

*Cyclas cornea*, Linn. Common.

*Cyclas calyculata*, Drap. The only locality I know for this shell in the district is in a marl pit near Hutton Grange.

*Pisidium obtusale*, Pf. Common on the Weald Moors.

*Pisidium pusillum*, Jen. I have at different times taken two or three specimens of this shell on the Weald Moors.

*Pisidium nitidum*, Jen. Not very uncommon on the Weald Moors.

*Pisidium ammeum*, Mull. Taken in the same locality with the last.

#### XLIX.—On the production of Isinglass from Indian Fishes.

By Dr. CANTOR, Corresponding Member of the Zoological Society\*.

IN the December Number, 1838, of Parbury's Oriental Herald appears a letter 'On the Suleah Fish of Bengal, and the Isinglass it affords': the description of this fish I shall quote in the words of the anonymous writer. "The Suleah Fish," he observes, "when at its full size, runs about four feet in length, and is *squaliform*, resembling the Shark species in appearance, but exhibiting a more delicate structure than the latter. The meat of this fish is exceedingly coarse, and is converted by the natives, when salted and spiced, into 'burtah,' a piquant relish, well known at the breakfast-tables of Bengal. The bladder of the *Suleah* may be considered the most valuable part of it, which, when exposed to the sun and suffered to dry, becomes purely pellucid, and so hard that it will repel the edge of a sharp knife when applied to it. These bladders vary from half a pound to three quarters of a pound avoirdupois in weight, when perfectly dry. . . . The *Suleah* Fish abounds in Channel Creek, off Saugor, and in the ostia or mouths of all the rivers which intersect the Sunderbuns, and are exceedingly plentiful at certain seasons."

Conceiving the great importance of the discovery of isinglass being a product of India, I was naturally anxious to examine the source, arising from a branch of natural history to which in particular I have devoted my attention; but from the general nature of the description, I was obliged to defer my desire of identifying the fish till some future opportunity should enable me to do so. Quite unexpectedly, however, a few days ago, the last overland despatch brought me a letter from my valued friend Mr. McClelland, a Corresponding Member of this Society, an extract of which, bearing upon the point in question, I lose no time in laying before the Society:—" . . . I have now to mention what is of far greater importance in another

\* Read before the Zoological Society, July 23, 1839.



point of view, namely, that the Suleah Fish described in a recent number of Parbury's Oriental Herald is the *Polynemus Sele* of Hamilton. I have examined that species, and found an individual of two pounds weight to yield sixty-five grains of pure isinglass, an article which here sells at sixteen rupees (1l. 12s.) per lb. Refer to your dissections of *Polynemi*; mark those with large air-vessels to be isinglass, requiring no other preparation than merely removing the vascular membrane that covers them, washing with lime-water, and drying in the sun. You know the size these fishes attain, and the number in which they abound in the Sunderbuns; you also know the method of taking them, and can therefore state to what extent isinglass may be obtained in India. I have sent a paper on the subject to the Journal of the Asiatic Society\*, which I will send you by the next overland despatch.'

Perceiving by this that the subject has been taken up by a naturalist of Mr. McClelland's rank, and that we ere long may expect his observations embodied in a paper from his hand, I think it sufficient to confine myself to a few general remarks upon those species of *Polynemus* which have come under my actual examination while I was attached as surgeon to the Hon. Company's survey of the sea-face of the Gangetic Delta.

The species best known is the *Polynemus risua*, Hamilton; *Pol. longifilis*, Cuvier; the Tupsee or Mango Fish of the Anglo-Indians; this inhabits the Bay of Bengal and the estuaries of the Ganges, but enters the mouths of the rivers, even higher up than Calcutta, during the breeding-season (April and May), when the fish is considered in its highest perfection, and is greedily sought as a great delicacy. This species is the smallest, for its length seldom exceeds eight or nine inches, and one and a half to two inches in depth. *Polynemus aureus* and *Topsui*, Hamilton, are species closely allied to this.

*Polynemus sele*, Hamilton, *P. plebeius*, Broussonais, *P. lineatus*, Lacépède, is the Suleah Fish mentioned in Parbury's Oriental Herald, the same which Mr. McClelland submitted to examination. This species, as well as another closely allied to *P. quadrifilis*, Cuvier, which I have dissected, figured, and described, under the name of *P. Salliah* (*Saccolih*), appears equally plentiful, in shoals, all the year round in the estuaries of the Ganges, and is appreciated by Europeans and natives for its excellent flavour. Both species attain a size from three to four feet in length, and eight to ten inches in depth.

\* See the following article.



In a paper which I had the honour of communicating to the Royal Asiatic Society\*, the genus *Polynemus*, among others, was pointed out by me as forming an article of food fit for curing, and easily procurable in almost any quantity: by the discovery that it produces isinglass, it has attained an additional interest; and I have no doubt the manufacture of this article will, when entrusted to judicious hands, form another valuable article of exportation from India.

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L.—On *Isinglass* in *Polynemus sele*, *Buch.*, a species which is very common in the *Estuaries of the Ganges*. By J. McCLELLAND, Esq., Assistant Surgeon†.

THERE are nine species of *Polynemi*, or Paradise fishes, enumerated by authors, and although they are all pretty well described, I am not aware of any more valuable property being known regarding them than their excellence as an article of food, of which we have a familiar instance at this season in the *Pol. paradiseus*, or Mango-fish, *Tupsi Muchi* of the Bengalese.

Buchanan has five species in his work on Gangetic Fishes, but three of these are small, and probably varieties only of the *Tupsi*; two of them, however, are of great size, and so common in the estuary of the Hoogly, that I have seen numerous hackeries, or bullock carts, conveying them to the Calcutta bazar, during the cold season. They are not confined to the estuary of the Hoogly, but probably extend to all the estuaries of the Ganges, as Buchanan says they do; and we know that Dr. Russell also describes two large species in his work, long since published, on the fishes of the Madras Coast.

The very valuable production, *Isinglass*, having been recently found to be yielded by one of the fishes of the Hoogly by a writer in Parbury's Oriental Herald, it became an interesting object to determine the systematic name of the fish affording an article so valuable, and to learn as much as possible regarding its habits. Having procured a specimen of this fish from the bazar, I was surprised to find it to be a *Polynemus*, or Paradise fish, although the writer alluded to described it as resembling a Shark. My surprise was not that a person unacquainted with fishes should compare it to a Shark, or to anything else, but that a nearly allied species to the Mango-fish should contain a natatory vessel of such size and value,

\* Published in the Journal of the Royal Asiatic Society of Great Britain and Ireland, No. ix., August 1838, p. 165.

† From the Journal of the Asiatic Society of Bengal, No. 87, p. 203.





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