

*Note on the newly discovered Eighth Satellite of Jupiter,  
photographed at the Royal Observatory, Greenwich.*

*(Communicated by the Astronomer Royal.)*

Since the date of the last communication successful photographs have been obtained of this object on the following nights:—March 27, 31, and April 3. From these it would appear that the object discovered is a satellite of Jupiter very much more distant from the planet than the sixth or seventh satellites. The following are the places deduced from photographs taken with the 30-inch reflector.

Date and G.M.T.	Exposure.	Apparent R.A.	Apparent Dec.	Sat. VIII—Jupiter.	
				R.A.	Dec.
1908. d h m	min.	h m s	° ' "	' "	' "
Jan. 27 12 41.4	64	8 45 51.86	+18 5 1.4	-0 8.29	-43 17.3
Feb. 1 11 52.1	111	43 20.67	17 36.3	+0 2.20	41 41.1
3 10 27.3	80	42 21.90	18 22 25.7	0 6.37	41 4.2
22 10 56.6	100	33 35.41	19 5 49.8	0 48.38	33 58.1
23 8 33.8	42	33 13.98	7 37.6	0 50.31	33 35.7
24 12 24.9	80	32 47.37	9 51.3	0 53.15	33 9.2
27 10 59.4	70	31 42.89	15 18.1	0 59.94	31 59.7
28 11 28.6	80	31 21.76	17 6.7	1 2.34	31 35.2
Mar. 27 8 54.3	43	26 32.33	47 53.5	2 11.35	20 59.9
31 9 16.5	165	26 40.24	49 12.3	2 21.55	19 38.1
Apr. 3 9 51.7	90	8 26 54.38	+19 49 38.8	+2 28.99	-18 40.2

The G.M.T. is the arithmetical mean of the times of beginning and end of exposure.

These places are definitive, replacing those given in the previous number, p. 373, which are provisional only.

The new satellite has also been photographed by Dr. Max Wolf at Heidelberg on March 3, 23, and 24, and at the Lick Observatory on March 8.

[A photograph of Jupiter's Eighth Satellite, as well as of the Sixth and Seventh Satellites, has since been obtained on April 24.]

*Note by Mr. Melotte.*

Throughout this and previous oppositions, in examining the photographs of Jupiter's sixth and seventh satellites a good lookout has been kept, with a view to detecting other satellites, should any exist. In view of the large gap between the orbits of the inner satellites and the sixth and seventh, the existence of others would appear not unlikely. On several occasions previous to this, suspected images had been noticed on the plates, and in some

Apr. 1908. *First approximation to the orbit of J VIII = CJ.* 457

cases (notably on four plates in 1905) images had been found on plates taken a few days before or after, which might possibly correspond. But the difficulty of distinguishing between photographic defects and true images is naturally very considerable, and, until the present occasion, it had never been possible in any case to obtain sufficient evidence to decide whether the images were real. A record of the positions of all suspected images is made for future reference.

*Royal Observatory, Greenwich:*  
1908 April 10.

---

*First approximation to the orbit of J VIII = CJ.*  
By A. C. D. Crommelin, B.A.

The hypothesis of retrograde motion gives a much more reasonable value of the distance of this object from Jupiter than the hypothesis of direct motion; it has therefore been provisionally adopted. Assuming that the distance of the object from Jupiter has remained sensibly constant during the period of observation (this assumption being justified by the uniformity of the rate of motion, when corrected for the varying distance and direction of the planet from the Earth), it is possible to deduce this distance by the curvature of the apparent path (the greater part of this curvature being due to the Earth's motion).

The result of several successive approximations gives the following values:—

Distance from Jupiter at inferior geocentric conjunction,	0.213
in astronomical units.	
Date of this conjunction . . . . .	1908 Feb. 20.0
R.A. of N. pole of orbit plane . . . . .	336° 25'
N. dec. " " " " . . . . .	54.48
Inclination to Jupiter's orbit . . . . .	32°
Daily angular motion about Jupiter . . . . .	0°.288

This satisfies all the observations within some 20"; a closer approximation could doubtless be obtained, but it is hardly worth while to do so till enough of the orbit has been described to make a reliable estimate of the solar perturbations, which must be extremely large. The rate of linear motion appears to have diminished by 1 per cent. in the period March 3 – April 3 as compared with Jan. 27 – March 3. This would be sufficiently explained by the Variation causing the motion to be most rapid at New and Full Moon.

The daily angular motion in an undisturbed orbit at distance 0.213 is 0°.310, with which the value 0°.288 is in satisfactory accord,