

Garden, Red House, Berkhamsted, Herts :—*Haplophthalmus danicus*; *Trichoniscus pusillus* and *roseus*; *Oniscus asellus*; *Philoscia muscorum*; *Platyarthrus Hoffmanseggii*; *Metoponorthus pruinus*; *Porcellio scaber*; *Cylisticus convexus*; *Armadillidium vulgare*.

In my former paper at the bottom of p. 75—in consequence of a wandering mind, I suppose—the word "*Porcellidium*" is substituted for *Armadillidium*.

XLIX.—*On the Skeleton and Systematic Position of Luvarus imperialis.* By C. TATE REGAN, B.A.

In a recent paper* I pointed out numerous resemblances between *Luvarus imperialis* and the Acanthuridæ. About a month previously Mr. E. R. Waite† had published in Australia an account of the skeleton of a large specimen stranded at Bermagui, New South Wales—a fact of which I could not have been aware when my own paper was written. I have now had an opportunity of examining the skeleton of one of these fishes taken in September last near St. Martin's Point, Guernsey, and as a result I find that *Luvarus* must be considered to be a most abnormal and specialized Scombroïd, and that the features in which it approaches the Acanthuridæ—the most notable of which are the restricted gill-openings, united pelvic bones, small number of vertebræ, short first vertebra, and maxillaries attached to the non-protractile premaxillaries, as well as the correspondence in the visceral anatomy—are to be regarded as the result of convergence. Examination of a large and considerably damaged specimen previously led me to believe that the palatines lacked the posterior (prefrontal) articulation; but in this I was evidently mistaken.

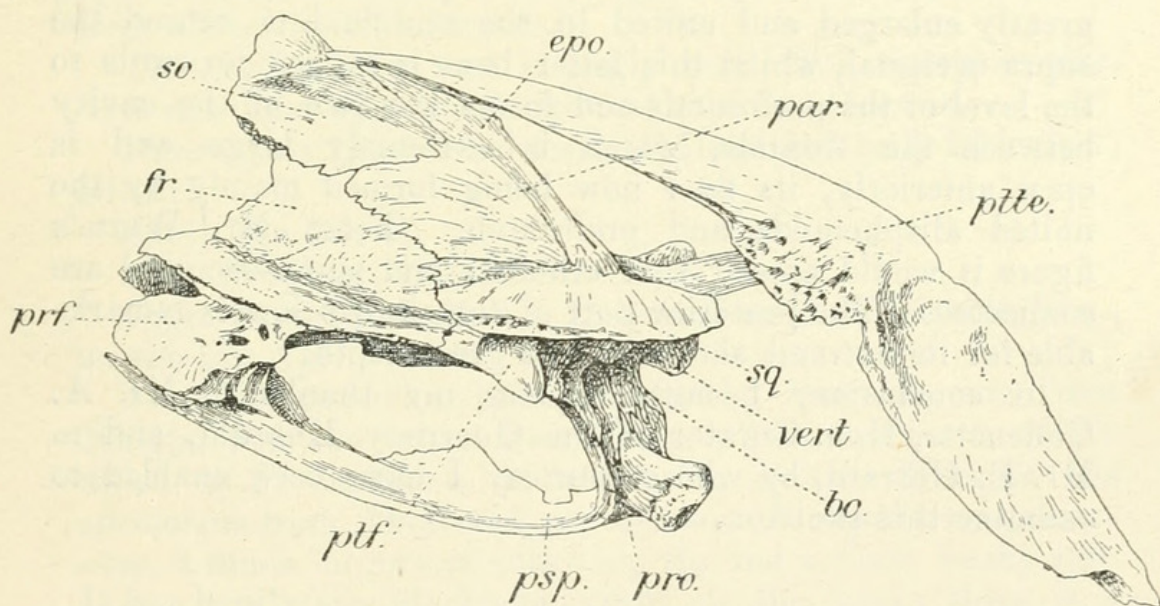
In the skeleton now dealt with the anterior part of the skull has been considerably injured; in other respects it is very complete. Mr. Boulenger has pointed out to me that the Scombridæ and Xiphiidæ are remarkable in that the deeply forked bases of the rays of the caudal fin are inserted nearly vertically and extend over the hypural so as to almost entirely conceal that bone, those of the upper and lower series nearly meeting in the middle line on each side. This

* Ann. & Mag. Nat. Hist. (7) x. 1902, p. 278.

† Rec. Austral. Mus. iv. 1902, p. 292.

feature is also seen in *Luvarus*, and is well illustrated in Mr. Waite's photograph. In the Scombridæ the vertebræ of the caudal peduncle are square and have broad flat neural and hæmal spines, which are directed horizontally backwards, so as to embrace the succeeding vertebræ above and below, and the vertebræ between the procurent caudal rays are greatly and progressively shortened. A similar condition obtains in *Luvarus*, in which, however, the first vertebra of the caudal peduncle is only half as long as the one preceding it, but otherwise normal; it is succeeded by two square vertebræ, as in the Scombridæ, and between the last of these and the hypural there is an extremely short vertebra. The sessile blade-like ribs exactly resemble the sessile anterior ribs of a *Thunnus*; epipleurals are absent.

The pectoral arch is remarkable for the large size of the post-temporal and for the fact that there is no supra-clavicle, which may be regarded as having disappeared or as being



Greater part of Skull of *Luvarus imperialis*.

so., supra-occipital; epo., epiotic; pte., post-temporal; par., parietal; sq., squamosal; fr., frontal; prf., prefrontal; ptf., postfrontal; psp., parasphenoid; pro., prootic; bo., basioccipital; vert., centrum of first vertebra.

represented by the lower part of the post-temporal. The post-clavicle is small, the clavicle, scapula, coracoid, and pterygials exactly like those of *Thunnus*. The pelvic bones are completely united, but do not diverge posteriorly at the vent, as has been erroneously stated. The vent is surrounded by a cartilaginous ring, to which is joined the pelvis anteriorly and the bone formed by the united anterior interhæmals

posteriorly. In the skull, which is best understood by comparison with that of a *Thunnus*, the ossified sclerotic and broad opercular bones are typically Scombroïd features. In a *Thunnus* the roof of the skull is composed of a posterior, short, nearly vertical portion, formed to a great extent by the exoccipitals, and above them by the supra-occipital and epiotics, and of an anterior, long, nearly horizontal portion, mainly formed by the frontals, and behind them by squamosals, parietals, epiotics, and supra-occipital. The upper forks of the post-temporals are attached to the epiotics, which almost meet in the middle line, the posterior part of the supra-occipital being very narrow; the frontals only meet in the middle line posteriorly, anteriorly they bound a cavity in front of the brain-cavity, open above, the floor of which is formed by the ethmoid, and which is filled with a loose oily tissue. The skull of *Luvarus* may be regarded as that of a *Thunnus* in which the posterior, nearly vertical part of the roof has become very long and oblique, the epiotics being greatly enlarged and united in the middle line behind the supra-occipital, whilst this latter bone is carried forwards to the level of the prefrontals and forms the roof of the cavity between the frontals, which is extremely large and is open anteriorly, its floor now being formed mainly by the united alisphenoids and prefrontals. From Mr. Waite's figure it would appear that ethmoid and supra-occipital are connected. The posterior part of the skull below is remarkable for its extreme shortness and great depth.

In conclusion, I must express my thanks to Mr. A. Collenette, Hon. Curator of the Guernsey Museum, and to Mr. E. Gerrard, by whose courtesy I have been enabled to examine this skeleton.

L.—*On a new Species of Cat from China.*

By J. LEWIS BONHOTE, M.A.

IN working out some of the small spotted cats of China I find the following species to be undescribed, and I propose for it the name

Felis Ricketti, sp. n.

Intermediate in size between *F. euphilura* and *F. chinensis*. General ground-colour bluish grey, except across the shoulders, where rufous tips to the hairs predominate. White



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