great Ease and Speed; and by it I have performed some Things upon Minerals and Metals, which with crude Antimony alone I could not effect.

Take of Antimony one Pound; flux it clear: Have an Ounce or two of the Cawk-stone (by and by to be described) in a Lump red-hot in readiness. Put it into the Crucible to the Antimony; continue the Flux a sew Minutes: Cast it into a clean and not greased Mortar, decanting the melting Liquor from the Cawk.

This Process gives us above 15 Ounces of Vitrum of Antimony, like polish'd Steel, and as bright as the most refined Quicksilver. The Cawk seems not to be diminish'd in its Weight, but rather increased; nor will be brought to incorporate with the Antimony,

though flux'd in a strong blast.

This Cawk-stone is a very odd Mineral, and I always looked upon it to be much a-kin to the white milky Mineral Juyces, I formerly sent you a *Specimen* of: And this Experiment is demonstrative that I was not mistaken; for, the milky Juyce of the Lead-Mines vitrities the whole Body of Antimony in like Manner.

That this Vitrification is from the proper Nature of Cawk, I little doubt; for, I could never light upon any one Mineral Substance, which had any such Effect upon Antimony; and I have tryed very many, as Lapis Calaminaris, Stone-Sulphur or Sulphur vivum, Gala-

ctites, Sulphur Marcasite, Allom-glebe, divers Sparrs, &c.

Cawk is a ponderous white Stone, found in the Lead-Mines; it will draw a white Line like Chalk or the Galactites: And though it be so free, that it is more firm, and hath a smooth and shining Grain, Sparr-like, yet not at all transparent. Of the Spirit, it yields by Distillation, another time.

I am,

York, Novemb. 20. 1674. Sir, Yours, &c.

An Account of some Books.

I. TR ACTS, containing t. Sulpicions about some Hidden Qualities of the Air, with an Appendix touching Celestial Magnets, and some other Particulars. 2. Animadversions upon Mr. Hobbs's Problemata de Vacuo. 3. A Discourse of the Cause of Attraction by Suction: By the Honourable ROBERT BOYLE Esq; Fellow of the R. Society, London, 1674. in 8vo.

In the first of these Tracts, the noble Author, passing by those obvious Qualities of the Air, Heat, Cold, Dryness and Moisture, and such others, as are now also well enough known, I mean Gravity, Springings, Restactiveness, &c. enquires into, and delivers his Conjectures about, some yet more Latent ones. And the chief Account, upon

upon which the Air may be thought endow'd with Hidden Qualities, he esteems to be those exotick Essluviums, that probably do proceed partly from beneath the Surface of the Earth, partly from the Celestial Bodies; not denying mean while, that the Air may, especially at some Times and at some Places, derive Mustitudes of efficacious Particles from its own Operations, acting as a fluid Substance upon that vast Number and Variety of Bodies that are immediately exposed to it. Now these Conjectures, grounded upon Subterraneal and Sidereal Effluviums, are in this Tract confirmed by many confiderable and hitherto un-heeded Observations; and they are such, that, if they prove to be well-grounded, they may lead us, (as the Author also intimates) to other Suspicions of no mean Consequence; As 1. That they may make us consider, whether divers Changes of Temperature and Constitution in the Air, not only as to manifest, but as to the more latent Qualities, may not sometimes in Part, if not chiefly, be derived from the Paucity, or Plenty, and peculiar Nature of one or both of those Sorts of Effluviums? 2. That they may fuggest to us, as a Thing not altogether improbable, that fome Bodies, we are conversant with, may have a Disposition and fitness to be wrought on by, or to be affociated with, some of those Exotick Effluvia, that are emitted by unknown Bodies lodged under Ground, or that proceed from this or that Celestial Body. 3. That they may put us upon the Investigation, Whether among the Bodies we are acquainted with here below, there may not be found some. that may be Receptacles, if not also Attractives, of the Sidereal and other Heterogeneous Effluviums that rove up and down in the Air? All which Suggestions are countenanced in this Piece with divers un-common Observations. And from the last of these three, Occasion is taken, in a peculiar Discourse, to enquire, Whether, as 'tisthought no impossible Thing, that Nature should make, so it may not be an unpracticable or hopeless Thing, that Men should find, or Art should prepare, useful Magnets of the exotick Effluviums of the lower Region of the Earth, or the Upper of the World?

To this first Part are subjoined, 1. Some Observations of the Growth of Metals, tending to resolve this Inquiry, viz. Whether a Portion of Matter, wherein as yet no Metal, or but such or such a Quantity of it, can be sound, this being expos'd to the Air, will after a Time either afford some Metal where none appear'd before, or a greater Proportion of it than it had before. 2. Some new Experiments about the Preservation of Bodies in Vacuo Boyliano, or with Exclusion of the Air; tryed upon Bread, Milk, Cream, Cheese, roasted Meet,

Gg 2 Blood.

Blood, Violets, July-flowers, Roses, Strawberries, Blackberries, Beer. All which, except the Milk, Cream, and Blood, remained good and without any notable Alteration after a confiderable time: But the Milk. upon siving an Access to the Air, after 3 Months time, was found. though weil-coloured, yet turned partly into a kind of Whey, and partly into a kind of fost Curd: The Cream, at a Years End, appear'd to be more thick and Butter-like at the top than other-where, and by a little shaking was soon reduced to Butter: And the Blood, though for one or two of the first Days it seem'd to continue sluid and of a florid Colour, vet afterwards degenerated into a blackish one, without Stink. Of the Beer thus exhausted and secured from the Air, it was remarkable, that after much Thunder it had contracted no Sowrness, though that of most of the Neighbourhood had. And that the Exectus borarii, especially such as are very tender and juicy, should without any additament be preserv'd from Putrefaction a great time longer than otherwise they would have been, is an Experiment that may give Hopes, that both odd and useful Things of this Kind may be this Way performed.

The fecond Tract of this Book, being written Dialogue-wife, examines Mr. Hobbs's Arguments for the absolute Plenitude of the World, and shews them to be far short of Cogency. Here the Author, still forbearing to declare himself either way in this Controversy, does not tye himself strictly to the Principles and Notions of the Vacuists, nor, though but for a while, opposes himself to those of the Plenists; but considers, either upon the Doctrine of the Vacuists, or upon other Grounds, Whether Mr. Hobbs have cogently proved his, and the Schools, Assertion, Non dari Vacuum? And whether he have rightly explain'd some Phanomena of Nature, which he undertaks to give an Account of, and especially some in the Author's Engine, whereof he takes upon him to render the genuine Causes? Where occur divers excellent new Experiments, countenancing the Author's Pur-

pole against that of his Antagonist.

The third examines the Cause of Suction, and having rejected Fuga Vacui to be the Cause of the raising of Liquors in Suction, and declared also, that he cannot acquiesce in the Theory, who refer it to the Action of the Suckers thorax; he shews, that the Ascension of Water upon Section may be caused otherwise than by the Condensation or the propagated Pulsion of Air contiguous to the Suckers Chest; and likewise, that there may be Cases, wherein the Cause, assign'd in that hypothesis, will not have Place. Which done, he proposes and makes out by Experiments his Thoughts concerning that Cause.

Cause; which Thoughts amount to this; That Liquors are upon Suction raised into Pipes or other hollow Bodies, when and so far as there is a less pressure on the Surface of the Liquor in the Cavity, than on the Surface of the external Liquor that surrounds the hollow Body; whether that Pressure on those Parts of the external Liquor, that are from time to time impelled up into the Orifice of the Pipe, proceed from the Weight of the Atmosphere, or the propagated compression or impulse of some Parts of the Air, or the Spring of the Air, or some other Cause, as the Pressure of some other Body quite distinct from Air.

II. R. P. Claudii Franc. Milliet de Chales è J. CURSUS seu MUN-DUS MATHEMATICUS, universam Mathesin tribus Tomis com-

plectens. Lugduni, 1674. in Fol.

HE Author of this great Work declares in his Preface, that, having considered with himself the several things, that render to young Students of the Mathematicks the Study of thoseSciences difficult and perplexed, he hath endeavour'd so to compose and frame this his Cursus Mathematicus, as that every one, having but ordinary good Parts, shall be able, by the attent perusal of the same, without any other Master or Guide, to penetrate into the inmost Depths thereof.

The first Tome comprehends eight Books of Euclid; Arithmetick; Theodosius his Sphericks; Trigonometry; Practical Geometry; Mechanicks; Staticks; Universal Geography; a Treatise of the

Magnet; Architecture, and Carpentry.

Concerning Euclid, he diffwades from teaching Novices all the Books of Euclid indifferently falledging to have by Experince found, that, at the beginning, time is ill spent in learning his 7th, 8th, 9th and 10th Books; and therefore would have his Tyro content himself with the Knowledge of Euclid's first 6 Books, and the 11th, and Part of the 12th, (which Books he saith he hath rendred easy,) for as much as all the principal Parts of the Methematicks may be demonstrated without the other Books of that Author.

Touching Arubmetick, he delivers the Rules of it both in Integers and Fractions, together with the Extraction of the Square and Cubick Roots; annexing thereunto Arithmetick with Counters, and

by Divination.

And because the Principal Bodies, that are of a Mathematical Confideration, are Spherical, he inserts here the Elements of Sphericks, as by which the chief Proprieties of the Celestial Orbs are domonstrated: And those Elements he takes from the famous Theodosius, who lived in the time of Pompey the Great.

Ilis

His Trigonometry he divides into 6 Parts: The 1st delivers the Canon of Sines, Tangents and Secants; the 2d explains the Nature of Logarithms; the 3d and 4th teach to resolve Rectilinear and Spherical Triangles; the 5th and 6th consider Rectangular and Obliquangular Spherical Triangles.

His Practical Geometry confifts of 4 Parts: The 1st treats of the Mensuration of Lines, both straight and curve, accessible and inaccessible; the 2d and 3d, of the Measure of Surfaces; the 4th, of that

of Solids.

His Mechanicks contain 6 Books: In the 1st, he establishes and explains the most Universal Principle of Motion; in the 2d, he applies that Principle to the Vectis, as in the 3d he does it to the Axis in per trockio: In the 4th, he demonstrates the Power of the Trocklea; in the 5th, of the Cocklea; in the 6th, of the Cuneus, where he takes Occasion to discourse of Percussion.

His Staticks are comprehend in 7 Books; whereof the 1st establishes the Equipoise of the Elements, and explodes the Fear of a Vacuum; the 2d treats of the accelebrated Motion of heavy Bodies; the 3d, of inclined Plans, and Pendulums; the 4th, of the Doctrine of Equiponderant Bodies; the 5th, 6th, and 7th, of the Center of Gravity of Superficies's and Solids..

In his Geography, he considers the Figure of the Earth, assigns it its Place, investigates its Circumference and other Dimensions; distinguishes the Number of the Zones, and the several Climates; enquires into the Height of Hills and the Depth of Mines; and adds divers Particulars relating to the Ocean, Rivers, Fountains and Lakes.

In his Treatife of Magnetism, he sirst sets down the various Experments made of the Attractive, Directive, and Communicative Power of the Loadstone; and as he infers thence several Conclusions, so he deduces several Practices from it. He intimates, amongst very many other Particulars, that if the Authority of the H. Scriptures did not hinder, the Consideration of the Verture of the Magnet would add much of Probability to the Copernican System.

Proceeding to his Architecture civil, he discourses of the known Five Orders, and annexes to it a Treatise of ordinary Carpentry.

In the second Tome are contained these Treatises, viz. of the Section of Stones, of Architecture Military, of Hydrostaticks, Fountains and Rivers, Hydraulicks, Navigation, Opticks, Perspective, Catoptricks, and Dioptricks.

The Treatise of the Section of Stones is divided into 4 Books, whereof the first treats de Compluviatis seu Cylindricis Fornicibus; the second,

second, de Conicis; the third, de præcipuis seu decumanis Testudinibus;

the fourth, de Helicoidibus.

His Architecture Military is comprised in 7 Books; of which the first lays down the Grounds and Axioms of that Art; the second is conversant about regular Polygons; the third, about Outworks; the fourth, about Irregular Figures; the fifth, about Circumvallations, Trenches, &c. the sixth, about Defence; the seventh, about Perspective Military.

In the Hydrostaticks, he considers, 1. the Poise of Bodies swimming; how much Bodies loses of their Weight, being immers'd in

Water; how Metals may be tryed in Water, and the like.

In the Treatise of Fountains and Rivers, he Discourses of the Equipoise of Waters; of the Ways of conveying Springs and Rivers; of salient Waters; of the several Depths, which a River acquires

by the Inlet of several Torrents or other Waters, &c.

In that of Hydraulicks, he treats of all Sorts of Artificial Fountains, that perform their Effect either by Attraction, or Compression, or Expulsion; as also of all Sorts of Engins for raising of Water: Where he gives a particular Account of the great Water-wheel at Bremen, which in every Revolution sends 25 Cart-loads of Water into that City. To all which he annexes the Consideration of all sorts of Mills, principally of Corn, Powder, Paper and Iron-Mills.

Passing on to Navigation, he speaks, 1. of Ship-Carpentry; of the several sorts of Ships; of Rowing, Sayling, Steering, Loading. 2. Of the Make and Use of the Sea-Compass, and the Method of observing, and allowing for, the Declination of the Needle. 3. Of the Nature of Loxodromy, or that Line which a Ship makes on the Surface of the Terraqueous Globe by the ductus of the same Rumb of the Mariners Compass. 4. Of Sea-Maps, and divers Practices to determine the Ship's Way. 5. Of the way of keeping an Account of Time at Sea; where occurs a long Discourse about the Longitude, that is, the Easterly or Westerly Distance of the Ship from the Place where the Voyage began. 6. Of divers Nautical Practices; as, making of Journals, representing the Prospects of remarkable Coasts, by making Draughts, Plots and Maps of them, with their Longitudes, Latitudes, Scales, &c. as also of finding the Time of the Tides, and of conjecturing tempesteous Weather.

Proceeding to Opticks, he gives an exact Description of the Eye; enumerates the various Deceptions of the Sight; shews the cause of being long and short-sighted; treats of strait Images, which, being look'd on from different Places, do vary; and of desorm Pictures,

which, being beheld from a determinate Place, are reform'd: Ad-

ding hereunto the Doctrine of the Propagation of Light.

Concerning his Perspective, he 1. gives the Grounds thereof; 2. teaches Ichnography and Scenography; 3. exercises the Art of Perspective upon Roofs and Vaulted Places; 4. treats of Shadows;

annexing thereunto a Delineating Parallelogram.

Touching his Catoptricks, he therein considers the Reflexions both of Plain, Convex, and Concave Glasses: As in his Dieptricks, having explain'd the Nature of Restaction, he writes of Concave and Convex Spectacles, as also of Telescopes and Microscopes: Subjoying thereunto a Discourse touching Refractions colour'd, and the Colours of Rainbows, and Prismes. So far the second Tome.

The third Tome contains his Treatifes about Musick, Pyrotechny, Astrolabes, Dialling, Astronomy, Calendars, Astrology, Algebra,

the Method of Indivisibles, and Conique Sections.

In the Treatife of Musick he considers the Nature and Properties of Sound, and the Reason of Harmony; as also the 3 Systems of Musick, viz. Diatonick, Chromatick, and Enharmonick.

In that of Pyrotechny, he teaches, 1. the way of making all forts of Artificial Fire-works, both Festival and Martial; 2. he treats of the

Art of Gunnery, and Balisticks.

In the Doctrine of Astrolabes, he writes of both the Globes, of the Analemna, the Universal, Horizontal, and other Astrolabes.

His Dialling Treatife, delivers first the Way of making Dials in

any Plain; and then Reflex and Refracted ones.

His Astronomy contains 7 Books: 1. Gives the Doctrine of the Primum mobile, and the several Systems. 2. Of the Sun. 3. Of the Moon. 4. Of the Cycles. 5. Of the three superior Planets, Saturn, Jupiter and Mars. 6. Of the two lesser Planets, Mercury and Venus. 7. Of Comets.

His Calendar conjoyns and compares the whole Civil Year with the Motions of the Sun and Moon: Annexing thereunto the Civil Years of various Nations; Questions about Easter; Considerations about the Golden Number, Epacts, Solar Cycle, Indictions, Bissertils, the Julian Period, &c.

Touching Astrology, he strikes that out of the Number of Mathe-

matical Disciplines, and represents the great Vanity thereof.

Of the three remaining Treatifes, viz. his Algebra, Doctrine of Indivisibles and Conick Sections, he faith, he hath referved them to the last, lest young Students of the Mathematicks should be deterred, or too long detained, by those more knotty or more difficult Studies.

Thus

Thus I have given as short a View as I could of the Contents of these 3 Volumes, consisting of 30 Treatises in above an 100 Books. Mean time, what the Author hath performed beyond others, and how much also he hath borrow'd from others without taking notice of his Benefactors, I must leave to the Intelligent and well-read Perusers of this Work to Judge.

III. The SPHERE of M. MANILIUS made an ENGLISH Poem, with Annotations, and an ASTRONOMICAL Appendix. By

Edward Sherburn, Esquire. London, 1675. in fol.

THE learn'd and intelligent Author of this Work, rightly confidering the great Importance of the mutual Helps, which the Knowledge of Antiquity and the Pursuit of New Discoveries of the present Times may afford to one another, thought fit to employ part of his ingenious Talent, in rendring English this ancient Poem; the famous Author whereof, desirous to inculcate Knowledge with delight, was pleafed to exhibit to the Age wherein he lived, the Principles of Astronomy in a Poetical Dress; wherein divers Particulars do occur, touching the Nature of the Heavens and the Celestial Bodies, that agree with the Assertions of some of the Eminent Modern Astronomers, viz. the Fluidity of the Heavens, against the Aristotelean Solidity of the Orbs; the Position of the Fixed Stars, not in the same Concave Superstcies of the Heavens equally distant from the Center of the Universe, but at Unequal distances in the Ethereal Region, some higher, fome lower, (whence the difference of their apparent Magnitudes and Splendor;) the Hery Nature and Substance of the Fixed Stars, and in confequence their being endow'd with native Lustre, and making so many Suns, conform to this Sun of ours; and the Galaxie's being an Aggregate of numberless small Stars.

Of the Parts of this Poem, their Distribution and Order, and of the Interpreters Endeavours in explicating the same both in his learned Notes and considerable Appendix, we shall, from the Author, give the Reader this Accompt, viz. 1. That the Poem begins with a succinct Indication of the Original and Progress of Arts and Sciences, more particularly of Astronomy; of which last, besides what the Englisher hath noted in his not-common marginal Illustrations, he hath added, for the Satisfaction of the more Curious, a Compendious History, continued down to the Age wherein Manilius lived: Together with a very instructive Catalogue of the most Eminent Astronomers from the first Parent of all Arts, and Mankind it self, to this present Time. 2. That it is continued on

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with a Description of the Mundan System, and of the Celestial Signs and Constellations; the former of which our Interpreter hath explain'd according to the various Hypotheses both Ancient and Modern; the latter he hath described by the Number of the Stars that compose them, their several Denominations in most of the learn'd Languages, and as they are distinguished into profane and facred Figures, according to the different Uranography of the ancient Ethnicks, and some late Christian Astronomers. 3. That the 3d. Part of this Poem contains a Description of the Celestial Circles; for the better understanding of which, over and above what is explain'd in the Marginal Notes, our Author hath added a Cosmographical Astronomical Synopsis, for the most part according to Mersennus; and thereunto annexed the xii Propositions of Theodosius de Habitationibus in English. And seeing that Manilius hath touched upon the fiery Nature of the Fixed Stars; his Interpreter hath here made some further and more curious Enquiries touching their Substance, Light, Colour, Scintillation, Number, Figure, Magnitude, Place, and Distance from the Earth, or rather the Sun. In the next place, the Planets are enumerated; whose several Denominations, by which they were known and distinguish'd by the Ancients, the Interpreter hath given in his Notes; further enlarging about the Nature and Substance of the Sun, his macula and faculæ (which are likewise represented in a particular Scheme,) something also being said of his Vertiginous Motion, Magnitude, and Distance; as also of the Moon and her Spots, adding thereunto the Selenographick Schemes of Hevelius and Grimaldi, with their respective Nomenclatures; and withal, exhibiting a brief Account of the Nature, Substance, Structure, Figure, Magnitude and Distance of the other Planets. And because this Poem concludes with a Corollary of Fiery Meteors and Comets; our Author hath in part explain'd them also in his Notes, more fully discoursing, in the Appendix, of their Names, Kinds, and several Species, their Matter, Place, and Efficient Causes; and adding in the close a Chronological Historical Table of the most notable Comets, that have appeared fince the Flood to this Present: Having in the Illustration of the whole, observ'd the Method prescribed by the Emperor Justinian, that great Legislator, thus express'd, Instit. L. 1. Tit. 1. by himself; Ita omnia videntur tradi commedissimè, si primò levi ac simplici via, deinde diligentiori atq; exactiori Interpretatione singula tradantur.

Nor hath our Interpreter omitted to inform his Reader touching Manilius his Life, Country, Quality, Studies, Writings, &c. in the doing

doing of which, as well as in composing this whole Work, he hath given sufficient Proof of his more than ordinary Acquaintance

both with ancient and modern Writings.

He adorns the whole, as with many other very fair Schemes, so with those of the two Hemispheres of the Stars; the one serving for the Northern Constellations; the other for the Southern; wherein the Stars are express'd according to their several Magnitudes, as appears in the Scale thereof, set down in the Southern Hemisphere. And the Constellations are only pricked out, wherein (with Gallucius) the middle Way is taken, betwixt not placing them in any, or representing them in too dark shadow'd Figures, as some have done. IV. AVONA, or a Transsent View of the Benefit of making RIVERS

of this Kingdom NAVIGABLE; communicated by Letter to a

Friend at London; by R. S. London, 1675. in 8°.

THIS Letter, it seems, was occasion'd by observing the Scituation of the City of Salisbury upon the AVON, and the Consequence of opening that River to the said City. The Author shews the manifold Benefits, which will redound to the Rich and Poor, by making our Rivers Navigable, to promote the Wealth, Navigation, Commerce, and Strength of this great Island; and to advance ingenious Arts and useful Knowledge, Inventions, Accommodations, and Discoveries; and particularly, representing the Advantages of Inland-Cities above our Ports on the shore, by navigable Rivers, by the Health, sulness of slowry and wholesome Air, from the environing Fields, Pastures and Groves.

On the by, he pleads for the Savages, that our English Colonies would permit and invite them to be Christians, as Ligon endea-

vour'd to perswade.

V. An Essay to facilitate the Education of Youth, by bringing down the Rudiments of Grammar to the sense of Seeing; which ought to be improved by Syncrisis, sitted to Childrens Capacities for the learning especially of the English, Latin and Greek Tongues: In three parts, An Assidence, a Middle Grammar, and a Critical or Idiomatical Grammar. By Mr. Lewis of Tottenham, in 8°. London.

Rammar is the Foundation to the other liberal Arts; Languages the Keys to Knowledge, and the Expedient for all humane Commerce: And Letters, by judicious Antiquaries acknowledged the most wonderful and the most beneficial of all the Old Inventions. And now by the active genius of this present Age, Men and Children may in far less time learn many of the most considerable Languages, than by the usual Pedantry they could lately be taught an imperfect smattering in Latin only.

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Next to Grammar, in old Account, and for strongest Influence; and for the highest Advantages in all human Societies, both in Peace and War, Elequence was esteemed more than fundamental, more than a Key, to unlock, regulate and set in order the Cabinets of Mens Hearts and Minds, to asswage bad Passions, and to excite noblest Assections.

And Poesse, in several kinds, being the highest Esslorescence of Eloquence, is with a sublime and accurate selicity guided and promoted in a late English Tract, entitul'd, Reflexions on Aristotle's Treatise of Poesse, containing the necessary, rational, and universal Rules for Epick, Dramatick, and the other sorts of Poetry; with Reflexions on the Works of the ancient and modern Poets, and their

faults, noted by R. Rapin. Printed in London, in 8°.

I take leave, on this occasion, to mention here, for Oratory, the two Tracts, that came abroad A. 1672. in 89. viz. I. Reflexions upon the Eloquence of these Times, 1. in general: 2. Of the Barr, and 3. of the Pulpit: Pretending to be a Translation out of French; but by the Addresses, Conclusion, and often in the Body of the Tract, it appears to be a Free Application to our English Eloquence. II. By the same hand, A Comparison between the Eloquence of DEMOSTHENES and CICERO; which (doubtless) was, as is acknowledged, really translated out of French. Those Research, may give much Light to Oratory.

Errata in Numb. 109.

Pag. 193. lin. 28. r. Littlesball.

LONDON