

paces in one second of time, he will at the end of his minute be back to tackle another load and then another and during a 10 hours-a-day work he will thus raise 600 times (600 minutes in 10 hours) 330 lbs. or 198,000 lbs. during his day or about 160,000 if he is at it for only 8 hours.

Of course the pupil will not see at once how the power of water or of a water fall may be appreciated or arrived at; but this can be put to him in so simple a manner that he cannot fail to understand it. He or she surely knows and now at any rate that gymnastics are taught every where, that if you swing a rope over a cross head or bar, he or she who pulls the harder at it, will master the "tug of war"—that if forces are equal, the rope will not move or only, by a tug, to go and by another to go back again. The children see that two of themselves or would at any rate be ready to admit, even if the thing were only put to them in so many words, that two of themselves of equal weight would form a counterpoise.—Now you say to the little one, looking up and directing its attention to a curtain pole across the head of a window, and let the gauze curtain or any other represent the descending sheet of water and if there be no curtain then you can imagine it just the same: suppose my boy this sheet of water falling loosely as it does and giving no adequate idea of the power it exerts at bottom, be gathered together as by a funnel at the head of the fall and to come down in a box or tub or a succession of them; do you not see that each of these if tackled by a rope over the roller to an equal weight of water on the other side would just counterbalance, as when you and your chum swing at the opposite ends of a board resting on a roller or pivot at the centre. Yes—You see therefore that the weight of water coming down from the one side could raise up or nearly so an equal weight on the other side; wherefore the power of a fall of water is, allowing for friction of machinery, equivalent to raising the same weight of water to the same height in