

1,500 lb. stamps were specified for the Commonwealth mill, Pearce, Ariz. We note an opinion recently expressed by a United States mining authority that on the Rand the weight of stamps appears to have reached a maximum. The accuracy of this view is open to question. Year after year the duty and the average weight of stamps operating along the Main Reef series increases. A tendency to ask for larger and larger tonnages from a given number of stamps is evident, in other words a disposition to intensify milling efficiency is to be observed. It is not unlikely that the deliberations of the Sunday Observance Commissioners will tend towards further intensification of efficiency. That is to say the falling weights of Rand stamps may be further increased and the duties correspondingly raised."

MODERN ROCK DRILLS

By P. B. McDonald.

It seems that a new rock drill is invented every week. The mine manager nowadays has as much trouble keeping track of the latest in rock drills as the average citizen has in automobiles. It used to be possible to classify drills by their mechanical principles, but there are too many principles, too intricately mixed, to allow one to remember them all. The most convenient classification is the use for which they are desired, sinking, drifting or stoping.

Sinking.

Shaft sinking is, at first thought, an insignificant part of mining, yet in many mines there is always sinking going on, in one form or another—deepening old shafts, starting new ones, winzes, etc. Usually the best miners are reserved for shaft sinking (probably because it costs several times as much as drifting), and short shifts are allowed, particularly in wet ground.

For sinking a drill must be adapted for "down-holes," practically vertical. The heavy, reciprocating drill mounted on tripod or bar, has always been popular. One man was accustomed to bail water with a can into the muddy hole where the drill-steel was pumping up and down, while the other manipulated the crank for feeding the drill ahead. Full length holes were favored, six ft. or more, on account of the bother in removing all the heavy paraphernalia when blasting. The tendency lately has been toward little one-man sinkers, on the order of a "plugger" drill, that is, unmounted and held in the hands. These sinkers are not reciprocating; but are of the "hammer" type. The drill steel is stationary and is hammered with a great number of comparatively light, quick blows. The same principle made "stopper" drills very popular.

At first, such drills had to be rotated by hand, but automatic rotation was introduced and is largely responsible for the type's popularity. As compared with a reciprocating drill, the feeding is accomplished merely by "pushing" by the miner, and not by a screw-feed regulated by a crank. Obviously, these light sinkers are easily removed at blasting time. There is therefore a tendency toward the European practice of shorter holes and more frequent blasting. Their chief advantage, however, is in the fact that about twice the number of drills can be used in a given space as with the tripod drill. Whenever used, these little sinkers are making records.

Drifting.

Drifting is still accomplished from a column or bar. There has been occasional talk of drifting with an un-

mounted drill, but only in exceptional cases has it succeeded. This statement, of course, does not apply to soft rock, such as the hematite on the Mesabi range in Minnesota, for which unmounted drills and power augers are already replacing the hand auger methods. One decided innovation in hard rock drifting is the application of the "hammer" principle in place of the reciprocating drill. There is at least one widely successful drill, which combines the hammer principle with a heavy, mounted, screw-fed type, and is particularly adapted to hard rock.

In drifting, more than in stoping or sinking, attention has to be directed to removing the rock cuttings which are liable to remain in the drill hole and cause trouble. In sinking it is easy to put water into a down-hole, while in stoping—meaning overhand stoping—the rock chippings fall down by gravity. But in drifting there are some holes of a slight upward inclination, not steep enough to cause the chippings to fall back and a little too steep to throw water up. Hence the success of the "water" drill, which forces a stream of water through the hollow drill-steel.

Of course, the most decided tendency in recent reciprocating drills has been the advent of light, one-man machines, with special light weight bar and column. This has been brought about by the demand for greater efficiency, inasmuch as one man, with a fast drilling, light machine can frequently do as much work as two men with a heavy drill.

Stoping.

The success of the "stopper" drill is an old story. Wherever "up-holes" are desired, as in over-hand stoping and in raising, the one-man, hammer type, air-feed drill is an acknowledged winner. It has revolutionized stoping the world over. There are a few districts where, for some reason, stopper drills never got a start; but it is usually for some exceptional reason or prejudice. The stopper has one big advantage—it is a one-man drill which is easy to run. Of course, the runner has to rotate it, by short arm swings, through a quarter circle, but it feeds itself—or rather the pressure of the air feeds it ahead; it requires no "rigging up." There are no nuts to loosen and changing steel is the simplest of operations. It is easy to drag around. Since it is used only for up-holes, the rock chippings fall back by gravity. Very often, the mine foreman will pick out from the force of miners some man who has a capacity for doing things unaided, and will keep him regularly at raise work with a stopper drill.

The total value of the metalliferous minerals produced in the Coast district of British Columbia is shown by official records to be increasing to an important extent. By five-year periods it has been as follows: For 1899-1903, \$3,148,256; for 1904-1908, \$4,264,525; for 1909-1913, \$7,270,495.

A news item lately published in British Columbia is as follows: The Kennicott Mines Co., operating the Bonanza copper mines in Alaska, controlled by the Morgan-Guggenheim syndicate, has declared and paid a \$1,000,000 dividend. This brings the total distribution since 1910 up to \$5,000,000.

The Canadian Pacific Railway Co. is stated to be applying for running rights over the Canadian Northern Railway from just east of Rocky Mountain House, where the lines of the two companies junction, west to the Brazeau coal mines, so that Red Deer, Alberta, expects to be by late next summer connected by both railways with large coal deposits.