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THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 368,

For the Week ending December 16, 1882.

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THE TRANSIT OF VENUS.

The sky was overcast throughout a great part of the United States on the morning of December 6; and, as a rule, the atmospheric conditions during the time of the transit were not favorable for continuous and exact observation. Yet there were but few places at which no observations of value were possible, while at most of the stations enough was accomplished to make the watching astronomers fairly well pleased with the results of their day's work.

In this city the observations were fairly good after the first contact, which was missed, until toward the end of the transit, when the sky became overcast again.

At the Naval Observatory, Washington, all four contacts were observed with the twenty-six equatorial, the first and last contacts through thin clouds. The sun was obscured during the middle of the day, yet a number of good measurements of the diameter of Venus were secured. No black drop or other extraordinary phenomenon was observed, except by Superintendent Sampson at the last contact. Some fifty photographs were secured.

At Princeton, Professor Young observed all four contacts, partly through thin clouds, but on the whole satisfactorily, and took one hundred and eighty-eight photographs, mostly excellent; some were affected by clouds. Complete measures of the diameter of Venus were obtained by both filar and double image micrometers. Spectroscopic examination of the planet's atmosphere showed lines of water vapor conspicuous, and some unknown lines.

At the Allegheny Observatory, Pittsburg, Professor Langley's observations were only partially successful. Clouds prevented exact determinations of contacts and all photometric and spectroscopical work. He noticed a curious and novel phenomenon as the planet was entering upon the solar disk. When Venus had about one half entered on the sun's face, a tolerably bright point of light was seen near the circumference of the dark body of the planet outside the sun, and where no direct ray of sunlight could reach it. The position angle of the center of the bright spot was about 172 degrees, and it extended for something like 30 degrees along the planet's limb. It was luminous and distinct, and, Professor Langley thinks, was certainly not a phenomenon of irradiation, nor due to any instrumental cause, but what its physical signification is he could not conjecture. It was observed with the great equatorial and a magnifying power of 244, used with the polarizing eyepiece by Professor Langley, but was seen also and quite independently by his assistant, Mr. J. E. Keeler, with a very much smaller telescope and a power of 80.

Observers in other places noticed light spots in the surface of Venus, some suspecting them to be snow-fields.

The observations of Professor Eastman, at Cedar Keys, Florida, were quite successful, though the first contact was lost by the intervention of a cloud. The second contact was obtained very well; no black drop or ligament was seen, and the limbs of Venus and the sun were very steady. The sky was mostly clear from 11 o'clock to 1h. 40m. One hundred and fifty photographs were taken with dry plates and thirty with wet plates, all good. The third and fourth contacts were very well seen, with no black drop.

The observations made at Yale College were much impaired by clouds. Professor Waldo reports over one hundred and fifty photographs, showing the full sun with a reference line from a horizontal mercurial surface photographed at the same time. The heliometer observations were particularly successful, and the definition of the sun in spite of the clouds was such as enabled the atmosphere of Venus to be clearly visible in the heliometer, and the silvery aspect which this atmosphere assumed between the third and fourth contacts was clearly discerned.

Considerable good work was done at Cambridge Observatory. The German astronomers at Hartford, Conn., secured eight sets of observations with the heliometer. The German party at Aiken, S. C., were less fortunate. The French observers at St. Augustine, Fla., had a clear day. All the contacts were perfectly taken, two hundred photographs were secured, and many micrometrical observations were made. Professor Asaph Hall and the Belgian party at San Antonio, Texas, missed the first two contacts, owing to clouds. The last pair were taken perfectly, no black drop or point of any kind being seen. Professor Houzeau obtained, in addition to these contacts, one hundred and twenty-five measurements. Professors Hall and Woodward got over two hundred good photographs.

At the Lick Observatory, Mount Hamilton, Colo., the day was splendidly clear, and many photographs were taken.

The European observers were generally thwarted by bad weather. Favorable observations are reported from Cape Town and Durban, South Africa.

Professor Davidson's party in New Mexico were favored with a clear sky and steady atmosphere. The contacts were clearly observed. Two hundred and sixteen excellent photographs were obtained, and a large number of measurements were made with great precision. Indeed, not a single item in the long programme of the day's work was missed. At nearly all the Mexican stations the weather was good. The observations of the French Commission in Puebla were entirely satisfactory.

Favorable reports are also made by observers in the West Indies and Central America. At Melbourne, Australia, successful observations were made, but observers in Queensland and Sydney were disappointed. The American party at Wellington, New Zealand, took two hundred and thirty-six photographs.

THE GREAT STATUE OF LIBERTY.

A large and enthusiastic meeting was held in this city November 28, to promote the subscription for the pedestal of Bartholdi's "Liberty Enlightening the World," to be presented to the United States by the French nation and erected on Bedloe's Island, New York Harbor. A number of addresses were made by prominent citizens.

The chairman of the committee having in charge the collection of money for the pedestal, Hon. Wm. M. Evarts, after reviewing the circumstances under which the project was started in our Centennial year, said that a communication had just been received from the Committee of the Franco-American Union describing the popularity of the project in France. As early as the year 1881 the enterprise had been indorsed by 181 towns in France, acting through their municipal council, by 40 general councils of as many provinces, by all the chambers of commerce of the great cities of the republic, and by 100,000 individual subscribers. The statue will probably be ready for transportation next summer.

Touching the magnitude of the proposed monument, Mr. Evarts said:

The simple statue will be, from the plinth to the top of the torch, 145 feet in height. From the water level up to the highest point in the span of the Brooklyn Bridge is but 135 feet—10 feet less than this truly colossal statue. The dimensions of the plinth, the space occupied by the feet and drapery of the figure, is 40 feet square—as large as a house. It is fitting that so noble a monument of skill and industry, so generous a contribution, should be framed as a munificent gift from the French people, as one of the great evidences that the great international relations of value and importance between great countries are no longer maintained by courts and cabinets, but spring out of the intermingling pulses of the people.

The great Colossus of Rhodes, known in its time as the seventh wonder of the world, was erected to show the gratitude of the Rhodians to the Egyptian king who was their ally in war when their liberties were threatened by the King of Macedon. They were a small people, inhabiting an island of but 450 square miles, but that great work of theirs was erected at a cost of 300 talents, of the value then of between $400,000 and $500,000. It was but 105 feet high. This statue of Liberty Enlightening the World will be 145 feet high, upreared upon a pedestal of equal height, and will be, not the seventh wonder of the world, for the wonders of the world are never ceasing in number, but will be the wonder of the world as much greater than the Colossus of Rhodes as the world now, of which it will be the wonder, is greater than the world of the Mediterranean Sea in classic times. The largest modern statue is the one near Lake Maggiore, in Italy, erected to the great Christian saint, Charles Borromeo, which, upon a pedestal 40 feet in height, is in itself 66 feet high. Nothing in the history of the world has approached the greatness of this statue of Liberty. Our genius did not conceive so great a statue; our art and our munificence have not contributed to its production. This great free gift we are simply called upon to receive, to place upon a perpetual site under the perpetual care provided by the Government of the United States, on a pedestal that comports in dignity and in solidity with the statue it is to bear up, and which shall comport with the wealth and the numbers of these great cities and this great country, and show our appreciation of the debt we can never repay to France, and which she simply adds to by this magnificent gift. The numbers of those who will come hither to see the light of this commemorative statue no man can count, and they shall not cease coming until liberty itself shall have ceased to enlighten the world, nor until this home of the free shall cease to attract the footsteps of the multitudes that seek this shrine and this safety for their love and exercise of liberty.

All the conditions of our acceptance of this great conception and great execution are already fixed. The French have spent $250,000 upon the statue, and the best computation, without unnecessary expense, fixes the cost of the pedestal at $200,000 to $250,000.

THE PROPOSED COTTON CENTENNIAL.

The great success of the cotton fair at Atlanta, and the resulting advantages to the cotton growing States, have led to a still more ambitious project, which the South ought not to allow to fail. It is nothing less than a World's Fair in commemoration of the hundredth year of the cotton industry of this country. The first shipment of American cotton across the Atlantic was made in 1784, when eight bags were sent to England, where the cotton was seized by the customs officers on the ground that it could not have been grown in the United States, and was therefore liable to seizure under the shipping acts as not imported in a vessel belonging to the country of its growth.

The National Cotton Planters' Association of America are responsible for the proposition and the choice of date for holding the fair, and are now waiting to see which of the commercial cities of the South will subscribe the half million dollars for the choice of location. In a recent press communication the President of the Association, Mr. F. C. Morehead, says:

"It is proposed to raise not less than $2,500,000, one-fifth of which, at least, will be required as a subscription from the city securing the exposition. Every kind of machinery used in the manufacture of cotton is expected to be exhibited in motion and at work just as in the factory. The utmost importance will be attached to exhibits of improved