

# SOCIETY FOR INDUSTRIAL ARCHEOLOGY

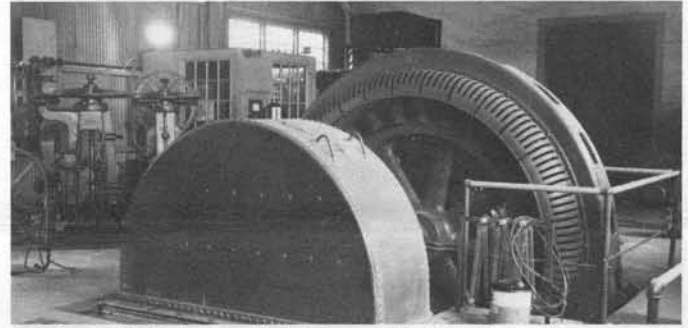
## NEWSLETTER

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The ruins of the Alaska-Juneau mill hang above the southeastern end of Juneau. (R) Lower Salmon Creek powerhouse: 2500-HP impulse turbine by the Pelton Water Wheel Co. (San



Francisco) and G.E. alternator. To the left-rear are the Pelton-wheel needle-nozzle regulators, themselves powered by small impulse turbines. All photographs by Robert L. Johnson.

### I.A. IN ALASKA

#### HYDROELECTRIC PLANTS OF THE A-J MINE, JUNEAU

The following is the first installment of two noting some of the IA observed by Robert L. Johnson, Rossville, Ga. during a consulting trip to the northernmost United State in the 1977 summer.

In 1880 gold was discovered in Silver Bow Basin, behind the city of Juneau. The strike was the start of a gold-producing era that saw the beginning of two of the world's greatest gold mines: the A-J (Alaska-Juneau), in the Basin; and the Treadwell group of mines on Douglas Island, W. of Juneau. Over \$146 million in gold was produced by these mines up to their closing—the Treadwell in 1917 due to cave-ins; the A-J in 1944. The ruins of the A-J mill hang above Juneau and south of the town of Douglas are literally miles of interesting ruins from the Treadwell operation including the "glory hole," an early open-pit mine. All are well worth visiting. Considerable water power was developed for the mines and some of the installations remain, owned by Alaska Electric Light & Power Co., as marvelous, intact (two in operation) early-20thC hydroelectric plants. These developments consist of:

1) **The Gold Creek Plant**, c1912, located in Juneau, still runs two impulse water wheels (one of 400 H.P., with double runners; the other of 600-H.P., triple runners) driving the original 2,400-volt Westinghouse generators. The wheels have no governors, being regulated by the Salmon Creek plant (below). They are fed by a 3,000-ft., 4' x 4' wood flume taking water from Gold Creek in Silver Bow Basin, delivering it to a wooden pressure box and thence to a 2100-ft., 36" diam. steel penstock under 210-ft. head. In recent years the plant's capacity has been increased by installation of a Pelton vertical-shaft impulse wheel and generator. The powerhouse is intact with additions on the S. side.

2) **The Sheep Creek Plant**, at the mouth of that creek 4 miles SE of Juneau, built in 1906; a timber-frame structure covered with corrugated iron, containing three units. Two are 1,900-H.P., two-nozzle Pelton wheels direct connected to 2,300-volt, 60-cycle, 3-phase, 1,000kW G.E. generators. Separate exciters driven by 35-H.P. Pelton wheels supplied these. The third unit is a 225kW Westinghouse generator driven by twin Pelton-Doble wheels. The plant was closed in 1944 but

stands in splendid condition giving the appearance of being ready to start up—due doubtless to the presence nearby of a caretaker. It was supplied by 3' x 4' wooden flume 2,500 ft. long and a 36" riveted-steel penstock 2687 ft. long under 600-ft. head. The flume is deteriorating badly, sections having fallen out.

3) **The Annex Creek Plant**, built in 1905, accessible only by helicopter or a 200-mile boat trip, was not visited. Located at Taku Inlet, 11 air miles E. of Juneau, it contains two 2,500-H.P. Pelton-Doble impulse wheels driving 1,750-kva, 2,300-volt Allis-Chalmers generators. The power is stepped up to 24,000 volts and transmitted to Juneau by a 12-mile transmission line supported partly on steel and partly on wood towers. It operates today essentially unchanged from its original construction.

4) **The A-J built an 8,000-kW steam station** at their mill at the S. end of Juneau, consisting of one 2,000-kW and one 6,000-kW unit. It was a standby plant and rarely used. The building stands today near the AEL&P offices, in use as a warehouse, the machinery removed.

5) **On Douglas Island an elaborate hydraulic system** was developed to bring water to a powerhouse on Bullion Creek. Fish Creek and Bullion Creek were given reservoirs; water was brought from these through a 12-mile covered ditch to a forebay 570 ft. above the powerhouse, and from there through a penstock to the Bullion Creek plant and to the various air compressors and stamps at the adjacent Treadwell Mines. The plant stands badly vandalized. The Pelton wheels are intact but the generators and switchgear have been smashed for their copper and vandals have broken what they could not remove.

6 and 7) Perhaps the most interesting of the developments are **the two power plants on Salmon Creek**, 6 miles NW of Juneau. The first seen is the **Lower Salmon Creek Plant**, alongside the highway connecting Juneau with the airport. The plant burned in 1922 but the machinery was not damaged and immediately it was rebuilt. It contains two units, each a double overhung 2,500-H.P. impulse wheel pair driving G.E. 1400-kW, 3-phase generators at 2,300 volts. One unit was built by the Yuba Construction Co., the other by Pelton. Additionally, there are two exciter sets. The plant is closed but maintained in mint condition: neat,