the fact that thus far all attempts at connecting auroral phenomena directly with meteorological have failed, goes far to show a cosmic rather than a terrestrial origin for the aurora. H. A. H.

An extinct hydroid.

Whether Shakspeare was the first to give expression to the idea of 'Sermons in stones,' the writer of this notice is not scholarly enough to answer. Strongly impressed by many demonstrations of its truth, it is in no spirit of detraction that he ventures the opinion that the inspired bard could not have appreciated the significance of his declaration, if we take into consideration what these sermons have since revealed to us of the past history of the world. The rocks have proved to be volumes of the most convincing sermons, and every pebble has a story that may be read. Such a pebble, the subject of the present communication, was sent to the writer by a greatly esteemed friend, the well-known naturalist and philologist, Prof. Samuel S. Haldeman, shortly before his death. It was picked up in Lebanon county, Penn., but exactly at what locality I failed to inquire. It is an irregular rectangular piece of quartzite, about an inch and a quarter in two diameters, and half an inch in the third diameter. It has several conchoidal fractures, is water-rolled, with rounded edges, and smooth. It is dirty white, opaque, homogeneous, and of flinty texture. Embedded in it, scattered here and there, are seen several dozen little fossils, all of the same character, and worn level with the smooth surfaces of the pebble. Most of the fossils have the form of a narrow ellipse with acute extremities, or have the shape of a section of a double convex lens. Where they cross the edges of the pebble, they exhibit the same form of outline on the contiguous surfaces; so that, if isolated, they would appear to be actually lenticular in form. They are composed of smoky-colored quartzite, cross-barred with white, and contrast conspicuously with their matrix. My first impression, on seeing the pebble, was, that the fossils were rhizopods, related to the nummulites; but an inspection with a lens indicated them probably to be hydroids related to the graptolites, and especially to Phyllograptus. The lenticular sections of the fossils generally range from four to nine millimetres in length by one to one and three-eighths millimetres in thickness at the middle. As represented in the accompanying figure, the white bars crossing the short diameter of the lenticular sections are produced by what appear to be two rows of cells, with their bottoms applied together inwardly, and separated by a median, slightly undulating line. Many of the cells are flask-shaped, with the neck directed outward, and reaching the convex surface of the fossil. In others the neck is variably shorter, and in some appears to be absent, the difference apparently being dependent on sections of the cells at different levels. In the specimen figured, the beaked cells appear somewhat curved or retort-like, but in other specimens they are straight. The body of the cells mostly exhibits a nucleus of smoky hue, while the walls of the cells are white, though not sharply defined from the nucleus. The appearance seems to be due to the interior of the cells being occupied by a more translucent deposit of silex. In several of the fossils like the one figured, the number of cells in each row is about two dozen. The lenticular sections of the fossils are not all equally symmetrical with the one figured, some bulging more on one side than the other, and a few being thicker towards one pole than the other, and less acute at the end. Two specimens, of which one is eleven millimetres long, are slightly constricted near the middle, and look like conjoined pairs. Another specimen, unlike the others, extends across the pebble for about eighteen millimetres, is of nearly uniform width throughout, and is broken near the middle. One extremity curves laterally, and ends in an obtusely rounded manner: the other extremity extends obliquely in an opposite direction, tapers a short distance, and is then prolonged to a broken end.

HALDEMANA PRIMAEVA.

From the well-known graptolites of the Silurian rocks, our fossil differs especially in the cells being embedded in a common basis or matrix, in this respect resembling such polyzoa as Cristatella in comparison with Plumatella. The age of the fossil I am unable to read in the pebble, though doubtless others may be able to do so. In Lebanon county the prevailing rocks are of lower Silurian age; and it is probable the pebble pertains to one of these, though it may have travelled from another source. The character of the fossil appears to be different from any previously indicated; and I would propose to name it Haldemana primaeva, in memory of the one who called our attention to this interesting representative of the hydroids. JOSEPH LEIDY.

Phosphatic rocks of Florida.

In my 'Report on cotton-production in Florida,' vol. vi. of the quarto series of census reports, p. 14 (194), there is an analysis, by Dr. G. W. Hawes, of a building-stone from Hawthorne, Alachua county. This rock contains 16.02% of phosphoric acid; and it was considered as of eocene or oligocene age, like the rest of the limestone of the peninsula.

During the past winter, Mr. L. C. Johnson of the U. S. geological survey has been collecting in Florida, and has made a very important discovery. He finds that the building or chimney rock in several of the counties of the state, and probably wherever it is found, like that occurring at Hawthorne, is generally phosphatic. Specimens sent to me for examination by Mr. Johnson, from Suwannee, Levy, Alachua, and Marion counties, are strongly phosphatic, varying in content of phosphoric acid from five to ten per cent. The material which contains most phosphoric acid is a porous, soft rock, consisting in the main of grains of quartz, with occasionally a little carbonate of lime, but seldom very much. In some of the specimens, especially those from near Waldo, the soft friable rock contains small nodular masses of nearly pure phosphate of lime disseminated through it. The largest of these nodules is some two inches in diameter.

By the discovery of a highly fossiliferous bed near Waldo, Mr. Johnson has been able to fix the age of these phosphatic rocks as miocene or later; and this view is confirmed by the specimens from Rock Spring in Orange county, collected by me in 1880, which Professor Angelo Heilprin determined from the fossils to be miocene. I have recently tested all these specimens, and find them, without exception, highly phosphatic.

From these facts, and others presented in the subjoined letter of Mr. Johnson, it appears that the deposits of miocene age are generally spread over the Florida peninsula, if indeed they are not co-extensive with those of the oligocene.