

after what I have said above about the Siemens & Halske electric drills, in comparison with the other systems in vogue in this country, is a mine justified in using any other kind of drill than electric drill, if the motive power in that mine is electricity? I am sure every one of you gentlemen will answer negatively, because every one of you have the welfare and progress of our mining industry too much at heart not to sacrifice a certain predilection for a dear, old, but antiquated machine which stands not any more upon the height of the progress of our present time. These drills are not by any means something new, or unproved. Ever since the beginning of the nineties these machines have been in practical use and give complete satisfaction everywhere. Permit me to mention only a few places:

Rotary Drills—

In the iron mines of Stumm Bros., near Diedenhofen, Germany.

In the iron mines of the Société par Action des Usines, Luxembourg.

In the salt and potash mines of New Stassfurt, of Sondershausen, Germany, and of Ischle, Styria.

In the iron mines near Marcusfalva, Hungary.

In the silver mines near Aranyidka, Hungary.

In the construction of the Transbaikalian R'y, Tiflis-Kars, Caucasus.

In the construction of the Transbaikalian R'y, Siberia.

In the silver mines of Kongsberg, Norway.

In the iron mines of Gellivare, Sweden.

In the gold mines of Island of Celebes, India.

In the coal mines of Laurahütte, Silesia, Germany.

In the lead mines of Silberg, Westphalia, Germany.

In the coal mines of Colliery Courl near Dortmund, Germany.

In the iron mines near Unterwellenborn, Thuringia, Germany.

In the iron mines of Laurum, Greece.

In the silver and gold mine of Silverton, Colorado.

These are only a few places where they are in operation, but as we see, they are already well known in different parts of the world. "Now let us go and do the same for our own and our country's advantage."

FIG. 1.

Percussive Rock Drill with Electro-Motor.—The percussive drill is also worked by an electro-motor and flexible shaft, the action being maintained by means of a crank, a fly-wheel, and strong springs. The feed is generally given by hand but it can also be arranged for automatic working. Bits of the different lengths required can be put in and taken out at the back of the machine, so that any hole can be completely bored without shifting the apparatus. The axle of the machine is hollowed out for the purpose and the bits are held tight by a key. The percussive drill is intended for the harder qualities of rock; with an expenditure of 1 H.P. it will bore a hole of 1¼ inch diameter and 3 to 4 inches deep in the hardest granite or quartz in one minute. The maximum depth of the holes which can be drilled is 6½ feet. The drill is fixed to an hydraulic stretcher-bar, and is raised or lowered most readily by means of a block and tackle. The separate parts of the machine, viz., the drill, with stretcher-bar, fly-wheel, flexible shaft, and motor-box can be easily carried by two men.

FIG. 2.

Percussive Drill with Electro-Motor.—The mode of supporting the drill on a stretcher-bar as shown on the preceding page is useful for driving work in the mine, whereas the four-legged stand shown above makes the machine suitable for over-ground work in quarries, and in connection with railway construction. The stand is so firm and rigid that the drill can be worked at any angle.

FIG. 3.

Percussive Drill at the Face, in use in the Ober-Gruna Mine near Freiberg (Saxony).—This sketch and the following one shows a percussive drill at work at the face of a drive. The drill is fixed to a hydraulic stretcher-bar with blocks of wood above and below the latter to secure the utmost rigidity.

FIG. 4.

Percussive Drill at the Face, in use in the Ober-Gruna Mine near Freiberg.—The rock-drill itself is more clearly seen than in the preceding sketch. The block and tackle for raising and lowering the drill on the stretcher-bar are also shown.

FIG. 5.

Rotary Rock Drill with Electro-Motor in use in the Salzburg Mine at New-Stassfurt.—The drill is fixed to the stretcher-bar in as simple a manner as

possible so as to suit the small space between the floor and crown of the drive. The apparatus is worked by two men.

FIG. 6.

Rotary Rock Drill with Electro-Motor in use in the Salzburg Mine at New-Stassfurt.—In order to bring the drill into position, a staging of wooden beams is used. The motor-box is on a trolley, so as to enable holes to be bored in the crown of the drive.

FIG. 7.

Cable Drum for Rock Drills with Electro-Motor.—The fixed conducting wires are connected with a joint-box secured to the wall near the place where the work of boring has to be done. A transportable drum holding about 65 yards of twin-conductor cable is put near the joint-box; the connection between the cable on the drum and the fixed wires is effected by means of a short length of double-conductor cable, having on its free end a union plug that fits into a corresponding socket on the flange of the drum. Before the shots are fired the cable can be wound back on the drum. As the work advances, the fixed conductors are lengthened and the joint-boxes fixed in a more forward position.

FIG. 8.

Joint-Box and Cable Drum for Electric-Drill as used in the Salzburg Mine at New-Stassfurt.—This sketch shows the mode of fixing the joint-box to the wall of the drive. The whole of the cable is unwound from the drum and led to the rock-drill, which is about 65 yards away.

FIG. 9.

Haulage by means of an Electric Locomotive in the Drive of the Salzburg Mine at New-Stassfurt.—The axles of the locomotive are driven by a direct current motor of 15 H.P. Conducting bars or rails leading from the generator are supported by insulators fixed into the crown of the drive, and the current is taken from these rails and led to the motor by means of two travelling contacts.

FIG. 10.

Rotary Rock Drill with Electro-Motor.—The drill which is carried by an adjustable screw stretcher-bar, is driven by means of a flexible shaft coupled to an electro-motor, the latter being enclosed in a stout box. The shaft can be readily uncoupled from the drill and motor. The motor-box can be easily carried by two men, whilst the drill with its stand and the flexible shaft form a load for one man. This drill is specially suitable for soft stone, such as salt, oolitic iron stone, &c. The feed is adjustable, automatic, and self-regulating. When two bits of different lengths are used, holes of more than six feet can be bored.

FIG. 11.

Chain Haulage Plant with Electro-Motor. In use in the Alkali Mine at Aschersleben.—The haulage machine is driven by an electro-motor of 35 H.P. The straining gear for the chain is in the same chamber with the machine. A shield of sheet iron is fixed above the motor to the crown of the gallery to ward off the drops of water.

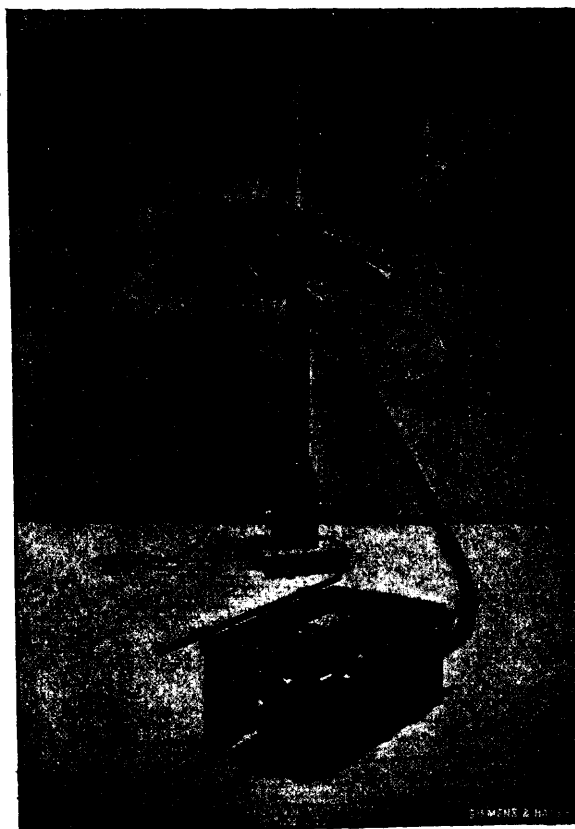


FIG. 1.