eye being closed, and the head shaken rapidly, the shadows of the retinal vessels and the position of the yellow spot will be seen. On cessation of the head movements, the perception of these vessels disappears; but if the uniformly lit field of the microscope is gazed at with relaxed accommodation, almost suddenly, it may become dark but alive with movement. Careful observation will show a well covered fern leaf-like pattern of a swirling circulation, dark reddish-grey in colour on a black ground. The circulating blood seems to fill nearly the whole field, the position of the yellow spot as elsewhere, and it will be seen to be dotted with numerous granules of pigment. In a few seconds at most, this dark picture vanishes and nothing is left but the uniformly lit field with which the experiment started. The dark-ground effect can usually be obtained several times but it becomes increasingly difficult to produce it. It is best seen in an evening after lights have been lit and the eye has become partially dark-adapted; and slow movement of the head is often helpful.

The circulation seen in this way is unlike any other in that it seems to be a circulation in small sinuses and not in small blood vessels and capillaries. There is no pulsation. The circulation can only be that in the chorio-capillaris; and the pigment seen can only be that in close proximity and is probably that of the retinal epithelium.

The circulation can be more easily viewed, but not so well, by looking at a brightly lit piece of opal glass of moderate size through a short focus lens protected from extraneous light, placed within its image plane so as to allow of parallel light falling on the rods and cones. I employ a 15-watt lamp surmounted by a piece of opal glass in 1½ inch diameter brass tubing which also carries a 1½ inch focus lens placed about 2½ inches from the light source. With such an arrangement, the dark-ground effect may appear within five seconds, although it usually takes longer, and may last ten to twenty or more seconds. At first there is usually seen nothing but blackness, then a sensation of circulation in a vessel occurs in one or more parts and then quickly the full picture develops, at least to those who are able to see it. A dark green glass screen is less helpful than might be expected, mainly owing to the circulation being viewed by reflected light of low intensity. A ruby-red glass has seemed to me more helpful.

It is probable that the chorio-capillaris will be seen by different eyes with varying distinctness. My left eye gives me the best picture. With my right eye the circulation seems more like an asparagus leaf than a fern frond in form.

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Tunny in the North Sea

DURING my investigations on tunny (*Thunnus thynnus* L.) in the North Sea this summer on Col. E. T. Peel's yacht *St. George*, I had occasion to talk to many fishermen and others interested in the occurrence of this fish; I have also consulted most of the relevant literature. Despite the almost unanimous agreement among the fishermen I met, that the tunny were not to be found in the North Sea before the War, it is impossible to avoid the conclusion that the migration of these fish into North Sea waters is not an occurrence of recent origin.

Dr. Delsman[1] suggests the warm summer of 1911 as the first year of the tunny's appearance. Against this, amongst other evidence, the following should be cited. Heldt[2] states that a tunny was caught by a French fisherman on the edge of the Dogger Bank in 1907 and that Redeke reported the occurrence of this fish off Warnemünde in the Baltic in 1903[3]: the records of Day[4] are numerous and go back so far as the year 1801, when three tunny were taken off Margate; he says they were numerous in the Moray Firth in 1850.

The many occasional records given by Day are surely evidence that the tunny were numerous in the nineteenth century. It is of interest also to bear in mind that, during such summers as that just past and that of 1911, unusually calm conditions prevail in the North Sea; such conditions are especially favourable for noticing tunny when they break the surface. It, of course, need scarcely be said that, as with other migratory fish, the tunny may be more numerous in some years than in others.

A good summary of the records of occurrence in the North Sea is given by Le Gall[5].

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Oct. 23.

[1] Delsman, H. C., NATURE, **132**, 640, Oct. 21, 1933.
[2] Heldt, H., *Off. Sci. Tech. Pêches Marit. Notes et Mem.*, No. 22; 1923.
[3] Heldt, H., *Comm. Int. Explor. Sci. Mer. Medit. Rapp. Proc. Verb.*, **6**, 192; 1931.
[4] Day, F., "The Fishes of Great Britain and Ireland": London, 1880–84.
[5] Le Gall, V., *Cons. Int. Explor. Mer. Journal du Conseil*, **2**, 309; 1927.

Mastacomys fuseus (Muridæ) Still Extant

THIS remarkable rat, which is distinguished from all other Australasian Muridæ by its ponderous molars and some curious features of their crown pattern, was described by Oldfield Thomas so long ago as 1882, but with one doubtful exception has never been recorded since, except from fossil remains, and its status in the Australian fauna has remained quite obscure.

I have now taken a series of specimens in Tasmania, whence came the type specimen in the collection of the British Museum. The animal was taken at an elevation of more than 3,000 ft. in the rugged north-western portion of the island. The locality is one of rigorous climatic conditions, and sparse 'Alpine' vegetation, and the runaways in the grass matt, in which the rat was trapped, are sodden with frequent rains in the cool summer which prevails there, and in winter are frequently buried feet deep in snow.

These conditions make a distinct approach to those of the Alpine meadows which form the station of many of the holarctic voles, and the animal in fact shows some morphological convergence towards the Microtinæ; a diagnosis which Lydekker made long before any details of its economy or the features of its habitat were known.

Examination of the new material shows that the type is immature; a redescription of the animal will appear in the current volume of the *Transactions of the Royal Society of South Australia*.

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