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The Sea-Bed Drifter

A new instrument which indicates the current near the sea-bed

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In recent years oceanographers have been making increasing use of drifting plastic objects, known as sea-bed drifters, in order to obtain information about the movements of the water near the sea-bed. The drifters are released in batches at certain points in the sea and trail over the sea-bed, later to be recaptured in the nets of fishermen, or by skin divers, or to be washed ashore and found by members of the public. Rewards are offered for their recovery and return with details of the position and date of finding. The study of this information enables the oceanographer to construct a picture of the currents near the sea-bed.

Glass bottom-trailing drift bottles with metal wire "tails" were used in European waters at various times in the years 1904-39 and in U.S. waters in 1960-1. The plastic sea-bed drifter was first conceived by Mr. R.E. Craig of the Marine Laboratory, Aberdeen, Scotland, and the present version of it as used by him is shown in Figure 1. It consists of a black plastic square, 11.3 cm x 11.3 cm, with a reward notice in the English language inlaid in red. The time and place of release are indicated by a series of punch marks around the edge of the square. Through the middle of the square a white plastic rod, or "tail", 54 cm long and 0.65 cm dia., is fitted; this has a small copper weight attached near its lower end, so that the drifter has a slight negative buoyancy and moves over the sea-bed with its tail just touching the bottom.

The drifter most commonly in use at present was developed by Mr. P.M.J. Woodhead of the Fisheries Laboratory, Lowestoft, England. It is shown in Figure 2. It resembles a toadstool and has a white polythene rod identical with that now used in the Craig drifter, but instead of a black plate it has a red polyethylene saucer, 18.5 cm dia. The rod is sharpened to a point at its lower end with a copper ferrule 6 cm above it; the red saucer has four holes of 2 cm dia. at a distance of 8 cm from its centre. The version used by the Lowestoft laboratory bears instructions to the finder on the saucer: these are in the English, French and German languages and provision has been made so that additional languages can be used if required. A serially numbered yellow polyvinyl chloride tag is secured to the saucer and this bears a reward notice in the English language only.

In Canada and the U.S.A. the Woodhead version of the sea-bed drifter is used. The U.S. sea-bed drifters have a red stem and a yellow saucer, with the serially numbered return labels and instructions in English stuck to the saucer as shown in Figure 3. The Canadian sea-bed drifters have a red saucer and a white rod, with a serially numbered yellow "spaghetti" tag, similar to a fish tag, secured to the saucer for identification and return instruction purposes. The only printing on the spaghetti tag is: Reward, Ret. Fish. Res. Board St. Andrews, N.B. S-05391.

The Craig type of drifter has been extensively used off the east and west coasts of Scotland, and English workers have made a number of large-scale liberations of the Woodhead type in the North Sea and Irish Sea. The rate of recovery of the latter type in the North Sea has been up to 50% in 12 months. Releases of Woodhead drifters have also been made off the north-west coast of Norway and in the south-eastern Barents Sea. Belgian scientists have now started to use this type of drifter in the southern North Sea. In North American waters the Woodhead type has been released by U.S. scientists over all parts of the continental shelf from the Scotian Banks to Florida. Starting in 1961, sea-bed drifters have been released by Canadian workers on the shelf along the Canadian Atlantic coast from the Bay of Fundy to the Gulf of St. Lawrence. Recently emphasis has been given to simultaneous releases of sea-bed drifters and drift bottles. The rate of recovery by trawlers from releases made on the Scotian Shelf is of the order of 5-6%. In 1963, 2,700 sea-bed drifters were released there.

The success of investigations with sea-bed drifters depends very largely on the fishermen and members of the public who find them. The greater the number of drifters which are returned with accurate details of the positions and dates of their recapture, then the greater is the information available to the oceanographer and the more reliable are his deductions about currents. The active co-operation of fishermen is therefore earnestly requested by all those marine scientists who make use of this particular instrument.

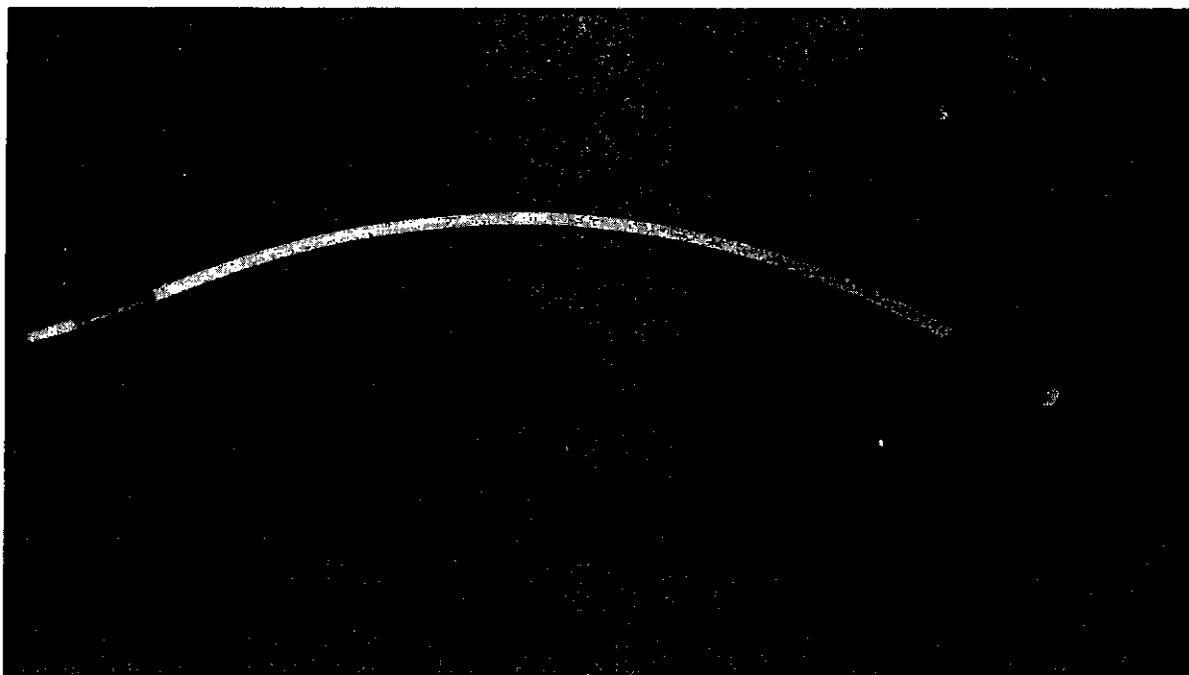


Fig. 1. The Craig Sea-Bed Drifter

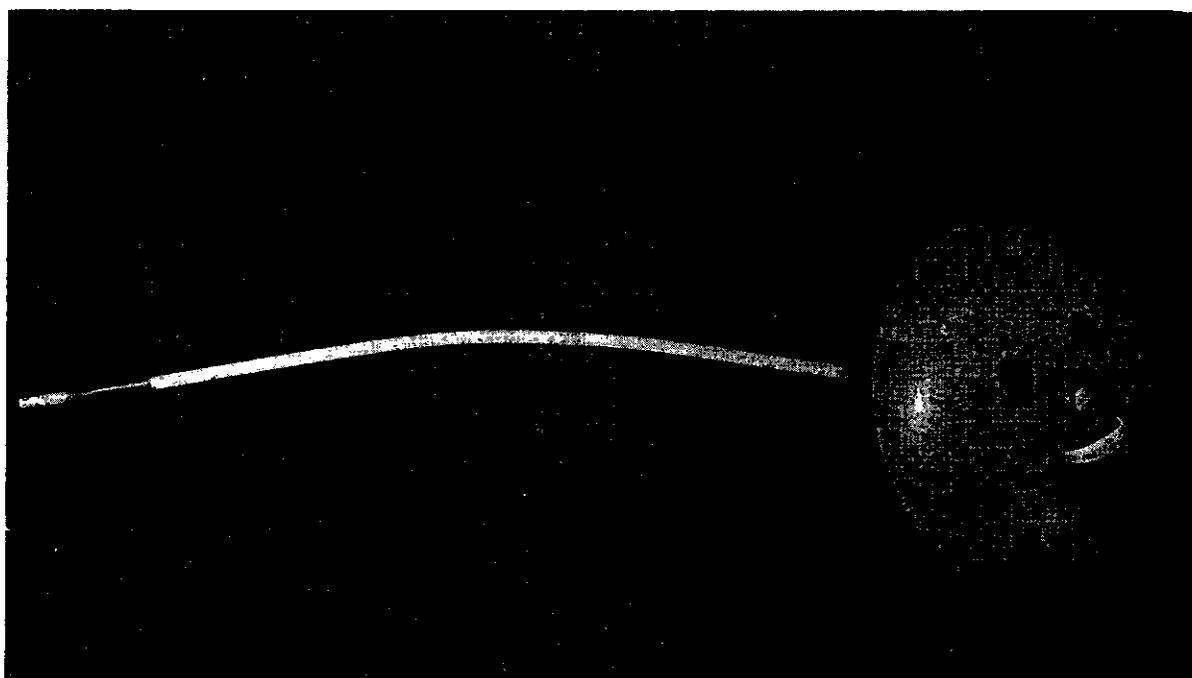


Fig. 2. The Woodhead Sea-Bed Drifter as used by U.K. scientists

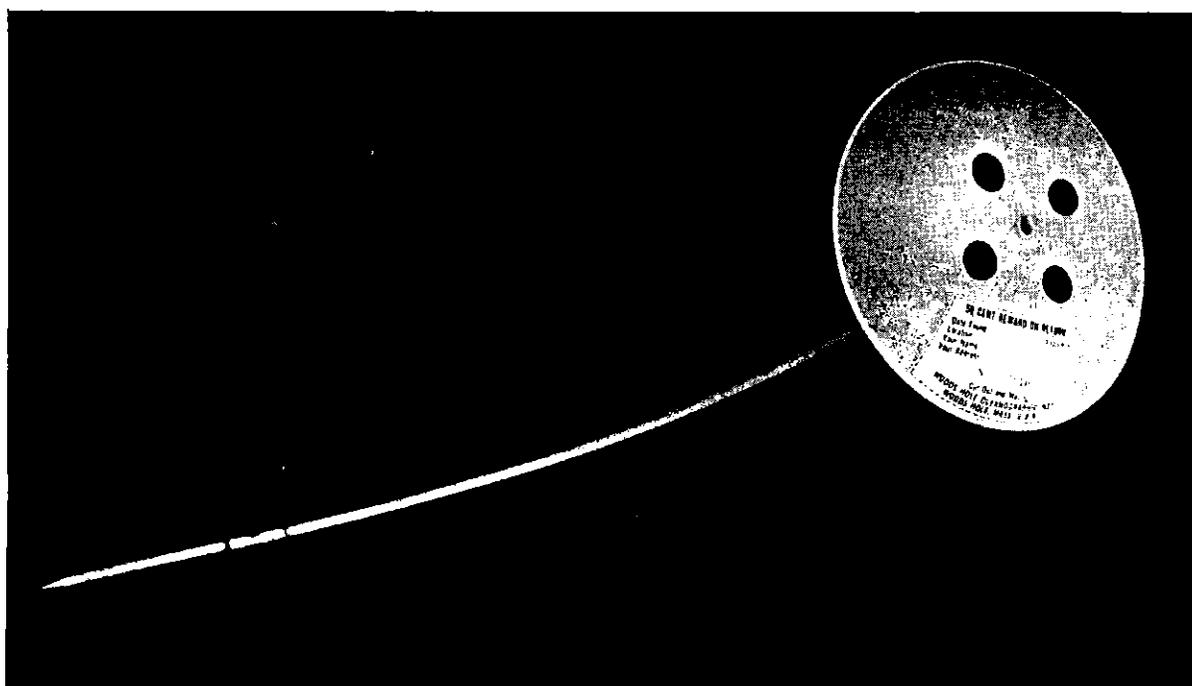


Fig. 3. The Woodhead Sea-Bed Drifter as used by U.S. scientists