## *Some Considerations*

*Of Mr.* Nic. Mercator, *concerning the Geometrick and direct Method of Signior* Cassini *for finding the Apogees, Excentricities, and Anomalies of the Planets; as* that *was printed in the* Journal des Scavans *of* Septemb. 2. 1669: *which Considerations are here delivered in the* Latine *Tongue, wherein they were written by the Author, as chiefly regarding the Learn'd in Astronomy*, viz.

### *Clarissimi* Cassini *Methodus*

*Investigandi Apogéa, Excentricitates & Anomalias Planetarum, breviter Exposita & Demonstrata.*

SUpponit Cl. *Cassinus*, ad Planetam in Ellipsi moventem extendi ab utroque foco duas rectas, quarum altera sit *medii*, altera autem *veri* motûs linea. Constructio porrò talis est;

*Fig. II.* L est Centrum Concentrici ABCDE.
B L D est Diameter.
B A, B C, B P, sunt intervalla apparentia.
D E, D F, D Q, sunt intervalla mediorum motuum.
B E, B F, B Q; item D A, DC, DP, sunt lineæ rectæ.
B E secat D A in H; BF secat DC in G; B Q secat D P in R.
R H G est linea recta.
B I est perpendicularis ad R H G.
I est Centrum Ellipseos.
L I est Excentricitas.
I O = L I.
O est focus, circa quem ordinatur medius motus; L, circa quem verus.
I M = I N = L B.
M est Apogéon; N, Perigeon; BLM Anomalia vera.

### *Demonstratio.*

*I.* Illustrissimus ac Reverendiss. *Sethus Wardus*, quondam in Celeberr. Acad. *Oxon*. Professor Astronomiæ Savilianus, nunc Episcopus Sarisburiensis, in *Examine Astronomiæ Philolaicæ*, edito Oxon. A. 1653. c. 6. docuit Methodum, ex data Anomalia *media* Planetarum, investigandi *veram*; quæ est hujusmodi:

*Fig. III.* C, est Centrum Ellipseos AEP: F, focus, circa quem ordinatur medius motus. S, focus, circa quem ordinatur verus motus. A, Apogéon. P, Perigeon, E, Erro sive Planeta. AFE, Anomalia media. ASE, Anomalia vera. FET, linea recta, E T = S E. S T est linea recta.

In △o S F T dantur, 1. S F distantia focorum: 2. F T = F E + E S = A P. 3. A F T, angulus externus, sive Anomalia media, æqualis summæ angulorum F ST & T. Ergo inveniri potest F S E, sive Anomalia vera, æqualis differentiæ Angulorum F ST & T. Nimirum

Ut

The Royal Society is collaborating with JSTOR to digitize, preserve, and extend access to *Philosophical Transactions (1665-1678).* www.jstor.org

Ut semi-summa laterum F T & F S, ad semi-differentiam eorundem;
Ita Tangens semi-summæ angulorum F S T & T, ad Tangentem semi-differentiæ eorundem.

Sed semi-summa laterum F T & F S invenitur, substituendo pro F T æqualem AP, cujus semis est AC, qui additus CS semissi ipsius F S, facit Semi-summam AS, distantiam Planetæ maximam.

Tum, si ex semi-summa A S auferatur latus minus F S, restat semi-differentia laterum F A, æqualis PS, distantiæ Planetæ minimæ; ut sit

*Regula* ex Anomalia *Media* data inveniendi *veram*:

Ut A S, distantia Planetæ maxima, ad PS, distantiam minimam;
Ita Tangens dimidiæ Anomaliæ mediæ, ad Tangentem dimidiæ Anomaliæ veræ.

*Corollar. I.* Si continuetur S E usque ad U, ita ut E U sit = ipsi F E, & tota S U = Axi AP; erit $\triangle^i$ F S U angulus U semis Prostaphæreseos F E S, ideóque æqualis semi-differentiæ angulorum Anomaliæ mediæ & veræ, h.e. ipsorum A F E & A S E; & externus A F U = semi-summæ eorundem A F E & A S E angulorum, ablata scil. semi-differentiâ U F E ex majori AFE. Unde oriuntur duæ Analogiæ:

1. Ut Sinus semi-summæ Anomaliæ mediæ & veræ A F U, ad Sinum semi-differentiæ eorundem, U; Ita S U (= axi transverso A P) ad S F, distantiam focorum.

2. Ut Sinus semi-summæ Anomaliæ mediæ & veræ, A F V, ad Sinum Anomaliæ veræ F S U; Ita S U (vel axis A P) ad F U, subtensam Anomaliæ veræ: Ita quoque semi-axis A C, ad semi-subtensam U X, vel F X.

*Corollar. II.* Si in eodem Triangulo F S U, ex subtensæ F U puncto medio X, erigatur perpendicularis X E; secabit illa S U in duas partes, quarum altera U E = est lineæ medii motûs F E, altera verò S E est ipsa linea veri motûs.

*II. Fig. IV.* Sit *a* Centrum Concentrici *c h f i*.
*c a d*, Diameter, eadémque linea Apsidum.
*c h*, Arcus Anomaliæ veræ, cui respondet
*d i*, Arcus Anomaliæ mediæ. Itaque
*c d h*, est Angulus dimidiæ Anomaliæ veræ, &
*d c i*, Angulus dimidiæ Anomaliæ mediæ.
*c i* & *d h* sunt lineæ rectæ, secantes se mutuò in *g*.

Ab Interfectionis puncto *g* demittatur ad *c d* perpendicularis *g b*. Erit igitur,

*d b* . *b g* : : Radius ad tang. *b d g* vel *c d h*.
Et *c b* . *b g* : : Rad. tang. *b c g* vel *d c i*.

Ergo

Ergo $db \times$ tang. $cdh = bg \times$ Rad. $= cb \times$ tang. $dci$.

Quare $db . cb$ :: tang. $dci$ . tang. $cdh$; hoc eſt, $db$ erit ad $cb$, ut tangens dimidiæ Anomaliæ mediæ ad tangentem dimidiæ Anomaliæ veræ, adeóque (per Regulam ſupra expoſitam) ut diſtantia Planetæ maxima, ad diſtantiam minimam. Quamobrem $db$ = erit diſtantiæ Planetæ maximæ, & $cb$, minimæ, & $ab$, excentricitati.

Cúmque idem eodem modo demonſtretur de cæteris omnibus Interſectionum punctis, nimir. Perpendiculares ab ipſis ad $cd$ lineam incidere in punctum $b$; oportet, ut recta, jungens ipſas Interſectiones, congruat perpendiculari $bgf$.

*III.* Ductâ diametro $hak$, fiat arcus $kl$ = arcui $id$, & ducantur $kc$ & $hl$, ſecantes ſe mutuò in $p$. Ab $h$ in $bgf$ demittatur perpendicularis $hr$, eadémque parallela Apſidum lineæ $cd$; erit angulus $rhs$ ſemi-differentia arcuum Anomaliæ veræ $ch$, & mediæ $di$. Tum ab eodem $h$ puncto ducatur recta $h\beta$, faciens cum $kh$ angulum = angulo $rhs$, & occurrens lineæ Apſidum in $\beta$, Erit △i $a\beta h$ angulus $\beta ah$ menſura arcûs $ch$, ſive Anomaliæ veræ, & $\beta ha$ ſemi-differentia Anomaliæ veræ & mediæ (ex Conſtructione;) & externus $c\beta h$ (æqualis duobus internis & oppoſitis $\beta ah$ & $\beta ha$, adeóque compoſitus ex Anomalia vera & ſemi-differentia ejus à media) erit ſemi-ſumma Anomaliæ veræ & mediæ. Ergo, per *Corollarii* I^mi Analogiam priorem; Vt Sinus $c\beta h$, ad Sinum $\beta ha$; ita Radius $ah$, ad Excentricitatem $a\beta$. Sed ſupra demonſtravimus quoque $ab$ æqualem Excentricitati. Ergo punctum $\beta$ congruit puncto $b$.

Tum ex $b$ excitetur ipſi $hb$ perpendicularis $bt$; Aio, hanc continuatam incidere in punctum Interſectionis $p$. Nam Triangula $rhs$ & $bht$ ſunt ſimilia, ex Conſtructione; quemadmodum & △m $hpk$ ſimile eſt △o $hgi$, cum eidem peripheriæ $ch$ inſiſtentes anguli $pkh$ & $gih$ ſint æquales, nec non æqualibus peripheriis $kl$ & $id$ inſiſtentes anguli $phk$ & $ghi$ æquales; quare & tertius $hpk$ æqualis eſt tertio $hgi$. Et ex æqualibus $phk$ & $ghi$ ablatis æqualibus $bht$ & $rhs$, reſtant æquales $phb$ & $ghr$. Vnde ſic arguo: $srh = tbh$, & $rhs = bht$, Ergo $hsr = htb$; ergò & Complementa horum ad ſemi-circulum ſunt æqualia, nimir. $rsi = btk$; & $sig = tkp$, Ergò & $igs = kpt$, quibus ablatis ex æqualibus $igh$, & $kph$, reſtat $hgs = hpt$; & $ghr = phb$, Ergo & $hrg = hbp$ Sed $hrg$ eſt rectus, Ergò & $hbp$ rectus eſt. Cùm verò & $hbt$ rectus ſit ex Conſtructione, erit $tb$ in directum ipſi $bp$. Cúmque idem eodem modo demonſtretur de quavis alia Interſectione linearum ab $h$ & $k$ ad congruentia Anomaliæ veræ & mediæ puncta ductarum; patet, non modò rectam, jungentem interſectiones, tranſituram per $b$ punctum; ſed & $hb$, lineam perpendicularem fore ad eandem Jungentem. *q. e. dem.*

*Corol-*

*Corollarium.* Si à quovis puncto Anomaliæ veræ, puta *h*, ad respondens punctum Anomaliæ mediæ *i* ducatur recta *hi*; excitata è Centro Excentrici *b*, ipsi *cbd* perpendicularis *bf* secabit ipsam *hi* in *s* eâ ratione, quam linea *medii* motûs obtinet ad lineam *veri* motûs.

Nam per *Corollarii* I[mi] Analogiam posteriorem, *hb* est semi-subtensa; Ergò per *Corollarium* II[um], perpendicularis erecta ex *b*, nimir. *bt*, secat diametrum *hk* in *t* eâ ratione, qnam linea medii motûs obtinet ad lineam veri motûs. Ergò & *rs* (sive *bf*) secat *hi* lineam eadem ratione in *s*; propter demonstratam modò figurarum *tbhkphb* & *srhighr* similitudinem.

Cæterùm ex laudata superius Reverendiss. *Wardi* Methodo inveniendi primam inæqualitatem, non est difficile, alium adhuc modum investigandi Apogéa & Excentricitates, non minùs directum & Geometricum, & Observationes *quotvis* admittentem, producere; quem & paucis exponam. Plures modos invenient Astrophili in Reverendiss. Viri *Astronomia Geometrica*, edita *A.* 1656, ad quam eos remitto. Interim

*Fig. V.* Sint *l* & *d* duo foci Ellipseos; *t* & *u* duo puncta *veri* motûs Planetæ; arcus Ellipseos *tu* ex *l* spectatus sub angulo *tlu*, & ex *d*, sub angulo *tdu*; item distantia focorum *ld* ex *t* spectatus sub angulo *dtl*, & ex *u*, sub angulo *dul*: Aio, differentiam angulorum *tlu*, *tdu*, æqualem esse differentiæ angulorum *dtl* & *dul*.

Cùm enim trianguli *lux* tres anguli simul sumpti æquales sint trianguli *dtx* tribus angulis simul sumptis; si auferantur utrinque æquales *lxu* & *dxt*, reliquorum duorum summa $ulx + lux$ erit = summæ reliquorum $tdx + dtx$, & ab his æqualibus summis si auferantur inæquales, v. g. *ulx* ex priori, & *tdx* ex posteriori; reliquorum, *lux* & *dtx*, differentia = est differentiæ ablatorum *ulx* & *tdx*; quod erat propositum.

Centro *l*, intervallo axis transversi *mn*, describatur Circulus *abc*, cujus arcus *ab* rursus ex *l* spectatur sub angulo *alb*, & ex *d*, sub angulo *adb*; item distantia focorum *ld* ex *a* spectatur sub angulo *lad*, & ex *b*, sub angulo *lbd*. Ergò rursus differentia angulorum *alb* & *adb* = est differentiæ angulorum *lad* & *lbd*. Sed per *Coroll. I.* angulus *lad* semis est anguli *lud*, & angulus *lbd* semis anguli *ltd*. Ergò horum angulorum *lad* & *lbd* differentia = est semi-differentiæ angulornm *lud* & *ltd*; ergò & angulorum *alb* & *adb* differentia = est semi-differentiæ angulorum *ult* & *udt*, quorum prior est intervallum apparens duarum Observationum, posterior autem, intervallum motûs medii. Datâ igitur horum intervallorum differentiâ, datur quoque hujus (*differentiæ*) semis, nimir. differentia angulorum *alb* & *adb*. Sed *alb* idem est cum *ult* dato; Ergo datur quoque *adb* angulus, sub quo peripheria *ab* spectatur ex *d*.

Simili modo ostendetur, differentiam angulorum *t l y* & *t d y* æqualem esse summæ angulorum *l t d* & *l y d*; nec non differentiam angulorum *b l c* & *b d c* = esse summæ angulorum *l b d* & *l c d*. Cùmque *l b d* semis sit ipsius *l t d*, & *l c d* semis ipsius *l y d*; erit sanè summa ipsorum *l b d* & *l c d* = semi-summæ angulorum *l t d* & *l y d*, hoc est, differentia angulorum *b l c* & *b d c* = erit semi-differentiæ angulorum *t l y* & *t d y*, quorum prior est intervallum apparens duarum Observationum, posterior autem, intervallum motûs medii. Quare, datâ horum intervallorum differentiâ, datur quoque hujus semis, nimir. differentia angulorum *b l c* & *b d c*. Sed *b l c* idem est cum *t l y* dato; Ergò datur quoque *b d c* angulus, sub quo peripheria *b c* spectatur ex *d*.

Unde liquet, ex datis intervallis Observationum mediis & apparentibus, dari angulos, sub quibus ex *d* spectantur Circuli *a b c* peripheriæ quotvis, interceptæ à lineis veri motûs. Ergò, per *Herigoni Theor. Plan.* l. 1. c. 3. Prop. 12. *Schol.* 1. totidem Circuli segmenta describi possunt, capacia angulorum, sub quibus isti arcus conspiciuntur ex *d*, quæ segmenta omnia se mutuò intersecabunt in *d*. Possunt igitur & hac Methodo inveniri Apogéa & Excentricitates Planetarum, delineatione Geometricâ, adhibitis Observationibus *quotvis*; nec difficilius est, Circulos ducere, quàm lineas rectas.

Sed ut demus id, quod verum est, Clarissimi *Cassini* delinationem Geometricam non-nihil expeditiorem esse; verendum est interim, ne, si ἀκρίβειαν Astronomis expetitam sectemur, Diagrammata requirat enormis magnitudinis, adeóque operosior evadat, quàm ipse Calculus. Ad hunc autem accedentes, utramque Methodum æquipollere deprehendemus.

Adhibeamus enim ex Observationibus *Tychonicis* tres, quæ Dom. *Cassini* Diagrammati quodammodo consentiant; nim. Observationem A, cùm *An.* 1604, *Mart.* 28 *d.* 16 *h.* 23 *m.* *Mars* observatus fuit in ♎ 18 *g.* 37 *m.* 10 *s.* B, cum *An.* 1587, *Mart.* 6 *d.* 7 *h.* 23 *m.* idem Planeta visus fuit in ♍ 20 *g.* 43 *m.* 0 *s.* Denique C, cùm *An.* 1600 *Jan.* 18 *d.* 14 *h.* 2 *m.* deprehenderetur in ♌ 8 *g.* 38 *m.* 0 *s.* Est igitur inter A & B intervallum apparens 22 *g.* 54 *m.* 10 *s.* & huic respondens medium 25 *g.* 58 *m.* 40 *s*; at inter B & C intervallum apparens 47 *g.* 5 *m.* 0 *s.* & medium 56 *g.* 21 *m.* 57 *s.* Itaque

*Methodo Cassini*, Fig. *II*.

1. In Triangulo D B H,

| | | |
|---|---|---|
| Dantur | D B | 10, 00000 |
| | D B H | 12 \|99 |
| | B D H | 11 \|45 |
| Quæritur | B H | 9, 68106 |

2. In Triangulo DBG.

| | | |
|---|---|---|
| Dantur | D B | 10, 00000 |
| | D B G | 28 \|18 |
| | B D G | 23 \|54 |
| Quær. | B G | 9, 70653 |

3. In Triangulo HBG.

| | | |
|---|---|---|
| Dantur | B H | 9, 68106 |
| | B G | 9, 70653 |
| | H B G | 41 \|17 |
| Quær. | B G H | 64 \|95 |
| Cujus Compl. | GBI | 25 \|05 |
| Si auferas ex | GBD | 28 \|18 |
| Restat | IBD vel IBL | 3 \|13 |

4. In Triangulo G B I.

| | | |
|---|---|---|
| Dantur | B G | 9, 70653 |
| | G I B | 90 |
| | G B I | 25 \|05 |
| Quær. | B I | 9, 66363 |

5. In Triangulo I B L.

| | | |
|---|---|---|
| Dantur | B I | 9, 66363 |
| | BL (semis τῆ BD) | 9, 69897 |
| | IBL | 3 \|13 |

Quær. BLI 32 |31, An. vera, & L I, 8,67284, Excentricitas.

*Methodo Herigoni*, Fig. *V*.

1. In Triangulo *d b h*,

| | | |
|---|---|---|
| Dantur | *db* | 10, 00000 |
| | *a d b* externus | 24 \|44 |
| | *b h d* | 11 \|45 |
| Quær. | *b h* | 10, 31894 |

2. In Triangulo *d b g*,

| | | |
|---|---|---|
| Dantur | *d b* | 10, 00000 |
| | *c d b* externus | 51 \|72 |
| | *b g d* | 23 \|54 |
| Quær. | *b g* | 10, 29347 |

3. In Triangulo *h b g*,

| | | |
|---|---|---|
| Dantur | *b h* | 10, 31894 |
| | *b g* | 10, 29347 |
| | *h b g* | 41 \|17 |

Quær. *b h g* (vel *bhi*) 64 |95 = *b s g*

Et *h i b* = *s g b* = 90.

Ergo *h b i* = *g b s* = 25 |05

Ex *gbi* = *gbs* + *sbi* (= *hbg* — *hbi*) = 16 |12

Aufer *d b h* = *h b i* — *d b i* = 12 |99

Restat *gbs* + *sbi* — *hbi* + *dbi* = *sbd* (vel *dbl*) 3 |13

4. In Triangulo *g b s*

| | | |
|---|---|---|
| Dantur | *b g* | 10, 29347 |
| | *b g s* | 90 |
| | *g b s* | 25 \|05 |
| Quær. | *b s* | 10, 33637 |

5. In Triangulo *d b l*,

| | | |
|---|---|---|
| Dantur | *b d* | 10, 00000 |
| | *b l* (semis τῆ *b s*) | 10, 03534 |
| | *d b l* | 3 \|13 |

Quærit. *b l d* 32 |31 Anom. vera

Et *l d* 9,00926 Excentricitas.

Nimir. Ut Fig. *II*. B L 9,69897, ad L I, 8,67284;
Ita Fig. *V*. *bl* 10,03534, ad *ld* 9,00926.

| | *s.* | *g.* | *m.* | *sec.* |
|---|---|---|---|---|
| Ex loco apparenti secundæ Observationis | 5 | 25 | 43 | 0 |
| auferatur angulus Anomaliæ veræ B L I | 1 | 2 | 18 | 36 |
| Restat locus Apogéi | 4 | 23 | 24 | 24 |

D 2

Erat

Erat autem reverà ævo *Tychonis* Apogeon *Martis* in ♌ 28 $\frac{1}{2}$ *d.*, à quo deficit iste locus, calculo inventus, solidis quinque gradibus. Porrò,

Ut B L 9, 69897, } Ita 5,18290 Log-us 152369 distantiæ med. ♂tis,
ad L I 8, 67284; } ad 4,15677 Log-um 14347 Excentricitatis ♂tis.

Est autum vera Excentric. ♂tis 14179, quam ista, calculo inventa, excedit $\frac{168}{14179}$ particulis.

Cæterum in ratiocinio secundùm utramque Methodum instituto notare licet non modò perpetuam Triangulorum similitudinem, sed & Epilogismi congruentiam; ne quis Apogéi & Excentricitatis sic inventæ à vero discrepantiam censeat errori Calculi imputandam. Sed nec Observationum vitio contingit; quas in dubium vocare nil aliud foret, quàm principia in Astronomia negare. Itaque restat, ut Hypothesin excutiamus.

Et *Ellipticæ* quidem Orbitæ Inventio sine controversia *Keplero* debetur; sed quibus Accelerationis & Retardationis gradibus incedant Planetæ, definire, non minùs pertinet ad integrandam Hypothesin, quàm ipsius Orbitæ determinatio. Quanquam autem ex Cl. *Cassini* (vel Interpretis ejus) sermone id nusquam apparet; attamen ex Constructione Problematis, & ejus Analysi, manifestum est, eum supponere, Planetam ex foco superiori videri prorsus æquabili motu incedere. Fuit sanè, cùm idem existimaret *Keplerus*, quod ejus Scripta evolventibus liquere potest. Sed cum id Observationibus nequaquam congruere animadverteret, mutavit sententiam, & lineam veri motûs Planetæ æqualibus temporibus æquales areas Ellipticas verrere professus est: Punctum autem, ex quo Planeta exactè æquabili motu procedere videtur, nullum omninò extare in hoc Universo, nisi id libratile statuere libeat. Nulli interim puncto propriùs æquabilem videri incessum Planetæ, quàm ipsi foco superiori Ellipseos. Neque inventus fuit hactenus, qui areas *Kepleri* phænomenis satisfacere posse negaret; sed, cum eas Calculo directo exhibere nec ipse nec post eum quisquam potuerit, causati sunt nonnulli, *Keplerum*, nimis indulgentem causis *Physicis*, à *Geometria* diversum abiisse; quasi causæ physicæ repugnent Geometriæ, aut minus Geometricum sit Problema, quod, nullâ injectâ physicarum causarum mentione, sic proponitur: *Data area Trilinei, inter lineas absidum, & veri motus, nec non peripheriam Ellipticam intercepti, invenire Angulum ad Solem.* Habent igitur à *Keplero* responsum, qui illi ἀγεωμετρίαν objiciunt; nim. *Eant ipsi & Schema solvant.*

Quamvis autem religio fuerit *Keplero*, ab Hypothesi, quam *Naturalem* esse planè persuasum habebat, recedere; quidni liberum foret aliis periculum facere, num via quævis alia detur, inæqualitatem Planetarum primam directo Calculo investigandi? Ideoque Vir Clariss. *Ism. Bullialdus* aggresus est ratiocinio Geometrico indagare, quâ semitâ, & quibus intensionis ac remissionis gradibus conveniret Planetas ferri, ut ab æquabili incessûs norma, Astronomis ante *Keplerum* assumptâ, ad eam, quam spectamus, Inæqualitatem perduceremur. Perennant Illustrissimi viri monu-

monumenta, unde omnem hujus Inventi rationem haurire licet Aſtrophilis. Amplexus eandem Reverendiſs. *Seth. Wardus*, primùm oſtendit, paria facere cum linea æquabilis motûs circa alterum Ellipſeos umbilicum gyrata; deinde & Calculi directi methodo ornavit eâ, quam paulò antè recitavimus: Ita ut nil amplius deſiderari poſset, quàm ut *Urania* felicibus cæptis annueret. Cujus quidem nomine ſuſcipere auſus fuit Illuſtriſs. Comes *Paganus*, edito, *biennio poſt*, ejuſdem ferè tenoris Scripto, adeò veram eſſe Hypotheſin, ut deprehenſam circa Octantes diſcrepantiam, Aſtronomorum inſcitiæ tributam mallet. At Cl. *Bullialdus*, audiendam potiùs ipſam Aſtronomiam ratus, Obſervatorum ore loquentem, ſecundis curis, adhibita prioribus Inventis limitatione quadam, diſcrepantiam illam exterminavit. Unde porrò intelligitur, Hypotheſin illam, cui Cl. *Caſſinus* inveſtigationem Apogeorum & Excentricitatum ſuperſtruit, tantundem ferè deficere à vero, quantum Cl. *Bullialdi* limitatio pollet, atque ab illo defectu pullulare eum quem ſuprà notavimus, Calculi à Cœlo diſſenſum.

Tantùm vero abeſt, ut de Eximii Viri Inventione vel minimum delibatum velim, ut quicquid hujus lucubratiunculæ non hauſi ex Reverendiſſ. *Wardo*, vel *Herigono*, id omne Ipſi libentiſſimè acceptum referam, qui anſam nobis præbuit hæc altius conſiderandi. Nec dubitamus, quin omnia iſta multò uberiùs ac luculentiùs in promiſſo *Tractatu* expoſita propediem reperturi ſimus, cujus Editionem maturam, pro eo qno flagramus diviniſſimæ Scientiæ amore, perquàm avidè exſpectamus.

## An Account of Three Books.

I. Eſperienze *intorno alla* Generatione Degl' Inſetti, *fatte da* Franciſco Redi, *Academico della Cruſca. In* Firenze, *A.* 1668. *in* 4o.

THe Learned and Ingenious Author of this Book, lately come to the Publiſhers hands, though not yet (which is much diſliked by the curious) into our Stationers Shops, doth with much induſtry undertake therein to evince, that there is no ſuch thing as *Æquivocal* Generation but that every Animal is generated by the ſeed of another Animal, (its parent,) or, at leaſt, from ſome Living and un-corrupted Plant, as out of Oak-Apples, and ſeveral Protuberances and Excreſcencies of Vegetables.

*Firſt* then, in the aſſerting of the *Univerſal* and true Generation of Inſects by a peculiar and paternal Seed, the Author poſitively affirms, that he could never find, by all the Experiments and Obſervations, he ever made (of which he relateth a great number, by himſelf made upon all ſorts of Animals) that ever any Inſects were bred from Fleſh, or Fiſh, or *putrified* Plants, or any other Bodies, but ſuch, as Flies had acceſs unto, and ſcatter'd their ſeed upon; he having taken extraordinary care and pains to obſerve, that alwayes on the Fleſh, before it did verminate, there ſate Flies of the ſelf ſame kind with thoſe, that were afterwards produc'd thence; and again, that no Worms would ever come from any Fleſh in Veſſels well cover'd, and defended from the acceſs of Flies; ſo that to him there is no generation of Inſects from any dead Animals, but ſuch as have been fly-blown.

And leaſt it ſhould be objected, that the reaſon, why in veſſels exactly clos'd, no Inſect breeds, is the want of Air, neceſſary to all Generation, He hath carefully covered ſeveral veſſels with very fine Naples-vaile, for the Air to enter, though Flyes could not; but that no worms at all were bred there, notwithſtanding that many Flyes ſwarmed about them, invited by the ſmel of the Fleſh incloſed therein.

*Secondly*, to make out the other part of his Poſition, *viz.* That theſe Animals that are not bred by the ſeed of other Animals, are produced from ſome live Plant, or its

Fig. II.

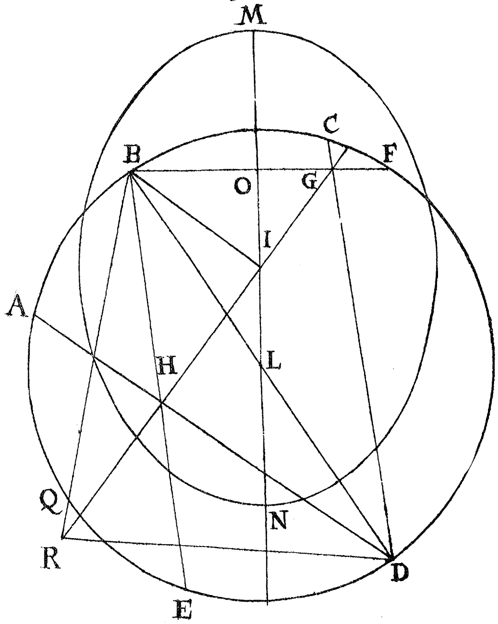


Fig. III.

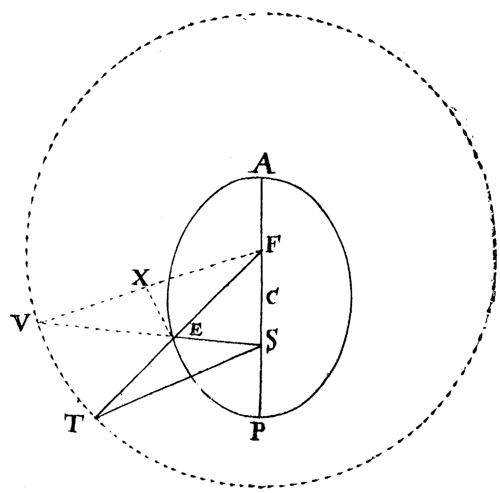


Fig I.

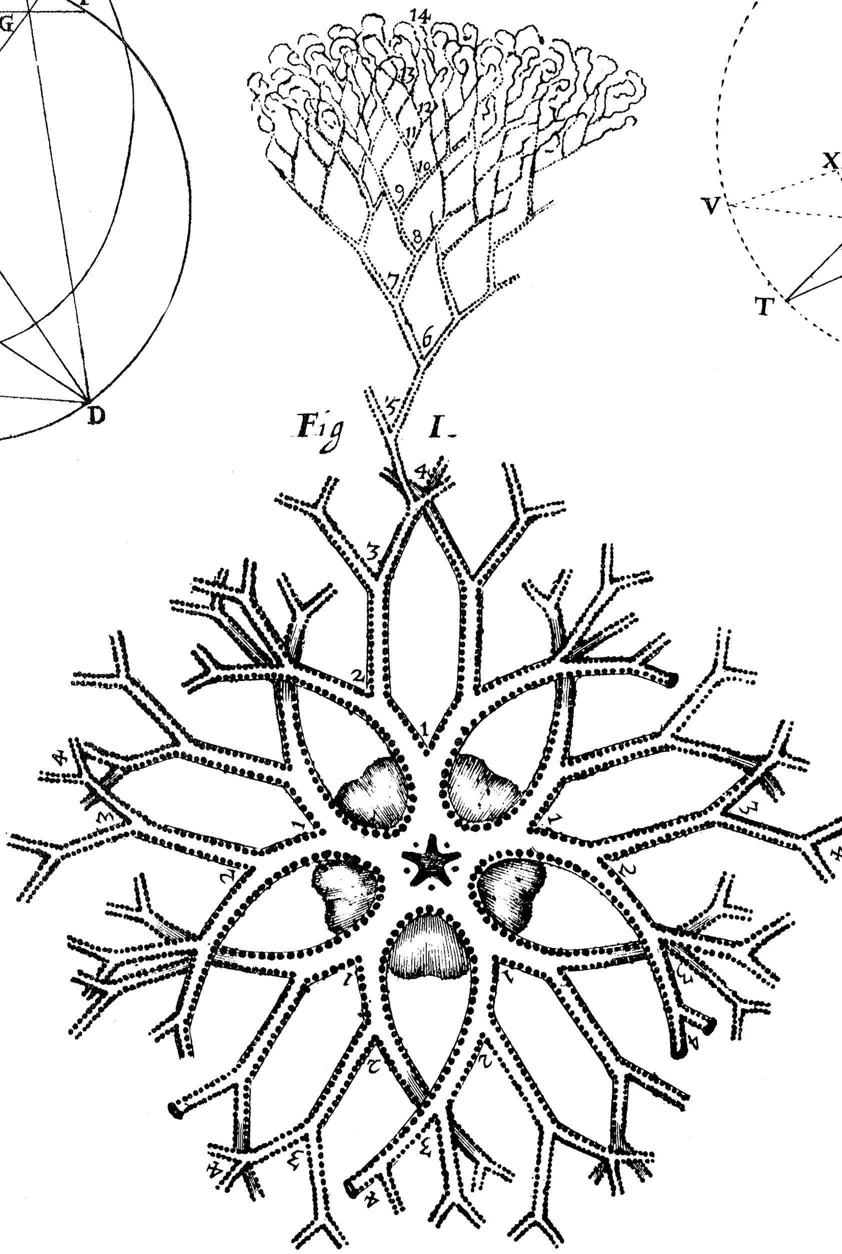


Fig. IV

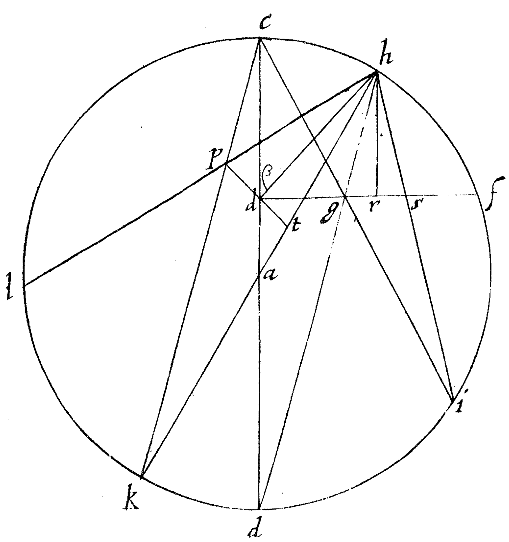


Fig. V.