

#### 140 *Fawcett—Ranching and Irrigating in British Columbia*

winter supply of hay and feed for winter use. In computing the measure of water supply by inches, there are several standards by which this quantity is determined. That generally understood in California is the miner's inch, an arbitrary measurement established many years ago by the miners in accordance with laws which they adopted. It is a quantity of water which is discharged from an opening one inch square through a two inch plank with a pressure of six inches above the opening. Another standard known as the Smartville inch is measured by a four inch orifice under a pressure of seven inches above the upper edge of the opening. An opening four inches wide and two hundred and fifty inches long, with the seven inch pressure above the top of the orifice, discharges 1000 Smartville inches. Each square inch of the opening discharges 1.76 cubic feet per minute, which is nearly the same as the discharge through a two inch orifice in a plank with a pressure of nine inches above the centre of the opening, and which is equal to 1.78 cubic feet per minute. The inch of the Park Canal Company in California discharges 1.39 cubic feet per minute.

In elevations where the pressure of the atmosphere is much less than at or near sea level, we can understand that through an orifice of a given size the discharge would be considerably less than would pass through an orifice of similar size at a lower altitude where the atmospheric pressure would be greater; so that the only correct rule to be adopted in measuring water supply would be let an inch, or whatever is adopted as the unit of measurement, mean a certain definite quantity of water discharged in a certain time. Whether 1.76, 1.78 or 1.36 cubic feet per minute, let the inch be determined in this way, which is the most simple method as well as the most accurate. The cross section of a stream may be determined in square feet or fractions thereof, the velocity of the stream in feet per minute by means of floats, and then if  $A$  = area of cross section in feet,  $V$  = velocity of stream in feet per minute, then the capacity of a

ditch or stream in inches will equal  $\frac{A + V}{1.76}$ .

But the field is a large one, embracing the construction of ditches and canals with the various methods adapted for conveying water, also the different devices in use for raising it from streams and wells beneath the surface to be irrigated. Then there is the preparation of the surface and means of distributing the water over the entire area of the same, requiring careful attention when the land to be watered is to any extent hilly. Irrigating in itself after the water has been procured is