

lines with the ditch, and will probably average 93 per cent of the theoretical discharge.

At the Cariboo mine a pipe line 1,000 feet in length is composed of a length at entrance of about fifty feet, tapering from forty-eight to thirty inches, forming the bell mouth, then 200 feet of thirty-inch pipe, and the remainder twenty-two inch to within a short distance of the giant.

The "deflector" at the end of the nozzle, which controls the movement of the giant is a simple cylinder of about two inches larger diameter than the issuing jet, swung, at its rear, in a joint similar to the gimbals on a marine compass. A lever is attached to this deflector of sufficient length to enable a boy, entering on his teens, to bring the cylinder into firm contact with the issuing jet, which then swings itself right or left, up or down as required. On letting go the lever the deflector swings free from the stream.

Water is usually measured on the Pacific coast by the "miner's inch," which varies in different localities; but the most widely used one is "the quantity of water that will flow from an orifice one inch square through a two-inch plank with still water standing at a depth of six inches above the top of the orifice,"—which quantity is 2,274 cubic feet (about 17,000 American gallons) in twenty-four hours. The duty of this inch is the washing of one and a half to four and a half cubic yards, according to locality and quality of material.

#### LAKE SUPERIOR IRON.

The Lake Superior ore beds of the United States have yielded 134,000,000 tons, of which 117,000,000 tons have been mined since 1882. The quantity mined in 1898 was 14,000,000 tons, the greatest of any one year, and more than half of the total mined in the United States in that year.

The production of pig iron in the United States in 1898 was 11,773,934 tons; the principal producing States being:—

Pennsylvania.....	5,500,000 tons
Ohio .....	2,000,000 "
Illinois .....	1,500,000 "
Alabama.....	1,000,000 "

The greater portion of the above was Bessemer pig, of which Pennsylvania produced 4,000,000 tons, Ohio 1,500,000 and Illinois 1,200,000, the last two having the higher proportion. Lake Superior ore and Pennsylvania coke meet at Chicago. About one and two-thirds to two