## ROYAL ASTRONOMICAL SOCIETY.

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No. 1.

CAPT. W. H. SMYTH, R.N., Vice President, in the Chair.

Major-General Sir Wm. Morrison, K.C.B. was balloted for, and duly elected a Fellow of the Society.

Discovery of a new Satellite of Saturn.\* By Mr. W. C. Bond, Director of the Observatory of Cambridge, U. S.

"As it may be interesting to the Society to know the evidence indicating the existence of an eighth satellite of Saturn, I subjoin, somewhat in detail, our observations upon it.

"On the 16th September, a point of light, resembling a star of the 17th magnitude, was noticed in the plane of Saturn's ring, between Titan and Japetus, by Mr. G. P. Bond, and entered by him in his diagram of the satellites and stars in the neighbourhood. On the 18th it was again seen similarly situated, and was recorded by us both, with a doubt expressed as to its character.

"The recurrence of nearly the same appearance on the 19th, induced us to apply the micrometer, with which the following measures were obtained from the object in question, which, for convenience, we shall designate by x.

- "These measures indicated that the suspected body partook of the retrograde motion of Saturn. At  $13^h$   $30^m$ , the distance of x from Saturn's centre was 256''; x following Saturn in the direction of the plane of the ring.
- "A map of the stars in the path of Saturn, for the two following nights, was made as a security against mistakes.

"The evening of the 20th proved cloudy.

"On the 21st the new satellite was compared with a star following it, near the plane of the ring.

Sept. 21st at 11<sup>h</sup> 34<sup>m</sup> distance of 
$$x$$
 from star 276"  
12 11 — 284  
12 51 — 293

\* See vol. viii. No. 9, for the simultaneous discovery of the same satellite by Mr. Lassell.

"The distance of x from the centre of Saturn was found to be,

Sept. 21, at 12<sup>h</sup> 30<sup>m</sup>, x following Saturn 220" 1 measure.

22 10 30 ---- 192 5 measures.

23 9 05 ---- 145 5 ,,

28 9 00 x preceding Saturn 156 5 ,,

- "On each of these nights, with the exception of the 22d, the observations were continued long enough to identify the satellite by its motion.
- "The presence of the moon prevented our obtaining further observations of the new satellite till the 13th of October, although we lost much time in observing accidental stars, which could only be distinguished from the satellite by their not partaking of the motion of Saturn.
  - "On the 13th of October it was again seen following Saturn,

At 
$$7^h$$
 40<sup>m</sup>  $x$  distant from centre of Saturn 202"  
Oct. 14 7 00  $x$  — 152

"The motion of x among the stars was sensible in three hours.

Oct. 15, at 9h 35m x distant from centre of Saturn 92".4, x following.

- "The foregoing positions are approximately satisfied by a periodic time of 21 days.
  - "The orbit is nearly coincident with the plane of the ring."

We are informed by Mr. Everett, that the name selected for the satellite discovered by Mr. Bond is "Hyperion."

Mr. Lassell complains, "that he has been completely baffled by the weather, which has never been clear, except on moonlight nights." He suspects that *Hyperion* varies considerably in brightness.

## Transit of Mercury.\* Nov. 8-9, 1848.

CAMBRIDGE. (Professor Challis.)
Greenwich M.T.

External contact 23 5 30.0 Professor Challis, Northumberland Equati,
Internal contact 23 6 47.8 Professor Challis, Northumberland Equati,
power 215.

23 6 47.0 Mr. Breen, 5-foot Equati,
power 120.

- "The external contact was noted when planet had made a very small impression on the sun's limb. The internal contact well observed."
- \* Several gentlemen have misunderstood the description of the transit inserted in p. 550 of the Nautical Almanac, and so lost the external contact, which is, however, a very unsatisfactory phenomenon. The description in the NA. applies to the transit as seen through an inverting telescope, i. e. the north, west, and east are the upper, right-hand, and left-hand limb, as seen in the telescope. This would have been evident on referring to the elements at p. 552. In the N.A. for 1849, p. xx, the Superintendent stated, to prevent such mistakes, "that the angles of contact have reference to the phases as seen in an inverting telescope."