MINING SECTION

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MINES, MINING, LOCAL STOCKS AND COPPER

Smelter Production For April Nearly 22,000,000 Pounds

Copper Queen Smelter Outputs 15,000,000 Pounds of Copper For The Last Month. C. & A. Handles About 7,000,000. Shattuck's Tonnage is Also Large And Leasers Are Keeping Up Their Pace, Making District's Position Assured

Higgins Leasing Company Looks For Another Property. Has Two in View And Actual Work May Be Undertaken At An Early Date. Shattuck Makes Quarterly Report. Commonwealth Extension Getting Into Position Where Mine is Made

With the Copper Queen smelter production for the month of April at 15,000,000 pounds of copper and Calumet and Arizona production, for the same period in the neighborhood of 7,000,000, with Shattuck producing at a rate of over 18,000,000 pounds annually, with the Higgins producing daily and with several other excellent leases in the Warren District, Bisbee continues to keep far in the lead as a great copper producing center.

The Douglas smelters are finding it impossible to handle all of the copper ore offered for reduction. This has forced many of the smaller operators to either suspend work entirely or to reduce their production considerably. There are more leases working today in Southern Arizona than ever before in the history of the state. Sasco smelter is now handling 500 tons of ore a day and the capacity, in all probability, will be increased as fast as possible. That smelter is handling ore from the Silver Bell and several other properties. The El Paso smelter is taking very little additional ore and other plants in the Southwest are running over with supplies of the tonnage. Work is being pushed ahead on the improvements and expansions on the C. & A. plant at Douglas and when completed will handle a much larger tonnage than is now possible.

SHATTUCK QUARTERLY REPORT

Shattuck report for the quarter ending March 31 has been issued, and a very gratifying showing was made for the first three months of the present year.

The company made copper at a net cost of 6.44 cents per pound, and on a basis of 18,700,000 pounds a year. Cost for second quarter will be further reduced on account of higher prices for silver and lead.

The company is getting a good price for its copper, for the report announces that deliveries of the first quarter's production will practically take care of all copper sales contracted at prices below 25 cents. The average price obtained for the quarter was 23.1 cents per pound.

The development of new ore, both copper and lead, is a feature in the Shattuck. Large bodies of sulphide and semi-oxydized sulphide are being opened on the 800 and 900 levels. The mine is in superb shape as regards ore developments.

PRODUCTION

The following is a summary of the mine and smelter production for the quarter:

	Copper Ore	Lead Ore
Dry tons mined	37,114	2,595
Dry tons shipped	37,381	3,544
Dry tons smelted	37,377	3,601
Pounds copper recovered		4,682,691
Ounces gold recovered		1,538
Ounces silver recovered		89,695
Pounds lead recovered		1,481,387
Net operating cost per pound of copper		6.31c
General office expenses and taxes paid		13c
Total net cost per pound refined copper		6.44c

"The smelter production was at the rate per year of 18,700,000 pounds of copper, 6,000 ounces of gold, 358,000 ounces of silver, and 5,900,000 pounds of lead.

"During the quarter the refinery delivered to us 3,757,307 pounds of refined copper against the production of 3,938,146 pounds for the last quarter of 1915. No refinery deliveries of the present quarter's production were made, as copper deliveries are not due from the refinery until 100 days after date of sampling at the smelter. All of the production of the first quarter of 1916 was sold for delivery on arrival at New York from the refinery except 427,877 pounds which is inventoried at 26 cents per pound and included in item 'Gross value of all ores produced during the quarter' below, making the average price received for this quarter's production 23.1 cents per pound. The deliveries of the quarter's production will practically take care of all copper sales contracted at prices below 26 cents per pound."

EARNINGS

Earnings for the quarter are as follows:

Gross value of all ores produced during quarter		$1,239,658.31
Miscellaneous receipts		768.69
Interest received		537.77
		$1,240,964.77
Operating expenses	$453,471.64	
General office expenses and taxes paid	6,112.97	
		459,584.61
		$781,380.16
At the rate per share per year		8.93

During the quarter dividends amounting to 10 percent were paid as follows:

No. 14—January 20, 1916	$175,000
Extra No. 2—January 20, 1916	175,000
A total of	$350,000

Shattuck's last dividend, paid April 20, was at the rate of 50 cents a share, and 75 cents extra, calling for a distribution of $437,500. This dividend will be credited to the second quarter. The company has disbursed thus far this

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COMMONWEALTH EXTENSION IS COMING INTO ITS OWN

220 Level of the Rainbow Shaft is Developing Some Excellent Silver Ore, Promising Great Future

FINE HORN SILVER FREQUENT IN TONNAGE

Company is in Excellent Shape To Go Ahead. All Indications Point To Successful Development

With a record of $25,000,000 behind it the Commonwealth Mining and Milling Company is still producing. Its veins, from every possible indication, are going south, around the famous hill from which John Pearce over twenty-five years ago, took the first Bonanza silver ever found in the region.

All of this would be a poor introduction for a layman's view of the Commonwealth Extension, were it not for the fact that the veins appear to be going into Extension ground and holding promise for another big property.

Twenty-five years ago and more, John Pearce and his brothers lived on a ranch in the neighborhood of what is now the town of Pearce. John Pearce prospected the hill and on the northwest side uncovered some rich silver ore. With the aid of his brothers he worked the property and sometime later sold the property to the old Commonwealth people for $275,000. This company took many millions of dollars from the hill.

The present operators of the property are more scientific miners. They are grading their product and have one of the most up-to-date mills, of the character, in the entire country. They are handling immense tonnage and the life of the mine cannot be computed in months.

The ground in which the silver is found consists of a high foothill, which sticks its nose out of the Sulphur Springs valley, much after the fashion of an ant hill in a back yard. The other and similar hills in the valley have been prospected and no silver has been found. It is one of the many freaks of nature.

The old company owns the northeast side of the hill. The Extension owns ten claims, four of which are patented and six unpatented. They take in the south end of the hill, southeast of the hill and for several thousand feet into the flat, south, east and west. The south line of the old Commonwealth is about 300 yards from the southernmost shaft of the company. The workings of the old company are down 700 feet in this neighborhood and within 500 or 600 feet from the southside lines.

The working shaft of the Extension has been sunk within 35 feet of the Commonwealth's south lines. It is substantial and sedquate for prospecting purposes but the company, when sufficient ore has been developed to warrant it ,will have to sink a larger shaft double or triple compartment .

At the present time the development work of the Extension consists of the above shaft, called the Rainbow; down 235 feet, fifteen feet being the sump. On the 150 level considerable lateral development has been prosecuted and some very rich ore taken out. The country, however, is spotted and being pushed east. Some of the most beautiful horn silver imaginable has been taken from this working. This crosscut is now in a matter of 55 feet and is being pushed ahead rapidly.

Here it is proper to say that the old company and the Extension have worked on the best of terms and are now doing the same. The old company is offering every facility possible to the Extension for the latter people to prove their property. Consequently when the Commonwealth desired to explore is southern zone which, heretofore, has been untouched, the Extension allowed the work to be done from the Rainbow shaft.

This work is now across the sidelines and into Commonwealth ground on the 220 level, west from the shaft. Thirty feet of ore, of a good milling average, was encountered in the Extension ground and it is said the Commonwealth is also some excellent indications.

Twenty feet from the shaft, on the west crosscut of the 220 level, the Extension is now starting a drift. The faith of nearly every miner who

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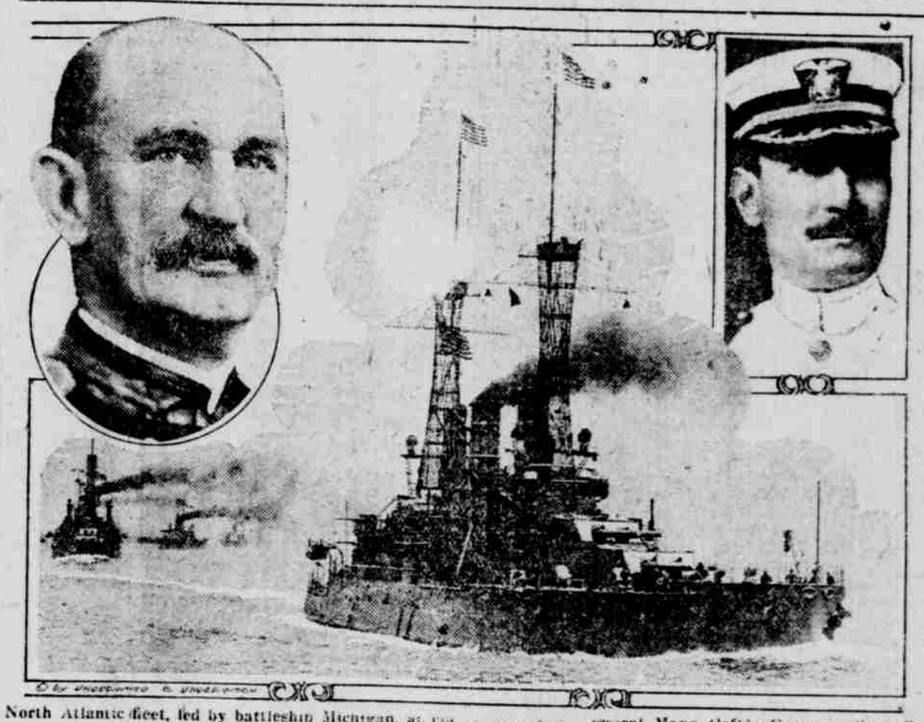
FLEET READY FOR "ANY EMERGENCY," SECRETARY DANIELS TOLD



North Atlantic fleet, led by battleship Michigan, at ... Admiral Mayo (left); Captain Albert P. Niblack, commander of the Michigan.

"In every respect, the shooting was the best the ... ever did. This sentence, taken from the report of Vice Admiral Mayo on the recent target practice ... of the Atlantic fleet in Cuban waters and just made public by Secretary Daniels, forms the substance of the report ... accompanied as it is by the admiral's simultaneous declaration that the fleet is "ready for any emergency."

IMPROVED MINING IS AID TO CONSERVATISM SAYS METALLURGIST

Dr. L. D. Ricketts, Of Bisbee And New York, Says "True Conservatism Means Better Processes And No Waste"

True conservatism means really improvement of processes and avoidance of waste. The present generation is entitled to take and will take from the earth that which it justly needs, provided it does not wreck and destroy and unduly waste a part of the earth's resources and provided that any partially beneficiated substances are stored and held for future treatment, says Dr. L. D. Ricketts, in a paper presented at the Second Pan-American Scientific Congress at Washington D. C.

This deduction comes from the fact that as we have accumulated and continue to advance in knowledge future generations can utilize material that is at the present time uncommercial or dispense with the use of the product in whole or in part. When the question of the conservation of our mineral resources came up during Roosevelt's administration, there were estimates showing the limited amount of iron, copper and other ores available for use in the arts, but as I recollect it, these estimates simply referred to material that was then available and commercial and did not refer to the immense masses of leaner material that were not then commercial.

Attention should be brought further more to the important advance in the metallurgical processes, and especially in the mining and metallurgy of copper ores which have resulted from the organized efforts of large and efficient technical staffs working in harmony and in unison. The wonderful results obtained have been the work of no one man, and the advance has been the result of wise and intelligent co-operation.

Wonderful progress has been made by this means in decreasing unit costs and in improvements in process and recoveries. In mining we originated in America and followed, for a generation or more, the square-setting and filling system, which is still important in rich ore masses. Later this was followed by the so-called caving systems, which abandoned an attempt to hold up ground that cannot be held up with usually a mattress of timber between the overburden and the ore. Such caving systems involve either slicing or subslicing to provide for reinforcements and maintenance of an efficient mattress. The caving systems have been borrowed from the iron industry by the so-called shrinkage methods that have still further decreased the cost of mining, although they require the holding of great masses of broken ore underground for long periods of time. Another method is being put into practice, requiring far less storage of broken ore underground and also avoiding the mattress —a system somewhat similar to the shrinkage system, excepting that far less ore stands broken and a single horizontal pillar is maintained under the caving ore instead of a horizontal pillar and numerous vertical pillars, and excepting that a far smaller quantity of ore is broken by mining methods and a far greater quantity by the natural crushing of the mass. I refer

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SUMMER HOLDS NO FEARS FOR OATMAN

With The Coming Of The Hot Weather Activity In The San Francisco District Increases Instead of Reverse

(Special to The Review)

KINGMAN, Ariz., May 6.—Contrary to logical expectations in all desert mining camps, the approach of summer is not in the least adversely affecting activity in the districts of Mohave County. Coincident with the rise in the temperature, the fever heat point is gradually being reached in the advancement of the mining industry in the entire section, with the result that the outlook is steadily improving. Although such a statement may seem overdrawn, it is, nevertheless, a fact that words are inadequate to properly describe the proposition of the revival in mining in the many camps of Mohave County. To use a common expression, "it must be seen to be appreciated." The successes being scored in the established centers of habitation are swelling the army of prospectors in the undeveloped or neglected sections of the county and new discoveries are becoming dealy occurrences. It is safe to say that the time is not far distant when Mohave County, figuratively speaking, will be one gigantic mining camp.

The camp of Oatman in the San Francisco district, developedments in which during the last year and a half are largely responsible for the present increasing interest and activity throughout the country, is established firmly and solidly, on the mining map. The permanency of its veins and the persistency of their values to great depth have been demonstrated beyond the slightest doubt by numerous operating companies. The "missionary" work having been accomplished, attention is now being given to proving the extent of the pay zone. As companies operating at widely separated points are meeting with the most encouraging results, the limits of the zone remain yet to be determined even to a superficial degree; indeed, it will be surprising if they are definitely proven for years to come. New companies are daily becoming identified with the field with the result that operations are not only increasing but the area of mineralization is being extended with marked rapidity.

In point of public interest Chloride and the other camps of the Wallapai district, embracing the Cerbat range of mountains which run north from the town of Kingman a distance of about 30 miles, is a close rival of the Oatman field and attracting equally as great attention from mining operators, capitalists and small investors. The Oatman and Wallapai regions differ in that the former is essentially a gold producer and the latter is, for the most part, a base metal country. As in the Oatman field, activity is increasing in an almost inconceivable manner on both slopes of the Cerbat range and the uniform success that is attending exploration augurs well for the Wallapai district. It must not be understood that the Oatman or San Francisco and the Wallapai districts

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YAVAPAI MINES RIVAL THOSE OF OATMAN FOR FEATURE INVESTMENT

Operations In The County Continue To Increase With The Coming Of Summer. Tungsten Important Ore

(By William P. DeWolf).

PRESCOTT, Arizona, ay 6—Mining operations in Yavapai county continue to increase in magnitude and importance and to vie with those of the famous Oatman district of Mohave county, in scope. Also, the mines here are vialling in popularity as investments those of Oatman and of Mohave county in general. In fact, the energizing of the mining industry of this county, which dates from the outset of the current year, continues without abatement under financial and mineral coaditions that bespeak unprecedented success.

Mining engineers and prospective investors in mining property are inspecting Yavapai county mines and prospects in increasing numbers ,and in most instances their investigations are followed by favorable reports and the investment of capital. Every hotel in this city and in Jerome is overcrowded with guests, most of whom are interested in some manner or other with the allied industries of mining and milling. Reports from local garages and livery stables indicate there are more vehicles at present on the move to the various mining sections of this county than ever before. Passenger travel via railway in and out of Prescott has practically doubled in volume since the first of the year, as have likewise the shipments of ore to local and outside mills and smelters.

Rich Tungsten Shipment.

Homer Wood and partners shipped 3,090 pounds of 70 per cent tungsten ore to Pittsburg, Pennsylvania, late last week. The consignment went forward from their property in the Eureka District and has a value in excess of $10,000. The initial shipment from the property made in the month of March, last, consisted of 3,600 pounds of 65 per cent tungsten ore. At the price then paid for tungsten it neetted Wood and his partners better than $5,000.

William Forbach and partners of Bisbee, are onerating the first ahme property with satisfactory results. Several shipments of silver lead ore have been made at a profit, and another shipment will go to the Humbolt smelter within a few days. The main working shaft 300 feet deep, is now being unwatered preparatory to engaging in mining operations on a more extended scale. The First Home is located in the Upper Big Bug District and is one of a number of valuable minin gproperties in this county in which Ed Block, of Prescott is interested .

Tungsten Mine Sold.

E. J. Temple, formerly of Boulder, Colorado, representing Denver Capital, has purchased the tungsten group of claims in the Eureka District formerly owned by Orville Bozarth. The boldings have been opened to a depth of sixty feet and yielding hubnerite ore, carrying 65 per

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"BLACK JACK" TURNED OUT TUNGSTEN ORES

Tip Top Mine, In Yavapai County, Again Coming Into Its Own By Reason Of Large Bodies Wolframite

WAS RICH SILVER PRODUCER IN 80'S

Property Is Now Being Worked For Steel Hardener And Improvements Are Being Rushed To Completion

(By Ernest Douglas)

PHOENIX, May 6.—Arizona's mining history contains no chapter more unique than the story of the Tip Top mine, fifty miles northwest of Phoenix in the lower end of the Bradshaw range, which produced $5,000,000 worth of silver in pioneer days and at the same time was developed into what is now believed to be the world's biggest tungsten proposition.

After being dead for years as a silver mine, the Tip Top is "coming back" for the "black jack" which was dreaded and avoided in those times is nothing more nor less than tungsten, the rare meatls for which steel manufacturers are eager to pay $7.50 a pound. There may be bigger deposits of tungsten ore than the pioneer operators all unknowingly opened at Tip Top, but there are no bigger developed deposits.

In 1876 John Corning, Jack Moore and two other prospectors found fabulously rich silver ore among the boulders of Cottonwood canyon. Tons of this float, some of which averaged as high as $10,000 a ton, were gathered up, freighted to Yuma and shipped by water to the Selby smelter at San Francisco. The float was followed to its source, which was at the point where the creek had broken through two parallel veins, and the Tip Top was discovered. It was soo nsold to Tevis & Hagen, of San Francisco. Many old timers say that Senator George Hearst, father of William Randolph Hearst, was associated with them in its ownership.

A typical mining camp sprang up at Tip Top. Once the camp had as many as 700 people, housed in adobe and stone cabins perched precariously on the sides of the canyon. The ruins of those cabins are still noticeable, and the building that was used as a brewery is now the camp's boarding house.

Ore that was worth $400 a ton and over was freighted to Yuma and El Paso, for the Southern Pacific had not then been built through Arizona. Great slabs of ruby silver were often encountered. Low grade material was not handled for the freighting charge was $200 a ton. Anything that apparently ran high in tungsten, then spoken of as "black jack" and supposed to be zinc, was thrown over the dump, left as broken in the stopes, or not broken at all. Black jack made all ores refractory and heavy penalties were imposed when it was present.

As the mine workings went down the average grade of the ore became lower in silver and higher i ntungsten. In many places the silver was replaced entirely by the tungsten. Finally a concentrator was erected at Gillette, ten miles east of Tip Top on the Agua Fria River.

After extracting some $4,000,000 from the Tip Top mine, Tevis & Hagen closed down the property. At that time it was supposed that the shutdown was only temporary but they became interested in the big silver mines of Virginia City and forgot all about the tungsten-ridden Tip Top. They did not even pay the watchman who was left in charge. He sued and was awarded the property.

Leasers worked the Tip Top intermittently for several years. Eventually the St. Louis-Yavapai company took hold and moved the mill from Gillette to the mine. In eighteen months this company recovered $235,000 from dump ores. Internal dissensions arose over the division of the profits. The company leased the mine to its superintendent, Cover, and a man named Tyrack. In ninety days Cover and Tyrack took $41,000 out of 150 tons stoped between the fifth and sixth levels.

Once more a watchman was left in charge. He failed to perform the assessment work and on January 1, 1898, the Tip Top was "jumped" by Frank and Ed Wager, old prospectors who fondly hoped that silver would once more come into its own. It was not until two years later that the first tungsten steel was manufactured and "black jack" was given a market value.

Last year A. F. Muter, an experi-

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