a large number of molecules are broken up into ions between these points. Some of the lines found at 40 per cent may be due to sulphate ions. Most of the lines in pure sulphuric acid were easily obtained in a three-minute exposure and the strongest appeared in a one-minute exposure. For other concentrations fifteen minutes was sufficient.

RAYMOND M. BELL.
W. R. FREDRICKSON.

Syracuse University,
Syracuse, New York, May 9.

The Swimming of Cuttlefish.

It may not perhaps be generally realised that the common cuttlefish, *Sepia officinalis*, uses its siphon for slow swimming in all directions, as well as for the more violent backward leaps. We recently had an opportunity of watching the behaviour of cuttlefish which

FIG. 1.

were swimming at eye level and above our heads in one of the large tanks of the Plymouth aquarium. We were rather surprised to notice that while moving slowly forwards with its fins undulating, the cuttlefish had its siphon curved back ventrally and was assisting its forward motion by emitting gentle squirts of water (Fig. 1, A).

If the cuttle wished to turn to one side it would point its siphon opening to the opposite side and squirt a little more violently (Fig. 1, B). In fact, for all its general slow movements the siphon appeared to be used, the undulations of the fins merely keeping the motion continuous and preserving the balance. In the quick backwards swimming the fins were depressed along the side. The siphon was extended about an inch and a half and could be pointed in any direction.

F. S. RUSSELL.
G. A. STEVEN.

Marine Biological Association, Plymouth.

Echo Sounding and Depths.

It is to be feared that the note on page 473 of NATURE of Mar. 22 may lead to some misunderstanding and to conclusions unfavourable to the echo method of sounding. Dr. Maurer states that out of 254 comparative soundings made by wire and echo in water over 2000 metres deep no less than 36 showed differences exceeding 100 metres and that the maximum difference was 650 metres. It should not be overlooked that a part, possibly a large part, of the error may be due to the curvature of the wire when the ship was drifting, for it is known that as a rule the depth by echo is less than that by wire even when the bottom is regular. Dr. Maurer also considers that the crude echo distance, calculated on a constant velocity, is more useful to the seaman for fixing his position.

It scarcely seems probable that deep soundings would ever be used for fixing a ship's position, except possibly cable or surveying ships, so that to the ordinary navigator the difference between corrected and uncorrected soundings would be of no importance.

In coastal water where the depth, or better, the rate of change of depth, gives valuable information

in thick weather, the correction is of small practical importance when expressed in fathoms or metres, except in some places such as the Red Sea. Special warnings are inserted on the Admiralty charts in such cases.

The Supplementary Hydrographic Conference, which was held at Monaco in 1929, resolved that all soundings should be corrected so far as possible before being placed on the charts, and did not adopt a standard velocity of sound in sea water.

H. P. DOUGLAS
(Rear-Admiral and Hydrographer
of the Navy).

Hydrographic Department,
Admiralty, London, S.W.1, May 3.

The Ions Produced by Discharges at Liquid Surfaces.

WE regret that, in our paper (*Proc. Roy. Irish Acad.*, 39, A, p. 21) in quoting Prof. Zeleny's description of the discharge from an alcohol point in the form of a stream of minute drops, we did not make it clear that this description applied only to discharge under the conditions of instability indicated in his letter in NATURE of May 10. We are in agreement with Prof. Zeleny that the discharge from a stable liquid surface is similar to that from a metal point; we find that it is carried by ions of the ordinary kind. But although we have observed the conditions of surface instability and the transport of liquid mentioned by him, we have been unable, under the conditions of our experiments, using water and a number of alcohols, to find any evidence by Chattock's method of the big drag on the gas which discharge currents carried altogether by drops should produce. We find evidence only of ions, which for a life of about $1/5000$ sec. have mobilities similar to those of ions produced in air by the ionising radiations.

On the other hand, in recent work, we have observed that in air drawn away from a discharging water-point, there are present large ions having mobilities at least as low as those of the large ions of Langevin.

J. J. NOLAN.
J. G. O'KEEFE.

University College, Dublin,
May 16.

Slug or Horned Viper?

As my name was mentioned by Prof. T. D. A. Cockerell in his letter in NATURE of May 17 on the identification of a certain animal represented among the incised carvings at Karnak, may I point out that the figure in question is the Egyptian hieroglyph for the letter F? I am informed by my colleague, Mr. A. Shorter, of the Department of Egyptian and Assyrian Antiquities, British Museum, that the animal portrayed in that symbol was identified as a slug so long ago as last century, the identification being based on a representation published by Prisse (1847), but that it has been more commonly recognised as the horned viper (*Cerastes cornutus* (Linn.)). The 'horns' in the figure, if somewhat exaggerated, are like those of the viper and do not resemble the tentacles of a *Veronicella* (the slug which has been suggested), in which there are in fact two pairs of these appendages. The clearly defined head and slender 'neck' which are shown in the Karnak figure are not found in *Veronicella*.

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June 3.