

NEW PORTABLE SHOWER BATH.

We give herewith perspective and sectional views of an improved portable shower bath, recently patented by Mr. James E. Vansant, of Covington, Ky. It consists of a spherical vessel, having at the bottom a supporting rim which admits of setting it on the floor when occasion requires. The top is provided with a screw cap, perforated with numerous small holes for discharging water in fine streams. In the center of the cover there is a filling tube, which extends nearly to the bottom of the vessel. A float is provided to indicate when the vessel is filled, and shot contained in the two side tubes serves as ballast to keep the device either in an upright or inverted position.

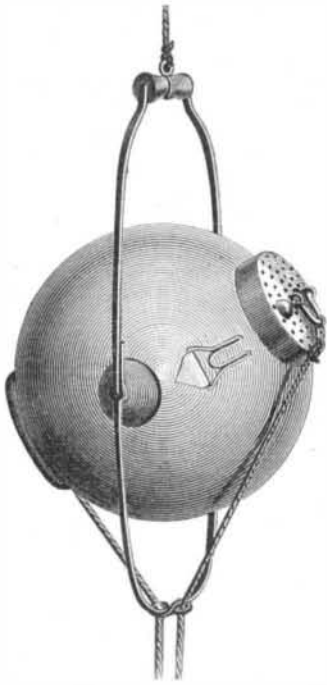


Fig. 1.—VANSANT'S PORTABLE SHOWER BATH.

The vessel is pivoted in a light jointed frame that admits of hanging it up or setting it down. In use it is tipped by means of the cords attached.

Mines and Railroads of Leadville.

To the Editor of the Scientific American:

Nearly every person interested in geology sets up a theory of his own with regard to the carbonate deposits of Leadville, immediately on arriving in this famous district. There is, however, but one theory which has been generally adopted by scientific men, formulated by W. S. Keyes, General Manager of the Chrysolite Iron and Little Chief Mines, and substantiated by the mute testimony of the fossil remains that fix the geologic data. The theory is substantially as follows:

A shallow sea overspread this entire region. An even bed of limestone, dolomitic, was formed by the myriads of shell-fish that subsisted in this shallow sea. From some natural convulsion the waters flowed off, leaving the sedimentary deposits. Subsequently the porphyritic rock flowed over the surface in a pasty mass, covering the limestone. There then followed two processes of ore making. The first was through the mineralizing action of heated and ore depositing waters, coming up out of the depths, and impregnating and permeating the hanging and foot walls of the contact. No free oxygen was contained in these waters; neither did they carry any chlorides or chlorobromides,

wherein consists the present richness of Leadville's ores; but in the first process the ore was entirely in the form of sulphurets.

The second process was initiated by the uplifting of the mountain ranges to their present height, at which time the diorites, those ore indicators of the globe, uprose through the sedimentary strata. Thus was the original surface of deposit bent and folded, and not unfrequently entirely broken. The surface waters carrying free oxygen and free carbonic acid now penetrated along the contact, and oxidized the sulphurets, which formed free sulphuric acid, giving rise to the sulphates and sulpho-carbonates. The irresistible law of gravity distributed these sulphates, these oxides, and these carbonates in vast bonanzas, that have been the wonder of the world. The fossil trilobites of this region identify it with the silver lead districts of Nevada, Utah, and Mexico. It is not anomalous, but simply richer than its sister regions to the West and South.

The output of ore from the Leadville mines last year (1879) aggregated 122,483 tons, which represents a value of \$11,477,046. That is to say, there was an average yield at \$90 per ton, or just \$31,443.96 each day. On the first day of May of the present year (1880), the returns from thirty-seven of the leading mines gave a total daily output of 899½ tons of ore, yielding, at the low average of \$90 per ton, something like \$80,955 per day. The world's history of silver mining in the past shows nothing like this for so young a camp. Scarcely a month passes without opening up some new and vast carbonate deposits. The territory has not even been thoroughly prospected; and the future yield of the royal metal will far eclipse its past production.

It might not be uninteresting in this connection to give something regarding the sampling and milling of ores. One of the most complete concerns engaged in this business anywhere in the country is that of Augustus R. Meyer & Co. This establishment has grown with the growth and development of this carbonate district. The business was first established as long ago as the year 1877 (before Little Pittsburg was dreamed of). A little log house, a relic of seventeen years previous, was found sufficiently ample for the needs of the business of that period. However, it was not long before additions had to be made and new buildings erected. In the year 1879 the present company was incorporated with a capital stock of \$50,000, and every preparation that money and business sagacity could effect was made to meet the demands of the prosperous era, that has built a mining metropolis 10,240 feet above the sea level, at the base of the great continental divide. As at present constituted the premises of the company comprise seven and one-half acres of ground, upon which six buildings have been erected, including ore houses and crushing and sampling buildings. During the busy season of summer from thirty-five to forty men are employed, who alternate their work in two shifts, day and night. At this season it frequently happens that the ore houses, which hold 1,500 tons, are insufficient for the accommodation of the mineral sent from the mines to be crushed, and large quantities have to be stored outside. In sampling ores from the various mines about Leadville this establishment pursues the most careful methods. The different ores are first deposited in large bins holding from 25 to 100 tons. One-tenth of each load is taken and run through a Dodge crusher, which well adapts it for the furnaces. A fifth of the tenth already indicated is put through heavy rollers, and one half of this finely crushed ore is subjected to the Bucking hammer and powdered to an eighty-sieve grade. One sample of this powder, consisting of a fourth, is given to the miner, two samples are kept for reference, and the other is sent to the assayer, who takes his "assay ton," upon which the company buys and sells. The capacity of the works are all the way from 80 to 150 tons

per day. For samples, \$7.50 is charged for silver and lead per ton, and \$10 per ton for gold; but in large quantities a less charge is made. In job crushing, the market value of silver is allowed, with from five to ten per cent deducted. The Meyer works enjoy an excellent patronage from the best mines of the camp, including such as the Chrysolite, Carbonate, Vulture, Duncan, Matchless, Climax, Morning Star, Crescent, and J. D. Dana, some of which have all their crushing done at these sampling works.

RAILROADS.

In order to furnish better transportation facilities for the mineral of this district, and to emancipate it from the freight embargo that has virtually fettered its commerce, citizens of

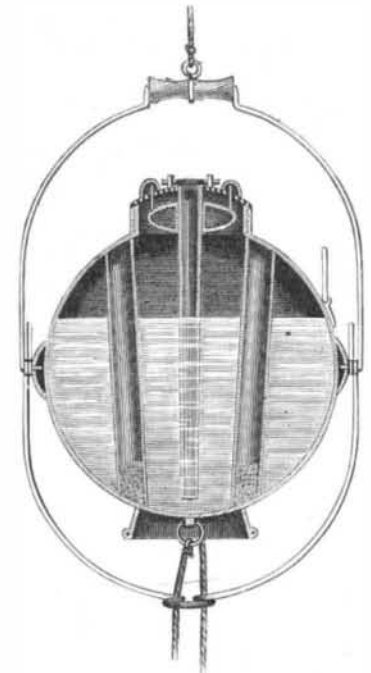


Fig. 2.—SECTION OF SHOWER BATH.

Leadville have determined to construct a broad gauge railway down the Arkansas Valley to Pueblo. This will enable Leadville merchants to ship goods through from the East without breaking bulk, and lay them down in their warehouses as cheaply as the same commodities could be laid down in Denver. This will insure Leadville the control of the business of the Gunnison country, whose mineral developments are spoken of in the highest terms. Propositions from Eastern railroad contractors have already been received, preliminary surveys have been made, and \$200,000 guaranteed to the stock subscription. It now seems to be only a question of what method to pursue in constructing the road.

Growing out of the broad gauge movement, to some extent, two or three narrow gauge enterprises have been organized. One is projected from Leadville to Salt Lake City, following the carbonate belt, as shown in Hayden's Geological Map, around through the Eagle River, Roaring Fork, and White River Agency districts, into Utah. Such men as H. A. W. Tabor and C. B. Rustin stand at the head of this project. Another narrow gauge road is organized to be built into the "Ten-Mile" and Breckenridge districts, where the famous Robinson Mine is located. Should the broad gauge be built this summer to Pueblo, there is little doubt but that narrow gauges would ramify out from Leadville into every mineral bearing gulch that was found accessible. W. Leadville, May 6, 1880.



AUGUSTUS R. MEYER AND COMPANY'S ORE MILL.