ASTRONOMY.

THE LATE PARTIAL ECLIPSE OF THE SUN, AND PENNULE'S COMET.

To the Editor of "SCIENCE:"

Though rather late in the day, I send the results of our eclipse observations on the morning of December 30 and 31: I observed the last contact with the diffraction spectroscope attached to the 9½ inch equatorial. The observation was made through the C line, the slit being *tangential* to the limb at the point of contact, and somewhat widely opened. Although the air was very unsteady, and the seeing simply "horrible," yet the instant of the moon's leaving the limb of the sun, as shown by the sudden reappearance of the chromosphere, was well marked. The time was $20^h\ 49^m\ 51^s.0 \pm 0^s.5$, Princeton mean time, or $20^h\ 40^m\ 16^s.5$ Washington mean time.

Mr. McNeill, with a telescope of 3 inches aperture and power of about 40, lost sight of the moon at $20^h\ 49^m\ 36^s$ P. M. T., 15 seconds earlier.

I may mention in this connection that Pennule's comet, as observed here December 18th, 19th and 22d, showed *two* faint tails. One of them was directed, as usual, very nearly opposite to the sun. The other was pointed roughly towards the sun, though deflected some degrees toward the north; the two streamers made an angle of about 150° with each other. Each was about 30′ long on the 18th, and neither was seen after the 22d.

C. A. YOUNG.

PRINCETON, N. J., January 12, 1881.

To the Editor of "SCIENCE:"

Mr. Edwin F. Sawyer has given a very interesting description ("SCIENCE" No. 19, p. 236), of the large bolide of October 25, and the special meteor stream, to which it probably owed its origin, is one which merits prominent notice from the fact that it supplies fireballs of the largest type.

I have collected accounts of no less than 26 bolides, seen during the interval October 26 to November 9, within the last 15 years, which distinctly radiated from this remarkable shower near ε Arietis.

I saw a large meteor belonging to it on Oct. 30, ($9^h 50^m$), 1880. While engaged in telescopic observation I was somewhat startled by two prolonged brilliant flashes, which caused me to turn quickly and I saw at once a very intense meteor streak projected on the sky just S. of α Arietis. It was broken in the middle and endured 25 seconds. Its position was from 38°+18° to 26°+22°.

I received a letter the following day from Mr. I. Baxendell, F. R. A. S., of Southport, saying he had observed a large meteor on October 29, at $9^h\ 50^m$, with a path from 31°—1½° to 16°—17°. The time agreed exactly with that recorded at Bristol, and the two paths gave the radiant at 46°+15°, which agrees fairly well with that of the notable shower alluded to by Mr. Sawyer.

In further confirmation I may add that on November 1, $10^h\ 50^m$, Mr. H. Corder, of Chelmsford, observed a bright meteor = Jupiter, which had an apparent path from 275°+56° to 257°+43° and obviously took its departure from the same radiant as that of the fireballs of October 25 and 30.

W. F. DENNING.

ASHLEY DOWN, Bristol, England.

The "Report of the Kew Committee for the year ending October 31, 1880," contains some interesting information connected with an institution which is engaged in a department of research not, as yet, covered by any observatory in this country. The work at Kew is divided into seven sections:—Magnetic observations; Meteorological observations; Solar observations; Experimental in connection with either of the above departments; Verification of instruments; Aid to other Observatories; Miscellaneous.

The Magnetic observations, embracing the automatically registered curves of the Magnetograph, and observations of Declination, Dip, Deflection and Vibration, seem to indicate the approach of a more disturbed period than has occurred for several years. In order to collect more accurate data relating to this subject, arrangements have been made with other magnetic observatories in different parts of the globe to carry on a series of synchronous observations, and the comparison of the results will probably throw some light upon the laws which govern many of these phenomena. In the Meteorological department, self-recording instruments for the continuous registration, respectively, of atmospheric pressure, humidity, wind (direction and velocity) and rain have been maintained in regular operation throughout the year, in addition to standard eye observations made five times daily for the control of the automatic records. Abstracts of the meteorological results are published weekly.

Observations of the sun were made on 246 days, and on only 27 of those days was the sun's surface found to be without spots. A complete copy of the solar drawings made by Schwabe between 1825 and 1867 having been obtained, the Observatory has now in its possession a complete record of the condition of the sun's surface from November, 1825, to the present date. Transit observations of the sun have also been obtained at intervals to correct the local time.

The Experimental department embraces work upon a "Winstaneley's Recording Radiograph," for registering the amount of radiation from the sky, a "Glycerine Barometer," a "Standard Air Thermometer," and various other instruments. A large number of meteorological instruments have been verified and their constants determined for other Observatories and for instrument makers, and facilities for study and experiment have been furnished to a number of individuals interested in the various branches of the institution.

The new observatory which is being erected at Nice under the auspices of the *Bureau des Longitudes*, will probably cost over two million francs. The buildings are partly finished, and Thollon has already done some excellent work there, in spectroscopy. Besides a small equatorial, a meridian circle, and accessory instruments, there is to be a large equatorial of 29.9 in. aperture and 59 ft. focal length, constructed by M. M. Henry, of the Paris Observatory.

W. C. W.

WASHINGTON, D. C., *January* 12, 1881.

THE OBSERVATORIES OF THE UNITED STATES.

I.

CARLETON COLLEGE OBSERVATORY, NORTHFIELD, MINN.

The United States is fortunate in possessing a greater number of well equipped astronomical observatories than any other country in the world. These are distributed over a wide extent of territory, ranging from the shores of the Atlantic to the Pacific coast, and extending from the tropical regions of the Gulf of Mexico, to Lake Superior on the North.

A brief description of some of these Observatories and the appliances at their command may be of interest to our readers, and we propose on this occasion to offer some interesting facts regarding one which has been more recently organized.

The course of instruction in Astronomy at Carleton College, Northfield, Minn., appears to be well organized, and, although the College was fully organized so recently as 1874, it appears to have a well equipped astronomical observatory and every requirement for teaching Astronomy. We are informed by Professor W. W. Payne, in