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MACKAY AND COPPER BASIN

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More than three decades of notably unsuccessful effort went into opening up Idaho's major copper lode at Mackay. Not as isolated from transportation as Levi Allen's Seven Devils discoveries, large copper properties near Mackay had to wait for rail transportation in order to realize their potential. Unlike many rich Idaho mining areas, Mackay could be reached without excessive difficulty. Yet until a mining company with resources sufficient to build a rail line to Blackfoot developed enough ore to warrant investing in supplying such service, mining at Mackay could not get underway on any reasonable scale.

Prospectors who found copper possibilities along Alder Creek in 1879 progressed very slowly in trying to exploit their potential mines. Too poor to be able to spend much time there trying to figure out what they had, they accomplished little toward preliminary exploration of their new mining area for four years. Finally some additional discoveries set off a boom there in 1884. A group of new camps suddenly sprang up. Some emerged as ghost towns after only a year or two, while others went through occasional phases of activity between longer periods of collapse. Houston, Alder City, and Carbonate all got underway early in 1884, while Cliff City followed that summer. No more than two of these initial four really were needed, so Alder City and Carbonate promptly failed. Mart Houston got a post office established at a superior location, January 25, 1884, and that spring a gin mill followed. Houston had a half dozen houses (twice as many as Alder) by June, while Carbonate had only three partly completed dwellings. Alder City gained a post office, April 22, to offer Houston some competition, and soon had five business establishments and a saw mill. Houston soon came out ahead, however. By early summer, twenty more houses were under construction there, with stores and "a commodious lodging house" following by August.

Chosen as a site for a copper smelter, Cliff City (four miles from Houston) flourished until construction was completed that fall. A store, twenty houses, and two or three saloons augmented Cliff City's twenty-ton smelter. Houston grew even faster, favored by a location along a route to Cliff City. Alder City's remaining store and whiskey shop disappeared, their log structures being moved to Houston. Carbonate's "solitary gin mill" also was deserted.

Smelting commenced November 23, with a pure looking product recovered when an initial batch was completed on November 24. Early in December, after a test of little more than a week, Relf J. Bledsoe shut down his smelter, discharged his entire crew, and left Houston little better off than Alder City and Carbonate. A single mine employed twelve men the following spring, while farms and ranches began to flourish. When smelting resumed at Cliff City, July 22, 1885, Houston had a short revival. By January of 1886, Cliff City's smelter had become idle again. Until technological problems could be solved, Houston and Cliff City faced another depression. Houston had become a family town, with a school of sixty scholars. Yet by June of 1886, only eight inhabitants remained there. Most of Houston's sixty-five buildings stood empty. A concentrator helped revive Houston in the fall of 1887, although failure to equip that plant for winter operation forced suspension of production until the spring of 1888. During 1888, however, attention was diverted to Copper Basin, west of Mackay, where assays of 35% to 55% copper attracted interest to a promising new lode. Silver values raised Copper Basin ores to \$145 a ton in a thirty-five foot vein. After several years, preparations were made to haul some of this ore down Trail Creek to Ketchum for shipment to a Salt Lake smelter.

New York investors finally came to Houston's rescue in August of 1890. A young and inexperienced mining superintendent spent \$100,000 there in twenty-six days, all to no advantage. Yet vacant houses were reoccupied, and new ones were constructed.

John Danskin contracted to deliver thirty tons of ore each day to Cliff City's smelter, which ran from late in 1890 through February. Then all of Houston's and Cliff City's residents grew despondent again when mining operations suspended.

Another revival stirred up hope in Houston in June, 1892. British investors financed construction of a good road to a large Alder Creek mine there. Development work had barely begun there, however, when "the eccentric Englishman in charge" abruptly returned to Sheffield in August, 1892. That turned out to be a poor time for mining expansion, so more delays ensued.

After several unsuccessful attempts to revive copper mining around Houston early in the Panic of 1893, new capital was attracted there. W. A. Clark of Butte-- whose copper holdings dominated that major mining area--undertook an ambitious program during the summer of 1894. He began shipping copper bullion from an old smelter there and put an additional furnace into operation on September 16. Houston flourished again, although Clark was engaged only in test operations which he described as prospecting. By 1889, a White Knob shaft had been sunk to a depth of 700 feet, at which point an access tunnel had been driven so that ore need not be hoisted all that distance. A lot of irregular ore bodies, diverse in character, had been developed. A recovery technology capable of handling this

variety of ores had to be employed. Only \$8,000 worth of copper was produced there in 1899, but costs had become more favorable.

Not too much lumber could be found nearby, so fifteen dollars a thousand feet had to be spent for timber. Fuel wood ran four dollars a cord. Freight for importing supplies cost twelve dollars a ton, while ore could be shipped to a rail terminal for ten. Ore could be smelted for ten dollars a ton, so low grade rock (available in great abundance) could not yet be processed. Miners worked eight to ten hours a day for \$3.00 to \$3.50 while engineers made four dollars. At that wage level, tunnels could be driven for eight dollars a foot, compared with forty-five dollars for sinking shafts. Major investments were needed to cover these expenses.

Finally John W. Mackay of San Francisco (most prominent of a group of miners who had developed Virginia City's major Comstock property) became interested in White Knob. He arranged with the Union Pacific to build an Oregon Short Line branch from Blackfoot to his new mine. At this point, Houston, which had grown to two stores, a restaurant, a boarding house, a blacksmith shop, two livery stables, four saloons, and a Methodist church, was replaced by a new rail terminal three miles away. There a new mining center--Mackay--gained a population of about 1,200 when rail service reached Lost River in 1901.

Preliminary development of Mackay's ambitious operation encouraged construction of a 600-ton smelter. A million tons of ore containing 4% copper, with about three dollars more in gold and silver, had been located. Wayne Darlington ran a series of encouraging tests in a fifty-ton smelter in order to verify that different deposits in White Knob's primary lode all could be processed without insurmountable difficulty. His various test lots produced 200,000 pounds of copper by direct smelting. Five hundred men were employed building a new 600-ton smelter with a twelve-mile electric railway for transporting ore. Along with this ambitious project, Mackay's firm developed some Copper Basin properties.

Long before Mackay's smelter was completed, mining at White Knob underwent some important changes. Wayne Darlington had been unable to get along with his miners, who finally decided to organize on April 4, 1902, as a union in the Western Federation of Miners. [The Western Federation had enough strength at Bay Horse to win a strike in order to preserve wage levels, and had powerful unions in other camps such as Custer and Gibbonsville.]

Only two days after they organized, White Knob's miners had to strike in order to avoid being driven out. In this showdown, Darlington's services were dispensed with, and his "superintendent and foreman likewise left the country." Mackay then became a union town, with a union restaurant. Prior to their strike, all miners had to use company facilities. "Married men were not allowed to board with their families, but now single men, as well as married men, can board where they please."

Darlington departed at a time when his 600-ton smelter was about half finished. Only about three months later, John W. Mackay died in London, July 20, 1902. When one of two projected furnaces was completed in October of 1902, Darlington's direct smelting system (with no preliminary milling) recovered all but a half percent of high grade copper that made up 58% of the ore being processed. With enough ore developed to assure a two-million dollar profit, Mackay retained a permanent population of almost a thousand. A new cross-cut tunnel, intended to reach the White Knob lode at a depth of 1,600 feet (900 feet below an existing 1,100-foot tunnel) was commenced. But a second furnace required to raise Mackay's daily smelting capacity to six-hundred tons was abandoned.

In 1904, mining operations at Mackay shifted to a new system. Revenal Macbeth, whose Lucky Boy property at Custer had become unprofitable, took a White Knob lease. From that time on, most underground work there was carried on by leasers. A year later, a matte process was employed in Mackay's smelter with unfortunate results. Lack of sufficient sulfur in White Knob ores accounted for technical difficulties. Costs also escalated after mining and smelting services had fallen into "the hands of a number of high-priced operators." Frank M. Leland was sent up from California to dissolve the company and to dismantle their matte plant.

Leland had an unusual gift for reducing costs dramatically and for inventing economical processes. Disposing of a lot of "superfluous supplies and equipments" in order to obtain operating capital, he employed a competent assayer and resumed smelting of a reserve of low grade ore on hand when his company had failed. Contracting with "some intelligent leasers" to supply enough high grade ore to provide a mixture suitable for smelting, he ran his furnace for several months. Then he replaced an expensive electric railway with a Shay steam locomotive, cutting transportation costs to a fourth of their previous level. So instead of closing out White Knob, he commenced a system in which different leasers working in different parts of his lode supplied his company smelter. Within two years, he had "rescued and transformed [White Knob] from a dismal failure to a large and profitable producer of copper."

In 1907 the Empire Copper Company of New York assumed Revenal Macbeth's lease. Instead of operating a three-hundred-ton Mackay smelter at considerable expense--partly for importing Bingham Canyon ore from Salt Lake, as Macbeth had to do in order to supply a sulphide deficiency--Leland sent all his ore to Salt Lake for smelting. That way he got rid of shipping costs for hauling copper [in ore] up from Salt Lake and then sending his copper back again. Great care had to be exercised in cost controls in order to process low-grade ore ranging from sixty to eighty pounds of copper per ton. A copper price collapse during the Panic of 1907 forced him to shut down, October 1. Unable to

resume until copper process rose to seventeen or eighteen cents a pound, he had to wait a year or two. But he developed a leasing and smelting system that would work when a price recovery would make mining feasible again.

By 1910, leasers for Empire copper operations brought out ore sufficient to produce 830,000 pounds of metal in the Garfield smelter near Salt Lake. A Copper Basin mine also shipped ore to Garfield, and 1914 Lost River discoveries west of Copper Basin next to Mount Hyndman increased that copper zone still further. Mackay produced steadily until adverse prices greatly reduced White Knob's yield in 1914. Recovery in 1915 enabled leasers to employ two hundred men for a record annual production. In 1916 an Empire dividend of \$250,000 rewarded investors after a decade of more modest returns. 1915 enabled leasers to employ two hundred men for a record annual production. In 1916 an Empire dividend of \$250,000 rewarded investors after a decade of more modest returns. That year, a lower tunnel, driven 6,000 feet in order to reach ore at a depth of 1,600 feet, was completed at last. An inexpensive tram replaced the Shay railroad in 1918, reducing transportation costs by 80 percent between White Knob and Mackay. Such savings had become more than necessary to compensate, in part, for high wartime operating costs which had increased with wage raises and rail car shortages. Copper Basin mines had profited by better prices after 1916, but faced problems comparable to White Knob's in 1918.

Four nineteen years, leasers had been filling White Knob stopes with low grade ore. Enormous reserves had accumulated by 1924. So a 150-ton flotation concentrator was installed to process this previously unmarketable copper. Enlargement of this mill to 250 tons the next year provided work for a hundred miners on a leasing system in which their return varied with copper price fluctuation and percentage of copper in their ore. This arrangement continued until 1928, when further development that could not be provided for under such a lease arrangement became necessary. So a new corporation acquired the Empire property, rebuilt their plant, and engaged in ambitious development. This program continued until August of 1930 when early depression problems forced a shut down. Leasers again took over, although they could manage only to build up ore reserves which they could not afford to ship to a smelter. Leasing continued after a tax sale in 1931, but depression prices did not favor copper mining.

Before a copper price recession in 1914, White Knob had produced about \$3,750,000 in copper [two-thirds of this total], silver, and a little gold. Later yields, supplemented with some tungsten production from nearby Wildhorse [1953 to 1955] raised this total to around fifteen million. In reacting to a variable market economy with abrupt price fluctuation over many years, copper production at White Knob of necessity lost efficiency. Additional elements of production not readily subject to management control includes problems and costs of transportation

along with technological innovation essential to facilitate production from low grade ores. If White Knob had benefited from a location like Bingham Canyon, where much lower grade copper ore could be processed to advantage, Idaho could have had a large copper output. [Much of Bingham Canyon's advantage came from development of large scale open pit mining there--a possibility inappropriate at White Knob.] Yet mines such as those around Mackay and Copper Basin deserve credit for enabling smelters such as Bingham Canyon's plant at Garfield to provide for increased recovery from copper ores from other places. Smelting at Garfield depended upon having a great variety of ores in order to provide a mixture of minerals essential for efficient operation.

White Knob contributed more than its share of different ores required to operate a smelter elsewhere. Credit deriving from this kind of incidental benefit has gone to other places. Yet White Knob deserves some recognition beyond a relatively modest total copper production.

Renewed interest in possibilities for resuming mining at Mackay led to an extensive drilling program, completed in 1977, to develop additional ore there.