



## Mr. Sturgeon on an Aurora Borealis seen at Woolwich, on December 22, 1834

Sturgeon

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Mr. Owen read a "Description of a recent *Clavagella*," founded on the examination of an individual brought home by Mr. Cuming and imbedded in siliceous grit. The portion of rock contained the whole of the expanded cavity excavated for the abode of the animal, together with the fixed valve of its shell and about an inch of its calcareous tube: the loose smaller valve was detached from the soft parts. Mr. Owen describes in detail the fixed valve, which corresponds to the left side of the animal's body; the attachment to it of the adductor muscles, two in number; its passage into the calcareous tube by a continuance of the shelly substance; the tube itself, which communicates with the posterior part of the chamber next the side which corresponds with the ventral surface of the animal; and the free valve. He regards it as probable that the animal of this species, having penetrated into the rock for a certain distance, then becomes stationary, and limits its operations to enlarging its chamber to the extent required for the development of its ovary: this enlargement takes place in the dorsal, dextral, and anterior directions.

The soft parts of *Clavagella* form an irregularly quadrate mass, convex anteriorly, rather flattened at the sides, and slightly narrowing towards the posterior end, from which the smooth rounded *siphon* is continued. This contains the anal and branchial canals, which are separated by a strong muscular *septum*, but do not project as distinct tubes: in this respect *Clavagella* agrees with *Gastrochana* and *Aspergillum*. The mantle is a closed sac, having only an opening for the passage of the *siphon* and a small slit at the opposite end for the passage of a rudimentary foot: the use of this slit in *Clavagella* is obviously different from that assigned by M. Rüppell to the corresponding structure in *Aspergillum*.

Mr. Owen describes the mantle and its structure; the *siphon*; and the thick mass of muscular fibres at the anterior part of the mantle, which forms probably one of the principal instruments in the work of excavation: he also notices the great development, as compared with the size of the animal, of the adductor muscles. He then proceeds to the *viscera*, which generally agree with the typical structure in other *Bivalves*. The digestive system, which accords with that which is usual in *Acephalous Mollusca*, is described; as are also the respiratory and circulating systems, the principal nervous *ganglia*, and the ovary.

The paper was accompanied by drawings illustrative of the several structures described in it.

The specimen described belongs to the species termed by Mr. Broderip *Clavagella lata*.

### XXXIX. Intelligence and Miscellaneous Articles.

MR. STURGEON ON AN AURORA BOREALIS SEEN AT WOOLWICH,  
ON DECEMBER 22, 1834.

A BEAUTIFUL Aurora Borealis was seen from this place last night. I was on Woolwich Common when I first saw it, then ex-

actly six o'clock. It consisted of several groups of vertical beams of pale yellowish light on both sides of the north star, extending nearly to equal distances in the western and eastern directions. These beams presented the strongest light at their bases, and grew gradually fainter, to their superior extremities, where they softened and gently glided into the most attenuated light, and were lost at various altitudes, some of which were near to the zenith. These streamers soon faded, and gave place to a few straggling vertical coruscations, displayed in various parts of the northern sky, which in their turn were again succeeded by the finest streamers I ever beheld. It was now five minutes past six. These splendid streamers were of the same tint as the former, and extended from the black nucleus near the horizon to the zenith in nearly the same manner; but the refulgence of these far exceeded that of the former. These streamers consisted principally of two parallel groups, one on each side of the north, and with some considerable distance between them. Smaller streamers were, however, playing in the intermediate space, and also on their outer horizontal skirts. The horizontal boundaries of the aurora, at this time, seemed to be the Milky Way on the west, and near to the planet Mars on the east. From this time the aurora gradually diminished in splendour, and about seven was nearly lost; it occasionally, however, brightened with a few faint flashing momentary streamers till between ten and eleven, at which time I discontinued my observations.

During the display of the fine streamers, which first presented themselves about five minutes past six, I hurried home to adjust a magnetic needle. It was about half-past six before I had my magnetic apparatus fit for observation, and the splendour of the aurora had now passed its meridian. I diligently watched the needle and the aurora till half-past ten, but observed nothing in the motions of the former that could possibly be attributed to the influence of the latter.

From the brilliancy of the aurora at six o'clock, I imagine that it was exhibited at a much earlier period of the evening, but I have had no opportunity of ascertaining the fact from persons likely to have seen it. I think it is likely that the aurora was very fine in Scotland, and perhaps in higher north latitudes, after seven o'clock, perhaps till nine or ten.

Artillery Place, Woolwich, Dec. 23, 1834.

W. STURGEON.

P.S. This aurora appeared to have no particular respect for the magnetic north: it was nearly, if not exactly, bisected by the *true meridian* during the whole of the time I observed it.

MR. GILL ON THE STRUCTURE OF THE FIBRES OF FLAX AND COTTON, IN REFERENCE TO THE OBSERVATIONS OF MR. BAUER.

*To the Editors of the Philosophical Magazine and Journal of Science.*  
Gentlemen,

I felt myself much interested in the perusal of a late article in your valuable work, by Mr. Thomson, on the *Mummy Cloth*;