Hydraulic design of pipe outlets into open channels

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The pyramidal hump appears to be an effective way of ensuring a more regular distribution of velocity at the beginning of the open channel, but it is rather curious that before the fitting of the hump there was in most cases such a marked tendency for the velocities on the left-hand side of the channel to exceed those on the right. This would seem to imply the existence of an initial degree of asymmetry in the pipe or channel.

From Fig. 3 and Fig. 4, the velocities near the bed of the channel are considerably lower with the hump than without it. This could be a disadvantage if the fluid in the pipe contained an appreciable amount of solid matter in suspension, which would tend to cause siltation just downstream of the pipe. The hump could, of course, in other circumstances, be of benefit in protecting the bed of the channel from erosion.

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Concentrated jets discharging into a larger channel are notoriously unstable. Their tendency to stick to one side or the other is made worse by any small asymmetry which is present, but not more than might be expected in many practical situations.

No tests were done with solid matter in suspension so that any tendency towards siltation can only be surmised. Modifications to the basic hump might very well be considered in such cases. Finality has not been gained yet in these exploratory investigations.