The gold in these placer deposits is in the form of finely divided particles, scattered through the gravel. The value is very variable, 10 to 15 cents per cubic yard being accounted poor ground, while 50 cents to \$1 would be rich pay. Occasionally pay streaks are found which will run \$5 and even \$20, or more, per cubic yard, but such streaks do not represent the general average of a deposit.

A cubic yard of gravel and saud will weigh about 2,800 pounds, or nearly a ton and a half. Fifty cents' worth of gold, scattered through this quantity, at \$20 an ounce, will weigh only 12 grains. The proportion of gold to gravel by weight is, therefore, t to 1,630,000. Inasmuch as gold is eleven times as heavy as gravel, the proportion by volume would be 1 to 17,000,000.

This 50 cents' worth of gold is found usually in finely divided particles. If the particles weigh only a grain apiece, it is called "coarse" gold and can be readily saved in a sluicebox, although the particles are not larger than ordinary sand. Fine gold is of various degrees of fineness down to minute floating particles, scarcely visible to the naked eye, and of which it requires several hundred to make a cent's value.

The marvelous ease with which the apparently infinitesimal and elusive yellow grains, lost amid millions of tons of earth and stones, can be recovered is due to the great specific gravity of gold. Being eleven times heavier than sand and nineteen times heavier than water, it is only necessary to wash the two together, when the gold sinks to the bottom and the lighter sand and gravel are carried off by the rushing water.

The beautiful simplicity of the hydraulic sluicing process in all its forms causes it to be the most widely adopted of any method of gold saving. Its efficiency in fine gold is from 40 to 60 per cent., and in coarse gold, from 70 to 100 per cent. If the gold is wholly coarse, it will save it all.

This lack of efficiency has led many

inventors to devise means to save that fraction of the fine gold that is lost in sluicing, but thus far with indifferent success. Several methods of annalgamation have been successfully used, but for thorough work their capacity is so limited that they do not pay.

The gradual erosion of the goldbearing banks by the streams and rivers naturally causes a deposition of strata lower down, containing more or less gold. These alluvial bottoms, sedimentary bars and beds of streams have, until recently, been considered as beyond the reach of any ordinary method of working.

They were not capable of being washed or sluiced, because they were already at the lowest level. Various



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attempts to dig the material up and elevate it into sluices, from which it could be worked, were made; but the constant presence of water in such workings and the great cost, or impossibility of drainage, rendered such efforts abortive. Miners were compelled to be conteut with scratching the surface or sinking shallow pits until overcome by the water, and speculating upon the unknown and untold riches that lay just beneath their feet.

The bottom of the alluvial deposit, or "bed rock," as it is termed, is generally where the richest pay is found,