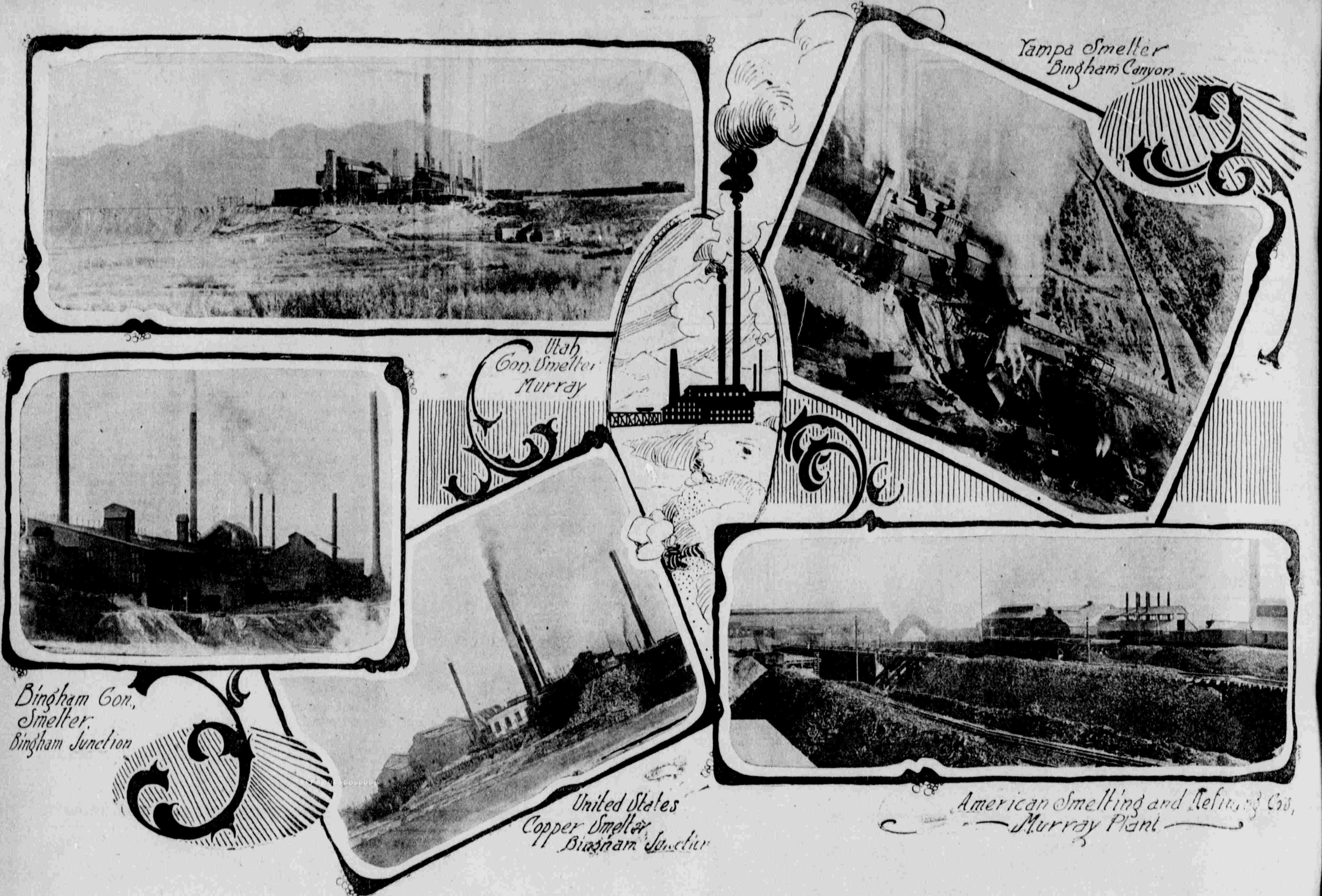


Salt Lake Smelters Treat About \$30,000,000 in Ore.



CONSIDERABLY more than \$30,000,000 worth of gold, silver, copper and lead ore received treatment at the smelters of the Salt Lake valley during the calendar year 1906. The foregoing is the net result of the operation of the plants of the Utah Consolidated and American Smelting & Refining at Murray and the Bingham Consolidated and United States plants at Bingham Junction. Directly and indirectly employment has been furnished thousands of men; the farmers of Utah have been given a ready market for the products of farms and ranches; every merchant of Salt Lake has profited by the maintenance of the industry and, in fact, almost every other business has been benefitted by the operation of the mines and smelters.

But what of the future? has been asked. Indeed, that is a question which cannot be answered definitely now. The long pending litigation between 40 or more Salt Lake valley farmers, as plaintiffs, and the four big smelting companies mentioned in the foregoing, as defendants, terminating in a restraining order from the federal court, has so completely upset conditions that the future seems clouded with uncertainties.

GRIEVANCES OF FARMERS.

Tillers of the soil entered the grievance that vegetation in their gardens and farms was either being injured or laid waste by fumes settling down upon them from the large smelter stacks; that live stock grazing in the pastures or eating hay from the meadows, became inoculated with arsenical poisons. Finally, the courts were sought for relief. On the other hand, the smelting companies—who admitted damage had been done but that its scope had been greatly exaggerated—purchased a great deal of land within the smoke zone and made it a practice to set aside a fund each year for the settlement of damage cases of this sort. However, everyone could not be satisfied in this manner and the issue finally came to a showdown.

ACTION OF COURT.

Volumes of testimony was given in by both sides before a master in chancery appointed by the court and that official's report, in due time, was submitted to and reviewed by the court. The decision of the latter, rendered a few weeks ago, is so far reaching in its effects that at this time there seems to be but one result of the controversy, and that will be abandonment of smelting operations at Murray and Bingham Junction. In the restraining order of the court the smelting companies were enjoined from smelting sulphide ores containing more than 10 per cent sulphur; while any ore or combination of ores containing arsenic in any form is absolutely prohibited. Under such regulations, smelting men say, they cannot treat more than a very small percentage of the present volume of ore coming to their plants for treatment, and means, therefore, that they will be compelled to remove their works to some other location or cease the business of smelting altogether, which, of course, will not be done.

ARE LIKELY TO MOVE.

While it is probable that Murray and

Bingham Junction will lose the smelters, this does not essentially mean that Salt Lake will lose its claim to being the greatest smelting center of the world. The new scene of operations may be farther away than at present; but Salt Lake people are too enterprising and too many business interests are involved to allow them to go away altogether. Just where the new sites will be—if it really comes down to moving—is only a matter of conjecture now. However, it is probable that the Utah Consolidated will find a place nearer its mine. The Bingham Consolidated could find an available spot up near its Dalton & Lark mine, where the air currents are such that the fumes would be carried away from the valley; the American can move its Murray plant to Garfield and the United States Smelting, Refining & Mining company can undoubtedly find a location not far away from the city and lines of transportation. But it is going to take time to move and build plants. It involves the expenditure of a great deal of money. Should the higher court affirm the ruling of the lower court, the chances are extremely doubtful if next year's bullion record will show up as well as it has this year, although the new Garfield plant of the American Smelting & Refining company will go a long way towards making up the deficiency.

SMELTERS DO THEIR PART.

It must be said to the credit of the various smelting concerns who have been involved in the smoke controversy with the farmers that they have been doing their best to scientifically solve the vexing problem. Everyone of them has gone to great expense in the employment of experts to carry on the experimental work with various methods suggested, and in afterwards installing equipment. The United States and Bingham companies have expended more than \$100,000 each and have rearranged the flue system by installing expansion chambers and bag houses which will at least minimize the danger complained of; the American company has done likewise, while the Utah Consolidated has found a way to effectively stop the escape of fumes by a system of "scouring" towers, but the management finds an equally difficult problem to contend with in the disposition of the poisonous water. The Bingham Consolidated company had not completed its improvements at the time of the issuance of the injunction by Judge Marshall and forthwith orders were given to stop all new work.

UTAH CONSOLIDATED PLANT.

The Utah Consolidated, or the Highland Boy Gold Mining company, as it was originally called, was the first concern to inaugurate copper smelting in the Salt Lake valley or in Utah. The initial unit treated 200 tons of ore per day and was located on the site of the present plant near the town of Murray.

In January, 1901, the capacity of the smelter was increased to 450 tons per day and about a year and a half ago additional furnaces went into commission which brought the ore treating capacity of the plant up to about 800 tons a day. This year has been a record breaker for this big Bingham company in several ways. More ore

has been treated than ever before; the bullion receipts have been very much greater, while the operating costs have been greatly reduced.

At the time of the building of the smelter it was considered to be a strictly modern plant, but the evolution of copper smelting practice has brought about so many changes that were the company to build a new plant today the chances are it would contain many devices which would be an improvement over those in use now. The existing plant has 20 MacDougall roasters and nine reverberatory furnaces in commission at the present time; to several of which are attached boilers and other especially designed contrivances for the utilization of waste gases, which serve the place of fuel and supplanting the use of coal to a very great extent in the creation of power for all uses.

WHAT EQUIPMENT CONSISTS OF.

The converter plant consists of three stands, while the power house is no insignificant part of the equipment. The latter contains, among other things, one 300 horsepower blowing engine, two 400 horsepower tandem compound engines, each of which is directly connected with a 200 k. w. Westinghouse generator, which supplies the electrical energy for the operation of fans and elevators, and for the tram cars used in the handling of ore and calcines, and the electric railway used in conveying the slag away. The power house also contains a hydraulic plant, used in the operation of the converters, and it also supplies power for the blacksmith and electrical shops.

In order to meet any such emergency as a mishap at the mine or to the tramway, blast have been provided at the smelter with capacity for storing 6,000 tons of ore, enough to keep the plant going at full tilt for a period of about seven days.

On being brought to the smelter the ore is crushed and sampled; then conveyed in electric tram cars to the roasters where the necessary percentage of sulphur is driven off. The calcines are then dumped into electric tram cars, conveyed to the reverberatory building and dropped into the huge hoppers above the reverberatory furnaces. From these hoppers, the product is drawn from time to time as needed, to charge the furnaces.

After the reverberatory smelting, the slag is carried away in slag-pot cars, drawn by electric locomotives. The matte is tapped directly into the converters which are transported by the overhead traveling crane.

After charging, the converters are conveyed by this crane to the converter stands, where the matte is blown up to pig copper, which is then poured into moulds and made into slabs, in which shape the product is shipped to eastern refineries for final treatment.

The smelter has never been closed down since it was taken in charge by the present management, a little more than seven years ago, and no plant in the west has treated ore more economically than this one has and dividends have been paid this year to the amount of \$1,509,000.

BINGHAM MADE IMPROVEMENTS.

The plant of the Bingham Con-

solidated Mining and Smelting company, which passed into the control of F. Augustus Heinze during the present year, has been undergoing a systematic overhauling under the direction of H. L. Charles, who came from Butte a few months ago to become general manager of the company, succeeding Capt. Duncan MacViechie, who was elevated to the position of managing director, but as stated elsewhere, all new construction has ceased for the time being and perhaps, permanently. The plant is handling close to 1,000 tons of ore per day at the present time and in addition to smelting ore from its own system of mines, is an active competitor of the American and United States companies for custom ores.

The Bingham Consolidated smelter is equipped with four blast furnaces, one reverberatory furnace, two roasters of the Edwards type, three converter stands, the Vezan type of sampler, two 50-ton cranes used to handle matte and slag from the converters, two 10-ton electric motors with which the smelting furnaces. The blowers and practically all other equipment about the plant where power is needed is electrically driven, however, the converters are operated by a 600 horse power Rarig type of compressor. In fact, the plant is very complete and up-to-date in every respect, and no smelter in the Salt Lake valley is accomplishing better results. From the Bingham Consolidated's system of properties is being supplied at the present time about 250 tons of ore daily from the Commercial mine in Bingham, 250 tons from the Dalton & Lark of Bingham and 150 tons from the Eagle & Blue Bell in the Tintic mining district.

The balance, to make up the 1,000 tons daily capacity, comes from custom ores. Now that a control of the Ohio Copper company's mine in Bingham has been taken over by Mr. Heinze, ores from that property will come to the Bingham smelter. The local operating staff of the Bingham Consolidated are: Capt. Duncan MacViechie, managing director; H. L. Charles, general manager; Frank P. Swindler, general superintendent; R. R. Putnam, smelter superintendent; James Creighton, superintendent of Dalton & Lark mine; Felix McDonald, superintendent of Commercial mine; William Owens, superintendent of Eagle & Blue Bell mine; John T. Murta, in charge of the company's office forces and Inner Pett, purchasing agent.

U. S. AND OTHER PLANTS.

The United States Smelting, Refining and Mining company has also been making many changes in the equipment of both its lead and copper smelters; new furnaces have been added and the capacity of both have been so greatly increased that its operations in this valley have become as extensive as any other competitor in this state. In fact, until the Garfield plant of the American went into commission, the United States plants handled a larger daily tonnage of ore. The American Smelting and Refining company has treated about 1,500 tons of lead, silver and gold ores at its big Murray plant, while the Yampa Smelting company, operating a plant at the mouth of Bingham canyon, has provided enough additional equipment to bring its capacity of ore treatment up to about 800 tons per day. The Yampa is a close corporation and smelts only ore coming from its own mine.

Birth of Garfield, Utah's New Smelter City.

(Continued from page seventeen.)

rolls; also, the necessary feeders, elevators and screens.

CONCENTRATING DEPARTMENT.

The concentrating department for the entire plant of 6,000 tons capacity is built on three floors, each successively lower in elevation than the other. These floors have an area of 120x600, 60x600 and 120x600, each, respectively; the total area, belies 242,000 square feet of reinforced concrete floor, or approximately 5.6 acres, in the concentrating floors alone. In this department will be located 72 jigs, 48 Wilfley tables, and 1,104 six foot classifiers and 234 nine-foot conical settling tanks.

COVERS LARGE AREA.

The total area covered by main building and are bins is approximately seven acres; the total floor space in the main building being something over eight acres.

The total area covered by shops, warehouses, yards, reservoirs, etc., is about 20 acres. The machine shop, thoroughly equipped with every modern appliance, has a ground area of 100x50 feet. The carpenter shop, like the machine shop, is 100x50 feet. The warehouse building is 100x50 feet.

PLANT IN SIX UNITS.

The mill is so designed that each of the 2,000 ton sections is made up of six

units of 500 tons capacity each, making 12 such units in the entire plant. Each one of these so-called units is a complete mill of itself, that is, any number of these can be run independently of all others, each having its independent power and being separate and distinct from the others in every way; thus giving great flexibility with respect to maintaining maximum capacity at times when repairs may be necessary.

There are two storage reservoirs: one for low head service, and one for supplying where higher head capacity is necessary. The former is 380x180 feet, and has a capacity of 6,000,000 gallons. The high head reservoir is 100x50 feet, and has a capacity of about a half a million gallons of water.

BIG POWER PLANT.

The power plant being built will have sufficient capacity to supply power for the Garfield works, as well as for the mine and mill at Bingham. To supply the latter, a transmission line 17 miles in length is being constructed.

The power plant will contain 50 water-tube boilers having a capacity, under the conditions in which they will be used, of about 600 horse power each, or 1,200 horse power total.

The engine plant will consist of five reciprocating engines, direct connected to high potential, alternating current, generators. Two of these sets are of 1,500 kilowatts capacity each; the other three, being 2,250 kilowatts, or 13,000 horse power.

The general dimensions of the power-house building are 288 feet by 158 feet. There are two reinforced concrete stacks in connection with the steam

plant, each 12 feet, inside diameter and 150 feet high.

The pumping plant designed to supply water from the source of supply near the power plant to the reservoir near the mill will consist of three electrically driven, direct connected, turbine pumps, having a combined capacity of 10,000 gallons a minute.

The Utah Copper company's enterprises, with which the Garfield, or American Smelting interests are identified, are under the general management of D. C. Jackling, R. C. Gemmel is general superintendent, and Frank Janney superintendent of mills.

Contract was first let to the Minneapolis Steel & Machinery company of Minneapolis, Minnesota, G. W. Pope, contracting engineer with offices in the Dooly block, for the first section of three hundred feet of this mill. When it was decided to double the capacity, that is add 300 ft. to the mill, these people were also successful in securing this contract. For the whole plant there will be furnished and erected over 4,000 tons of structural and fabricated steel. The first section is now completed and the second section is being rushed to an early completion by a large force of men.

British Perspicacity.

Charles Francis Adams was recently escorting an English gentleman about Boston. They were reviewing the different objects of attraction, and finally came to Bunker Hill. They stood looking at the splendid monument, when Mr. Adams remarked:

"This is the place, sir, where Warren felt." "Ah!" replied the Englishman, evidently not very familiar with American history. "Was he seriously hurt by his fall?" Mr. Adams looked at his friend. "Hurt?" said he. "He was killed, sir." "Ah, indeed!" the Englishman replied, still eying the monument and commencing to compute its height in his own mind. "Well, I should think he might have been—falling so far."—Harper's Weekly.

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