

and a Pelton wheel nozzle with needle regulator.<sup>1</sup> From these it appears that the central velocity at a point distant  $\frac{1}{2}$  inch from the tip of the needle is only .68 of the maximum velocity. At a section  $3\frac{1}{2}$  inches from the tip this ratio becomes .90, while when the distance is  $9\frac{1}{2}$  inches it becomes .96.

At mid opening (diameter 1.25 inches) the coefficient of velocity diminishes slightly as the head increases, from about .992 with 23 feet head to .978 with 120 feet head. With a given head the velocity was slightly the

