

(c) SMELTING.—The concentrates are added to the charge of a lead, or copper smelting plant, and base bullion is produced. In the former case, the gold is separated from the lead by Parke's process; in the latter, the precious metal may be conveniently obtained by electrolysis. This is done by running the coarse metal into slabs, and then depositing the copper electrolytically on pure sheet copper, the precious metals separating as mud in the bottom of the vat.

The cost of treatment in some representative mills in the districts mentioned below, is seen in the following table.

DISTRICT.	PROCESS.	COST.	Tons treated per 24 hours.
California	Chlorination ..	\$13 40	3.5
South Carolina	"	4 62	.4
Alaska	"	8 99	12.75
South Africa	Cyanidation ..	92

These figures represent the cost under certain conditions, and must not be taken as general estimates.

A good deal has been written lately about the efficiency of the stamp mill. Some maintain that, as a crushing machine, it is remarkably inefficient, while it is claimed by others that although it has defects of no small magnitude, that nevertheless the efficiency is high. Certain it is that other machines, for which much has been prophesied from a theoretical point of view, have failed signally in competition with stamps. A notable instance is the Huntington mill; a good machine for soft ores, and used with great success at the Spanish Mine, California, where the cost of milling per ton is only twenty-five cents. One of the main reasons for the non-success of the Huntington mill, in many places, is that it is complicated, and requires careful watching, involving extra expense for labor. Such apparently trifling considerations carry much weight in many instances, and the best machines for a mill are not always those which are most efficient in other localities.

An improvement on the old mills is worthy of notice, viz., the automatic handling of the ore. The aim of the designer is to obviate the necessity of employing any extra labor. The reason is apparent; labor may cost two dollars per day, and in milling a low grade ore any additional expense is bound to affect the returns more or less. This calls forth the remark that the successful treatment of a low grade ore demands the most systematic handling that can be devised.