

open to allow the water to pass freely through, with the openings so distributed as to leave a part of the bag close enough to bring up the finest mud.

The late Dr. Robert Ball of Dublin devised the modification which has since been used almost universally by naturalists in this country and abroad under the name of 'Ball's Dredge' (Fig. 45). The dredges on this pattern used in Britain for ten years after their first introduction about the year 1838, were usually small and rather heavy—not more than from twelve to fifteen inches in length by four or four and a half inches in width at the mouth. There were two scrapers the length of the dredge-frame and an inch and a half or two inches wide, set at an angle of about  $110^{\circ}$  to the plane of the dredge's mouth, so that when the dredge was gently hauled along it took hold of the ground and secured anything loose on its surface. I have seen Dr. Ball scatter pence on the drawing-room floor and pick them up quite dexterously with the dredge drawn along in the ordinary dredging position.

Latterly we have used Ball's dredges of considerably larger size. Perhaps the most convenient form and size for dredging from a row-boat or a yawl at depths under a hundred fathoms is that represented by Fig. 45. The frame is eighteen inches long, and its width is five inches. The scrapers are three inches wide, and they are so set that the distance across between their scraping edges is seven inches and a half. The ends of the frame connecting the scrapers are round bars of iron five-eighths of an inch in diameter, and from these two curved arms of