

# MODERN PRACTICE OF ORE-SAMPLING.

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From the old-fashioned "grab-sample" to the modern timing-device, which takes a machine-sample with mathematical precision, there is a wide gap which was only crossed by many years of toil and unremitting endeavor. Even to-day, notwithstanding the advancement in the art, "grab-sampling" is still practised—some times to afford the unscrupulous mine-promoter a basis for fairy-tales with which to entrap the too-gullible investor, and often by milling and smelting companies to determine the amount of moisture in custom ores. The latter practice is almost as reprehensible as the former, and it causes more trouble and ill-feeling between seller and buyer than all other factors put together. No reputable concern to-day would think of attempting to determine by grab-sampling the amount of gold, silver lead, or copper contained in an ore, and yet many buyers expect the miner to accept the results of grab-sampling in the determination of the amount of water contained in the ore, forgetting that accurate results are just as necessary here as in the determination of the metals, because the result determines the percent-

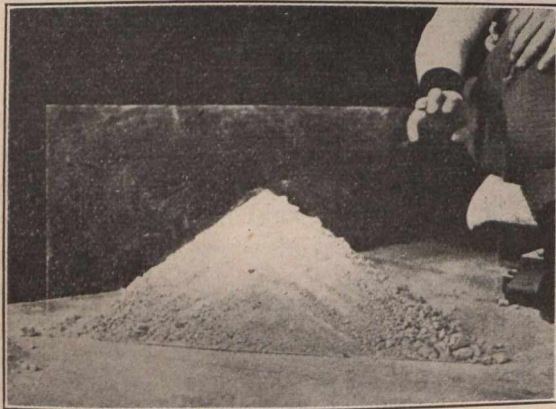


FIG. 1.—SAMPLE BISECTED BY A SHEET OF GLASS, SHOWING PROPORTION OF COARSE AND FINES.

age of weight of the ore which shall be excluded and considered to have no value whatever.

Samples for the determination of moisture should be taken with as great care as samples for the determination of metallic content, and in order to avoid the extra expense of a separate operation moisture-samples should be taken from the sample-safe. As the sample reaches the sample-bin in a smaller stream and by a more circuitous route than the "reject" travels in its path to the outgoing car, it loses more moisture en route, and a constant should be added to compensate for this difference. Carefully conducted experiments have shown that the difference in loss of moisture between the two routes does not exceed 10 per cent. in summer and 7 per cent. in winter. For instance, a lot of ore shipped during the summer months, in which the machine sample showed 5 per cent. of moisture, would have an actual moisture content of 5.5 per cent. Grab-sampling by an interested party, at its best, is only a prejudiced conjecture, while at its worst it gives rise to the most unscrupulous practices with which the ore producer and the mining investor have to deal.

Shovel sampling, another archaic method which is still used in some localities, consists in throwing out from the car or wagon every third, fifth, or tenth shovelful for a sample. As the portion of the pile from which the

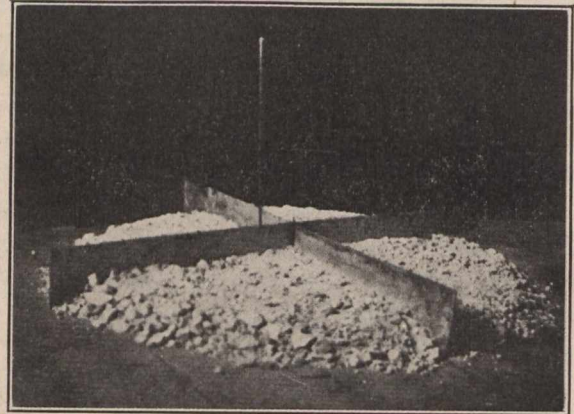


FIG. 2.—SAMPLES SPREAD OUT INTO A PANCAKE.

sample is taken is entirely at the discretion of the operator, the process would be more properly named fifth-shovel selection than fifth-shovel sampling. Between the conscientious workman who endeavours to be absolutely upright, and often becomes, as the Scotchman said, "maer than plumb," and the scheming labourer who, desiring to make his "job solid," takes a "safe sample," there is little room for truth or accuracy in this method, and the sooner it is consigned to oblivion the better for every one concerned.

Thirty years ago Cornish quartering was the almost universal method of sampling in use, and it is still employed to a considerable extent in cutting down machine samples and in mine examinations where no machinery can be had. When properly carried on with skill, care, and common honesty, fairly good results may be obtained by quartering, but between the possibility of accidental

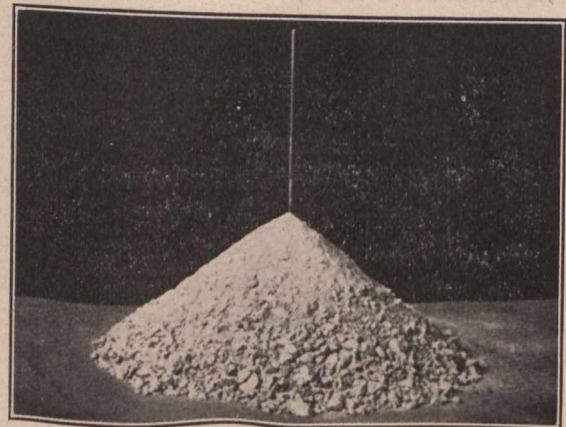


FIG. 3.—SAMPLE CONED AROUND A ROD.

mistakes and the opportunities which it affords for skilful and unscrupulous operators to manipulate the sample, it has fallen almost into disuse, and should have been completely abandoned long ago. The inherent