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FLORIDA MOUNTAIN MINING

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Although at least four veins have been located in Florida Mountain, the most persistent is the Black Jack-Trade Dollar which extends in a generally north-south direction for 7,000 feet. Tunnels and underground workings from both ends are connected and ore to some extent has been stoped almost the entire distance. Early production came mainly from the northern end on the Booneville and Black Jack claims. Several hundred thousand was produced on the Booneville property from working near the surface, and the Black Jack did even better, having produced \$1,600,000 from 1865 to 1889, when the Idaho and Pittsburgh Mining and Milling Company bought the property. This company ran a 900 feet long crosscut on the 800 level and discovered good ore in 1891 after turning south on the Black Jack vein. In seven years the company mined approximately 63,000 tons of ore averaging over \$20.00 a ton for a total production of 1,300,000 with a proportion by value of gold 1 silver 5.

Early in 1899, water in the deeper levels of the mine forced the Idaho and Pittsburgh Mining and Milling Company to shut down. They sold their Black Jack property to the Consolidated Trade Dollar Mining Company which had acquired the south extension of the Black Jack vein from W. H. Dewey in 1891, the year he completed his 3,900 feet Blaine tunnel along the vein. In 1899 the Trade Dollar Company also bought the Booneville mine and all of the other claims owned by the Florida Mountain Mining and Milling Company on the northern end of the vein. Now the Trade Dollar Company was in a position to drain water, develop and haul it through the long tunnel started at Dewey where they eventually located a new mill. The Dewey tunnel or 1,700 level was 500 feet below the Blaine tunnel and also the Idaho or 1,200 level which was eighteen feet below the Blaine but connected with it.

The Trade Dollar Consolidated Mining Company operated successfully until 1909. During this time they had their share of difficulties and misfortune. Fatal accidents, disappointments in underground exploration work, failure of equipment in the Swan Falls electrical power plant and problems of supply in an isolated region at high altitude, all put constant strain on Fredric Irwin, a very capable manager. For a number of years Irwin was able to increase production and reduce mining costs per ton but a decreasing silver price and dwindling ore reserves forced him to recommend shutting down the mine in 1909. but Irwin, unlike many others in a similar situation, knew when to quit. Those companies that came later often squandered resources in an effort to mill low grade ore or in a futile search for new ore bodies.

To understand more fully what was involved in an underground mining operation at the

beginning of the century a number of matters have to be examined rather closely. Clearly, there were advantages compared to the early years immediately following discovery, but in many respects conditions were much the same. Exploration, often called development work in advance of actual mining was a necessity all competent managers thoroughly understood. In the early years, mining companies far too sanguinary in their expectations found themselves in great difficulties when they suddenly ran out of good ore. The irregular ore shoots at intervals along the Black Jack-Trade Dollar Vein would produce these surprises quite frequently. In his 1903 report to the company Irwin was confident of at least "one year's ore ahead of the mill" compared to only six months the year before.

Except for daily work slips of shift foremen, supply records, and mine maps, information on operations from 1899 to 1902 is derived from the progress and improvements Irwin mentions in his 1903 report. The following descriptions should indicate the importance and extent of exploration and development work in these years. Strictly speaking, prospecting exploration and development are not synonymous terms. Tunnels, shafts, and raises may be run either for exploratory purposes or to facilitate extraction of ore and, of course, for both purposes if ore is found. Later in the life of a mine, older workings may be used in transferring ore to the surface. Frequently the terms ore developed or "blocked out" are used to describe the quantity of ore determined by the various tunnels, shafts, or raises penetrating the ore body. Because ore bodies along miles of veins in Florida Mountain are not continuous but consist of enriched zones usually extending further vertically than horizontally, they are called *shoots*. Much barren or nearly barren rock separates the shoots, and often between the walls of wide shoots much rock of little or no value must be broken to get at the seams and streaks of ore. A good ore shoot found at one level reasonably could be expected to extend into levels a hundred feet above or below, but there was no certainty of this happening. An ore shoot could extend vertically hundreds of feet, but one or more levels might encounter great irregularities in width or values. Better ore in the bottom than the top of a tunnel was always encouraging.

Besides pushing the 1,700 level vigorously to get under known ore bodies above, the Trade Dollar Company in 1903 had crews working in many headings ranging at different levels from the Booneville holdings at the northern end of their holdings to beyond the south end of the Black Jack ground. The company was exploring the Alpine vein from crosscuts to the west and mining ore from upper levels of the vein. They planned to explore ground 700 feet to the north as far as the Humbolt shaft, an area never penetrated at depth. Irwin expected to "see immense amounts of ore" in this region, for him a rare expression of excessive optimism. Of the crews working the various headings, perhaps half were extracting ore. Since two of the ore shoots were unusually long, one 398 feet, the other 294 feet--and quite rich in places--two or more crews may have been working on each of these ore shoots. Although each crew might have only one miner and mucker, Carmen and others could bring the average to three per heading. Whether three shifts could work in twenty-four hours would depend upon ventilation for removal of powder fumes and perhaps other factors. Throughout the mine a number of men were employed at special tasks. Besides hoist engineers, timbermen, plumbers, electricians, and shift foremen moved from place to place. On the surface in addition to mill operators, timber framers, carpenters, blacksmiths, mechanics, and a small office staff were required. The narrow seams and streaks of ore mined in this labor intensive manner explain why a mill capacity of never more than sixty tons in twenty-four hours could handle all the ore produced. In fact, Irwin

believed his mill had ten tons capacity not used, which would reduce costs if more ore were produced.

The report for 1904 shows 17,494.43 tons produced compared to 15,744.03 tons for 1903. The report lists thirty-six headings in which they had worked during the year, comprised of drifts, cross-cuts, and raises. However, they frequently discontinued work in a heading and resumed work in another, making it virtually impossible, with the information provided, to determine how many crews were employed at the same time. For 1903 and other years the number of headings probably varied to no significant extent since tonnage figures, operating costs, etc. remained much the same from year to year. The 1904 list of drafts, raises, and crosscuts comparing costs per foot with that of 1903 shows that costs varied from 1.38 to 10.28, averaging 3.68 per foot except for the long 1,700 level, which cost 33.35 in 1903 and 30.90 in 1904. The list reveals that in nine of the thirty-six headings miners used hand steel and hammers. Only one large machine is listed. Miners used small machines in all the other headings. Working the six to eight inch wide Alpine vein in very hard rock from the 1,200 level on up, miners using hand steel could fill five cars per day. Using small machine drills the same number of miners could fill fifteen cars.

While the Trade Dollar Consolidated Mining Company followed long established practices of a much earlier technology as evidenced by the use of candles for underground lighting and some use of hand steel, electricity from the Swan Falls power plant began to make great improvements, beginning in 1901. Three phase circuits powered the mills and other heavy equipment. The surface plant found many uses for electricity, lighting, heating offices, running pumps, saws, and machine shop tools. On July 14, 1904, an electric haulage system was put into operation underground for a length of 9,800 feet. The Westinghouse Baldwin Locomotive used on the trolley pulled eighteen cars and made four to six trips a day besides hauling men to and from work. It replaced five or six mules and drivers.

After 1906 Florida Mountain gold and silver production began to decline. Irwin was correct in his estimate of values in the far north end of the property. Production in this sector exceeded his optimistic expectations in the quantity of good ore discovered. But exploration along the 1,400 and 1,500 levels to the south (near Trade Dollar-Black Jack line) under good stopes at higher levels was not meeting with much success. More discouraging was the failure to find anything except a few small bunches of ore along the 1,700 level. In 1919 another company attempted to make a profit milling waste rock left as fill in the old stopes, and when this failed the manager recommended sinking below the 1,700 level to find ore. Another mine promoter in 1924 suggested spending \$170,000 to sink a 200 foot shaft from which levels could be run to explore ground under the 1,700 level. These proposed ventures have no sound basis. When extensive exploration along the 1,400 and 1,500 levels failed to discover good ore shoots, the Trade Dollar Company evidently considered a 1,600 level unwarranted, let alone prospecting below the 1,700.

To get an idea of the size of the Trade Dollar Consolidated Mining Company operation in respect to quantities of ore processed and values recovered, production figures of a few representative years will suffice since these figures are comparatively constant from 1903 to 1908.

1905

	17,672.58	tons milled
	31.55	per ton average value
	21.886	per ton operating costs
	157,488.27	gross profit
	5,073.92	used for equipment
	152,414.35	net profit
	8,016.00	feet of development work
		19 months ore ahead of the mill
11 months		
	382,273.20	value of concentrates
11 months		
	122,167.53	value of bullion
1906		
	17,426.74	tons milled
	32.20	per ton average value
	20.931	per ton operating costs
	167,078.70	gross profit
	5,586.00	feet of development work
		20 month's ore ahead of the mill
11 months		
	383,801.64	value of concentrates
11 months		
	121,120.87	value of bullion
	93.94	per cent of gold recovered
	93.16	per cent of silver recovered
1907		
	15,998.12	tons milled
	33.55	per ton average value
	24.21	per ton operating costs
	94,779.10	net profit
	5,860.00	feet of development work
		Less ore developed than amount extracted
11 months		
	352,588.23	value of concentrates
11 months		
	106,801.13	value of bullion
	6.39	gold average value per ton
	27.16	silver average value per ton

Irwin explains the abrupt decline in 1907 production. Production for the first half of the year was satisfactory, but in the last six months ore values dropped and silver declined in value also, from 68 cents per oz. to 53 cents per oz. At the same time labor and supplies became more

expensive. In the last three months mill savings dropped 5 per cent because the old governors on the Swan Falls power plant could not handle the fluctuating Boise Interurban street car load. By the end of 1908 silver price decline made a difference of \$75,000. At the end of 1909 the mine had not developed new ore shoots and had exhausted their reserves. Since the expanding power business in which the company was engaged needed more power for other than mining, and since no more ore was available, a Trade Dollar transition from Florida Mountain mining to marketing Swan Falls power followed after 1909.

Blaine Tunnel production:

Trade Dollar Company records now available provide no information on total production from 1891, the time of purchase, to 1903, when annual reports began to supply complete figures for each year. Lindgren's 1898 map shows extensive stoping of good ore from the Blaine Tunnel and on page 140¹ he provides the following production information:

The output for 1897 was 8,975 tons, containing about \$60 per ton, resulting in \$538,500, while the shipping ore and concentrates yielded \$196,500. The total production was \$735,000, of which \$420,000 are said to be profits. Rich shipping ore was also produced in 1898, one parcel of 23,921 pounds yielding \$44,183. During 1898 and 1899 the production was very heavy, though exact data could not be obtained.

¹Lindgren, Waldemar, "The Gold and Silver Veins of Silver City, De Lamar and other Mining Districts in Idaho," *Twentieth Annual Report of the United States Geological Survey*. (Washington, 1900) 3:67-189.

(This information has not been edited.)