

way a litre of the solution could be used from beginning to end without any sensible alteration of strength.

Below these narrower shelves were two broader ones, which were occupied as required. Against the foremost support of the shelves a variety of copper cases were hung. They contained pressure gauges or piezometers, so constructed as to register the combined effect of temperature and pressure on a mass of water at any depth. (See p. 102.)

Against the ship's side, and above the working bench, was a small iron frame (fig. 6) holding a cast-iron plate, or sand-bath, or other support for vessels to be heated, and having a gimbal motion. The size of the frame was arranged so as to hold one of Bunsen's thermostats in ordinary use in laboratories. The rods D D, on which the weight E slipped, were of the same diameter as the retort-stand rods above referred to, and could

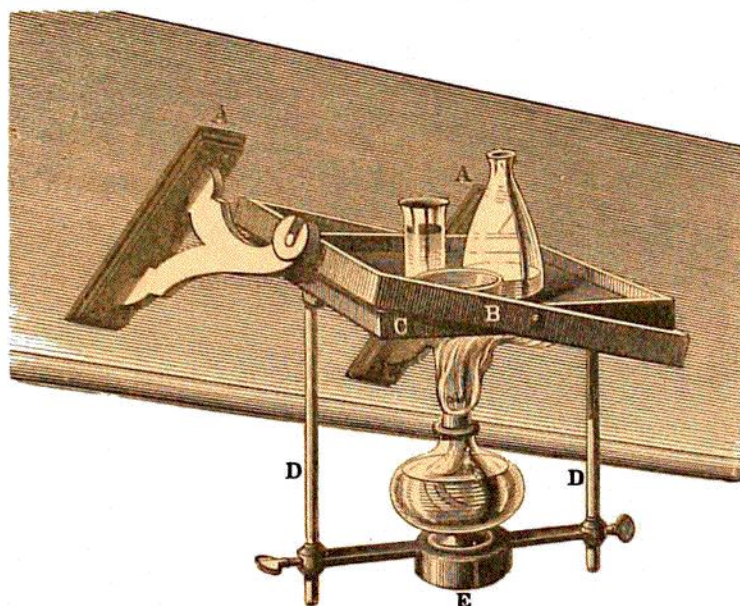


FIG. 6.—Sea-going Sand-Bath.

therefore carry the large laboratory spirit-lamps; but it was always found more convenient to use the ordinary glass spirit-lamp shown in the figure. The whole apparatus suited itself so easily to the motion of the ship, that even in very rough weather the lamp was perfectly safe as shown, and there was no danger of spilling the contents of even the flattest evaporating dish.

The arrangement of the apparatus for extracting and collecting the carbonic acid in sea water is shown in fig. 7. The flask *a* has a capacity of about 500 c.c., and receives the sample of sea water, amounting in volume to from 200 to 250 c.c., in which the carbonic acid is to be determined. It is closed by an india-rubber cork, through which pass two tubes. Of these, one, reaching to the bottom, communicates with the atmosphere by means of the soda-lime tube *f*, and flexible tube supported by hooks and rings as shown, the other, opening a little below the cork, communicates with the