

The column of water passing through the screw is contracting in area and increasing in velocity.

Blades of uniform-pitch would only be strictly appropriate if the column while passing through the screw were parallel and maintained a constant speed.

If the length of column occupied by the screw is sufficient to allow a sensible contraction to take place within its limits, then the pitch of the screw surface should augment at the same rate as the speed of the column of water is accelerated, in order that all parts of the blade may keep touch with it during its passage. It was an early practice introduced by Woodcroft to vary the pitch in this manner (see p. 21), the supposition being that by so doing a gradual acceleration would be produced and not a sudden one. It is probable that in no case could water be accelerated suddenly by a submerged propeller, and all that is required is that the surface of the screw should be adapted as nearly as possible to the rate of flow through it, which rate is determined by the mean pitch of the screw surface. What the variation on each side of the mean should be is very difficult to say, as it has not yet been determined at what distance ahead of the screw acceleration of the water commences, or at what distance astern it is completed, and the full velocity or race attained.

Although we know that the vena contracta of the race must be somewhat of the form shown in Fig. 8, it is not possible at present to define its boundaries, and it can therefore only be stated in general terms that the greater the