to whom I gave a glass conveniently shaped to try the specific gravity of the water, that it grew heavier and heavier as he came nearer the line, till within about 30° latitude; from whence to Jamaica he observed no alteration in the specific gravity in the least. And in confirmation of this I am likewise informed, by one, who for his own satisfaction weighed the water, both under the Aequinoctial and at Cape of Good Hope, and found that the weight of both was the same. To which may be added that it is commonly observed at Mozambique, one of the hottest places in the world, that the sea is so salt there, that it bears up the ships a considerable height out of the water, more than in other places; and that the water may be much salter in one place than another, by having more salt dissolved in it, does not only appear from what hath been said, but also from what is frequently observed in the different strengths of brine-pits."[1]

About this time Hooke invented a machine for ascertaining the depth of the sea without a line.[2] It consisted of a sphere of light wood carefully pitched and varnished, which was sunk by means of a leaden sphere attached to it by a spring hook. When it reached the bottom the catch was released by the impact, the lead ball remained, and the float rose to the surface. The depth was calculated, by means of a certain formula, from the time which elapsed between letting it go and again seeing the float; and the machine answered well in shallow and still water. Hooke himself pointed out that in a current it would not show the true depth, but that the arrangement would be extremely valuable as a means of detecting under currents, and measuring their direction and velocity. The idea of self-detaching weights was not revived for two hundred years, when Brooke's sounding machine was invented.

The early volumes of the Philosophical Transactions abound in records of work done on subjects connected with the sea. In 1680 a "Person of Honour who was becalmed off of Pantalara near Sicily" amused himself by calculating the pressure at great depths by sinking a bottle "stopp'd with an excellent, good, tender cork" fixed in by various devices; he obtained some interesting results.[3]

These researches are now only of interest as showing how active a part was taken in marine physics in the early days of the Royal Society.

The phosphorescence of the sea attracted much attention about the beginning of the eighteenth century. The beautiful display seen on moving an oar through the water on a calm dark autumn night, the milky way of powdery light starred here and there with globes of soft brilliance, and the grand effect of a swell breaking on a rocky beach in showers of luminous spray, were examined by several investigators, and reasons the most various were assigned for the appearance. Newton suggested that the light was produced by the continual agitation of the water,[4] some observers thought it a phosphorescence of

[1] Boulton's Boyle, vol. i. p. 282.
[2] Lowthorp's Abridgment, *Phil. Trans.*, vol. ii. p. 257. (Figured in tailpiece to this Introduction.)
[3] *Phil. Trans.*, vol. i. p. 504.
[4] Optics, Bk. iii. p. 314, 1730.