Ejusdem Doctoris *WALLISII* Non-nulla, De *Centro Gravitatis Hyperbolæ*, Prægressæ Epistolæ subnexa.

Tandem vero, ne nihil habeas præter Confutatum Hobbium, (*quæ fortè non tanti res est, ut de ea multum sis solicitus* ;) *libet hic annectere*, De Centro Gravitatis Hyperboles *nonnihil* ; (*præterito Anno conscriptum* ;) *Miscellaneis illis, si placet subjungendum, quæ habemus ad* Prop. 1. Cap. XV. De Motu. *Nempe*, pag. 753. l. 26. ibidem.

Post §. 10. *Hæc addantur.*

11. *Etiam hoc addo.* Spatii Hyperbolici, sive interioris sive exterioris, *non quidem ipsum Gravitatis Centrum, sed Rectam in quâ est, seu* Axem Æquilibrii exhiberi posse, etiamsi ignoretur Plani Magnitudo.

Vid. Tab. II Fig. 4. *Esto enim exposita Hyperbola* HhV, *Centrum* A, *axis* AX, *vertex* V, *latus rectum* L, *axis transversus* T=2S, *axes intercepti* VD=D, Vd=d, *ordinatim-applicatæ* HD=H, hd=h, *axis conjugatus* $A\Delta$, *ad quem ordinatim-applicatæ* $H\Delta$=K, $h\delta$=k, *asymptotarum alteri* $A\sigma$ *parallela* HS=B *ad alteram* AS=A *ordinatim-applicetur*, & VO *ad* AO=E, & hs *ad* As ; *atq*; *intelligatur* $SA\sigma$ *angulus rectus* ; *sitque* OS (=A-E) =O.

Sunt (*propter* $h=\sqrt{:dL+\frac{L}{T}d^2:}$) *ordinatarum ad axem semi-quadrata, seu momenta respectu* AD, $\frac{1}{2}Ld+\frac{L}{2T}d^2$; & (*propter* Omn : d, $=\frac{1}{2}D^2$, & Omn . d^2, $=\frac{1}{3}D^3$,) *simul omnia, seu Momentum totius* HVD *respectu* AX, $\frac{1}{4}LD^2+\frac{L}{6T}D^3$.

Idem (*propter* $k=\sqrt{:S^2+\frac{T}{L}h^2:}$) *ordinatarum ad axem conjugatum semi-quadrata, seu momenta respectu* $A\Delta$, $\frac{1}{2}S^2+\frac{T}{2L}h^2$; & (*propter* Omn . h^2, $=\frac{1}{3}H^3$,) *simul omnia, seu totius* $AVH\Delta$, *momentum respectu* $A\Delta$, $\frac{1}{2}s^2H+\frac{I}{6L}H^3$. *Quod ex* (*totius* $ADH\Delta$ *momento*) $\frac{1}{2}K^2H=\frac{1}{2}S^2H+\frac{T}{2L}H^3$ *subductum, relinquit residui* HVD, *respectu* $A\Delta$, *momentum* $\frac{T}{3L}H^3$.

Ergo (*propter distantias momentis proportionales*,) *in* DH, *sumptâ* DG, *quæ sit ad* AD, *ut* $\frac{1}{4}LD^2+\frac{T}{3L}D^3$ *ad* $\frac{T}{3L}H^3$; *hoc est*, $3TL^2D^2+2L^2D^3$ *ad* $4T^2H^3$; *erit in* (*junctâ*) AG, *ipsius* HVD *centrum Gravitatis* ; *utpote cujus puncta singula in eâ ratione distant ab* AD, $A\Delta$.

Idem obtinebitur ope momenti ipsius HVD *respectu Asymptotæ* $A\sigma$.

Est (*per* § *D* Prop. 31. Cap. 5.) *ipsius* $OVHS$, *respectu* $A\sigma$, *momentum* ABO. *Est autem Trianguli* ASX ($=\frac{1}{2}A^2$,) *respectu ejusdem* $A\sigma$, *momentum* $\frac{1}{3}A^3$; & *Trianguli* AOV *momentum* $\frac{1}{3}E^3$; *positisque* HX(=A−B)=X, & DB (*parallelâ* AS) =Y, *adeoque* $HDX=\frac{1}{2}XY$, *hujusque ab* $A\sigma$ *distantiâ centri Gravitatis* $A-\frac{1}{3}Y$, *erit Trianguli* HDX, *respectu* $A\sigma$, *momentum* $\frac{1}{2}AXY-\frac{1}{6}XY^2$. *Ergo* (*propter* $HVD=ASX-AOV-OVHS-HDX$) *ipsius* HVD, *respectu* $A\sigma$, *momentum* $\frac{1}{3}A^3-\frac{1}{3}E^3-ABO-\frac{1}{2}AXY+\frac{1}{6}XY^2$.

Ergo

Ergo (*propter distantias momentis proportionales*) *in* DH *sumptâ* DQ, *quæ sit ad* AS, *ut* $\frac{1}{4}LD^2+\frac{L}{6T}D^3$ *ad* $\frac{1}{3}A^3-\frac{1}{3}E^3-ABO-\frac{1}{2}AXY+\frac{1}{6}XY^2$; *ductâque* QK *parallelâ* AX *occurrente* SX *in* K; *erit in* (*juncta*) AK, (*utpote cujus singula puncta in ea ratione distant ab* AD, Aσ,) *Centrum gravitatis* HVD. *Quæ quidem* AK *est eadem positione recta cum* AG; *quoniam utraq; tum per* A *transit, tum per Centrum Gravitatis* HVD.

Similiter (*ob eandem causam,*) *in* ΔH *sumpta* ΔL, *quæ sit ad* AS, *ut* $\frac{T}{3L}H^3$ *ad* $\frac{1}{3}A^3-\frac{1}{3}E^3-ABO-\frac{1}{2}AXY+\frac{1}{6}XY^2$; *ductaque* LK *parallelâ* AΔ, *occurrente* SX *in* K; *erit in* (*juncta*) AK (*cujus utique singula puncta in ea ratione distant ab* AΔ, Aσ,) *centrum gravitatis* HVD. *Erit autem hoc* K *idem quod prius, ob causam modò insinuatam.*

12. *Simili processu utendum in spatio exteriori* OVHS.

Est enim (*ut jam ostensum*) *hujus, respectu* Aσ, *momentum* ABO.

Item, respectu AX, *Trianguli* $ASX=\frac{1}{2}A^2$ *est* (*propter centri ab* AX *distantiam* $\frac{1}{3}A\sqrt{\frac{1}{2}}$) *momentum* $\frac{1}{6}A^3\sqrt{\frac{1}{2}}$; & *similiter, Trianguli* AOV, *momentum* $\frac{1}{6}E^3\sqrt{\frac{1}{2}}$; *Trianguique* $HDX=\frac{1}{2}XY$ (*propter distantiam* $\frac{1}{3}H$) *momentum* $\frac{1}{6}XYH$; *ipsiusque* HVD (*ut modò*) $\frac{1}{4}LD^2+\frac{L}{6T}D^3$. *Ergo* (*propter* OVHS=ASX-AOV-HDX-HVD,) *ipsius* OVHS, *respectu* AX, *momentum* $\frac{1}{6}A^3\sqrt{\frac{1}{2}}-\frac{1}{6}E^3\sqrt{\frac{1}{2}}-\frac{1}{6}XYH-\frac{1}{4}LD^2-\frac{L}{6T}D^3$.

Ergo (*propter distantias momentis proportionales,*) *in* DH, *sumpta* DI, *quæ sit, ad* AS, *ut* $\frac{1}{6}A^3\sqrt{\frac{1}{2}}-\frac{1}{6}E^3\sqrt{\frac{1}{3}}-\frac{1}{6}XYH-\frac{1}{4}LD^2-\frac{L}{6T}D^3$ *ad* ABO: *ductaque* IF *parallelâ* AX, *occurrente* SX *in* F; *erit in* (*juncta*) AF (*cujus puncta singula in ea ratione distant ab* AX, Aσ,) *centrum gravitatis* OVHS.

Idem obtinebitur comparando ejusdem OVHS *momenta respectu* Aσ, & AΔ; *vel* AX, & AΔ; *eandem autem* AF *prodire necesse erit, ut quæ transire debeat tum per* A, *tum per ipsius* OVHS *centrum gravitatis.*

13. *Simili item processu utendum est in spatio exteriori* AVHΔ.

Est enim (*ut modò*) *hujus respectu* AΔ *momentum* $\frac{1}{2}S^2H+\frac{T}{6L}H^3$.

Idem, respectu AX; *rectanguli* ADHΔ *momentum* $\frac{1}{2}KH^2$; *unde subducto ipsius* HVD *momento* $\frac{1}{4}LD^2+\frac{L}{6T}D^3$; *habebitur ipsius* AVHΔ *respectu* AX *momentum* $\frac{1}{2}KH^2-\frac{1}{4}LD^2-\frac{L}{6T}D^3$.

Ergo, in ΔH, *sumpta* ΔM, *quæ sit ad* DH, *ut* $\frac{1}{2}S^2H+\frac{T}{6L}H^3$ *ad* $\frac{1}{2}KH^2-\frac{1}{4}LD^2-\frac{L}{6T}D^3$; *erit in* (*juncta*) AM (*cujus singula puncta in ea ratione distant ab* AΔ, AX,) *centrum gravitatis* AVHΔ.

Idemque obtinebitur comparatis ejusdem momentis respectu AΔ, & Aσ; *vel respectu* AX, & Aσ: *eandem autem* AM *prodire necesse erit, ob causam ante insinuatam: Ut non sit spes inde, ob duas ejusmodi rectas, se mutuò decussantes, ipsum centrum obtinendi, absque Plani magnitudine.*

Si verò in his omnibus vel non sit SAσ *ang. rectus; vel Hyperbola, vel Scalena* (*sumptâ Diametro quavis aliâ loco Axis* AX;) *similis adhibenda erit accommodatio cum ea, quam de Scalenis insinuavimus ad* § K prop. 31. c. 5.
Dab. Oxon. Aug. 31. 1672.

Tab. II.

Fig. I.

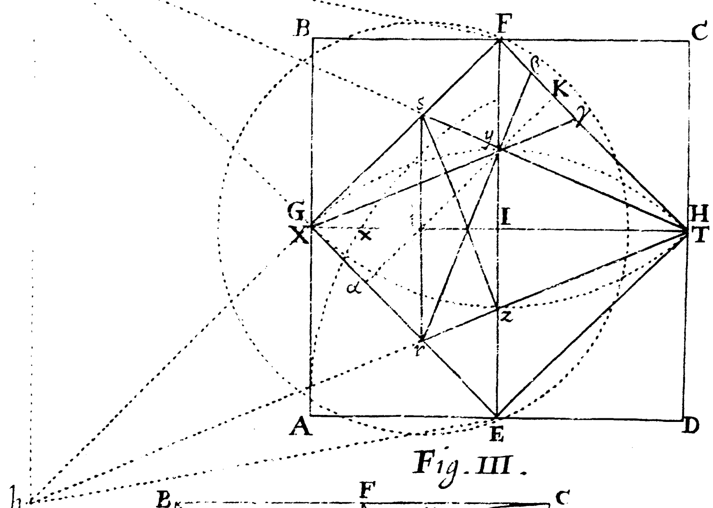

Fig. II.

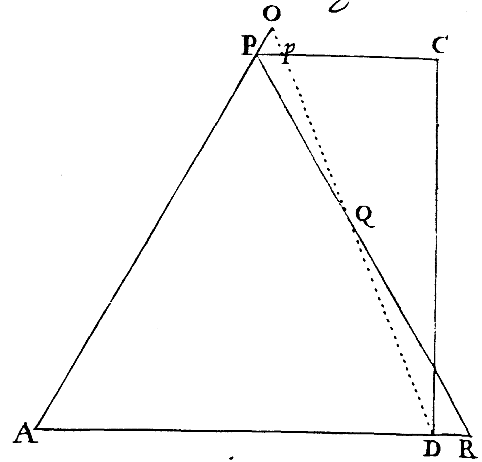

Fig. III.

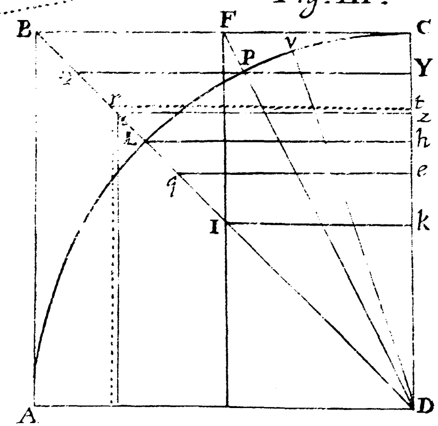

Fig. IV.