Letter from Newton to Edmund Halley, dated 3 December 1724

<68r>

Dr Halley

I received from you formerly a Table of the motions of the Comet of 1680 in an Elliptic Orb. You there put the Node ascendent in Capricorn 2^{gr} . 2′. The Node descendent Cancer 2$^{gr.}$ 2′. The inclination of the plane of the Orb to the plane of the Ecliptic 61^{gr} . 6′. 48″. The Perihelium of the Comet in this plane Sagittarius 22^{gr} . 44′. 25″. The equated time of the Perihelium December 7^d . 23^h . 9′. The distance of the Perihelium from the ascending Node in the plane of the Ecliptic 9^{gr} . 17′. 35″. The Axis transversus 138,29571. And the Axis conjugatus 1,84812, the mean distance of the earth from the Sun being 100000. And in this Orb you computed the places of the Comet on November 3^d . 16^h . 47′. November 5^d . 15^h . 37′ & November 10^d . 16^h . 18′, as follows.

1680	Tempus verum	Long. comp.	Lat. comp.
Novem	3^d . 16^h . 47′.	♌ 29° . 51′. 22″.	1° . 17′. 32″ bor
	5 . 15 . 37 .	♍ 3 . 24 . 32 .	1 . 6 . 9 .
Leb. 10	7 . 16 . 18 .	15 . 33 . 2 .	0 . 25 . 7 .

The first of these three places you have inserted into the Table of the motions of this Comet in an Elliptic Orb, which you have printed in your Astronomical Tables where you treat de motu Cometarum in Orbibus Ellipticis. I beg the favour of you to reexamine the two last of them, viz those on November 5^d . 15^h . 37′ & November 10^d . 16^h . 18′.

In the same printed Table you have calculated the place of this Comet upon March 9^d . 8^h . 38′, true time. I beg the favour of you to calculate its place in the Parabolic Orb also upon March 9^d . 8^h . 38′ true time, & send me its computed Longitude Latitude and distance from the Sun. For I would add them to the Table of the motion of this Comet in a Parabolic Orb printed in the third book of the Principia Mathematica pag. 459. Edit. II. By its distance from the Sun I mean the distance of its centre from the centre of the Sun in parts whereof the Radius of the Orbis Magnus is 100000. I am

Your most humble Servant

Isaac Newton

St Martin's Lane
by Leicester fields
Decem. 3. 1724.

<68av>

For Dr Edmund Halley, the Kings
Professor of Astronomy at the
Observatory in Greenwich
in   <u>Kent.</u>

<u>These</u>