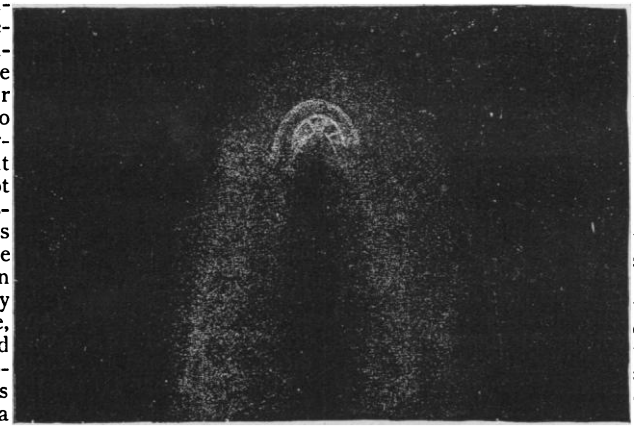
THE COMET.

The comet is daily becoming a fainter object, and astronomers are now employed in making investigations based on their observations.

We understand that Professor O. Stone, of Cincinnati, has published a statement that he saw the nucleus of the comet divide into two parts. Professor Stone is not one likely to be mistaken in an observation of this nature, but we understand he has not been confirmed in this discovery, as observations since made with the large equatorial at Washington have failed to show any division. A disturbance, however, has been observed in the nucleus, which Professor Skinner considers might be mistaken for a division as described by Professor Stone.

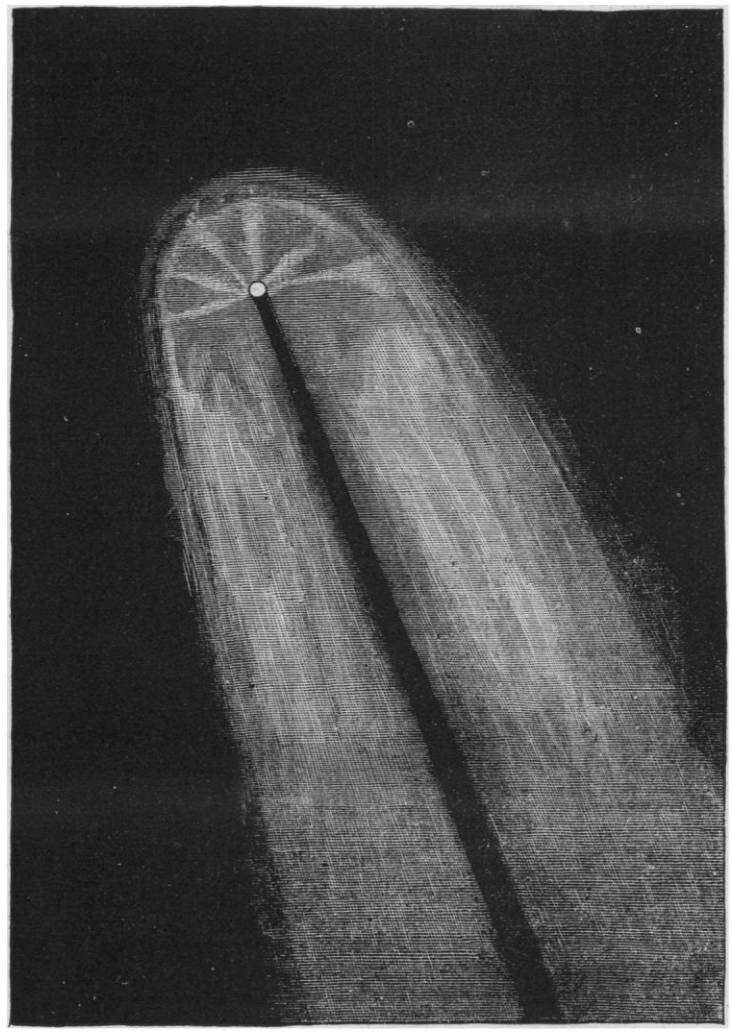


HEAD OF DONATI'S COMET, AFTER BOND.

On the 6th of July the comet was observed by Mr. Rock of the Naval Observatory, who thus describes what he saw:

"A bright tongue of light about one revolution long in direction of tail, with a slight node near end and curved."

In explanation of this Mr. Rock said: "I observed the comet at the time of its lower culmination about twenty minutes after midnight. The nucleus did not appear to be divided, but a bright band streamed out in the direction of the tail. This band was about fifteen seconds of the arc in length. Near the end of it was a bright spot, and that portion of the band extending beyond it was curved in the same general direction as the tail, but in a somewhat shorter arc. It is possible that the observer at Cincinnati was not able to distinguish the band of light which I saw uniting the nucleus and the node, and so concluded that he saw two nuclei. When I first observed the comet, on June 28, the coma was apparently homogeneous as it also was on July 2. On June 28, however, there were two spurs of light spreading away from the opposite sides of the head like angel's wings. On July 2, I did not observe these at all or they were very faint. On July 6 I observed the appearance that I have described. It may be that this was the same thing that I saw on June 28, observed from a different point of view. It is not improbable, however, that the nucleus has really divided. Comets appear to have a tendency to do that.



COMET OF 1881. AFTER PROF. HENRY DRAPER'S PHOTOGRAPH.

To a correspondent of the N. Y. *Tribune*, Professor Harkness said:

"We think that the November meteors are the debris of a comet which first made its appearance about the year 900. This debris, to all appearance, continues to trail along the whole orbit of the comet of which it formed a part and which has disappeared. The August meteors are assigned a similar origin. Biela's comet reappeared once after its nucleus had separated into two parts; it has never been observed since. All comets appear to diminish in brightness, and it is probable that they become gradually disintegrated. I have undertaken spectroscopic investigation of this comet, sufficient to convince me that the spectrum is the same as that of all comets. I made observations on June 28 and July 1 and 2. On June 28, I found a bright continuous spectrum with three bands very hazy, the whole indistinct. Evidence of polarization was not trustworthy, and I concluded there was no polarization. On July 1 the spectrum of the nucleus was right, showing two bands; wave lengths approximately 550.29 and 611.5. On July 2, I found a bright, continuous spectrum extending from about wave length 577 to 428; the coma gave three bright bands; wave lengths

approximately 548.4, 513.3, 467.2. The tail gave no continuous spectrum. The mean of eighteen comets observed gives us wave lengths as follows: 556.4, 512.7 and 470.6; the mean of two nights' work on this comet gave me 549.3, 512.4 and 467.2. These two sets of figures agree as nearly as could be expected, considering that I used in my observations a single 60° prism, and there can be no doubt whatever that this is the usual comet spectrum."

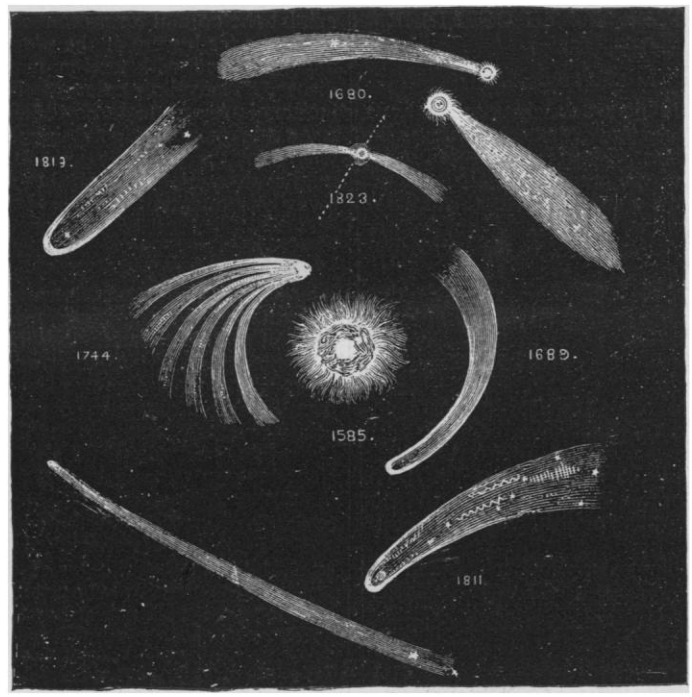
Professor A. Hall also observed that he had received from Baron Struve, of the Imperial Observatory at Palkova, an ephemeris of Encke's comet extending from July 29 to November 14, and preparations are making at the Naval Observatory for careful observations of that body, which is considered of great scientific interest.

We present our readers with an illustration showing the appearance of the comet in one of Professor Henry Draper's photographs for which we are indebted to Messrs. Harper Brothers, and we hope to shortly publish Professor Draper's mature views based on his observations and photographs, both of the comet and its spectrum.

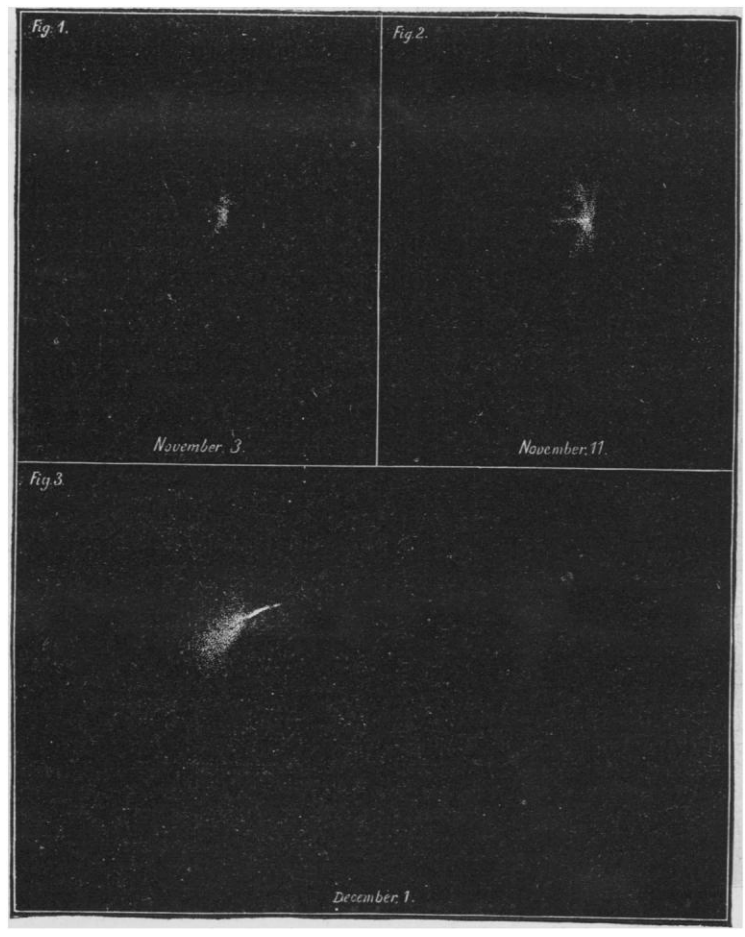
To a correspondent Prof. Draper gave the following particulars:

"In the spectrum of the comet there is one great band in the ultra-violet region beyond the line H. This morning I brought the spectroscope with me to the city, and have taken photographs of the spectrum of the electric arc with it. The electric arc contains carbon; not, in all probability, the pure element of carbon volatilized, but some compound of carbon—most likely a hydrocarbon. The spectrum of the electric or voltaic arc shows a strong band at the ultra-violet region, due to the presence of this carbon or carbon-compound. This spectrum I mean to compare with that of the comet, to see whether the bands in the ultra-violet region correspond in the two. If they do, the presence of some form of carbon in the comet will be demonstrated. My impression at present is that the ultra-violet spectrum of the comet does prove that it contains carbon, but I cannot speak with certainty until after I have made more careful measurements of the photographs. At all events, my experiments must settle the question.

We are indebted to Professor Pickering, of Harvard University, for some valuable observations which will be found in another column.



GROUP OF VARIOUS COMETS.



VIEWS OF ENCKE'S COMET, 1871

ON THE TAILS OF COMETS.

One of the most important articles in the June number of *Urania* is that by M. Th. Bredichin, on the Tails of Comets. After a series of investigations he arrives at the conclusion that the position, curvature and structure of a tail are explained by the repulsive force of the sun and by the effluvia of cometary matter from the nucleus towards the sun with a certain initial velocity or repulsion.