

tinental tract west of Joplin have been forced to close temporarily because of the severe cold weather, there are still a number busy with development work. Childress Bros., who recently leased the Little Pearl mill to use in cleaning the dirt from their Greyhound shaft, have now completed the work preparatory to this end and cleaned the first dirt upon the mill just before Christmas. They made many other improvements, installing a gas engine and erecting a 150-ton hopper. The ore deposit is well opened up and preparations for its thorough working have been made.

The old Tamagami mine on the southwestern part of the Continental ground is to be worked by Robinson & Howard of Carl Junction. The draining of this property has been going on for some time and when the water is out the old Alhambra shaft connected with the mill by a tram will be the one worked.

A good strike of zinc ore has been made at Four Corners northwest of Joplin by O. E. Marshall on the Excelsior land. The old Babson mill nearby will be moved to this ground. Mr. Marshall is also interested in the Dallas mine on the Galena-Joplin ground west of Carl Junction, and in the old Jubilee-Smith mine on the United Zinc Co.'s land at Carl Junction. The latter property is making a steady production.

J. M. Short has taken a lease on the old Pocahontas mine at Thoms Station and is engaged in draining the ground. So far he has not secured the lease upon the mill which was owned by other parties. But it is understood this deal will be made soon. There are many pillars left in the ground which are very rich and it is believed these will be very profitable when cleaned.

Webb City, Mo.

A number of the larger operators in the Webb City camp are of the opinion that the coming year will be the banner year in the ore output from the Webb City field. They cite as evidence of their prediction the important new development on the Connor land and adjacent tracts to the southeast of Webb City, where the old ground which was worked some years ago at the 100-ft. level is now being cut much deeper to take up the sheet ore deposits which seem almost limitless in this part of the camp. The new work is done around the 200-ft. level and for the handling of this new ore five or six new mills have recently been completed. Among the more important properties in this field are the Wallower, a large new mill built last summer; the Arkansas, operated by Hess and Goff; the M. & S., a fine new mill under the management of A. J. Burnham; McDonald Bros.' new plant, soon to be completed, and the Budge on the Aylor land. Besides this development work is hastened on the Barber Gibson tract, and the Dan King tract is ready for a mill. The Florine mill has been removed from the north side of the McInturff lease to the southeast, and since its removal has been making large turn-ins. Adjoining the McInturff lease is a developed tract where a mill is being erected by T. J. Franks and Frank Danglade. Still further south on the old Ten O'Clock tract the Katy mill is cleaning ore. Besides this important new development to the southeast of Webb City, the North Webb City sheet ground area is far from worked out as so many have predicted. Many properties are still working here with a large amount of uncut mineralized ground still awaiting them. Among the more important properties are the several mines operated by Chas. T. Orr, all of which are large and steady in their output, being among the most important mines in the entire mining district.

MONTANA.

Butte.

The refinery at the Great Falls smelter has resumed operations, and within a week will be running at full capacity again, giving employment to about 100 men and turning out about 5,000,000 lbs. of refined copper per month. Anodes will be shipped from the Washoe smelter at Anaconda. This will not represent an increase of the Washoe plant, but merely a diversion of shipments which have been going to other refineries. The copper will be refined into wire bars for shipment to wire mills. It is explained that a market

will be provided for this output in the Chicago, Milwaukee & St. Paul electrification between Harlowtown, Mont., and Avery, Ida., which is now under way.

The Badger State mine of the Anaconda Co., which was closed in August, has resumed operations, and the Leonard mine, the company's largest producer, has been shut down for repairs to the shaft, which was badly damaged in an accident a week ago. It had been the intention of the company to close the Original and Gagnon mines, which are now operated through one shaft, upon resumption at the Badger State, but the accident at the Leonard caused a temporary change in plans. As soon as the Leonard is repaired the Gagnon and Original will be closed indefinitely. The latter mines are in fine condition for a large production, and the company is putting all its properties in similar condition in anticipation of a heavy production.

The output of the Anaconda Co. for December was the smallest of any month last year, amounting to 11,800,000 lbs., against 12,700,000 lbs. in November, and 25,100,000 lbs. in December, 1913. The total production of the company by months for 1914, with estimates for July and August when the company gave out no reports, follows, in pounds: January, 24,400,000; February, 21,250,000; March, 24,800,000; April, 22,900,000; May, 23,500,000; June, 23,800,000; July, 22,000,000; August, 13,500,000; September, 12,400,000; October, 11,800,000; November, 12,700,000; December, 11,800,000; total, 224,850,000.

The Anaconda has kept well within the 50% limit of production. The company is in a strong position and at a moment's notice can put practically every mine at work at full capacity. With the improvements under way, when completed, the company will be able to produce easily 30,000,000 lbs. of copper per month.

The Butte-Ballaklava has prepared for extensive development work, for the payment of which a bond issue of \$200,000 has been authorized and a trust deed on the property in Butte executed. It is understood that stockholders and backers of the company in Duluth will take the bonds. Forty thousand dollars of an old bond issue became due Jan. 1 and it is understood that they have been taken up through the new issue. The first work contemplated in the mine will be repairs to the shaft between the 700 and 900-ft. levels, where the shaft runs through the big vein. It is estimated that this will require 6 weeks or 2 months, and this repair work must be done to put the shaft in condition for the heavy mining that is anticipated when general business conditions get better.

North Butte has spent to Dec. 1 for sinking the Granite Mountain shaft to a depth of more than 3100 ft., cutting stations and driving crosscuts to connect with the mine workings, \$220,477. All this has been absorbed in development account and charged to cost of copper. New machinery, consisting of the largest electrical hoist built in the United States, with subsidiary equipment, shafthouse, engine house and other necessary structure, cost \$222,656. Final payment of \$23,000 is due on this equipment when it has been thoroughly tested and found equal to guarantees. With the completion of this equipment the Granite Mountain shaft will afford a permanent outlet to the North Butte mine with the very best type of electrical machinery for economical operation that can at present be installed.

Between 35 and 40 men are being employed by the Barnes-King Mining Co. at the Piegan-Gloster. Good progress is being made on the construction of the mill, and the plant will be completed some time in February, according to present calculations.

While work has not yet been resumed on the construction of the high power transmission line from the Missouri river to Deer Lodge, via the Marysville district, the announcement has been made that this will be done, and it is expected that power will be available some time in the spring so that the Piegan-Gloster mill can be commissioned.

Georgetown.

The Southern Cross mine, owned by the Anaconda Co., was operated without curtailment during 1914. The total tonnage of gold ore shipped to the Washoe smelter in 1914

was 54,000 tons, an average of 4500 tons per month, or 150 tons a day. The ore was taken almost entirely from the 100, 200 and 300-ft. levels. The present depth of the shaft is 500 ft., and no sinking was done during the year. The total amount of development work during the year amounted to 5000 linear feet. One hundred and forty men have been constantly employed. The company has made a number of improvements at the mine, including the installation of a new water system, the erection of a large boarding house and bunkhouse for the miners, office buildings, carpenter shop, framing machine, etc. The hoisting engine and air compressor are electrically driven. Beside the electric engine there is a small steam hoisting engine for emergency. The value of the ore is indicated by the fact that one recent shipment yielded \$5000 to the car, and other car loads averaged \$20 a ton. Other properties near the Southern Cross are making regular shipments to the Washoe, which makes a very low treating charge, the ore being valuable to the smelter for fluxing.

Philipsburg.

The Mondamin Mining Co. has been recently organized by David T. Conkling, W. W. Williams and Nathan Williams to operate the Mondamin group, which adjoin the Granite Bi-Metallic on the west. The enterprise is backed by Bozeman and New York capital and extensive development is contemplated.

NEVADA.

Manhattan.

The three main operating companies now at work in the Manhattan district are the Big Pine, White Caps and Con. Mining companies. The White Caps, at present in charge of the 10-stamp mill and complete cyanide plant recently operated by Mushett & Wittenberg on Big Pine ores, is each day shipping 50 tons and over to the mill. The mill work is under the supervision of J. P. Montague and the same high extraction is shown on the oxidized ores as when the mill was in charge of Pat Quinn. In the mine, the raise from the 2nd level in the west ore body has developed 6 ft. of oxidized ore about 70 ft. above the level. Besides this ore there is the same amount of sulphide ores in the hanging wall of the ledge, with average values around \$25 per ton. In the east ore body a new shoot of oxidized ore has been developed in the furthest east workings of the mine, more than 500 ft. distant from the west ore shoot. The White Caps Co. is now investigating several roasting processes, preliminary to the cyanide treatment for the sulphide ores. Should a roaster be installed, and prove successful as anticipated, it will mean that several thousand tons of the sulphide ores will be immediately available, and the average values of the exposed sulphide ores indicates that the entire tonnage is higher than a \$17 grade.

The Big Pine is now establishing new records for cheap mine and mill work. Four miners break sufficient tonnage each day from the sides of the glory hole to keep the new tube mill busy. The ore is crushed at the collar of the working shaft, and grizzled, the over-size, about 48% of the total going for waste, the balance fed into the tube mill and by the installation of a classifier, a closed circuit is made, everything being slimed before passing over the amalgamating plates. The average tails show 40 cts. per ton loss. At present about 250 tons of rock is broken each day, with about 125 tons going for ore to the tube mill. As development work has proven 3 years' ore in sight in the mine, even at this rate, to the 200-ft. level, with the schist zone carrying a higher average gold content on the bottom level than elsewhere in the mine, indications all point to the Big Pine producing big dividends for its owners for many years to come. The operations of the new mill, having proven so successful, it means revolutionizing mill practice for soft ores, similar to the schist now being treated on the Big Pine. The first cost of the mill being but a fraction of the cost for a stamp mill, and the operating costs also being so very much cheaper, it means that several of the low-grade deposits of ores found throughout the district will in the near future be

developed for similar milling plants. Two more mills similar to the Big Pine mill are already planned for a section, close to the Big Pine ore zone.

The Manhattan Con., it is understood, already is preparing for a further sinking of the main operating shaft. The past few months development and mill work has shown a valuable deposition of free gold ores in the Consolidated workings. While the Associated mill, leased to the Consolidated, has cost several thousand dollars in repairs and alterations, a high extraction has been demonstrated on the ores treated, and the sinking of the working shaft still deeper will undoubtedly add to the development of the available water for the mill, as the lack of sufficient water has been the main trouble during the past term of operations.

Elko.

The Nevada Bunker Hill Mining Co. installed during last summer an air compressor and Ingersoll-Lyner drill, to drive the main working tunnel, which is now in 2230 ft., and will continue work on some this winter. There are six sets of lessees working on the company's property, four of whom have and are still shipping ore to the Salt Lake smelters. The principal shipper is the Key Lease owned by the Dome Mining & Reduction Co. of San Francisco, who have shipped since June 1 to date 2345 tons of silver-lead-copper ore of gross value of \$50,800. The Elk Lease owned by William Fordham has shipped 180 tons of gross value of \$4300. A large tonnage of ore has been developed in this lease. The Elk Lease No. 4 is owned by Messrs. Peterson & Kerr and has shipped 150 tons of gross value of \$2681. The Elk Lease No. 7 is owned by D. W. Frank and R. Kinnie and has shipped 117 tons of gross value of \$3178. They have opened an ore body 50 ft. deep, 20 ft. wide and of unknown length, that can be shipped direct to smelter. A lease has been let on the Tripoli mine, in which a fine ore body is opened by its deepest workings.

John McConaghy and associates have a bond and lease on the Sweepstakes group owned by Hesson, Hylton and Hunter and during the summer shipped about 150 tons of silver-copper ore. During the summer he opened up a large ore body and during the winter will drive the main tunnel to connect with this ore body and raise on it to connect with shaft sunk on it this summer.

Rochester.

The Nevada Packard Co. has been taking out enough high-grade ore to defray its operating expenses, and only a shallow depth has been attained on the ore. The company has just shipped 125 tons of its lower grade ore to the new mill of the Rochester Mines Co., for the purpose of having it at the plant when operations are started. The Nevada Packard Co. expects to ship regularly 15 to 25 tons daily, which will average about \$20. The ore body that this company developed in its upper tunnel was driven on for a distance of 90 ft. All of this is of good milling grade, and in two places the company has exposed rich lenses of ore which is said to average about \$50 to the ton. From its shipments to date the company has accumulated a small surplus with which to carry on more extensive development work. The lower tunnel is expected to cut the ore formation at sufficient depth to give the owners a better idea of what to expect as the vein is followed down the mountain side. The richest ore consignment ever sent out from the camp came from the Packard mine. One car of ore from this property gave an average return of 230 ozs. silver and \$2.30 a ton in gold. The company proposes to have a small stamp mill erected, provided the lower tunnel shows enough of the milling material to justify the construction of a plant.

Ely.

There is a general belief here that operations at the Consolidated Copper Mines properties may be resumed early next spring. So far as can be learned here the Coppermines Co. has done no new financing, and more is heard about the estate being acquired by the Nevada Con. Operations for 18 months, previous to Aug. 1, were confined to drilling in the Giroux ground for the purpose of blocking out a large tonnage of the porphyry ore, which could be steam shoveled. Unless the porphyry deposits can be proven up from the Liberty pit of the Nevada Con. on through to the Bunker Hill group, it is feared that Coppermines may experience some further