

But in all this, the Comet had been supposed to be affected only by the attraction of the sun. The planets must disturb its motion as they disturb each other. How would this disturbance affect the time and circumstances of its reappearance? Halley had proposed, but not attempted to solve, this question.

The effect of perturbations upon a comet defeats all known methods of approximation, and requires immense labor. "Clairaut," says Bailly,³⁸ "undertook this: with courage enough to dare the adventure, he had talent enough to obtain a memorable victory;" the difficulties, the labors, grew upon him as he advanced, but he fought his way through them, assisted by Lalande, and by a female calculator, Madame Lepaute. He predicted that the comet would reach its perihelion April 13, 1759, but claimed the license of a month for the inevitable inaccuracy of a calculation which, in addition to all other sources of error, was made in haste, that it might appear as a prediction. The comet justified his calculations and his caution together; for it arrived at its perihelion on the 13th of March.

Two other Comets, of much shorter period, have been detected of late years; Encke's, which revolves round the sun in three years and one-third, and Biela's, which describes an ellipse, not extremely eccentric, in six years and three-quarters. These bodies, apparently thin and vaporous masses, like other comets, have, since their orbits were calculated, punctually conformed to the law of gravitation. If it were still doubtful whether the more conspicuous comets do so, these bodies would tend to prove the fact, by showing it to be true in an intermediate case.

[2d Ed.] [A third Comet of short period was discovered by Faye, at the Observatory of Paris, Nov. 22, 1843. It is included between the orbits of Mars and Saturn, and its period is seven years and three-tenths.

This is commonly called *Faye's Comet*, as the two mentioned in the text are called *Encke's* and *Biela's*. In the former edition I had expressed my assent to the rule proposed by M. Arago, that the latter ought to be called *Gambart's Comet*, in honor of the astronomer who first proved it to revolve round the Sun. But astronomers in general have used the former name, considering that the discovery and observation of the object are more distinct and conspicuous merits than a calculation founded upon the observations of others. And in reality,

³⁸ Bailly, *A. M.* iii. 190.