botanical sources of honeys are desirable, the chemist has yet a long way to go before he can analyse a 5 gm. sample of honey and state with an error of ± 5 per cent the percentage composition in, say, a mixture of horse-chestnut, sweet-chestnut, lime and privet. The mere identification of a readily recognizable substance such as methylanthranilate is but a beginning. Such a goal is probably more nearly within reach of the palynologist.

RONALD MELVILLE.

Royal Botanic Gardens,
Kew, Surrey. Jan. 31.

[1] Melville, R., *Nature*, **154**, 640 (1944).
[2] Farmiloe, C., *Nature*, **155**, 80 (1945).
[3] Hyde, H. A., *Museums J.*, **44**, 145 (1944).

Duration of the Larval Stage of *Echinometra*

BY adding every day a small quantity of food to cultures of *Echinometra* larvæ, Onoda[1] was able to grow them to full larval shape in forty days from fertilization. Mortensen[2] succeeded in growing larvæ of the same species to metamorphosis in eighteen days. He transferred the larvæ every day, by means of a pipette, to fresh sea-water, thus giving them access of their natural food. Using Mortensen's method, but transferring the larvæ to fresh sea-water twice a day, I have been able to grow them to metamorphosis in twelve days only. Attempts are being made to rear these and other larvæ in order to find the minimum duration of the larval stage; the results will be published elsewhere.

A. KHALAF EL-DUWEINI.
(Assistant Director.)

Marine Biological Station,
Ghardaqa, Red Sea,
Egypt. Nov. 15.

[1] Onoda, K., *Jap. J. Zool.*, **6** (1936).
[2] Mortensen, Th., *Mem. Acad. Sci. Copenhagen*, ix, **4** (1937).

Preparation of Stable Colloidal Solutions of Carcinogenic and other Water-Insoluble Compounds

E. BOYLAND[1] prepared colloidal solutions of 1 : 2 : 5 : 6 dibenzanthracene by using acetone as a solvent with the addition of a gelatine solution. Following Berenblum's technique[2] by using pyridine as a solvent with the addition of a solution of gum arabic, P. H. O'Hara and J. A. Pollia[3] succeeded in preparing colloidal solutions of low concentration of carcinogenic hydrocarbons. N. Waterman[4] prepared colloidal solution using acetone-water dispersions of carcinogenic hydrocarbons. The acetone was evaporated in vacuum. M. Wolman[5] obtained a colloidal solution by the dispersion of acetone solutions of carcinogenic hydrocarbons in water; the acetone was evaporated in large Petri dishes exposed at room temperature.

As neither of these methods, nor the evaporation of the organic solvent on a water-bath, was practical or convenient for our purpose[6], the following procedure was adopted.

The water-insoluble compounds are dissolved in a small volume of acetone, in a test-tube, and added drop by drop with continued stirring in a given volume of distilled water, depending on the required concentration. The test-tube is washed out with another small volume of acetone and this also added to the water. The colloidal solution is then freed from acetone by dialysing against distilled water for 2–3 hours as follows. The colloidal acetone-water mixture is poured into a 'Cellophane' bag, the mouth of which is securely fastened about a glass tube. The bag with its protruding glass tube is suspended in a beaker into which distilled water was introduced, allowing the diffusion of the acetone from the mixture into the water. Within 2–3 hours the mixture is freed from acetone. If the water is changed two or three times the period of diffusion may be reduced. The acetone-free colloidal solution is then brought to the desired volume according to the concentration required.

In this simple way we have succeeded in preparing stable and perfect colloidal solutions of any desired concentration (in our experiments we could prepare solution of more than 1 per cent concentration) of almost all carcinogenic and other related and unrelated compounds such as 1 : 2 : 5 : 6 dibenzanthracene, 3 : 4 benzpyrene, methylcholanthrene, anthracene, pyrene, phenanthrene, cholic acid, desoxycholic acid, cholesterol, œstrone, ergosterol, etc.

We have still to test this method for other water-soluble solvents.

JACOB FEIGENBAUM.

Chemical Department,
Cancer Research Laboratories,
Hebrew University,
Jerusalem.

[1] Boyland, E., *Lancet*, ii, 1108 (1932).
[2] Berenblum, J., *Lancet*, ii, 1107 (1932).
[3] O'Hara, P. H., and Pollia, J. A., *Amer. J. Cancer*, **31**, 493 (1937).
[4] Waterman, N., *Internat. Kong. Krebsforsch.*, **2**; Reference 2.33 (1937) Bruxelles.
[5] Wolman, M., *Nature*, **145**, 592 (1940).
[6] Feigenbaum, J., *Exper. Med. and Surgery* (*U.S.A.*), in the press.

Commutation of Annual Subscriptions

MR. J. H. UNNA, in *Nature* of December 9, makes the point that it almost always pays members of scientific and professional institutions who are 'good lives' to commute their annual subscriptions. The great practical objection to this is that a member who commutes is no longer able to make his disapproval felt by resigning. On the contrary, his resignation puts money into the institution's pocket.

It is not difficult to imagine circumstances in which the control of an institution might pass into the hands of a minority, or in which the country and foreign members might object to a policy decided by those who happen to live near London. Foreign members in particular are often disenfranchized entirely, even when questionnaires or voting papers are circulated to all members, since the closing date is usually such that foreign replies arrive too late.

In any such circumstances a dissatisfied member, so long as he pays an annual subscription, can in the last resort exert pressure of a practical kind by withdrawing. This real power should not lightly be forfeited. The professional 'man in the street' may finally have to apply economic sanctions to the scientific and professional institutions in order to force those measures of rationalization which, as the editorial in *Nature* of December 9 points out, have been so long delayed.

R. EDGEWORTH-JOHNSTONE.

Pointe-a-Pierre,
Trinidad, B.W.I. Jan. 6.