OIL-MINING MACHINERY WANTED.

The whole series of machinery used in oil mining needs to be remodeled and improved, to say the least, while new and better kinds than those used, would be a boon indeed to the oil miner. During the war the best portion of the inventive genius of the country was engaged in devising means to kill off their fellow beings more rapidly. Now that meek-eyed Peace reigns triumphant over the land, the talents of inventors can be turned to better account in the peaceful arts. No better field was ever presented for the benefit of the practical inventor than the petroleum region of Pennsylvania. New methods, or new applications of old ones, are badly needed in every department of the oil-mining business.

Machinery of greater power and strength is needed for the drilling of oil wells; that which will dispense with the cumbrous samson post, and creaking walking beam, with its great waste of power; that which will also render the drilling of a well fifteen inches or even twenty in diameter as easy as it now is to drill one of four and a-half inches. Let it be so arranged that the driller cannot help from drilling a round hole to any depth, and one that can be measured with some degree of accuracy, after it is drilled. Machinery, combining these qualifications, will render the fastening of mining tools in the well almost an impossibility. At any rate, with sufficient room to fish for them they can be speedily recovered. This would save the oil region of Pennsylvania nearly a million of dollars, and perhaps three times that sum annually. Scores of wells are abandoned on this account, that gave promise of being as good producing ones as any in the oil region. Experiments should be tried with the wire instead of the rope cable, if cables cannot be altogether dispensed with. We don't believe that more than one out of every ten wells drilled, are true. This is, in a great measure, to be attributed to the use of rope cable. At the depth of five hundred feet it would seem hardly possible that the driller can tell whether his boring tools turn or not.

Machinery for the proper testing of wells, and the pumping thereof, is the greatest want of all. The liquid treasure is beneath the surface of our soil, Messrs. Inventors, and we want it. So does the world generally. Surely there is some effectual and comparatively easy way of getting it. Show us the way, and the greenbacks will flow into your coffers at a rate that will alarm you. Give us something that will supersede the use of the present coffee-mill apparatus, with its sucker-rods that always break just at the wrong time, and working barrel that always wants fixing. An article is wanted with suction enough to lift the oil from a depth of 1,000 feet. If one pump won't do it, why not use more? These are only a few of the articles needed. If a machine is effective, and meets the want for which it is intended, we want the inventor to commence the manufacture of the same forthwith. Oil miners have no time to peddle patent rights.

The inventors of every nation are invited to compete for the mastery in this contest. And we shall take great pleasure in publishing through the columns of the *Register*, all the results of their efforts that they will favor us with, or will furnish them with any information relating to the kinds of machinery now in use here.—*Oil City (Pa.) Register.*

In our observations in the oil regions of Western Pennsylvania, extending over a period of four or five weeks, we were struck with the want of common ingenuity displayed in the contrivances used for boring and pumping oil wells. The walking beam contrivance, mentioned in the *Register*, was simply an adaptation of the old-fashioned well-sweep, and lacked the first qualification of boring—that of forming a straight hole. The temper screw and simple device calculated for the turning of the drill, at each stroke, in passing through rock, seemed to us to be miserably inefficient. The twist of strands in the cable, perhaps two hundred or three hundred feet deep in the earth, would neutralize all the efforts of the driller, who was satisfied with giving a partial revolution to the end of the cable he managed. If the drill struck a stratum of rock inclined at an angle, or the sloping face of a boulder, the tendency, all the time, until the drill had bedded itself, was to slip off at an angle and consequently to make a crooked hole. This, we believe to be the cause of many of the annoyances of tools sticking in the well. In fact this want of mechanical genius is understood by oil men, who, to remedy the defective operation of the ordinary drill, have the follower, or reamer, made very thick so that the area of the bearing surface shall neutralize, to some extent, the neglect of regular rotative motion in the drill.

We scarcely agree with the *Register* that "machinery for the proper testing and pumping of wells is the greatest want of all." It seems to us that the machinery for this purpose has been improved much faster than the machinery for boring. In No. 1 of the present volume we noticed a device for elevating the oil in wells which promises to be effective. But an improved apparatus for boring wells is greatly needed. Many wells have been abandoned because the tools, or some portion of them, could not be extricated. Any deviation from a straight line in the bore of a well must be a great hindrance to its proper tubing. If the tubing can be placed to the bottom of such a well, there is a strain on the pipe which severely tries the joints, and makes the drawing of the tube for deeper drilling almost, if not quite, an impossibility.

There certainly appears to be an excellent opportunity for inventors to exercise their talents on the improvement of well-boring machinery.

Sodium Amalgamation.

Some time since, and before I had heard of the use of sodium as an assistant in amalgamating metals, I prepared the result of the following experiment for publication. Circumstances delayed it, but I now give it to the interested for what it is worth. Having given my views to several practical men in this city, they tell me that the theory explains many things which they have met in their experience that were incomprehensible to them, and they have urged me to make it public.

THE EXPERIMENT.—Take a clean tumbler and fill it about two-thirds full of clear water; then drop a little finely-pulverized metallic powder upon the water. Gold dust or bronze (such as printers use, and nearly every printer has it), or silver powder will answer, provided it be sufficiently fine. Then stir it smartly with the handle of a spoon or the blade of a knife. It will be seen that the powder will not sink in the water; but, on the contrary, the more it is stirred the more obstinately it keeps at the top. When you have sufficiently demonstrated to your own satisfaction the almost impossibility of sinking the metal, which, being heavier than the water, by the laws of gravity should sink, drop into the tumbler a little caustic potash or soda, and stir a little, the powder will then be seen to leave the top, and in a short time settle at the bottom of the water.

THE CAUSE OF THE METAL FLOATING.—Atmospheric air adheres with great tenacity to any highly polished surface, and is very difficult to displace. It preserves a knife blade by preventing the moisture from getting to it to oxidize it. Dip a knife blade or a razor into water, drawing it out you will find that it has not been wet—a film of air interposed between it and the water. So with each particle of dust which you placed on the water in the tumbler. Notwithstanding its being so exceedingly fine, it is surrounded with a layer of atmospheric air as thick as that on the surface of a knife blade. The particle being round and smooth, no mechanical means which you can use will displace the air so that the water can get to it, and the air being lighter than water acts as a balloon to sustain the piece of metal. If you agitate it in the water with a spoon, or force it down by any other means, the air will stick to its piece of metal, and as soon as you let it alone it will rise to the surface. How it is that the alkali makes the air let go its hold on the metal I do not know. The experiment shows that it does do so, and the metal sinks.

APPLICATION OF THIS TREATMENT TO AMALGAMATING THE IMPALPABLE GOLD DUST IN QUARTZ ROCK, AND ITS THEORY.—Suppose every particle of gold dust in quartz rock to be as fine as the dust with which the experiment is made (and much of it is finer), very little of it would have its film of air displaced by the mechanical operation of crushing, although, on account of much of it clinging to the particles of quartz, it would not float; part of it would sink to the bottom, part would remain floating between the bottom and the surface of the water, the film of air and the quartz dust fighting for the mastery, the air trying to take it to the top, and the quartz dust trying to pull it down. As long as the particle of gold or silver remains covered with the air, the mercury cannot come in contact with it any more than can the water. The mercury to take it up must come in contact with the naked gold, and not with the gold protected by a mantle of atmospheric air. Therefore, in order to the effectual amalgamating of gold or silver dust from quartz rock, some means must be used to disperse the air surrounding the particles of dust. Heat will do this partially, but caustic potash or soda will do it effectually. It also acts as a deoxidizing agent—that is, if the oxide of some base metal should be in contact with the gold, it will remove it, or clean the gold, and it will keep the mercury clean. About 1 lb. of caustic potash or soda will remove the air from metal that is immersed in 5 gallons of water. Does not this explain the cause of the advantage derived from the use of sodium? If this is the true theory, whence the necessity of using the expensive metal itself? It cannot be denied that the sodium is oxidized and becomes soda, and is dissolved in the water in the pan. When that takes place, and not until then, does this sodium produce the beneficial results. I am aware that alkalies have been used in amalgamating pans with partial success. But have they been used intelligently? Common potash, or soda of commerce, in the best state in which you can buy it, is composed of 40 or 50 per cent of carbonate. In transporting it to the mines, and from exposure to the air when opened, a much larger per centage is turned into carbonate, and in that state is of little use to disperse the atmospheric air. To be effectual for this purpose it must be as nearly caustic as possible. In regard to the electrical effect resulting from the use of alkalies in the amalgamating pans, my experience proves that it cannot be otherwise than highly beneficial. Zinc, lead, and antimony would be taken up in large quantities by a caustic alkaline solution when contained in an iron vessel. I have used, and for some purposes prefer to all others, especially for precipitating the reguline copper, a battery composed of iron and zinc in a solution of caustic potash.—*Wm. Hilmer in the San Francisco Mining and Scientific Press.*

Profits on Tea.

In the report of the Revenue Commission we find the following facts about the profits on tea:—

The original price of good tea is about 18c. per lb. This is the "ship off" price. The Chinese producer does not get this. There is the export duty, tolls levied at the various stations on the way to port, expenses of packing, and the two or three profits accruing before the tea reaches the hands of the exporting merchant. Adding his profit, the price at a Chinese port of shipment is, as stated, about 18c. per lb. for good tea. Staple grades of black Oolong tea are laid down in New York at about 30c. per lb., free of duty—that is to say, "in bond." This includes all charges, selling commission, freight, insurance, etc.; all over this price being profit.

The Commission state that the profits of the tea trade, after leaving the importer's hands, and before reaching the consumer, have been enormous. They add, that of the profit paid by the consumer not more than one-fourth reaches the original importer. Three-fourths of it stops in the pockets of the jobber and the retailer.

The Commission tested this by the following case: A pound of Oolong tea was purchased of each of two different and respectable grocers in New York, on the same day, at $1 50 per pound. This tea was immediately taken to one of the leading "tea-brokers" and valued by him at a market price of 90 cents for one of the samples, and 93c. for the other. The market for tea at the time was steady, and had been so for months, gold also being steady at 146 to 147. The broker's valuation, returned to the Commission on the samples submitted to him, was the price at which the tea would have been sold by the importer. The tea in question cost, say about 80 cents in currency, laid down in New York, duties and all charges paid. The importer's profits ranged from ten to thirteen cents per pound, while the balance of the cost to the consumer, amounting to fifty-eight cents, or seventy-two per cent upon the cost to the importer, is cribbed by the jobber and the retailer. The Commission say: "A condition of trade that admits such an iniquitous profit to be made out of the consumer, certainly needs reformation."

The consumption of tea in the United States is set down at 30,000,000 pounds annually