VII. *A* Collection *of* Obſervations *communicated to the* Royal Society, *relating to the* COMET *that appear'd in the Months of* January, February, *and* March 1736-7.

1. *Obſervations upon the* Comet *that appear'd in the Months of* January, February *and* March 1737, *made at* Oxford, *by* J. Bradley, *F. R. S. Sav. Prof. Aſtron.*

I Made ſeveral Obſervations on the late Comet, during the laſt five Weeks of its Appearance, which enabled me to find out the Elements of a parabolic Trajectory, upon which a *Calculus* might be founded, that would correſpond with each of my Obſervations within about a Minute of a Degree: But the firſt of them being taken many Days after the Time of the *Perihelion*, and the whole Series comprehending but a very ſmall Portion of the Trajectory; I was ſenſible, that a little Error, either in the Obſervations themſelves, or in the Places of the Fixt Stars with which the Comet was compared, might occaſion a conſiderable Difference in the Situation and Magnitude, *&c.* of the Orbit deduced from them alone; and therefore I was deſirous of having ſome earlier and accurate Obſervations, in order to determine thoſe Elements with more Certainty: But not having yet been able to procure ſuch, I ſhall not longer defer laying before the Society the Particulars of my own, together with the Compariſon between the obſerved Places

Places of the Comet, and thoſe computed from ſuch Elements as I have already collected from my own Obſervations.

I firſt ſaw the Comet on the 15th of *February* 1737, between Six and Seven in the Evening, when its *Nucleus* appear'd ſmall and indiſtinct, and its Tail (extending above a Degree from the Body) pointed towards the Star *in Lino Auſtral. Piſcium*, marked ξ by *Bayer*. Applying my Micrometer to a good ſeven Foot Tube, I obſerved, that at 7 Hours, 32 Minutes *Temp. Æquat.* the Comet preceded the ſaid Star 1 Degree, 1 Minute, 40 Seconds, in Right Aſcenſion, and was 20 Minutes, 20 Seconds more Southerly than the Star. *Note*, That the equal Time is likewiſe made uſe of in all the following Obſervations.

Aſſuming the Place of this Star, as it is ſettled in *the Britiſh Catalogue*, (as I ſhall likewiſe the Places of others hereafter mentioned) it follows, that the Comet's Right Aſcenſion was 23 Degrees, 58 Minutes, 0 Seconds, and its Declination 1 Degree, 31 Minutes, 55 Seconds, North.

February 17. 7 Hours, 33 Min. the Comet followed α *in Nodo Lin. Piſcium* 31 Min. 25 Sec. in Right Aſcenſion, and was 52 Min. 30 Sec. more Northerly. Hence the Comet's Right Aſcenſion was 27 Deg. 38 Min. 20 Sec. and its Declination 2 Deg. 21 Min. 10 Sec. North.

February 18. 7 Ho. 14 Min. a ſmall Star (whoſe Right Aſcenſion was afterwards found to be 29 Deg. 0 Min. 5 Sec. and Declination 2 Deg. 58 Min. 30 Sec. North) preceded the Comet 24 Min. 0 Sec. in Right Aſcenſion, and was 15 Min. 30 Sec. more Northerly. Hence the Comet's Right Aſcenſion was 29 Deg.

24 Min. 5 Sec. and its Declination 2 Deg. 34 Min. 0 Sec. North.

February 21. 7 Ho. 25 Min. the Comet preceded *ν Ceti* 1 Deg. 6 Min. 0 Sec. in Right Aſcenſion, and was 38 Min. 20 Sec. more Southerly. Hence its Right Aſcenſion was 34 Deg. 25 Min. 10 Sec. and its Declination 3 Deg. 47 Min. 20 Sec. North.

February 22. 7 Ho. 45 Min. the Comet followed *ν Ceti* 30 Min. 5 Sec. in Right Aſcenſion, and was 18 Min. 45 Sec. more Southerly. Hence the Comet's Right Aſcenſion was 36 Deg. 1 Min. 15 Sec. and its Declination 4 Deg. 6 Min. 55 Sec. North.

February 25. 7 Ho. 45 Min. a ſmall Star (whoſe Right Aſcenſion was afterwards found to be 40 Deg. 34 Min. 0 Sec. and Declination 5 Deg. 5 Min. 30 Sec. North) followed the Comet 2 Min. 30 Sec. in Right Aſcenſion, and was 2 Min. 30 Sec. more Northerly than the Comet. Hence the Comet's Right Aſcenſion was 40 Deg. 31 Min. 30 Sec. and its Declination 5 Deg. 3 Min. 0 Sec. North.

The Difference of Right Aſcenſion and Declination between this Star and the Comet was taken with a 15 Foot Teleſcope; but the Place of the Star was determined by one Obſervation made with the 7 Foot Tube.

February 27. 8 Ho. 45 Min. the Comet preceded a ſmall Star 1 Deg. 16 Min. 0 Sec. in Right Aſcenſion, and was 2 Min. 15 Sec. more Southerly. The Right Aſcenſion of this Star was afterwards (by a ſingle Obſervation) found to be 44 Deg. 37 Min. 40 Sec. and its Declination 5 Deg. 38 Min. 30 Sec. North. Hence the Comet's Right Aſcenſion was 43 Deg. 21 Min.

40 Sec. and its Declination 5 Deg. 36 Min. 15 Sec. North.

March 4. 8 Ho. 0 Min. a ſmall Star (whoſe Right Aſcenſion was found to be 49 Deg. 30 Min. 30 Sec. and its Declination 6 Deg. 38 Min. 30 Sec. North) preceded the Comet 7 Min. 30 Sec. in Right Aſcenſion, and was 10 Min. 0 Sec. more Southerly. Hence the Right Aſcenſion of the Comet was 49 Deg. 38 Min. 0 Sec. and its Declenſion 6 Deg. 48 Min. 30 Sec.

March 12. 8 Ho. 25 Min. the Comet preceded *μ Tauri* 2 Deg. 5 Min. 50 Sec. in Right Aſcenſion, and was 4 Min. 25 Sec. more Northerly than the Star. Hence the Comet's Right Aſcenſion was 58 Deg. 12 Min. 40 Sec. and its Declination 8 Deg. 16 Min. 50 Sec. North.

March 14. 9 Ho. 0 Min. the Comet followed the *47th Star of* Taurus *in the* Britiſh *Catalogue* 12 Min. 50 Sec. in Right Aſcenſion, and was 0 Min. 15 Sec. more Northerly than the Star. Hence the Comet's Right Aſcenſion was 60 Deg. 8 Min. 5 Sec. and its Declination 8 Deg. 34 Min. 5 Sec. North. This, and all the following Obſervations, were made with a good 15 Foot Teleſcope, the Comet now appearing too faint to be well obſerved with the 7 Foot Tube.

March 17. 8 Ho. 40 Min. the Comet followed *ν Tauri* 25 Min. 5 Sec. in Right Aſcenſion, and was 9 Min. 40 Sec. more Northerly. Hence its Right Aſcenſion was 62 Deg. 47 Min. 55 Sec. and its Declination 8 Deg. 58 Min. 45 Sec. North.

March 19. 7 Ho. 50 Min. the Comet followed the ſame Star 2 Deg. 4 Min. 50 Sec. in Right Aſcenſion, being 23 Min. 55 Sec. more Northerly. Hence its

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Right Aſcenſion was 64 Deg. 27 Min. 40 Sec. and Declination 9 Deg. 13 Min. 0 Sec. North.

The ſame Night, at 9 Ho. 0 Min. the Comet preceded *d Tauri* 47 Min. 40 Sec. in Right Aſcenſion, and was 22 Min. 50 Sec. more Southerly. Hence its Right Aſcenſion was 64 Deg. 30 Min. 20 Sec. and Declination 9 Deg. 12 Min. 35 Sec. North.

March 20. 8 Ho. 5 Min. the Comet preceded *d Tauri* 0 Min. 30 Sec. in Right Aſcenſion, and was 16 Min. 35 Sec. more Southerly than the Star. Hence its Right Aſcenſion was 65 Deg. 17 Min. 30 Sec. and Declination 9 Deg. 18 Min. 50 Sec. North.

March 22. 8 Ho. 15 Min. the Comet followed the ſame Star 1 Deg. 36 Min. 10 Sec. in Right Aſcenſion, and was 3 Min. 50 Sec. more Southerly. Hence its Right Aſcenſion was 66 Deg. 54 Min. 10 Sec. and Declination 9 Deg. 31 Min. 35 Sec. North.

This was the laſt Night that I ſaw the Comet; for the Moon being then in her Increaſe, intirely obſtructed its further Appearance. The Light of the Comet was indeed (even in the Moon's Abſence) ſo very weak, that I found it difficult, in ſome of the latter Obſervations, to take its Place with any tolerable Certainty; which is, in part, the Cauſe of ſome little Diſagreement obſervable in the Comet's Places taken from the ſame Stars on different Nights; though there are likewiſe other Irregularities that occur in this Series of Obſervations, which ſeem to ariſe from ſmall Errors in the aſſumed Places of the Fixt Stars.

Suppoſing the Trajectory deſcribed by this Comet to be nearly *Parabolical*, conformable to what Sir *Iſaac Newton* has delivered in the third Book of his *Princip. Math.* I collect from the foregoing Obſer-

vations, that the Motion of this Comet in its own Orbit was *Direct*, and that it was in its *Perihelion*, *January* 19. 8 H. 20 Min. *Temp. Æquat. Lond.* That the Inclination of the Plane of the Trajectory to the Ecliptick was 18 Deg. 20 Min. 45 Sec. The Place of the Deſcending Node ☊ 16 Deg. 22 Min. The Place of the *Perihelion* ♒ 25 Deg. 55 Min. The Diſtance of the *Perihelion* from the Deſcending Node 80 Deg. 27 Min. The Logarithm of the *Perihelion Diſtance* from the Sun 9.347960. The Logarithm of the Diurnal Motion 0.938188.

From theſe Elements (by the Help of Dr. *Halley*'s general Table for Comets, to which they are adapted) I computed the Places in the following Table; which alſo contains the Longitudes and Latitudes of the Comet, calculated from the obſerved Right Aſcenſions and Declinations above-mentioned, together with the Differences between the obſerved and computed Places.

Oxon.

Oxon. 1737. Temp. Æquat.	Com. Longit. Obſervat.	Lat. Auſt. Obſervat.	Com. Longit. Computat.	Lat. Auſt. Comput.	Diff. Long.	Diff. Lat.
Day H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	S.	S.
Febr. 15 7 32	♈ 22 45 7	7 53 27	♈ 22 45 00	7 53 1	+ 7	+ 26
17 7 33	26 30 30	8 27 21	26 30 44	8 28 6	− 14	− 45
18 7 14	28 18 14	8 44 20	28 17 46	8 43 57	+ 28	+ 23
21 7 25	♉ 3 26 34	9 26 50	♉ 3 26 53	9 25 46	− 19	+ 4
22 7 45	5 4 53	9 40 00	5 5 28	9 39 27	− 35	+ 33
25 7 45	9 42 18	10 12 21	9 41 19	10 12 22	+ 59	− 1
27 8 45	12 36 43	10 31 42	12 36 16	10 31 13	+ 27	+ 29
Mar. 4 8 00	19 3 00	11 6 46	19 3 5	11 7 8	− 5	− 22
12 8 25	27 49 58	11 43 3	27 49 53	11 43 19	+ 5	− 16
14 9 00	29 47 42	11 49 59	29 47 19	11 49 26	+ 23	+ 33
17 8 40	♊ 2 30 57	11 56 31	♊ 2 30 50	11 56 49	+ 7	− 18
19 7 50	4 12 36	12 00 19	4 12 45	12 00 47	− 9	− 28
9 00	4 15 11	12 1 12	4 15 13	12 00 52	− 2	+ 20
20 8 5	5 3 10	12 3 5	5 3 32	12 2 33	− 22	+ 32
22 8 15	6 41 30	12 6 15	6 41 19	12 5 42	+ 11	+ 33

From the ſmall Differences between the Comet's obſerved and computed Places, exhibited in the two laſt Columns of this Table, we may reaſonably conclude, that the Orbit, as above determined, cannot differ much from the Truth, and muſt therefore be near enough to enable future Aſtronomers to diſtinguiſh

guiſh this Comet upon another Return, and thereby to ſettle its Period; which I cannot at preſent pretend to do, not having met with an Account of any former Comet that ſeems likely to have been the ſame with this, whereof a Deſcription has been given particular enough to determine this Point.

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2. *Cometes* Romæ *ex* Monte Aventino *obſervatus menſe* Februario 1737, *à* Didaco de Revillas *Abb.* Hieronym. *R. S. S.*

CIrca horam ſeptimam P. M. diei 16 nobis primum in occidentali cœli parte Cometes apparuit, octo vel novem gradibus Venere inferior; atque ab ejus verticali circulo aliquantulum Meridiem verſus declinans. Nudo oculo nonniſi albicantem, et crepera luce fulgentem Lineolam conſpiciebamus: egregio tamen Campani Teleſcopio Ped. 6. præter Caudam, quæ in partem à ſole averſam protendebatur, & lineolæ ſpeciem extra teleſcopium præ ſe ferebat. Nucleum quoque etſi tenui Athmoſphæra circumundique obtenebratum intuebamur. Quum nullus circuli quadrans tunc præſto eſſet; & viciniorum fixarum conſpectum nedum nebula interciperet; verum & crepuſculum ſubtraheret, Cometæ locus apparens ea nocte definiri minime potuit.

A die 16 ad 19, ſicuti & poſt 25, plura alia occurrebant impedimenta, quæ obſervationibus vacare prohibebant. Noctibus porro inter 19 & 26 mediis haud aliter apparentem Cometæ locum accurate determinare licebat, quam Phœnomenon cum Venere comparando: propterea quod parvo dumtaxat Quadrante uteremur,

mur, cujus tubus opticus pedem Anglicum vix æquabat. Ex verticalibus itaque cum Cometæ, tum Veneris altitudinibus eodem tempore obſervatis, verticales utriuſque differentias collegimus, quas hic damus.

Die.	P.M. H.	M.	Differ. Vert.	°	M.
20	7	59	Gr.	5	22
22	7	00	Gr.	3	56
23	7	20	Gr.	3	13
24	6	15	Gr.	2	30
25	7	30	Gr.	1	47

Cometæ Cauda die 22. Verticale Micrometri filum pertranſiens horarium minutum cum Sec. 7. impendebat. Micrometrum autem laudato Campani Teleſcopio applicitum erat.

	H.	M.			
Die 24.	8	3	Venus, & Cometa apparebant ſub Angulo	Gr.	7 35
Die 25.	7	50	Apparebant ſub Angulo	Gr.	8 5

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3. *Obſervations upon the* Comet *ſeen in* January *and* February 1736-7. *and of an* Eclipſe *of the* Sun, Feb. 18. 1736-7. *made at* Philadelphia *in* Penſylvania, *incloſed in a Letter from Dr.* Kearſly *to Mr.* Peter Collinſon, *F. R. S.*

ON the 27th of *January* laſt, about Six in the Evening, I ſaw a dull Star about 3 or 4 Degrees above *Mercury*, and a little to the Southward of a Vertical paſſing through ☿, but took little Notice of it then, not thinking of a Comet; but by comparing ☿'s Place with the Fixt Stars, I afterwards thought it might be a Comet ——On the 31ſt, about 6 Ho. 30 Min. P. M. I took its Diſtance from *Venus*, by a reflecting Inſtrument of Mr. *Hadley*'s Make, 14 Deg.

40

40 Min. but by a Foreſtaff, 14 Deg. 50 Min. and a Right Line paſs'd over the Comet, *Venus*, and the *Pleiades*. The Night following, about 6 Ho. 20 Min. its Diſtance from *Venus* was, by Mr. *Hadley*'s Inſtrument, 13 Deg. 25 Min. The reſt of my Obſervations, by ſuch Inſtruments as I had, being none of the beſt, and the Comet's growing very dull, are as follows:

	Deg.	Ho.	Min.	P. M.	
Feb. 7.		6	47		Comet from *Venus* 7 Deg. 40 Min.
		7	3		———from *Aldebaran* 59 Deg. 40 Min.
					———from *Algenib* 17 Deg. 45 Min. by a Foreſtaff.
					A Right Line from the Comet over *Venus* paſs'd over the bright Star in the Side of *Perſeus*.
11.		7	14		Comet from *Venus* 7 Deg. 12 Min.
		7	20		A Right Line over the Comet, *Venus*, and Head of *Caſſiopeia*.
17		7	20		The Comet was in a Right Line, and to the Northward of two Stars; Diſtance of the Stars I ſuppoſed to be about 40 Minutes, and the Comet from the leaſt 30 Min. Theſe Stars, I think, were the South

			South Node of *Piſces*, brighteſt from *Venus* 10 Deg. 20 Min. from *Aldebaran* 50 Deg. 30 Min. as I found it ſet down, but muſt be very falſe.
D.			
20.			No Star within Sight of the
	Ho.	M.	Comet by the Teleſcope.
	30	7	Comet from *Aldebaran* 34 Deg. from *Lucida Cap.* ♈ 19½.
21. about	30	8	Wanted about a Degree of *Oculus Ceti.*—— Which was the laſt Sight I had of it.

P. S. The Eclipſe *Feb.* 18. could not be well obſerved here, by reaſon of Clouds. I rectified my Clock by one of *Heath*'s large Ring Dials. At 7 Ho. 18 Min. there was a ſmall Dent in the Sun's Edge, whence the Beginning 1 or 2 Minutes ſooner: Juſt before the End, *viz.* 10 Ho. 11 or 12 Minutes, I had a Sight of the Sun again, and there was then a Dent in the Sun's Edge, ſo that the End muſt be 10 Ho. 13 or 14 Min. in the Morning: About the Middle of the Eclipſe, there was a large Spot near the Middle of the enlightened Part, which was the North Side of the Sun.

4. *Part of a Letter from* Roſe Fuller, *M. D. F. R. S. to the Preſident; mentioning a* Comet *ſeen in* Jamaica, *in* January 1736-7.

Spaniſh-Town, Mar. 1. 1736-7.

WE have nothing new here to write you of, but the Appearance of a Comet, which was firſt perceived about the 26th of *January*, but muſt, by its Plainneſs then, have been viſible for ſome time before. It was in the Weſt firſt of all, ſome Degrees below and directly under *Venus*: Every Night it appear'd nearer to that Star, but inclined Northerly. In about a Fortnight, it was parallel to it, and in a Week after, was no more to be ſeen.

I am, &c.

Roſe Fuller.

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5. *Extract of a Letter from Mr.* Sartorius, *a Miſſionary at* Madras, *dated* Feb. 9. 1736-7. *V. S. to Mr.* Bayer *at* Petersburgh; *concerning the* Comet. *Tranſlated from the* German *by* C. M. *R. S. Sec.*

FOR ſeven Days laſt paſt, about 7 Hours *Veſperè* there hath appear'd a dim Comet, as we took it to be: It is ſeen in the Weſt, under *Venus* towards the S. W. It looks through a Tube of 10 or 11 Feet long, like a dim or pale Planet; its Tail tends upwards. What do the Aſtronomers in *Europe* ſay of it, if it hath been ſeen there.

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6. *An Obſervation of the* Comet *ſeen at* Lisbon, *by* G. R. Vanbrugh, *Eſq; on board the* Burford *Man of War. Communicated to the* Royal Society, *by* John Hadley, *Eſq; V. Preſ. R. S.*

Lisbon, Jan. 29, 1736-7.

AT 6 Hours 49 Minutes, P. M. we ſaw a Comet with a long bruſh Tail, at which time its Altitude was found 5 Degrees 15 Minutes, its Diſtance from *Venus* 18 Degrees 5 Minutes; and *Venus*'s Altitude was obſerved 20 Degrees 40 Minutes. It bore due Weſt.

G. R. Vanbrugh.

[*Note by* John Machin, *R. S. Secr.*]

" The Place of the Comet, according to this Obſervation, " ought to be on *Jan.* 29. 7 Hours 39 Minutes, Eq. Time at " *Lond.* P. M. (♓. 13 Degrees 38 Minutes) Latitude 3 Degrees, " 59 Minutes, 40 Seconds, Bor. The Comet of 1556 moves the " ſame way, hath its Nodes nearly in the ſame Place, and with nearly " the ſame Inclination to the Ecliptic."