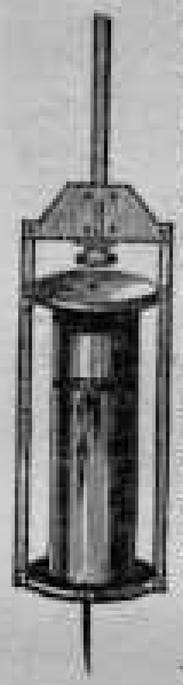
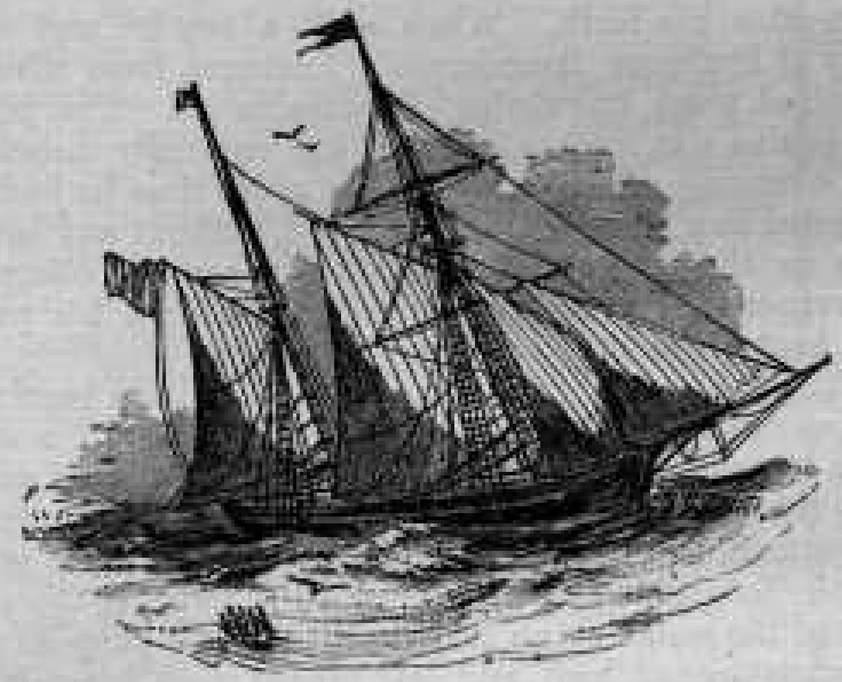
ning to be commonly used in England and on the continent six hundred years ago. Who was the inventor is still doubtful, and it is probable than no one man could justly lay claim to that distinction. Archimedes was acquainted with toothed wheelwork before the Christian era. A weight being applied as a motive power, would be provided with a fly, similar to that of a kitchen jack, to regulate its velocity. The ratchet-wheel and click, for winding up the weight without detaching the teeth of the main-wheel. The regulation by a fly being subject to changes, from the variety of density in the atmosphere, would naturally suggest the adoption of a balance, with which an escapement of some kind must have been coupled; a dial-plate and pointer would, of course, be added; and, lastly, the striking portion would complete the invention. There can scarcely be any doubt that these various additions and improvements were the work of different hands. "The motive power; the regulator, rendering the motive power uniform; the mechanism by which the motive power was applied to the indicator; the indicator itself, and the dial on which it moved, were all to be found in the famous clock of Henry de Wyck."



PENDULUM.

The first clocks which were made, had no pendulum; they had, instead, a balance vibrating on the top, and most of them were as incorrect as the famous watch of Captain Cuttle. The employment of the pendulum was suggested by Galileo, and was applied with much success. But one of the most important improvements in the manufacture both of clocks and watches was the discovery that a coiled spring would impart the same motion as a falling weight, so that portable clocks were a possibility. Very valuable additions have since been made, and it would seem that clocks and watches of the present day kept the time with remarkable accuracy, but while this is very satisfactory to landsmen it is not equally so to those who "go down to the sea in ships."

Suppose, for example, I am on the ocean, and wish to know what's o'clock. I may glance at my repeater, but shall find myself metaphorically as well as literally at sea; the hands may point to noon, but the purple sky and the setting sun show plainly enough that this is entirely incorrect. I am off New York, and looking at my carefully wound-up repeater discover again that it is exactly twelve, while a Yankee just come on board assures me it is "four minutes to five, sharp!" "I am out of my latitude," say



ALTOGETHER AT SEA.

I, "and I of my longitude," says my watch. The real facts of the case are these. When the sun apparently reaches the meridian, that is, the highest point in this visible heaven, it is noon. As the real motion of the earth and the apparent motion of the heaven causes the sun to rise in the East and set in the West, noon or twelve o'clock is successively indicated at various places, and consequently all the hours of the day are either behindhand or beforehand with Greenwich time all over the world. To a fixed population anywhere, this is a matter of no

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