

The Roots of young trees are to be preferred before the roots of older trees, because they will be more apt to take in sap and nourish the branch grafted into them.

The best roots of all, are those that come of kernels, which may be drawn at one, two or three years old, according to their growth. One plant must yield several Roots according to its bigness.

The Informer assures us, that 29 years since he sowed a bed of apple-kernels in *March*, in which year he planted an Orchard of Apple-trees and Pear-trees that cost 12. *d.* the tree. The spring following he pluckt up 40 of those seedlings, grown to the thickness of a fair graft, he grafted them in this manner of tongue-grafting, and planted them again. They all grew, and four of them bore fruit to perfection that year; so that in a year and half from an apple-kernel he had ripe fruit. Four of those trees, bought at 12. *d.* the tree, died; for want of a better supply, four of these trees thus grafted were planted in the rooms of those which died. These four trees will now bear two quarters of apples upon a tree; and are bigger than most of those trees amongst which they stand, which cost 12. *d.* the tree, when these were Kernels. He doth conceive, that plumbs, cherries, apricotts, peaches, and all sorts of fruit-trees may be thus raised; but he hath not made an Experiment any further then upon apples and pears.

If any desire to be further satisfied of the executive part of this, and the success of it, they may repair to *Totnam High-Cross* four miles from *London* in the road to *Ware*, where they themselves may see this performed.

An Account of some Books.

II. *Christiani Hugemii Zulichemii HOROLOGIUM OSCILLATORIUM. Parisiis, 1673. in fol.*

THIS eminent Mathematician divideth this Treatise into Five parts, of which, The *First* containeth his description of the Pendulum Watch.

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The *Second* treats of the descent of Heavy bodies, and their Motion in a *Cycloid*, that is, in a Line, which a Nail, fastn'd in the circumference of a running wheel, by its continued circum-rotation designeth in the Air.

The *Third*, of the Evolation and Dimension of Curve Lines.

The *Fourth*, of the Center of Vibration.

The *Fifth*, of the construction of an other Watch, wherein the Pendulum moveth *Circularly*, together with some Theorems *de Vi Centrifuga*.

Why the Author hath joyned all these matters together in this Book, will appear from his own discourse premised in the beginning of the same. It seems then, that having, since the publication of his first Treatise concerning the Watches by him invented, found many things relating to the perfection of that work, he thought good to gratify the publick with them; especially seeing that these Particulars are by him lookt upon as the main, and, as 'twere, the ground of this whole Mechanism; which before it was destitute of. For, a simple *Pendulum* being no Certain and Equal Measure of time, in regard that larger excursions are observ'd to be slower than the narrower, he hath by the aid of Geometry lighted upon a way of suspending the *Pendulum*, by finding out a certain Curve Line, that is appropriate to give it that desired Equality, which having applied to Watches, their Motion hath by this means been rendred so constant and certain, that by frequent Experiments they are now known to be exceedingly useful both in Astronomy and Navigation. This being the *Cycloid* above-mentioned, our Author maketh it his chief business in this Treatise to give a very accurate demonstration thereof. To which he thought it requisite to premise some new Demonstrations to establish and advance the Doctrine of *Galilaei* touching the *Descent of Heavy bodies*, the top-fruit of which he counts to be this very propriety of the *Cycloid*.

But then that this *Cycloid* might be adapted to the Use of *Pendulums*, he thought himself obliged to enter upon a new consideration of Curve Lines, *viz.* of those; which by their Evolation generate other Curves. Whence resulted the com-

parison of the length of Curve lines with Streight ones; which argument, by reason of its excellency and novelty, he acknowledges to have prosecuted further, than his present design required. Where occurs the way of finding a streight line equal to a *Paraboloid*, invented by that intelligent *English Gentleman William Neile*, since snatch't from us by an untimely death, to the exceeding great regrett of those that knew his worth.

Besides, for the clearer explication of the nature of the *Compounded Pendulum*, the usefulness whereof he shews in the construction of these *Automata*, he thought fit to subjoyn thereunto the speculation of the *Centers of Agitation*; in which occur many considerable Theorems, appertaining to linear, plain and solid figures.

To all which he promises the Mechanical Structure of the Watch, and the Application of the *Pendulum* thereto; enriching that part with his Table of the *Equation of Dayes*, as also with a Relation of the several successes of such Watches employed in considerable sea-voyages; of which *he saith* the best of all hath been, which was found in the Expedition of the late Duke of *Beaufort* into *Candia*, who having taken with him in his own ship two of those Watches, and appointed a good Astronomer to take care of them; The longitudes of the places, which they either touched at in that voyage, or which in passing by they could see, were by means of the said watches exactly measured, so as that the very same differences of longitudes were found by the accuratest Maps assigned to those places.

But since those Tryals, our Author affirms to have improved his watches by using a *Pendulum* of a Triangular figure, and by an other way of suspending them: of which he gives an ample description; to which we refer the Reader: concluding this account with taking notice of his *Universal and Perpetual Measure*, which he establisheth by exactly taking the measure of the distance from the point of suspension to the center of agitation of a simple *Pendulum* vibrating a second of Time; which being found to be such a length as being divided into three equal parts will make such a measure, as he calls an
Horary

Horary foot, which having such or such a proportion to all other Feet, may be used to settle a constant and certain measure every where, and to recover it in all ages; Forasmuch as Time will be always and in all places the same, and consequently such a length being taken as exactly equals a second of Time, a just Universal Measure is obtained.

II. *MODERN FORTIFICATION, &c.* By Sir Jonas Moor Master Surveyer of his Majesties Ordnance. London 1673. in 8°.

THE Worthy and Intelligent Author of this Book comprehends in a small volume whatever hath been designed and practised by the Latest and most Experienced Engineers of this Age, *Italian, French, Dutch and English*; and the manner of Defending and Besieging *FORTS* and other *PLACES*; together with the Use of a *Joynt-Ruler* or *Setſor* for the speedy description of any Fortification. All which he doth by such easy Rules, as if he had calculated this his Treatise for the meanest Capacities.

He divides the Book into 8. Chapters.

The *first* contains certain Propositions necessary to be known before-hand, borrow'd from Geometry; as also his way of taking the Plat of any Town or Place, together with his great care in reconciling the differences of *Measures* of several Countries, found in the Tables of *Snellius, Dogen, Greaves, Nicciolus, &c*; and particularly in comparing the *English Foot* with the famous Measures of other Places; mentioning withal *Monton's Universal Foot*, or a *Pendulum* that will vibrate 132 times in a minute of Time.

The *second* treats of the most Modern Fortifications of *regular Figures*; where the Author, discoursing of Count *Pagan's* way, wherein the *Flank* stands at right Angles with the Line of *defence*, takes notice, that this way hath been not only approved, but much facilitated by his Majesty of *Great Britain, CHARLES II.*

The *third* teaches the Uses of the *Joynt-ruler*, among which those are very considerable ones, that it contains not only a Table shewing, what weight of Powder is allowed for Proof
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of all Guns cast in *England*; but also the weights of the Shot in Iron for the several sizes of Guns, together with the weight of the Powder allow'd to each Sea-gunner for service. Where the Author inserts a very necessary and useful Advice to this purpose, *viz.* That if the Sea-Captains would seriously concern themselves in employing trusty persons to see the Cartridges justly filled with the appointed Allowance, and at their leisure to turn the Powder out of some Cartridges already fitted, and weigh it, to see that the Gunner wrong not their Guns, they would find their Bullets fly further, and do more execution. Adding this remarkable note, that the Officers of the Ordnance know that Powder proved Tower-proof is a fifth part stronger than any *Dutch* powder that hath been brought thither.

The *fourth* treats of Rampires, Parapets, Tenails, Motes, Covert-ways, and their several Dimensions and Measures; together with the whole way of laying down the *Profile*; as also the Rules how to cast up the Solidity of a *Rampire* and its *Parapet*, together with the *Parapet* of the *Covert way* beyond the *Counter scarp*, and thereby to proportion the Wideness and Depth of the Mote, that sufficient Earth may be gotten out of the same. Where is annexed the way of building up a Fort, and also the Estimate to be made of the Charges that will be required to do the same. To which is added a description of the works usually made both within and without *Forts*; as also the manner of describing upon Paper, by way of Perspective, the aforesaid Works.

The *Fifth* contains the doctrine of *Irregular* Fortifications; by which it appears, that 'tis requisite, an Engineer should make first a Plot of the whole Ground to be fortified, with all the ways, passages, old walls (if there be any) Rivers, Pools, Enclosures and all other matter fit to be known in the draught; which done, he may then design what works he shall think most agreeing to the place.

The *Sixth* teaches the way how to defend a Fort; and in order to it, how a Governor ought to be qualified; and what strength and number of Men, Victuals, Ammunition, and Instruments of war are necessary for its defence.

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The *seventh* treats of the way of *Besieging* places, by blocking up, breaking of Ground, opening of trenches, building of Batteries, bringing on Galleries, and Mining.

The *eighth* delivers in *English* a short Discourse written in *French* by Monsieur *de la Mont*, of Fortification offensive and defensive, printed at *Paris* 1671. To which is annexed the *Table of Angles* taken out of Count *Pagan*.

So much of this Tract; which, we hope, will in due time, be follow'd by that large and costly piece, the Author saith in the *Epistle Dedicatory* he is now preparing, of all the *Forms of Fortifications*, and *Modles* of all sorts of *Engins of war*, of what nature soever, in fair Prints, that have been made or invented to this day: A very desirable work, the hastening of which is very much wish't by the Curious.

III. *The Elements of that Mathematical Science call'd Algebra*, by John Kersey. London 1673. *an. in fol.*

IN N^o. 90. of these Tracts, an *Advertisement* was given of a Body of *Algebra* prepared for the Press by that eminent Algebraist Mr. *John Kersey*, consisting of four Books. We now give notice to the Reader, that the *Two* first of them are since actually printed and now exposed to sale. As for the Argument of them since a pretty large account was then rendered concerning them in the said Tract, we shall now only acquaint the Reader;

First, that the Author will be found to have so fully and plainly handled the matter, that an ordinary capacity without any other Teacher may attain this excellent knowledg, which extends itself through all the parts of the *Mathematicks*, being the very Art of Invention of innumerable Theorems and their Demonstrations both in *Arithmetick* and all parts of *Geometry*, whether Plain, Curvi-linear, solid or local.

Secondly, that whereas many do wonder, why some forraign Nations are so fertile, and the English so barren of good *Mathematical Books* in their Mother tongue, the reason thereof, and of the loss of many mens laborious and excellent writings and inventions, is, that the Bookfellers being discouraged by the
slow-

slowness of sale, are not willing to undertake the printing of them. Now that *Algebra* may not have the same fate, we have this to say from the Judgement of sober and knowing Mathematicians, that there is not the like Collection of *Algebra* extant in Latin or any other Language, that we know of; whence this Book hath met with the approbation and applause of the most Learn'd in that Science: And if it find a suitable acceptation, satisfactory to our Stationers, it will encourage them to hasten the *third* and *fourth* Part, of which the *third* is a *Diophantus in Speciebus* with many other excellent Problems of the like nature; and the *fourth* consists partly of Geometrical Theorems and Problems (many whereof are practical in Mensuration,) partly, but principally, of the Analytical Calculation and Geometrical constructions of Problems arising thence, demonstrated afterwards out of the Elements, according to the custom of the Antients, concealing the Method of Invention, (as is asserted by many,) for the magnifying of their Inventions, as if there had been no such thing as *Algebra* known or used.

Besides, it will doubtless induce the Learned to communicate their Notions and Collections of much excellent knowledge that lyeth strangely scatter'd in print in the most abstruse parts of Geometry, as in the Conical Doctrine, Angular Sections, Solid and Curvilinear Geometry, and Local determinations; about which we shall not further trouble the Reader or ourselves, till we find the success of this, which is now extant.

An addition to the above-related Experiments made with the Blood-staunching liquor.

Since the above-recited Experiments were printed, the Publisher received information, that with the same liquor there have been made two successful Operations upon two several Persons, a Woman and a Man, by applying it to the place, from whence a leg of each of them was cut off to prevent a gangrene. Of which the particulars not being yet given in, we must refer them to another opportunity, if they shall be found so considerable as to deserve to be described at large.

Errata in this Numb. Pag. 6057. l. 18 r. to decry. ibid. l. 32. r. of thos.

London, Printed for John Martin, Printer to the R. Society. 1673.