

diameter, and with mouths of about  $1\frac{3}{4}$  inches. The bottles are manufactured by machinery as pomatum bottles, and are sold very cheaply by the gross. They are very strong, survive much hard usage, and were in constant use throughout the voyage. They were found, on account of their strength, especially useful for collecting expeditions on land. Rectangular leather cases, with leather lids secured by a strap and buckle, and divided inside into compartments for six of these bottles placed upright, and with long straps for suspending them from the shoulders, are most useful appliances for the collector on shore, and it is especially convenient that such cases should be made to contain a kind of bottle the supply of which is practically unlimited. The pomatum bottles were obtained from Messrs. James Powell & Sons of Whitefriars.

A large store of sheet zinc and solder was found indispensable, as the majority of the larger animals were preserved in zinc cases made on board.

Common fish globes are especially useful on board ship for containing living animals in water, washing the contents of surface nets into, and all similar purposes. Their shape is better adapted than any other to prevent the splashing over of the contents. They should be of various sizes, and racks should be provided for them to fit into.

A slate and plate-glass aquarium, closed by slate above, and so arranged that, in order to prevent constant splashing and motion of the contents, it should always be completely full and yet permit of a frequent change in the water being effected, was set up on the main deck, but proved a complete failure. The reason of the failure was, that owing both to its own weight and that of the contained water, it was found impossible to keep its joints water-tight. The motion of the ship, and the working of the deck to which it was secured, caused the slate and glass to play against one another at the joints, and no application of bolts and screws seemed able to prevent this action.

In the hope that Cetacea might be secured during the voyage, a stock of harpoons and a harpoon gun and its gear formed part of the equipment, but not a single Porpoise or Whale was obtained. Porpoises and Dolphins frequently accompanied the ship in various parts of the world, and it was most disappointing that not a single specimen could be secured. The harpoon gun was a large one, fit for use only for full-sized Whales, from a specially built whale boat by a trained crew, but as the Challenger did not carry such a whale boat nor a crew acquainted with whaling operations, and as there was no one on board specially expert in the use of the harpoon from the bows of the vessel, nothing was obtained by its use. It is most important that the smaller Cetacea met with during scientific voyages should be secured, whenever practicable. What is required is a gun to be fired from the shoulder, and to carry a small harpoon suitable for catching the smaller Dolphins or Porpoises, which might be used from the ship's bows. Such a weapon is now used with success by the U.S. Fish Commission.

Of the fishing-nets used by the Expedition, exclusive of those employed for dredging