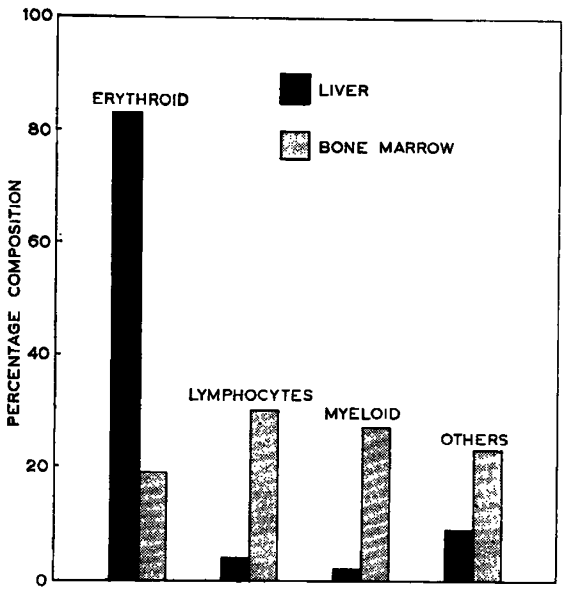

Fig. 1. Hæmopoietic cells of fœtal liver and bone marrow. Human fœtus, 202 mm. crown-rump length

lymphocytes; 15 per cent of these are transitional in appearance between typical small lymphocytes and hæmocytoblasts, resembling closely the cells previously described in the bone-marrow of the guinea pig by Yoffey[2]. In the liver, on the other hand, very few lymphocytes are seen and these, like the granulocytes in this situation, are probably derived from the blood.

The sparsity of lymphocytes in the fœtal liver, in which cell proliferation is extremely active, is difficult to reconcile with the view of Andreasen[3] and others, that lymphocytes are somehow mitotic adjuvants.

Furthermore, it seems unlikely that the lymphocytes of the bone marrow are concerned in antibody production, of which there is little evidence in early fœtal life. It would appear, therefore, that the lymphocyte population which is such a conspicuous feature of bone marrow—and presumably an indispensable cellular constituent from the earliest stages of development—must subserve a non-immunological function. The abundance of 'transitional' cells in fœtal marrow accords with the conclusion of Yoffey[4], that at least some of the small lymphocytes serve as hæmopoietic stem-cells in the marrow. Hæmopoiesis in the fœtal liver is quite unlike that in the bone marrow, for not only is it mainly erythropoietic, as has been noted already, but also the hæmopoietic stem-cell in this situation appears to be radically different from that in the marrow.

According to the widely accepted view of Maximow[5], it is represented by the undifferentiated mesenchymal cells which are trapped among the hepatic trabeculæ as they grow into the septum transversum. Our observations have failed to yield any evidence in support of this view. On the contrary, when mesenchyme occurs independently of hepatic trabeculæ, it contains very few differentiating hæmopoietic cells in comparison with the latter. Although occasional hæmocytoblasts and a variety of other immature hæmopoietic cells are seen intravascularly, in which situation they may undergo mitosis, the overwhelming majority of hæmocytoblasts and differentiating erythroid cells is extravascular, being found in the substance of the hepatic trabeculæ in intimate relationship with the liver cells. Here cells intermediate in appearance between hæmocytoblasts and early liver cells are observed in profusion and a complete morphological spectrum, linking the two, can be readily synthesized. We are, therefore, inclining more and more to the conclusion reached by Toldt and Zuckerkandl[6], that the hepatic hæmocytoblasts are derived not from the mesenchyme but from entoderm, namely, the as yet undifferentiated liver cells. In this connexion it is interesting to note that Gladstone and Hamilton[7] have ascribed an entodermal origin to the hæmocytoblasts of the human yolk-sac.

This work will be reported in detail elsewhere.

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BIOLOGY

Recapture in the River Tweed of a Sea-trout marked in Devonshire

During the winter of 1959–60 a number of sea-trout (*Salmo trutta* L.) kelts were tagged at the experimental fish trap installed by the Ministry of Agriculture, Fisheries and Food in the River Axe at Colyford, south Devon.

One of these fish, tagged on October 29, 1959, was recaptured on July 21 (266 days after liberation) in the estuary of the River Tweed, Northumberland, at the Yardford fishery situated about four miles from the mouth of the river.

The minimum distance travelled from the point of tagging to the point of recapture, via the Straits of Dover, is approximately 580 miles and via the Irish Sea is approximately 1,130 miles.

In addition to this recapture, a number of other sea-trout kelts similarly tagged at the trap last winter have been recaptured in the Rivers Otter (1), Exe (1), Teign (4), Erme (1) and Taw (1). In the last case, the minimum distance travelled was 244 miles in 174 days. Two of the fish caught in the Teign were taken in fresh water several miles above the tideway but the others were taken in the estuaries of the various rivers. The extent of the migrations of sea-trout in the sea are almost entirely unknown and these observations suggest that they are more extensive than has hitherto been supposed.

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