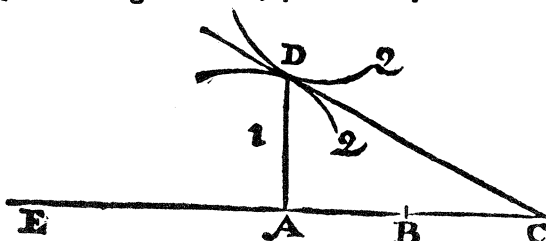


4. An Extract of a Letter from the Excellent *Renatus Franciscus Simons*, Canon of *Liege* and Counsellor to his Electoral Highness of *Collen*, written to the Publisher in order to be communicated to the *R. Society*; concerning his short and easie Method of drawing *Tangents* to all *Geometrical Curves* without any labour of *Calculation*: Here inserted in the same language, in which it was written.

— **M**ethodum meam ducendarum ad *Curvas* quaslibet *Geometricas Tangentium* misit ad Te, & *Virorum Doctissimorum R. Societatis* censuræ submitto. Brevis mihi visa est ac facilis, quippe quam puer *ægyptiæ* doceri possit, & quæ absque ullo calculi labore ad omnes omnino *lineas* extendatur: *Malo* tamen aliis talem videri quàm mihi, cum in rebus nostris cæcitere plerumque soleamus.

Fig. 1. *Data* sit igitur qualibet *Curva* *DQ* cujus puncta omnia referantur ad *Rectam* quamlibet datam *EAB* per *Rectam* *DA*; sive *EAB* sit *diameter* seu alia qualibet, sive etiam alia simul *lineæ* datae sint, quæ, vel quarum potestates *Æquationem* ingrediuntur; parum id refert.

In *Æquatione* *Analytica*, facilioris *explicationis* causâ, *DA* perpetuò dicatur v , *BA*, y . *EB* verò & alia *quantitates* datae, *Consonantibus* exprimantur.



Tum supponatur ducta *DC*, tangens *curvam* in *D*, & occurrens *EB*, productæ, si opus sit, in puncto *C*; & *CA* perpetuò quoque dicatur a . Ad *inveniendam* *AC* vel a , hæc erit *Regula Generalis*;

1. Rejectis ab *æquatione* partibus, in quibus y vel v non invenitur; statuantur ab uno latere omnes in quibus est y , & ab altero illa in quibus habetur v , cum suis signis $+$ vel $-$. Hoc, dextrum, illud, sinistrum latus, *facilitatis* causâ, vocabimus.

2. In latere dextro, præfigatur *singulis* partibus *exponens* potestatis quam in illis obtinet v ; seu, quod idem est, in illum ducantur partes.

3. Fiat idem in latere sinistro, præponendo scil. unicuique illius parti *Exponentem* potestatis quam in illa habet y . Sed & hoc amplius: *Unum* y in *singulis* partibus vertatur in a .

Ajo, *Æquationem* sic reformatam modum ostendere *ducendæ Tangentis* ad punctum *D* datum. Cui enim eo dato, pariter datae sint y & v , & ceteræ *quantitates*, quæ *Consonantibus* exprimuntur; a non poteris *ignotari*.

Si

Si quid forte sit obscuritatis in Regula, aliquot exemplis illustrabitur: Data sit hæc Aequatio $by - yy = vv$; in qua EB sit b, BA, y, DA, v, & queratur a sive AC talis, ut juncta DC tangat Curvam DQ in D. Ex regula, nihil rejiciendum est ab hac Aequatione, cum in singulis ejus partibus reperitur y vel v. Ita quoque disposita est, ut ab uno latere sint omnes illius partes in quibus y; ab altero, omnes in quibus v. Singulis itaque tantum præfigendus est Exponens potestatis, quam in illis habet y vel v; & in latere sinistro unum y vertendum in a, ut fiat $ba - 2ya = 2vv$. Ajo nunc, hanc Aequationem ostendere modum ducende Tangentis ad punctum D, sive $a = \frac{2vv}{b-2y} = AC$.

Sic si data fuerit aequatio $qq + by - yy = vv$; eadem planè fietetam priori Aequatio pro Tangente, abjecto scilicet qq, ut Regula præscribit.

Sic ex $2byy - y^3 = v^3$ fit $4bya - 3yya = 3v^3$ sive $a = \frac{3v^3}{4by - 3yy}$: Ex $bby + zyy + y^3 = qvv$, fit $bbat + 2zya + 3yya = 2qvv$ & $a = \frac{2qvv}{bb + 2z + 3y}$: Ex $b^4 + by^3 - y^4 = qqvv + zv^3$, fit $3byya - 4y^3a = 2qqvv + 3zv^3$ & $a = \frac{2qqvv + 3zv^3}{3by - 4y^3}$.

Verum in similibus aequationibus nullam arbitror accidere posse difficultatem. Aliqua fortasse in illis occurret, quarum partes quadam constant ex productis y in v: Ut yv, yyv, y³vv, &c. Sed hæc quoque levis est, ut exemplis patebit. Detur enim $y^3 = bvv - yvv$. Nihil ab illa rejiciendum erit, cum in singulis ejus partibus reperitur y vel v.

Sed ut ex Regule præscripto disponatur, bis sumendum erit yvv, & statuendum tam in latere dextro, in quo sunt partes quæ habent v, quam in sinistro, cujus partes habent y; quandoquidem yvv, tam y quam v contineat. Faciendum igitur erit

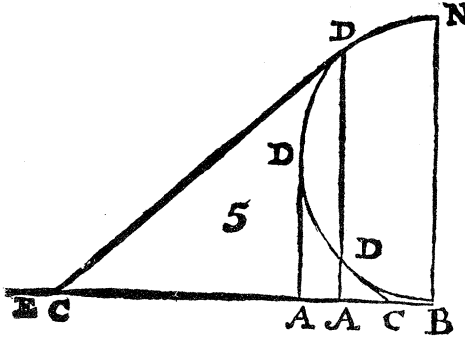
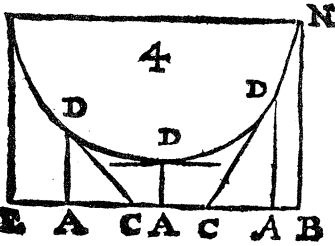
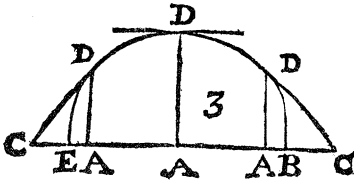
$$y^3 + vvy = bvv - yvv.$$

Tum mutata, ut prius, hac aequatione in aliam $3yya + vva = 2bvv - 2yvv$, dabitur $a = \frac{2bvv - 2yvv}{3y + v}$.

Ita enim intelligenda est Regula, ut nempe in latere non consideretur potestas ipsius v, ideoque ipsi yvv Exponens vv præfigi non debeat, sed tantum ipsius y: Sicut contra ab alio latere, in yvv considerari non debet potestas ipsius y, sed v tantum, eique suus Exponens præponi. Sic si foret $y^3 + by^4 = 2qqv^3 - yyv^3$, faciendum esset $y^5 + by^4 + v^3yy = 2qqv^3 - yyv^3$; & haberetur aequatio pro Tangente $5y^4a + 4by^3a + 2v^3ya = 6qqv^3 - 3yyv^3$ & $a = \frac{6qqv^3 - 3yyv^3}{5y^4 + 4by + 2v^3}$.

Atque his Exemplis arbitror, me omnem, quæ dari posset, Casuum varietatem complexum esse. Ceterum non erit fortasse inutile, si ea quæ generatim exposui, ad lineam aliquam singularem applicem. Data sit igitur Curva BD, cujus ea sit proprietas, ut sumpto in illa quolibet puncto D, si jungatur BD, & erigatur ad illam normalis DE, occurrens rectæ BE in E, recta DE sit semper æqualis datæ rectæ BF. Ut habeatur

Vid. Fig. 3. Sit enim Semi-circulus, cujus diameter EB, & in eo pun-
ctum D datum, ex quo cadat normalis DA=v. Sit BA=y, BE=b;



erit aequatio $b y - y y = v v$,
& ducta Tangente DC, erit
AC sive $a = \frac{b^2 - v^2}{2y}$. Nunc si
b major sit $2 y$, ducenda est
tangens versus B; si aequalis,
fit parallela EB; si autem
minor, ducenda est versus E;
ut n. 1. 2. & 4. diximus.

Vid. Fig. 4. Datur rursus
alius Semi-circulus inversus,
cujus puncta referri intelli-
gantur ad Rectam diametro
parallelam, & eidem aqua-
lem, ut in schemate. Denomi-
natis, ut prius, partibus, &
 $NB = d$, fit aequatio $b y$
 $- y y = d d + v v - 2 d v$.
Igitur AC sive $a =$
 $\frac{2 v v - 2 d v}{b - 2 y}$. Cum verò in ex-
emplo supposuerimus, v sem-
per esse minorem d; si b sit
major $2 y$, ducenda erit Tan-
gens versus E; si aequalis,
erit parallela; si minor, mu-
tatis omnibus signis, ducenda
erit versus B; ut n. 4. 5. & 3.

Nulla autem ducenda esset Tangens, seu Tangens foret ipsa EB, si sup-
posuissimus NB aequalem semi-diametro, sive $2 d = b$; ut n. 5.

V. Fig 5. Sit tandem alius Semi-circulus, cujus diameter NB nor-
malis sit ad rectam BE, ad quam ejus puncta referri intelligantur. NB
dicatur b, & alia partes denominentur ut supra; fiet Aequatio $y y =$
 $b v - v v$; & $a = \frac{b v - 2 v v}{2 y}$. Jam si b sit major $2 v$, Tangens ducenda
erit versus B; si minor, versus E; si autem aequalis, ipsa DA erit
Tangens; ut n. 1. 4. & 5^o.

Et hac est, ni fallor, Casuum omnium varietas, qua ex Aequationum
consideratione deprehendi potest.

Quomodo verò ex doctrina Tangentium constituentur Aequationum
Limites, non est ut pluribus exponam, cum evidens esse existimem, maxi-
mam vel minimam applicatarum vel utramque simul determinari à Tan-
gente parallela: de quo & aliàs ad Te scripsi, & aliquid etiam attingi

Miscelaneorum capiti &, quâ ratione flexus contrarii curvarum ex Tangentibus inveniuntur, ostendi. Eadem ratione reperitur quoque $\mu\upsilon\alpha\chi\delta\iota\varsigma\ \lambda\omicron\upsilon\pi\epsilon\varsigma$, ut vocat Pappus, & multa alia; quae si explicare vellem, liber mihi scribendus esset. Nam & in Physico-mathematicis Usus quoque hujus Regula opinione major est: Licet enim falsum sit Axioma, Naturam agere per lineam brevissimam; verissimum tamen est, Viam sequi determinatam, &, ubi nullam invenit, agere adipsam. De quo aliàs plura, si tanti Tibi visum fuerit: jam enim epistola modum excessi; ac vereor, ne, dum obscuritatem vitare satago, in prolixitatem inciderim. Adde tantum, me Regula mea Demonstrationem * habere facilem, & qua solis constet Lemmatibus; quod mirum Tibi fortasse videbitur. Vale. Dabam Leodii d. 17. Januâr. C1D1CCLXXIII.

* Non dubitamus, quin rogatu nostro Illustris & Candidus hic Author Demonstrationem hic indigitatam Nobis etiam brevi sit communicaturus.

An Account of some Books.

- I. *A Discourse concerning the Origin and Properties of WIND, &c. By R. Bohun Fellow of N. Coll. in Oxon. Printed at Oxford 1671. in 8^o.*

THE Industrious Author of this Discourse, having consider'd with himself, how little Progress had been made, as in general, in the *History of Nature*, so, in particular, concerning the History of *Winds*, till our Voyages to the *East* and *West-Indies*, and the great advancement of Navigation in this and the precedent Age, furnish't us with so many new Discoveries and Improvements in all Natural knowledge, especially in the Motions of the *Winds* and *Seas*, that we must acknowledge the Insufficiency of the Theories received from the Schools of the Antients; having, I say, considered this, and withall met with frequent opportunities of conversing with the most Experienced of our Sea-Captains, giving him good information of the Course of the *Trade-winds*, the *Indian Monsoons*, the several sorts of *Brisés* in the African and American Climates, *Hurricanes*, and other tempestuous Winds: Endeavoureth in this Discourse to give a fuller Account of this Subject than former Writers have done, proceeding therein, as he assureth the Reader, with great caution, in seldom making use of any Account of Voyagers, but when several Relations did agree in the same Particulars, or when he