if present, and form small, spongy, blackish lumps, which are so light as to float, and on account of being coated with foreign matters, will not unite with the accumulated amalgam. Of this amalgam but very little can be saved; it floats over blankets, copper plates or ripples."*

Of amalgamation on copper-plated platforms, troughs and other copper contrivances, this author remarks they are "very imperfect, and mostly abandoned," in California and Nevada.

Certainly the experience of California may be regarded as a safe guide in gold dressing. There every other contrivance for amalgamation has given way to the "iron pans," which is a highly improved arrastra amalgamation, and at present the most perfect gold amalgamation known. The two conditions are friction and contact with quicksilver, at a high temperature. These are met in a highly satisfactory manner by "Wheeler's pans," the gold being extracted by them as close as ninety-five per cent. of the fire assay. The loss of gold in the pans does not result from defective amalgamation, but from improper discharge. This is not the place to describe, in detail, the construction of this apparatus. My duty is discharged by indicating the best methods to be adopted for saving the gold in your veins. That none of the methods now in use in Nova Scotia approach the perfection attainable, is clear to any one at all acquainted with ore dressing. Every process which I witnessed there was faulty in this particular, especially that it provided no means for the *continued and intrimate contact of the gold with quicksilver;* too much water, and too large an amount of quicksilver were also employed for successful and economical amalgamation. The "iron pan" process, as stated, is only a highly improved arrastra amalgamation. The proper use of the "arrastra" (and of the Chilian mill also) requires use of only a limited quantity of water, not more than is needed to convert the ore into a paste, or thick mud, and the quicksilver

* "Nevada and California Processes of Silver and Gold Extraction," &c., by Guido Küstel, Mining-Engineer and Metallurgist. Illustrated by accurate engravings. San Francisco: F. D. Carlton, 1863, 8vo, pp. 327.