

parts are the tips, which should be replaceable. An all steel pick is liable soon to be shortened up and useless, whilst the iron pick eye, a 14 inch length of best iron, gives long service by welding on tip ends, whenever desired. Professor Ihseng, in his "Manual of Mining," as also Mr. George Andre, in his book on "Rock Blasting," gives excellent descriptions of tools used as well as the mode of sharpening and tempering them; to them we are indebted for many of the details of this article, and to their works we refer the reader for further information on this subject. "The picks are sharpened to form on an anvil, and commonly drawn to a four-sided pyramidal point, for hard rock, and a slim taper for fissured rock, and a bluff taper to cut crisp ground, and to a chisel end for chipping the ground. The eye is oval and well surrounded with metal. All the strain of the prying falls on the eye, which must be true and stout."

DRILLS.

"The drill is a bar which has one cutter edge and one hammer end. It is of round or octagonal steel. Drills may be of various lengths, from a foot to four or five or even more feet. For prospecting purposes two or three medium short drills from two to four feet are generally enough, as the prospector's business is rather to find than to develop. In beginning to drill, it is common to use a short thick drill, with a stout 'bull edge' rather than a thin, tapering one, especially in hard rock; smaller sized, *i.e.*, narrower drills may be used for increasing depth.

"The rock drill consists of chisel edge, bit, stock and striking face. To allow the tool to free itself readily in the bore hole, and to avoid introducing unnecessary weight onto the stock, the bit is made wider than the latter. In hard rock, the liability of the edge to fracture increases as the difference of width; the edge of the drill may be straight or slightly curved, a straight edge cuts more freely than the curved; a bull bit for hard rock is generally curved, a straight edge is weaker at the corners than the curved. The width of bits varies from 1 inch to 2 ½ inches. Figs. 1, 2, 1a, 2b, Plate CXXVI, show the straight and curved bits and angles of cutting edges for use in rock. The stock is octagonal in section. It is made in lengths