Extrait d'une lettre de M. Stirling à M. Cramer. 11 April 1729. V.S. +

I have given Mr Bradley's Paper to Mr Caille, I hope it will give you great Satisfaction. He accounts for the apparent motion of the Fixt Stars by comparing the velocity of Light to that of the Earth in its orbit: and find by several observations that Light comes from the Sun to the Earth in 8′, 12″ or 13″. His way determines it more exactly than the Eclipses of Jupiters Satellits. He shews us that the parallax of the fixt Stars is very small, particularly that of γ Draconis, he seems to be certain that it is less than 2″, and indeed is inclined to be of opinion that it is less than 1″. He observes that the Stars near the Equinoctial Colure change their declination more and those near the Solstitial Colure change their declination less than they should if the precession of the Equinox were exactly 50″. But whether this proceeds from a regular cause or not he does not determine.

I know not if Mr MacLaurins Book be yet in the Press, he has met with a Disapointment in another Mathematical affair, wich gives him some trouble and probably may Stop his Book for some time. I shall put mine in the press very soon, in the mean time I send you one of my theorems for interpolation as follows.

Concessa curvarum quadratura oporteat interpolare seriem cujus termini producuntur ducendo in se continue fractiones quarum numeratores & denominatores sunt in progressione arithmetica.

Solutio.

Sit series $A,\ \frac{r}{p}A,\ \frac{r+1}{p+1}B,\ \frac{r+2}{p+2}C,\ \frac{r+3}{p+3}D$, &c, sitque z intervallum inter primum terminum A & alium quemvis T. Eritque ut area curvae cujus ordinata est $x^{r-1}\times\overline{1-x}^{\,p-r-1}$ ad aream curvae cujus ordinata est $x^{z+r-1}\times\overline{1-x}^{\,p-r-1}$ ita est primus terminus seriei ad terminum quaesitum T. Notandum est, x esse absissam, & oportere sumi eas arearum partes quae jacent supra absissam unitati aequalem.

Exemplum.

Sit series $1,\ \frac{1}{2},\ \frac{3}{8},\ \frac{5}{16},\ \frac{35}{128}$, &c. hoc est, $1,\ \frac{1}{2}A,\ \frac{3}{4}B,\ \frac{5}{6}C,\ \frac{7}{8}D,\ \frac{9}{10}E$, &c, sive $1,\ \frac{\frac{1}{2}}{1}A,\ \frac{\frac{1}{2}+1}{1+1}B,\ \frac{\frac{1}{2}+2}{1+2}C$, &c, erit $r=\frac{1}{2}$, $p=1$; adeoque ut area ordinata ~~[illegible]~~ $x^{-\frac{1}{2}}\times\overline{1-x}^{\,-\frac{1}{2}}$ ad aream ordinata $x^{z-\frac{1}{2}}\times\overline{1-x}^{\,-\frac{1}{2}}$, sive ut area hujus $\frac{1}{\sqrt{x-xx}}$ ad aream hujus $\frac{x^z}{\sqrt{x-xx}}$ ita unitas, primus scilicet terminus seriei ad terminum T qui intervallo z removetur ab initio. Ut si quaeratur terminus in medio inter primum & secundum erit $z=\frac{1}{2}$, adeoque ut area ordinata $\frac{1}{\sqrt{x-xx}}$ ad aream hujus $\frac{x^{\frac{1}{2}}}{\sqrt{x-xx}}$, i.e. ut 3,141596.. &c. ad 2, ita terminus primus 1 ad terminum in medio inter primum & secundum. Similiter si quaeratur terminus centesimus primus,

mus primus, erit $z = 100$, & hoc in casu ratio quam habeat area ordinatæ $\frac{x^{100}}{\sqrt{x - xx}}$ ad aream circuli determinabit terminum quæsitum.

This Theorem will serve for more compounded Series, by resolving the Termi into their Divisors, and the same method is applyed to the most perplexed serie altho' I have only prosecuted it so far as is sufficient for the solution of some problems that were proposed to me.