

ELECTRICITY IN MINING.

I AM on record as being of the conviction that a successful electric percussion drill is the key to the general introduction of electricity in mining operations, writes Nelson W. Perry in *Electricity*. As the statement thus stands it might be misleading, and I wish at this point to make myself quite clear. It is a fact that at the present time considerably less than one per cent. of all the mines operated employ power drills of any kind, or feel the need of them, or, in fact, would use them if you furnished them a completely equipped plant free of charge. To send solicitors among these, would therefore be not only useless, but a waste of time and substance. There is, however, another class of mines where power drills are not used but might be used to advantage. Here, intelligent presentation of the case might result in business, but how is our tenderfoot electrician or solicitor to distinguish between the two? But among those mines which do use power drills how useless it is to attempt to induce the management to put in an electric plant which will do but a portion of the work, whereas it already has a steam or compressed air plant that will do it all. The representative of the electrical company offers to light the mine with electricity, and will guarantee to work the pumps, hoists and drills by the same agency, but he knows nothing of pumping, hoisting or drilling, and his ignorance is at once apparent, and as to lighting, that is a luxury, and our western brother is unused to luxuries.

But if a few of these mines which can use power drills could be equipped with a perfectly satisfactory electrical drill, the entering wedge would have been driven, and the moral effect upon others would indeed be salutary, and in my opinion do more for the general introduction of electricity to mines of all classes than any other one thing. But the fact is that the electric drill has not yet given entire satisfaction. The manufacturers have put it on the market somewhat prematurely, making claims for it from shop tests which have not yet and cannot be borne out by continued use. If less had been claimed, greater satisfaction would undoubtedly have been given; but when the claim is made that a certain amount of work can be done with an expenditure of 4 H.P., and in practical work but a fraction of this is accomplished with 7 H.P., the reputation of the machine is seriously damaged. Manufacturers must understand that shop tests of 12 or 20 minutes or an hour's duration give little indication of the practical working of a machine.

Some of the objections urged by practical men against the electric drills of the present day are that they are too heavy and heat up to an abnormal degree. Both of these objections must be met before the electric drill will be a practical success. We know of one instance in which a lot of electrical drills of a prominent make were thrown out because they would not clean the hole well. This was not an electrical difficulty, but probably entirely due to a faulty bit. It emphasizes, however, what I have been contending for all along, viz: the importance of employing for all mining work—both in the shop and in the field—of men who know their business. It will not do to copy after accepted practice unless the conditions in both cases are exactly the same. A drill bit that will clean at 300 strokes per minute may choke the hole at 600 strokes, or vice versa; and one which will work satisfactorily with a true reciprocating motion may not give satisfaction when this is departed from. Attention to details of this kind by men who thoroughly understand their business, I am sure, would have saved the electric companies much trouble.

Then as regards water power. While there are but few electricians who are also mining engineers, the proportion who are also hydraulic engineers is still less. The opinion that to run a plant by water power it is only necessary to find the water power, install a wheel and connect the latter to a dynamo, has already resulted in many disastrous failures in the mining regions. In the first place the water powers are often gauged at the wrong time of the year and an estimate made which is far in excess of the minimum, which for steady running must always be regarded as the maximum. This is due to two things—first an ignorance of the business; and second, to taking the measurements at the wrong time of the year, when the water supply is not at its minimum. Throughout a large portion of our western country the proper time to gauge the streams is in midwinter, and early in the morning when every-

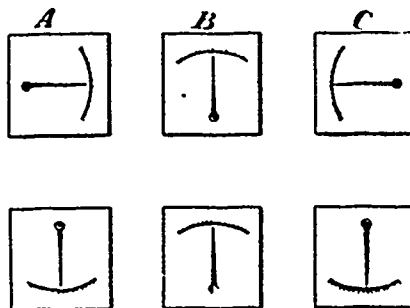
thing is frozen up tight. Those familiar with the western mountain streams know that the volume of water carried by them is sometimes double at 4 P. M. what it is at 6 or 7 A. M., but the difficulty is that at the season of the year most favorable for gauging in other respects, the localities are often almost inaccessible on account of the snow. Then in regard to the proper regulation of the wheel. This is of the utmost importance, and nothing short of automatic regulation will answer the purpose. A lack of attention to this caused the utter failure some years ago of one of the largest electrical plants for mining purposes that has ever yet been erected.

In the case above referred to, a river had been diverted from its usual course in order to enable the company to wash the gravel for gold. The water of the river furnished the motive power for wheels which drove the dynamos, and current was carried for about 12 miles to a series of motors located along the exposed river bed. These were employed to operate cranes to remove the large boulders that were in the way of these placer miners. Occasionally as one of these boulders was being lifted it would slip from its fastenings, thus suddenly removing the load both from the motor and from the dynamo. The result was that either one or both burned out, and this occurred so often that the plant was declared a failure, and finally abandoned entirely, having discredited electricity in that section of country to such an extent that it feels the effect of it to this day.

PLACING OF AMMETERS.

Prof. C. W. Pike gave the result of some experiments with a Weston Ammeter, made to show the effect of two or more instruments on each other when placed near together.

It is much handier when making tests to have the instruments arranged as near together as possible, yet they must not be placed so as to affect the correctness of the readings. Several



When two instruments only are used place them as A and B or B and C. When three; place in this position.

tests were made to ascertain a safe distance for placing so as not to affect the other instrument or be affected by it, and several interesting points were brought out.

The outline sketches will make clear the correct positions for the least error, although the instruments need not set square with each other if placed over a foot away; i. e. one foot between the nearest points of their frames.

TELEPHONE COMPANIES LIABILITY.

IN the case of The Southwestern Telegraph & Telephone Company vs. Robinson, reported in the *Washington Law Reporter* the Circuit Court of Appeals for the fifth circuit decided that a telephone company which for several weeks permitted its wire to remain suspended across a public highway, a few feet from the ground, was liable to a traveler who came in contact therewith during an electrical storm, and was injured by a discharge of electricity which had been attracted from the atmosphere, since the electricity would have been harmless except for the wire. The court said. "The duty on the part of the telephone company was clear to prevent its wire from becoming an obstruction on the highway. Under the circumstances shown the defendant in error might have been hurt by coming in contact with the wire of the telephone company, and injuries to the defendant in error might have resulted independent of the fact that the wire at the time was loaded with a charge of electric fluid from the clouds and storm then prevailing. So that it is difficult to see how this verdict could be disturbed even if the contention of the plaintiff in error is correct, that the electricity with which the wire was charged at the time was the proximate and immediate cause of injury to the defendant in error, for which the telephone company cannot be held responsible."