the same time, and the time and weight being known the H. P. can be calculated by rule of three.

But the water that falls need not be weighed—its weight is known already as 62½ lbs. to the cube foot is ; but of course the quantity going over must be ascertained, and this, it is plain, can be done by the easy process of finding how quick it travels, as evidenced by a chip or stick thrown into a quiet and regular reach of the river above the fall, and as the breadth and average depth will give the area of section ; this into the number of feet of its velocity per minute will do the rest, that is give the quantity of feet of water which if multiplied by 62½ lbs. its weight, and this by the feet in height of the fall will give the so called foot-pounds and as the H. P. as seen is equal to 33,000 foot-lbs. per minute, the number of foot-lbs. divided by this 33,000 lbs. will give the H. P. of the fall or river.

And don't you Mr teacher ever be at your wits ends for an illustration or a simile. If it be winter, and the ferry boat not at hand, or the travelling season net yet inaugurated, and even if it were, and you have no time for that ; any round thing as a tobacco box, or twist a piece of paper into one and stick or pin it and it will stand you in good stead of your engine cylinder for explanation of piston action back and forth—and as for levers, and even if the box or cylender be octagonal or square, that makes no odds as to the action you wish to illustrate—and if the saw horse lies buried beneath the snow or has been mislaid or loaned and this mode of elucidation not at hand ; take hold of a round ruler or even of a bit of wood, or a book on edge, and now a flat ruler and load this at either end with paper weights, or books or what not and thus explain the lever, and while you'r at it, how it acts where the fulcrum is at one end of it with the power between weight and fulcrum, or the weight between the other two.

If you have no sphere at hand, or even if you have, an