oblique run of the spinal roots starts from D_2, decreases from D_{11} to D_{17} and then increases again[2].

Choloepus hoffmanni Pet. is known to possess 6 cervical vertebrae, 23–25 dorsal, 3–4 lumbar, 5–6 sacral and 4–5 caudal vertebrae[3]. In four adult specimens, weighing 3·3–6·4 kg, we observed that the backward obliquity of the spinal roots increases from C_4 to D_4–D_7, and then decreases progressively, and the eleventh–thirteenth dorsal roots are horizontal. Farther down, the course of the spinal roots takes a forward direction, which is maximal for D_{17}. More caudally, this forward obliquity decreases and the spinal roots become horizontal again or swing to a backward direction at about D_{21}–D_{22}, the obliquity of which increases up to the filum terminale (Fig. 1). This situation thus represents a strong exaggeration of what has been described in horse and ox, where the spinal roots, horizontal in the lower thoracic region, never take a forward direction.

In four foetuses, weighing 105–400 g, and in one newborn *Choloepus* of 375 g, the 5–7 first cervical roots were horizontal, and the level at which the spinal roots are again at right angles to the cord was shifted caudally to D_{14}–D_{17} (against D_{11}–D_{13} in the adult). The following roots never assumed a forward direction but rather resumed their backward descent.

The peculiar arrangement of the spinal roots in *Choloepus hoffmanni* Pet. presumably results from a very complex difference in growth-rate of the spinal cord and of the vertebral column in early embryonic life, prolonged in infancy. It raises interesting problems on this differential growth, which seems so straightforward in man.

M. Goffart
M. A. Gerebtzoff

Departments of Physiology and Anatomy,
University of Liège,
Belgium.

[1] Goffart, M., and Gerebtzoff, M. A., *J. Physiol.* (Paris), **56**, 563 (1964).
[2] Tigges, J., *Handbuch der Zoologie*, **8**, Teil 7, 31 (1964).
[3] Grassé, P. P., *Traité de Zoologie*, **17**, Fasc. 2, 1195 (1955).
[4] Hochstetter, F., *Morphol. Jahrb.*, **25**, 362 (1897).

New Record of *Branchiostoma lanceolatum* (Pallas)

Branchiostoma lanceolatum (=*Amphioxus lanceolatus*) appears to be generally distributed round the coasts of Britain but very few areas are known where it can be obtained in any number. The Eddystone ground in the English Channel is well known[1,2] and specimens, mostly single, have been caught in the Bristol Channel[3], Irish Sea[4] and Firth of Clyde[5–7].

Consequently, some interest is attached to the finding of ten specimens in Loch Ewe, Wester-Ross, on May 14, 1964. They were caught by a small sledge beam trawl, 3 ft. in diameter, the net being of stramin and so able to retain the young of this species. The area fished lay along the $5\frac{3}{4}$-fathom (10·5 m) contour[8] in the outer area of Gaineamh Smuagh on the east side of Loch Ewe (Fig. 1). The line within the hatched area in Fig. 1 is the approximate line of sampling through the area. The specimens were of the following sizes, total length in mm: 21·4, 23·8, 24·3, 25·7, 26·7, 28·1, 33·2, 36·8, 46·4 and 58·8. The myotome formula was constant, being 35 : 14 : 12.

The substratum in which they were found is a clean calcareous gravel composed predominantly of fragments of the alga *Lithothamnion calcareum* but with appreciable quantities of broken mollusc shells and fragments of echinoderms, both ophiuroid and echinoid. The material was dried and sieved, and the following percentages by weight represented particles of the indicated sizes: greater than 2 mm, 20 per cent; between 1 and 2 mm, 78 per cent; between 0·5 and 1 mm, 1 per cent; less than 0·5 mm, 1 per cent. This gravel is, therefore, similar in texture to the gravels of Eddystone[2].

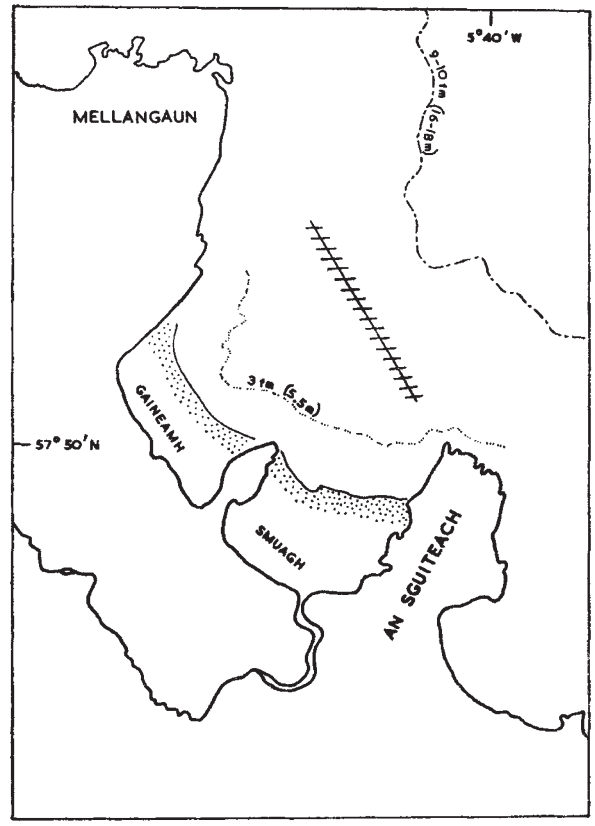

Fig. 1. The sampling area in Loch Ewe, Wester-Ross, where the specimens were collected

A more detailed examination of the fauna of this area will be published elsewhere.

J. Mauchline

Marine Station,
Millport, Scotland.

[1] *Plymouth Marine Fauna*, third ed. (Marine Biological Association of the United Kingdom, 1957).
[2] Smith, J. E., *J. Mar. Biol. Assoc., U.K.*, **18**, 243 (1932).
[3] Bassindale, R., and Barrett, J. H., *Proc. Bristol Nat. Hist. Soc.*, **29**, 227 (1957).
[4] Bruce, J. R., Colman, J. S., and Jones, N. S., L.M.B.C., Mem., No. 36 (1963).
[5] Elliott, G. F. S., Laurie, M., and Murdoch, J. B., *Fauna, Flora and Geology of the Clyde Area* (Local Committee for meeting of British Association, Glasgow, 1901).
[6] Chumley, J., *Fauna of Clyde Sea Area* (University Press, Glasgow, 1918).
[7] Lindsay, A., *Ann. Mag. Nat. Hist.*, 1 (1857).
[8] Admiralty Chart, No. 3146, Loch Ewe.

Root Growth as a Factor in the Response of *Pisum sativum* L. to Irrigation

A water shortage at any stage of plant growth usually results in a reduction in vegetative growth, but many annual crop plants are especially sensitive to changes in soil moisture conditions during the period from flower initiation to the development of full flower[1–3]. It has been shown that during this period shortage of water has a maximum depressive effect, and irrigation has a maximum beneficial effect, on the yield of seed and fruit. Pea plants (*Pisum sativum* L.) respond in this manner, and while soil moisture conditions during the period from sowing until the start of flowering have little influence on final yield of peas[1,4], this crop is particularly responsive to irrigation at the start of, or during, flowering[1,4–6]. Later, at the flat-pod stage of growth, the plants again appear to be insensitive to soil moisture conditions, but they