

each float crosses the lines, it is an easy matter (on paper) to join the first two, the next pair, etc., and then taking a mean of all these lines you have the general direction of the current,—the first essential point in metering.

Next a new "base line" is laid out on the shore, parallel to the direction of the current, and at one end of that base line is erected a perpendicular, at the extremity of which is put a solid wooden post, usually surmounted with a flag. Two other posts are situated at the ends of the base line. Everything is now prepared for the actual work of metering.

The recording meter is a heavy lead weight, with a steel rod about two feet long running through it; halfway up the rod there is a small fan, exactly similar to the propeller of a boat, and connected to this is a "tail" or piece of flat wood, to keep the fan always against the current. Tied to the steel rod is a heavy cable which is used by those in the boat to lift the meter; also two electric wires are connected with a battery in the boat, and these wires are then bound to the meter in the water. Naturally the water running against the fan causes it to revolve, and at every revolution the fan makes a connection between the two wires, and thus a current is produced which transmits to a recorder in the boat the number of revolutions in a stated time.

When everything is prepared the boat is anchored on a line with the perpendicular to the "base line" of which I have spoken. Now we know the length of the base line and we know that the angle on the short is a right angle, and by using the sextant we obtain the other angle from the shore to the boat. It therefore becomes an easy trigonometrical process to find the distance of the boat from the short. Having found this, the meter is dropped to the bottom, and a reading is taken of the number of revolutions, then it is brought up two feet and another reading taken, then two feet more, and so on to the surface. This process is continued about every hundred feet across the river—the boat always being kept perpendicular to the base line, and therefore parallel to the mean current.

When all these readings have been secured it becomes a matter of higher mathematics (which I do not imagine you would relish to have explained) to take the mean number of revolutions of the fan at each point, and computing from this the number of gallons of water that pass this point. Thus adding the amount passing at each point we obtain the volume of the whole river or the "mean flow." Taking this mean flow, at say ten times in a