AMONG THE WONDERFUL achievements of modern explorers should be placed on record the history of the successful expedition of Capt. Willard Glazier in search of the ultimate source of the Mississippi River. This daring explorer, at the head of a large and well-equipped party, penetrated the untrodden wilderness of central Minnesota, and reached Lake Itasca, which has so long been regarded as the source of the great river. Not content with this achievement, he plunged boldly into the forest, and succeeded, after great exertions, in forcing his way three miles farther southward, where he came to a second lake, also drained by the Mississippi, and forming, as he states, its uttermost head. To this lake he gives his own name, that the fame of his achievement may be perpetuated. It is perhaps unfortunate, that, as this whole region was sectionized by the general land-office several years previously, lines having been run at every mile, a prior claim to this great discovery may arise. In any case, however, the names of Capt. Glazier and John Phenix as explorers will go down to posterity side by side.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The new commissioner of agriculture.

In your notice, April 10, of the appointment of Col Coleman to be commissioner of agriculture, you commend the selection because of his "knowledge of practical agriculture, and his experience of men and affairs," and indirectly condemn it because he does not have "any special or intimate acquaintance with the science of agriculture;" your idea seeming to be that the agricultural department should be organized as a 'scientific bureau, with a technical expert at its head.'

Col. Coleman has one additional qualification, in which he differs from all previous commissioners: he is without a pet hobby. His course will be to elevate the work of the bureau from the advocacy of some single theory, to the development of what is best in a variety of theories, and the adaptation of that best to the practical work of the agriculturist. To carry out such a course, it is not necessary that the head of the bureau should be a 'technical expert:' indeed, it is better that he should not be. Technical experts in one or two or three branches of scientific agriculture are, as a rule, those gentlemen who have bees in their bonnets, and seem to be incapable of such universal control as ought to be required; and experts in all branches cannot be found. If one have the ability to distinguish and recommend what is best, to discover and make use of the ability of specialists, to restrain the disposition in any one department of his general work to override or belittle the rest, that one is the person to have charge as the general head. Such a person is Col. Coleman. His experience of men and affairs, and the general appreciation of his fitness in the conditions you pointed out, by all classes of men, prove the wisdom of the selection.

When the bureau is to be properly organized as a scientific one, will be after the so-called agricultural colleges, founded at so enormous an expense by the general government, shall have done what they were intended to do, — raise up young men and women, first, to an appreciation of what scientific agriculture is capable; and, second, to an educational ability to pursue and apply it. Until the old ruts are abandoned by men capable of understanding the benefit of a new and well-made road, such men to be those who are practical workers themselves, there will be no use of attempting science in a place the province of which is really only the collation, selection, and diffusion of such knowledge as can be used in the gradual development of all the resources of the country. When the work of such an education is begun at the right end, it will have its natural sequence in a higher gradation of the work of the head of the agricultural bureau, if any thing higher than that which will be accomplished by the new commissioner is needed. AUG. F. HARVEY.

St. Louis, April 19.

Auroras.

Various speculations are met with from time to time as to the extent of any individual display of an aurora. A prominent French writer has recently attempted to show that auroras are not widely extended, and has instanced the case of the most brilliant aurora of modern times at Brussels, Belgium. This phenomenon occurred on Feb. 4, 1872; and the writer emphasizes the fact that it was not seen at Godthaab, Greenland. Meteorological observations at the latter place for this date are not accessible; but there is little doubt that, if there were such, it would be found that the sky was clouded, thus preventing the appearance. At all events, the observations made on the American polar steamer Polaris, which wintered about four hundred miles north of Godthaab, show the most brilliant aurora of the winter on Feb. 4. The same aurora was seen throughout the northern United States.

When we consider, that, as shown by Professor Loomis, during a maximum period of sunspots there are also the greatest number of auroras, and that great solar outbursts are followed or accompanied by magnetic storms and brilliant auroral phenomena, we are led to the view that the cause of the latter may be superterrestrial, acting either directly or indirectly through induced earth-currents.

It would seem as though all auroras are a manifestation of cosmic energy, and that their extent and brilliancy are limited by the amount of energy, by the vapor in the air, by the temperature, etc. Professor Lemström in Finland obtained a simulation of the aurora by artificial means during one winter; but during the next winter, which was barren of brilliant auroras, both he and Professor Tromholt, the latter in Iceland, failed in this. It may be that the first success was owing as much to earth-currents, or a condensation of atmospheric electricity, as to the artificial means employed.

The question of the source of the electricity of an aurora is an important one in meteorology; and

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.