

APPENDIX

LADY FRANCES MINE (Perlite)

Mutton Mountain District
Wasco County

Owners: Dant and Russell, Inc., Perlite Division, Portland, Oregon.
James Abbott, Maupin, Oregon.

Operators: Dant and Russell, Inc.

Location and Transportation: The Lady Frances mine is located on the west side of the Deschutes River, at a point 9 miles south of Maupin, the nearest town to the north, on the Dalles-California Highway (U.S. 97) (See Plate 1). Maupin is 100 miles by highway to Portland by way of the Wapinitia Pass (State Highway 50). A gravelled road goes up the east side of the river from Maupin, a distance of 14 miles to a point opposite the mine, where the river is crossed by small boat. The Oregon Trunk Railroad goes up the west side of the river past the mine, which is 162 miles from the Portland terminal, via the junction with the main line at Wishram, and the Columbia River gorge.

The mine portal is located about 500 feet above river level, at a point 1400 feet west of the railroad and about 1500 feet north of Frieda Station (See Plates 4 and 5). A spur has been built opposite the mine. The portal lies about 2100 feet S. 26° W. of the northeast corner of Sec. 24, T. 6 S., R. 13 E., at an elevation of about 1550 feet, the river is at about 100 feet (See Plate 2).

Development and equipment: When the property was first visited in November, 1945, development consisted of an adit 1000 feet long with a 40 foot inclined raise; 4 open cuts in perlite, and 5 other location cuts. The crew lived in box cars converted to mess and bunk houses. The mine was reached by a narrow switchback trail up the steep hillside.

In July, 1946, development work consists of 1150 feet of drifts and crosscuts in perlite and about 300 feet of raises (See Plate 6). A road to the portal over a mile long has been built; office, a bunk house, mess and a change house have been built or are under construction; and foundations for a small pilot mill have been laid. Two diesel-electric power plants have been set up to furnish power for lights and ~~for~~ the mill, and a pump and line from the river has been laid to furnish water. A 2-ton army truck furnishes transportation to and from camp to mine, and a siding has been constructed on the railroad below the mine.

Metallurgy: A thirty ton pilot mill is being constructed at the mine to crush, wash, and size the perlite for shipment to the expanding plant at St. Helens, Oregon. The mill will consist of a 6" x 8" Dodge crusher, a 2' x 6' Marcy rod mill, 2 Hummelt screens, a Western hydroseparator with Adams density control, settling and dewatering tanks, and sacking apparatus. The perlite, after crushing to 1 inch, ^{will be} ~~is~~ ground to pass 20 mesh, oversize from the screens being returned to the mill. It is important both to the production of a clean product and to the success of later treatment that all fines below 200 mesh be removed by a hydroseparator.

At the St. Helens pilot plant, the perlite is expanded in a 4 x 8 foot specially designed rotary kiln*, fired by 4 gas burners to temperatures varying from 1500 to 2500° F. The sized perlite is raised by a small 20 foot bucket elevator to a 3 x 4 foot storage cone, and is fed into the kiln, which rotates at 8 rpm, above and about 1 foot ahead of the burners. The system operates at a vacuum of from .4 to .8 inches of water, this being maintained by an automatically regulated steam jet directed upwards in the exhaust stack. The expanded perlite is drawn from the furnace into a downdraft box where the coarse material is removed;

* Patent applied for.

thence into a cyclone six feet in diameter, where the fines are collected, thence into a 10 foot cyclone which catches any remaining dust.

Economics: The expanded aggregate, which weighs less than 12 pounds to the cubic foot, can be used as a light weight aggregate for plaster, concrete, and a multitude of other uses where light weight, insulating and acoustic properties are of value.