MINING IMPROVEMENTS.

Mining improvements are ever-increasing. The old-style lamp and lantern system is archaic as well as dangerous, and even in the safest mines a sudden burst of pent-up gas may work irreparable harm. It is surely high time that the advantages of electric lightning in mines were full-valued. The incandescent lamp requires no trimmin , is not affected by currents of air, and exposed in no way to contact with gas. The arc lamp, of course, throws a more powerful light, and its effulgence can be used at the pit head, gear, screens, or at any point about the works where a light of such a nature is needed. Electricity is, in fact, indissolubly bound up with mining, and especially mining of coal, and no industry has gained more practical benefit from its introduction than the coal industry. It is only fair to recognize that, as has been truly pointed out, when the owners of mineral property began to see that by the use of the electric current not only could a radical economy be effected in the operation of existing mines, but that workings long thrown up could be again operated at a profit, they soon set about the adoption of new methods. The development of the new applications has been so great that in many mines electricity is now practically the only power in use, and the drilling, ventilating, pumping, hauling and winding, signalling, explosive-firing and lighting, are all done by means of the electric current. Great improvements are being made in drills and several electric rotary drills have been used with success. The atmosphere condition of a mine is one of primary importance, and there can be no doubt that the furnace system of ventilation increases the danger of fire, and makes it almost impossible to ascend or descend by the upcast shaft in case of an accident. Here the electric fan comes in and enables the largest mines to be thoroughly and safely ventilated. The safety of a mine very often depends on the efficient and prompt dealing with a sudden influx of water into the workings, and what is then wanted is a pump that can be quickly got to work on the spot. In dealing, too, with the large quantity of water frequently met with in sinking pit shafts, the continuous lengthening of heavy spear rods (if Cornish pumps are used) is an objection. A good system, and one to which electrical transmission lends itself admirably, is to suspend the pumps (fitted with telescope suction) in the shaft by means of stout wire cables attached to capstans on the surface, the machine being steadied temporarily by props. Several pumps are now working on this method and give excellent results. For signalling purposes the telephone is used in French mines; and the expiry of the telephone patents will cause its extended use in other countries. Electric belts are employed for the same purpose in England, more especially in the collieries of Yorkshire and South Wales. A pair of wires are run along the roadways, and the circuit is so arranged that when the two are brought into contact anywhere the bell is rung. The working of an electric bell by means of a manipulator in the cage has been found to be of the greatest service, and the adoption of a method of preventing serious accident in the event of a displacement or derailment of the cage will soon be universal. The firing of fuses electrically effects a saving of time and reduces the proportion of missed shots, and therefore the cost. Any number of shots may be fired simultaneously, and this is an advantage where a considerable weight of material has to be removed.

Hence from this recapitulation it is evident that the new power—the mysterious agency of electricity—is, indeed, becoming in every way and on every side the hand-maiden of the coal industry. It not only renders mining healthier and safer, but it really improves to a wonderful degree the productive capacity of a mine or of a shaft. There is greater facility in handling, and the output has, in many instances, been phenomenally increased. Naturally, as the running expenses are no more, and fixed charges, if anything, become less, the average cost of production is lowered and the operator mining with the aid of electricity is placed in a favored position in the competitive market. This is a matter which invites earnest consideration, for in these days of keen competition the diminution of original expenses cuts an important figure in the profitable handling of the commodity. Reports that are constantly coming to hand indicate that mine managers and operators are giving the matter close thought, and the frequent introduction of electric appliances in their mines establishes both their utility, their safety and their economy. Apart from this, an electrical equipment in a mine places the operator in a better position to make contracts and affords a greater guarantee of his ability to fulfil them than when he has to rely alone on hand labor for the accomplishment of this result. —*Black Diamond.*