

aurora is present; the stars shine quite bright in this dark sky above them.

Prof. Smyth considers that the night after the aurora of the 27th the twilight extended over the region "aurora-blackened" the evening before. Would not this be owing to the brightness of the aurora preventing the twilight from being seen so high then simply by contrast? The fact that the dark sky was luminous in the spectroscope seems to bear out this.

I do not understand Prof. Smyth's suggestion why these clouds should never be seen in winter, for any night in the year there is a time when the sun is at the same distance below the horizon as it is when the bright clouds are well seen.

Sunderland, August 18

T. W. BACKHOUSE

#### Cloud Effect

A VERY unusual cloud effect was noticed here on the 18th inst. at 7.45 a.m. The whole sky, especially to the east or south-east, was at that time covered with a widespread field of mackerel cloud. This field was cut from north to south with a strongly defined cleft or narrow line showing the blue sky beneath. It was like a crack in the cloudy tissue, and formed a perfect arch, whose greatest altitude was not many degrees above the sun's apparent place. It lasted nearly half an hour. There was little wind at the time, only a slow motion from the north, but a change took place shortly after, when it veered to the south-west.

E. BROWN

Further Barton, Cirencester, August 20

#### The Crag Deposits on the North Downs

To students of Tertiary geology, the interest of Mr. Clement Reid's verification of Prof. Prestwich's judgment of many years ago as to the Pliocene age of certain outlying deposits at Lenham is so great that I must crave permission for space for a line or two with reference to other similarly situated deposits on the North Downs, which have been described as belonging to an horizon "so nowhere between the Chalk and the moon." The deposits to which I refer were described by Prof. Prestwich in the *Q. J. G. S.*, vol. xiv., and of his paper Mr. Whitaker made free use in preparing the account of these outliers in vol. iv. of the "Memoirs of the Geological Survey" (pp. 336-42). The idea has been for some time growing up in my own mind, with reference to these unfossiliferous outliers, that some of them will have to be recognised as remnants of the once more widely extended Upper Bagshot Sands. This conclusion is at present based mainly on three facts: (1) the literal application of Prof. Prestwich's description of their lithological character to portions of those beds; (2) the occurrence of "similar beds on the Chalk Downs on the opposite side of the Channel, between Calais and Boulogne"; (3) the superposition of "analogous strata" on the top of Cassell Hill in French Flanders upon the *Calcaire grossier* series, the equivalent of our Middle Bagshot (so-called Bracklesham) Beds. I hope to deal with this more at length during the next session of the Geological Society, and only draw attention now to the suggestion which I threw out several years ago (*Proceedings of the Geological Association*, vol. viii. p. 170) for reasons assigned, that the oldest plateau-gravels of the London Basin are probably of Pliocene age. This may possibly have escaped Mr. C. Reid's notice.

A. IRVING

Wellington College, Berks, August 17

#### Actinotrocha on the British Coasts

IN answer to Mr. Cunningham's letter on the distribution of *Tornaria* and *Actinotrocha*, I may state that I took *Actinotrocha* in the tow-net at the mouth of this bay on July 31. I believe I have found it more than once before on the west coast during the last few years, but, not having my note-books with me, I cannot say definitely where and when. If I am not mistaken, *Phoronis* was found by Dr. Strehill Wright in the Firth of Forth, and is therefore known as a British animal.

Loch Ranza, Arran, August 21

W. A. HERDMAN

#### GEORGE BUSK, F.R.S.

A SINGLE-MINDED, true-hearted man, a warm friend, and an able and accomplished naturalist, has just passed away from the midst of his family, his friends, and his fellow-workers.

George Busk was the second son of Mr. Robert Busk, of St. Petersburg. He was born in 1807, and at an early age gave promise of those tastes and of that aptitude for research which, developing with his years, gained for him the high position which he was destined to hold among the scientific workers of his time.

After completing his medical education he was appointed surgeon to the seamen's hospital-ship *Dreadnought*, a post which he continued to hold for about twenty-five years. It is these twenty-five years which constitute the strictly professional period of his life, and which gained for him a place among the most distinguished members of his profession as an able, clear-sighted, and enlightened surgeon.

In 1856 he resigned his appointment to the *Dreadnought*, and at the same time decided on retiring from professional practice and on devoting himself to scientific work.

Having now leisure for the cultivation of those studies which were always dear to him, he threw himself warmly into biological work. An excellent and cautious observer, it was chiefly to researches on the structure of the lower members of the organic world that he now devoted himself, and scarcely a month passed without the periodical literature of biology receiving from his labours the record of some new and interesting fact.

About this time he became one of the editors of the *Microscopical Journal*, and the numerous communications which appeared from his pen in the pages of that periodical contributed largely to its popularity and success.

There were few departments of biological science which Busk did not enrich by his researches, and we now find following one another in rapid succession a long series of papers containing the results of his studies among the lower groups of the animal and vegetable kingdoms. He was a skilful microscopist, an acute and conscientious interpreter of the optical expressions of organic form presented by the microscope to the observer, and his contributions to the transactions of our leading scientific societies and to various natural history journals have advanced our knowledge of some of the simple unicellular plants, of the Infusoria, the Hydroida, the lower Vermes, and above all of the Polyzoa, to an extent which those who have worked in the same fields can fully appreciate.

In 1856 appeared his article "Polyzoa" in the English Cyclopædia. In this admirable article we have an exhaustive account of the structure of the Polyzoa, while it contains the first satisfactory attempt at a scientific arrangement of the group, and proposes for the first time the employment of certain systematic characters which are now universally accepted as offering the only legitimate bases of a philosophical classification.

Soon after this he undertook the labour of drawing up an illustrated descriptive catalogue of the Polyzoa contained in the collection of the British Museum, and brought to bear on the descriptions and systematic arrangement of the species those principles whose soundness he had already established. There was thus placed in the hands of the student a work of great value, with which no investigator of the group can afford to dispense.

On the return of H.M.S. *Rattlesnake* from its explorations in the Australian seas under Capt. Owen Stanley, the collections of Polyzoa and Hydroids made during the voyage were placed in Mr. Busk's hands for examination and description. His report on the new species thus obtained is published in the narrative of the voyage, and forms an important addition to our knowledge of these animals.

Among the facts of anatomical interest which have been successfully worked out by Busk in the organisation of the Polyzoa, his demonstration of the structure of the *avicularia* and *vibracula* deserves special mention. He has given by far the best account which had been hitherto