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

T*Andem 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 expoſitæ Hyperbolæ H h V, Centrum A, axis A X, vertex V, latus rectum* L, *axis tranſverſus* T=2S, *axes intercepti VD*=D, *Vd*=d, *ordinatim-applicatæ HD*=H, *hd*=h, *axis conjugatus A*Δ, *ad quem ordinatim-applicatæ H*Δ=K, *h*δ=k, *aſymptotarum alteri A*σ *parallela HS*=B *ad alteram AS*=A *ordinatim-applicetur, & VO ad AO*=E, *& h s ad A s ; atq; intelligatur S A*σ *angulus rectus ; ſitque OS* (=A-E) =O.

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

Idem obtinebitur ope momenti ipſius HVD reſpectu Aſymptotæ Aσ.

Eſt (per § D Prop. 31. Cap. 5.) *ipſius OVHS, reſpectu A*σ, *momentum* ABO. *Eſt autem Trianguli ASX* ($= \frac{1}{2}A^2$,) *reſpectu ejuſdem A*σ, *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*σ *diſtantiâ centri Gravitatis* A$-\frac{1}{3}$Y, *erit Trianguli HDX, reſpectu A*σ, *momentum* $\frac{1}{2}AXY - \frac{1}{6}XY^2$. *Ergo (propter HVD=ASX−AOV−OVHS−HDX) ipſius HVD , reſpectu A*σ, *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* $\frac{1}{6}E^3\sqrt{\frac{1}{2}}$; *Triangulique* $HDX = \frac{1}{2}XY$ *(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~~ Item, 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 insinnavimus ad § K prop. 31. c. 5.

Dab. Oxon. Aug. 31. 1672.

 An

Trans. N°27. Tab. II.

Fig. I.

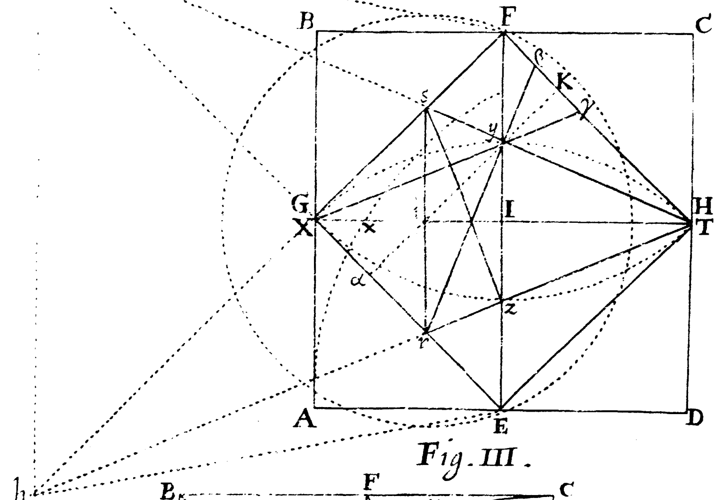

Fig. II.

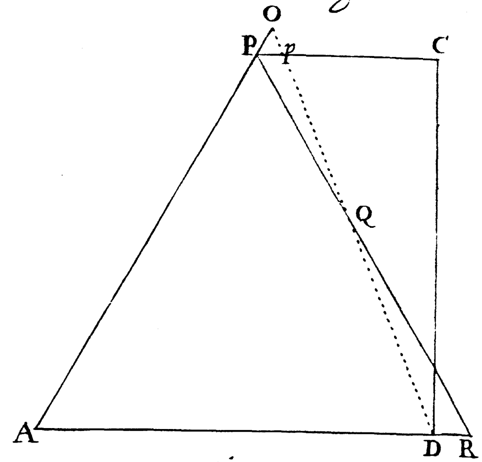

Fig. III.

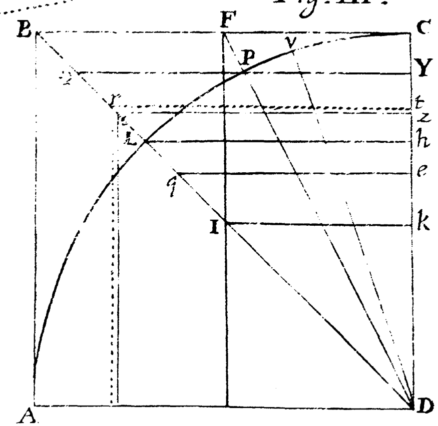

Fig. IV.