were washed in water in order to clean them from mucus and debris.

A mixture of three parts 70 per cent alcohol and one part glacial acetic acid did not kill as rapidly as the undiluted acid, nor did the specimens straighten so well in it. When the glacial acetic acid becomes diluted with water after repeated use, the killing effect is retarded and the specimens do not straighten so well in it. The acid should therefore be used undiluted. However, by adding various amounts of absolute alcohol to the glacial acetic acid, specimens of *C. aduncum* were killed even more rapidly, but they did not uncoil as well as in the glacial acetic acid alone. The advantage of adding absolute alcohol is that the freezing-point of the glacial acetic acid is lowered, thus avoiding solidification at low temperatures. A mixture of one part of glacial acetic acid and one part of absolute alcohol was found to remain fluid at $-32°$ C. This mixture may be useful for field work in extreme low temperatures, but at higher temperatures the amount of glacial acetic acid should be increased.

Admittedly, this simple method for killing nematodes seemed promising, but it remained to be seen whether or not the specimens had been damaged by this treatment. Specimens were cleared in the usual media, lactophenol and creosote, in which they cleared very rapidly. On microscopical examination, they were found to be in good condition. When cleared in lactophenol cuticular structures, such as lips, papillæ and striation were found to be very clearly visible. Internal organs were also seen clearly.

After having been kept in the glacial acetic acid for six months, some of the specimens from the fulmar were transferred directly to lactophenol and examined microscopically. The specimens were found to be in good condition.

It thus appears that glacial acetic acid with subsequent transfer to 70 per cent alcohol may be used for killing and fixing nematodes.

Acanthocephalans (*Echinorhynchus gadi*) and trematodes (*Hemiurus communis*) from the cod have also been treated with glacial acetic acid. Before killing in acid, the acanthocephalans had to be left for some time in fresh water in order to extrude their evertible hooked probosces. No movement of the specimens was observed during fixing. They cleared quickly in lactophenol. The trematodes were washed in 1 per cent saline solution before fixing. Whole trematodes were found to stain fairly well in carmalum.

Manuals on microscope technique[1,2] do not recommend fixing in pure glacial acetic acid for histological work, although it is known to kill with the utmost rapidity. However, as nematodes rarely have to be sectioned, the method described may be useful, at least when it is imperative that they should die and remain extended. However, for histological work it is perhaps better to avoid prolonged stay in glacial acetic acid; the specimens should preferably be transferred to 70 per cent alcohol as soon as possible. It is possible that this method may be regarded as a two-step modification of Carnoy's.

Although nematodes in general are rather difficult to stain, transverse sections of *C. aduncum* killed in glacial acetic acid were stained in hæmalum for 1·5 hr., and overnight in eosin, with quite good results. Even the nuclei stained well. Carmalum or paracarmine alone stained poorly.

In conclusion, it is suggested that the use of glacial acetic acid, followed by transfer to 70 per cent alcohol, is satisfactory for fixing nematodes in an extended position. No adverse effect on cleared specimens was observed after this treatment. In addition, the anatomy may be studied satisfactorily in stained sections. However, it is not known what effect, if any, the glacial acetic acid treatment has on the finer histological or cytological details.

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[1] Lee, B., *The Microtomist's Vade Mecum*, edit. by Gatenby, J. B., and Beams, H. W., eleventh ed. (London, 1950).
[2] Romeis, B., *Mikroskopische Technik*, fifteenth ed. (Munich, 1948).

Swarming of the Polychaete *Odontosyllis phosphorea* Moore, var. *Nanaimoensis* Berkeley, near Nanaimo, B.C.

In a communication to *Nature* some years ago[1] I mentioned that the annual concentration of the luminescent swarming forms of *O. phosphorea* in the channel at the entrance to Departure Bay during the summer and early autumn months could be partly attributed to the set of the currents around the islands in the vicinity. This channel has always been regarded as the classical locality from which these forms could be secured, but no effort to collect any had been made for many years until recently. Interest in them revived two years ago in connexion with work on bio-luminescence; diligent search was made for them in the channel throughout the summer of 1959, but not a single individual was seen. If present, they are easily detected at dusk by their brilliant flashes of light when the sexual products are discharged. Moreover, a dredging run through the channel failed to secure an example of the atokous bottom-living form.

The explanation is fairly clear. Since the worms were last collected there, a ferry service between Departure Bay and Vancouver has been established and boats of considerable draught ply many times daily through the channel. This creates sufficient disturbance to nullify entirely effects of currents and, apparently, to disperse the bottom dwellers, but this latter finding requires confirmation.

It is most unfortunate that this should have occurred, and I write regretfully to advise fellow workers interested in bio-luminescence that they can no longer rely with confidence on Departure Bay as an available source of swarming *Odontosyllis phosphorea*.

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[1] Berkeley, E., *Nature*, **136**, 1029 (1935).

Light Rainfall and Plant Survival: Measurement of Stem Flow Run-off

Work on the effects of showers on droughted maize necessitated measurement of water run-off down the main stems. The following two collecting devices have proved simple to construct and reliable in use. They are attached directly to the stem 1–3 in. above the ground-surface after the leaf-bases