

that, whatever the position of the cuff, no difference can be observed in the time of onset of sensory paralysis.

Lewis *et al.* attribute the order of loss of the various sensory modalities in any skin area to a differing susceptibility of nerve fibres of large and small diameters. Our observations show that this hypothesis is inadequate to explain the results in detail. The manner in which any modality is lost appears to be fairly characteristic. Subjectively, there is first an alteration in the quality of the sensation, then prolongation of the response followed by delay in appreciation, and, finally, patchy loss of sensibility.

Our attention has been directed particularly to the alteration in the quality of pain sensibility which precedes the onset of analgesia. This altered quality appears to resemble very closely the unpleasant pain which can be elicited from certain cutaneous scars, and also from skin at the borders of areas which have either been recently denervated or are in the course of sensory recovery.

Sensory tests have been carried out in several such cases, and the areas of skin concerned have afterwards been examined histologically after vital staining with methylene blue. It was found that, in all cases where pain of an unpleasant quality could be aroused, the nerve nets and terminals subserving pain were invariably isolated from their neighbours, in contrast to the interweaving which normally obtains. In parenthesis, it may be remarked that such alterations in the peripheral pain network appear to be without effect on the threshold of pain sensibility, which was found to be correlated with abnormalities in the morphology of the endings. The lowest thresholds occurred when the subjacent pain fibres were surmounted by growth cones ending just beneath the basal layer of the epidermis.

Direct stimulation of pain fibres in a human digital nerve has shown conclusively that such fibres obey the 'all or none' law. It follows that no modification of the characteristics of the stimulus applied to a single pain fibre will give rise to any change in the quality of the sensation perceived. Taken in conjunction with the histological observations, this observation suggests that changes in quality are due to alteration of the number and peripheral pattern of the fibres involved in the conduction of impulses arising from a given stimulus. The alteration in quality of pain sensibility which occurs during compression of the arm is in strong support of the above hypothesis. The pain fibres do not all simultaneously cease to conduct, and there is, therefore, a period during which there is a progressive reduction in the number of active fibres proceeding from a given area, and also an alteration in the peripheral pattern of innervation. It is precisely during this period that alteration in the quality of pain sensibility occurs, and it is difficult to escape the conclusion that the subjective change is due to this process.

Further work along these lines is in progress, and it is hoped shortly to publish results in detail.

G. WEDDELL
D. C. SINCLAIR
W. H. FEINDEL

Department of Human Anatomy,
University Museum,
Oxford.

¹ Lewis, T., Pickering, G. W., and Rothschild, P., *Heart*, 16, 1 (1931).
² Weddell, G., and Sinclair, D. C., *J. Neurol., Neurosurg. and Psychiat.*, in the press.

British Folliculinidæ (Ciliata, Heterotricha)

DAS¹ has recently reported the occurrence at Cullercoats of two species of Folliculinidæ hitherto unrecorded for Great Britain, namely, *Folliculinopsis producta* Wright and *Folliculina simplex* Dons. He stated that only three other species have been recorded from Great Britain: *F. ampulla* Müller (Plymouth and Port Erin), *F. elegans* Clap and Lach. (Port Erin), and *Parafolliculina hirundo* Kent (Channel Islands).

To this list can be added² *Folliculina viridis* Wright, which, three years ago, during an intensive study of a rock pool in Langland Bay, Swansea, I found attached in some numbers to the fronds of *Corallina officinalis*. *F. viridis* is easily confused with *F. elegans*; but the former can be distinguished³ by its smaller size and yellow-green colour. The overall length of my specimens (fully extended) never exceeded 400 μ .

Last year, while examining the fauna associated with *Porcellana platycheles* in Langland Bay, Swansea, I found the upper surface of the carapace and legs liberally encrusted with the (mostly) empty tubes of *Folliculina*. 310 tubes were counted on one crab, 128 of these being on the carapace. The dimensions and shape of the tubes, and absence of green colour in the living organisms, accord with the description given by Faure-Fremiet³ for *F. elegans*.

R. R. FOWELL

Research and Development Department,
The Distillers Company, Ltd.,
Great Burgh, Epsom, Surrey.
April 21.

¹ Das, *Nature*, 159, 502 (1947).

² Fowell, *Proc. Swansea Sci. and Field Nat. Soc.*, 2, 192 (1944).

³ Faure-Fremiet, *Biol. Bull.*, 70, 353 (1936).

Erythrean Fishes on the Mediterranean Coast of Palestine

THE presence of fishes of Erythrean origin in the Levant has been observed by several authors¹⁻⁶. It has also been stated that these fishes must have traversed the Suez Canal and settled more or less finally in the Mediterranean. As this process of immigration of fishes into an entirely distinct region is going on continually, it may be of interest to list briefly those species which have been collected by workers of the Hebrew University and have so far been identified.

<i>Atherina pinguis</i> Lac. ¹	<i>Holocentrum rubrum</i> (Forsk.)
<i>Hemiramphus far</i> (Forsk.) ⁴	<i>Mulloides auriflamma</i> (Forsk.)
<i>Cyprinodon diisay</i> (Rüpp.) ⁵	<i>Teuthis sigana</i> Gthr. ^{2,3,4,6}
<i>Therapon jarbua</i> (Forsk.)	<i>Platycephalus</i> sp.
<i>Apogeton tenuatus</i> C.V.	<i>Monacanthus setifer</i> Benn. ²⁻⁴

Four of the ten species listed here were mentioned by previous authors as captured in Palestinian or Syrian coastal waters. The remaining six have—so far as we are aware—not been recorded from Palestine or Syria as yet.

A discussion of the data published in this note will be given elsewhere.

G. HAAS
H. STEINITZ

Department of Zoology,
The Hebrew University,
Jerusalem. April 25.

¹ Norman, *Trans. Zool. Soc. London*, 22, 3 (1927).

² Steinitz, W., *Pub. Staz. Zool. Napoli*, 8, 3/4 (1927).

³ Gruvel, "Les Etats de Syrie" (Paris, 1931).

⁴ Hornell, Report on the Fisheries of Palestine (London, 1935).

⁵ Mendelsohn, in the press.

⁶ Kosswig, *C.R. Ann. Arch. Soc. Turque Sc. Phys. Nat.*, 10 (1942-43).