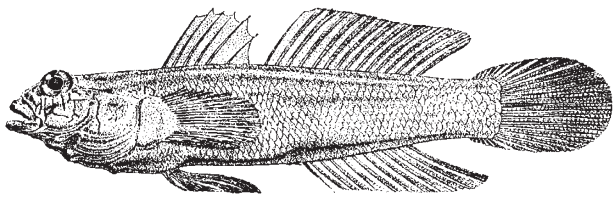

Gobius cruentatus from Barlogue Creek, Lough Ine, collected by L. P. W. Renouf in 1930.

there since being found in Lough Ine, County Cork, in 1930 (*J. Fish. Biol.*, **2**, 59; 1970).

Returning to his own museum in London, Wheeler was amazed to find another specimen of *G. cruentatus* hidden away under the name *Gobius niger*. This too dated from 1930, when it was collected in Bantry Bay, County Cork. Wheeler then contacted Professor J. A. Kitching of the University of East Anglia, who had been investigating the ecology of Lough Ine. He produced a collection of gobies, among which Wheeler identified another specimen of *G. cruentatus*.

This species, shown in the illustration, is large, at 166 mm long, compared with most other gobies, and is also distinguished by its large eyes, reddish head and black body. It belongs to the so-called Lusitanian element among fish, being most common in the southern waters around North Africa, Spain and Portugal (which country is roughly equivalent to the ancient Lusitania). The most northerly report of *G. cruentatus* was previously from Arcachon on the French Biscay coast in 1872. It is not altogether surprising that this fish should turn up in Irish waters, where the comparatively warm climate of the southern and western regions provides the northerly limit of distribution of several Lusitanian species.

Three specimens are obviously too few to form the basis of any theory as to how *G. cruentatus* came to Ireland, but the thirty years interval between the capture of Kitching's specimen and the two museum pieces suggests to Wheeler that there is a maintained population in the area. It seems unlikely that specimens could have been carried to the Irish coast by water currents during the planktonic larval stage, for their larval life is rather too short. In any case, currents from the north Spanish coast would not take them to Ireland.

There remains the question of why these gobies have not been found before in the sea around Ireland. The answer seems to lie in their habit of staying concealed just below tide level. Maybe many more are waiting to be found in northerly waters.

ENZYMES

Proline Hydroxylase and Liver

from our Medical Biochemistry Correspondent

THE activity of protocollagen proline hydroxylase is increased in healing wounds, fibrotic liver and the skin of growing animals, as a result of the increased rate of synthesis of collagen. The activity of the enzyme might therefore be expected to be intimately connected with the activity of connective tissue. But a recent survey has indicated that it is the liver that is the vital tissue in this respect.

Stein *et al.* (*Lancet*, i, 106; 1970) have developed a technique for assaying proline hydroxylase activity in human serum, and measured the enzyme in twenty healthy volunteers and 124 patients with different conditions. The "normal" range found was from 79–567 d.p.m. per ml. of serum per hour (the amount of tritium released from labelled collagen) and there was no evidence of any increase in activity in patients with diseases of the connective tissues. On the other hand, three patients with hepatomas all had extremely high serum proline hydroxylase activity. Stein *et al.* found that a substantial proportion of patients with hepatitis or cancers with liver metastases had significantly higher than normal serum proline hydroxylase activity. In liver disease there was a good correlation between increased alkaline phosphatase activity and increased proline hydroxylase.

Among patients with cancer, six out of fifteen with lymphoma had increased proline hydroxylase and, of these, four also had increased alkaline phosphatase; eleven out of forty-one patients with other cancers had increased proline hydroxylase, nine of them also having increased alkaline phosphatase.

Elevated serum alkaline phosphatase can also be a symptom of bone disease. It is therefore interesting that in patients with bone metastases, primary bone tumours and Paget's disease, many with great increases in serum alkaline phosphatase, only one patient had slightly more proline hydroxylase than normal.

To investigate whether wound healing would increase proline hydroxylase activity the enzyme was assayed in sixteen patients before and at daily intervals after major surgery. In six patients given nitrous oxide anaesthesia supplemented with muscle relaxants there was no change in proline hydroxylase activity. The other ten patients received either methoxyflurane or halothane as the primary anaesthetic agent, and in all of them concentrations of serum proline hydroxylase increased considerably a few days after the operation. The increase is therefore unlikely to be due to wound healing and may reflect an effect of the anaesthetic on liver metabolism. Both anaesthetics have been suspected of causing liver damage, but these patients showed no evidence of this by any of the conventional tests of liver function.

In view of the finding that serum proline hydroxylase seems to depend on liver activity and not, as might be expected, on the activity of connective tissue, it might prove to be a useful test of liver function; tests used at present are not entirely satisfactory.

STOMATA

Ion Pump at Work

from our Plant Physiology Correspondent

A TECHNIQUE which makes possible direct measurement of the concentration and nature of particular ions in small samples of tissue has provided strong support for the latest theory of stomatal movement. B. L. Sawnhey and I. Zelitch of Connecticut Agricultural Research Station have found that in conditions which favour stomatal opening, potassium ions accumulate in the guard cells. In contrast, an efflux of potassium from the guard cells occurs as the stomata close (*Plant Physiol.*, **44**, 1350; 1969).

Stomata are the minute pores which perforate the epidermal surfaces of leaves and so ventilate the leaf