regarded as pests rather than a source of food, in spite of the fact that there is a ready market for the flesh. In the Keta district, Ghana, the 'saw' is removed and used for fetish purposes, being specially coloured alternately red, white and blue colours[2]. It does not, however, appear to have any religious significance for the fishermen of Sierra Leone.

During the course of a fish-marking cruise in May, a male specimen of *Pristis peroteti* was caught in the Sierra Leone River, about ten miles from the mouth. This fish weighed 257·6 kgm. and measured 4·42 m. from the tip of the 'saw' to the end of the caudal fin. The liver yielded more than 13 litres of oil, and within the stomach was found a 52-cm. 'whiting' (*Cynoscion brachygnathus*, Bleek), which was in a fair state of preservation and showed wounds caused by the 'saw'. There was a deep cut on the left side, about 19·5 cm. long, in front of the operculum and a stab wound in the flesh of the back in front of the dorsal fin. There was no other food material either in the stomach or the intestine of this saw-fish.

Although saw-fish may occasionally use the 'saw' as a defensive weapon, its main purpose is to obtain food. This it does by grubbing about on the bottom in its search for small fish and crustaceans lying buried there. It may also use the 'saw' as a weapon of attack, as the present instance shows; but it probably does so only rarely in the estuaries of Sierra Leone as the water is usually very turbid. In this connexion, it is interesting to note that the specimen under consideration was caught at the end of the dry season (May), when the waters of the Sierra Leone River are at their clearest.

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A Simple Microelectrode for recording from the Central Nervous System

Metal microelectrodes suitable for recording from single cells externally or after penetration have been described by various authors[1–3]. The procedures of Svaetichin[2] and Grundfest[1] call for special apparatus, and the method of Hubel[3], employing tungsten, in our hands gives rather noisy electrodes which are difficult to straighten. Steel electrodes, which have the advantages of low noise, low electrode potential, ease of straightening and, in particular, offer the possibility of accurate localization of the recording site, may be made as follows.

Stainless steel insert pins size 00, which are about 1·5 in. long (Clay-Adams Co.), are used. Using a filament transformer of 7 V. output, regulated by a variable auto-transformer, the terminal 1 cm. is thinned with alternating current against a carbon electrode dipped in concentrated hydrochloric acid. The surface of the acid is covered with xylol to limit the highly corrosive spray. The voltage is then reduced to about half and the tip quickly agitated up and down through the xylol–acid interphase. A highly polished and very sharp tip is produced. A terminal thickness of less than 0·5μ is readily obtained (Fig. 1*b*). Residual acid must be removed quickly to avoid pitting, so the electrode is quickly dipped in strong sodium carbonate solution and

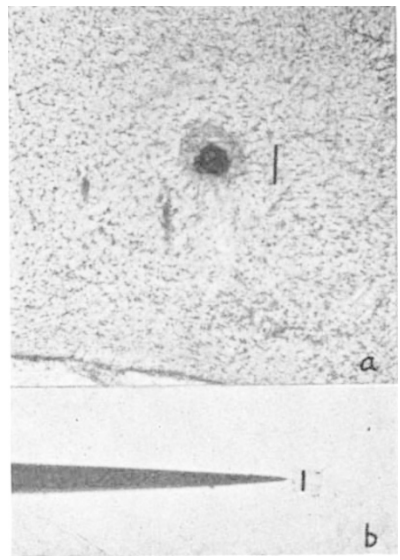

Fig. 1*a*. Site of recording marked by prussian blue reaction. Two earlier tracks to right. Mark = 200μ (100 μamp. for 10 sec.)
Fig. 1*b*. Electrode tip. Oil immersion. Mark = 2μ

then successively in 1 per cent acetic acid, alcohol and xylene. Insulation is obtained in a manner similar to Hubel's technique[3]. While the electrode is wet with xylene, it is pushed beneath the surface of unthinned lacquer (Insl-*X* *E*33 clear, Insl-*X* Co., Ossining, New York), held beneath the surface for 30 sec., quickly withdrawn, inverted and allowed to dry at room temperature for 2 hr. It is then baked overnight at 60° C. Electrode resistance ranges between 5 and 100 megohms. Cells may be successfully penetrated, and extracellular spikes of up to 10 mV. with good rise times have been recorded from neurons in the hypothalamus, indicating reasonable electrode capacitance. The recording site may be marked by a current of about 2 μamp. for 15–30 sec. If the electrode is made the anode, a small amount of iron is lost. (The insulation may then be observed under the microscope as a transparent terminal core.) The animal is fixed in 10 per cent formalin with about 1 per cent potassium ferrocyanide added. A prussian blue spot is obtained. The large deposit shown in Fig. 1*a* was made by a much larger current (100 μamp. for 10 sec.), but this is unnecessarily large.

It may be noted that if the lacquer advised is not available, a lacquer of high viscosity with a tendency to form a surface pellicle rapidly is desirable. This avoids beading and, while the electrode is inverted, the coat becomes thin as the central lacquer is still capable of flowing away from the tip beneath the surface pellicle. Lacquer shrinkage in the final setting determines the size of the exposed tip.

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