

"The Thirteenth Annual Meeting of the American Association for the Advancement of Science."

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FROM OUR SPECIAL REPORTER.

The Thirteenth Annual Meeting of the American Association for the Advancement of Science.

SPRINGFIELD, August 6, 1859.

ADDRESS OF PROFESSOR CASWELL.

In accordance with annual custom, the retiring President of the Association, Prof. Alexis Caswell, of Providence, R.I., delivered his valedictory address in Hampden Hall on Friday evening. Before the hour announced, (8 o'clock) the hall was filled by the most literary and scientific audience that has ever assembled there.

The Professor gave obituary notices of Prof. Young of Dartmouth, Prof. Mather of Ohio, and Prof. Olmstead of Providence, all of whom were active members of the Association at the time of their decease. That upon Prof. Olmstead was especially replete with affectionate remembrances. The Professor proceeded to enquire, what is science? Science, said he, is priceless. It cannot be bought. It has its own grandeur. The object of the Association should be to render science available--to bring the great public into contact with scientific truth. But aside from this, if they did not have a paper read upon scientific research, the fact of their meeting would be of value. The Association should have two things in remembrance--that science is an object worthy of pursuit, and that combined efforts are necessary to its progress. After an elaboration of these points, he gave an interesting review of the progress of science in America.

In 1761, Prof. Winthrop of Harvard College visited Newfoundland to observe the transit of Venus, which occurred on the 5th of June. He was sent out in the "Providence," a sloop which was fitted out at public expense. More elaborate preparations were made in various parts of the country to observe the transit of Venus in 1769. These might be considered as the beginnings of American astronomical science.

Up to 1840 we had done almost nothing. At that time the U. S. coast survey had several good instruments. Yale college had a refractor of 10 feet focal length and a 5 inch object glass. This was much the largest refractor in the country. Williams college had a Herschelian refractor of 10 feet focal length, equatorially mounted, and a very good transit instrument. The Hudson observatory, Ohio, had an equatorial of 4 inches aperture.

Cambridge had one about the same size. These were our best instruments.

Astronomical instruments are of two classes. One shows what the heavenly bodies are and the other where they are. Of the first class we have the great refractor at Harvard, of 15 inches clear object glass, which with that at Pulkowa, Russia, are far in advance of all others in the world. At Ann Arbor there is an instrument of 13 inches aperture, one at Cincinnati of 12, and one at Washington of 9 6-10, all of which are telescopes of great power. We have mounted six meridian circles of the most refined construction reading off to a single second of arc, and with the microscopes attached reading to tenths of seconds, while the chronometers give the time much less than the tenths of seconds. These circles are at Cambridge, Washington, Georgetown, West Point, Ann Arbor and Albany--the last named is second to no other of the kind ever made. American astronomical observers had attained a high position. The astronomical and geodetic labors of the U.S. coast survey, including the methods of longitude by the electric telegraph, show consummate skill in the conduct of difficult researches, and reflect the highest honors upon the scientific character of the country. None of the great geodetic enterprises of modern times has been so thoroughly accurate as our own.

The application of the electric telegraph to astronomy is known in Europe as the "American method." The American Nautical Almanac shows what progress we have made in computation. There was still a higher department--higher mathematical analysis which developed laws, and which takes the laws as we now have them and demonstrates what must be the condition of the solar system any time to come. A higher and nobler function of the human mind than this we can hardly conceive below that of paying its devout homage to the Supreme Architect of these countless worlds above us. The name of Bowditch stands as a proud monument of American science, and other names there are which will have an honorable place assigned them by posterity as being among the great geometers of the age.

The next transit of Venus in 1874 is regarded as the surest means of verifying, or correcting the previous determinations of the sun's parallax. The astronomer royal of England has already called the attention of astronomers to this problem, and says that it is not too soon to begin the preparation for so important an event. He looks to the astronomers of the United States to take a leading part in the enterprise, and adverts to the peculiar advantages which will result from connecting together a series of stations covering a great extent of country by the telegraph. Photograph is another wonderful auxiliary to astronomical research, and its application is due to American genius. The late director of the Cambridge Observatory was the first to make the application and show its importance. That sun-painting art which delineates so quickly and truthfully the features of the human face divine, delineates with equal facility and precision the features of the sun, moon and planets. Much is expected from American science. It remains for us to encourage each other and show what may be done by thorough and generous devotion to a noble cause. Our united efforts surely will not be fruitless.

FOURTH DAY--SATURDAY.

In accordance with a vote of the Association on Friday, there was no regular meeting held on Saturday, but the first divisions of sections A and B held the usual forenoon session, each commencing at 9 $\frac{1}{2}$ o'clock.

As usual, each meeting was quite fully attended, and the reading of the different papers gave unmistakeable pleasure and information to the majority of those present.

The following is a synopsis of the proceedings:--

SECTION A--MATHEMATICS, PHYSICS AND CHEMISTRY.

The section met at 10 A.M., and Dr. B. A. Gould, Jr., was elected chairman for the day.

Prof. B. A. Silliman, Jr., read a paper by Prof. F.A.P. Barnard, upon "the Means of preventing Alteration of metallic surfaces employed to close and break a voltaic circuit."

This was done by the application of Fizeau's condenser. Prof. Bache spoke of the result as a great desideratum, and said that former attempts to effect it had failed.

Prof. Bache read a paper "on the currents of the gulf-stream at the Florida reef." This paper was a supplement to the Professor's investigations of the Gulf Stream. The portion on which the observations were now presented lay between Florida Key and Cuba. He stated that the observations of temperature were made at all depths, and at all distances from the coast. The Professor also said that there is a sharply defined cold wall, which enables a navigator who observes the temperature to find his position within five miles at the edge of the stream. By thus tracing the stream back to its very source, the current is still found very warm, with its cold wall as well marked as it is further north, while at the straits of Bemini there are successive bands of cold and warm water.

In answer to an inquiry by Capt. Hunt, Prof. Bache said he thought there was an eddy current upon the west of Cuba.

Prof. Peirce next read a paper upon the History of the Theory of the Comet's Tail, a continuation of his former discourse before the Association, after which the section adjourned.

SECTION B--NATURAL HISTORY AND GEOLOGY.

Prof. O. B. Hubbard was called to preside over the business of the day in this section, which commenced with the reading of a paper by Prof. Asa Gray of Cambridge. His subject was a "Theoretical Explanation of the Similarity between the Flora of North-eastern Asia and that of Eastern North America."

The paper was a very well prepared one, and contained much instructive and entertaining matter, but want of space prevents our giving even an abstract of it.

Prof. Gray was followed by Prof. W. P. Blake, with a paper of "Observations on the Geology of the Rocky Mountains, in the vicinity of Santa Fe, New Mexico."

The Professor occupied the attention of the audience closely for half an hour, with evident pleasure to them.

The meeting closed by the reading of a short paper on "Ornithichnites," by Prof. R. Field, and then adjourned to Monday.

THE EXCURSION TO AMHERST COLLEGE

At 12 $\frac{1}{2}$ P.M. the members of the Association and their ladies, to the number of four hundred, proceeded by railroad to Amherst, in accordance with the invitation received on Thursday. At about two o'clock they arrived at the railway station in Amherst, where they were met by the Undergraduates of the College. The students gave three mild cheers for science, and then, preceded by a band of music and a banner inscribed "Honor to Science," escorted the company to the beautiful grounds of the college. Here, without any speeches or other formalities, the ladies and gentlemen scattered over the place, wherever fancy led. The paleontologists soon filled the room of the Appleton Cabinet, where Professor Hitchcock explained to them the "footprints on the sands of time." The chemists were all to be found in the Octagonal Cabinet, warmly discussing points of mineralogy. Here also were astronomers examining meteorities, and the antiquarians buried themselves in a small room, all the appointments and furniture of which was brought from the ruins of Nineveh. Many were to be found admiring the beautiful telescope, which was made by Alvan Clarke, Esq., of Cambridge, while the Williston Laboratory was filled with the curious about retorts and crucibles. At 5 o'clock all assembled in Williston Hall, where a sumptuous collation was provided. After the collation had been disposed of, the company were addressed by Mr. Dickinson representing the citizens of Amherst, by President Stearns representing the College, by President Alexander representing the Association, and by Prof. Hitchcock representing the geological collection they had come to see. At six the Association again proceeded to the railroad station, whence after more cheers from the students, rather more heartily than those given earlier in the afternoon, they were hurried back to Springfield, where they arrived safely at eight o'clock, charmed by the pleasure of the trip.

Amherst College has, since its foundation, been a highly respected institution, and it is certainly now most vigorous. It has three dormitories, containing 112 rooms, and four other elegant buildings, in which are the observatory, the recitation and lecture rooms, the various museums, &c., &c., &c. It is an eminent nursery of science, and especially of that science which investigates the changes through which our globe has passed since it first emerged from whirling mistiness, and became a globe. Besides these attractions to the man of science, Amherst affords many gratifications to the eye of taste. From the eminence on which the college stands we have a glimpse of that lovely valley of the Connecticut, which on Saturday afternoon shone with glorious freshness and tenderness of beauty. The arrangements of the day were simple and delightful, and the collation of sandwiches, ice cream, and various kinds of delicious "home-made," cake was enough to create an appetite for the most fastidious.