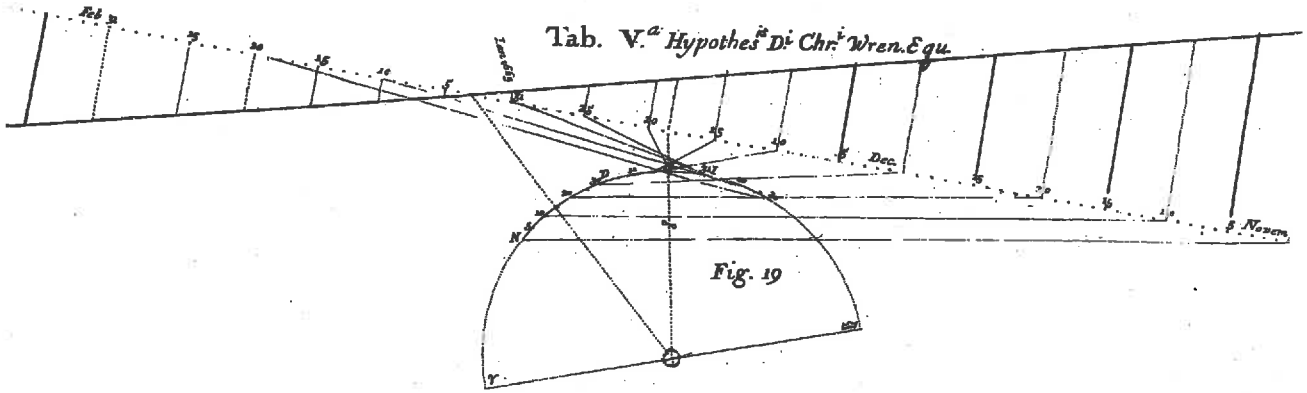

12.3. Wren's 'theory' of cometary motion, applied to the comet of 1664–65. The semicircle represents the orbit of the Earth, the continuous straight line the path of the comet, and the dotted straight line its projection onto the plane of the ecliptic.

Fellows of the Royal Society of London

The list of fellows given below is only those scientists elected Fellows of the Royal Society whose biographies appear in the MacTutor History of Mathematics Archive, together with some present day mathematicians. The list also gives their date of their election to the Society.

1663 - 1749

William Brouncker 1663
Robert Boyle 1663
John Wilkins 1663
Isaac Barrow 1663
Robert Hooke 1663
William Neile 1663
John Pell 1663
John Wallis 1663
Christopher Wren 1663
Christiaan Huygens 1663
Nicolaus Mercator 1666
Ismael Boulliau 1667
John Collins 1667
James Gregory 1668
Isaac Newton 1672
Jean D Cassini 1672
Gottfried W von Leibniz 1673
Renatus F Sluze 1674
Jonas Moore 1674
John Flamsteed 1676
Edmond Halley 1678
Denis Papin 1682
Joseph Raphson 1689
David Gregory 1692
Vincenzo Viviani 1696
Abraham de Moivre 1697
Jacques Cassini 1698
John Keill 1700
John Arbuthnot 1704
Guido Grandi 1709
Giovanni Poleni 1710
John Craig 1711
William Jones 1711
Roger Cotes 1711
Brook Taylor 1712
Johann Bernoulli 1712
Nicolaus (I) Bernoulli 1714
Pierre Varignon 1714
Willem Jakob 'sGravesande 1715
Pierre R de Montmort 1715
John Hadley 1717
Thomas F de Lagny 1718
Colin Maclaurin 1719
Giulio Fagnano 1723
Edmund Stone 1725
James Stirling 1726
Benjamin Robins 1727
Samuel Clarke 1728
Pierre L M de Maupertuis 1728
Joseph Privat de Molières 1729
Louis B Castel 1730
Bernard le B de Fontenelle 1733
Johann G Doppelmayr 1733
Alexis C Clairaut 1737
Johann A Segner 1738
Georges L L Buffon 1740
Thomas Bayes 1742
Giovanni F M S Castillon 1745
Thomas Simpson 1745
Leonard Euler 1747
Charles M de La Condamine 1748
Jean le R d'Alembert 1748
Gabriel Cramer 1749

PHILOSOPHICAL *TRANSACTIONS.*

Munday, March 6. 166$\frac{6}{7}$.

The Contents.

An Introduction to this Tract. An Accompt of the Improvement of Optick Glaſſes *at* Rome. *Of the Obſervation made in* England, *of a Spot in one of the Belts of the Planet* Jupiter. *Of the motion of the late* Comet *prædicted. The Heads of many New Obſervations and Experiments, in order to an Experimental* Hiſtory of Cold; *together with ſome* Thermometrical *Diſcourſes and Experiments. A Relation of a very odd Monſtrous* Calf. *Of a peculiar* Lead-Ore *in* Germany, *very uſeful for Eſſays. Of an* Hungarian Bolus, *of the ſame effect with the* Bolus Armenus. *Of the New* American *Whale-fiſhing about the* Bermudas. *A Narative concerning the ſucceſs of the* Pendulum-watches *at Sea for the* Longitudes; *and the Grant of a* Patent *thereupon. A Catalogue of the Philoſophical Books publiſht by* Monſieur de Fermat, *Counſellour at* Tholouſe, *lately dead.*

The Introduction.

WHereas there is nothing more neceſſary for promoting the improvement of Philoſophical Matters, than the communicating to ſuch, as apply their Studies and Endeavours that way, ſuch things as are diſcovered or put in practiſe by others; it is therefore thought fit to employ the *Preſs*, as the moſt proper way to gratifie thoſe, whoſe engagement in ſuch Studies, and delight in the advancement of Learning and profitable Diſcoveries, doth entitle them to the knowledge of what this Kingdom, or other parts of the World, do, from time to time, afford, as well

of the progreſs of the Studies, Labours, and attempts of the Curious and learned in things of this kind, as of their compleat Diſcoveries and performances: To the end, that ſuch Productions being clearly and truly communicated, deſires after ſolid and uſefull knowledge may be further entertained, ingenious Endeavours and Undertakings cheriſhed, and thoſe, addicted to and converſant in ſuch matters, may be invited and encouraged to ſearch, try, and find out new things, impart their knowledge to one another, and contribute what they can to the Grand deſign of improving Natural knowledge, and perfecting all *Philoſophical Arts*, and *Sciences*. All for the Glory of God, the Honour and Advantage of theſe Kingdoms, and the Univerſal Good of Mankind.

An Accompt of the improvement of Optick Glaſſes.

There came lately from *Paris* a Relation, concerning the Improvement of *Optick Glaſſes*, not long ſince attempted at *Rome* by Signor *Giuſeppe Campani*, and by him diſcourſed of, in a Book, Entituled, *Ragguaglio di nuoue Oſſervationi*, lately printed in the ſaid City, but not yet tranſmitted into theſe parts; wherein theſe following particulars, according to the Intelligence, which was ſent hither, are contained.

The *Firſt* regardeth the excellency of the long *Teleſcopes*, made by the ſaid *Campani*, who pretends to have found a way to work great *Optick Glaſſes* with a Turne-tool, without any Mould: And whereas hitherto it hath been found by Experience, that *ſmall* Glaſſes are in proportion better to ſee with upon the Earth, than the *great* ones; that Author affirms, that his are equally good for the Earth, and for making Obſervations in the Heavens. Beſides, he uſeth three Eye-Glaſſes for his great *Teleſcopes*, without finding any *Iris*, or ſuch Rain-bow colours, as do uſually appear in ordinary Glaſſes, and prove an impediment to Obſervations.

The *Second*, concerns the *Circle of Saturn*, in which he hath obſerved nothing, but what confirms Monſieur *Chriſtian Huygens de Zulichem* his Syſteme of that Planet, publiſhed by that worthy Gentleman in the year, 1659.

The

The *Third*, reſpects *Jupiter*, wherein *Campani* affirms he hath obſerved by the goodneſs of his Glaſſes, certain *protuberancies* and *inequalities*, much greater than thoſe that have been ſeen therein hitherto. He addeth, that he is now obſerving, whether thoſe ſallies in the ſaid *Planet* do not change their ſcituation, which if they ſhould be found to do, he judgeth, that *Jupiter* might then be ſaid to turn upon his *Axes* which, in his opinion, would ſerve much to confirm the opinion of *Copernicus*. Beſides this, he affirms, he hath remarked in the *Belts* of *Jupiter*, the ſhaddows of his *ſatellites*, and followed them, and at length ſeen them emerge out of his Disk.

A Spot in one of the Belts of Jupiter.

The Ingenious Mr. *Hook* did, ſome moneths ſince, intimate to a friend of his, that he had, with an excellent twelve foot Teleſcope, obſerved, ſome days before, he than ſpoke of it, (*videl.* on the ninth of *May*, 1664. about 9 of the clock at night) a ſmall Spot in the biggeſt of the 3 obſcurer *Belts* of *Jupiter*, and that, obſerving it from time to time, he found, that within 2 hours after, the ſaid Spot had moved from Eaſt to Weſt, about half the length of the Diameter of *Jupiter*.

The Motion of the late Comet prædicted.

There was lately ſent to one of the *Secretaries* of the *Royal Society* a Packet, containing ſome Copies of a Printed Paper, Entituled, The *Ephemerides* of the *Comet*, made by the ſame Perſon, that ſent it, called *Monſieur Auzout*, a *French* Gentleman of no ordinary Merit and Learning, who deſired, that a couple of them might be recommended to the ſaid *Society*, and one to their *Preſident*, and another to his Highneſs Prince *Rupert*, and the reſt to ſome other Perſons, nominated by him in a Letter that accompanied this preſent, and known abroad for their ſingular abilities and knowledge in Philoſophical Matters. The end of the Communication of this Paper was, That, the motion of the *Comet*, that hath lately appeared, having been prædicted by the ſaid *Monſieur Au-*

Vertue for cuttings, lameneſs, &c. the part affected being anointed therewith. One thing more he related, not to be omitted, which is, that having told, that the time of catching theſe Fiſhes was from the beginning of *March*, to the end of *May*, after which time they appeared no more in that part of the Sea: he did, when asked, whither they then retired, give this Anſwer, That it was thought, they went into the Weed-beds of the Gulf of *Florida*, it having been obſerved, that upon their Fins and Tails they have ſtore of Clams or Barnacles, upon which, he ſaid, Rock-weed or Sea-tangle did grow a hand long; many of them having been taken of them, of the bigneſs of great Oyſter-ſhels, and hung upon the Governour of *Bermudas* his Pales.

A Narrative concerning the ſucceſs of Pendulum-Watches at Sea for the Longitudes.

The Relation lately made by Major *Holmes*, concerning the ſucceſs of the *Pendulum-Watches* at Sea (two whereof were committed to his Care and Obſervation in his laſt voyage to *Guiny* by ſome of our Eminent *Virtuoſi*, and Grand Promoters of Navigation) is as followeth;

The ſaid *Major* having left that Coaſt, and being come to the Iſle of St. *Thomas* under the *Line*, accompanied with four Veſſels, having there adjuſted his Watches, put to Sea, and ſailed Weſtward, ſeven or eight hundred Leagues, without changing his courſe; after which, finding the Wind favourable, he ſteered towards the Coaſt of *Africk*, North-North-Eaſt. But having ſailed upon that *Line* a matter of two or three hundred Leagues, the Maſters of the other Ships, under his Conduct, apprehending that they ſhould want Water, before they could reach that Coaſt, did propoſe to him to ſteer their Courſe to the *Barbadoes*, to ſupply themſelves with Water there. Whereupon the ſaid Major, having called the Maſter and Pilots together, and cauſed them to produce their Journals and Calculations, it was found, that thoſe Pilots did differ in their reckonings from that of the Major, one of them eighty Leagues, another about an hundred, and the third, more; but the Major judging by his *Pendulum-Watches*, that they were only ſome thirty Leagues diſtant from the

the Iſle of *Fuego*, which is one of the Iſles of *Cape Verde*, and that they might reach it next day, and having a great confidence in the ſaid Watches, reſolved to ſteer their Courſe thither, and having given order ſo to do, they got the very next day about Noon a ſight of the ſaid Iſle of *Fuego*, finding themſelves to ſail directly upon it, and ſo arrived at it that Afternoon, as he had ſaid. Theſe Watches having been firſt Invented by the Excellent Monſieur *Chriſtian Hugens* of *Zulichem*, and fitted to go at Sea, by the Right Honourable, the Earl of *Kincardin*, both Fellows of the *Royal Society*, are now brought by a New addition to a wonderful perfection. The ſaid Monſieur *Hugens*, having been informed of the ſucceſs of the Experiment, made by *Major Holmes*, wrought to a friend at *Paris* a Letter to this effect;

Major *Holmes* at his return, hath made a relation concerning the uſefulneſs of *Pendulums*, which ſurpaſſeth my expectation: I did not imagine that the Watches of this firſt Structure would ſucceed ſo well, and I had reſerved my main hopes for the New ones. But ſeeing that thoſe have already ſerved ſo ſucceſfully, and that the other are yet more juſt and exact, I have the more reaſon to believe, that the Invention of *Longitudes* will come to its perfection. In the mean time I ſhall tell you; that the *States* did receive my Propoſition, when I deſired of them a Patent for theſe new Watches, and the recompenſe ſet a-part for the invention in caſe of ſucceſs; and that without any difficulty they have granted my requeſt, commanding me to bring one of theſe Watches into their Aſſembly, to explicate unto them the Invention, and the application thereof to the *Longitudes*; which I have done to their contentment. I have this week publiſhed, that the ſaid Watches ſhall be expoſed to ſale, together with an Information neceſſary to uſe them at Sea: and thus I have broken the Ice. The ſame Objection, that hath been made in your parts againſt the exactneſs of theſe *Pendulums*, hath alſo been made here; to wit, that though they ſhould agree together, they might fail both of them, by reaſon that the Air at one time might be thicker, than at another. But I have anſwered, that this difference, if there be any, will not be at all perceived in the *Penduls*, ſeeing that the continuall Obſervations, made in Winter from day to day, until Summer, have ſhewed me that

they

they have always agreed with the Sun. As to the Printing of the *Figure* of my New Watch, I ſhall defer that yet a while: but it ſhall in time appear with all the Demonſtrations thereof, together with a *Treatiſe* of *Pendulums*, written by me ſome days ſince, which is of a very ſubtile Speculation.

The Character, lately publiſhed beyond the Seas, of an Eminent Perſon, not long ſince dead at Tholouſe, *where he was a Councellor of Parliament.*

It is the deſervedly famous *Monſieur de Fermat*, who was, (ſaith the Author of the Letter) one of the moſt Excellent Men of this Age, a *Genius* ſo univerſal, and of ſo vaſt an extent, that if very knowing and learned Men had not given teſtimony of his extraordinary merit, what with truth can be ſaid of him, would hardly be believed. He entertained a conſtant correſpondence with many of the moſt Illuſtrious Mathematicians of *Europe*, and did excel in all the parts of Mathematical Science: a Teſtimony whereof he hath left behind him in the following Books.

A Method for the Quadrature of *Parabola's* of all degrees.

A Book *De Maximis & Minimis*, which ſerveth not only for the determination of Problems of *Plains* and *Solids*, but alſo for the invention of *Tangents* and *Curve Lines*, and of the *Centres* of Gravity in Solids; and likewiſe for Numerical Queſtions.

An Introduction to the Doctrine of *Plains* and *Solids*, which is an *Analytical* Treatiſe, concerning the ſolution of *Plains* and *Solids*, which had been ſeen (as the Advertiſer affirms) before Monſieur *Des Cartes* had publiſh'd any thing upon this Subject.

A Treatiſe *De Contactibus Sphæricis*, where he hath demonſtrated in *Solids*, what Mr. *Viet*, Maſter of Requeſts, had but demonſtrated in *Plains*.

Another Treatiſe, wherein he eſtabliſheth and demonſtrateth the two Books of *Apollonius Pergæus*, of *Plains*.

And a General Method for the dimenſion of *Curve Lines*, *&c.* Beſides, having a perfect knowledge in Antiquity, he was conſulted from all parts upon the difficulties that did emerge therein: he hath explained abundance of obſcure places, that are found