

ores, and to determine on the method to be adopted for milling or otherwise extracting the value.

The ordinary method of taking hand specimens to an assayer gives results of little value except to indicate whether it is worth while to further explore the property.

A mill test of one, or preferably, several tons is of course "the proof of the pudding," and—if properly carried out—gives all information that can be desired about the character and value of the ore sent to the mill. The School of Mines in connection with Queen's College, Kingston, is now happily possessed of a three-stamp mill for testing purposes, which will no doubt be of great value to mine owners.

There are, however, many discoveries made in districts so remote from railway or water communication, or even from travelled wagon roads, that the cost of sending out a lot of ore for a mill test is so excessive as to cause the owners to hesitate before incurring such an expense.

It is to determine, at a reasonable expense at the mine, the gold contents of such ores and the value that can be extracted by amalgamation, that the writer proposes the following method, which he has used and has checked with the ordinary assays and found very satisfactory.

A quantity of the ore judged sufficient to give a fair average value (say one ton) as broken to egg size on a close board floor (or preferably on an iron sheet), and carefully quartered (sweepings and all). The quarter is again broken smaller and again quartered. The part selected is then coarsely crushed in an iron mortar and sampled. A quantity of the same judged (by size of the shows of gold, if any, and the supposed value of the ore) sufficient for fair assay is now weighed and ground fine in successive lots in a mortar with water and a *small amount* of mercury until the whole weighed sample has been treated—using the same mercury for each lot. The whole weighed sample is now panned down to separate the amalgam and the concentrates from the tailings. The concentrates are dried and weighed and the *whole of the mercury used* is retorted in a small, smooth cast-iron retort. When all the mercury has been driven off, the retort is opened and a small quantity of test lead is melted in the bottom of the retort to collect all the particles of gold left from the retorted mercury. The lead is then poured into a mould and the litharge and scrapings of the retort are reduced on charcoal with the blow-pipe, and the resulting lead added to the first. The lead is now