

vious, and that the present was a favourable time to discover the body.

The semi-axis major might vary from 35.04 to 37.90, and the period from 207 to 233 sidereal years. The brilliancy of the planet ought to be about one third that of Uranus at its mean distance, and its angular diameter at opposition 3".3.

The action of the new planet, with elements as above determined, reconciles with theory, within very narrow limits, the observations of Uranus, both modern and ancient.

Even this memoir seems not to have overcome the incredulity or the indifference of astronomical observers, for it appears hardly possible that search could then have been made in the place pointed out by Le Verrier, without immediate success.

On the 5th of October, (Comp. Ren., xxiii, 657,) Le Verrier presented the fifth and last part of his researches, in which he gives his reasons for concluding that the plane of the orbit of the new planet is inclined at least $4^{\circ} 38'$ to the plane of the orbit of Uranus. In a postscript, he adds, that on the 18th of September, he addressed a letter to M. Galle of Berlin, asking his aid in discovering the planet, and that this astronomer discovered the body on the very day on which the letter reached him. Its observed place Sept. 23, 12h 0m 14s, Berlin m. t., was R. A. $325^{\circ} 19' 17''$ and S. Dec. $13^{\circ} 24' 8''$; only $52'$ from the place assigned by Le Verrier. M. Galle was furnished with the Berlin Academy Star-map of the 21st hour, (by Bremiker,) then just published, yet other astronomers could with very little labour have made for themselves from the star-catalogues, charts abundantly sufficient for the detection of a new body of such brilliancy. The whole history of the affair evinces much distrust or apathy on the part of the astronomical observers, and undoubting confidence on the part of the mathematician,—confidence which the event has most fully justified.

The annals of science show that a discovery has often been made about the same time in different countries, and by persons unconscious of each other's labours. The present case offers another instance of this nature. In the Lond. Edinr and Dub. Phil. Mag., Vol. xxix, No. 197, Suppl. No., Dec., 1847, G. B. Airy, Esq., the Astronomer Royal, has published numerous letters and other documents, (most of which had already appeared in the London Athenæum of Oct. 3, 17, 31, and Nov. 28, 1846,) proving that Mr. J. C. Adams, of St. John's College, Cambridge, undertook, as long ago as 1843, an investigation of the anomalies of Uranus. As a result of his labours, he left, on one of the last days of October, 1845, at the Royal Observatory, Greenwich, a paper of which the following is an extract:—

"According to my calculations, the observed irregularities in the motion of Uranus may be accounted for by supposing the existence of an exterior planet, the mass and orbit of which are as follows:—

Mean distance, (assumed nearly in accordance with Bode's law.)	38.4
Mean sidereal motion in 365.25 days,	$1^{\circ} 30' 9''$
Mean longitude, Oct. 1, 1845,	$323^{\circ} 34'$
Longitude of perihelion,	$315^{\circ} 55'$
Eccentricity,	0.1610
Mass,	0.0001656."

If the English astronomers had now searched the Ecliptic, through but a few degrees on each side of the point here indicated by Mr. Adams, they would, with clear weather, undoubtedly have discovered the new planet within a week. That they did not do this, must probably be attributed to a want of confidence in the computation. Or if Mr. Adams' note had then been printed, he would have secured the glory which is now, according to the recognized rule, due to M. Le Verrier. So easily is a glorious opportunity lost forever!

The coincidence between the position for the planet assigned in Le Verrier's paper of June 1, 1846, and that which Mr. Adams had given, was so remarkable, that Prof. Challis undertook to search for the body, with the aid of the Northumberland telescope of the Cambridge Observatory, one of the largest refractors in the world. He commenced his sweeps July 29, 1846, and between this date and the time of the arrival of the news of the discovery at Berlin, he actually secured two observations of the planet, but without recognizing them until then. These places are.

	R. A.	N. P. D.
1846, Aug., 4d 13h 35m. 25	21h 58m 14s. 70	102 57 32.2
12 13 3 26	21 57 26.13	103 2 0.2

In a letter to Mr. Airy, dated Sept. 2, 1846, Mr. Adams gave results somewhat different from those communicated in October, 1845; the difference being due to the assumption of a mean distance about one-thirtieth less. He suggested, moreover, that "by still further diminishing the distance, the agreement between the theory and the late observations might be rendered complete, and the eccentricity reduced at the same time to a very small quantity.

The new planet has doubtless been seen at all the observatories in this country, and may be easily detected by a good spy-glass. In the *Sidereal Messenger* Vol. i, No. 6, Prof. Mitchell, the director of the Cincinnati Observatory, has given an interesting account of his first observation upon the body with the large refractor. Having received, Oct. 28th, the news of the discovery, he directed the telescope, soon after 6 p. m., to the region of the heavens occupied by the planet, taking his place at the finder, the assistant being seated at the large telescope. "The planet was described as a star of the 8th magnitude. On placing my eye to the finder, four stars of this magnitude were seen. The first was brought to the centre of the field of view of the Equatorial, and after examination by my assistant was rejected—a second was examined critically, and in like manner rejected. The third star, a little smaller and whiter than the other two, was now brought into the field of view, and instantly I heard the exclamation from my assistant—'There it is! there's the planet! with a disc round, clear, and beautiful as that of Jupiter!' My own eye was now placed to the eye piece of the great refractor, and to my unspeakable pleasure, I found a beautiful disc, so well defined, that without any knowledge of a previous discovery, it never would have been passed over for a moment." Prof. Mitchell immediately proceeded to measure the diameter of the disc, six measures being made by his assistant, and six by himself; the mean of the whole gave 2.523. This is somewhat less than the result given by Schumacher. The real diameter of the planet is probably more than 40,000 miles.

The name of the new planet seems not yet quite determined. The mythological designations of *Janus*, *Oceanus*, *Neptunus*, *Atlas*, &c., have been proposed. M. Le Verrier, to whom the right of imposing the name undoubtedly belongs, has delegated this right to M. Arago. The latter denominates it *Le Verrier*. It seems unwise thus to depart from the received system of nomenclature; as *Uranus* and the five small planets must then change their titles; and it is also quite possible that the names of future discoveries may be either unpleasantly short or immoderately long, or otherwise unsuited for this celestial use.—*American Journal of Science and Arts*.

THE

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MONTREAL, MARCH 1, 1847.

INHALATION OF SULPHURIC ETHER VAPOUR.

For the last two or three months, our exchange periodicals have teemed with remarks upon the narcotizing influence of the inhalation of sulphuric ether vapour, in surgical cases. We have attentively watched the progress of the discussions to which this novel mode of relieving the pain incident to surgical operations naturally led; and while we cannot but reprobate the method adopted by Mr. Morton, a dentist of Boston, (who claims the discovery,) in patenting the process, and endeavouring to render it tributary to his own pecuniary advantage, nor less, the encomiums passed upon it by Drs. Bigelow, Warren, and Hayward, of Boston, who lent themselves and their high names to the furtherance of the plans of the patentee, by recommending and countenancing what was