

this time) than four or five rods, the motion of the wheel on its axis, or shaft, ceased altogether, and it began to turn on its axis down the stream, slowly at first, but quickly increasing. And after the skiff had floated not more (I think) than fourteen or fifteen rods from the place where it had been anchored, the water wheel turned downwards, or with the current, as often as once round in the distance of a rod, or less.

It is evident that while the wheel turned up the stream, the current of the river went faster than the skiff, or ran past it; and when the wheel turned down the stream, the motion of the skiff was more rapid than that of the current. We expected this result in a certain degree, but all of us were surprised that the floating skiff should so soon acquire a velocity greater than that of the current of the river.

It would be interesting to repeat this experiment under change of circumstances. For instance:

1. In a slower, and in a more rapid, current.
2. In a boat heavily, and one lightly, loaded.
3. In a flat bottomed, and in a sharp keeled, boat.
4. On rafts of different sizes.

Also, to ascertain whether any difference would arise from having the load lie in the bottom of the boat, such as a quantity of pig metal, or having the load consist of men standing up in the boat.

Times and distances should, of course, be accurately noted.

E.

Estimate of the Water discharged by a River.

If the currents of rivers diminish from the surface towards the bottom, and be very slow at the bottom, the quantity of water discharged by rivers into the ocean is much less than has been usually imagined. Dr. Halley, in his theory of the origin of springs, probably estimates much too largely the quantity of water poured into the ocean by all the rivers of the world.

When the dam at Fairmount, near Philadelphia, was erected across the Schuylkill, it was stated, in some of the newspapers, that some gentlemen wished to ascertain the quantity of water that flowed in the river in a given time. For this purpose, the newspapers said that the breadth and depth of the river at Fairmount were measured, and that to obtain the velocity of the motion of the water in the river, four or five gentlemen entered a boat, and floated a certain distance on the river, noting the time required to pass a given distance, after the boat had acquired its *natural velocity and motion*, as it was called.

If the newspaper account was correct, it would seem that two great errors entered into the calculation.

First. The current diminished in velocity from the surface to the bottom, the current in the bottom of rivers being very slight, unless in places where the descent in the bottom, or bed, is considerable, as at rapids or ripples.

Second. The boat loaded with four or five men floated much faster than the fastest part of the current of the river, faster than the current at the surface.

E.

Franklin Institute.

Annual Meeting.

The Annual Meeting of the Institute was held at their Hall, on Thursday evening, Jan. 19th, 1837,