elpass mill is to be added to the roll-jaw crusher for further grinding, and such other additions to the concentrating tables as are necessary will be made.

"We will complete the mill on the line originally designed," said Mr. Sorenson last evening. "This work is to be pressed at once, and will be finished on time. The ore reserves in the Highland warrant much larger works and those interested in the company are

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Primarily, Mr. Dennis sought to obviate the soot. To do this, he was compelled to effect absolute combustion of his fuels fed into the firebox and the organic matter and sulphur derived from the ores. Roughly he says that this has been achieved by manufacturing the gas from the wood, distributing this to combustion chambers and subjecting the ores to a roast under high temperature, which is recuperated and intensified by degrees. The draught is introduced in the top of the ore charge instead of at the bottom, as in the Scott furnace, and the highest temperature is had at the point of exit, rather than where the draught first introduced in the top of the ore charge. This is accomplished by the same general control of the blast as with the Scott furnace.

There is no successful gas generator using fuel in smelter practice. Many inventors have striven to attain this end. That Mr. Dennis has been successful is attested by the temperature of his experimental furnace. In No. 1 roasting zone he holds the temperature at about 400 degrees Fahrenheit, and in No. 4 zone, which is the last in the experimental plant, the temperature attains 1,200 to 1,400 degrees. In the cylindrical flue chamber leading the gases from the roasting zone, combustion is further advanced and the temperature raised again, so that the temperature of the blast at the point of final exit attains 1,600 to 1,800 degrees.

Of the capacity of the furnace there is more to be said than this relating to the temperature. In the Scott furnace the heat time made in California is a 24-hour roast, the extreme being 48 hours and the mean about 36 hours. The time that will be required with the new furnace perfected by Mr. Dennis has not been reduced to the minimum yet, as it is along this line that the experiment work is being conducted now. The longest period yet required has been eight hours for a charge, which is but one-third of the minimum with the Scott and about one-quarter of the average time required. This increases the capacity of the furnace accordingly, giving it from three to four times the tonnage that can be put through the Scott.

Most remarkable conditions attained, however, is the complete combustion of all gases. There are no more deadly fumes in all metallurgy than that coming from a cinnabar roast. Where the utmost care is not observed it has been the experience of smelters that workmen suffered grievously. Mr. Dennis has a furnace that so thoroughly separates all gases and minerals that a man can hold his nostrils in the draught issuing from the top of the stack for an hour, breathing deeply all the time, and not feel the slightest ill effects. There is no smoke color and no fumes to be detected by smell.

Mr. Dennis is having a model of the new furnace made for exhibit at the fair, by which time details of the plant and the results attained will be furnished. Until then he does not care to discuss more than general results, despite the numerous inquiries that have been made by mining engineers.

ready to put the property on a proper basis for his best results."

Mr. Sorenson is accompanied to this city by Ed. E. Diehl, a prominent business man of Pennsylvania, who is one of the heaviest stockholders in the company. Mr. Diehl has spent considerable time at the mine examining it, and was assisted by J. T. Lovett of Chicago, who is a veteran of high standing in the industry of the eastern Oregon district when it properly equipped for handling the ore reserves already in sight.

In slightly more than two years this young property has been brought from a mere prospect stage to the promising condition indicated by the equipment work. It was discovered in the late '80s, when heavy work began on the Cracker creek lode property, and the Highland being on an extension of this same zone. Marshall H. Knapp, a well-known prospector of the district, did early there, and held to the group without doing more than assess the property for more than 20 years. Mr. Sorenson organized the Highland company, in which the former owner was interested, and began development. Last fall production commenced. Crude ore was at first shipped, and late in the season the present experimental concentrator was finished. Since then the Highland has been able to output from six to ten tons of ore daily, and has been one of the steadiest producers of upper districts. Development has been largely confined to one long drift entering the Bannockburn claim, which has attained a length of more than 800 feet, giving a vertical depth of 400 feet. Several promising ore bodies have been opened in this drive, and another cross-cut has been commenced to give a depth of 150 to 200 feet below this old level.

ALMEDA COMPANY SMELTER TESTS GOOD

President O. M. Crouch and Manager J. H. Wickham of the Almeda company have returned from San Francisco, where they were present at a smelting test of their ores. They took an average sample throughout the property, taking one from 1,700 feet of underground work and portions of the cropping, as well as from open cuts that have been made to prove the continuity of the ore shoot. The test was for final determination by the manufacturers of the Almeda smelter, and the owners of the property were invited to be present to observe results.

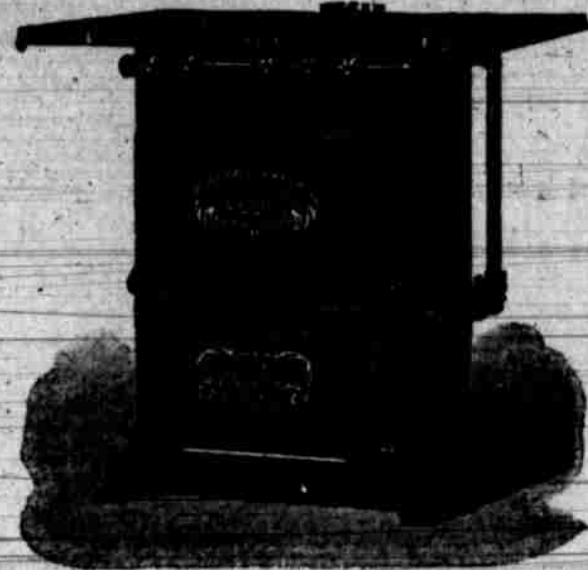
The first test was with 500 pounds of average ore from the mine, which was divided into 100-pound charges and put through a 12-inch Venedora furnace. From the total of 500 pounds, 219 pounds of matte was produced. The assays of the batch before beginning the test showed the ore to carry 22.05 gold, 13.38 silver and 2.8 per cent copper, worth \$8.20 per ton. The matte produced in the furnace assayed 84.01 gold, 39.90 silver and 34.34 copper in the ton, or a total of \$27.75. The matte product in this test,

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GAS AN ECONOMICAL FUEL



PERTINENT SUGGESTIONS

- 1—Top burners should not be lighted until ready to use them. Oven burners lighted but a few moments before using, according to the temperature desired. Make all preparations first and then use only heat enough to accomplish the work to be done. In cooking, as soon as the water boils, turn down the fire—you can't make the water any hotter.
- 2—Extinguish and relight the burners between operations. Turn off the burners the instant the work is done. Perfect results are obtained by using just so much, no more nor less gas than is required.
- 3—Learn the value of simmering burner.
- 4—Plan your meals so that when the oven is in use you can do most of the cooking in the oven. Vegetables and fruits usually cooked over top burners may be transferred to oven, saving the gas and losing no flavor in this method.
- 5—Follow these simple rules and with a little thinking and planning you will be able to make the gas bill exceedingly reasonable, and have a lot more comfort besides than could possibly be gained with the use of any other fuel.

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Portland Gas Company

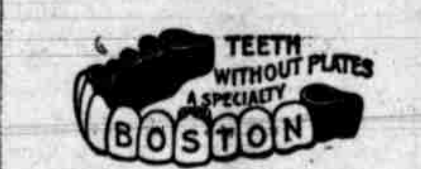
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HOURS—8:30 a. m. to 5 p. m. Sunday, 8:30 a. m. to 12:30 p. m.

And, the millionaire banker, has just gone on record to the effect that he would not support his indigent relatives. The declaration is provoked by the recent arrival at Montevideo of an elderly man who says that he is Morosini's brother and has come for an annuity. He has not yet been seen by Morosini, but has been informed by the latter's agents that his fare back from Montevideo will be paid by the banker. In speaking of the matter, Morosini said: "Why should I support all my poor relatives? This man may be my brother; I don't care whether he is or not. I have not seen him for 60 years, if he is my brother. It is like blackmail for him to come here and demand an annuity from me. I sent my agent to tell him that I do not want to see him, and all that I would do would be to send him back home."

GRAND RAPIDS FESTIVAL

(Journal Special Service.)
Grand Rapids, Mich., May 30.—The third annual May music festival which opened here this afternoon promises to be a great success, both financially and artistically. The participants this year include the Theodore Thomas orchestra of Chicago, Frederick A. Stock conducting, and a chorus of several hundred voices. The notable soloists include Madame Louise Homer, contralto;

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