

pumped for sluicing this power cost and sluice attendance was 15 cents per cubic yard. The combined cost of stripping, scraping, and sluicing was 25 to 30 cents per square foot, or 40 to 60 cents per cubic yard, for ground 15 to 35 feet deep. The capital invested in equipment at these mines ranges from \$15,000 to about \$25,000. The smaller workings in other districts have \$4,000 to \$12,000 invested in equipment.

Typical Bagley scraper operation at Fairbanks.—Although practice and conditions differ at different placers, they are well illustrated in the following description of a typical large Fairbanks mine. The average depth of ground mined was about 16 feet. The 5 feet of overburden were hydraulicked off, 3 feet of upper gravel were scraped and sluiced, and about 5 feet of gravel and 3 feet of schist bedrock were scraped and sluiced. The pit was 300 by 400 feet and was drained by two 2-inch pumps. A 4-foot (1¾-cubic yard) Bagley enlarged to hold 2 cubic yards and operated by a 10 by 12 hoist was used with 1-inch cable for the lead line and ¾-inch for the haulback lines. Three sets of cable were required for the season. The material was scraped and dumped into the car in the underground station and hauled up the track incline by an 8½ by 10 inch engine and dumped into the dump box. Three boilers, totaling 115 horsepower, produced the power. With favorable conditions the scraper made 35 to 40 trips per hour, although this was often greatly reduced by frost conditions, so that the average yardage scraped to the car was about 450 cubic yards per 20-hour day.

The dump box at the head of the sluices is 100 feet long and 4 feet wide. At the lower end this box narrows to 22 inches, where it is connected to the 22-inch sluice boxes, 6 to 10 lengths of which are used. The dump box and sluice are set on a grade of 18 inches to 12 feet and paved with block riffles (see fig. 24). An undercurrent, the same size as the sluice box and set on a 20-inch grade, is used to catch fine gold. It consists of a steel plate perforated with ½-inch holes, placed 3 inches above a burlap surface. As the burlap becomes covered with mud slime, it is taken up and cleaned every day. About 125 miner's inches of water from the ditch are used for sluicing. A dump-box man is kept busy forking out the larger rocks and preventing the sluices from being clogged.

Twelve to fourteen men constitute the average crew for two shifts; the labor and mess cost is \$60 per shift. The boilers burn 4 cords of wood, costing \$12 per cord, per shift. This 16-foot depth of ground was worked for 35 cents per square foot, or 59 cents per cubic yard. Detailed costs are not available, but it is estimated that the cost of scraping and sluicing the 8-foot depth of gravel and bedrock was about 25 cents per square foot, or 85 cents per cubic yard.

The operator stated that this 16-foot depth could be mined for 25 cents per square foot, or 42 cents per cubic yard, if average conditions had existed. The cost of rigging and setting up for one of these large pits is about \$1,000. About \$25,000 is invested in the plant and equipment.

Scraper operation in Iditarod district.—On Willow Creek, in the Iditarod district (fig. 1, 21), Bagley operations were conducted for

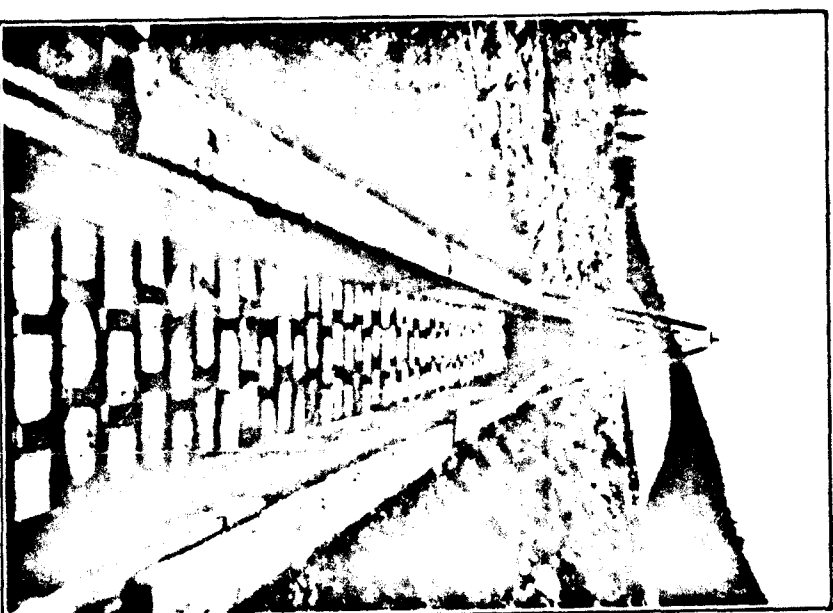


FIGURE 24.—Sluice showing block riffles and special liners; also bangers for backstop as used for hydraulicking.

five years by stripping about 9 feet of overburden by ground sluicing and scraping 7 feet of gravel and soft slate bedrock into a car by a 1¼-cubic yard scraper, at an average cost of 30 cents per square foot, or 51 cents per cubic yard. Scraping the 7 feet of gravel and bedrock cost 65 cents per cubic yard. With eight or nine men employed, working one shift only, an area of 40,000 to 50,000 square feet was mined in a season. A 60-horsepower boiler produced the power. No water was pumped. Wood cost \$14 per cord, and 3½ cords were burned per shift.