

men, while a third takes it from the winch and coils it.

Dredging in deep water—that is, at depths beyond 200 fathoms—is a matter of some difficulty, and can scarcely be compassed with the ordinary machinery at the disposal of amateurs. Deep-sea dredging can no doubt be carried on from a good-sized steam yacht, but the appliances are so numerous and so bulky, and the work is so really hard, that it is scarcely compatible with pleasure-seeking.

I do not know that much improvement can be made upon the apparatus and method employed in the 'Porcupine' in 1869 and 1870. I will therefore describe her dredging gear and the dredging operation carried on from her at the greatest depths in the Bay of Biscay, that which tested our resources most fully, somewhat in detail.

The 'Porcupine' is a 382-ton gun-boat, fitted up for the surveying service, in which she has been employed for some years past among the Hebrides, and latterly on the east coast of England. She was assigned for our special work in 1869, with all her ordinary surveying fittings; and certain very important additions were made; among others the double-cylinder donkey engine, which worked up to about twelve horse-power, with surging drums of different sizes, large drums for bringing up light weights rapidly, and smaller drums for heavy work. This engine was set up amidships, so that lines could be led to the drums either from fore or aft. The donkey-engine proved a most serviceable little machine. We almost always used the large drum, both in dredging and sounding; and except on one