per cent restoration, which is the result for which the determination of the required number of cells can be the most accurate, there must not be more preserved than fresh medullary cells. (b) On the other hand, this preservation has a considerable influence on the immunologically competent cells which, when immunized against a semi-allogenic host, are killed through a graft-to-host reaction: 1,000,000 fresh lymph-node cells kill 50 per cent of the animals, but of the cells that have been stored for 2 h at 37° C in Tyrode solution 40,000,000 are not enough to bring about the same effect; accordingly it may be concluded that this preservation affects more than 97.5 per cent of those cells that are capable of evoking a graft-to-host reaction.

This work was supported by International Atomic Energy Agency contract 93/2/R.B. and C.E.A. contract 5262/R.

J. L. AMIEL
G. MATHÉ

Cancerological and Radiological Research Centre,
Claude Bernard Association,
Hôpital St. Louis, Paris.

¹ Mathé, G., Amiel, J. L., Schwarzenberg, L., and Méry, A. M., *C.R. Acad. Sci., Paris*, 255, 2863 (1962).

² Mathé, G., Amiel, J. L., Schwarzenberg, L., and Méry, A. M., *Blood*, 22, 44 (1963).

Frontal Foramina and Tripodes of the Characin *Crenuchus*

GERY¹ has recently described a pair of foramina in the frontal bones of *Crenuchus spilurus* Günther. These foramina underlie the posterior margin of a pad of fatty tissue which covers the anterior part of the skull roof. Gery found by dissection that they contained structures which seemed to be connected to the brain. His specimens were not well enough preserved for histological examination.

I possess two well-preserved specimens of the same species. I have cut serial transverse and horizontal sections of their heads, and stained them with Mallory's triple stain. Each frontal foramen is filled by a plug of tightly packed, tangled collagen fibres, penetrated by a few small blood vessels (Fig. 1). The collagen fibres of the plug are continuous with those of the fatty pad, of the periosteum of the frontals, and of the interesting structure shown in Fig. 2. This structure lies posterior to the plug, within the cranial cavity. It includes blood vessels, collagen fibres, and a group of elongate vesicles, partially filled by a lightly staining homogenous substance. It is served by a substantial branch of the superior ophthalmic nerve.

It seems probable that this is a sense organ. The vesicles (reminiscent of ampullae of Lorenzini, though they have no external openings) and the innervation by the superior ophthalmic nerve suggest derivation from lateral line organs. If it is an exteroceptor, the stimuli to which it is sensitive must be able to affect it through the collagenous pad.

Gery¹ also discussed the tripodes of *Crenuchus*. He stated that they are not of the type found in other characins. I have cut horizontal sections of the Weberian apparatus of one of my specimens of *Crenuchus*, and am unable to confirm this. The anterior edges of the tripodes (Fig. 3) are formed by bony lamellae which are fused to the third centrum but not, apparently, to the more posterior bony parts of the tripodes. This structure is identical with that of the tripodes of *Astyanax* (typical of Characinoidei) and contrasts strongly with that of *Carassius* (typical of Cyprinoidei) which have been illustrated elsewhere². In Cyprinoidei there are no separate bony lamellae, and the tripodes are attached to the centrum by the cartilage which fills them.

Gery¹ also suggests that the tripodes of Erythrininae may lack the bony lamella. The tripodes can, however, be

Fig. 1. Camera lucida drawing of part of a transverse section of *Crenuchus* showing the frontal foramina, collagenous plugs and fatty pad. Epi., epidermis (damaged); Lat. l., lateral line canal and pore; Olf., olfactory tract

Fig. 2. Camera lucida drawing of part of a horizontal section of *Crenuchus* showing a collagenous plug, the vesiculate structure associated with it, and the nerve. The top of the figure is lateral and the left anterior

Fig. 3. Camera lucida drawing of a horizontal section through the third centrum and tripodes of *Crenuchus*. The top of the figure is anterior. Bone is shown black and cartilage is stippled

seen to be attached to the centrum by a bony lamella, and seem to be of entirely normal characin type, in my sections of *Erythrinus erythrinus* (Bloch and Schneider).

Weitzman's³ definition of the Characinoidei in terms of the structure of the tripodes, to which Gery¹ refers, is faulty in that, of the Cyprinoformes, it excludes only the Cyprinoidei. The tripodes of Gymnotoidei⁴ and Siluroidei⁵ are attached to the centrum by bony lamellae. In Siluroidei, however, the lamella is fused to the main body of the tripus.

The specimens described here were collected by the Cambridge Expedition to British Guiana, 1960, of which I was a member.

R. McN. ALEXANDER

Department of Zoology,
University College of North Wales,
Bangor.

¹ Gery, J. R., *Nature*, 198, 502 (1963).

² Alexander, R. McN., *Proc. Zool. Soc. Lond.*, 139, 451 (1962).

³ Weitzman, S. H., *Stans. Ichthyol. Bull.*, 8, 3 (1962).

⁴ Chranilov, N. S., *Zool. Jb. (Anat. Ont.)*, 51, 323 (1929).

⁵ Alexander, R. McN., *Proc. Zool. Soc. Lond.* (in the press).