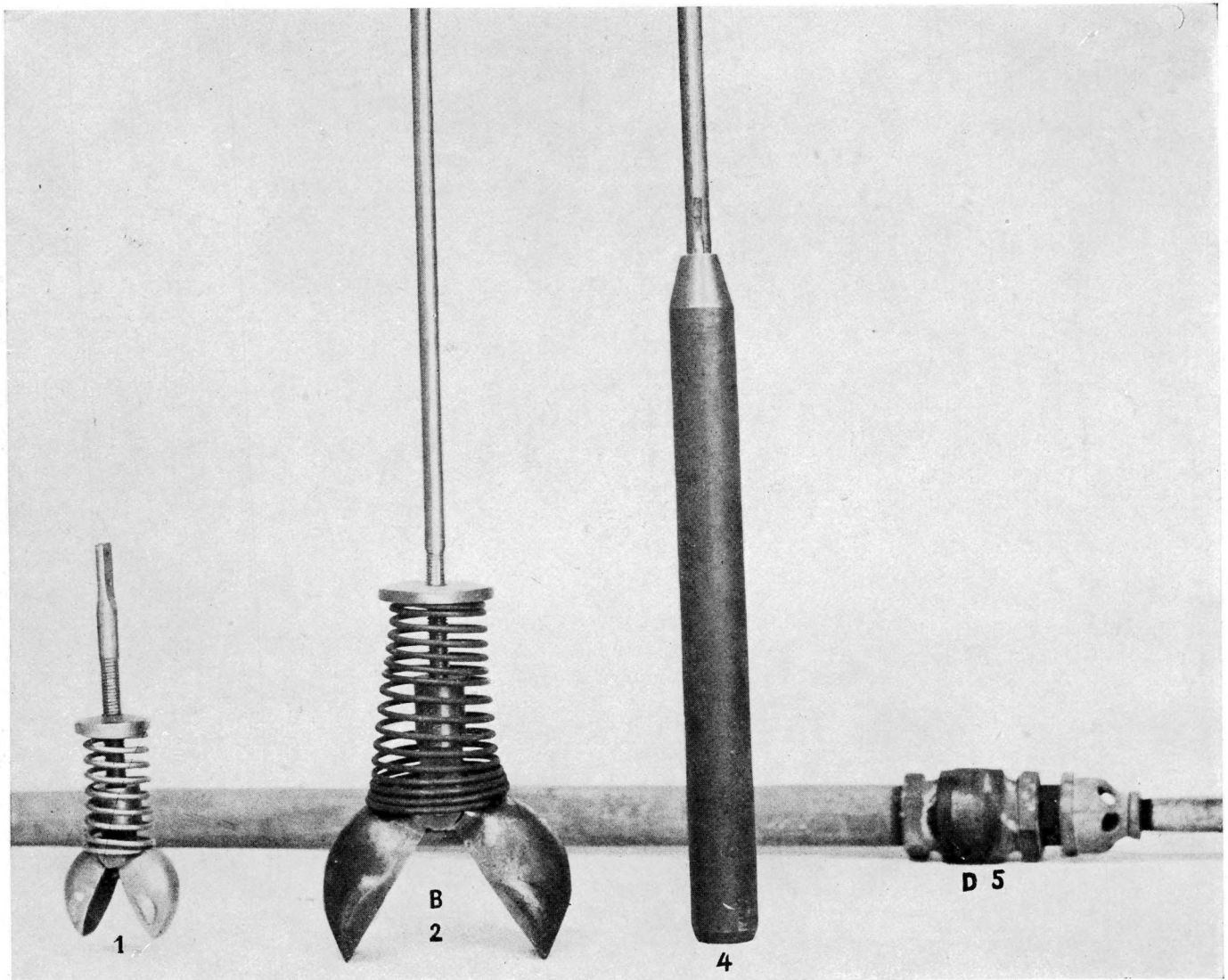
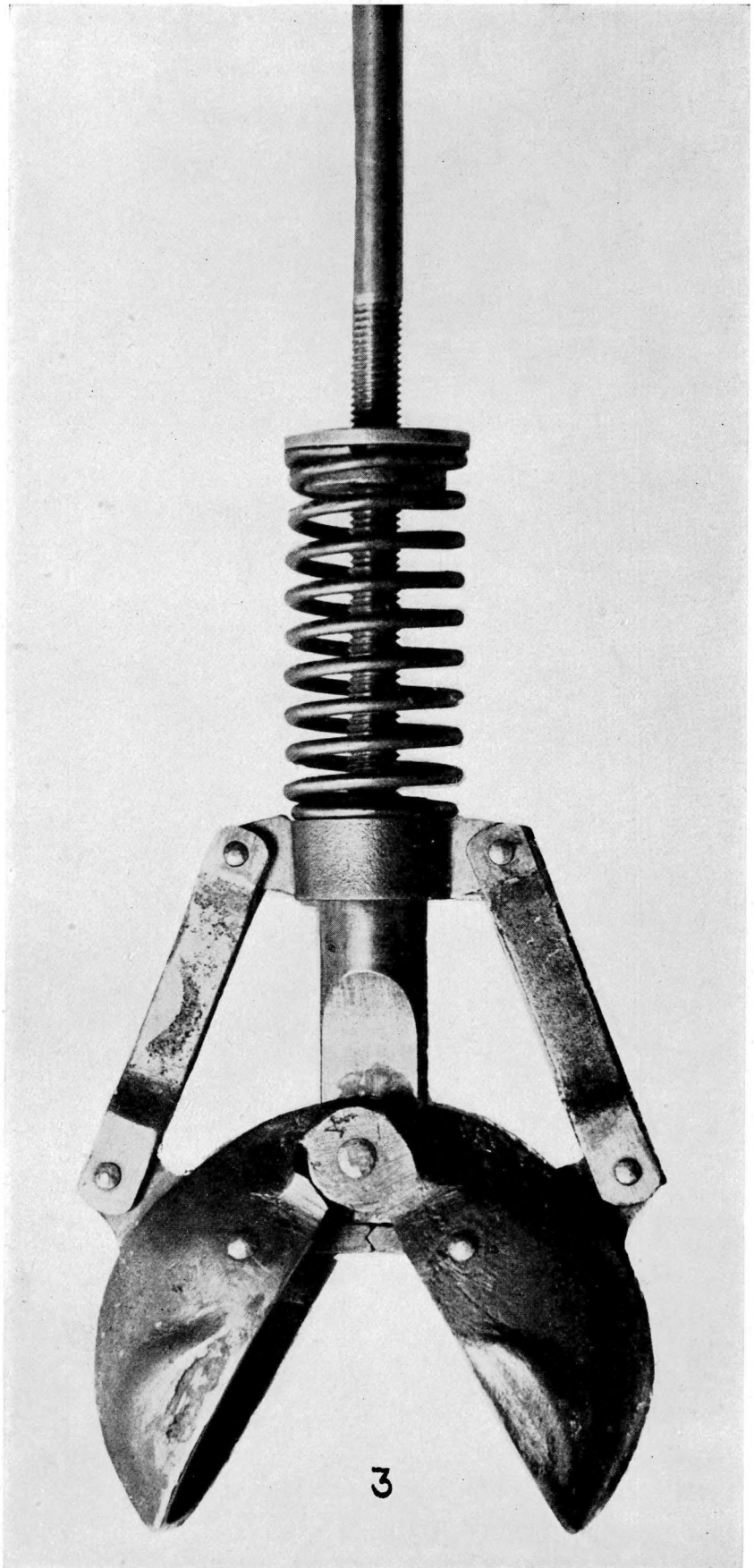


Bottom samplers — Ramasseurs de fond.



Bottom sampler — Ramasseur de fond.

BOTTOM SAMPLERS.

The Director of the Scripps Institution of Oceanography of the University of California, La Jolla, California, (U.S.A.) was kind enough to send to the International Hydrographic Bureau the description of certain pieces of apparatus for which Members of the staff of the Scripps Institution, or persons associated with it, have made the designs or for which they have modified old designs.

I. — *TELEGRAPH SNAPPER.*

Fig. 1 shows the Telegraph Snapper of the design and dimensions in general use.

Fig. 2 shows a snapper of the same design but of larger dimensions.

Fig. 3 is an enlarged and modified design of the Telegraph Snapper for taking bottom samples.

II. (*) — *MODIFIED DAVIS PEAT SAMPLER USED BY PARKER D TRASK, OF THE AMERICAN PETROLEUM INSTITUTE.*

Two instruments to collect the sediments in sufficient quantities for distillation have been constructed. One is a modification of the Davis peat-sampler (fig. 4). It consists of a brass plunger that fits into a brass cylinder. The sampler by means of series of pipes coupled together is shoved in the mud with the plunger forced as far as it will go in the cylinder. At the depth at which the sample is to be taken the plunger is pulled upward until a springcatch on the inside engages top of cylinder, which, due to the friction of the mud with the wall of the cylinder, does not rise with plunger. The whole apparatus is then forced into mud and the empty cylinder becomes filled with the sample and is hauled to the surface.

The chief change made from the Davis sampler is that the plug that closes the top of the collecting cylinder is removable and is tapered conically upward so as to make easier the withdrawal of the instrument from the mud. This sampler will operate satisfactorily in water up to twenty-five feet in depth and will collect material, under favorable conditions, twenty-five or thirty inches deep in mud.

(*) Reprinted from *Bulletin of National Research Council*, N° 61, Washington, 1927, *pp.* 235-240

III. (**) — *SIMPLIFIED EKMAN SAMPLER USED BY PARKER D. TRASK, IN HIS WORK FOR AMERICAN PETROLEUM INSTITUTE.*

This sampler (fig. 5.) is based on the principle of the Ekman sampler but is composed of standard plumbing supplies and needs but little machine work. Its cost is less than 5.00 dollars and it is easily dissembled and wrapped up in a bundle four feet in length and six inches in diameter.

The instrument consists of a collecting tube made of 1 ½ inch pipe 42 inches long, a vertical check valve, a short nipple, a 1 ½ by 3/4 inch perforated reducer containing six 5/8 inch holes and one or two lengths of 3/4 inch pipe 42 inches long. Once the check valve, short nipple, and reducer are firmly fastened together in one piece they need not be uncoupled thereafter.

To operate the sampler the collecting tube is attached to the valve and the stem is coupled to the reducer. The instrument is conveniently fastened to the rope or cable by an eye-bolt that fits into a cap at the end of the stem. The sampler is then thrown in a vertical position into the water and after striking the mud is hauled to the surface. The collecting tube is unscrewed from the valve and the contents rammed into a receptacle with a plunger. The collecting tube is then coupled to the valve and the instrument is ready for another haul. By using a 1 ½ inch nipple in the lower end of the collecting tube, paraffined tubes may be used to collect the sediments. These work satisfactorily provided they are paraffined on the outside only, but they lessen the depth of penetration of the sampler in the mud.

The check valve allows water to pass through the sampler as it descends in the water thus aiding it to fall faster and strike deeper in the mud; but on the upward haul the valve closes and prevents water from washing out the sample. As originally designed a specially constructed butterfly valve was used but later work has shown that the standard vertical check valves work effectively. This improvement has reduced the cost and makes the sharpening of the lower end of the collecting tube, and the drilling of the holes in the reducer and top cap, the only machine work necessary. The instrument weighs less than ten kilograms, but by adding weights just above the reducer a deeper penetration of the mud is effected.

The sampler works very well in all depths of water and in all types of deposits except sand. Samples more than a metre in length have been collected but the average is about 60 $^{c}/_{m}$. Since the instrument has no valve on the bottom, sandy deposits run out as the apparatus is being hauled to the surface, but if before the valve emerges from the water, the instrument is lifted into a horizontal position, many samples that would otherwise be lost are saved, because while the instrument is in the water, the water inside of the tube does not exert any downward pressure because of its own weight, but as soon as it emerges the water inside is pulled downward and washes out soft sandy samples.

(**) Reprinted from *Bulletin of National Research Council*, N° 61, Washington, 1927, *pp.* 235-240.