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Math. 31.



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The Mind
OF THE
FRONTISPIECE.

TH E Spheres, (*which ever moving are*) imply
That Arts, and Learning, if *unactive*, die.
Our Subjects *Worth*, is by URANIA meant,
Our Poet's, PAN, and MERCURY present,
Who sings rough Matter in smooth Verse, & invite
The Ignorant to Learn, the Learn'd Delight.

CALIQUE VIAS ET SIDERA MONSTRAT.

THE SPHERE
of
M MANILIVS
made
An English
POEM.
by
Edward Sherburne, Esq.



NATURA UNIVERSITAS.



UNIVERSITATIS INTERPRES.

W. Hollar fecit 1725

THE
SPHERE
OF

Marcus Manilius

MADE AN

ENGLISH POEM:

WITH

Annotations

AND AN

ASTRONOMICAL

APPENDIX.

By EDWARD SHERBURNE, *Esquire.*

L O N D O N,

Printed for Nathanael Brooke, at the Sign of the *Angel* in Cornhil, near
the *Royal Exchange*, MDCLXXV.



OF

William M. Meade

OF THE

UNITED STATES OF AMERICA

AND

1881

Addressed to

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the

year

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TO HIS
SACRED MAJESTY
Charles the II. King

O F

GREAT BRITAIN, FRANCE and IRELAND, &c.



AT it Please Your Majesty, To Vouchsafe
 Your Royal View to this Copy ; The
 Original was by a Great Master , and
 dedicated to the Great *Augustus*. Having
 been long buried by Barbarity , and
 Ignorance ; It hopes now to rise unto
 New Life, and Lustre, by the Gracious
 Aspect of Your Sacred Majesty.

The Author now first alters his Native Language, exchanging it
 for that of Your *English* Subjects ; Be pleased Great SIR , to afford
 Him Your Eare, never denied to Strangers, whom Fortune happily
 casts upon Your Royal, and All-obliging Goodness.

He briefly represents the Splendid Oeconomy of the Celestial
 Spheres , the Pattern of the most Flourishing Empires ; then most
 Glorious when most conformable to the Heavens.

— *imitatur Olympum* —

Officiis Augusta Domus —

A 2

These

THE EPISTLE DEDICATORY.

These Rudiments of Astronomy crave Acceptance from Your Majesty, who in Your Late Naval Expeditions, have been pleased to shew Your Self so great a Favourer of that Learning, by encouraging the Noble and Generous Youth of these Nations, to enable themselves thereby, for that Your Service.

SIR, It would have seemed an unpardonable Omission, not to have added Your Name to the Constellations, who by your Excellent Virtues justly deserve, and without Question shall in due Time obtain a most Eminent Place among them. But Your Clemency and Moderate Government makes your Subjects to pray,

*Servus in Cælum redeas, diuque
Letus intersis Populo —*

Which Blessing upon Your Sacred Self and Us, None more fervently implores, than

May it please Your Majesty,

Your Majesties most Obedient

Subject and Servant,

EDW. SHERBURNE



THE P R E F A C E.



THE High Esteem, which the Antient Romans had for Astronomical Learning; appears even by their Publick Games in the Circus Maximus; whose Order and Disposition represented that of the Heavens. The Circus being of an Elliptical or Oval Figure; having twelve Gates or Entries resembling the twelve Signs of the Zodiack. In the Midst an Obelisque, as the Sun: On each side thereof three Metæ, denoting the other Six Planets, which in their respective Courses mark out the several Intervals or Spaces, into which the Mundane System is divided.

* Castidor.
Variar. l. 3.
Epistol. 51.
Sic factum
est ut Natu-
ra Mysteria
Spectaculo-
rum compo-
sitâ Imagina-
tione lude-
rentur.

So that the Circensian Games seem not to have been so much, an Exercise of Charioting and Racing, as an Astronomical Cursus; wherein the People were not only delighted by the Exhibition of corporal Games, but had their * Minds also instructed to apprehend the Course and Order of the Celestial Bodies, which in the Great Circus of the World are continually moving.

This Method of inculcating Knowledge with Delight (though in a different way) Manilius hath likewise pursued; who intending to exhibit to the Age wherein he lived the Rudiments of Astronomy, chose to represent the same in a Poetical Dress; that so his Readers might be allured to relish with the greater Gusto the initiating Principles of a Science not easily acquired; and he thereby gain to himself the Repute which good Poets chiefly affect, of being able at once both to instruct and please.

What upon this Accompt he hath delivered in the first of his five Books of Astronomicks, which of it self is a Compleat and entire Poem of the Doctrine of the Sphere; We have adventured, as well for its Brevity and Politeness, as its Perspicuity and Usefulness, to transfer into our Native Tongue.

But some perhaps will demand,

Daphni quid Antiquos cœlorum suspicis Ortus?

Why, in an Age wherein the learned World is so fruitful in Accurate Productions of this Kind, obtrude We upon the Reader a Piece of less curious and less knowing Antiquity?

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This frivolous Objection will easily be obviated and answered, if we shall but duly consider, that it is a design no less commendable for the Industry of this present Age, gratefully to revive the valuable (but too much obscured and unregarded) Helps, by which the Wits of former Times have benefitted Posterity; than it is to labour in the Pursuit of new Discoveries and Inventions; which many times are rather pretended than real Improvements; and are (some of them) found to be, but the Disguises and Alterations of elder Ingenuity.

And we may without derogating or detracting in the least, from the worthy Endeavours of the Learned, modestly affirm, that there are some Particular Notions, touching the Nature of the Heavens and the Celestial Bodies, delivered in the Piece we now publish, which having been revived, and of late dayes reasserted by some of the most eminent Modern Astronomers, have been received with general Applause, and thereby have added no little Honour to their Names.

To instance in the following Particulars.

First, The Opinion of the Fluidity of the Heavens, against the Aristotelean Hypothesis of Solid Orbs, appears in this Work to have been expressly delivered by Manilius near 1700 years since; which, by the Noble Tycho, Galilæo, Scheinerus, and others, have of late Dayes with all the Acumen of convincing Reason been defended, and demonstrated.

Secondly, That the Fixed Stars are not all in the same Concave Superficies of the Heavens, equally distant from the Center of the World, but that they are placed at unequal Distances in the Æthereal Region, some higher, some lower, (whence the Difference of their apparent Magnitudes and Splendor) is by the famous Kepler (Epitom. Astron. l. 1.) and other Modern Astronomers lately asserted; and seems by many to be taken for a Novel Opinion; which yet in this Piece we find to have been many Ages since, declared by our Author.

Thirdly, The Assertion, which by the most knowing Astronomers of these Times is embraced, affirming the Fixed Stars to be of a fiery Nature and Substance, and consequently endued with native and propper Lustre, and that they are (as Galilæo terms them) so many Suns, conform, and like unto this Sun of ours, appears in this very Poem to have been long since maintained by our Manilius.

Fourthly, What by help of the Telescope hath been lately detected and demonstrated by Galilæo, Kepler, and others, that the Galaxie is a Congeries of Numberless small Stars, was by the sole Perspicil of Reason, discovered by the Ancients, and is here by our Author proposed as the most probable Solution of that Phænomenon.

Of the Parts of this Poem, their Distribution and Order, and of our Endeavours in explicating the same both in our Notes and Appendix, We hold it not amiss in this Preliminary Discourse, to give the Reader some Accompt.

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 We have noted in our Marginal Illustrations; We have added, for the Satisfaction of the more Curious, a Compendious History, continued down to the Age wherein Manilius lived; together with a Catalogue of the most Eminent Astronomers from the first Parent of all Arts, and Mankind it self, to this Present.

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It is continued on with a Description of the Mundane System, and of the Celestial Signs and Constellations; The first of which we have explained according to the various Hypotheses both Antient and Modern; The latter we have described by the Number of the Stars that compose them, their several Denominations in most of the Learned Languages, and as they are distinguished into prophane and Sacred Figures or Morphoses, according to the different Uranography of the Antient Ethnicks, and some late Christian Astronomers.

The Description of the Celestial Circles makes up the next Part of this Poem; for the better understanding of which, over and above what is explained in the Marginal Notes; We have added a Cosmographical, Astronomical Synopsis, for the most part according to Merfennus; to which We have likewise annexed the twelve Propositions of Theodosius de Habitationibus in English.

And seeing our Authour hath briefly touched upon the fiery Nature of the Fixed Stars; We have thought fit in the Appendix to make some further and more curious Enquiries touching their Substance, their Light, Colour and Scintillation, their 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 distinguished by the Antients) We have given in our Notes; and in the Appendix have further enlarged touching the Nature and Substance of the Sun, his Maculæ and Faculæ (which are likewise represented to View in a particular Scheme) something also being said of his Vertiginous Motion, Magnitude, and Distance: Of the Moon and of her Spots, whereunto we have added the Selenographick Schemes of Hevelius and Grimaldi with their respective Nomenclatures; and have exhibited a like brief Accompt of the Nature, Substance, Structure, Figure, Magnitude, and Distance of the other Planets.

*The Poem concludes with a Corollary of fiery Meteors and Comets: These We have in Part explained in our Notes; and have more fully in the Appendix discoursed of their Names, Kinds, and several Species, their Matter, Place, and Efficient Causes; adding in the Close a Chronological Historical Table of the most Notable Comets, that have appeared since the Flood to this present. Having in the Illustration of the Whole, observed (in some Measure) the Method prescribed by the great *Roman Leg-
gillator, which cannot better be expressed than in his own Words. Ita Omnia videntur
tradi commodissimè, si primò levi ac simplici Via, deinde diligentiori; atque exacti-
ore Interpretatione Singula tradantur.*

And seeing it is Customary in publishing Works of this Nature, to premise something touching the Authors: It may justly be expected we should here do the like in reference to

MANILIUS his Life, Country, Quality, Studies, Writings, &c.

Of this, (though we are not ignorant, that in a Subject so obscure, and to which Antiquity affords so dim a Light, it will be hard for us either clearly to discern, or certainly to determine; yet,) for the Satisfaction of the Curious and Ingenious Reader, We shall in the following Discourse endeavour to give, if not a full, at least a fair and probable Accompt.

VVho this Manilius (whose Name the following Poem bears) should be; partly through the Silence of those Authors which are come to our Hands; partly through the
• Loss

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Loss of others, of which the Injury of Time hath deprived us, is left very uncertain. The best means that we can use for the clearing of a Matter so dark and dubious, will be to take a View of Those, who by the Name of Manilius have been recommended to Posterity, as qualified with the Knowledge of good Letters, and among them to consider, which in all rational Appearance may be the Person we look for.

Varro in his fourth and sixth Books De Lingua Latinâ, makes mention of one Manilius or Manilius a Poet, out of whose Works he cites these Verses

*Deli Gemellos Creta Titana Deos
Latona pariit, casto complexu Jovis.*

(Which Verses may happily be taken out of Chrestus Manilius, whom Gyraldus reports to have written De Deorum Hymnis) and these Others

*Casum duxisse Casum non mirabile est,
Quoniam Canoras conficiebant Nuptias.*

Or as Jos. Scaliger reads the last Verse

Quoniam Charon eas fanciebat Nuptias.

But finding no express Evidence (besides the bare Name) to prove the Manilius mentioned by Varro, to have written any thing on the Subject of Astronomy, much less to have been the same with the Authour of this Poem; We shall wave this Authority, and pass on to some others more Explicit and Declarative.

Pliny l. 35. c. 17. tells us of one Manilius surnamed Antiochus, who with Publius Mimus and Staberius Eros, was brought to Rome, all three, of Servile Condition, but Persons of good Literature. His Words are These. Pedes Venalium transmare advektorum, Cretâ denotare instituerunt Majores; Talemque Publium (Syrum,) Mimicæ Scenæ Conditorum, & Astrologiæ Consobrinum ejus Manilium Antiochum, item Grammatices Staberium Erotem eâdem Nave advektos videre Proavi, i. e. Our Ancestors used to mark with white Lead or Chalk the Feet of such Slaves as were brought over from beyond Sea to be sold. And such an one was Publius (Syryus) the Founder of the Mimick Scene, and his Cousin German Manilius Antiochus, of Astrology, and Staberius Eros of Grammer, whom our great Grandfathers saw in that manner brought together in one and the same Ship.

This Manilius, Laurentius Bonincontri (who near two Ages since commented upon our Authour) conceives the same with Manilius, who wrote this Astronomical Poem: To confirm which Opinion, he produces the Evidence of a Silver Medal in his Possession, whereon was the Figure of a Man, in an Exotick Habit, with a Sphere placed near his Head, with this Inscription MANILI. the same is affirmed (says Lilius Gyraldus) by Stephanus Dulcinus; and the said Gyraldus further assures us that a familiar Friend of his, one Nicholas Trapolinus, had by him another Medal of the like Stamp and Inscription.

But against this Opinion of Bonincontri, and Gyraldus, Scaliger opposes a double Argument, one, drawn from the seeming inveracity of that supposed Evidence; No such Medal being at this Day to be found in the Cabinets of any, no not the most curious Antiquaries; the other from the Reason of Time; for Manilius Antiochus being brought to Rome (as Scaliger supposes) in the beginning of Sylla's Dayes, must needs

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needs, if he were the same with the Author of this Poem, have been (as he reckons) 120 years old when he began to write (an ill Age to play the Poet in) this Piece being written in the later years of Augustus his Reign. But the Author in the Proem of this Work wishes for long life to compleat his intended Poem; Wherefore (says Scaliger) certainly he was not then old, who wished he might live to be so. But leaving this Argument at present, to be anon reassumed. We shall go on in our further Enquiry.

The same Pliny l. 36. c. 16. speaks of one Manilius a Mathematician, who upon the Obelisque which Augustus erected in the Campus Martius, for finding out the Hours of the Day by the Shadow of the Sun, with the Increase or Decrease of the Dayes and Nights, placed a gilded Ball. Cujus Vertice Umbra colligeretur in semetipsam, alia Incrementa jaculantem Apice, ratione (ut ferunt) à Capite Hominis intellecta, says Pliny, who commends the Design, as a Thing worthy of Knowledge, and the Invention of a pregnant Wit.

To this Person Scaliger conceives this Work may with fairer Probability be ascribed than to the former; which Opinion is by divers other learned Persons likewise embraced.

The excellently learned Doctor Isaac Vossius conceives yet, that the Manilius Antiochus, and the Manilius Mathematicus, before mentioned are not two distinct Persons, but one and the same under different Titles and Appellations, and the very Author of the Poem we now publish. Whose Particular Sentiments upon this Subject, and Arguments confirming the same, he was pleased not long since to impart to Me, by his most obliging Letter, in Answer to some Queries by Me proposed in one of mine to him, upon Occasion of my intended Publication of this Piece, which for the Readers Satisfaction, I shall here make Publick, though not in his own Words, yet as near as may be in his own Sense.

And first in Answer to Scaliger's Argument, drawn from Reason of time, against Manilius Antiochus, upon the Supposition, that Staberius Eros, (one of the three before mentioned) set open his Grammar School in the Time of Sylla, ninety five years before the Death of Augustus; And that therefore (according to Scaliger's Computation) Manilius could not probably be less than 120 years old, at the time when this Poem was written. He urges by way of Reply, that Suetonius (from whom Scaliger takes the Ground of his Argument) does not say, that Staberius Eros opened his School in Sylla's Time, but that he taught Gratis, the Children of Those, who in Sylla's Time were proscribed. The Words of Suetonius are these. Sunt qui tradunt tantâ eum (scilicet Staberium) honestate præditum, ut temporibus Syllanis Proscriptorum Liberos gratis & sine Mercede ullâ in Disciplinam recaperit: How long that was after the Times of Proscription will be needless here to declare; and that Manilius was not so old as Scaliger conceives, when this Piece was written, may be made out from this, that he was the Cousin German of Publius Syrus, who that he was brought a Young Boy to his Patron, Macrobius affirms; from whom likewise and from the Verses of Laberius, it may, not obscurely, be collected, that he was but a Youth when he came upon the Stage against Laberius, which was a little before the Death of Julius Cæsar, and of Laberius also; to whom he succeeded on the Mimick Stage in the second Year of the CLXXXIV. Olympiad, that is in the Year of Rome DCCXI. as Eusebius testifies; And therefore seeing it is manifest that Manilius published this Poem soon after the Varian Defeat, which hapned in the DCCLXII. of Rome; it is as evident likewise that between the Youth or Adolescence of Manilius, and the Time wherein he writ this Piece, there could not pass above one and fifty years; and consequently there is no Reason to assign so great an Age to Manilius as Scaliger here does; since perhaps he was
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not

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not Seventy years old, when he had finished this his Astronomical Poem.

As to what Scaliger subjoyns touching Manilius his Wish for long life, together with a chearful Old Age, and the Inference he thence makes, that he could not reasonably be then thought to be Old, who wished he might live to be so. The Argument is but weak: for Senium is one thing, and Senium Annosum another. Nor does he simply wish Vitam Annosam, but Vitam Annosam quæ conjuncta sit cum molli Senectâ, which may be wished for even by those who are very old.

As for the Name of Antiochus, he seems to have taken it from the famous Philosopher Antiochus Ascalonita, often mentioned by Cicero, Plutarch, Sextus Empiricus, and others; whose School not only Cicero, but Varro, Brutus, and divers others are said to have frequented, and in all Probability this our Manilius also, as being not only of the same Nation, but happily born in the same Town: (Ascalon.) So that it may seem no Wonder if after the manner of those Times, he took upon him the Name of his worthy Tutor and Instructor. For that he was a Syrian is not only manifest from his Consanguinity with Publius Mimus, but may likewise be collected from the Title, or Inscription of this Work, which in an antient and excellent Manuscript in the Possession of the said Doctor Vossius, is this: M. MALLII POENI ASTRONOMICON, DIVO OCTAVIO QUIRINO AUG. That the Phœnicians were by the Romans called POENI, is manifest out of Horace, Cicero apud Nonium, and our Author in this very Poem. He concludes therefore that this our Manilius, or, (as he is rather pleased to call him) Manlius, was a Phœnician, and in all Probability Native of the same Town as Antiochus his Tutor, whose Name he assumed.

From this Dedication of his Work to Augustus, by the Name of Quirinus, as the Inscription shews, will appear the Error of those, who imagine the same to have been dedicated to Tiberius or some later Roman Emperor. And the reason of attributing the Name of Quirinus to Augustus may be made clear from the Words of Suetonius, Consentibus quibusdam Romulum appellari oportere, quasi & ipsum Conditorem Urbis, &c. Dion likewise tells us; ὁ καὶ σαρ ἐπεδύμα ἰχυρῶς ῥωμύλος ὀνομαζήναι. That (Augustus) Cæsar extremely desired to be called Romulus, and Joannes Philadelphensis (scripto de Mensibus, in Aug.) Ὀκταεὶανὸς ὑπὸς Ὀκταεὶς νίκας πεποικίως μεγάλας πολλοῖς ὀνόμασιν ἐτιμάτο οἱ μὲν γὰρ αὐτὸν ὀνόμαζον Κύρνον οἱ οὖν ῥωμύλον, &c. Octavianus Son of Octavius was after his great Victories honoured with divers Names; for by some he was called Quirinus as another Romulus, &c.

As to the other Manilius by Pliny stiled Mathematicus; he conceives, that Titular Distinction to make no Difference in the Person; but that he is the same with the former; further adding, Omnino existimo & illum quoque de Nostro Manilio accipi debere. And whereas Salmasius affirms that the Name Manlius (or Manilius) is not to be found in that Place of Pliny in any antient Manuscripts, and therefore ought to be expunged out of the Printed Copies; he makes it appear that Salmasius is extremely mistaken; by the Testimony of several antient MS. of Pliny in his Possession; whereof one is in a Character written above 8 or 900 years since: In all which, the Word Manlius is found though with some small difference in writing of the Name. Nor does he think the Name of Marcus prefixed to Manlius ought to be scrupled at, upon the account that none of the Manlian Family after the CCCLX. Year from the Building of Rome, could or did use that Prænomen, seeing that Prohibition, as Cicero (in Philip.) intimates, is only to be understood of the Patrician Race: Now that this Manilius, or (as he calls him) Manlius was, before his Manumission, a Slave; not only the Place of Pliny already cited, but the very Agnomen of Antiochus sufficiently evinces; for as much as a Greek Agnomen joyned to a Roman Name, is alwayes a most certain Token of a Servile Condition.

With

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With this rational Discourse of so incomparable a Person, both my Self and Reader might well rest satisfied; Did VVe not meet with another Manilius, mentioned by Pliny (l. 10. c. 2.) of Senatorian Dignity; honoured by him with the Character of the most diligent of all the long Robe, and enobled with the greatest Learning without any Teacher. VVho is said first of all the Romans to have written of the Phœnix, That there was never any man that saw it feed, that in Arabia it is Sacred to the Sun; and (to omit the mention of some other Particulars) that it lives 660 years, and that with the Life of this Bird, is consummated the Conversion of the great Year; In which the Stars return again to their first Points, and give Significations of the same Seasons as at the Beginning. That this Great Year begins about High Noon on the Day, wherein the Sun enters the first Degree of Aries, and was compleated (as he declares) when P. Licinius, and M. Cornelius were Consuls, &c.

This person (not taken Notice of by any others that have written touching our Author) Monsieur Tristan in his Historical Commentaries (Tom. 1.) conceives to be the same with our Manilius. The Reasons inducing him to embrace this Opinion, being grounded upon the Concinnity of Time, and Conformity of Study. The Subject here mentioned clearly implying him to have been conversant in the like Astronomical Exercises as our Author, whom not improbably he believes to have made these curious Remarks touching the Phoenix and the Annus Magnus, in the sixth Book of his Astronomicks, which is now lost: though, as Scaliger affirms, extant in the Time of Firmicus, who from thence collected his ἀποτελέσματα συλλαβῶν Sphæaræ Barbaricæ, as he did from the fifth Book, yet extant, his ἀποτελέσματα συνατάλαων. For, that Manilius wrote of the first Kind as well as of the last mentioned, may appear by these Verses.

Quæ mihi per proprias Vires sunt cuncta canenda,
Quid valeant Ortu, quid quum merguntur in undas?

The Elogy which Pliny gives him, seeming likewise (as Tristan observes) to insinuate, besides a particular Respect, a kind of Intimacy and Acquaintance, between this Manilius (supposed our Author) and Pliny; who, as he was a Person very curious might be desirous to be known to him upon the Score of his Eminent Learning; and happily enjoyed what he desired, about the end of Tiberius his Reign; at which time Manilius might be far advanced in years, and Pliny a Young Man.

I am not yet ignorant, that the Learned Pighius in his Roman Annals, and some other knowing Persons are of Opinion, that this Elogium ought to be applied to Titus Manilius Son of Publius, and Nephew of Marcus Manilius, whom Cicero in Roscio calls Ornatissimum Senatorem: But with the leave of those Learned Persons; I do not find that among the Characters which Cicero gives him, there is any one of his Learning or Erudition; for though he says he was a most honourable Senator, of a great Age, by Nature pious and Religious, and of a plentiful Fortune, yet he honours him not with any Encomium of his Studies, or of his great Proficiency in all Sciences; which doubtless he would have done, had he merited eminently in that kind.

In all Reason therefore We may conclude the Manilius mentioned by Pliny, to be different from that of Cicero, and with much seeming probability suppose him (as Tristan does) to be the same with our Manilius, Author of this Poem, who by Petrus Crinitus de Poet. Latin. is reported (we wish he had strengthened his Assertion by some Authentick Testimony) to have been of illustrious Extraction, which adds some further Weight to Monsieur Tristan his Conjecture.

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But since this cannot be made out by other Arguments than what are meerly probable, we shall forbear to determine positively thereupon ; but leave the Reader freely to judge which hath the best Pretence to be entituled to this Work, the Slave or the Senator.

As to that Opinion started by Gevartius, that this our Manilius was the same with Manlius Theodorus (who 400 Years after the Death of Augustus, and of our Author too, was Consul, and Præfectus Prætorio in Illyrium, under the Emperors Theodosius, Honorius and Arcadius, and who by Claudian is celebrated for an excellent Poet, Philosopher and Astronomer.) It is so groundless, and so unworthy the Name of Gevartius, that we shall not spend time in refuting it, since the Reader may find sufficient Evidence against it from the Pen of our Author in this very Poem, without the help of those Arguments, which from thence are drawn by Tristram in his Commentaries before mentioned (Tom. i. p. 114, and 115.) and Barthius in his elaborate Animadversions upon Claudian (p. 112.)

The Name of Manilius is no less controverted than his Person ; some affirming it to be Manilius, some Manlius, and others contracting it (compendio improbo, as Barthius terms it) into Mallius. But his true Name, (uncertain whether derived to him by Adoption or Descent) seems to be MANILIUS, which was the Name of a Roman Family distinct from that of the Manlian, as is apparent, both by the Capitoline Tables, and other Evidences in the Roman Story, of which see Schottus de Famil. Roman. and Glandorpius in his Onomasticon. This Name of Manilius all the Antient Editions in the very Infancy of Printing, give him, and most Manuscripts ; particularly, as Barthius (in Claudian.) notes, that of Corpus Christi Colledge in Oxford ; and (as he adds) he is so named, with the Addition of the Prænomen, Marcus ; above 600 Years since by Gerbertus Rhemensis Bishop of Ravenna, and afterwards Pope of Rome, in his cxxx. Epistle in these Words. Age ergo, te solo conscio, ex tuis sumptibus fac mihi scribantur, Marcus Manilius de Astrologia, Victorinus de Rhetorica, Demosthenes Ophthalmicus, &c. And though some Antient MSS. call him Caius, yet generally all the late printed Copies give him the Name of Marcus Manilius ; Which, as being confirmed by the most prevailing Authority, we admit of.

Of his Studies, his own Writings give us the clearest and the best Account. By those, (that is to say his five remaining Books of Astronomicks, for other Writings of his, the learned World is not acquainted with) he is represented to Us to have been an Excellent Mathematician, Astronomer, Astrologer, a great Humanist, Philosopher, (and which comprehends all the rest) an admirable Poet. In Astronomy and Astrology he chiefly followed the Doctrine of the Chaldeans and Egyptians. In Philosophy, though he was generally conversant in all the different Opinions of the Antients, yet, he more particularly adhered to that of the Stoicks, with which he seems to have been thoroughly imbued ; as may appear by several Instances ; particularly that excellent Proem of his fourth Book ; a Taste of some Part of which, We hold it not amiss to give the Reader. It begins thus.

*Quid tam sollicitis Vitam consumimus Annis ?
Torquemurque metu, cæcæque Cupidine rerum ? &c.*

*Why waste We Life in Years of anxious Pain ?
With fears tormented, and blind Love of Gain ?
Worn old with Cares, not Age ; which in th' Acquest
We loose, and with no End of Wishes blest,
Act as to live still, yet ne're live indeed :
So much more Poor, as our Desires exceed.*

What

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What We have not We covet ; what We have
We count not ; and though Nature little crave,
We hoard up Matter for vast Luxury,
And purchase Spoyle with Superfluity ;
With Gain buy Loss ; as if the End of all
Our Wealth, were only to be Prodigal.

Lay, Mortals, Lay these Cares, these Follies by ;
All govern'd is by changeless Destiny,
That rules the World ; and Times long Courses run
In a link'd Series, not to be undon.
Ev'n in our Births We die ; and our last End
Does on our Live's Original depend, &c.

Of the Time or Manner of his Death We find Nothing recorded.

What Stock of Credit and Esteem he hath left behind him, will best appear by the Censures which the ablest Criticks of these later Ages have given of him, and of his Writings. Some of which for the Reader's Satisfaction we shall here enumerate.

JUDGEMENTS of the Learned on *Manilius*.

We begin with ALDUS MANUTIUS, in his Edition of our Author.

Manilius (sayss he) was the first of all the Latines who wrote of Astronomy, and therefore, when in many Places of this Work he not a little glories therein, deservedly to be born with for it is an Argument of no mean Wit and Industry, to have explained such difficult Matter, so aptly and so clearly in Verse as he hath done ; to have only attempted, though not performed such a Design, being abundantly Praise-worthy and Noble.

By ANGELUS POLITIANUS (in Nutric) He is stiled Bis Vates, Doubly a Poet ; for describing so excellently in Verse the Babylonian, and Ægyptian Astrology.

PETRUS CRINITUS (De Poet. Latin.) thus speaks of Him.

Marcus Manilius is reputed to have been of Illustrious Extraction ; and flourished at Rome, when Augustus happily swayed the Empire thereof ; and doubtless was most acceptable to so great a Prince for the Eminency of his Learning, and Excellency of his Wit. He employed his Study and Industry chiefly in Mathematical Arts, with so much Proficiency, as he thereby gained from the World no mean Applause of his Ingenuity.

ALEXANDER ab ALEXANDRO (Genial. Dierum l. 2. c. 21.) speaking of several Authors signalized by Fame for their eminent Skill and Knowledge in Celestial Matters, reckons, among the Greeks, Berofus, Eudoxus, Aristotle, Empedocles and Aratus ; among the Latines, Julius Firmicus and Marcus Manilius.

REMBERTUS DODONÆUS (in Ifagog Cosmogr.) citing the Verses of Manilius proving the Figure of the VWorld to be Spherical, adds this Encomium,

As sings that Divine Poet.

ADRIANUS TURNEBUS in Adversar. gives him the Title of a Noble Poet, adding withall, that he was an Honour and Ornament even to Poesie it self.

LUDOVICUS

THE PREFACE.

LUDOVICUS CARRIO (emendat. l. 2.) *styles him a most Grave and Learned Poet.*

MONSIEUR de MESMES, *in his Institutions Astronomiques, written long since in French, calls him, The Gentile Astronomical Poet.*

The Incomparable JOSEPH SCALIGER (to whose Learned Labours our Author owes his Second and better Life) thus writes of him in his Preface to his last Edition of him.

As for MANILIUS I cannot say, whether I should rather wish that he had been publicly read in the Schools, or lament that he hath lain hitherto so neglected. A most ingenious Poet, and Polite Author; having illustrated so Obscure a Subject in such Luculent Verse, and displayed a Matter of it self Morose, in such a pleasing Character. All his Proemial Inductions, His Transitions and Excursions are beyond Censure, than those Nothing can be said more divine, nothing more copious, more weighty or more delightful.

Then coming more particularly to the Censure of this Part which We now publish:

Certainly (says he) it is a Piece so useful and advantagious to all Generous Youth, as it ought to prepare their Way to the Elements of Spherical Learning.

And again in his Epistle to the Learned Stadius.

I exhort all knowing and worthy Professors, that when ever they go about to instruct their Pupils in the first Elements of the Sphere, they would initiate them therein by this first Book of our Author; for whence (*says he*) can they better derive the Principles of that Science, than from this most Disert Poet; who hath omitted Nothing which may seem pertinent to that purpose.

The Learned ISAAC GASAUBON (Annot. in Strabon. & alibi) honours him with the Title of a most Elegant Poet.

PAULUS MELISSUS *in his Encomium upon Scaliger's first Edition of our Author, thus sings of Him.*

*Jove pitying humane Weakness; gave to Us
Th' Inspector of the Stars, Manilius.
Who to Rome's Nephews first the Knowledge brought
Of Heavens high Orbs, and their hid Motions taught.*

JOANNES AURATUS *upon the same Occasion describes him thus:*

*Manilius, like another Atlas bears,
Or an Alcides, on his Head the Spheres.*

FRANCISCUS JUNIUS *in the Dedicatory Epistle before his Edition, gives him this following Elogy.*

Manilius for Gravity of Stile, Propriety of Language, and Usefulness of Argument is to be preferred before many.

And

THE PREFACE.

And again.

In my Judgment he expresses all Things briefly, gravely, sweetly, and most commodiously for the Instruction of all that read him.

CHRISTOPHERUS SCHEINERUS in his *Accurate Work* entituled *Rosa Ursina*, delivers this Censure of him.

Marcus Manilius, (whom some call Caius Manilius) wrote most elegantly (much above any Others) of the fluidity, and Liquidness of the Heavens. That egregious Authour having with extraordinary Clearness, Roundness and Elegancy expressed all things concerning the Heavens and the Celestial Bodies.

GASPAR BARTHIUS (in *Adversar.*) gives him the Commendation of a most judicious and ingenious Poet; and one of the most elegant of the *Augustæan* Age; and (in *Animadvers. in P. Statium*) adds; that he was a Poet most consultive in Philosophy. No less Praise is afforded him by

JOANNES GLANDORPIUS (in *Onomastic. Roman.*) who gives him the Character of a Noble Mathematician and Poet, and One who first of all the Latines wrote of Astronomy in Verse.

JULIUS NIGRONIUS (de non legend. *Libr. Amator.*) reckons him among the most Useful and Instructive Authors. I exhort (*says he*) that Young Persons read such Authors as they may peruse without offence to good Manners; such as *Persius, Seneca, Silius, Lucan, Claudian* and MANILIUS. Of the same Judgment is

ARNOLDUS CLAPMARIUS (in *Nobil. Triennio*) where he thus advises the Generous Young Student. Read, and read o're again *Homer* with *Theocritus* and *Virgil*; *Horace* with *Pindar*; *Lucretius* and MANILIUS, with *Aratus*.

The most eminently learned and judicious HUGO GROTIUS In the Preface to the Edition of his own *Latine Poems*, shews us the Esteem and value he set upon our Author. I acknowledge my self (*says he*) to be now and then full of *Lucan's* Spirit, sometimes above measure studious of MANILIUS.

The excellent GERRARD. JO. VOSSIUS (l. de 4. *Artibus Popular.*) speaking of that Part of Philosophy which is comprised under the Title of *Grammatica Exegetica*.

Without this (*says he*) how can any interpret *Lucretius*, or *Manilius*, *Parmenides*, or *Melissus*? who besprinkle their Writings with many things drawn from the inmost Recesses of Philosophy.

PAGANINUS GAUDENTIUS sometime Publick Professor of Law and Rhetorick at Pisa, in his *Treatise De Initio & Progressu Philosophiæ apud Romanos*; ranks him among the Eminent Lights of Learning in the *Augustæan* Age; concluding with an Epigram (which for Brevities sake we forbear here to insert) in Honour of so great a Poet and Astronomer, as he there styles him: And in his *Obstetrix Literaria* thus farther Discourses of him.

If any shall go about to describe Arts and Sciences in a Poetical Stile, he takes not more from Poetry than the bare versifying Part; for he then begins to assume from his Subject the Part either of a Philosopher, Astronomer, Physician, or such like, in which kind certainly *Empedocles, Lucretius* and MANILIUS were more than Poets.

BRIETIUS in *Syntagmate de Poet. Latin.* comparing the *Latine Poesie* with the different Ages of Man; makes the virile and perfect State thereof to consist of *Virgil, Horace, Ovid, Tibullus, Propertius*, and our MANILIUS.

Add we to these the Opinion of the most Ingenious

Mr. ABRAHAM COWLEY, Who in his *Essay of constituting a Colledge for the infusing into Youth, Knowledge and Language at the same time*; conceives the Way to be by breeding them up in Authors or Pieces of Authors that treat of solid and Learned, that is Natural Matters. Among which he commends *Virgil's Georgicks, Grætius, Nemesianus* and MANILIUS.

To accumulate more Encomiums, were superfluous; Hear himself now speak his own Character.

OF

O F

The two Hemispheres

O F T H E

S T A R S.

THe One serves for the *Northern Constellations*; the Other for the *Southern*. The Stars are expressed according to their several *Magnitudes*, as may be seen in the *Scale thereof* set down in the *Southern Hemisphere*. And the *Constellations* are only pricked out, wherein (with *Galluccius*) the Middle Way is taken, betwixt not placing them in any, or representing them in too dark shadowed Figures, as some have done.

In the *Projection*, the Eye is supposed to touch the *South Pole*, for the projecting of the *Northern Hemisphere* upon the *Pole* of the *Equator*, and contrarily for the *Southern*. So that the Stars are placed in either by the *Arches* of right *Ascension* measured upon the *Equator*, and by their *Distances* or *Declinations* from it, set off from a *Scale* of *Double Tangents*, which this and All other *Stereographical Projections* require: Amongst which, I accompt this the most proper and useful to be here placed, because by adding an *Index* made as above said, and divided as you see one of the *Semidiameters* done in either *Hemisphere*, any Star may easily be found either on the *Projections* or in the *Heavens*; And the Way or Course of a New Star or Comet may be traced upon them by any that have but ordinary Skill in the Sphere; and may serve very well instead of a *Celestial Globe*; and being held up before one in the Night, placed according as the *Heavens* require, will plainly shew the Position at that Time. And are ready, to those that are yet more Curious, by the putting on a *particular Horizon*, for other several Uses. But yet these Instruments are not true *Astrosopes*; there is not any point to place the Eye in, for discerning the Stars in the *Heavens* as they are placed in the *Hemispheres*; for that will require another *Polar Projection* much like this following, viz.

The Eye is to be supposed at the *Center* of the *Sphere*, projecting on a *Plane* touching the *Sphere* at the *Pole Point*, in which the right *Ascension* is measured as before by the Angle at the *Pole Point*, and the *Polar Distances* are set off by the *Tangents* of the said *Arks*; On which Supposition an entire *Hemisphere* cannot be projected; And this is no other than the *Plane* of an *Equinoctial Dial*, which being placed *Erect* to the *Axis*, if the Eye be supposed therein at the Distance of the *Radius* from the *Plane*, and if at the Situation of each Star on the *Plane*. Holes were supposed or made in the *Plane*; if the Eye beholds two known Stars shining through their proper Holes, at the same Time it should behold All the rest likewise shining through their Holes, to which their Names being affixed, this *Projection* becomes an *Astroscope* to teach Beginners to know the Stars, and will also serve as a *Nocturnal* for finding the Stars hour, and by Consequence, by *Ayd* of the Sun's right *Ascension*, proper to the Day of the Moneth, the true hour of the Night likewise.

The *Polar Dial* or *Meridional Plane*, as *Kircher* in his *Ars Magna Lucis & Umbra* affirms, hath been applied by *Griembergerus*; as an *Astroscope* to teach *Tyros* how to know the Stars in both *Hemispheres*, and to find the Hour of the Night by the Rotation of the *Plane*, affixed as it were to the Handle of a Carpenter's Wimple; the *Axis* thereof being conceived to be Parallel to the *Axis* of the World, and the Eye, at a Knot tyed in a Thread on the said *Axis*, to be the Center of the Earth; is supposed to behold the Stars shining through their proper Holes as before; the Distance from the Eye to the *Plane* being the *Radius* of the *Projection*.

But neither of these *Astrosopes* are the same as *Schickardus* treats of; His is supposed to be the Surface of a *Cone*; In the Circle of the *Base* whereof conceive a Thread to represent a *Diameter*; a Knot in it the *Center*, a Perpendicular from that Knot to the Side of the *Conick Surface* the *Radius*, and a Line passing through the *Vertex* of the *Cone* (which represents the *Pole Point*) and the Foot of that Perpendicular to be a *Tangent Line* each way, in which, the Stars are to be placed according to their Distances from the *Pole*, counted from the *Pole Point*, in respect of the Graduation of the said *Tangent*; the *Arches* of right *Ascension* being measured by the *Periphery* of the Circle in the *Base* of the *Cone*, and this Surface is to be conceived to be directed to the *Pole*, and that the Eye is at the Knot or *Center* of the *Base* of the *Cone*, beholding two known Stars shining through their Proper Holes, and at the same time it shall likewise behold the rest shining through their respective Holes; The Rotation of this Figure about an *Axis* serving as a *Nocturnal* to give the Hours of the Night.

Other *Astrosopes* there are; As one, that being rectified and set to the Hour of the Night, the Sight through two *Pinnacles* shall be directed to that Star to which the Instrument is rectified. Of All which to treat, is not our present Design, and therefore shall refer the Reader to the *Authors* and *Composers* of such kind of *Projections* or *Astrosopes*.

T H E



THE SPHERE OF MARCUS MANILIUS.

(a) *Salmastius* (in *Diatribis de Annis Climacis. & de Antiqu. Astrolog.*) expounds *divinas Artes* according to the opinion of the Stoicks; who held the Stars to be Deities; and thinks that *Manilius* gave to Astrology that Epithete in regard of the Divinity of its subject: We rather take it in the same sence as *Divinatrice*: So *Horace* uses the Word *Imbrium Avis Divina Imminens*; so *Juvenal. Satyr. 10.*

Extra & candida Divina Tomacula Porti.

See *Scaliger*, and *Barthius Adversarij lib. 25. c. 2.*

(b) So we have chosen (for the better cadence of the Verse) to render—*conscia fati sydera*—not assuming a greater liberty than the sence of the words will bear, in making *conscia fati* in this place (according to the Tenet of *Manilius*) to express as much as *præscia venturi*. How far yet this foreknowledge of the Stars extends, is not agreed upon by the Antients. Some (with *Plotinus*, in *libro si faciunt Astra*, as cited by *Macrobius in somn. Scip.*) believe, that the Stars

it in the Book of the Stars, as in the Tables of the Gods; as Birds are not conceived to be skill'd in Augury, though from their voice or flight, men knowing therein foretel future events: Others, that the Stars know all things, but not that they effect what they know or signify: Some that the Stars carry about (as included within them) the Fate of all things, and what they know requisite to be done; produce into act. Which last Opinion, though by *Seneca* (*Epistol. 80.*) proposed as doubtful, is by *Manilius* (in the height of Stoicism) positively asserted: See *Lips. Philosoph. Stoic. l. 2. c. 14.* And *Vossius l. 2. Idololat. c. 49.*

(c) So *Ausonius*,

Omnia quæ vario rerum meimur in Actu

Astrorum Dominatus agit; terrenaque tantum

Membra homini; è superis Fortuna & Spiritus Auris.

And (before him) *Seneca*: *Ex syderum quinque levissimis motibus Fortune Populorum dependent: & Maxima ac Minima proinde formantur, prout æquum iniquumve sydus incessit.* Some went yet further, and assign'd peculiar Stars to the particular condition of Persons, as the large and bright to the Rich, the lesser to the Poor, the obscure to the feeble and decrepid: But this opinion is by *Pliny* exploded as a vulgar error, *Sydera quæ affixa dicimus mundo, non illa, ut existimat vulgus, singulis tributa sunt nobis: Clara divitibus, minora pauperibus, obscura defectis, & pro sorte cujusque lucentia ad munera mortalibus. Non tanta cæli Societas nobiscum est. Vid. Plin. l. 2.*

(d) The Stoicks held the World to be a rational Creature, and to consist of Heaven and Earth, as Soul and Body; The Heavens (according to them) being the same to the whole, as reason to man. Hence *Arnobius* (*l. 3. advers. Gent.*) In *Philosophie Memorabiles studio, atque ad istius nominis columnen* (vobis laudatoribus) *elevati, universam istam molem Mundi, cujus omnibus amplexibus ambimur, regimur, ac sustinemur, Animans esse unum, Sapiens, Rationale, Consulium, probabili Affeueratione definiunt; with whom consents Hilarius in Genes.*

Hæc tamen Æthereoque machina volvitur Axe,

Non tantum pictura poli est, sed celsa voluntas,

Mens Ratioque subest.

Upon which Verses *Barthius* (*l. 31. Adversar. c. 12.*) notes, that *Mens & Ratio Cæli est Astrorum, ut vocant, Influentia, quæ Gentibus gubernat humanum.* Expressing the sence and meaning of our Author; but how truly, the thing I leave to be considered.

(e) *Helicon Aonia Beatique Mons Musis Sacer* (Vib. Sequester) so call'd, according to *Plutarch* (*l. de Nominibus fluviorum & Montium*) from *Helicon*, the Brother of *Cerberon*, of which see there the Fable. Or, as *Casaubon* (*in Pers.*) conjectures from the Hebrew word, *Halike*, i. e. *Ambulatio*, in regard the Antients used to have there their Walks, and to confer and discourse of natural and divine Matters: Where also as *Asbenaïs* (*l. 14. Deipnosoph.*) from the Authority of *Amphion Thebænsis* reports, there was a Colledge instituted for all Musical Exercises, in which the Youth of those Times were accurately instructed. But *Bochartus* conceives the name derived from the Arabick, *Halie*, or *Halica*, which signifies a high Mountain, for such is it describ'd to be by *Strabo* *l. 8. & l. 9.*

B

And

And it's green Groves, with unacquainted Rimes,
Offering strange Rites, not known to former Times.

(f) *Augustus Caesar* : of whom
Horace,

Ames dici Pater atque Princeps.
A Title first given to *Julius Caesar*
(as his Coins attest) for his singular
Clemency. Yet *Cicero* enjoy'd it
before either of them, though not
in the same Extent and Latitude,
yet as the *Encomium* of a good Pa-
trior : hence *Juvenal Satyr*. 8.

— *Roma Parentem*

Roma Patrem Patrie Ciceronem
Libera dixit.

The reason of this Imperial Title
Seneca gives (in *de Clementia* 1^o)
Patrem quidem appellavimus, ut sci-
ret sibi datam esse Potestatem, quæ est
Temperatissima subditis tanquam Li-
beris consulens, suæque post illos repo-
nens. The Ceremony of *Augustus*
his Instalment in this Titular Di-
gnity, is thus describ'd by *Suetoni-*
us. *Valerius Messala* was deputed
by the Senate to present him with
the Votes of the House, which he
deliver'd in these Words, *Quod fa-*
lix fastumque sit tibi domuique tue,
Auguste! (sic enim nos perpetuam
Reipublicæ felicitatem, & lætæ huic
precari existimamus) Senatus Te
(consentiens cum *Populo Romano*)
consalutat *Patriæ Patrem*. To

whom *Augustus* with tears in his eyes thus answer'd : *Compos facius votorum meorum (Patres Conscripti) quid habeo ali-*
ud Deos immortales precari quam ut hunc consensum vestrum, ad ultimum vitæ finem mihi perferre liceat?

(g) The Original hath *Augustus Leges*, which Epithete our Author doubtless made use of in Allusion to the Title of
Augustus given by the Senate at the instance of *Manacius Plancus* to *Octavianus Caesar* : who after his settlement in the
Empire according to *Eusebius in Chronis*. (as rendred by Saint *Jerom*) *Romanis plurimas leges statuit*. To which *Ovid*
likewise alludes (*Metam.* 15)

Pace datâ terris, Animum ad Civilia vertet
Jura suum; Legesque feret Justissimus Auctor.

These Laws in honour of *Julius Caesar*, were by *Augustus* call'd *Julie*, either as being first enacted by *Julius Caesar*, or as re-
viv'd and put into execution by *Augustus*, according to the Advice and direction of his Uncle, left in his Memorials, or Com-
mentaries behind him, as he perswaded the People to believe; which see enumerated by *Donatus in Tacitum*. p. 144. and *Poll-*
tus de foro Romano. l. 4. and more particularly by *Rosinus in Antiqu. Rom.* l. 8.

(b) Our Author here seems to make a difference between the Divinity of *Augustus*, and that of *Julius Caesar*, attri-
buting to the Nephew Heaven as his due and Merit; to the Uncle, as the Grace and Concession only of the Gods. *Plin.* l. 7.
c. 45. speaking of *Augustus*, says; *Ille Deus, Cælumque nesci adeptus magis an meritis.* Of the other, *Virgilius in Prefat. Julius*
Caesar Consilio Cælestium in Sedibus Immortalitatis dedicatus est.

(i) *Propter numen Caesaris jam receptum; vel Augusti jam recipiendum*, says *Barthius Adversar.* l. 1. c. 8. Or rather in regard of
the great Discoveries made by the Extent and Progress of the Roman Conquests in Climates and Regions formerly un-
known, by which means (to use *Valerius Flaccus* his Expression, *Argon.* 1.)

— *Tantum terræ, tantum cognoscere cæli*
Permissum est. —

(k) That is from West to East, contrary to the Motion of the *Primum Mobile*; which Motion of the Planets in the time of
Democritus was not known among the Greeks; *Eudoxus* being the first that discovered it to his Countrymen, as *Seneca* ob-
serves (*Natural. Quest.* l. 7. c. 3.) having deriv'd that knowledge from the *Egyptians*, to whom he travel'd in the Company
of *Chrysippus* the Physician and others, supported by the Bounty of his Friends, and recommended by *Agessilaus* his Letters
to *Nectabis* the King, and by him to the Priests, as *Diogenes Laertius* in his life, l. 8. Yet *Lucian (de Astrolog.)* assigns the first
Observation thereof to *Atræus*, King of the *Argives*, confirm'd by *Achilles Tatius (in Arati Phenomen.)* who saies, that *Atræus*
(εὐρε τὴν πλανήτων τὴν ἐναντίαν πορείαν) found out the opposite motion of the Planets. So that *Gassendus (Tom.* 1. l. 3. p. 591.)
conceives the more universal and exact Theory of that Motion, rather than the Original or Primary Invention thereof, is to be ascribed to
Eudoxus.

(l) Not unlike to that of *Virgil (in Culicis Proæmio)*

Phæbus eris nostri Princeps & Carminis Auctor,
Et recinente Lyra fautor —

The Poets usually applying that Musical Instrument to their Songs; *quod dum mens fata parturit, ipsa ferat opem.* And there-
fore a late triple Crowned Poet (*Urban* 8. in his *Ode upon St. Lewis*) calls the *Lyra*, *Sonoram Cantus Obstetricem*, as is noted
by *Paganinus Gaudentinus in Adduament. Crit.* c. 9. And for this reason *Manilius* here brings in *Phæbus* with his *Lyra* to bear
a part with him in consort.

(m) Two

(m) Two Altars bright with Flames, we raise; repair
T' a double shrine, prest with the double Care
Of Verse and Matter; on these certain Grounds
Raising our Song, concordant Heaven surrounds
It's Poet with deep Harmony, and Words
Scarce fit for *Latian* Characters affords.

(m) Justly does *Scaliger* condemn *Lilius Giraldu* for supposing our Author in this place to profess himself to have been twice *Law-reat*: who means no more by these double Sacrifices than the Invocation of double Assistance, being to treat of the gravest subject in the most pleasing style and therefore he erects two Altars to the two Patrons of *Astronomy* and *Poetry*.

The Original and Progress of Astronomy.

Who to inferiour Earth did first reveal
These Gifts of Gods? Who, what they hid, could steal?
All-ruling Heaven! What Mortal dar'd so high
As spite of Gods, himself to Deifie?
Open the highest Path, the lowest Deep?
Tell how the Stars their bounded Courses keep?
The Force, and Motions of the Signs impart?
(n) *Cyllenius*! Thou first taught'st this sacred Art;
Thou th'inmost Heavens, & utmost Stars mad'st known,
That so to Natures Power, not Face alone,
Might greater Awe, and Reverence accrue;
And Nations learn what to that God was due,
Who did through Seasons, to be known, display
The Heavens, and this great Worlds *Phænomena*.
Nature help'd too; Her self, Her self improv'd,
(o) And Monarchs (next to Heaven in power) first mov'd
T' affect these Arts; who near Sol's rising Beams
Fierce Nations tam'd; whose Lands (p) *Euphrates* Streams

(n) *Mercury*, so called (according to *Festus*) *Quæd omnem rem sermone sine minus conficiat, quibus Partibus Corporis qui carent* *Κυλλοὶ* *vocantur*. And therefore the Hermetical Statues were made of a square Trunk, or Stone only. Others (saith *Festus*) will have him so called (not à *Cyllenia via*, as it is commonly read; but as *Mr. Vossius* in *Melan.* corrects the Text) à *Cyllene Avis*, from his Grand-Mother *Cyllene*, by whom he was educated. Others will have him to be so called from the Mountain *Cyllenius* in *Arcadia*, where he was bred. That he first taught the *Ægyptians* *Astronomy*, and indeed all other Arts and Sciences, is the generally received Opinion; which (besides *Jamblichus*) is asserted by *Plato* in *Phædro*, (where he is styled *Πατριῆ γεγεμεύτων*;) and by *Cicero*, *Lib. 3. Divinat. Vide etiam Lactantium lib. 1. c. 6.* But as to the first Authors of *Astronomy*, see more in the History of its Original and Progress in the Appendix.

(o) *Lucian* (*de Astrol.*) makes *Astrology* to be *ἔργον Ἀρχαίων βασιλέων θεοφιλέων*, *The study of Antient Kings belov'd of the Gods*: The Poet here particularly respects the *Babylonian* and *Ægyptian* Princes.

(p) One of the most celebrated Rivers of the East, arising in *Armenia Major*, and watering on the left hand *Mesopotamia*, on the right hand *Syria*, *Arabia*, and *Babylonia* (now *Caldea*.) It was heretofore according to *Plutarch* (*de Nomin. fluv. & montium*) call'd *Medus*, and before that *Zarandus*, of which see there the Reasons. Its Modern Name answering to its Antient *Apberat*, or *Pbraat*, which owes its Original (as some conceive) to the *Arabick*, in which Language *Pharatta* signifies *inundare*, whence *Iphraton Inundatio* (this River overflowing in the same manner as *Nilus*) or rather from the Hebrew *Huperath*, signifying *frugifer*, *crescens*, or *fructificans*: It was antiently divided into five Principal streams. The first whereof passing by *Seleucia* falls into *Tygris*. The other four loosing themselves in so many great Lakes. The first of these four Branches, and most Easterly, was call'd *Tisartar*: The second, *Naar-Malcha*, (by *Pliny* corruptly *Armalchar*) i. e. *Regium flumen*; by the *Arabs* in the same sense *Al Melic*, in memory of some of the *Babylonian* Princes, who caused that Cut to be made; and *Chobar* from the Name of the *Præfect* or *Overseer* of the Work, as observed by *Scaliger*, *l. 5. de Emendatione Temporum*. The third passing by *Babylon*, was that, which was properly called *Euphrates*, as believed to be the Native Channel of the River, and not made by Art as the others; call'd likewise *Sur*, from the City *Sura*, or *Sora*, seated upon its Banks. The fourth and most Westerly was (according to *Pliny*) called *Narragam*, by *Ptolomy* *Baarsarem*, or *Maarsarem*, and by some others *Αναγοναον*, which *Bochartus* (*in Phaleg. lib. 1. c. 8.*) rather reads *Ναυαγοναον*, which nearer answers to *Plinie's* *Narragam*, or *Naar-Agam*, i. e. *fluvius stagni*. By the *Greeks* antiently this great River was otherwise nam'd, being call'd from its Source to the Mountain *Taurus*, *Pisyrates*; where it breaks into the Mountain *Taurus*, *Omyra*; after its emerſion from thence, *Euphrates*, as *Pliny lib. 5. c. 24.* See likewise *Ptolomy lib. 5. Strabo lib. 11. & alibi*. And *Salmasius* at large in *Plin. Exercitat. Tom. 1. pag. 625. & sequent.*

(q) The Learned Mr. Vossius (*de aetate mundi & in Melam*) conceives our Poet in this place to follow the Opinion of the Antients, who before the discovery of the Indian Ocean, were so ignorant as to believe, that Nilus derived its source from the utmost East, even from India it self. With which Error (besides divers others of the Antients) Virgil seems to comply (*Georg. 3.*)

Quaque Pharetrata Vicinia Persidis

urget,

Et viridem Ægyptum nigra facundat Arenas

Et diversa Ruens septem discurret in Ora

Ufque coloratis Annis devexus ab Indis.

On Quiver-bearing Persia's Hem he it rains,

With black Sands marling Ægypt's verdant Plains:

In seven Streams forcing his divided Course,

And from the Sun-tann'd Indians draws his Source.

But our Poet does no more than concisely mark and point out the Babylonian and Ægyptian Territories, *Per flumina Urbes eorum alimentia ac fecundantia*, as Barbius notes, l. 1. *Adversar. c. 9.* The several Names given by the Antients to this River are collected by the Learned Mauffacius (*in Plutarcho de Fluv. & Mont. nominibus*.) It was first of all called *Oceanus*, or (but as he saies *barbare*) *Oceanes*: Then *Aetos seu Aquila*, and *Melas* from its Profundity or depth, because all deep Waters seem black, or from *Melos*, the Son of Neptune: Afterwards *Ægyptus*, either from *Ægyptus*, the Son of Belus, or of Vulcan and Leucippes, who threw himself into it; or *Ἰππὸ τοῦ αἰγῶος πιδνῶν, à Capris pinguescendo*. From whence likewise the whole Country of Ægypt seems to be so nam'd. The Hebrews call it *Gebon*, and *Schior*, the latter signifying *nigrum seu turbidum*; whence happily is derived the Æthiopian Name, *Siris*: It was called also *Nῆς*, five *Nus* & *Trito*; and lastly *Nilus*, from the Husband of *Garmathones*, an Ægyptian Queen so named; or from *Nilus* the Son of Cyclops, or *Nileus*, or *Nilasius*, Ægyptian Princes; or rather *Ἰππὸ τοῦ νέαν ἰλὺν ἄγνῶν, i. e. à novum limum aut facem ferendo*. By the Latines it was peculiarly call'd *Melo*, as is evident from the Testimonies of Ennius, Festus, Servius and Ausonius. Of the Original of Nilus, and Cause of its Inundation, in former Ages so unknown; See Kircherus in *Mund. Subterr.* and Mr. Vossius in his particular Treatise of that Subject.

(r) Taken from Hesiod *Ἐν ἑγῶ.*

Ἐπὶ κυανέων Ἀνδράων δ' ἄνδρ' ἔμπεδον πόλιν
Ἰερότατον

Super Nigrorum Hominum Populum, Urbemque
Verissimam

Meaning the Æthiopians; particularly those seated beyond the Eastern Bank of Nilus.

(s) Ægyptian Priests, from whom Astronomy received its first Rise and Increase in that Nation: Instructed therein by Hermes Trismegistus, whom the Arabs called *Adris*; the Ægyptians, *Theus*, or *Ithoth*. These Priests in their Supplications and Vows, as Kircher (*in his Oedip. Ægypt. Tom 3.*) tells us, *Primo ante omnia Sapientiam & Mentis petebant illuminationem: Quam adepti, ab omni fatorum Necessitate se absolvi & θεολήπτες effici putabant, perpetuo Numinum Consortio beatos.* Which gives some light to the following Verses.

(t) Not unlike to this, Statius de *Vindict. Herculi. Sylv. 4.*

Deus ille Deus, seseque videndum
Indusit Lysippe Tibi

And Quintilian *Declamat. 10.* *Quales Humanis se offerunt Oculis Propitii Dii, quale letissimum numen est, cum se patitur videri.*

(u) Cicero *Lib. 1. de Divinat.* ascribes this to the Assyrians. The Assyrians (*Ut ab ultimis Auctoritatem repetam*, says he) by reason of the plainness and large Extent of their Country, affording on all sides a clear and open view of Heaven, observed the Course and Motion of the Stars. Which having duly calculated, they from thence made Predictions of future Events. Amongst whom the Chaldeans (*Non ex Artis sed ex Gentis vocabulo Nominati*) arriv'd to that perfection of skill, as to be able to foretel what should happen to any one, and under what Fate they were born. Which Art the Ægyptians acquired from them many Ages since. Thus Cicero. *Vitruvius (Lib. 9. c. 7.)* more particularly; Among the Chaldeans (says he) Berosus was the first, who taught the Greeks judiciary Astrology: After him Antipater and Achinapetus were reputed famous *Genethliologists*. Of Natural Causes and Effects, Thales Milesius, Anaxagoras Clazomenius, Pythagoras Samius, Xenophantus Colophonius, and Democritus are reckoned the most eminent Observers: following whose Inventions, and observing the Rise and setting of the Stars, and the Seasons of the Year, Eudoxus, Eudemon, Callisthus, Melo, Philippus, (and not as Salmasius will have the Text to be read, Phainus) Hipparchus, Aratus, and others left to Posterity their Astrological Prognosticks, in their Tables or *Parapigmata*. Of which see Geminus, and Theon in *Arati Phenomena*.

Experience

Experience fram'd thereof an Art; the Way

(*) Shown by Example; Which through long Essay,

And various Speculation, learn'd from far

The tacit Laws of every ruling Star;

Saw in alternate Course Heaven still move round,

And Fate to vary as it's Aspects, found.

For before them, rude Man no difference made

'Twixt Natures works, nor things with Reason weigh'd;

Astonish'd at Heavens new disclosed Light,

(*) Now mourn'd the Stars as lost; now at their Sight

As if new-born rejoyc'd: th' uncertain Times

Of Day and Night, differing in different Climes,

Till then none knew; nor could the Causes clear

(*) Of shades unlike the Sun far off and near.

Yet witty Cunning no (*) learn'd Arts had found;

Under rude Swains waste lay the untill'd Ground:

(b) Gold then in Desert Mountains lodg'd at Ease,

(c) New Worlds lay hid in unattempted Seas,

(*) *Omnis enim nostræ paulatim industria viæ*

Fluxit ab exemplis —

Claudian de Hystrie. But by Example here our Authour means the Observations and Prognosticks, which Posterity received from the Tables or *Parapegmata* of the Antients.

(y) Ingeniously imitated by *Statius* (*Theb.* 4. speaking of the Primitive *Arcadians*.)

Hi Lucis stupuisse vices, Noctisque feruntur

Nubila, & occiduum, longe Titana secuti

Desperasse Diem —

And by *Draconius* (in *Hexaemer.*)

Nec Lucem remeare putat terrena Pro-pago.

At ubi purpureum surgentem ex æquo-re cernunt

Luciferum, vibrare Jubar, flammæ-que ciere

Et reducem super Astra Diem de sole rubentem.

Mox revocata fovens besterna in gaudia Mentes,

Temporis & requiem noscentes Luce diurna

Cæperunt sperare Diem, ridere Tenebras.

The learned Mr. *Selden de Diis Syris, Syntagm.* 2. (citing for Testimony this Place of *Manilius*) conceives the Original of *Adonis* Festivals with the Antients to have sprung from no other ground.

Non aliud cogitarunt, (says he) qui

primumbas Nanius instituerant, quam Solis Accessum & Recessum. Quem ut amissum nunc Lugebant, & renatum Latius excipiebant Auspiciis. Ita Rudiores olim, & qui simpliciore vitam debebant, priusquam ab Astronomis Leges siderum didicerant.

(*) The Demonstration of this depends upon Gnomonick Principles: One is, That the lower the Sun is, the longer shadow it makes upon an Horizontal Plain; the higher and more elevated, the shorter. Hence when the Sun approaches near the Horizon, the shadows of things become greater, according to that of *Virgil* (*Ecol.* 1.)

Majoresque cadunt altis de Montibus umbrae.

But the farther he is mounted above the Horizon till he comes to his Meridian Altitude, the shadows are less. *Ovid. Metamorph.* 3.

Jamque Dies Medius rerum contraxerat umbras.

So likewise when the Sun is in the Tropick of Cancer, and in its greatest Northern Elevation; we are then (to use the expression of *Achilles Tatius* in *Arat.*) *Brachyscii*, and cast the shortest shadows. But when it is in the opposite Tropick, and consequently in its greatest Depression as to us, we are *Macroscii*, and cast the longest shadows. See, as to this subject, more particularly *Jundinus* in *Sacrobosc.* c. 3. and *Aldus Manusius* in *Præfat. ad scriptores Rei Rusticæ.* To which may be added *Bede* his Poemation de *Compositione Horologii.*

(a) Arts are distinguished into Illiberal or Manual, and Liberal or Ingenuous. And though of the first, the number be almost numberless, yet both kinds vulgarly (though very imperfectly) are reduc'd to a Septenary Division, and express'd in this Distich:

Lingua, Tropus, Ratio, Numerus, Tonus, Angulus, Astra

Rus, Nemus, Arma, Faber, Vulnera, Lana, Rates.

The first Verse expressing Grammar, Rhetorick, Logick, Arithmetick, Musick, Geometry and Astronomy. The second Agriculture, Hunting, Arts Military and Fabril, Chirurgery, Spinning and Weaving, and Arts Nautical. Of whose first Inventors see *Pliny*, l. 7. c. 56. *Polydor Virgil*, *Garzoni* his *Piazza universale*, and *Vossius de Sed. Philosoph.* As to the different esteem and practice of these Arts among the Greeks and Romans, see *Aldus Manusius* in *Quæsit. per Epistol. lib.* 2. c. 9.

(b) The first that found out Gold is said to be *Cadmus* the Phœnician; or, as others, *Thos*, in the Mountain *Pangæus*; or according to the *Chronicon Alexandrinum*, *Mercury* the Son of *Jupiter* or *Picus* King of *Italy*, who quitting his own Countrey, travell'd into *Egypt*, and was there elected King after *Misraim* the Grand-child of *Cham*, for this Invention called *Σιδὴς χρυσοῦ*, i. e. *Deus Aureus*. *Æschylus* attributes the Invention both of that and all other Metals to *Prometheus*. There are others who write that *Æælis* (*Hyginus* calls him *Cææcus* the Son of *Jupiter*) or *Sol* the Son of *Oceanus* was the first Inventor of Gold in *Panchæia*, see *Pliny*, l. 7. c. 56. and *Polydor Virgil*, l. 2. de rer. Inventor. c. 9.

(c) Our Poet here alludes to the Detection and Conquest of Great-Britain by *Julius Cæsar*, which the Romans then called a New World, from their recent discovery thereof. However it was long before known to others of the Antients, as is manifest by the Testimony of *Ptolemy*, mentioned by *Strabo*, who in the time of *Ptolemy Philadelph.* wrote *Ἐπίοδος ἡ 7η*. Touching which see *Casaubon* (in *Strabon.* l. 1. & 2.) *Vossius de Hist. Græc.* l. 4. c. 11. and *Paganinus Gaudensius* de *Peregrinatione Philosophica*. And that it was some Ages before Cæsar's time known to the Phœnicians, the learned *Bochartus* in his *Geogr. Sacra Tom.* 2. l. 1. c. 29. evinces, who blames our *Camden* for saying, that this Island of Ours non nisi serò fuisse cognitam, was not known till of late,

C

(d) To

(d) To this purpose, appositely (d) To waves and winds to trust their Lives none dar'd,
Seneca in Medea.

*Audax nimium qui freta primus,
 Rite tam fragili perfida rupit :
 Terrasque suas post Terga videns,
 Animam levibus credidit Austris, &c.
 Candida nostri sæcula patres
 Videre, procul fraude remotâ,
 Sua quisque piger Litora tangens,
 Patrioque Senex factus in Arvo,
 Parvo dives ; nisi quas tulerat
 Natale solum, non nôrat Opes.*

Rash man was he with Ships frail
 Beak
 Did first the treacherous Billows
 break :
 And leaving the safe Shoar behind,
 Durst trust his life to trustless wind,
 &c.
 The candid Age of Innocence
 Our Fathers saw ; free from all
 sense

To know themselves and theirs, Men only car'd.
 But when long Time and Toyl their Wits had whet,
 And (e) Want an Edge on Industry had set,
 Then thousand Cares their working Heads possess,
 Whilst to scape Need, they Sacrifice their Rest ;
 Conclusions try'd : and whatsoe're (f) wise Use
 By oft-repeated Practice did produce
 Of sure Effect ; the new Experiment
 Unto the Common Good they gladly lent. (Earth
 Then Barbarous Tongues receiv'd new (g) Laws, the

Of fraud : then in secured rest
 Each man on his own ground liv'd blest
 With length of days, with little rich ;
 Nor of more wealth, than that with which
 His Native Soyl was stor'd, could tell.
 With which last likewise *Ovid* concludes, *lib. Metamorph. 1.*
*Nullaque mortales præter sua litora nôrant,
 To Mortals in those days were known
 No other Shoares, belides their own.*

(e) *Theocritus, Idyll. 21.*

*Ἀπένια Διόφαντε μὲν ὅλως τὰς τέχνας ἐγχεῖ
 Ἄυτὰ τῷ μὲν ὅλως διδασκαλῶν, ὅδ' ἔδ' ἐνδὲν
 Ἀνδρῶν ἐργατῖνοι καὶ παρὲν ὄντι μέλει μιν.*

Want, *Diophantus*, is Arts only Spur,
 The Rise and Rule of labour is from her,
 For Care keeps watch in every poor mans eyes.

Hence *Arnobius lib. 2. Supellectiles necessariae quas familiaris usus exposcit, non sunt ista scientie munera, sed pauperrima necessitatis inventa.* And hitherto not impertinently may be applied, what I find recorded of the Temple of *Hercules* at *Gades* by *Philostrophus* in *vita Apollonii*, (as cited by *Photius*;) wherein among other Altars there was one Dedicated to Penury and Art; intimating, that as Penury stirr'd up Art, so Art drove away Penury; as *Hercules* put to flight and subdued Monsters, the Incitements of his Valour. Vide *Riccard. Brixian.* See likewise *Casaubon* explicating this Verse of *Perseus* in *Prologo : Magister, Artis Ingenique largitor Venter.*

(f) Consonant to this place is that of *Columella, l. 10.*

*Ipsa novas Artes varia Experientia rerum
 Et labor ostendit Miseris, ususque Magister
 Tradidit.*

(g) As all our Actions, saies *Scaliger* (*l. 1. Poetices, c. 1.*) so Speech is to be considered under three kinds. First, that of Necessary; Secondly, of Useful; Thirdly, of Delightful. The first kind was that which serv'd as a means of necessary Intercourse between Man and Man, to make themselves barely understood. Such may be imagined that manner of Speech, which we find in *Lactant. (de vero cultu)* that Mankind according to the Opinion of some of the Antients us'd; for they believed at first that men exprest their meanings by signs and nods. Afterwards (as he saies, and before him *Diodor. Sicul. Bibl. l. 1. and Horace, l. 1. Satyr. 3.*) They made Essays of Language by imposing distinct nominal Notes upon several things, and so by degrees perfected a kind of Speech. The second sort (saies *Scaliger*) was something more refin'd by apting it for use and commodiousness, and applying as it were certain Dimensions, Prescriptions and Lincaments to the rude and inchoated Body, whence proceeded a certain Law and Rule of Speaking. The third sort was yet more polite; and had added to it the Ornament of Elegancy, as it were its Dress and Apparel. Now among these Laws of Language, not in the last place is to be reckon'd the Invention of Letters, which, as *Cicero* (*in 1. Tuscul.*) *Sonus vocis, qui infiniti videbatur, paucis litterarum notis terminavit.* This *Suidas* calls γράμματικὴν φιλοσοφίαν, and attributes the Invention thereof to *Prometheus*. But as to the first Characterizers of Speech (besides the learned Digression of *Joseph Scaliger de liter. antiqua* in *Enseb. and Petis. in observat. l. 2. c. 1.*) take these antient Anonymous Verses, as they are recorded by *Crinius* and *Giraldus*, and from them transcrib'd by *Gerard. Job. Vossius, l. 1. de Arte Grammat.*

*Primus Moyses Hebraicas exaravit literas.
 Mente Phænices sagaci condiderunt Atticas.
 Quis Latini scriptum, edidit Nicostrotas.
 Abraham Syras & idem reperit Chaldaicas.
 Isti Arte non minore protulit Aegyptias.
 Gulfilus prompsit Getarum quas videmus Literas.*

But with more likelihood is their Original by others referr'd to *Adam* himself; It being conceiv'd very improbable that he, who was to convey all Learning and knowledge to his Posterity, should want those necessary Organs for such a Work: for which Opinion makes the early mention of Letters, even in *Seb's* time, who was his Son, and doubtless receiv'd them from him. To which purpose there is extant in the *Vatican Library* at *Rome*, an Antient Picture of *Adam* with an Hebrew Inscription over his Head, and under his Feet, this Latine one; *ADAM DEUNITUS EDOCTUS, PRIMUS SCIENTIARUM ET LITEARUM INVENTOR.* Vide *Lomeier. de Biblioth. p. 10.*

(b) Manur'd

(b) Manur'd, to various Fruits gave timely Birth.

Bold Seamen the (i) blind Ocean did invade,

(k) And 'twixt strange Lands procur'd a mutual Trade:

Thence Arts of War and Peace in time arose,

For Art by Practice propagated, grows.

(b) Of all Arts, Agriculture, by the Confession and Testimony of Varro (l. 3. de R. R.) is the most antient. This among the *Ægyptians* was first said to be found out by *Osyris* or *Maneros*. In Greece by *Ceres*, so called, *quasi geres*, à *gerendis frugibus*, (as *Cicero*) or rather (as *Vossius* conceives) from the Hebrew word *Geres*, which signifies a Green Spike of Corn. In Italy by *Saturn*, the Son of *Cælus* and *Tel-*

lus. By whom the said *Vossius* (l. de Philosoph. c. 6.) not improbably supposes *Adam* to be meant: for who besides him was the Son of Heaven and Earth? The name *Saturn* seeming likewise to be deriv'd from the Hebrew word *Satar*, which signifies to lie hid, and is applicable to *Adam* for his flight and absconding himself after his Fall. *Josephus* yet attributes it to *Cain*, (l. 1. Antiqu. c. 3.) ποιμήν & βίος, &c. Pastoralis vitam Abel, Agriculturam vero primus excogitavit Cain. Manuring of Ground by Stercoration is by *Pliny*, l. 17. c. 9. ascribed to King *Angeus*, who is said first to have instructed the *Greeks* therein, as *Hercules* the *Italians*, who for that reason likewise immortaliz'd their King *Stercutius*, the Son of *Faunus*, but rather the same with *Evander*, the *Arcadian*, who first brought the Worship of *Faunus*, (which is *Pan*, or universal Nature) into Italy, and taught the *Latines* the Art of Manuring Ground, for which he was honoured as a God by the name of *Stercutius*; by *Terullian* in *Apologes*. call'd *Sterculus* or *Sterculius*; by *Servius* in 8 *Æneid*. *Sterquilinus*, whom he will have to be *Pisummus*, Brother of *Pisummus*; by *Macrobius* called *Stercutus*; which he makes to be one of the Attributes of *Saturn*: *Saturnum Romanis etiam Stercutum vocant, quod primus Stercore fecunditatem Agris comparaverit*. Vide *Macrob.* l. 1. c. 7.

(i) The Original hath

—In cæcum penetravit Navita Pontum.

By cæcum understanding obscuram quid, incertum, vel ἄοργτον, the Sea being yet undiscover'd, impervious and unknown; *Lucretius*,

Improba Navigii ratio tam cæca manebat,

(i. e.) Ignora, as *Lambin* upon the Place. So likewise *Virgil*, *Georg.* 2. more expressly to the sense of our Author.

Sollicitant alii remis freta cæca—

And *Propert.* l. 2. *Eleg.* 27.

Et Maris & terre cæca pericla via.

Upon which words *cæca Pericla*, *Pafferatus potes*, *cæcum non tantum quod non videt, sed etiam quicquid non videtur*; in which respect the Ocean may be term'd *cæcus*, its Bounds being stretch'd beyond Ken, and its many dangers undiscoverable. Of the Original of Navigation, and the first Effaies thereof, *Claudian* elegantly in *Prefat. Rapt. Proserp.*

Inventa secus primus qui Nave profundum
Et rudibus remis sollicitavit Aquas,
Tranquillis primùm trepidus se credidit undis;
Litora securo tramite summa legens.
Mox longos tentare Sinus, & linquere Terras,
Et leni capis pandere vela Notò.
At ubi paulatim præcepit Audacia crevis,
Cordaque languentem deditisera marum,
Jam vagus erupit Palago, Cælumque secutus
Ægeas Hyemes Ioniamque domat.

He who in new built Ship first Plow'd the Main;
And with rude Oars furrow'd the Watry Plain;
Fearful at first the Seas calm Billows try'd,
Securely steering by the Shoares known side.
Straight leaving Land, through wide stretch'd Bays, he sails,
Spreading his Canvas unto Gentle Gales.
At length by often daring, bolder grown,
His heart by past Fears taught Fear to disown,
He takes the deep; Heaven his sole Guide; and braves
Ægean storms, and the Ionian Waves.

The Nations who are fam'd for this Invention, are, first, the *Phanicians*, from whence it came to the *Ægyptians*, from thence to the *Greeks*, and among them in the first place to the *Cretans* or *Candiots*. But more particularly as to the first building and use of Ships (not to instance in that of *Noah's Ark*) *Clement Alexandrinus* ascribes it to *Atlas* the *Lybian*; *Æschylus* to *Prometheus*; *Diodorus Siculus* to *Neptune*. The Invention likewise of Sails *Æschylus* ascribes to *Prometheus*; *Diodorus* to *Æolus*; *Pliny* and *Pausanias* to *Dædalus* and his Son *Icarus*; *Cassiodorus* (l. 5. *Variar.*) and *Hyginus* to *Isis*; who for that reason on the Reverse of some of the Roman Coins, is figured holding in her hands a Sail swelling with the Wind, and by the *Latines* she was term'd *Isis Pelagia*, as President of Navigation, as may appear by this Inscription in *Gruterus*, pag. 312.

DIIS MANIBUS SAC.
SER. SULPICIO AUG. L:
ALCIMO ÆDITUO
AD ISIDEM PELAGIAM

(k) To this effect our Country-man *Joseph of Exeter* (not unpoetically,)

—Sine remigis usu,
Non nosset Memphis Roman; non Indus Iberum,
Non Scythia Cecropidem, non nostra Britannia Gallum.

—Without the Seaman's pain,
Memphis had ne'r known Rome; nor India Spain;
Greece Scythia, nor our Britain France.

The Original of Traffick is generally ascribed to the *Phanicians*; some particularly attribute it to *Mercury*, as *Phornutius*; (81 *Cornutus*) de naturâ deorum, and *Cæsar*, l. 6. de Bello Gallico; for which reason by *Arnobius* (l. 3.) he is stil'd *Nundinarum*, *Mercurium*, *Commerciorumque Mutator*. To whom Merchants us'd to sacrifice, as to the God of Gain, and President of Negotiation and Commerce: confirm'd by *Ovid*, l. 5. *Fast.*

Te quicunque suas profitentur vendere Mercēs,
Tunc dato, tribuas ut sibi lœra, rogant.

To this purpose likewise makes that antient Inscription, found at Metz, Anno 1589. Recorded by *Philip. Thomassinus de Donariis*, p. 174.

MERCURIO NEGOTIATORI
SACRUM
NUMISIUS ALBINUS
EX VOTO.

C 2

What's

(l) That Birds and brute Beasts have a Language, seems to be main-
tain'd by *Sextus Empiricus* (l. 1. *Pyrron. hypotyp.*) with whom com-
plies *Laetian. de Ira Dei*, c. 7.) where
he saies, *Nobis quidem voces eorum*
videntur inconditæ, sicut illis fortasse
nostræ; sed istis, qui se intelligunt,
verba sunt. That Magicians un-
derstood them, was believ'd by
credulous Antiquity: Hence that

What's yet more strange, they learnt^(l) the Tongues of
Birds,

(m) Entrails t'inspect, (n) burst Snakes with powerful words;
(o) Call'd up pale Ghosts, mov'd Hell it self, the (p) Light
Turn'd into Darkness, into Day the Night.

Fable of *Apollonius Tynæus* ex-
pounding the Notes of Swallows (as *Porphyr.*) or the Chirpings of Sparrows (as *Philostatus*), for which skill
likewise *Tyresius* is fam'd. And *Mopsus* in *Apolon. Rhod.* l. 3. is said to expound the Language of Crows and
Daws. And that *Melampus* was taught the Interpretation of the Tongues of Birds, by a Serpent licking his ears,
we find (yet as fabulous) related by *Pliny*, l. 10. c. 49. And for such reports he, what *Democritus* delivers;
That out of the Blood of certain Birds mixing together and corrupting, a Serpent is produc'd, which whoever
eates, *Iuteleiturus sit Alitum Colloquia.* Not to instance that *Salomon* (according to some Rabinical Tales) was
skill'd therein, and by a certain Bird is said to have sent a Message to the Queen of *Æthiopia* (who must therefore be believ'd
to be as knowing in this Birdish Language:) Or that in the *Alcoran* he is made to say, *O Homines intelligite Avium Elo-*
quentiam! And that a Lapwing, or a Bird called a Houp, brought to him the first News of the Queen of *Sheba*. Of which
in *Prolegom. in Bibl. Polyglott.* But *Delrius* denies that Birds or Beasts can use Discourse, as wanting Reason; yet confesses
they have certain Indications of their affections and appetites, which men by long Observation may come to be acquainted
with; and that they are perfectly known to the Devil, and that he may instruct Magicians therein. Which whether he ever
did (saies he) I know not, *Non est incredibile fecisse.* Vid. illum disquis. Mag. l. 2. c. 19.

(m) Divination from the Inspection of the Entrails of sacrificed Beasts, *Pliny* ascribes to the *Delphians*, *Cicero* (*de divin.*)
to one *Tages*, who appearing suddainly out of the Ground to the *Ætrurians* as they were plowing, is said to have instructed
them therein. *Æschylus* yet refers the Invention thereof to *Prometheus*. The Divination was made from the Site, Colour,
and Marks of the Entrails. The Parts inspected were the Heart, Lungs, Liver and Gall. That of the Heart, not practic'd
by the *Romans*, until the 123 Olympiad. That of the Liver, most antient and usual. The Parts of this Inspected, were the
Fibra, *Fissum*, and *Caput*. Of which see particularly *Briffonius de formulis*, l. 1. Yet this kind of Divination seems by the
Romans themselves in the time of their Greatness to have been despis'd, as may appear by *Tacitus*, and *Quintus Curtius*; The
later of whom condemns *Alexander the Great*, for being addicted to those Superstitions, which he terms, *Humanarum*
Mentium Ludibria, &c.

(n) The Charming of Serpents even from the Testimony of Scripture it self (*Psalm 58. ver. 5. Jerem. 8. ver. 17. Eccles.*
10. ver. 11.) appears to have been frequent with the Antients: To which we may add the farther Testimony of *Virgil* (*Eclog. 8.*)

Frigidus in Pratis cantando rumpitur Anguis.

And *Ovid*, (l. *Metam.* 7.) in whom *Medea* boasts of her self,

Vipereas rumpo & verbis & carmine fauces.

As likewise *Nemesianus*, (*Eclog. 4.*)

Cantavit quod Læna timet, quo rumpitur anguis.

See *Pliny*, (l. 8. c. 16. and l. 28. c. 2.) where treating of the power of Enchantments, he writes, *Figlinarum opera multi cre-*
dunt rumpi tali modo. Non pauci etiam Serpentes. Upon which place *Turnebus* notes, That Serpents, if aware of the
Charmer, have the faculty recancre, i. e. retorquere & dissolvere Incantationem, to dissolve the Charme. *Pliny* (*loco citato*) assert-
ing *bunc unum esse illis intellectum.* The people most notorious for these kind of Incantations, were the *Psylli*, a people of
Africa, and the *Marfi*, a People of *Italy*, of which later thus *Lucilius* in *Satyr.*

Jam disrumpitur medius, jam ut Marfus Colubras
Disrumpit cantu, venas cum extenderit omnes.

Horace likewise in *Canid.*

Caputque Marfæ diffilire Nenias.

And *Ovid* de *Medicamine faciei.*

Et media Marfæ findantur cantibus Angues.

The *Ægyptians* were likewise of old famous for the charming of Serpents, as at this Day the *Indians*, *Negros*, and those of
Peru; Vide *Bochart. in Prefat. ad Hieroz.*

(o) In this many of the Antients vainly gloried. So *Empedocles* in *Laertius* (l. 8.) boasts he could teach the Art by
which,

Ἄξις δ' ἐξ Αἰδῶ καὶ αὐθιμῆος μὲν ὁ Ἄνδρ' ὄψ,
Extinctumque Hominem nigra revocabis ab Orco.

So *Canidia* in *Horace*, (*Epod. ult.*)

Possum crematos excitare mortuos.

And *Tibullus* of a certain Witch,

Hæc cantu findisque solum, Manesque Sepulchris
Elicit.

So the Nurse in *Seneca* his *Hercul. Oet.*

Mea jussi prece
Manes loquuntur.

And *Aleto* in *Claudian.* in *Ruffin.*

Condita funera traxi.
Carminibus victura meis.

See *Delrius Disquis. Magis.* l. 8. quest. 26. and particularly *Leo Allatius* refuting this Diabolical Vanity in his Learned *Syn-*
tagma de Engastrimytho.

(p) So, in *Seneca*, *Medea* boasts she had
Heavens Laws inverted, shown the World the Light
Of Sun and Stars, at once.

Mundus Lege confusa Ætheris
Et Solem & Altra vidit.

But this is more than Magick can perform; Divine Providence not permitting the Devil or his Agents to interrupt or di-
sturb the Course and Motion of the Heavens or Stars, or confound the Order of the Universe, however by Poetical Licence
'tis allowed. Hence the *Tragædian Seneca* in *Hercule furente*,

Nox media Solem vidit & Noctem Dies.

And *Petronius* ———

Trepidusque furentes
Flectere Phæbus Equos revulso cogitur Orbe:
Tantum dicta valent.

So likewise *Apuleius* (l. 2. de *Aur. Asin.*) speaking of a certain Witch, *Omniem istam Lucem Mundi fideiisimis Tartari & in*
Vetustum Chaos submergere novis.

Ingenious

Ingenious Industry made All things bend;
Nor put they to their curious Search an End,
Till Reason had scal'd Heaven, thence view'd this round,
And Nature latent in its Causes found;

Why^(q) Thunder does the suffering Clouds assail;
Why Winters^(r) Snow's more soft than Summers^(s) Hail;
Whence^(t) Earthquakes come, and Subterranean^(u) fires,

(q) *Anaximander* and *Metrodorus* supposed Thunder to be a Wind conceiv'd and inclos'd within a thick Cloud, which breaking forth with violence makes a crack: the Lightning being caused by the breaking of the Cloud; as is il-

lustrated by *Anaximenes* his Comparison of the Sea, which being broken with Oares, sparkles and shines. *Anaxagoras* held it to be a portion of ardent matter quencht in a moist Cloud, which makes a noise, as red hot Iron dipt in water. The Stoicks believ'd it to be a Noise occasioned by the Collision of two hollow Clouds, Lightning proceeding from their attrition. *Descartes* (not much differing from them) conceives Thunder to be occasioned when divers flat Clouds (*Tabulatorum instar*) like so many Floores or Scaffolds are driven with violence the higher upon the lower, and clatter one upon another; the Lightning proceeding from the Nature of the Exhalations included in the *Interstitia* or spaces between the Clouds, which by them falling one upon another, is violently crusht out. Our Countrey-man Mr. *Hobbs* will have it to be the breaking of a Cloud congeal'd to Ice, by the struggling of inclos'd Air, which he borrowed from *Lucretius*, l. 6.

*Denique sæpe geli multus fragor, atque Ruina
Grandinis, in magnis sonitum dat nubibus æte.*

But much more consonant to Truth is the Opinion of those, who hold Thunder to be an Exhalation hot and dry, of a Sulphureous and Nitrous matter contracted within a cold and moist Cloud, from which striving to get out, it kindles by Agitation, and violently breaks through its Prison.

(r) *Pliny*, l. 17. c. 2. calls Snow the Foam of Cœlestial Waters. *Aristotle*, and from him most Modern Philosophers, describe it to be begotten of a moist but rare and thin Cloud, which being condensed by a sharp cold falling down, parts (that it may the easier divide the Air) into Flakes like Fleeces of Wool, to which the Psalmist alludes, *Qui dat Nivem sicut Lanam*; Though *Bodin* (in *Theatro Nature*) conceives the Psalmist resembles Snow to Wool, for the warmth it affords to Plants and Vegetables in the cold time of Winter, (as Woollen Vestments do to men) rather than for its Fleece-like Similitude. Its whiteness (though *Anaxagoras* maintain'd it to be black, and in *Armenia* it is found of a ruddy colour, by reason the Terrestrial Particles or Atoms of that soil, which abounds in *Minium*, mixing with those of the Air, tinge it, and give it that hue, as *Estab.* in *Iliad.* 2.) is derived from its Efficient cause, Cold; and the copious mixture of Aerial Spirits: Of the Admirable Contexture and Figure of its Parts, which are said to be always *Sexangular*; See *Kepler* in his particular Tract upon that Subject.

(s) Hail is nothing else but Rain congeal'd in its fall; and this Concretion or Congelation happens not far from the Earth, as is Manifest by high Mountains; on which Snow is often found, but never Hail. The nearer to the Earth it hath its fall, the more Triangular or Pyramidal is its Figure, the higher its fall, the rounder. Those Angles or Inequalities being worn away and rounded by the length of its passage through the Air. The cause of its congeal'd hardness, is the *Antiperistasis* of the lower Region of the Air, which is the Reason likewise why it falls more frequently in Summer, than in Winter, and seldom in the Night, unless the Night be warm. *Vide Fromond. Meteorolog.* l. 5. c. 9.

(t) *Thales* & *Democritus* ascribe the Cause of Earth-quakes, to Subterranean Waters breaking out and undermining the Bowels of the Earth. The Stoicks, to Moisture rarified into Air; which seeking for room to break forth, when it meets (as *Anaxagoras* likewise held) with the thick and tough Body of the Earth, by its struggling for vent it shakes it. Others conceive it proceeds from inclos'd Air, or Spirits arising from combustible matter (such as Sulphur, Nitre, Allom, Sal Armoniack, or Bitumen) set on fire, and consequently rarified, causing the like effect, as Gunpowder in Mines. See *Fromond. Meteorolog.* l. 4. c. 1, 2, 3. and *Kircher* in his *Mund. Subterr.* l. 4. c. 2. The several kinds of Earth-quakes are thus reckon'd up by *Apuleius*, l. de *Mundo*; The first is term'd *Epiclinter seu Inclinator*, that is, when it strikes at oblique Angles, turning things sideward. The second is called *Braster*, or *effervescens*, from the similitude of boiling Water, bearing up all above it in a direct Line. The third is termed *Chasmatias*, whose Violence makes a Breach or *Hiat*, in which the place forced, is swallowed up. The fourth is called *Rheles*, from forcing its way by a Rupture, but not making such a *Chasma*, as the former. The fifth *Ostes*, which at once shakes and overturns. The sixth, *Palmatis*, which shakes but overturns not. The last, *Mycematis*, from the bellowing Noise it makes. *Ammianus Marcellinus*, l. 16. and *Calinus Rhodiginus* from him reckon but four kinds.

(u) That there are Subterranean Fires, and those great and many, appears by the *Vulcanian* Islands, by the Mountains *Ætna*, *Vesuvius*, *Hecla*, and others, ejecting Flames, and by hot Baths and Fountains breaking out of the Earth, which as *Vitruvius*, l. 2. instances could not be, *Si non in imo haberent aut de Sulphure, aut de Alumine, aut Bitumine ardentes Maximos Ignes*. In which words he briefly declares their Causes. To which, as a further Proof, (to omit divers others) may be added Earth-quakes, deriving (as but now alledged) their Original from these Subterranean Fires, and therefore by our Authour not improperly joyn'd together in this Verse. Who would be further satisfied touching this matter, may consult *Pliny*, l. 2. c. 106. *Gassendus* his *Epicurean Animadversions*, and particularly *Kircher* in his *Mund. Subterr.* l. 4. where the Natures of these Fires, their Necessity, Diffusiveness, Food and Prodigious Effects are exactly described. See likewise *Isidorus* expressly upon this Subject in his Tract de *Montium Incend.* and the Curious Disquisition of *Alphonsus Borellus* in *Historia & Meteorologia Incendii Ænæi*, Anno 1669.

D

Why

(x) Rain is defin'd by *Aristotle* Why^(x) show'rs descend, what force the^(y) wind inspires.
 a Cloud converted into Water, From Error thus the wondring Minds uncharm'd;
 and distilling in drops. *Epicurus* (z) Unsceptred *Jove*; the Thunderer disarm'd;
 makes two ways or means of generating Rain; One by Transmutation, when the parts of a Cloud, Of Name and Power dispoyl'd him, and assign'd.
 either by absence of Heat, or accession of Cold, are so transpos'd and varied, as render them more apt to Fire to the Labouring Clouds, Noise to the Wind.
 flow and fall, as is exemplified by Vapor in a Limbeck, gathering These to their proper Causes having brought,
 together, and then falling in drops. Next on the whole Worlds Mass she casts her Thought,
 The other by Compression; when Of which the^(a) System in her self she frames,
 by wind or cold the Cloud is compressed, and the vaporous *Corpuscula* Dispensing to the Signs both^(b) Forms and Names;
 within the hollows thereof are crowded together, and by accession get weight and fall. Whence it appears that the drops of Rain are form'd by Coalition, rather than Division; And that Rain is not (as vulgarly conceiv'd) a watry Mass effus'd from a Cloud, like water from a watering-Pot, (or as *Trepiades* jestingly in *Aristophanes*, declar'd it to be caus'd when *Jupiter* urin'd through a sieve) For if there were any such stagnation of Water in a Cloud, it would fall from thence like a Torrent or Spout, rather than in Drops. Of Rain there are reckon'd three kinds, *Stratidium*, *Imber*, and *Nimbus*. The first is a small Misty Rain. The second is more intense, and composed of greater Drops. The last is yet more violent, and falls more thick, and as *Fromondus* says, *Decumanis Guttis*. *Apuleius de Mundo* sums up the Matter when he saies, *Tot Diversitatibus pluvie cadunt, quot modis Aer Nubium conditionibus cogitur*.

(y) The Original of Wind is reckoned among the *Abcondita* of Nature; But I find it reduc'd chiefly to three Heads or Causes, *Viz.* the Earth, the Water, the Air. The first is maintain'd by *Aristotle*, who makes it a dry Earthy Exhalation. The second is maintain'd by *Metrodorus*, and partly by *Anaximander*, chiefly by *Vitruvius*, l. 1. c. 6. Where he says, *Ventus est Aeris fluens unda, cum incerta motus redundantia: Nasciturque cum fervor offendit Humorem, & Impetus fervoris exprimit vim Spiritus flantis*. Which he illustrates by your *Æolipile*, or Wind-balls, so demonstrated likewise by *Descartes*, l. 4. *Meteor.* c. 4. and asserted by *Salmasius* (l. de *Ann. Climat.* p. 811.) in *Vitruvius* his own words. The third seems to be most antient, which makes Wind to be nothing else but Air moved. *Apuleius de Mundo* is of the same Opinion; *Nec enim aliud est ventus, nisi multum & vehemens in unum coacti Aeris flumen*. But this not assigning the first Cause of that Motion, leaves the matter undetermin'd. The most probable Opinion is, that Wind is an Earthy or Watry Exhalation mixed with *Jaline Spirits*, and other Vapours, drawn or forc'd out of the Earth or Sea, by the power of the Sun or Subterranean Fires; which being rarified by Heat, or condensed by Cold, and impelled for the most part by a transverse, sometimes by a direct Motion, exagitates the Earth, Air, and Sea. But of this Subject, see particularly the Lord *Vernham*, in his Book de *ventis*, *Descartes* (loc. cit.) *Gassend. Animadvers. in Epicur. Fromond. Meteor. Kircherus in Mund. Subterr.* and Mr. *Isaac Vossius de Motu Marium & ventorum*.

(z) See *Lucretius*, l. 6. arguing to this effect, against the pretended and fabulous Power of Thundring *Jupiter*. But far better and with more Analogy to Truth, *Seneca in Natural. Quest.* l. 2. *Interim hoc dico, Fulmina non missi à Jove; sed sic omnia disposita, ut etiam ea, quæ ab illo non fiant, sine ratione non sunt, quæ illius est. Vis eorum illius permissio est. Nam etsi Jupiter illa nunc non facit, fecit ut fierent: singulis non adest, sed signum & Vim & Causam dedit omnibus*; Thus far *Seneca*. In which there only wants the true Name of the first Divine Cause. Why *Jupiter* is said to be the Author of Thunder and Lightning, *Pliny* (l. 2. c. 20.) gives this Physical reason. That the Fires of the three uppermost Planets falling to the Earth, carry the name of Lightning, but that especially which is seated in the midst, that is to say, *Jupiter*; because participating of the excessive Cold and Moisture from the upper Circle of *Saturn*, and the immoderate Heat of *Mars* that is next under, be by this means discharges the superfluity of either; whereupon it is commonly said, that *Jupiter* darts Lightning, &c. Of the Superstitious Opinions of the Antients touching Thunder and Lightning, see *Nardius* in his 27. accurate *Animadversion* on the 6. Book of *Lucretius de rerum Naturâ*.

(a) Of the several Mundane Systems, Antient and Modern, see the Appendix.

(b) Who first reduced the Stars into Asterisms, or Constellations, is not easily to be found out: As hard a Task it is to reconcile the different Morphoses or Figures in the several Spheres of the *Chaldeans*, *Persians*, *Ægyptians*, *Greeks*, *Arabians*, *Indians*, *Chineses* and *Tartars*, whose various differences may appear partly by the Description of *Abu Masher*, commonly called, *Albumazar*, partly by *Aben Ezra de Decanis Signorum*, published by *Scaliger* in his Notes upon our Authour: Of all which *Salmasius* (in *Prefat. ad Distrib. de Antiqu. Astrolog.*) conceives those of the *Greeks* (most vulgarly used amongst us) to be the newest and latest. As to the Names of the Stars, it is not to be doubted, but that they were first imposed by *Adsm*, Though those (except some few preserv'd in Scripture) be long since utterly lost. Yet the Names we now use are most of them above two thousand years standing, as is manifest by *Hesiod* and *Homer*. It is not yet to be imagined, that they were all impos'd about one and the same time; some being of much later Denomination, as particularly *Coma Berenices* (so called by *Conon*) *Antinous*, and others. Some report *Astræus* to be the first, who gave Names to the Stars; whom for that reason

Fama Parentem
Tradidit Astrorum

As *Germanicus* makes *Ætæus* speak, concerning which see *Theon*. Others ascribe this to *Mercury*. But as to the several Denominations of the Signs and Constellations, see after in the following Notes.

Their

Their ^(c) Aspects and their Order notes, and saw
Heavens changing Face gave fatal changes Law.

This is our Muses Theme, as yet ^(d) display'd
In Verse by None: Propitious Fortune aid
The bold Attempt; with Ease my Life befriend,
And to a long and chearful Age extend,
That so I sink not with my Subjects weight,
But with like care, great Things, and small relate.

Now since from Heaven it self our Verse descends,
And down to Earth Fates settl'd Order tends,
We first must Natures General State rehearse,
And draw the Picture of the Universe.

Which, whether it from Nothing were deriv'd;
Or (of Beginning both, and End depriv'd)
Hath ^(e) ever been, and ever shall endure;
Or ^(f) Chaos severing from the Mass obscure

(c) The Aspects or mutual Radiations of the Signs and Stars, are the Habitudes of one unto another in a determinate distance, in which they are apt to Cooperate; and these commonly are reckoned five in number, and are attributed peculiarly to the Stars and Signs within the Zodiac, but extended likewise to the rest. These *Censorinus de die Natal.* c. 8. calls *Conjunctio*, the Antient Greeks *Συμμετρίαι* and *συνυζήσεις*, the later *βλέψεις*. The Arabs, *Almantar*. Their Characteristick Notes, Names, and Distances, thus express:

Gr.	
δ	Conjunctio, συνυζήσεις — 0
*	Sextilis, ἑξάγωνος — 60
□	Quadratus τετραγωνος — 90
Δ	Trinus, τριγωνος — 120
δ	Oppositio, ἀντιμετέσεις — 180

To which *Kepler* and *Mestlinus* add several others: But the most eminent Aspects are the great Conjunctions of the three Superior Planets, and their distances in Trine Aspects of the Zodiacal Signs, called therefore *Triplicities*. The first fiery, whose Angles answer to the fiery Signs, *Aries*, *Leo*, and *Sagittarius*. The second aery, answering to the aery Signs, *Gemini*, *Libra*, *Aquarius*. The third watry, pointing to the watry Signs, *Cancer*, *Scorpio*,

and *Pisces*. The last Earthy, whose Angles are terminated in the Earthy Signs, *Taurus*, *Virgo*, and *Capricornus*.

(d) Others of the Romans, says *Sealiger*, καταλογάδην tentarunt, essay'd to write of this Subject in Prose, as *Varro* and *Nigidius*, who both wrote of the Sphere, (as well the Barbarick as the Greek) *Cassiodorus* (in *Astronom.*) mentioning the first, *Servius* (in *Georg.*) the other. And among the Greeks, *Eratosthenes*, *Aratus*, *Hegesyanax*, and *Hermippus* wrote of the Celestial Phenomena; and *Ovid*, after *Marcus Tullius*, and *Germanicus* after him, translated *Aratus* into Latine Verse; But not any amongst the Romans before our Authour (for ought appears) ever wrote an *Astronomical* or *Astrological* Poem of their own Invention. Nor of the later sort any among the Greeks, save only *Dorotheus Sidonius*, who wrote an *Apotheismatick* Poem, though now lost. And therefore not unjustly does our Authour assume the Glory of this to himself from all the Latines.

(e) The Opinion of *Xenophanes*, who held the World to be eternal, ungenerated, uncreated and incorruptible; with whom agree *Parmenides*, *Melissus* and *Aristotle*, to whose Opinion likewise *Xenocrates* subscribes, and with them *Pisny* (l. 2. c. 4.) thus concludes. *Numen esse Mundum credi par est, æternum immensum, neque genitum neque interiturum unquam.* Vide etiam *Censorin.* de die Natal. c. 4. And as to this and the several other Opinions of the Antients touching the Efficient Cause, Matter and Principles of the Universe, (besides *Plutarch de Placit. Philosoph.* and *Stobæus in Eclog. Physic.*) see *Paulus Merula* his Learned Dissertation in *Q. Ennii Annal.* p. 119. upon these Verses.

Corpore Tartarino prognata Palus Virago,
Quoi par Imber & Ignis, Spiritus & Gravi Terra.

(f) Our Authour here makes *Chaos* to disclose and separate the mixed Principles of things, and to bring forth the World. *Claudian* more conform and agreeable to the Antient Theologie of the Ethnicks, makes Clemency or Love to effect this Work, l. 2. de *Land. Stilicon.*

Prima Chaos Clementia solvit,
Congeriem miserata rudem, vultuque sereno
Discussis Tenebris in Lucem Secula fudit.

Hesiod (as *Plutarch* delivers his Opinion l. de *Iside & Osyride*) makes the Principles of all things to be *Chaos*, *Earth*, *Tartarus*, and *Love*; By *Earth* understanding *Isis*; by *Love* *Osyris*; by *Tartarus* *Typho*; by *Chaos* *χαλκον τινα κ' & τὸ πονεῖν τῆς ποίης*. The Place, Region or receptacle of universal matter; to which its name answers: *Chaos* signifying no other than *Hiatus seu vastitas quædam*. *Philo-Biblus* from the Writings of *Sancuniathon*, as cited by *Eusebius* in *prima Preparat.* writes thus: *τῆς ποίης τῶν θεολογῶν τὴν τῆς ὅλων ἀρχὴν, &c.* (i. e.) The Theology of the Phœnicians makes the Principles of the Universe a dark Spiritual Air, or a Spirit of dark Air, and confus'd *Chaos* involv'd in Obscurity; These were infinite, and for some time without Bound or Term: But when the Spirit was touch'd with the love of his own Principles, and a Mixtion was made, there was given to that Nature the name of Love. This was the beginning of the production of all things; But the Spirit it self had no Generation: And from this Commexion of the Spirit was begotten *MWT*; which some call *Slime*, &c. From which Theology of the Phœnicians; *Hesiod*, *Ovid*, and others deriv'd their Fables of *Chaos*, as the Phœnicians theirs from their Neighbours, the Jews, and the Writings of *Moses* not clearly understood. See *Grotius* in his Notes upon his Book de *veritat. Relig. Christ.* l. 1. Of the several acceptations of the word, *Chaos*, according to the different Notions of the Poets, Philosophers and Divines; See *Ricciolus* on that Subject in *Almagest. Nov. Tom.* 2. lib. 9.

The mixed Principles of things, this bright
World teem'd, whilst Darkneſs took to Hell its Flight;

(g) The Opinion of Democritus, Leucippus, and Epicurus, and before them of Mischus, or rather Mochus, the Sidonian, who as Strabo (l. 16,) from the Authority of Posidonius, affirms, was the first Authour or Introducer of these Indivisible Principles, and liv'd before the time of the Trojan War. By Atoms is to be understood what the Latines call *Indivisible*, that is, a Body incapable of Division both by reason of its solidity, *ob vacuum carentiam*, and the Minuteness of its Body, whence it is properly said to be *quid minimum*, or as our Authour terms it *penè Nihilum*. But see these explain'd in Lucretius de Rerum Natura, and the Ingenious Interpreter of his first Book Mr. Evelyn; more especially Gassendus in his incomparable Epicurean Animadversions.

Or that made up of (g) Atoms Nature's Frame
Exists, and shall resolve into the same
Some thousand Ages hence, and almost brought
From Nothing, fall again to almost Nought;
Or that the Heavenly Spheres and Globe of Earth,
From (h) Fire, not such blind Matter, drew their Birth,
Whose flames in all things dwell, kindled Heav'n's (i) Eys,
And form the glittering Lightning of the Skies;
Or sprung from (k) Water, which dry Matter soaks,
And (l) ravenous Fire, that would devour it, choaks;
Or unbegot were Earth, Air, Water, Fire,

(h) This was asserted by Hippasus the Metapontine, and from him by Heraclitus the Ephesian; The Opinion thus delivered by Laertius; All things consist of Fire, and into that are resolv'd: for since all things are made by Condensation and Rarefaction, and flow for the most part in manner of a River; Fire when it is condens'd, humectates and becomes Air; Air when compress'd, becomes Water; Water contracting and growing concrete becomes Earth: this is the way down. On the contrary, the Earth being diffus'd, thereof Water is made, of Water the rest as the like manner: this is the way up. To this effect likewise Plutarch de Placit. Philosoph. l. 1. & Stobæus Eclog. Physic. l. 1.

And these (m) four Limbs make up the God entire,
And form this World; nor will that ought be found
Beyond themselves, since All things they compound,

(i) Meaning the Stars, according to the Stoicks; who make the World to be a Corporeal Deity, and the Stars its Eys. See Plutarch de facie in Orbe Luna, and Lips. Physiol. Stoic. l. 2. Differt. 10.

(k) Of this Opinion was Thales the Milesian, and Pherecydes of Scyrus; who held Water to be the first principle of all natural Bodies, whereof they consist, and into which they resolve. The Reasons or Grounds for which Opinion are these. First, because the Seminal and generating principle of all living Creatures is humid. Secondly, because all kinds of Plants are nourished by moisture, wanting which they wither and decay. Thirdly, because Fire, even the Sun it self and the Stars are maintained by Vapours proceeding from Water, and consequently the whole World consists thereof. See Plutarch de Placit. Philosoph. and particularly (to omit divers others) my learned Dear Friend Mr. Stanley in his History of Philosophy, Part. I.

(l) Not improperly is that Epithet given to Fire; it being by some of the Antients believed to be a devouring Animal: And for that reason the Egyptians refused to burn their dead, imagining fire to be *ὄρεον ἐμψυχον*, *Animata Bellua*, as Herodot. l. 3. informs us.

(m) Asserted by Empedocles, who held the Principles of all things to be the four Elements; to which he added two Powers, Amity and Discord, the one Unitive, the other Discretive: See Plutarch de Placit. Philosoph. Laertius in Vit. Empedocli. Achilles Tatius in Arat. Phenomen. and Laertius lib. 2. Which last conceives he deriv'd this Opinion from Hermes Trismegistus. These Elements he called after this manner. Fire he termed Jupiter: the Air Juno, or (as Laertius saies, but not with so good reason) Pluto. The Water Neftis a νάξ, i. e. fluere. The Earth Pluto, or (according to Laertius) Juno, i. e. Vesta. Consonant to this Opinion of Empedocles, thus Ovid Metam. l. 1.

Quatuor æternus genitalia Corpora Mundus
Continet. — and again, l. 15.
— Omnia fiunt
Ex ipsis, & in ipsa Cadunt —

Lipsius Philosoph. Stoic. lib. 1. conceives our Authour in these Verses to touch at the Opinion of Strato the Peripatetic, who held this Mundane Deity to be formed of these four Elemental Limbs, *Sine Mente gubernante*. Of which thus Seneca (in a fragment of his, cited by St. Augustine, l. 6. de Civitat. dei) *Egone feram Platonem, aut Peripateticum Stratonem, quorum alter (scil. Plato) Deum sine Corpore fecit, alter sine Anima?*

Applying

Applying Hot to Cold, to Humid Dry,
To Heavy Light, which kind ⁽ⁿ⁾ Discordancy
The Matrimonial Bands of Nature knits,
And Principles for all Production fits;
We can but guess its Birth: obscur'd it lies
Beyond the reach of Men and Deities.
Yet though its Birth be hid, its Form's disclos'd,
And in due Order all its Parts dispos'd;
^(o) Fire up to the Æthereal Confines flew,
And a round Wall of Flame 'bout Nature drew,
The subtle Air possess the second Place
Diffus'd throughout the vast Globes middle space;
Whence its hot Neighbour draws cool Nourishment:
The third Lot level'd the wide Seas Extent,
And in a liquid Plain the Waters spread,
Whence hungry Air is by thin Vapours fed;
Press'd down b' its ^(p) Sediment, Earth lowest fell,
Whilst sand-mixt slime contracting did expel
The subtler moisture; which to flight constrain'd
Rose by degrees 'till it the surface gain'd,
And the more that into pure Water went,
The more the ^(q) squeez'd out Seas the drain'd Earth pent,

(n) To this purpose Lactantius, l. 2. Philosophi quidam & Poetæ discordi Concordia Mandum constare dixerunt, i.e. some Philosophers and Poets report the World to consist of discording Concord: So likewise Cassiodorus (lib. 2. Variarum) Merito dicunt Philosophi Elementa sibi Mutuis complexibus illigari & mirabili conjungi federatione, quæ inter se contraria intelliguntur varietate pugnare. This dissonant Harmony of Nature being represented by Orpheus in his Tetrachord; in which, as there were four strings, from the mixture of whose different Tones resulted a sweet Harmony; so by concurrence and mixture of the four Elements, all things are generated. And as in the Tetrachord the ὑπὸ τῇ ὑποτάτῃ, rendered the gravest sound, Νῆτη the most acute, and the nearest in gravity of sound to the first came the πικρὺν τῇ ὑποτάτῃ, to the second in acuteness the ὀξύτην. So among the Elements, there is one the heaviest, Earth, and one the lightest, Fire, answering to the two first Notes; Water and Air answering to the two intermediate Tones. This admirable Consent of the contrary Elements is here not unaptly called The Matrimonial Band of Nature. And for this reason, saies Lactantius (loco citato) The Marriages of the Antients were confirmed and plighted by the Sacrament of two contrary Elements, Fire and Water. In regard that Heat and Moisture are the Parents of all Generation, as Ovid (l. 1. Metam.) hath likewise expressed it.

Quippe ubi Temperiem sumpsere Hæmorrhæque Calorem, Concipiunt, & ab his oriuntur cuncta duobus;

Cumque sit Ignis Aquæ Pugna, vapor humidus omnes Res Creatæ & Discors Concordia facibus apta est.

(o) Our Authour here Confines not the Element of Fire within the Convex of the Lunary Sphere, as Aristotle, and his followers; but with the Stoicks transmits it to the Æthereal Region, which they will have so called, ὁ αἰθήρ, i.e. ab Ardore, as consisting of Fire, and to be Heaven it self, imbracing all things, as Cleanthes in Cicero, (i. e. de Natura Deorum) describes it. *Ultimum, & altissimum, atque undique circumfusum, & extremum omnia cingentem atque complexum Ardorem, qui Æther nominatur.* To this purpose likewise Macrobius (in Somnio Scipionis) *Quicquid ex omni Materia, de qua facta sunt omnia, purissimum ac liquidissimum fuit, id tenuis summitatem; & Æther vocatus est.*

(p) So Ovid,

— Tellus Elementaque grandia traxit;
Et pressa est gravitate sua —

Upon which Words Jacobus Crucem; *Per Elementa grandia nos materialem intelligimus Alluvionem, &c.* By the heavy Elements we understand that Material Conflux, which the Greeks call ὕλην, being the settling and Dregs of all the Elements, To the same sense likewise Lucretius,

— Terra concreto corpore pondus
Constitit, atque omnis Mundi quasi Limus in Imum
Confluxit, gravis & subsedit funditus ut fax.

So the Scholiast of Apollonius Rhodius, in l. 1. — Ζῆλον τὸ πᾶρ Ἡρόδ' & ἔσθ' ὕδωρ ἐν αὐτῷ φησιν, &c. Zeno affirm'd The Chaos, whereof all things, according to Hesiod, were made, was water; which settling became slime; the slime condens'd into solid Earth.

(q) Virgil, Eclog. 6.

Tum durare solum, atque excludere Nereæ Ponto
Caperit —

Our Authour perhaps in this place hints at Anaximander, who said of the Sea, that it was ἡ πᾶσις ὑγρότης καὶ ἰσότης, i.e. The remainder of Primitive Moisture, after this Exclusion and Separation. Plutarch. l. 1. c. 4. de placit. Philosoph. thus expresses the sense of our Authour: *Of those Bodies which settled below, was made the Earth; and that part thereof which was more subtil and of a thinner form and consistence, gathered round together, and engendered the Element of Water, which being of a liquid and flowing nature, ran downward to hollow places lying low, which were able to receive and hold it.*

E

Settling

Settling in hollow Vales; whilst Hills thrust out
 Their Heads from Waves circling the Globe about:
 This lowest, in the midst is still confin'd,
 On all parts equally from Heaven disjoyn'd,
 Secur'd from further falling by its fall,
 The Middle both and Bottom of this All,

The Earth
 in the
 midst of the
 World.

(r) To this purpose Cicero, *l. 2. de Naturâ Deorum. Si Mundus Globosus est, Omnesque ejus partes undique æquabiles, &c.* If the World be round and of a Globose Figure, and all its Parts contained in like proportion, by and among themselves; It must happen to the Earth by necessary Consequence, seeing all its parts press and tend to the middle, (now the middle in a Sphere is that which is lowest) that nothing can possibly interpose; which may be able to weaken or hinder so great a Convention of Gravity.

In whose (r) concentrating Parts, on every side
 Bodies Encountring, are to sink deny'd.

And did not Earth by its self-Poize suspend,

Phæbus, the Stars approaching, could not bend

His Course to set, nor set, ere rise again,

Nor *Phæbe* drive through the Aereal plain

Her Wave-drench'd (s) Steeds; nor (u) *Phosphorus* the Light

E're usher more, if *Hesperus* to Night.

Now in the Middle Earth suspending thus,

Not sunk to th' Bottom, All is Pervious:

For We nor can the rising Stars conceive

A (u) casual Production; nor believe

(s) Homer and Ovid make the Moon to be drawn in a Chariot by two Horses; whereof the one is said to be white, the other black, in regard (as *Ætius in Germanicum* gives the reason) she is sometimes apparent by Day, as well as by Night. Others will have her to be drawn by Oxen, and therefore by *Nonnus in Dionys.* l. 12. she is called

— Βοῶν ἑλκτρεῖα Σελήνη.
 — Bourn Agitatrix Luna.

Of both which we have express representations in the Roman Coyns, and particularly in those of the Empress *Julia Domna*, touching which, see *Tristan* in his *Historic. Commentar.* Tom. 2. p. 129, 130. She is said likewise to be drawn by Mules, in regard, (as *Festus in voce Mulus* observes) that as Mules are not generated ex suo genere, sed Equi; So the Moon is said to shine not by her own, but as *Catullus* expresses it, — *Notho Lumine*, which she derives from the Sun. *Clandian* l. 3. de *laudibus Stiliconis*, makes her to be drawn by Stags, in regard of the swiftness of her Motion, &c. and so we have her likewise represented in divers Consular and Imperial Coyns, in *Ursinus*, *Golzius* and *Gorleus*.

(t) The Star or Planet *Venus*, called likewise *Lucifer* (as *Cicero* in *2. de Naturâ Deorum*, and *Pliny*, l. 2. c. 8.) when it precedes the rising Sun, as being the Harbinger of Light, (and not as *Julius Scaliger Exercit.* 75. conceives, for being the brightest of all the Stars, and from its splendour so nam'd.) It is likewise call'd *Hesperus*, *Vesper*, & *Vesperugo*, when it rises in the Evening and ushers the Night. Of this, thus *Seneca* in *Hypolit.*

*Qualis est Primas referens Tenebras
 Nuncius notis, modo lotus undis
 Hesperus, pulsus Iterum Tenebris
 Lucifer idem.*

Such the bright Usher of dark Night
 Rises from Seas with new-bath'd Light,
Hesper: The same, Night chac'd away,
Phosphor, the Herald of the Day.

We shall only add as a further Illustration to this, and the foregoing Note, what *Cassiodorus* hath (l. *Variarum* 3.) in Explanation of the Circensian Games. *Bigæ quasi Luna, quadrigæ Solis Imitatione reperiuntur. Equi Defultorii, per quos Circensium Ministri missos denuntiant Exituros, Luciferi Precursorias velocitates imitantur.*

(u) He points at the ridiculous Opinion of *Xenophanes* the *Colophonian*, who held, that the Moon and Stars were certain Clouds set on Fire, extinguish'd every Day, and re-kindled at Night; as on the contrary, the Sun extinguish'd every Night, and re-kindled every Morning; or, to express it in *Minucius Felix* his Words, *Congregatis ignium Seminibus Soles alios atque alios semper splendere*. For the Rising and Setting of the Sun, Moon, and Stars, according to this Tenet, is nothing else but their kindling and extinguishing. Of the same Opinion likewise was *Heraclitus*, whence the Proverb in *Plato*, *Heracliteo Sole citius extingui*. From them *Epicurus* receiv'd by Succession, *Hereditatem stultitiæ* (as *Lactantius* terms it) This Inheritance of Folly, which he left improv'd by himself, and *Lucretius*, who thus asserts it, l. 5.

— conveniunt Ignes, & semina multa
 Confluere Ardoris consueverunt tempore certo,
 Qua faciunt Solis nova semper Lamina gigni,
 Quod genus Idæis fama est è montibus altis

Of

Of the chang'd Heavens, the oft-renaſcent State,
Sol's frequent Births, and his Quotidian Fate;
Since the Signs always ſhew the ſelf-ſame Face,
Heav'n keeps one Courſe, the Sun one conſtant Race,
The Moon in certain, although various, ways,
The changes of her Light, and Orb diſplays.
Nature, the Tract which firſt ſhe made, obſerves;
Nor e're like an unſkilful Novice ſwerves.
Day with eternal Light is carried round,
This the times ſhew, in ſeveral Regions found
Successively the ſame; and we may ſee
Eastward its Riſe, its Setting Weſt to be
(The further unto either as we run)
Continued with Heavens Motion, and the Sun.

Nor need the Pendent Earth wonder beget,
Since the whole World ſuſpends as well as it,
Whoſe (*) Foot upon no certain Bottom reſts,
As its ſwift Courſe and Circular attests.
The radiant Sun ſuſpended runs its Rounds,
Never tranſgreſſing his Æthereal Bounds.
The Moon and Stars in Skies (y) ſuſpended ſtray,
And Earth by Imitation (z) hangs as they,
Poiz'd in the middle of circumfluent Air:
Not flatly ſtretch'd, but ſwell'd into a Sphere,
Riſing alike, and falling every where.

The Earth
of a Sph-
erical Form.

the Heavens to be ſolid, and the Stars fixed therein, as Nails in a Wheel, or Jewels in a Ring; the contrary to which Opini-
on is here aſſerted by our Authour, with whom concur among the Antients, Homer, Virgil, Cicero, Lucretius, Seneca, Ptolomy,
Pliny, Metrodorus, and others: And of the Moderns, the moſt Eminent Aſtronomers from Tycho, to this preſent, who all
maintain the Heavens to be fluid, and the Stars to move therein, as Fiſhes in the Water, or Birds in the Air. Between theſe
there is a middle Opinion, which maintains the Heaven of the fixed Stars to be ſolid, but that of the Planets to be fluid.
The firſt Authour of which diſtinction, is conceiv'd to be Empedocles; Of which ſee Plutarch, l. 2. de Placit. Philoſoph. c. 13,
and upon the whole ſubject matter, Ricciolus in Almageſt. Nov. l. 9. c. 7.

(x) This Libration, or Suſpention of the Earth, Achilles Tatius in Arat. Phenomen. thus illuſtrates. If any one ſhould put
a Millet-Seed, or other ſmall Grain into a Bladder, and by blowing into it fill it with Air, the Seed or Grain will be carried up, and re-
main in the middle of the Bladder. After the ſame manner, the Earth being on all ſides forced by the Air, ſuſpends poiz'd in the
miſt thereof. To which Ariſtophanes in Nubibus, alludes;

Ω Δεσποτ' ἀνάξ ἀμέτρητ' αἰὲρ, ὃς ἔχει τὴν γῆν μετ' ὤρον.
Great Lord and King, Thou Immenſe Air!
Which doſt the Earth ſuſpended bear.

See Turnebus, l. Adverſar. 4. c. 17. explaining theſe Verſes of Ovid, (l. 1. Metam.)

Et circumſuſo pendeat in Aere Tellus
Ponderibus Librata ſuis

E 2

This

Disperſos ignes orientis Lumine cerni,
Inde coire Globum quaſi in unum, &
conſicere Orbem.

By which inſtance of Lucretius it
may appear, that Epicurus did not
hold ſo much the Quotidian Cre-
ation of a new Sun, as the dayly
Renovation of the Old; To which
Horace in Carmine ſecular. ſeems to
allude,

Alme Sol Curra nitida diem
Qui promiſ & celas, aliuſque
Et idem naſceris

And to this purpoſe I find his Opi-
nion expreſſed by Gaſſendus. See-
ing the Ocean compaſſes the Earth,
the Sun may be extinguish'd by it in
the Weſt, and return all along it by
the North into the Eaſt, and thence riſe
re-kindled, which yet little mends
the matter,

(*) To this may be applied
that of Plato (in Timæo) ἡ ἀεὶ οὐδὲ
ἀντὶ τοῦ λαοῦ, &c. Thus inter-
preted by Cicero in his Fragment
of Timæus, ſeu de univerſo. Nec
Manus ei Deus affixit, quia nec capi-
endum quicquam erat, nec repellen-
dum, nec pedes, nec alia membra qui-
bus Ingreſſu corpus ſuſtineret, &c.
i. e. God affixed to the World no
hands, becauſe it was neither to take
nor repel any thing; nor Feet, nor
other Members, whereby it might
ſuſtain its body by walking or going;
But gave it a Motion, which is moſt
ſuitable to its Figure; wherefore by
one and the ſame Converſion, it is
whirl'd and turn'd about it ſelf.

(y) Ariſtotle, Anaximander, and
their followers at this day, hold

This is the Face of Nature; thus th'Heav'ns roll'd

(a) He alludes perhaps to the Opinion of *Leucippus Eleates*, which see more particularly expressed in *Hesych.* ὅτι Σόφρων in voce ΛΕΥΚΙΠΠ.

(b) This is a Noted Star of the first Magnitude, in the Southern Rudder of the Ship, *Argo*; so called, from *Canopus*, Pilot to *Ossiris*, (according to the *Egyptians*) or to *Menelaus*, (according to the *Greeks*) who landing in *Aegypt*, was by the biting of a Serpent slain, and buried near one of the Out-lets of *Nilus*, from him called *Ostium Canopicum*; the place of his burial receiving likewise his Name, and growing to a City, in which he had his Temple, being honoured with Divine Rites, and worshipped in the form of a Pitcher or Watring-Pot, with a large round Belly, as the Deity presiding over *Nilus*, and the watry Element: Of whose Contest with the God of the *Chaldeans* (Fire,) and Victory thereupon; see the Story in *Suidas* in verb. *Canop.* and from him in *Kircher.* in *Oedip. Aegypt.* Tom. 1. p. 209.

(c) To this purpose *Vitruvius*, l. 9. c. 7. *Uti Septentriones circum Axis Cardinem versantes non occidunt, neque sub Terrâ subeunt: Sic & circa Meridianum Cardinem, qui est propter inclinationem Mundi subiectus terræ, Sydera versabunda latentiaque non habent egressus orientes, &c. i. e. As the seven Stars, or the Bears turning about the Northern Axis of the World never set; so the Stars near the Southern Pole, which (by reason of the Worlds Inclination, being deprest under the Earth,) make occult and hidden Revolutions, never rise, nor can be observed or known by us in regard of the Earths Interposition. Of which the Star *Canopus* is proof, which in these Regions is unknown, as those Merchants which travail to the uttermost Parts of *Egypt* inform us.*

(d) To the same effect *Pliny.* *Septentriones non cernit Trogloditæ, & Confinis Aegyptus; nec Canopum Italia.* i. e. The Land of the *Troglodites*, and its Neighbouring *Egypt* sees not *Helice*, nor *Italy* *Canopus*. *Scaliger* yet condemns both *Pliny* and our Authour, as mistaken in the first particular; for at *Alexandria* the Sun being about five Degrees of *Pisces* under the Horizon, both *Helice* and *Canopus* are in the Evening seen to rise in the East; and were so to be seen in the time of *Manilius*, the Sun setting in the twenty third Degree of *Aquarius*. What is said of *Canopus*, as not appearing in *Italy*, is true.

(e) *Gassendus* in *Append. Animadvers. in Epicur.* noting upon this place, thus advises. *Causè esse interpretandum quod ad hanc rem Manilius habet.* For those Words, *Pariter, prius, & post*, (saies he) are not to be taken as to divers Moments of time, for the Moon at one and the same instant is beheld to be Eclipsed by all those, to whom she appears above the Horizon; but to be means of the diversity of Hours by reason of the several Meridians; by which means it happens that at the same instant of time that the Moon is seen to be Eclipsed, above our Horizon, They Eastward of us may reckon the Eclipse at one, two, or three in the Morning; They Westward at nine, ten, or eleven at Night, after the preceding Noon. Vide etiam *Balforeum* in l. 1. *Cleomedis Meteor.*

Swiftly about, into (a) round Figures mould
The Sun and Stars; round is the Moon to fight,
And with a swelling Body barrs the Light;
Hence never wholly Lucid is her Ball,
When the Sun's Beams on it obliquely fall.
A Form eternal, like the Gods alone,
In which, Beginning there or End is none;
But like throughout, and every where the same.
Such are the Stars, such is the whole Worlds Frame.
Hence 'tis We see not in all Lands all Signs,
(b) *Canopus* not till you reach (c) *Aegypt* shines,
And they (d) lack *Helice*, who see his Light,
Earth's Tumour hind'ring th'intercepted Sight.
The Truth of this Thou *Cynthia* mayst attest,
When dark'ning Shadows thy bright Looks invest,
(e) At once thou dost not all the World amaze,
But first the Eastern Nations miss thy Rays;
Then those which under the Mid-Heaven are plac'd;
Next, tow'rd *Hesperia* fly'st thou, cloudy-fac'd;

Then

Then those who yet more distant have their Seat,
 Later (to aid thee) ^(f) brazen Vessels beat.
 If then the Earth were flat, this sad Defect
 Of Light, the whole World might at once detect,
 But since 'tis Round, to These first, then to Those,
 Her Rising self, or setting *Delia* shows;
 For carried Circular, she first attains
 Th' Ascending Parts, then the Descending gains;
 Now climbs this Arch, anon leaves that behind,
 Whence that the Earth is Round, we clearly find,
 This is by Men, and Beasts, and ^(g) Birds possest,
 The North Parts Eminent, the South deprest
 Beneath our Feet; whose surface seems to be
 (It's Breadth deceiving its Declivitie)
 Stretch'd to a lengthful Plain; the large Extent
 Compos'd of equal Rising and Descent.
 Hence when *Sol's* Beams i'th' West our Orient Face
 There rising Day does sleep from Mortals chace,
 And when the Light to Labour summons Those,
 'Tis Night with Us, and Time for our Repose.

defect, or *Deliquium* of the Moon, as believing she was then by the Sun whip'd till she bled, to which they attributed her dark and sanguine colour. *Vide Delrium in Commentar. ad Hippolyt. p. 195.* See likewise *Turnebus in Adversar. l. 22. c. 23.* 24. And *Pincierus in Parerg. Osii Marpurg. l. 2. c. 37.*

(g) Whether Birds, which are generally call'd *Genus Aereum*; and by the sacred Text it self, *volatilia Caeli*, may be properly reckon'd among Terrestrial Animals, is by some questioned. *Ovid (Metam. l. 1.)* seems not to allow thereof in his Distribution of Animals,

*Astra tenent Caelste solum, Formaeque Deorum,
 Cesserunt nitidis habitande Piscibus undae,
 Terra ferax cepit, Volucres agitatae Aeri.*

The like Division is made by *Cicero, l. 2. de Nat. Deor.* and in *Timeo*, and by *Aristotle*, as he is cited by *Plutarch. in 5. de Placit. Philos.* To which may be added that belief of the Antient Greeks (derived to them from the Egyptians) that Birds were produc'd before ever the Earth was form'd, whereunto *Aristophanes in Avibus*, alludes. But *Apuleius* sides with our Authour, and ends the Controversie in these words: *Si sedulo animadvertas, ipsae quaque Aves, Terrestre Animal non Aereum rectius perhibeantur; Semper enim illis vitius omnis in Terra, ibidem Pabulum, ibidem Cubile, tantumque Aera proximum Terra volando verberant; Iterum cum illis fessa sunt Remigia Alarum, Terra seu Portus est. i. e.* If you seriously consider, Birds may be more truly reckon'd a Terrestrial Animal, than Aereal; For all their living is upon the Earth, there is their Food, there their Nests. They only in their flight beat the Air; But when their Oars and Sails, their Wings, begin to fail them, the Earth is their Harbour. But as to this Question, (not much unlike that which troubled the heads of *Aristotle, Theophrastus*, and most of the Antient Peripateticks, as *Censorinus de die Natal. c. 14.* delivers it, which was, *Avesne ante, an Ova generata sint, cum & Ovum sine Ave, & Avis sine Ovo gigni non possit?*) See *Hieron. Magius, l. 1. Miscellan. c. ult.* *Jacobus Cruicemus Syllog. 3.* and *Kireber. in his Iter. Extatic. 2. Dialog. 2. c. 5.*

(f) So *Ovid, (l. 4. Metamorph.)*

— resonant aera auxiliaria Lunae;

And *Statius, l. 6. Theb.*

— Procul auxiliaria Gentet
 Aera crepant —

That Custom springing from the foolish belief of the Antients, that the Moon at the time of her Eclipse, was endeavour'd by the Charms of Witches to be drawn from her Sphere. And therefore they made that Noise that she might not hear their Incantations; Practised by the Ignorant People, even in *St. Ambrose* his time, as we find by his reprehension of that Piece of Paganism, cited by *Turnebus in Adversar.* And what is more affirm'd by *Bemincetrus* (who first within less than two Centuries of Years, Commented upon our Authour) to have by himself been seen acted upon the like Occasion, by his own Country-men, the *Italians*. The *Turks* continue it to this Day, as *Scaliger* affirms. *Plutarch in Aemilio* reports that the *Romans*, besides their beating of Brazen Vessels, and sounding of Trumpets, us'd to reach up flaming Links and Torches towards Heaven, to re-supply the Light of the Moon, which they believed by Charms to be extinguish'd. *Delrium in Senec. Tragad.* says, he hath read that the *Indians* us'd with Tears and Lamentations to prosecute this

(b) *Homer* (saies *Geminus*) and almost all the *Antient Poets*, make the Sea to round the Earth, as an *Horizon*, dividing the upper from the lower Hemisphere; whence the *Horizon* it self is by them call'd the Ocean, according to this Verse of *Neoptolemus Parianus*, and *Euphorion* cited by *Achilles Tatius* in *Arat. Phaen.*

Ὠκεανὸς ὃ πᾶσα ἀμφέστυτος ἐνδὲ-
δείου χερσίν.
The Ocean girdling the surrounded
Earth.

To the same purpose *Agatharchides*, as cited by *Philius* (in *Biblioth.*) asserts, ὅτι πᾶσαν οἰκουμένην Ὠκεανὸς ἀμφικυκλοῖ, &c. *Quod Orbem totum Oceanus circumlucet & am-
biat; Custodiens eum fluxibus suis
& continens.* Hence *Homer* gives to *Neptune* the title of Γαίης ἄναξ, i.e. *Terram continens*, five *ambitus* (su-
e mplectens; and by *Secundus* (ἐν
γῶμας) the Sea is stil'd, καὶ οὐρανὸς
ἀναγκάσκει, θαλάσσιον ἐφά-
νωμα; ἀλμυρὸς δὲ γῆμος, Ἀ-
τλαντικὸς Ζώνη; πᾶσι δὲ φύσεως
ἀσπίς ἐσθμός, οἰκισμένης γῆτος, &c.
i.e. *Mundi amplexus, Corona Mariti-
ma, salsum vinculum, Cingulum At-
lanticum, totius nature Ambitus, Or-
bis fascia*; Being of old likewise
among the *Greeks* called ὠκύω, probably deriv'd from the *Phæni-
cian* Ogg, i. e. *Circulus, five Ambitus*
(for so they call'd the Ocean) as
first observed by *Vossius* *Idol.* 1. 2 from
Hesychius; And from him by *Bochar-
tus* (in *Geograph. sacra*, l. 1. c. 35.) *Vide etiam Casaubon. Animadvers. in Strabon.* l. 1. p. 4.

(i) *Plato*, *Trismegistus*, *Pythagoras*, and many other of the *Antient Philosophers*, conceive the World to be indued with a *Rational Soul*, perswaded thereunto by the admirable Order and Connexion of its Parts, which they conceiv'd, could not be sustain'd, but by a soul intrinsically informing, ordering, disposing and connecting them: Hence that of *Virgil*, imitated by our Authour,

*Spiritus intus alit, Totosque infusa per Arsus
Mens agitat Molem, & Magno se Corpore miscet.*

This Soul, *Thales* imagines to be God himself; thus explained by the *Hermetick Philosophers*. The *Divine Spirit* which produc'd this World out of the first Water, being infus'd as it were by a continual Inspiration into the Works of Nature, and diffus'd largely through, by a certain secret and continual Act, moving the whole and every particular according to its kind, is the Soul of the World. See Mr. Stanley in the Life of *Thales*. *Plato*, and the old *Academicks*, (as *Cicero* in *Acad. Quest.* 1. delivers their Opinion,) say thus of it: The Parts of the World and all things therein, are kept together by a sensitive Nature, wherein is likewise perfect Reason; It is also *Sempiternal*, for there is nothing more strong, whereby it may be dissolv'd. This Power is call'd the Soul of the World. *Heraclitus* affirm'd the Soul of the World to be an Exhalation of the humid Parts thereof, as *Plutarch* in 4. de placit. *Philosoph.* c. 1. *Varro*, fire, of which *Tertul.* ad Nat. l. 2. perhaps meaning the same with *Chalcidius* in *Timeum*, who calls *Vesta, animam Corporis universi*; or with *Pliny*, who asserts the Sun to be this Soul of the World. Hunc Mundi esse totius Ani-
mum ac plane Mentem, Hunc principale Naturæ Regimen ac Numen credere decet, says he, l. 2. c. 6. Of the same Opinion is *Julius Firmicus*. But as to this, see more particularly *Celius Rhodigin.* *Antiqu.* Lect. l. 1. c. 14. l. 6. c. 11. & alibi. As like-
wise *Kepler*, in *Hærm. Mundi*, l. 4. *Kircher.* *Oedip. Ægypt.* Tom. 2. Part. 2. p. 526. *Gassendus.* And *Ieronymus Vitalis* in *Lex. Mathematic.* p. 305. &c.

(k) To the same sence *Crito Pythagoricus* in *Stob.* *Sermon.* 2. — ἐντε γὰρ τὰ τῶν ὄλων ἀφιοχῇ, &c. In the Universe the Conjunction of either Nature, viz. of that which is always Active, and the other which is always Passive, make this World, which otherwise could not subsist. Consonant to which a Modern Italian Poet, *Janus Pannonius* (in obitum *Guarini Veronensis*) as cited by *Barbinius Adv.* far. l. 54. a. 25.

*Junge etiam semper Patientis, semper Agentis
Materia Fluxus, & Fata regentia Mundum.*

(l) That is the *Zodiack*. The *Egyptians* held, that in every Asterism or Sign in the *Zodiack*, or rather in each *Dodecatemorion* thereof, a peculiar Deity resided; and in every Star belonging to one of those Constellations a peculiar Genius, as the inferior Ministers of each Deity; whose vertue they believed to flow by an Influx in form of a Pyramide, whose Basis contain'd the whole Extent of the Asterism, or rather *Dodecatemorion*, and whose Vertex or Top was terminated in the Centre of the Earth; and these they termed πύργος, seu *Arces Deorum*; and from them the *Arabians* call'd the Signs *Burugi*, signifying Towers, Castles or Forts; and in the singular *Burgi*, believing the Signs to reside in so many Castles or Palaces, by the *Persians* call'd *Kishk*, or as we usually term them Houses. And therefore our Authour elsewhere calls the twelve Signs or Houses in the *Zodiack*, *Castra*; and the *Zodiack* it self in this place, *Arcei Mundi*, of the Tower, or Citadel of Heaven, consisting of so many Bulwarks. See *Kircher.* in *Oedip. Ægypt.* Tom. 2. and Mr. Hyde the Learned Commentator upon *Ulysses*, his Tables, p. 30.

The Divine
Spirit or
Soul of the
World.

The Twelve
Signs of
the Zodi-
ack.

The

Aries.

Taurus.

The^(m) Princely⁽ⁿ⁾ Ram glittering in Golden Wool,
Wonders to see the backward-rising^(o) Bull

(m) I have chosen so to English *Princeps Aries*, rather than the Leading Ram, persuaded thereunto by the Authority of our Poet, who, l. 2. gives him that Title,

— *Aries Caput est ante omnia Princeps*
Sortitus —

And again, l. 4.

Consilium ipse suum est Aries, ut Principe dignum est.

And by that of *Germanicus*, in *Aratum*; where he is stil'd

Princeps Aries —

And of *Columella*, (l. 10.) who gives him the Title of

Signorum & Pecorum Princeps —

So likewise *Varro*, l. 5. de *Lingua Latina*. speaking of the Original and Etymology of the *Agonalian* Festivals; (in which, antiently the Kings of the *Romans* us'd in their Palace to sacrifice a Ram) tells us, they were so call'd from the Question of the Sacrificer, *Ago ne? Eo quod Interrogatur Princeps Civitatis, & Princeps Gregis immolatur.* This Principality being given to this Sign above the rest, in regard that at the Worlds Nativity, according to the Astronomical Computation of the Antients, he was found seated as in a Throne, in *Medio Cæli*, i. e. the Tenth House; of which *Macrobius* in *Somnio Scip* and *Salmasius* *Diatrib. de Antiq. Astrolog.* p. 180. And for this reason (perhaps) it was, that the Ram among the *Romans* was taken for the Symbol of Principality: To which effect, we find among the Coins of *Domitian*, some, on whose Reverse is stamp'd a Ram with this Motto, *PRINCEPS JUVENTUTIS*. And with the *Greeks*, the Word *Κεῖδος*, which signifies a Ram, is taken for a Prince or Potentate. See *Magius Miscellan.* l. 2. and *Tristram* in his Historical Commentar. Tom. 1. p. 323.

(n) This Sign is by the *Greeks* called *Κεῖδος*, *Chrysomallus*, *Jupiter Ammon*; by the *Egyptians* or *Coptics*, *Tamotro Ammon*, i. e. *Regnum Ammonis*; in *Hebrew*, *Teles*; in the *Syriack*, *Emro*; by the *Arabians*, *Al Hâmal*; by the *Persians*, *Bêri*, or *Bêre*; by the *Turks*, *Kuzi*. All signifying a Lamb full grown, as I find in the Learned Commentator upon *Ulugh Beigh* his Tables; whom in the Nomenclature of these Signs, and th' other Constellations I most particularly follow, as being in that more exact and copious than either *Scaliger*, in *Sphæ. Barbar.* *Schickardus*, *Bayernus*, *Hues de Globis*, *Grotius* in *Arat.* *Kicciolus*, or (whom he follows,) *Kircher*, whose several assistances I yet make use of upon occasion; and only premise this to avoid (for brevity sake) the trouble of future Citations. In this Constellation are reckoned according to *Ptolemies* Computation, seventeen Stars, whereof four inform (which sort of Stars, reckoned either in this, or any other Constellation, are by the *Greeks* call'd *ἀμρόφωντοι*, i. e. *Informes*; and by the *Arabs*, particularly by *Ulugh Beigh*, *Chârîgi Sârati*, i. e. *extra figuram positæ*.) *Bayernus* reckons nineteen, whereof three are of the third Magnitude, two in the Western, and one in the Eastern Horn, call'd by the *Arabs*, *Alsheratin*, or *Alsheratin*; in *Hebrew*, *Sartai*, and *Mezarthim*; the third in his Head, in *Arabick*, *Al Ahra*; all from the singular *Sherat*, i. e. *Signum seu Indicium*, a Sign or Mark; the seventh, eighth, and eleventh Stars are call'd in *Arabick*, *Min Botein*, from their Situation near the Belly of the Ram. This according to the Tradition of the *Egyptians*, was made a Constellation in Honour of *Cham*. But as *Nigidius* (cited by the *Scholast* of *Germanicus*) reports, for discovering to *Bacchus*, and his thirsty Army in the Deserts of *Africa*, a Fountain of Water; or, according to *Pherecides*, for transporting of *Phryxus*, and *Helle* over the Sea, flying from the fury of their Step-Mother *Ino*. It is under the Tutelage of *Jupiter* and *Minerva*, according to the Doctrine of the *Pythagoreans*, deriv'd from the *Chaldeans*, who held the Principal Gods to be twelve; To each of whom they attributed a Month in the Year; and one of the twelve Signs in the Zodiack, as is observ'd by *Diodorus Siculus*, l. 1. *Bibliothec.* This Sign was first discover'd by *Cleostratus* the *Tenedian*, as *Pliny* witnesses, l. 2. c. 8. and comes to the Meridian at Midnight, about the end of *October*, and beginning of *November*.

(o) This Sign is called *Io*, *Isis*, *Apis*, and *Orias*, i. e. *Statio Hori*, by the *Egyptians*; by the *Greeks* and *Latines* *Ταῦρος*; and *Taurus*; in *Hebrew*, *Sbôr*; by the *Arabs*, *Al Thaur*; by the *Syrians*, *Thauro*; by the *Persians*, *Ghau*; and by the *Turks*, *Ughuz*, i. e. *Bos*. It consists according to *Ptolemy*, of 44 Stars, whereof 11 shapeless; or as *Bayernus* counts, of 48, as *Kepler*, of 52; among which there is one of the first Magnitude, by the *Greeks* called *λαμπάδας*; by *Ptolemy*, *ὐπὸνιξος*; by the *Arabs* *Aldebaran*, i. e. *Stella Dominatrix*, and *Ain Al Thaur*, i. e. *Oculus Tauri*; by the *Egyptians*, *Pârion*, i. e. *Statio, seu Dominium Hori*, in regard of the power of the Sun in Conjunction with that Star; by the *Romans*, *Palilicium*, because heretofore it rose at *Rome* on the Feast-day of *Pales*, translated into Heaven in Memory of the Rape of *Europa* by *Jupiter* in that shape; or in Honour of *Io*, or *Isis*, transform'd by *Juno* into a Cow, and Constellated by *Jupiter*. Hence *Ovid*.

Vacca sit an Taurus non est cognoscere promptum,
Pars prior apparet, Posteriora latent.
Seu tamen est Taurus, sive est hæc fæmina Signum
Junone invisâ Munus Amoris habet.

If Bull or Heifer hard 'tisto descry
Seen are its fore-parts; hid its hinder lie.
But be't a Masculine or Female Sign,
It spite of *Juno*, as Loves Mark does shine.

Others will have it to be the Symbol of *Osiris* or *Meforis*, or *Mizraim*, the Son of *Cham*, who first taught the *Egyptians* Tillage; or rather of the Patriarch *Joseph*, for his preserving *Egypt* in the time of Famine; to which the Learned *Grotius*, in his Tragedy of *Sophomphania*; alludes. To confirm which Opinion, *Ger. Jo. Vossius* in his most accurate Work de *Orig. & Progress. Idololatr.* shews that *Apis* was the same with *Joseph* (de quo etiam vide *Tertull.* l. 2. ad nationes) and that under the Symbol of an Ox; he was honoured by the *Egyptians*, as the most proper to express the Benefit conferr'd by him upon that People; as among the *Romans*, we find *L. Minucius*, *Præfeti* of the Corn-stores, *Bovæ aurato extra Portam Trigemina est donatus*, because in a time of scarcity he supplied the *Roman* People with Corn at a Cheape Rate. *Venus* is Patroness of this Sign; which about the end of *November*, and beginning of *December*, is at midnight seen in the Meridian.

F 2

With

(p) These are call'd *Δίδυμοι*, *Tindaride*, and *Discuri* by the Greeks and Latines; In the Cop-
 tick, *Clusos*, (i. e.) *Cluistrum* (q) *Cancer*, who after him sees (r) *Leo* come ;
Hor; in the Hebrew, *Temin*; in Syriack, *Tóme*; in Arabick, *Taw'amán*, i. e. *Gemelli*. They are likewise by the Arabs call'd *Gianzá*, as it were by a Metathesis, or Transposition of the Word from *Záuzi*, i. e. *Bini*, *ζεύγος*. Others derive it from *Gianx*, signifying a Nut; and therefore the Turks call this Sign, *Küs Siphelü Burgi*, i. e. *Nucem*, vel *Nuces referens Signum*; by the Persians, *Ghirdegán*, to the same sense. But with more probability, (says my Authour) they are call'd *Gianxa*, because plac'd in *Gianx al Samá*, i. e. in *Medio Celi*. There are reckon'd in this Constellation, according to *Ptolomy*, twenty five Stars, whereof seven are inform; *Repler* makes them thirty, *Bayerus* thirty three; whereof that in the Head of the Western Twin, which first rises, is by the Arabs call'd *Ras al Tawum Almukeddem*, i. e. *Caput prioris geminorum*; the other, *Ras al Tawum Muaccher*, i. e. *Caput posterioris Geminorum*. The Star reckon'd the fourteenth in number in this Constellation, is by *Higynus* and *Bassus*, call'd *Propós*, by *Ptolomy* *περόπας*, quia *præcedit Pedes Geminorum*; and by the Persians, *Pish-pai*. The seventeenth and eighteenth opposite to one another in the feet of the said *Gemini*, are by the Arabs call'd *al Hen'a*, (i. e.) *quævis res quæ aliam immediate sequitur*. These Twins *Varro* and *Servius* (in 11 *Virgil. Æn.*) will have to be *Apollo* and *Hercules*, call'd by the Arabs, *Apbellan*, and *Hieraclus*, and commonly, but most corruptly, *Apbellar*, *Anbelar*, and *Abrackileus*. Others will have them to be *Triptolemus* and *Jason*; some *Amphion*, and *Zethus*, or *Dii Samothracæ*; *Plutarch*, according to the Tradition of the *Ægyptians*, makes them to be *Helitomenius* and *Harpocratio*, the Sons of *Isis*, and *Osiris*. But with more probability they are conceived to be *Castor*, and *Pollux*. For as the same *Plutarch* (*l. de Amore fraterno*) affirms, the *Spartans* of old us'd to call the Statues of *Castor*, and *Pollux*, *Δοξαὶν*, i. e. *Trabalía*, being no other than two Wooden Posts set parallel one to another, and join'd together at each end by two other traverse Beams. Hence (saies the Learned *Palmerius* upon that place of *Plutarch*) *Astrologers* make use of the like Figure or Character to denote this Twin Sign, which they deriv'd from the *Lacedæmonians*. It comes to the Mid-Heaven at Midnight, in the end of *December*, and beginning of *January*, and hath *Phæbus* for its Superintendent.

(q) *Cancer* is in the Greek call'd, *Καρκίνος*, and *ὀυρανός*, i. e. *Océper*; It is likewise called *Νεφέα Ἀστacus*, *Camarus*; In Arabick, *A'stacin*; in Hebrew, *Sartan*; in Syriack, *Sartóno*; in Persian, *Chefjengh*; by the Turks, *Lenkutich*, or *Lenkiich*, and *Yenkutch*, or *Yenkiich*, and *Tilenkutich*, or *Tilenkiich*, i. e. *Cancer*; In the Coptick it is called *Klaria*, i. e. *Bestia*, seu *statio Typhonia*. The whole Constellation made up of thirteen Stars; whereof four shapeless, according to *Ptolomy*; *Repler* reckons seventeen, and *Bayerus* thirty five. Among which, the first Star in this Constellation is call'd in Arabick, *Malaph*, i. e. *Præsepe*, or the Manger; in Greek, *φάτνη*. It is likewise by the Arabs call'd *Al Netbra*; in Chaldie, *Pesëbre*; and is a Cloudy Star, by *Galileo* discover'd to consist of thirty six smaller ones. The fourth and fifth Stars are by the Arabs call'd *Al Himarein*, or *Al Himarân*, i. e. *duo Asini*; Our Authour elsewhere calls them *Jugular*. The Crab was made a Constellation at the Intreaty of *Juno*, being kill'd by *Hercules*, for biting him by the Foot, when he encountred *Hydra*: The *Asinægoes*, with their Manger, were constellated, because in the Fight with the Gyants, *Bacchus* and *Vulcan* charged upon *Asses*, who with their Brayings, frighted; and so put to flight their Enemies; see *Higyn.* and *Bassus in Germanic.* (or rather *Eratoſthenes*, for that Comment is no other than *Eratoſthenes* translated.) This Sign is appropriate to *Mercury*, and is famous according to the Chaldaick and Platonick Philosophy, for being supposed the Gate by which Souls descend'd into Humane Bodies; touching which, see *Macrobius in Somn. Scip. Cal. Rhodig. antiq. Lell. l. 15. c. 23.* and *Kircher in Oedip. Ægypt. Tom. 2. p. 535.* It illustrates the Mid-Heaven about Midnight, from a little after the beginning, until the end of *January*.

(r) This Sign by the Greeks is called *λέων*; in Hebrew, *Ar'ye*; by the Arabs, *al Asad*; in Syriack, *Ar'yo*; in the Persian, *Sbir*; the Turks call it *Arslân*, or *Aflân*; i. e. *Leo*; the Egyptian Copties call it *Pimentekion*, i. e. *Cubitus Nili*. It consists of thirty nine Stars, whereof eight inform, according to *Ptolomy*, of forty according to *Repler*; to which number *Bayerus* adds three more. The first Star in this Constellation, is by the Arabs called *Minchir al Asad*, i. e. *Nares Leonis*. The third, *Ras al Asad*, al *Schemali*, i. e. *Caput Leonis Boreale*. The fourth, *Ras al Asad*, al *Gienubi*, i. e. *Caput Leonis Australe*. The fifth, sixth, and seventh Stars are called by them *al Gieb'ba*, i. e. *Frons*. The eighth they call *Melichî*, to which the Greek *βασιλίσκος*, and the Latine, *Regulus*, answers; they give it likewise the name of *Kalb al Asad*, i. e. *Cor Leonis*, being a Star of the first Magnitude. The twentieth Star is in Arabick call'd *Dubr al Asad*, i. e. *Dorsum Leonis*, and is also with the twenty second call'd *Min al Zub'ra*, i. e. *de Crine Dorsi*. The twenty seventh Star they call *Serpba*, i. e. *Mutatrix*, from the Change it brings of Heat from Cold; and *Danab al Asad*, i. e. *Cruda Leonis*; and is likewise of the first Magnitude. The Lyon was made a Cœlestial Sign by *Juno*, to spite *Hercules*; by whom he was slain; and is said to have been bred in the Moon, and from thence to have fallen near the *Nemæan Grove* in *Arcadia*, from whence call'd *Nemæus*; as likewise, *Clæonens*, and *Herculeus*; to which, besides *Achilles Tatius in Arat.* *Seneca* alludes in *Hercul. furente*, in these Words,

Sublimis alias Luna concipiat feras.

And again

— Leo Flammiferis æstibus ardens,
Iterum è Cælo cadet Hercules.

The Poets, (as is observ'd by *Scaliger. not. in Ceirim*) feigning Animals, exceeding th'ordinary size, to be bred in, and to come from the Moon; Hence *Claudian*, or some one more Antient than him, in the Poem of the Praises of *Hercules*, speaking of the *Marathonian Bull*, subdu'd by that *Hero*,

— Taurus medto nam Sydere Luna
Progenitus, Diçæa Jovis possederat arva.

This Sign, — *Jupiter* (& cum *Matre Deum*) regit, — says our Authour, l. 2. It appears in the Meridian at Midnight, in the Moneth of *February*.

Him

Virgo. Him ^(s) *Virgo* follows; then the ^(t) Scales, that weigh
Libra. In even Ballance equal Night and Day,
Scorpio. Draw on the ^(u) Scorpion with the fiery Sting,
Sagittar. At which the ^(x) Centaur his Shaft levelling

(s) This Constellation in Greek bears the name of *παρθένος*; to which the Latine *Virgo* answers. In Hebrew it is call'd *Beibula*; in Syriack, *Bethalto*; in Arabick, *Adra*, and *Adrenedepba*; and in the Persian; *Dushiza Pakiza*, all to the same sense with the former; in the Egyptian or Coptick, it is called *Ashbolia*, i. e. *Statio Amoris*; It is

likewise in respect of the chief Star by which it is signaliz'd, being one of the first Magnitude in her left hand (though *Vitravius* and *Hyginus* erroneously place it on her right,) call'd by the Hebrews, *Shibboleth*; by the Syrians, *Shevelto*; by the Arabs, *Simbela*; by the Persians, *Chushhe*; and by the Turks, *Salkim*; All signifying a Spike, or Ear of Corn. In this Sign, *Ptolemy* reckons thirty two Stars, six whereof inform; *Kepler* thirty nine, and *Bayerus* forty two, of which the sixth and seventh Stars are by the Arabs called *Min al Auwa*, i. e. *de latratore*; and so likewise the tenth. The seventh is by them called *Zawija al Auwa*, i. e. *Angulus Latratoris*. The thirteenth, which is also one of the first Magnitude in her right wing, call'd by *Proclus* *παρσηνιτης*, i. e. *Prævidemiator*, is by the Arabs in the same signification called *Mukdim al Kétaph*. The fourteenth, which is the *Spica*, is by them likewise call'd *Simak al A'zal*, i. e. *Efferens Inermem*, scil. *Virginem*, to distinguish it from another Star, in *Bootes*, call'd *Simak al Ramih*, i. e. *Efferens Hastiferum*, vulgarly, but corruptly call'd *Azimeb* and *Huzimeb*, and by *Sealiger*, (but amiss) *Huzmet al Hisal*, i. e. *Fasciculus frumenti vel segetis*. The twenty second, twenty third, twenty fourth and twenty fifth Stars are call'd *Min al Gapbr*, i. e. *Ex al Gapbr*, which signifies *Velamen*, *Ventrem* & *Testuram*, *Quod Stelle ejus obsecra sint*. This Sign according to the Vulgar Opinion, is taken for *Astrea*, or Justice, by others, for *Erigone*, Daughter of *Icarus*, (so *Servius*.) Others suppose her to be *Ceres*, *quod sicca teneat*, (says *Bassus*.) Others call her *Atergatis*, the Goddess of the *Assyrians*. Some will have her to be *Fortune*, *pro eo quod sine Capite Astris inferitur*, says the same *Bassus*. *Avienus* makes her to be *Isis*; and others again will have her to be *Concord*, or *Peace*; for which Opinion (says *Vossius* l. 2. *Idol*.) makes the Figure in *Commelinus* Antient Manuscript of *Hyginus*, and that of *Grotius* in *Germanic. Arat. ubi manu dextrâ Olivam, sinistrâ Caduceum tenet*, as commonly the Antients represent *Peace*. *Ceres* is Lady of this Sign, which visits the Meridian at Midnight about the end of *March*, and beginning of *April*.

(t) This Asterisme by the Greeks is call'd *λίρα, στήλη, σάβμος & ζυγός*; to which the Latine *Libra* answers; by *Cicero* it is called *Jugum*, particularly answering to the last of the Greek names. In Hebrew it is called *Mozenaim*; in Syriack, *Masátho*, in Arabick, *al Mizan*; by the Persians, *Terazu*: All signifying *Libram*, *Stateram*, seu *Bilancem*. The Turks commonly use the Arabick name *Mizan*, which by them in their Language is explain'd *Tartagiek elati*, i. e. *Ponderandi Instrumentum*. In the Coptick it is call'd *Lambadia*, i. e. *Statio Propitiationis*. The Constellation is made up of seventeen Stars, according to *Ptolemy*, whereof nine inform; *Bayerus* reckons but fifteen, *Kepler* eighteen. Among which the first Star in Account, by the Greeks called *ζυγὴ νότιος*, is by the Arabs, in the same signification, call'd *Zubana Gjenubi*, i. e. *Chela australis*, and *Al Kiffa*, *Al Gienubija*, i. e. *Lanx australis*; the third, call'd by the Greeks *ζυγὴ βορέος*, is accordingly by the Arabs call'd *Zubana Shemâli*, i. e. *Chela Borealis*, and *al Kiffa al Shemâlija*, i. e. *Lanx Borealis*. This Sign owns *Vulcan* for its Patron, and is famous for being ascendant in the Horoscope of *Rome*, at its Foundation, according to the Calculation of *Lucius Tarruncius Firmianus*, as *Cicero* witnesses (l. 2. *de Divin*.) There is no distinct Fable of this Sign, it being part of *Scorpius*, whose *Chela* or Claws (by the Arabs call'd *Zubana*) make the Scales; Hence our Authour, lib. 2.

Scorpius in Librà Consumit Brachia.

It mounts the Meridian at Midnight in the beginning of *May*.

(u) The Hebrews call this Sign *Akrab*, pro *Akatrab*, à magno atuleo (mediâ vocis literâ per compendium elisâ) according to *Bochart* his Interpretation. The Syrians call it *Akravo*; the Arabs, *Al Akrah*; the Persians, *Gbezdam*; the Turks, *Kirugbi*, quasi *κατ' ἐξοχὴν*, *Caudatus*, or *Uzân Koirugbi*, i. e. *longâ Caudâ prædians*. By *Cicero* it is call'd *Nepa*, which *Festus* says is an African Word, happily a Phœnician says *Bochartus*, *Neb* or *Nebba* (b chang'd into p) à *Cauda Internodiis*; by the Greeks, *Σκorpion*; and by the Egyptian Coptics, *Isas*, i. e. *Statio Ifidis*. There are counted therein by *Ptolemy* twenty four Stars, whereof three shapeless; by *Kepler* twenty eight; by *Bayerus* twenty nine; of which the six first are by the Arabs call'd *Ilil al Gieb'ba*, i. e. *Corona Frontis*, and simply *Ilil*, *Corona*. The sixth is particularly called *Gieb'ba al Akrah*, i. e. *Frontis Scorpii*. The eighth is by them called *Kalb' al Akrah*, i. e. *Cor Scorpii*, &c. In Greek *Ἀντίδενς* or *Ἀντίδης*, i. e. *Tyrannus*. On each side of which Star there are two others, by the Arabs call'd *al Niyâ*, i. e. *Præcordia*. The twentieth and twenty first they call *al Shaula*, which properly signifies the Tail of a Scorpion, and not of any other Creature. From which name *al Shaula*, not rightly read or written, have proceeded the corrupt names of *Shomleek*, *Moshleek*, and *alasha*, commonly found in most Authours. The Scorpion is fabled to have been made a Constellation, for having slain *Orion*, who boasted he would in Hunting destroy all the Wild Beasts in the Forrests; or according to *Nigidius*, for that hunting with *Diana* in the Mountain *Chelippus* in the Island *Chios*, he contemn'd and derided her, as inferiour to him in Skill; or according to *Palephatus* and *Nisander* in *Theriac*. for daring to have violated her Chastity; for which in Revenge, she is said to have sent this Scorpion to sting him to death (though *Hirace* says he was — *Virgineâ domitus sagittâ*) being for that, at her request, by *Jupiter* made an Asterism in Heaven; owning *Mars* for his Deity; and is seen to crawl toward the Meridian at Midnight, about the end of *May* and beginning of *June*.

(x) This Constellation is in Hebrew call'd *Kesheth*; in Syriack, *Kesho*; in Arabick, *Al Kans*; in the Persian Tongue *Kamân*; in the Turkish, *Tai*. All signifying an Arrow. In Greek *τοξότης & πύργος τοξ & βελονότατος*, i. e. *Sagittarius*; according to which signification it is likewise by the Arabs call'd *al Rami*; by the Egyptians, *Pimaero*, i. e. *Statio Amantissis*. It consists of 31 Stars, as *Ptolemy* reckons; of 32, as *Bayerus*; of 34, as *Kepler*. Of which the first is by some among the Arabians call'd *Zugi al Nushaba*, i. e. *Cuspis*, vel *Ferramentum Spiculi*. But both that and the second in *Ulugh Beighs* Tables, *Min al Nâsim*, *al Wârîda*, i. e. *E pecoribus advenantibus* (scil. *ad aquam*.) The 6th and 7th according to those Tables, *Min al Nâim*, *al Sadira*; i. e. *E pecoribus redeuntibus* (scil. *ab aquatione*.) The 8th Star in this Constellation, is by the Arabs call'd *Ain al Kami*, i. e. *Oculus Sagittarii*. The 23d *Urkhâb al Rami*, i. e. *Suffrago*; the Hough or Pattern. The 24th *Kukba al Rami*, i. e. *Genu*, the Knee of *Sagittarius*. *Hyginus*, from the Authority of *Sosibeneus*, will have this to be *Crotus*, the Son of *Euphemis*, or *Eubemis*, the Nurse of the Muses, at their instance by *Jupiter* plac'd in the Zodiack. Others will have him to be *Chiron*. This Sign is under the Tutelage of *Diana*, and of *Apollo* likewise, to whom it is sacred; as *Trifan*, in his *Commentar. Tom. 3.* evinces, from the Coyns of *Gallienus*, on some of whose Reverses is stamp'd the Figure of *Sagittarius*, with this Inscription, *APOLLINI CONSERV. AUG.* This Sign at Midnight aims at the Meridian, about the end of *June*, and beginning of *July*.

G

Seems

Seems ready to let fly: To these comes on

(y) The Greeks give to this Sign the Name *Αἰγώνες*, & *Αἰγώνες*; The Latines, *Hircus Aegoris* (so *Asclepiadius* and *Vomanus*) and *Pelagi Procella* (so *Vitalis*) by *Horace* being styl'd,

— *Tyrannus*

Hesperia Capricornus unda.
In Hebrew, it is call'd *Gadi*; in Syriac, *Gadio*; in Arabick, *Al Giedi*; in the Persian, *Buzegbâle*; in Turkish, *Uglack*; all signifying a Kid or Goat. In the Coptick or Egyptian Tongue it is call'd *Hopenus*, i. e. *Brachium Sacrificii*. It is made up, by the joynt Account of *Ptolomy*, *Kepler* and *Bayerus*, of 29 Stars; of which the first and third are by the Arabs call'd *Min Sad Al Dâbih*, i. e. *Ex Fortuna Mâdantis*; and simply, *Dâbih*, i. e. *Mâdantis*. The

23d and 24th Stars are call'd by them, *Sad Nâshira*, i. e. *Fortuna overruncantis, vel divulgantis Nuncium*. But the 24th by a particular Name, from its situation, is called *Danab Al Giedi*, i. e. *Cauda Capricorni*. This was made a Constellation in honour of *Aegipan* the Son of *Jupiter*, by the Olenian Goat, or rather his Foster Brother, Son of *Aega* the Wife of *Pam*, whence his Name; who as *Bassus* in Germanic, from the Authority of *Epimenides*, writes, assisted *Jupiter* in his Wars against the *Titans*, and armed the Gods; and for that reason honoured with this Celestial Dignity. The reason of his being figur'd half Goat half Fish, *Theon* the Scholiast of *Aratus* reports, was, for that he finding on the Sea-shore an empty *Murex* or purple shell, is said to have wound it like a Horn, thereby striking a Panick fear into the *Titans*, and therefore they represented him with a Tail like a Sea-Monster. Celebrated it is according to the Doctrine of the *Pythagoreans*, and *Platonists*, for being the Gate, by which Souls ascend into Heaven; and therefore stil'd *Porta Deorum*: Nor less Famous, to use our Authours Words,

— *In Augusti felix quod fulseris Ortum.*

Of which see *Suetonius* in *August.* *Scaliger* in *Manil. l. c. Sam. Petit. in Observat. l. 1. c. 5.* *Vindelinus* and *Albertus Rubenius* upon that subject; *Ricciolus* in *Chronolog. reformat. Tom. 1. l. 4. p. 104.* and *Spanhemius* in *Dissertat. de Numismat. Vesta* is the Goddess appropriate to this Sign. It climbs the Mid-heaven at Midnight, about the end of *July*, and beginning of *August*.

(z) This Sign is by the Greeks call'd *ὐδρόχοος*; by *Appian*, *Hydriurns*, and in the same signification by the Arabs, *Sakib Al Mâ*, i. e. *Effusus Aqua*. It is by them likewise called *Al Delu*, and in Hebrew, *Delu*; in Syriac, *Daulo*; in the Persian Tongue, *Dâl*; in the Turkish, *Kugha*; all signifying an Urn, or Watring-pot. The Egyptians or Copties, call it *Hypenterian*, i. e. *Brachium Beneficii*. There are reckon'd therein according to *Ptolomy* and *Kepler*, 45 Stars, whereof three inform. *Bayerus* yet reckons but 41. Of which the 2d and 3d are in Arabick call'd *Sa'd Al Melick*, or *Sa'd Al Mûlek*; the first signifying *fortuna Regis*, the later, *fortuna Opum & Substantie*. The 4th and 5th are call'd *Sa'd Al Suîd*, i. e. *fortuna fortunarum*; under which are some other Stars of less note call'd *Al Ana*. The 6th and 7th are call'd *Sa'd Bulâ & Al Bulaan*, i. e. *fortuna Deglutientis*, or *Deglutientium*. The 9th, 10th and 11th Stars are call'd *Sa'd Al Abbija*, i. e. *fortuna Tentorium*. The 14th Star in this Constellation, being one of the first Magnitude, is in Arabick call'd *Dipbda al Auwa*, i. e. *Rana Prima*; It is likewise call'd *Phom al Haut al Gjenubi*, i. e. *Os Piscis Australis*, commonly, but corruptly, *Phomahant*. This Asterism is by some fabl'd to be *Ganymede* the Cup-bearer of *Jupiter*, by some *Deucalion*, (whence by *Vomanus* this Sign is entituled *Deucalionis Aquæ*;) by others, *Aristeus*; of which, see the Scholiast of *Germanicus*. It is seen in the Meridian at Midnight, about the end of *August*, and beginning of *September*. *Juno* is its Lady Regent.

(a) This Sign in the Greek is call'd *ἰχθυὸν ἀσσεμίδος*, and by the Jews accordingly *Dagim*, i. e. *Duo Pisces*. But the Arabs call it *Al Haut*, & *Al Samaca*; the Syrians, *Nâno*; the Persians, *Mâbi*; the Turks, *Balick*, which signifies a Fish in the singular number; so likewise in the Coptick, it is call'd *Piktorion*, i. e. *Piscis Hori*. The Northern of these Fishes is in the Arabick call'd *Haut Alshemali*, i. e. *Piscis Borealis*, and is known by the peculiar Name of *χελιδνίας*, as being represented by the Chaldeans with the Head of a Swallow; the reason as *Scaliger* conceives, because when the Sun is in that Sign, the Swallow begins to appear in those Regions. The Southern is call'd *Haut al Gjenubi*, i. e. *Piscis Australis*. The whole Constellation consists, according to *Ptolomy*, of 38 Stars, (whereof four inform,) according to *Bayerus* of 39. But *Kepler* reckons therein 59. The Stream, or *Tennis fusio Stellarum utrisque Piscibus disposita*, *Vitravius*, l. 9. c. 7. calls *ἑρμῆδ' ὄνλω*, i. e. *Mercurii Donum seu Delicium*, which *Scaliger* conceives ought to be read *ἀρπᾶδ' ὄνλω*, i. e. *Laqueum*; or as *Pliny* terms it, *Commisuram Piscium*. The Compiler of the *Vitravius Lexicon* seems to come nearer to the truer Reading, and will have it to be *ἀρμῆδ' ὄνλω*, i. e. *Nodum*, or to use the Words of the said Lexicon, *Coaptationem qua Piscis Pesci seu vinculo alligatur*; by *Proclus* call'd *Λινὸν*, by *Aratus*, *σινδισμον ἐπουράνιον*, which *Cicero* renders *Celestem Nodum*. The Arabians call it *Cheit*, vel *Cheit Kettani*, i. e. *Filum Linteum*. These are fabled to be the Syrian Deities according to *Germanicus*, *Syria duo Numina Pisces*, by which are understood *Venus* and *Cupid*, as *Hyginus* (from the Authority of *Diognetus Erythraeus*) writes. For *Venus* and her Son *Cupid* coming to the River *Euphrates*, and frighted with the suddain appearance of the Gyant *Typhon*, cast themselves into the River, and assum'd the shapes of Fishes, by which means they escap'd from danger. For this reason the Syrians abstain from eating of Fish, lest they might happen to devour their Deities. But the Scholiast of *Germanicus* (from *Nigidius*) writes, that these were the Fishes, which turn'd or roll'd up upon the Bank of *Euphrates* a great Egg, upon which a Dove sitting, hatch'd *Venus*, the Syrian Goddess. The Exposition whereof, see in *Bayerus* in *Additament. in Seldeni System. de Diis Syriis*, p. 290. This Sign is under the Patronage of *Nepitune*, and is seen in the Meridian at Midnight, almost throughout the whole Moneths of *September* and *October*.

(b) The Axis of the World (so called *ab ἀξίω, volvo*) is an Imaginary right Line, passing through the Center of the Mundane Sphere from North to South, whose extremities are terminated in the superficies thereof; the two points terminating the said Axis being called the Poles of the World: About which immoveable Line the Sphere it self is turned. By this Description it may appear that the Axis of the Sphere is likewise the Diameter thereof; but on the contrary every Diameter thereof is not its Axis; because the Sphere is not turned about every Diameter, but only about that, which is extended from North to South. *Vid. Clav. in Sacrobosc.*

Capricor

Aquar.

Pisces.

The Axis of the World,

Whose

and the
Poles.

Whose distant Poles the Ballanc'd Fabrick hold ;

Round this the Star-imbellish'd Orbs are rowl'd:

Whilst yet it self unmov'd through empty Air,

And the Earths Globe extends to either Bear.

Nor is't a ^(c) solid Substance, or oppress'd

With Weight, though the Worlds ^(d) weight upon it

But as the Air mov'd in a Circle goes,

And on it self, whence first it flow'd, reflows,

What e're that is which still the midst doth hold,

'Bout which, (it self unmov'd) All else is rowl'd,

So subtle it can no way be inclin'd,

That by the Name of *Axis* is design'd.

The Constel-
lations of
the North-
ern Hemi-
sphere.

Upon whose Top (to Mariners distrest

Well known, their Guides through Seas) two bright signs

Helice.

Great ^(e) *Helice* moves in a ^(f) greater Bend

Mark'd with seven fair Stars, the *Greek* Pilot's Friend,

(c) To this purpose *Achilles* *Tatius* in *Arat. Phenom.* τὴν ὃ ὕλῳ αὐτῆς, &c. Of the Materiality of this *Axis*, (though some Philosophers have conceiv'd it a Spirit passing through the inter-jelled Mundane space) *Aratus* (saith he) hath taught us nothing. For if any shall conceive it to consist of a fiery substance, when it passes through the Sphere of the Water, it would be extinguish'd, or consum'd by the Sphere of the fiery Element; or should it be supposed to consist of any other of the Elements, as of Air or Water, it would not mix with the others, but would be destroy'd by its contraries: Wherefore Mathematicians have defin'd it γεγραμμένην τινὰ λεπτὴν, i. e. Lineam quandam subtilem, seu tenuem, and is here by our Authour excellently described.

(d) *Homer* and most of the Antient Poets seem to attribute to the Sphere of the World a kind of Gravity or tendency downward, and for this Reason they describe it to be supported by *Atlas*. But this Fancy *Aristotle* eludes in his Book *De Communi Animalium Motu*, by applying (not unappositely) the Fable of *Atlas* to the *Axis* of the World, upon which it is imagined to be supported and turned about.

(e) So named by the *Greeks*, quidd' ἐλισσέσθαι, i. e. volutus (*Circa Polum Arcticum*:) It is likewise called ἀγυρὸς μέγιστη, and ἀμαξία μέγιστη, i. e. *Ursa Major* & *Plaustrum Majus*. In *Arabick* (according to *Ulugh Beigh*) *Dub Ackber*, i. e. *Ursus Major* in the Masculine Gender; as likewise *Agala*, i. e. *Plaustrum seu vehiculum*, from whence by the change of one only Letter, is that corrupt Name of *Aganna*, mentioned by *Scaliger* from *Hesychius*. It is likewise by the *Arabs* call'd *Benât Al Nafth Al Cubra*, i. e. *Filix feretri Majoris*, in regard the four Stars that make the Body of the Bear resemble a Bier, and the three in the Tayl, the Virgins or Maids that attend the Corps. And for this reason saies *Kireber* the Christian *Arabs* call the four Stars in this Constellation, *Nafth Laâzar*, i. e. *Feretrum Lazari*; and the three in the Tayl, *Mary Magdalen*, *Martha* and their Maid. By the *Persians* it is call'd *Haphtharengb Mibîn*, i. e. *Septentrio Major*; and by the *Turks*, *Tidigher Tilduz*, i. e. *Septena stelle*; and *Kaî' êxozhyn Tidigher*, i. e. *Septena*; as by the *Latines*, *Septem Triones*, quasi *Teriones*, à terendo semitam circa Polum. The whole Constellation consists according to *Ptolomy* of thirty five Stars, whereof eight inform; according to *Bayerus*, of thirty two; *Kepler* yet reckons fifty six; among which the twelfth and thirteenth Stars are in *Arabick* call'd *Al Nekra Al Tbalisha*, i. e. *Cotyle*, *Scrobs seu Cavitatis ossis Tali*. The sixteenth *Dubr Al Dub Al Ackber*, i. e. *Dorsum urfi Majoris*. The seventeenth *Merrâk Al Dub Al Ackber*, i. e. *Epigastrium urfi Majoris*. The eighteenth *Meg'res Al Dub Al Ackber*, i. e. *Uropygium urfi Majoris*. The nineteenth is call'd *Pbaid Al Dub Al Ackber*, i. e. *Femur urfi Majoris*; and these four last named, make up *Al Nafth Al Cubra*, *Feretrum Majus*. The twentieth and twenty first Stars are called *Al Phikra*, or rather *Al Nekra*, *Al Tbanija*, i. e. *Vertebra seu Cotyle secunda*. The twenty third and twenty fourth *Al Phikra*, or rather *Al Nekra*, *Al Ula*, i. e. *Vertebra seu Cotyle prima*, as the Commentator upon *Ulugh Beigh* his Tables would rather have it read in both Places. The three Stars, that make the Tayl, are call'd *Al Benât*, i. e. *Filix*: Whereof the first is called by some *Al Hawn*, or *Al Gjenn*, signifying *albam Nubeculam*; by others, *Al Haver* or *Al Haur* (commonly but corruptly, *Alcor*) i. e. *Albedo oculi*, or *Populus Alba*. The second is called *Al Inâk*, or *Al Anâk*, i. e. *Capella*. The third *Alkaid*, i. e. *Gubernator*. This Constellation was first found out by *Nauplius*, as *Theon*, the Scholiast of *Aratus*, affirms, and was antiently the *Greek* Sea-mans Guide, as the lesser, the *Phœnicians*: The Reason; because to the *Greeks*, who say'd the Mediterranean, Pontick and Euxine Seas, this Constellation was still apparent, but to the *Sidonians*, *Phœnicians* and *Carthaginians*, who were more Southerly, part of the greater Bear was either by the Position of Sphere, or some other Accident, sometimes deprest and obscur'd; but *Cynosura* always apparent to them; whence that of *Valerius Flaccus* in *Argonauts*. — Certior in *Tyris Cynosura Carinus*. And therefore these last chose the lesser, as the *Greeks* the Greater Bear for their Directress. Vide *Ricciol. in Alm. gest. Nov.*

(f) *La Cerda* explicating this Verse of *Virgil's* (in *Georg. 1.*)

[*Maximus hic flexu sinuoso elabitur Anguis*]

Cites these Verses; and conceives by the greater Bend and lesser Orb, our Poet means the greater and the lesser flexure of the Serpent; that is to say, that of the Tayl (being the larger) about *Helice*, that of the head (being the more contracted) about *Cynosure*. But this is far from the meaning of *Manilius*, whose sence is this, that *Helice* being more removed from the Pole, makes by its Circumgyration a larger Circle than *Cynosura*, which being nearer to it, must consequently make breviorē seculū, as *Grotius* (in *Arat. Phenom.*) turns it: This Interpretation is confirm'd by these Verses of *Aratus*, to which doubtless our Authour had respect.

πολλὴ φαινόμενη ἐλίκη πρώτης ἀπὸ νυκτός,
ἥδ' ἑτέρον ὀλίγη μὲν, ἀπὸρ ναύτησιν ἀρείαν
μολέει γὰρ πᾶσα ἀφιστρέφεται τροφάληγι.

To which purpose see likewise *Theon*, the Scholiast of *Aratus*.

Multa lucens *Helice* primâ à Noctē:
Altera vero parva, sed Nantis Melior;
Minori enim Tota convertitur Orbe.

(g) So called by the Greeks, *quasi Canis Cauda*, or as *Vossius*

(*l. de Scient. Mathemat. c. 32.*) derives it from the Hebrew, *U-*

ra, i. e. *Lumen, flamma, Ignis*; and *Ngbur*, i. e. *coligere, ut sit Cyno-*

sura quasi Collectio luminis seu Ignis, or from the Chaldean, *Kinnush*, i. e.

Umbilicus; for by its Conversion is made a small Circle, as it were

Umbilicus Igneus. The Hebrews call it *Genash*, i. e. *Gallinam cum*

filiis suis, as *Kircher* expounds it. By the Arabs it is called *Dub Af-*

gher, i. e. *Ursus Minor*, and *Benat al Nash al Sughra*, i. e. *Filia Feretri*

Minoris; by some of them it is called *Agiala*, i. e. *Planstrum*, and by

Sealiger and *Schickardus* *Al Rucba*, vel *Arrucba*, which yet Mr. Hyde

says is not to be found in any Arabick Writer, unless happily they

derive it from the Chaldaick *Recubd* or *Recurd*, which signifies

Curram, vel Vehiculum. By the Persians it is call'd *Haphturengb*

Kibin, i. e. *Septentrio Minor*. The Star in the Extremity of the Tayl

is by the Arabs call'd *Caucab Shemali*, i. e. *Stella Borealis*; by the

Turks, *Tilduz Shemali*, and absolutely *Tilduz*, i. e. *Stella*; and by a

peculiar Name in Arabick it is called *Gjedi*, i. e. *Hædus*. The Ita-

lians call it *Tramontana*; and we the Pole, or North Star. The

two last and brightest in the *Fere-*

trum or *square*, are by the Arabs call'd *Al Phercadân* or *Al Phercadein*, i. e. *Duo vituli*. The whole Constellation consisting

according to *Ptolomy* and *Bayerus* of eight Stars, whereof one inform; as *Kepler* reckons, of twenty. Of the Fabulous

Anaëstis of this and the former Constellation, *Diodorus Siculus Biblioth. Histor. l. 4.* reports, that these were the Nurses of

Jupiter, and privately kept him from the search of *Saturn*; for which they were by him in Gratitude plac'd in the Heavens, and

call'd by the Name of the two Bears, being worshipp'd with Divine Rites, by the Cretans and Sicilians; by whom they were styl'd *Deæ*

Μυτιέες, i. e. *Deæ Maires*. Others refer it to the Fable of *Callisto* and her Son *Arctas*, of which see *Hesiod* and *Ovid*. This

Constellation was (among the Greeks) first discovered by *Tales* the Milesian, as (besides *Theon* and *Laertius* from the Testi-

mony of *Callimachus*) *Hyginus, l. 2. Astronom. Poet.* affirms, for which reason it was call'd likewise *Phanice*, from *Tales* its

Inventor being by descent a Phœnician, who first gave it the Name of *Arctos*, or the Bear. But trulier so denominated,

from the whole Nation of the Phœnicians, who in their Navigations (and that long before the time of *Tales*) observ'd her,

as their Directress: See *Palmerius* his Learned Exercitations, p. 445, and 446.

(h) Of the frequent Voyages of the Phœnicians and Carthaginians into the Atlantick Ocean, and their Discoveries

of the Western Coasts of Africk, and a large and wealthy Island in that vast Ocean; See *Diodorus Siculus Biblioth. l. 5.* and *Aristotle* (in *Admirand. Audition.*) which forementioned Island *Turnebus* (*l. Adversar. 20. c. 11.*) conjectures to have

been some part of America not fully discovered; of which Opinion likewise is *Cluverius* (in *Sicilia Antiqu. l. 2.*) And for further

proof of the Punick Navigations, we have the *Periplus* of *Hanno* yet extant; though by many as well of the Antients,

as Moderns, supposed a Fiction (whence the Proverb, applicable to a credulous Person, *Dignus est quem oblectent Lybici libri de*

Erroribus Hannonis, as *Casaubon* notes in his Animadversions on *Athenæus*) yet is the truth thereof asserted by the learned

Bocharius in *Geograph. Sacra*; and by Mr. *Vossius* (in *Melam*) commended as a signal Monument not only of Historical Verity,

but of Antiquity likewise, beyond any Extant Remains of Græcian Learning.

(i) This Constellation the Poets feign to have been the Dragon that kept the *Hesperides* slain by *Hercules*, and

made an Asterism by *Juno*. Others (says *Stoefler*) will have the Dragon to be brought by the Gyants in their fight with the

Gods to oppose *Minerva*, and by her to have been strangled and thrown up to Heaven, and there fixt as a Trophy of her Vi-

ctory. This by the Greeks is call'd *Δράκωντος Ἀστερισμός*; by the Latines, *Draco*; in Hebrew, *Tannin*, i. e. *Draco*; by the A-

rabs, *Tinnin* and *Tannin*, as the Hebrew: it is by them likewise call'd (according to *Kircher*) *Taaban*, or rather *Tubban*, and

in the same sence by the Persians, *Ashdeba*, which is interpreted *Serpens, qui Homines ac Bestias devorat*. Some among the A-

rabians give it likewise the Name of *Al Haija*, which is also appropriate to the Southern Constellation of the same kind. It

is made up (as *Ptolomy* reckons) of 31 Stars; as *Kepler*, of 32; as *Bayerus*, of 33. Of which the first Star in the Tongue is by

the Arabs call'd *Al Rakis*, or *Arrakis*, i. e. *Saltator, seu Tripudiator*, the three next *Al Awa'id*, i. e. *Pulsatores Testudinis*. The

fifth in the Head is call'd *Ras Al Tinnin*, i. e. *Caput Draconis*. The 14th, 15th and 16th Stars are call'd *Al Thâphi*, i. e. *Cy-*

thropodes, from their Posture, representing a Skillet with Feet Tripod or Brandiron. The 20th and 21th are called *Adphar Al*

Dib, i. e. *Ungula Lepi*. The 27th is called *Aldibeh*, i. e. *Viçima*, as being plac'd before that in the Horn of *Capricorn*, call'd

Sa'd Al Dabih, i. e. *Fortuna Mædantis*. This is seen in the Meridian at Midnight about the end of June.

(k) *Macrobius* (in *Somn. Scip. l. 1. c. 18.*) *Septentrionum quoque Compago non solvitur; Anguis qui inter eos labitur semel*

circumfusum non mutat amplexum.

(l) From the Philosophy of the Egyptians, of which thus *Diogenes Laertius* in *Proæm. τὸς Ἀστέρας πῦρ εἶναι*,

ἢ τῇ τούτων κατὰ τὰ ἔτη γῆς γίνεσθαι, i. e. *That the Stars are of a fiery Nature, and that by their Contemperation all*

Things are produced on the Earth. To this Effect is that Caballistick Maxim, *Non est Herba inferiis, quæ non habeat*

Stellam superiis, quæ dicat ei Cresce; of which *Kircher* in *Magnet. Natur. Regn. Scd. 2. c. 3.*

Small (g) *Cynofure*, less both in Light and size,

A less Orb holds; whom yet the Tyrians prize

More than the Great; by This the (b) *Pæni* steer

Through vast Seas to the Western Hemisphere.

These joyn not Fronts, but eithers Head turns to

The others Tayl; pursu'd, as they pursue.

Between both which, his large unfolded Spires

A (i) Serpent stretches; and with winding fires

Embracing them, one from the other parts,

And from their (k) Stations sees that neither starts.

'Twixt this, and Heavens Mid-Circle, where the Sun,

And six Lights more 'gainst the bright Zodiack run,

Rise Stars of different Magnitude and Power,

Some near the Pole, some near Heav'ns radiant Tower.

Which (l) temper'd by the disagreeing Air

The fruitful Earth for humane use prepare.

Cynofure

Draco.

Next

Next the cold Bears, (the Cause t' himself best known)

Engonasi. Shines forth a ^(m) kneeling Constellation.

Arctophylax or Boötes. Behind whose Back ⁽ⁿ⁾ Arctophylax appears,

The same Boötes call'd, because yolk'd Steers

He seeming drives; who through the rapid Skies

Arcturus. (Bearing ^(o) Arcturus in his Bosome) hies.

Ariadnes Crown. On th' other side see the rich ^(p) Crown display

Its Luminous Gems, bright with a different Ray :

(m) This Asterism in Greek bears the Name *Εγγόνασι* and *Οκλάζων*, i. e. *Ingeniculus*. It is likewise call'd *Κορυμβός* & *Κορυμβοφόρος*, i. e. *Clavator* sem *Claviger*, and by some of the Latines, *Nisus vel Nixus*, quia *Laboranti similis*. By the Arabs *Giathi ala Ruchateibi*, i. e. *Incumbens Genuibus*, (from which corrupted may come those commonly mistaken Names of *Elgiastale* and *Rukhabei*) by the Persians interpreted *Bersann Nisheste*, i. e. *genuibus insidens*, from whence the Commentator upon *Uugh Beigh* conceives the corrupt Persian Name, *Ternuevelles Sanders*, may be deriv'd; which he supposes ought to be read *Zurnai*,

vel *Zernai Zan*; implying as much as *fistulator*, *five vir aureo canens calamo*. The number of Stars in this Constellation are by *Ptolomy* reckon'd to be 29; by *Bayerus*, 48; by *Kepler* but 28; of which the first is called *Ras Al Giathi*, i. e. *Caput Ingeniculi*, and commonly, but falsely, *Ras Al Aben*. That in his Elbow from its situation is called *Marpak*; that in his Wrist *Mi'sam*, i. e. *Carpus*, and by mistake commonly *Maafym*. This Constellation some will have to represent *Theseus*, or *Ixion*; others, *Orpheus* or *Prometheus*; others, *Thamyris* or *Thamyras* a Thracian Poet, who contending with the Muses for Skill, and by them overcome, was punish'd with the loss of his Eyes, and in the Memorial of their Victory plac'd in the Heavens in a supplicating posture, as deprecating his punishment. But *Panyases* (in *Heraclid.*) will have this Asterism to represent *Hercules*; so likewise *Hyginus* from the Authority of *Æschylus*, with whom agrees the Scholiast of *Germanicus*. This comes to the Meridian at Midnight in the Month of June.

(n) *Arctophylax* and *Boötes* are one and the same Constellation; the first signifying *Custos Urfarum*; the later so call'd *ἀπὸ τοῦ βοός*, i. e. *Bovis*, & *ἀθῆν*, i. e. *pellere*, quasi *Bovum Agitator*, to which Name our Authour alludes; but in the Eastern Tongues the same seems to be deriv'd *ἀπὸ τοῦ βοῶν*, i. e. *à Clamando*, whence by the Arabs call'd *Al Auwa*, i. e. *Vociferator*, and *Al Neckar*, i. e. *Foffor* sem *Pastinator*. It consists according to *Ptolomy* of 23 Stars, *Kepler* counts 28, and *Bayerus* 34. This some Fable to be *Lycæon*; Others *Aræas*, the Son of *Callisto* his Daughter by *Jupiter*. The Scholiast of *Germanicus* makes it to be the Constellation of *Icarus*, and accordingly *Propertius* files the *Septentriones*, *Icarus* his Oxen, in this Verse;

Flestant Icarii Sidera tarda Boves.

This is seen in the Meridian at Midnight about the beginning of May.

(o) Some will have this Star so call'd, quasi *ab ὄψεσσι* *Ἀκνῆς*, i. e. *à Cauda Urse*, but trulier *ab ὄψεσσι* *Ἀκνῆς*, i. e. *Custos Urse*, in the same sense as *Arctophylax*. This the Arabs call *al Simak al Kāmih*, i. e. *effrens Hæstiferum*; in the common Globes falsely *Huzme*: *Tzetzes* says it is likewise call'd by the Greeks *ἑωσφόρος*, and in *Chrysococce's* Persian Tables (published by *Bulialdus* at the end of his *Astronom. Philolaic.*) it is called *Κορυμβοφόρος*, i. e. *Hæstili aut Conno armatus*. It is a Star of the first Magnitude, by *Vitruvius* plac'd *Media Genuorum Custodis Arcti*, but according to others in the knot of *Arctophylax* his Girdle; so *Germanicus* in *Aratais*;

Arcturum dicunt fidus quæ vincula nodant.

(p) This by the Greeks is call'd *στέφανος βορέας*, & *στέφανος πᾶτος*, i. e. *Corona Borealis*, & *Prima*; And accordingly by the Arabs, *Al Iclil Shemali*, i. e. *Corona Borealis*, and simply *Al Iclil*, i. e. *Corona*; it is by them likewise called *Al Phecca*, i. e. *Apertio*; in Hebrew *Kir Sebetali*, i. e. *Corona Sinistra*, and in Chaldeæ *Malphecarti*, i. e. *Sertum Pupille*. The Constellation is in form of a Circle, not completed, and therefore by the Vulgar Arabs call'd *Kâse Shekêste*, i. e. *Scutella fracta*, and *Kasêbi Dervishan*, i. e. *Scutella pauperum*, and in the same sense, by some of them *Kasâ Al Masâkin*, or *Alsaâlik*. In *Chrysococce's* Tables *πινάκιον κεκλασμένον*, i. e. *Discus fractus*. The brightest in this Circle being of the second Magnitude, is call'd *Lucida Corone*, and by the Arabs, *Nair Phecca*, i. e. *Lucida Phecca*, & *Mumir*, i. e. *Pupille*. It consists according to *Ptolomy* and *Kepler* of eight Stars, yet *Bayerus* reckons twenty. This Crown some fable to have been of Gold: *Asbenau* l. 15. from the Authority of *Timæides*, says it was made of a Flower or Herb, call'd *Theseus*; others will have it to be of Lawrel or Myrtle: *Bayerus* from some Antient Greek Coyns describes it to have been compos'd of Elder Leaves, mix'd with Berries. *Phoebus* in *Bibliotheca* (out of *Ptolomæus Ephesioni* his fifth Book *Nov. Histor.*) gives this Fable thereof. They report (saith he) that a certain Nymph named *Psilacantha* in the Island *Icaria* being in love with *Bacchus*, endeavoured to procure *Ariadne* to his Bed, on condition, he would likewise be kind to her: Which *Bacchus* refusing, she plotted to do *Ariadne* a Mischief: This the God discovering, he in Passion transform'd her to an Herb bearing her Name: But afterwards repenting the Fact, by way of Recompence and Honour he caus'd the Flower to be entwin'd about *Ariadne's* Crown, which he had already fix'd in the Skie. As to the Fable of *Ariadne* deserted by *Theseus* in the Island *Naxos*, and reliev'd by *Bacchus*, the same is sufficiently known. And though most make only her Crown to be constellated, yet others place *Ariadne* her self in Heaven; as *Sealiger* hath observ'd in his Notes upon *Catullus* his Poem de *Coma Berenices*, of which Opinion likewise is *Propertius* in these Verses;

*Te quoque enim non esse rudem testantur, in Astris
Lyncibus in calum veſta Ariadna tuis.*

To which as a further Proof we shall add the Testimony of one of Nero's and another of Trajan his silver Coyns, having on their Reverse, the Figure of *Ariadne*, carried up to Heaven in the same manner, as is represented by *Propertius*; touching which see *Monsieur du Choul, de la Religion des Anciens Romains*; and *Occo in Numismat.* p. 199. *Videſis etiam Tertullian. in Scorpiace,* & *Pascalinus de Coronis.*

H

For

For the fair Round is by One Star out-vy'd,
Near to the middle of its Front descry'd,
Whose clear Fires make the other pale Lights fade,
Bright Marks of the deserted *Gnaffian* Maid.

(q) This Constellation is by *Ptolomy* call'd *Λύρα* *Ἀστερισμός*, and by *Aratus* *Λύρα καὶ ὠφειῆς*, i. e. *Lyra deorsum pendens*. It is likewise by the *Greeks* call'd *χέλυσ*, i. e. *Testudo*, and by the *Latins* *Lyra* and *Fiducia*, and *Vultur cadens*, for it is represented in the form of an Eagle or *Vultur*, holding a *Lyra* invert. By the *Arabs* it is call'd *Al Lura*, from the *Greek* *λύρα*, from whence comes the corrupt Name *Alobore*, peculiarly attributed to the first great Star in this Asterism. It is likewise by *Ulugh Beigh* call'd *Su-laphās* and *Shelyāk*, both signifying the same with the *Greek* *χέλυσ*, i. e. *Testudo*; the later denoting the Instrument, the other the Animal of which it was made. The *Persians* call it *Ciengh Rumi*, i. e. *Cybara Græca*, from which comes the *Arabick* Name, *Al Sengi*, whence the common, but corrupt Name, *Al Sanguet*. It consists according to *Ptolomy* of 10 Stars; according to *Bayanus* of 13; *Kepler* reckons 11; whereof the first is by the *Arabs*

call'd *Ner' Waki*, i. e. *Vultur Cadens*; *Scaliger* instead of *Waki* reading (but mistakingly) *Waghi*, i. e. *Facies*. This some make the *Lyre* of *Apollo*, others of *Orpheus*, to whom *Mercury*, who first invented it, bequeathed it. The same refusing to sound at the touch of any other Artist.

*Quæ quondam Januæque ferens Oeagrius Orpheus
Es sensus Scopulis, & sylvis addidit Aureas,
Et Divi Latrymæ, & Mœni denique finem.*

As our Author elsewhere Pathetically (l. 5.) It is seen in the Meridian at Midnight in the end of July, and partly at the beginning, partly at the end of the Year.

(r) This Sign by the *Greeks* call'd *ὄφις*, and the *Latins*, *Serpentarius*; is by the *Arabs* call'd *Al Hāwā*, i. e. properly one that keeps and nourishes Snakes: It is commonly but mistakingly call'd *Al Hāque*, and in the *Latine* Translation of *Alphraganus*, *Azalange*, which, as Mr. Hide notes, seems to be a *Turkish* Word, *Tilangē*; or with the Article *Alylange* signifying the same as *Serpentarius*. By the *Jews* it is call'd *Uizerath Hajab*, i. e. *Tentus Serpentem*. It consists according to *Ptolomy's* Account of twenty nine Stars, whereof four inform; *Bayanus* reckons thirty; *Kepler* thirty seven. Of which the first Star is by *Ulugh Beigh* call'd *Al Rai*, i. e. *Pastor*, and *Rās Al Hāwā*, i. e. *Caput Serpentarii*; The second is call'd *Kelb Al Rai*, i. e. *Canis Pastoris*. The Serpent which he holds consists according to *Ptolomy* of twenty five Stars, whereof five inform; according to *Bayanus*, of thirty seven; *Kepler* counts but thirteen: It is by the *Greeks* call'd *ὄφις ὀφιοῦχος Ἀστερισμός*, i. e. *Asterismus Serpentis Ophiuchi*, to distinguish it from the Constellation of the Dragon. The *Arabs* call it *Al Hāya*, i. e. *Serpens femella*. In this the ninth Star is more eminent than the rest, and is call'd *Umek Al Hāya*, i. e. *Collum Serpentis*. *Æsculapius* is said to have been converted into this Sign for his rare skill in Physick, and particularly for the Cures by him done, by the help of an Herb shewn him by a Serpent. Of which *Hyginus* in *Ophiuch*, who likewise from the Authority of *Polyzelus Rhodius*, reports that this *Ophiuchus* was *Phorbis* Prince of *Rhodes* by *Hyoille* the Daughter of *Myrmidon*, who when that Island was extremely infested with Serpents, (which for that reason was then call'd *Ophiussa*) and especially (among the rest) by a great Dragon, which devoured many of the Inhabitants, is said to have clear'd the Island of the Venemous Beasts, and to have slain the Dragon (as is likewise attested by *Diodorus Siculus*, *Bibliothec. l. 5.*) and in Memorial thereof to have been Constellated by *Apollo*. *Kepler* (in *l. de Stella Nov.*) will have this Constellation to represent *Laocoon*; the Trojan mentioned by *Virgil* in *secundo Æneid*. The Constellation of *Ophiuchus* reaches the Meridian at Midnight about the beginning of June; the former part of the Serpent about the beginning of May, the hinder part about the end of June.

Ophiuchus or *Serpentarius*.

Next

The
Swan.

Next see the (s) Swan plac'd in the Skies by Jove
As Guerdon of that form which gain'd his Love:

For once the God on Earth transform'd to such
Submitted to fair Leda's softer touch
His downy Back; This now through ample Skies
Roving, a winged Constellation flies.

The Ar-
row.

Here Stars an (t) Arrows shape and flight present;
There with unusual Wing the Firmament

The
Eagle.

Jove's (u) Eagle Scales; now justly stellify'd,
Who Heav'n and him with sacred Arms supply'd.

The Dol-
phin.

Then see from Seas to Stars the (x) Dolphin rise,
The Grace both of the Ocean and the Skies,

(s) This Sign is by the Greeks call'd ΚΩΝΟΣ; by Ptolemy, Ορνις, i. e. Volucris; by Ovid, Milvius; and by others of the Latines, Gallina; according to which last it is by the Arabs call'd Al Degjagic, to which answers the Hebrew Name, Tharn-goeth. It is likewise by the Arabs call'd Al Tair, i. e. Volucris, and Kathâ, which is properly an Aquatick Fowl, resembling a Pidgeon. The Persians call it Iffherud, and the Turks Bagbirdlik. Ptolemy reckons in this Constellation nineteen Stars, whereof two inform; Bayerus, thirty six; Kepler, twenty seven. The first of which is by the Arabs call'd Minkar Al Degjagic, i. e. Rostrum Galline; the fourth, Sadr Al Degjagic, i. e. Pectus Galline; the fifth, Danab Al Degjagic, i. e. Cauda Galline, and Hieresym, i. e. Rosa aut Liliūm redolens, as likewise Al Rid'ph, i. e. quæ ponit se sequens, because it follows four others, whereof two in

the left Foot, and two others in the left Wing. There are other Stars likewise on the Wings, call'd Al Phamnis, i. e. Equites; the seventeenth Star is call'd Ruc'ba Al Degjagic, i. e. Genu Galline. The Fable of this Asterism is sufficiently explain'd by our Poet; but Theon, the Scholiast of Aratus, makes this Swan to be plac'd in the Heavens not in Memorial of Jupiter, but in Honour of Apollo, as particularly dedicated to him, being a Musical Fowl; It is observed to hover in the Meridian at Midnight in the Month of July.

(t) It is by Ptolemy call'd ΟΥΡΟΣ ΑΓΓΕΙΟΣ, i. e. Asterismus Sagitte seu Teli. In Arabick it is call'd Al Sab'm, i. e. Sagitta, and in the Globes commonly Al Hance, but corruptly; In Hebrew, Chetz in the same sense with the Arabick; Kircher says in Hebrew it is nam'd Setan seu Daman, and that the Turks call it, Orseralem. It consists of five Stars according to Ptolemy; Bayerus and Kepler reckon eight. This was the Arrow, with which Hercules slew the Vultur that fed upon Prometheus his Liver; And Prometheus being received into favour with Jupiter, the Arrow in Memorial was made an Asterism in Heaven; by Cicero call'd Musator; by others, Temo Meridianus. This transpierces one of the Wings of the Eagle, and passes the Meridian at Midnight about the middle of July.

(u) In the Greek this Constellation is call'd Αετός and Αἰὲς Ορνις, i. e. Aquila, & Jovis Ales; and in some Authors βασιλισσός, βασίλος and βασισσέων, which the Commentator upon Ulysses Beigh conceives to be derived from the signification of the Arabick name of this Sign Aljak, or Al Akab, i. e. Pana, seu Tormentum; the reason of which Name Scaliger professes not to understand; but the forementioned Authour conceives it may possibly be so called from the tortures of Prometheus, inflicted by an Eagle or Vultur tiring upon his Liver. It is likewise called in Arabick, Okab, i. e. Aquila Nigra; by Gesner call'd Leporaria, which in the Persian Tongue is call'd Akak; in Turkish, Taushangjil, i. e. Aquila Leporaria. In Hebrew it is call'd Nefcher, which signifies an Eagle. It consists of nine Stars according to Ptolemy; Bayerus reckons thirty two, but he includes therein the Constellation likewise of Ganymed or Antinous; Kepler counts twelve; among which the third Star is by the Arabs call'd Al Nes'r Al Tar, i. e. Vultur volans; in Chrysocced's Tables ὀφειόμενος in the same sense with the Arabick; and is likewise call'd Lucida Aquila. The ninth Star is call'd Danab Alakab, i. e. Cauda Aquile. This Eagle according to the Poets was Constellated by Jupiter for the Rape of Ganymed; or, according to Aglaosthenes as cited by Eratosthenes in ΚΑΤΑΓΕΓΟΡΑ. (and from him by Bassus in German.) for that Jupiter going from Naxos to war against the Titans, an Eagle as he was sacrificing appeared to him as an happy Auspice; whereupon after his Victory he took that Fowl into his particular Patronage; Of which likewise see Lactantius, l. 1. But Macro (Poetria Byzantina) cited by Athenæus, l. 1. gives us the Fable quite otherwise: For she writes that the Eagle was Constellated by Jupiter, for suckling him, when an Infant, in Creet with Nectar, which she first drank from a Rock, and then brought to the God. With this Fable (not elsewhere to be met with among the Antients) Tristram illustrates a Medail of Hadrian's stamp'd by the Greeks or Caudians, having on its Reverse the Figure of Jupiter, and by him an Eagle, without the Ensigns of Thunder, with this Inscription ΚΡΗΤΩΝ. About the middle of July at Midnight it is seen in the Meridian.

(x) Famous, Quid fuit oculis felix in Amoribus Index, as being (according to Eratosthenes) instrumental to Neptune in his Amorous Pursuit of Amphitrite, who fled and conceal'd her self from him; nor less signal for the Fabulous Transport of Arius; of which see Ovid. Fastorum, l. 2. The Constellation consists of ten Stars according to the joynt Account of Ptolemy, Bayerus and Kepler. Eratosthenes antiently allowed but nine Stars in this Constellation, and gives the reason, because it is reputed φιλόμυθον ζῶον, and therefore mark'd with just so many Stars as answer to the number of the Muses. By the Greeks call'd Δελφίνος Αστερισμός, i. e. Asterismus Delphini; by others ἰχθύς, i. e. Piscis Sater; in Hebrew Dagaim, i. e. Piscis Maris. The Arabs from the Greeks call it Delphin. In which the most eminent Star is one in the Tail, call'd therefore by the Arabs, Danab Al Delphin; i. e. Cauda Delphini. This Asterism is by Cicero in Arati Phenomeni call'd Carrus, and by Pliny, Hornippus; by some others, Rhomboides. It passes by the Meridian at Midnight toward the end of July.

H 2

Whom

(y) This Constellation is call'd *Pegasus*, by the Greeks *ἵππολος ἰππος*. It is called likewise *Equus Major*, *Medusæus*, *Gorgonius*, *Bellerophonæus* and *Menalippe*, or rather *Melanippe*; by the Arabs, *Al Pharus Adsm*, i. e. *Equus Major*, and *Alpharus Al Thani*, i. e. *Equus Secundus*, to distinguish it from the *Equus Minor*, omitted by our Poet. In Hebrew it is call'd *Ha Sus chail Kernim*, i. e. *Equus Cornutus*. It consists according to Ptolemy of twenty Stars; according to Bayerus and Kepler, of twenty three. Among which the Chief (being in *Umbilico Equi*) is promiscuously reckon'd as appertaining to the Head of *Andromeda*, as well as to Part of this Constellation, and therefore by the Arabs call'd as well *Ras Al Mara Al Mofalsala*, i. e. *Caput Mulieris Catenate*, as *Sirra Al Pharus*, i. e. *Umbilicus Equi*. That in the joyning of the Wing is call'd *Marchab*, i. e. *Equitandi vel vehendi locus*, *Sagma*, *Ephippium*. The third Star is call'd by them *Menkib Al Pharus*, i. e. *Humerus Equi*. The fourth they call *Mat'n Al Pharus*, i. e. *Lumbus Equi*, vel *Dorsum*. The fifth and sixth Stars are call'd *Alkerb*, vel *Alkreb*, i. e. *Fanis*. The seventh and eighth *Sa'd Mazar*, i. e. *Fortuna Pluvie*. The ninth and tenth *Sa'd Bari*, i. e. *Fortuna præcellentis*. The eleventh and twelfth *Sa'd Al Homam*, i. e. *Fortuna Herois*, vel *Sad Al Hammam*, i. e. *Fortuna Obsecratrix*. The fifteenth and sixteenth are call'd *Sa'd Al Babaim*, i. e. *Fortuna Bestiarum*. In the Common Globes for *Sa'd* is mistakenly put *Sheat*. The seventeenth Star is call'd *Phom Al Pharus*, i. e. *Os Equi*, and *Gjabphela Al Pharus*, i. e. *Labrum Equi*; by others *Enph* or *Emph Al Pharus*, i. e. *Nasus Equi*; this some will have to be *Bellerophon*; others *Perseus* his Horse: *Callimachus* and *Catullus* call him *Unigenam Memnonis*, Brother of *Memnon* and Son of *Aurora*. The Greek Commentators make him to have been presented by *Aurora* to *Jupiter*; but *Lycophron* describes him to be the winged Steed of the Morning, upon which she is said to ride. *Palephatus* and *Artemidorus* yet make *Pegasus* to be a Ship and not a Horse; so *Scheffer de Milit. Navali*, l. 1. c. 4. and according to *Vossius*, (l. 3. de *Idololatr.*) The Name *Pegasus* seems to be derived à *πῆγω*, sive *πηγύω*, i. e. *compingo*, quia *Navis è multis componitur lignis*. It is seen in the Meridian at Midnight about the middle of *August*, and beginning of *September*.

Andromeda.

Perseus.

Deltoton or the Triangle.

(z) This Asterism is by the Arabs call'd *Al Mara Al Mofalsala*, i. e. *Mulier Catenata*. In Hebrew *Isha Shalabajala*, i. e. *Femina carens viro*. It consists of twenty three Stars according to Ptolemy and Kepler; according to Bayerus, of twenty seven. Among which the twelfth is by the Arabs call'd *Gjemb Al Mofalsala*, i. e. *Latus Catenate*, and *Bet'n Al Hut*, i. e. *Venter Piscis*. That in her Zone or Girdle is for that reason by them call'd *Izar* and *Mizar*, whence come the corrupt Names of *Mirach*, *Mirar*, *Mirath*, and *Miraz*. The twenty first Star being in the Hem or Border of her Vest is therefore by the Arabs call'd *Al Deil*, vel *Addeil*, i. e. *Syrma seu Lacinia Vestis*. The fifteenth is called *Rjeil Al Mofalsala*, i. e. *Pes Catenate*; by *Ulugh Beigh*, *Anak Al Ard*; which *Scaliger* and others will have to be read *Al Amach* or *Almak*, i. e. *Cochurnus*; which Errour Mr. Hyde from good Authority confutes, and shews that *Anak* is a little Beast, by the Persians call'd *Siyab Gush*, i. e. *Nigra Auricula*, (the Epithete of *Al Ard*, i. e. *Terrestis* being added) from its Ears which are black; Its whole Body besides being of a Brown or Ruddy Colour; and is Usher to the Lion, when he hunts for his Prey. We call it a Jack-call, for by his barking he calls the Lion to the Place, where his Prey lies. It comes to the Meridian at Midnight about the middle of *October*. As to the Fable of *Andromeda*; see after in the Notes upon the Whale, and in the Appendix or Comment.

(a) Was the Grand-child of *Acrisius*, King of the *Argives*, begotten by *Jupiter* on his Daughter, *Danae*, plac'd in the Heavens by favour of *Minerva* for having slain *Medusa* or the *Gorgon*, and freed *Andromeda* from the devouring Sea Monster. This Constellation is by the Arabs call'd *Chelub* or *Gbelub*, i. e. *Deceptor*; or (happily) *Kellub*, i. e. *Harpago*, seu *aduncum quodvis*, (says Mr. Hyde;) and from the Greek Name *Perseus*, *Bershaush* and *Bershaush*. It is likewise call'd by them *Himil Ras Al Ghul*, i. e. *Portans caput Larve*. It consists of twenty nine Stars according to Ptolemy, whereof three inform; Bayerus reckons thirty eight; Kepler thirty three; whereof the first is call'd *Misam Al Thuraiya*, i. e. *Carpus Pleiadum*, and *Al Gjemb Bershaush*, i. e. *Latus Persæi*. The twelfth is call'd *Ras Al Ghul*, i. e. *Caput Larve*. By the Jews, *Rosh ha Saiban*, i. e. *Caput Diaboli*. The twenty fourth Star is in Arabick call'd *Menkib Al Thuraiya*, i. e. *Interseapilium Pleiadum*. This Constellation is seen in the Meridian at Midnight in the Moneth of *November*.

(b) Call'd likewise *Trigones*, and *Delta*, by the Latines *Triangulum*, and *Nili Donum*; by the Arabs, *Mothallath*, i. e. *Triangulum*; In Hebrew, *Himmoseclush*, i. e. *Tripartitus*. It consists of four Stars according to Ptolemy and Kepler; Bayerus reckons five, whereof that in the top of the Triangle is call'd in Arabick, *Ras Almothallath*, i. e. *Caput Trianguli*. This is said to have been plac'd in Heaven by *Mercury* in Memorial of the first Letter of *Jupiter's* Name *Δις*, of which *Grotius* in *Not. ad Arst.* *Bassus* in *Germanicum*, and *Hyginus* write that *Mercury* at the Command of *Jupiter* plac'd it over the Head of *Aries*, as a Mark the better to discern that sign, of it self,

— Obscura lumine labens.

As *Cicero* in *Aratæis*. Others will have it to be the Figure of that part of *Ægypt* constellated, which *Nilus* after that manner encompasses. Vide *Bassus* in *Germanicis*. This at Midnight comes to the Meridian in the Moneth of *October*.

So

Cepheus. So call'd from its Resemblance; ^(c) *Cepheus*

Cassiopea. And ^(d) *Cassiopea* made conspicuous

Ev'n to her Punishment, seems to deplore

Andromeda chain'd to the rocky shore,

Fearing the gaping Monster of the Deep ;

But *Persæus* still does his old kindness keep,

Caput Algol, or Medusa's head. Comes to her Aid, and of the *Gorgon* slain

Shows the fear'd Head, his Spoil ^(e) the Seers Bane.

Close running by the kneeling Bull, behold

Auriga or the Charioteer. ^(f) *Heniochus*, who gain'd by skill of old

his Hands certain others called *Al Agb'nâm*, i. e. *Pecudes*. The 3d, 4th and 5th Stars in this Constellation are by *Ulugb Beigh* call'd *Cawâkib Al Pirk*, i. e. *Stella Gregia*. This *Cepheus* was Son of *Belus* by *Anchinoe* the Daughter of *Nilus*, from whom the *Persians* were heretofore call'd *Κηφινες*, over whom he was King, as likewise of *Phœnicia*, and reign'd both in *Babylon* and *Joppa*, reckon'd among the Royal Fautors of Astronomy. It is beheld in the Meridian at Midnight about the end of August and beginning of September.

^(d) It is likewise by the *Greeks* call'd *γυνὴ τῆς Σεφύς*, i. e. *Mulier sedis, five Throni*. By the *Arabs*, *Dât Al Cursâ*, i. e. *Inibronata*. It is also known by the Latine Names of *Cathedra*, *Thronus* & *Sedes Regia*. It consists of 13 Stars according to *Ptolomy*; *Bayerus* counts therein 25. And *Tycho Brahe* hath observed therein no less than 45; besides the New Star which appear'd in the Year 1573. and vanished the Year following: It is resembled by *Aratus* to the form of a *Lacœnian* or a *Carian* Key, as his Paraphrast *Avienus* expresses it.

Sic qualem Caria quondam
Noverat intrantem per Clausura Tenacia Clavem
Formatur Stellis distantiibus.

The first Star in this Constellation is by the *Arabs* call'd *Capb Al Chadib*, i. e. *Mannus tincla*. Whence in *Chrysotheca's* Tables *χελὴ πελαμμένη*, i. e. *Mannus tincla*, in the same sence with the *Arabick*. The 2d Star is *καὶ ἐφοχὴν* call'd by the Name of the whole Constellation *Dât Al Cursâ*. The 5th is call'd *Rucha Dât Al Cursâ*, i. e. *Genu Inibronata*. The Bright one in its Breast is call'd *Sad'r*, i. e. *Pectus*. This *Cassiopea* was the Wife of *Cepheus*, and Mother of *Andromeda*, who contending for Beauty with the *Nereides*, was as a Punishment, and in Memorial of her Arrogance, plac'd in Heaven with her heels upward. But *Tycho* gives us a better ground of the Fable, who writes, That *Cepheus* was a great Astronomer, or at least a Favourer of the Professors of that Science, who in a grateful acknowledgment of his Encouragement of their Studies, gave to several Constellations the Name of himself, Wife, Daughter, and Son in Law; which he received from *Cicero*, where he says, *Nec Stellatus Cepheus cum uxore, genero, filiâ, traderetur, nisi Cælestium Divina cognitio Nomen eorum ad Errorum Fabule traduxisset*. He likewise reports that in the time of *Cepheus* those Stars, which make the Constellation of *Cassiopea*, did rise with the first Degrees of *Aries*: And that under that Constellation the *Æthiopians* did solemnize the Inauguration of their succeeding Kings in Memorial of their first Mother, *Cassiopea*, whom he supposes more probably to have been called *Cassiopea*. Vide *Tychon. Braheum in Progymnasmo*. l. 1. p. 233. This Asterism is discovered in the Meridian partly in the end of March and beginning of May, partly at the end of September and beginning of October.

^(e) The Latine Text of *Scaliger's* Edition hath — *Testemque videnti*. *Testem* being interpreted by *Scaliger*, *idem quod presentem*. We have rather chosen according to the conjecture of *Lannoius*, as noted by *Junius*, and with *Gevarcius* (*Elektor*. l. 2. c. 5.) to read, *Pestemque videnti*, i. e. *Exitium & mortem*; expressing the sence of the Fable, which makes all such as beheld the Gorgons Head to be thereby converted into Stone. *Gevarcius* confirms this reading by that Exclamation of the Giant *Pallas*, converted into Stone by *Minerva*, as *Claudian* in *Gigantomachia* expresses it,

Quis Torpor inertem
Marmorea me Pelle ligat.

Pestis being taken (as *Mæursius* in *Auctor. Philolog.* c. 28. observes) for any kind of Death, as *Febris* for any kind of Disease.

^(f) This by the *Greeks* is call'd *Ἡπιδάτης*, *Ἑλάσπιος*, *Ἀρμηλάτης* & *Διφρηλάτης*. By the *Jews* *Ha Roab sebobido Ha reu san*, i. e. *Pastor tenens frenum*; and in the same sence by the *Arabs*, *Mâfik Al Inân*, i. e. *Tenens Habenam*; or *Mûmsik Al Ainna*, i. e. *Tenens Habenas*, to which the Greek Name *Heniochus* answers, i. e. *Habenifer*. It is by some of the *Arabs* likewise call'd *Roba*, i. e. *Auriga*, and *Memesciab*, i. e. *Mulus Clitellatus*. It consists according to *Ptolomy* of 14 Stars; according to *Bayerus* of 32, *Kepler* reckons 27. Among which the 4th Star is call'd *Menkib Dil Inân*, i. e. *Humerus Heniochi*. The 11th, *Ca'b Dil Inân*, i. e. *Talus Heniochi*. This Constellation the Scholiast of *Germanicus* will have to be *Mirtillus*; The *Trezenians* are for *Hippolytus*, others for *Eridanionus*, whom *Pliny* makes the first that joyn'd four Horses in a Chariot, as before him *Virgil* in these Verses in 3 *Georg.*

Primus Eridanionus Currus, & quattuor ausus
Jungere Equos, rapidisque Rotis insistere Vultur.

Ensebius in *Chronic.* makes *Trochilus* the *Argive*, who was Son of *Callisthea*, the Priestess of *Juno*, the first Inventor thereof; of whom likewise *Tertulian de Spectac.* He is mistakenly by *Hyginus* call'd *Orsilochus*. In which Errour he is followed by *Corippus* in *Panegy.* 1. in these Verses, as cited by *Scaliger* in *Ensebius*:

Orsilochum referunt primas junxisse Quadrigas
Es Currus armasse Novos, Pelopemque Secundum
In Soceri venisse Necem

Dempster yet in his Edition of *Corippus* instead of *Orsilochum* reads *Cæropidem*, thereby meaning *Eridanionus* the 4th King of *Athens*, from *Cærops*; others will have him to be *Oenomaus*. But *Theon* the Scholiast of *Aratus* says plainly, That the Constellation of *Heniochus* is *ἄδελον ἢ Βελλεροφόντος ἢ Τροχίλος*; The Representation either of *Bellerophon* or *Trochilus*, the first Inventor of the *Quadriga*. This Sign attains the Meridian at Midnight about the middle of December.

^(c) The Name of this Asterism by the *Arabs* (to use *Scaliger's* Words) *ridiculè exornificatum est*: For sometimes they call it *Kikaw* or *Kekens*; sometimes *Canvans*, and often *Phicares*. Which Erroneous Names proceed from the mistake of the Letter *ق* *Kaph*

for *ف* *Phe*. Whence instead of *Keiphus*, which is the true *Arabick* Name, deriv'd from the *Greek*; it is commonly written *Keikaw* or *Kekeus*. In *Hebrew* it is call'd *Baalish Hslab*, i. e. *Domina Flammæ*, and in *Arabick*, *Multahab*, i. e. *Inflammatus*. It consists of 13 Stars according to *Ptolomy*, whereof two inform. *Bayerus* reckons 17. Among which there is one in his Foot, call'd *Al Rat*, i. e. *Pastor*; and between his Feet another, call'd *Al Kelb*, i. e. *Canis*, and upon

(g) In the manner of joyning these 4 Horses to a Chariot, the Antients as they differ'd from us, so they differ'd among themselves; for some made 2 Poles to a Chariot, one between each two Horses, for they went *æquatâ fronte*, all a breast; so that all the Horses were ζύγιοι, i. e. *Jugales*, yoked, or collar'd to the Poles; Afterwards *Clisthenes* the *Sicyonian* chang'd that manner and made only one Pole to a Chariot; so that the two middle Horses were only *Jugales*; the other two outmost on either hand, had only Reins and Harness, and therefore call'd *ἑταφόροι*, i. e. *Females*, and were at more liberty than the *Jugales*: Of these we

have in *Suetonius* in *Tiberio* an eminent Example, where he says, *Tiberius pubescens Adiaco Triumpho currum Augusti comitatus est sinistrore funali Equo, cum Marcellus Octavia filius dextero veheretur*; which Place by *Alexander ab Alex.* (who undertakes to explain it) is not clearly understood; he conceiving the *Equi funales* to be so called à *funalibus*, i. e. *Facibus Triumphalibus*, &c. from the *Triumphal Lights*, or *Torches* born by their Riders: But not having opportunity to say more hereof in this Place, I refer the Reader to *Salmasius*, who particularly and at large handles this subject in his *Plinian Exercitationes*, Tom. 2. p. 899. to the Figures of the *Currus Quadrijuges* in the Consular and Imperial Coins in *Ursinus*, *Goltzius*, and *Panvinus de ludis Circensibus*; more particularly to *Scheffer*, who hath expressly written upon this Subject in a late Treatise *de Re vehiculari veterum*. *Romulus* is said to have first shewed the *Quadriga* to the Romans, as *Tertullian* l. *de spectaculis* witnesses: Of the *Currus Sejuges*, Chariots drawn by six Horses, *Pliny* mentions the first among the Romans to have been in the time of *Augustus*, to whom the Senate decreed it as a *Triumphal Honour*, but by the modest Prince refused.

Heav'n and his Name; as first^(g) four Steeds he drove
On flying Wheels, seen, and install'd by *Jove*.
The^(b) Kids next, the Seas barring till the Spring,
Then the⁽ⁱ⁾ Goat, Nurse to the Worlds Infant King,
Who from her Teats scal'd Heaven, her Milk, did grow
To brandish Lightning, and fear'd Thunder throw,
By her own *Jove* a Constellation made,
And for the Heav'n she gave, with Heav'n repay'd.

*Hædi or
the Kids.
The A-
malthe-
an Goat.*

(b) These are 2 Stars in the left Arm of *Hemioebus*, call'd by the *Arabs* (according to *Scaliger in Spher. Barber.*) *Sacleteni*, or trulier *Sadateni*, i. e. *Brachium sequentes*; they are likewise call'd *Giedyân*, and in the Common Globes instead thereof *Maazein*, i. e. *duo Capri*. These *Cleostratus* the *Tenedian* (according to *Hyginus*) is said first to have discovered. They are observed both at their rising and setting to cause Storms and Tempests, and therefore by the Poets call'd *borrida & insana Sydera*; and by *Germanicus*

— Nautis inimicum sydus in undis.

By our Poet they are said to close or bar up the Sea; So *Vegetius* l. 5. c. 9. *Circa Nonis Octobris, Hædi Pluviales, &c. Ex die igitur tertio Novembris usque in Diem sext. Id. Mart. Maria clauduntur*; and as the first of those days did shut up the Seas; so the later (to use *Plinies* Words) did *aperire Navigantibus Maria*; which not unaptly by *Vegetius* is stil'd *Natalis Navigationis*; and was celebrated among the Antients *Solemni Certamine*, *publicoque Spectaculo*, by the Greeks in their *Panathænan*, by the Romans in their *Quinquatrian Games*: See *Turneb. Adversar. l. 18. c. 24.* and *Stewech. in Veget. l. 5. c. 9.*

(i) This is a bright Star in the shoulder of *Hemioebus* of the first Magnitude, call'd by the *Arabs* *Aiyâk*, and commonly instead thereof *Atud*. In *Hebrew*, *Ash*, or *Aish*; in *Syriack*, *Iyûbo*. All signifying *Capellam*. This the Poets fable to have been Mother of the two Kids, and Nurse to *Jupiter*; though others (from the Authority of *Agathocles Babylonius*) report him to have been suckled by a Sow; the *Gretans* for that Cause honouring that Creature, as sacred: Of which see *Cassaubon in Animadvers. in Athenæum*, p. 649. But the more general Opinion is, that he was suckled by a Goat, and from thence he deriv'd the Title of *Ægioebus*, or the Goat-nurse. And to this effect in some Medails of the Emperour *Valerianus* he is represented in the Figure of a Child, mounted on the back of a Goat, with this Inscription, *JOVI CRESCENTI*: Touching which see *Cronius de la Religion des Anciens Romains*, &c. I shall hereto only apply an Ingenious Epigram of *Crinagoras* in the Greek *Anthologie*, l. 1. c. 33. upon a Goat, whose Milk *Augustus Caesar* us'd to drink.

Ἀἶμα με τὴν ἑνὸν, ὅσον ἐκένωσεν αἶμα ὀλγυῖ
οὐδατα, πασαῶν πολυγαλακτοτάτην,
γευσάμενος, μελινδὲς ἐπὶ τ' ἐφροσάτο πῖταρ
καὶ Ἰάσον, κῆν νῆυσι σὺμπλαυν ἠγάγετο.
Ἥξω δ' αὐτίκα που καὶ ἐς Ἀστράς· ὅγδ' ἐπεχού
μαξὸν ἐμὸν, μέλιον δ' ὅσον Αἰγίόχου.

When *Cæsar* did our full Bags Nectar taste,
Whose Spring th' exhausting Pail could never waste;
Me, that he might not want that Milky store,
To Sea with him in his own Ship he bore.
Straight 'mong the Stars shall I be made to shine,
For he I serve, than *Jove's* no less divine.

Last

The Pleiades and Hyades.

Last view the ^(k) *Pleiad's* and the ^(l) *Hyades*,
Both Parts o'th' Bull; The ^(m) Northern Signs are These.

Now see the Stars which 'bove the scorcht Earth run

The Southern Constellations.

Rising beneath the Path-way of the Sun,
And those which 'twixt the Tropick are confin'd
Of *Capricorn*, and *Pole* that is declin'd.

Orion.

Near to the Twins behold ⁽ⁿ⁾ *Orion* rise
With stretch'd Arms almost fathoming the Skies :
Nor marching with a less extended Pace.
Bright shining Stars his either shoulder grace.
Three Lights his Pendant Sword obliquely sign,
In his advanced Head three others shine
Deep in the Skies immerst; nor yet less bright,
Though such they seem 'cause more remov'd from Sight.

(k) Seven Stars on the Back of the Bull, by the Latines from the time of their rising call'd *Vergilia*, by the Greeks (ἀπὸ τῆς πλεῖν, quod ortu suo Tempus navigandi ostendant, or from their Plurality) πλεῖαδες. By the Arabs for the last Reason *Al Thuraiya*, from the singular *Therwa*, i. e. *Mulus seu Caprosus*. They are likewise by them called (αὐτὸ ἐξ ὧν) *Al Negim*, i. e. *Astrum*. By the Egyptian Coptic ἑξαερον. By the Syrians they are called *Chimo*; by the Persians *Peru*, and *Pervin*; by the Turks, *Ulgber*; by the Jews they are distinguish'd by two several Names; the first is *Chima*, answering to the Arabick *Al Thuraiya*; the other is *Succoth Benoth*, which is interpreted commonly *Tabernacula filiarum*, and represented after the similitude of a Hen, brooding over her Chickens. According to which Interpretation this Asterism is by the Italians call'd *La Gallinella*. These are said to have been the Daughters of *Atlas* and *Pleione*, whom *Méro Poëtria Byzantina* (as cited by *Athenæus* l. 11.) makes the Nurses of *Jupiter*, who fed him with *Ambrosia*; But commonly they

are reputed the Nurses of *Bacchus*, and for that constellated. Their Names *Maia*, *Sterope*, *Taygeta*, *Celene*, *Electra*, *Merope*; or according to the Scholiast of *Theocr.* (in *Idyll.* 13.) *Coacymo*, *Glaucia*, *Protis*, *Parthenia*, *Maia*, *Sionychia*, *Lampado*. *Michael Florentius Langrenus* (who as *Ricciolus* writes was an exact observer of them) adds to them two other Stars, which he calls *Atlas* and *Pleione*. *Galileo* hath observ'd in this Constellation above 40 Stars, and *Ricciolus* no less than 50.

(l) Seven Stars in the Head of the Bull, called, ὕαδες, by the Greeks, ἀπὸ τῆς ὕδρ πλῆρε, because when they arise Cosmically they cause Rain and Showers, or from ὕες, for that they resemble the gaping Jaws of a Swine, whence by the Latines call'd *Sucula*, or (according to *Theon* and *Bassus* in *Germanic.*) from the Greek Letter Υ. *Upsilon*, which they resemble, or from their Mother *Hya*, Daughter of *Oceanus*, and Wife of *Atlas*: by *Ulgb Beigh* they are call'd *Al Debarân*; from their Position, the word signifying *quicquid ponit, vel posterius est*. However that Name is peculiarly applyed to the brightest of them, commonly call'd *Oculus Tauri*. They are sometimes by the Arabs call'd *Al Najmon*, or *Negim*, i. e. *Stella*, and *Althuraiya*; for the same reason as the *Pleiades*. In *Hebrew* they are likewise called *Chima*, from the Number of Stars of which they consist. These excessively lamenting the Death of their Brother *Hyas*, slain in hunting by a Lyon, were by the commiserating Gods converted into Stars: their Names, *Ambrosia*, *Eudora* (or *Eudoxa*) *Phefile* (or *Pasithee*) *Coronis*, *Prolixo* (or *Plexauris*) *Phileto* (or *Pytho*) and *Thyene* (or *Tuke*.)

(m) In the Catalogue of these Northern Stars our Poet hath omitted *Coma Berenice*, *Ganymed* or *Antinous*, and *Equuleus* or the lesser Horse: touching which see the Appendix.

(n) This Constellation was first by the *Bæotians* call'd *Candaon*, as *Lycophron* testifies; afterwards Ὠρίων, call'd by the Latines *Hyriades* and *Hyrides*, from his Father *Hyreus*, of which see the Fable in *Ovid Fastorum* l. 5. It is by *Plautus*, *Festus*, and *Varro* call'd *Jugula*, ἐὸν quod armatus sit ut *Gladius*, says *Bassus* in *Germanic.* By the Jews it is called *Gibbor*, i. e. *Gigas*, and *Kelb Ha Giebbor*, i. e. *Canis fortis*, and *Bellator fortis*; by the Arabs, *Al Giauza*, and that for the same reason as is before alledged in the Constellation of the Twins; as likewise *Al Giebbor*, i. e. *Gigas fortis*. In which sense it is in the *Syriack* call'd *Gavoro*; in *Chaldee*, *Nipbla*, answering to the *Hebrew* *Chefil*, or *Kesil*. It consists according to *Ptolomy* of 38 Stars; according to *Bayerus* of 49; as *Repler* reckons of 62. Among which the first Star is by *Ulgb Beigh* call'd *Hecka*, which signifies a white Circle or Mark. By which Name likewise the three Stars in his Head are denominated. The second is call'd *Menkib Al Giauza*, i. e. *Humerus Orionis*, and *Jed Al Giauza Al Jumma*, i. e. *Manus dextra Orionis*, vulgarly, but erroneously being read *Bet* or *Beit Al Giauza*, i. e. *Brachium Orionis*. The third Star is call'd *Mirzam Al Nagjid*, i. e. *Leo Strenuus*. The 17th and 25th are in the Arabick call'd *Al Tagis* and *Al Dawâib*, the first signifying *Tiara*, the other *Antie seu Lemnisci*. The 26th, 27th, and 28th are call'd *Mintaka al Giauza*, and *Nitak Al Giauza*, i. e. *Cingulum seu Balbeus Orionis*. By our English Mariners, the Golden Yard; as likewise *Al Nidam vel Al Nedin*, i. e. *Series*, seu *quicquid ordine disponitur*; also *Phikâr Al Giauza*, i. e. *Vertebra Dorso Orionis*. The 29th, 30th, 31th and 32th Stars are call'd *Saiph Al Giebbor*, i. e. *Ensis Gigantis*. The 35th is call'd *Rigil Al Giauza Al Jufra*, i. e. *Pes Gigantis Sinister*; and *Rai Al Giauza*, i. e. *Pastor Orionis*. The 38th is call'd *Rigil Al Jumma*, i. e. *Pes dexter*. The Fable of this Constellation (to omit others) is by some thus related: *Orion* being a great Companion of *Diana's* in her hunting Diversions, *Apollo* grew jealous of his too much familiarity with his Sister, and to be revenged, seeing *Orion* one day swimming in the Sea, his Head appearing above the Waters like a black Mark, he shew'd it to his Sister, and told her she could not hit it: Whereupon she presently drawing her Bow let fly, and kill'd him, not knowing who he was, till the Sea had cast him on the Shoar; which perceiving and much troubled, to make amends she plac'd him in Heaven near the Dog and the Hare, where he seems still to hunt. The Persians will have this Asterism to represent *Nimrod*. It is seen in the Meridian at Midnight in the Moneth of *December*.

Him, as through Heaven he marches, follow All

(o) The Southern Constellations are here said to follow *Orion*, as Souldiers, their General : and Scripture it self hath reduc'd the Stars into a Military Order, and call'd them *στῆται τῶν ἄστρον*, *Miliriam Cali*, the Host of Heaven. *Vide Petr. Fabri. Semestr. l. 3. c. 1.*

The (o) starry Legions as their General.

Next after whom with rapid Motion bent,

(No Star than that 'gainst Earth more violent)

The fierce (p) Dog runs ; not one for Heat does rise,

Sirius or the Dog-Star.

Not one for Cold more grievous quits the Skies,

The World afflicting with a different Fate :

Nor ever fails upon the Sun to waite.

Who this from (q) *Taurus* Crown first rising see

(r) Ghets thence of Fruits what the (s) Event may be :

What Health, what Quiet may the Year befall :

Here War it makes, there Peace does reinstal ;

And as it variously returns, doth awe

Th' inferiour World ; It's Aspect is their Law.

(p) This is fabled to have been *Orion's* Dog, named *Lelaps* ; others make it *Isis* her Dog ; some again *Cephalus* his. By *Ovid* it is called *Canis Icarus* and *Erigonius*. By the *Greeks* *Κυνὸς Ἀστεισμῆς*, i. e. *Canis Asterismus*, and *Σελγιος*, which *Timosthenes* cited by the Scholiast of *Apollonius* reports to have been *Κύριον ὄνομα*, the Dog's name. By the *Latines* it is call'd *Canicula*. Why it is call'd the Dog Star, *Artemidorus* in *Oncirotis*. l. 2. c. 2. gives this Reason : The Star *Sirius* (saies he) is the Cause of Feavers, and therefore by some call'd the Dog, which is a Creature fierce, and yet fawning, and for that reason *πυρετῶ ὁμοίον*, resembled to a Feaver. The ancient *Egyptians* (as *Plutarch* testifies) believ'd this Constellation to be the Soul of *Isis* ; but thore properly (according to the relation of *Diodorus Siculus*, l. 1.) that Star in *Ore Canis*, call'd *Σελγιος*. From which *Greek* name the *Arabick* *Sbiri* or *Sbira* seems to be deriv'd. As *Σελγιος* from the *Greek* word *σέβειν*, which signifies to gape, or a *Σελγίω*, which is to make dry, because at its rising the Earth becomes dry, *Agents Terræ per Caniculam Rimas*, (as *Virgil* in *Cataleth.*) and Dogs gape with heat ; or *ab ἔλιν*, i. e. *estum*, whence *ἔλινος* or *Σελγιος*, or *ἀΐδρον*, i. e. *exinatio*, quia sudore fluxu nos exinaiat, saies the Scholiast of *Apollonius*, l. 2. Or from *Siris*, which Name (as *Dionysius* in *Perieges.* witnesses) the *Æthiopians* gave to *Nilus*, as if it were *Sydrus Niloticum*, by reason of the great Affinity between *Nilus* and that Star, for in the Dog days that River hath its greatest Inundation. *Germanicus* and *Hyginus* give it the Name of *Mera* ; and by the *Greeks* it is call'd *Ἀστὴρ Μολέας*. By the *Arabs*, *Kelb Acbur*, i. e. *Canis Major*. By the *Syrians*, *Kelbo Gavoro*, i. e. *Canis Gigantis*. By the *Egyptians* it was call'd *Sotbis*, perhaps in Memory of the King of that Name (Father of *Rhameses*) who was a great Erector of *Obelisks*, and Restorer of the *Egyptian* Learning, de quo vide *Kircherum* in *Obelise. Pamphil. & alibi*. The Constellation consists according to *Ptolomy* and *Kepler* of 29 Stars, whereof 11 inform. *Bayerus* reckons but 19. It is seen in the Meridian at Midnight about the end of December.

(q) Of the time of the Dog-Stars rising there is much difference among the Antients ; (touching which see *Ricciolus Almagest. Nov. Tom. 1. p. 471. Petavius Uranolog. l. 2. c. 10. and Kepler Epitom. Astronom. l. 3.*) That difference arising from the Antients confounding the true and Cosmical rising with the Heliacal, or from their different Computation of the Suns Ingress into the Cardinal Points, or their misapplying the Astronomical Fasts of one Climate to another ; but the greater part of the Antients assign it to the time of the Sun's first entring into *Leo*, or as *Pliny* writes, 23 days after the Summer Solstice, as *Varro* 29, as *Columella* 30. See besides the forecited Authours *Salmas. in Plinian. Exercitat. Tom. 1. p. 430.* At this day with us according to Vulgar computation, the rising and setting of the said Star is in a manner coincident with the Feasts of *St. Margaret*, (which is about the 13th of our July) and *St. Lawrence* (which falls upon the 10th of August) as this common Verse expresses it,

Margaris Os Canis est, Candam Laurentius offert.

Vide Bambrigium in Canicular. c. 3. & Weigbel Spher. l. 1. §. 2. c. 2.

(r) What our Authour here applies to the Observation of the *Cilicians* (which *Scaliger* conceives is done in respect to the Memory of *Aratus*) *Cicero* (l. 1. de *Divinat.*) attributes to the *Ceans*. *Ceas accepimus Ortum Caniculæ diligenter quotannis solere servare, Conjecturamque capere, ut scribit Ponticulus Heraclides, Salubrisne an Pestilens Annus futurus sit ; Nam si obscurior, quasi caliginosa, stella extiterit, Pingue atque Concretum esse Cælum, ut ejus Aspiratio gravis, ac Pestilens futura sit ; Sin illustris & perlucida stella apparuit, significari Cælum esse Tenue purumque, & propterea salubre.* So likewise *Horus Apollo*, l. 1. c. 3. speaking of this Star, by the *Egyptians* call'd *Sotbis*, In exortu hujus Syderis, Ea signis quibusdam observamus, quæ toto Anno peragenda sunt. For this reason was it honoured, as the chief of all the fixed Stars. Hence *Pliny*, l. 2. Non est Minor ei veneratio quam descriptis in Deos stellis : And *Apollonius Rhod.* l. 2. Argonantis, affirmas

— Κέωδ' ἐπὶ νῦν ἱερῆες
Ἀπολλέων προπαύροιδε Κυνὸς ῥέζουσι θυηλάς.

— Hodie Sacerdotes in Co
Ante Caniculæ Exortum operantur in Sacris.

So among the *Romans*, as *Ovid* in quinto *Fastorum* testifies,

Pro Cane Sidereo Canis hic imponitur Aris.

And *Festus*. *Ruitæ Canes, ut ait Atteius Capito, canario sacrificio immolantur pro frugibus, deprecanda sevitia causâ Syderis Caniculæ.*

(s) The Growth or product of Fruit the *Romans* express by the peculiar Term of *Eventus*. Among whom there was the Deity, call'd *Bonus Eventus*, principally worshipp'd by Husbandmen, as *Varro de Re Rusticâ*, l. 1. testifies. *Uti fruges, frumenta virgultaque grandire & bene evenire sinat :* (to use *Cato's* words.) *Festus* likewise writes that they sacrificed also to *Pan*, ob frugum *Eventum* ; which propriety of Term is here observed by *Manilius*, and is noted by the Learned *Volafius* (in *Annotat. in Ammian. Marcellin.* l. 29.)

Tis

'Tis strongly credited this owns a Light
And runs a Course not than the ⁽¹⁾ Sun's less bright;
But that remov'd from Sight so great a Way
It seems to cast a dim and weaker Ray:
All other Stars it foys, none in the Main
Is drench'd, or brighter thence ascends again.
Next, with the nimble ⁽²⁾ Hare see ⁽³⁾ Procyon rise,
And then the noble ⁽⁴⁾ Argo; to the Skies

Procyon
and the
Hare.
Argo.

(1) Hence the Name *Σελήιος* is applicable as well to the Sun as to this Star, *propter splendorem*; *σέλιον*, signifying as much as *lucere Solis & Siderum in morem*. So Hyginus (in *fabul.* speaking of this Star) *Syrion appellatur propter flammam Candorem; quod ejusmodi sit, ut præter ceteras lucere videatur*. It being by some held to be another Sun, and to illuminate the more remote Stars, within the Ætherial Recess, as our Sun illuminates the Moon and the Planetary System. Vide Kircher. *Itinerar. Exstat. Dialog.* 1. c. 9. *inque illum Schottum Schol.* 3. *nec non Gassend. Tom.* 1. *part.* 2. p. 138.

(2) This Constellation is by the Greeks call'd *λαγῶδες & λέπρος*; by the Latines, *Lepus*. The Arabs call it *Arneb*, and the Jews *Arnebesb*, i. e. *Lepus*. It consists of 12 Stars according to Ptolomy, as Bayerus and Kepler reckon of 13; whereof the 7th, 8th, 9th and 10th are call'd in Arabick, *Arsh Al Gianza*, i. e. *Solium Orionis*. Some will have this to be plac'd in Heaven in Memorial of the Chace affected by Diana and Orion; others make Mercury the Authour of this Constellation in Testimony of the fruitfulness and pregnancy of this Creature; of which Aristotle speaks in *Hist. Animal.* Hyginus and Bassus write, that anciently in the Island Hiero there were no Hares, until one of the Islanders brought thither from beyond the Seas a female Hare big with young; and that from thence in a short time (every one being desirous by his example to breed up some) they increased and grew so numerous, as wanting sufficient food, they destroy'd all the Crop of the Island, and brought a famine upon the Place. In Memorial of which this Asterism was figur'd in the Heavens, *ut Homines Meminissent Nihil his exoptandum in vitâ, si insolenter utantur letitiâ, quin dolorem capere posterius cogantur*; saies the same Mythologist. There is an Ingenious Epigram of Cæsar Germanicus in the Greek Anthology, imitated by Ausonius, which may not improperly be hitherto applied.

*Trinacrii quondam currentem in litoris Ora,
Anticanis leporem Cæruleus rapuit.
At lepus; in me omnis Terra Pelagique ruina est,
Forisitan & Cæli, si Canis Astra tenet.*

A Hare by Hounds pursu'd, them having scap'd
Met on the shoar a Dog-fish, and was snapt.
Then cries; us Earth and Seas are bent t' undo.
Heaven's only left; yet there is a Dog too.

This is to be seen in her form near the Meridian at Midnight in the Moneth of December.

(3) Call'd likewise *Canis Minor*, *Procyonis*, and *Præcanis*; by Cicero and Ausonius, *Anticanis*. Pliny saies, the Romans had no Name for it, unless (saies he) we should call it *Canicula*. By the Arabs it is call'd *Kelb Afgher*, i. e. *Canis Minor*. It is likewise by them call'd *Shira Al Shamiya*, i. e. *Syrus Shamenfis* (*ex quod Occultatio ejus sit in plagis Al Sham, i. e. Syrie*) and *Shira Al Ghomeisa*, vel *Al Ghomuz*, i. e. *Syrus Otuli fluxu laborans*, of which we find this Arabick Fable in the Commentator upon Ulugh Beigh his Tables. *Shira Al Ghomeisa sic dicunt, quod soror ejus Shira Al Abir, i. e. Canis Major, (for the Arabs make the greater and the lesser Dog to be the sisters of Canopus) transferit Galaxiam ad assequendum Canopum; Illa vero manens in tractu boreali, propter Canopum, ita plorat, ut oculi sui lippitudine capti sint*. This Constellation according to Ptolomy consists only of two Stars: Bayerus reckons eight, Kepler five. Among which that in his shoulder is by the Arabs call'd *Al Mirzam*, and *Al Dira Al Meshita*, i. e. *Brachium expansum*. The other (*ad Radicem Caudæ*) is call'd *Al Shira Al Shamiya*, i. e. *Syrus Shamenfis*, and *Al Ghomeisa*, as before. This Dog the Poets Fable to have been Erigone's, which mourn'd to death for the loss of his Mistress, who hang'd her self for grief that her Father Icarus was slain by his drunken Payfants. It is seen at Midnight in the Meridian in the Moneth of January.

(4) This Constellation is by Ptolomy call'd *Ἀργεῖος Ἀστὴρ*, and by some simply *Ναῦς*, i. e. *Navis*. By the Arabs, *Mercab*, i. e. *Currus*, seu *vehiculum*; for so by the Poets the Ship Argo, which this Asterism represents, is call'd *Ἀργὸν Πτερόενος*, and *Currus volitans*. It is likewise in Arabick call'd *Al Sephina*, i. e. *Navis*. It consists as Ptolomy counts of 45 Stars; according to the Computation of Bayerus, of 63; as Kepler reckons of 53. In which the 3d, 6th, 7th and 22th Stars are by some Arabs call'd *Tur'yesh*, and in the Plural *Tur'yeshat*, which Mr. Hyde conceives ought to be read *Tur'eis*, and in the Plural *Tur'eifat*, which answers to Ptolomies *Ἀσπίδων*, i. e. *Scutulus*, a little shield. The 44th Star, which is in the extremity of the Southern Rudder of the ship (for every ship antiently had two Rudders) is by the Greeks call'd *Canopus*, and in honour of Ptolomæus Lagus, one of the Egyptian Princes, *πτολεμαῖος*; by the Egyptians, *Sampilos*; by the Persians in Chrysocæta's Tables, *Soail Jamane*; and by the Arabs, *Sobeil Al Jemin*, i. e. *Canopus Jemanensis*, (*Jeman* signifying *Arabia felix*.) Some make *Sobeil* or *Sobel* to signify *Ponderosum*, in the same sense perhaps with Bassus, by whom it is call'd *Stella Terrestris*, because to us Europeans it seems to sink low, and as it were *stringere Horizontem*, or as Salmasius (in his *Plin. Exercitat. & in Distrib. de Antiqu. Astrolog.*) from the meaning of the name *Canopus*, which in the Coptick or Egyptian Language is *χρῆς* or *χρῆσος*, i. e. *Autum*, that being the heaviest Metal the Earth produces. There are several Stars of the second Magnitude not far from it, viz. the 17th, 31th and 35th, which by the Arabs are call'd *Sobeil Telkin vel Belkin*, or as Mr. Hyde reads it *Belkin* (that being the name of the Queen of Sheba that came to visit Salomon) and *Sobeil Hadar*; *Sobeil Rekas* or *Rekash*, *Sobeil Al Wez'n*, and *Sobeil Al Muhliph*. The Fable of Argo (which Bochartus in *Geograph. sacra* will have so called, not from Argos its Builder, nor from the Son of Phryxus so nam'd, nor for that it was built near Argos, nor from the Argives which Mann'd her, but from the Figure of her Built, her length, and therefore in the Phœnician Tongue, call'd *Arco*, i. e. *Navis longa*, or as Hoelelin notes in *Appolon. Argon.* 1. i. from the Hebrew, *Areg*, i. e. *Textura*, à *Pineis Textis*) is sufficiently known. By the Poets generally reputed the first ship, that ever sayl'd the seas. But Diodorus Siculus l. 4. plainly affirms the contrary; for speaking of Jason he saies *that he first under the Mountain Pelius, built a ship of far greater bulk than any that were then us'd, for at that time (saies he) Men only sayl'd in small Barques or Skiffs*. So that Argo seems not to have been the first ship, but rather the first of its kind. Touching which Argument see (besides Fournier and Baiffus) Scheffer. *de Militiâ Navali*. This saies by the Meridian at Midnight about the end of January.

K

From

From Seas translated which she first did plow;
Once tost with mighty storms, in Heaven fixt now,
And deify'd for saving Deities.

(z.) This Serpent is by *Ptolomy* call'd 'Υδροεις Ἀσπερίσμιος, i. e. *Hydri Asterismus*; (of which see the Fable in the next Note) by the *Greeks* likewise call'd Ἀσπεία; and by the *Arabs* with little alteration from that, *Alhugia*, i. e. *Serpens tenuis*; or as *Scaliger* reads it, *Asuia fortis seu Audax*. *Ricciolus* says it is in *Arabick* call'd *El Hawick* and *Kirker* *Apbaak*; in *Hebrew*, *Hajah*, i. e. *Serpens*.

There is reckon'd in this Constellation by *Ptolomy* 32 Stars, whereof seven *Sporades* or inform; by *Bayerus* 29; by *Kepler* 33. Whereof the first star is call'd *Minchir Al Shugja*, and the others from that to the seventh inclusive *Min Al A'zal*, i. e. *ex Inermi*, as if appertaining to the sign *Virgo*. The twelfth star, which by the *Latines* is call'd *Cor Hydra*, is in the *Persian* Tables call'd 'Υδροεις Αὐχῆς, and accordingly in *Ulugh Beigh*, *Unuk Al Shugja*, *Collum Serpentis*; and *Pherd Al Shugja*, i. e. *Solitaria Hydri*; and simply *Pherd*, *solitaria*; *quia nulle in Circuitu stelle adjacent*. The head of this Constellation is seen in the Meridian at Midnight about the beginning of *February*; its middle parts about mid *March*, and its tayl in the beginning of *April*.

Close boarding her a glittering (a) Serpent lies,
And by so ordered Lights, seems to present
His speckled Bodies scaly Ornament.

Draco.

(a) Sols Bird, the (b) Cup dear to the God of Wine,
And (c) Centaure next in a mix'd shape does shine,

*The
Crow.
The Cup.
The Cen-
taur.*

(a) This by the *Greeks* is call'd Κόραξ and Κόρακος Ἀσπερίσμιος, i. e. *Corvus & Corvi Asterismus*: in the same sense by the *Jews* it is call'd *Orev*; and from thence by the *Arabs*, *Al Gorab*, *Corvus*. It is likewise by them call'd *Al Chiba*, i. e. *Tentorium*, and *Arsh Al Simak*, i. e. *Solium efferentis* (scil. *inermem vel Virginem*) and *Agiar Al Asad*, i. e. *Clunes Leonis*, and *Al Agjmal*, i. e. *Cameli*. It is seated upon the Tayl of the Serpent, and consists of seven stars, according to the joyn't Accompt of *Ptolomy*, *Bayerus* and *Kepler*; whereof the first in *Arabick* call'd *Minkar Al Gorab*, i. e. *Rostrum Corvi*. The fourth *Gienab Al Gorab Al Aiman*, i. e. *Ala dextra Corvi*: The Fable of this Constellation is thus; The Crow being by *Apollo* sent to fetch Water for a Libation, seeing a Fig-tree full of Fruit, but not ripe, made stay there until the Figs were come to Maturity (which Fable, says the learned *Bochart* in *Hierozyoic.* l. 2. c. 13. seems to be derived from *Noah's* sending the Crow out of the Ark) and having satisfied his longing went to the Fountain to fetch Water; but coming there, meets with the Serpent before mentioned, whereat affrighted, he returns back with the empty pitcher, telling *Apollo* there was no Water in the Fountain. This untruth being discover'd by *Apollo*, he prohibited the Crow from ever drinking at that time of the Year, and in Memorial of the Fact, plac'd the Crow, Snake, and Pitcher in the Heavens; see *Hyginus* and *Bassus* in *Germanicam*. The Crow is sacred to *Apollo*, the President of Divination; forasmuch as this Fowl by its different Notes is said to foretel fair and fowl weather; or for that *Apollo*, fearing the pursuit of *Typhon*, is said to have assum'd the Figure of that Fowl; or in Allusion to the Sun's departure, causing darkness and night, of the same colour with the Crow, as his Return does the Day or Light resembling the whiteness of the Swan, which is likewise sacred to that God. See *Ricciard Brixian. Commentar. Symbolic. in voce Corvus*. This Asterism at Midnight is seen in the Meridian about the middle of *March*.

(b) Our Poet here appropriates this Cup to *Bacchus*; *Aratus*, *Hyginus* and *Bassus* to *Apollo*, according to the Fable before mentioned: But *Pontanus* in *Urania* seems to give it, with our Poet, to the first, where he says, by that is denoted to such in whose *Horoscope* it is ascendant

— Meri Genialis Amor studiumque bibendi.

It is called by *Ptolomy* Κερατῆρος Ἀσπερίσμιος; by others, *Hydria*, *Calpe*, *Cratera*, *Patera*, *Urna*, & *Vas*. By the *Arabs*, *Batiya*; from the *Persian*, *Badiya*, i. e. *Poculum Magnum*. By some it is call'd *Alkis*; instead of *Alkas*, i. e. *Cyathus*, from the *Hebrew*, *Kus*, or *Kor*, signifying the same. *Kircher* says it is by the *Arabs* likewise call'd *Al-phun*. It consists as *Ptolomy* reckons of seven, as *Bayerus*, of eleven; as *Kepler*, of eight Stars, which by the *Arabs* are call'd *Al Ma'laph*, i. e. *Præsepe*. It is apparent in the Meridian at Midnight about the middle of *March*.

(c) Some will have this to be the *Minotaur*; others, *Chyron* the Son of *Saturn* and *Phillyra*, the Daughter of *Oceanus*, who taught *Æsculapius* Physick, *Achilles* Musick, and *Heracles* Astronomy; with one of whose poysonous Arrows casually falling out of his Quiver he was wounded in the Foot, and of that wound died, and by commiserating *Jupiter* was made a sign in Heaven; call'd by *Ptolomy* Κενταύρος Ἀσπερίσμιος: The *Arabs* making use of the Greek Name, by whom yet according to *Ricciolus* it is call'd *Albeze* and *Almeas*; by the *Greeks*, Φήρ, and in barbarous Greek, *Taraopoz*. It consists according to *Ptolomy* of 37 Stars, according to *Bayerus* of 40, as *Kepler* reckons of 56. All which, together with those that make up the *Fera Centauri*, are by the *Arabs* call'd promiscuously *Al-shamarich*, i. e. *Spadices*, bright dappled, *propter multitudinem ac densitudinem collectionis earum*. The 35th and 36th are by the *Arabs* call'd *Al Hadur*, i. e. *solum*, and *Al Wex'n*, i. e. *Pondus*, and *Muhtalaphein*, i. e. *Jurata*, and *Mubnatbein*, i. e. *Pejnrata*, as being by some Observer mistaken for *Canopus*, and averr'd upon Oath to be it, by another sworn to the contrary, whence the Original of those *Arabick* Names. The 35th Star is yet by *Ulugh Beigh* call'd *Rigil Kentaurus*, i. e. *Per Centauri*. Our Poet here omits his *Hasta*; by *Proclus* and *Bassus* call'd *Thyrus*, and *Thirfolochus*; as likewise the *Beltis Centauri*, by the *Greeks* call'd Σελίον, i. e. *fera*, and *υωνίας* à rapacitate, scil. *Lupus*. In *Arabick* it is call'd *Sebu*, i. e. *Fera*, and *Pheb'd*, i. e. *Tbos*, *Pardus*. This Constellation gallops by the Meridian at Midnight in the end of *April*.

Half

Half Man, half Horse; then Heavens bright Temple see,

The Altar.

And ^(d) Altar consecrate to Victorie,

What time th' intraged Earth a Giant Race

Gainst Heaven produc'd, then Gods besought the Grace

Of the ^(e) great Gods; and Jove himself ^(f) fear'd too

He wanted Power to do, what he could do.

(d) Call'd by the Greeks *ἱερόν, περιβόλιον & φάρος*. By the Latines, *Thuribulum, Conceptaculum, Batibulus, Sacrarium, Puteus, Templum, Lar, Acerra, Ara, & Altare*. By the Arabs (according to Ricciolus) *Almegrameth* or *Al Mugamrah*. It consists of 7 Stars according to Ptolemy and Kepler; as Bayerus reckons of 8. This was the first Altar (according to the Poets) that ever was erected,

*In qua devoti quondam cecidere Gigantes;
Nec prius armavit violento fulmine dextram
Jupiter, ante Deos quam constitit ipse Sacerdos.*

(As our Poet l. 5.) It was fram'd by the Cyclops, and in memorial of the fact constellated. *Laëtantius* yet, l. 1. de *falsa Relig.* reports that the first Altar that Jupiter erected was in honour to *Cælus*. *Deinde* (says he) *Pan eum deducit in montem, qui vocatur Cæli Stela; Postquam eò ascendit contemplatus est latè Terras, ibique in eo Monte Aram creat Cælo, primusque in ea Arâ Jupiter Sacrificavit.* The Deities, to whom Jupiter sacrific'd upon this Expedition against the Gyants, we find from *Diodorus Siculus Bibliothec. l. 5.* to have been the *Sun, Heaven and the Earth*. This Constellation about the end of June passes the Meridian at Midnight under our Horizon.

(e) These were by the Greeks call'd *ἑοὶ μέγας, ἑοὶ χεῖροι* and *ἑοὶ δυνατοί*; by the Latines, *Dii Majores, Dii Valentes & Potentes*, and *Dii Samothracæ*, of whom see *Dionys. Halicarnass. Antiq. lib. 1.* and *Macrob. Saturnal. l. 3. c. 4.* They are likewise by the Greeks call'd *καὶ δέοι*, which *Scaliger* (in *Varron. de Lingua Lat.*) conceives to be deriv'd from a Phœnician or Syrian Original, *Cabir* in that Language signifying *Potens*; which Gods were so call'd in Opposition to, and Distinction from the *Dii Castilli, Camilli, or Camiri*, i. e. *Dii Ministri sive Minores*, as observ'd by *Heinsius* (in *Aristarcho sacro*.) These some will have to be *Castor and Pollux*, confirm'd by this Antient Latine Inscription,

CASTORI ET POLLUCI
DIS MAGNIS
SULPICIE. Q. SULPIC. F.
VOTUM. &c.

And this Greek one, cited by *Argolus* in l. 2. *Panvini de Lud. Circens.* extant at Venice in *Æd. Episc. Torcell.*

ΓΑΙΟΣ ΓΑΙΟΥ
ΑΧΑΡΝΕΥΣ ΙΕΡΕΥΣ
ΓΕΝΟΜΕΝΟΣ ΘΕΩΝ
ΜΕΤΑΛΩΝ ΔΙΟΣ.
ΚΟΡΩΝ ΚΑΒΕΙΡΩΝ. i. e.

CAIUS CAII
ACHARNENSIS SACERDOS
FACTUS DEORUM MAGNORUM
DIOSCURORUM CABEIRORUM.

These yet the Scholiast of *Apollonius* (l. 1.) says were Jupiter and Bacchus; or, according to *Arbenion, Jasson and Dardanus* Varro conceives them rather to be *Ops* and *Saturn*. *Nigidius* and *Cornelius Labeo* (as cited by *Macrob.*) will have them to be *Neptune* and *Apollo*. They are reputed likewise to be *Cybele* and *Attys*, as by two Antient Monuments erected to their Honour, with this Inscription *DIS MAGNIS*, in *Gruterus* may appear; of which more particularly *Pignorius de Magnâ Deâ Matre & Attide*. Others make them to be the *Dii Penates*: against which Opinion thus *Turneb. Adversar. l. 15. c. 21.* *Magnos Deos à Penatibus diversos facit Maro; Penates enim Dii Penetiales videntur fuisse, Diique familia: Dii magni, illi qui maximum Imperium & Numen habent, publicæque coluntur, &c.* or according to *Antonius Goveanus* (in *Terrent.*) *Dii Magni quos majorum Gentium Cicero vocat, qui à Terris in Cælum non pervenire.* These by *Diodorus Siculus*, l. 1. c. 8. are said to be five in number, i. e. *πνεῦμα seu Spiritus, πῦρ seu Ignis, ξηρόν seu Siccum, ὑγρόν seu Humidum, and ἄηρ seu Aer*. By the first, meaning Jupiter; by the second, *Vulcan*; by the third, *Tellus seu Ceres*; by the fourth, *Neptune, sive Oceanus*; by the last, *Minerva*. *Theon Smyrneus* (in *Mathemat. Plat.*) reckons them to be eight; *φαὶν ὅτι τὰς πέντε καὶ τοὺς δύο εἶναι θεοὺς*, i. e. *aiunt octo esse Deos omnium Dominos*: Thus enumerated in an Antient Inscription upon an Egyptian Pillar, as cited by the said *Theon* from the Testimony of *Evander*.

* For so we read that Inscription according to the ingenious Emendation of the Excellent Mfr. de Fermat, in his Epistle (to Mfr. de Pellisson) annexed to the last Edition of *Diopbanus in Alex.*

ΠΡΕΣΒΥΤΑΤΟΣ ΠΑΝΤΩΝ ΟΣΙΡΙΣ ΘΕΟΙΣ
ΑΘΑΝΑΤΟΙΣ, ΠΝΕΥΜΑΤΙ, ΚΑΙ ΟΥΡΑΝΩ,
ΗΑΙΩ, ΚΑΙ ΣΕΛΗΝΗ, ΚΑΙ ΓΗ, ΚΑΙ
ΝΥΚΤΙ, ΚΑΙ ΗΜΕΡΑ, ΚΑΙ ΠΑΤΡΙ ΤΩΝ
ΟΝΤΩΝ, ΚΑΙ ΕΣΟΜΕΝΩΝ, * ΕΡΩΤΙ. &c. i. e.

ANTIQUISSIMUS OMNIUM REX OSIRIS
DIS IMMORTALIBUS, SPIRITUI, ET COELO,
SOLI, ET LUNÆ, ET TERRÆ, ET
NOCTI, ET DIEI, ET PATRI
EORUM QUÆ SUNT, QUÆQUE FUTURA
SUNT, AMORI. &c.

And from hence the Proverb *πάντα ὄκτω*, i. e. *omnia octo*; which see explain'd in the learn'd Notes of *Bulialdus* upon that Authour. Others make them to be twelve in Number, reckoning them according to this Distich of *Ennius*.

*Juno, Vesta, Ceres, Diana, Minerva, Venus, Mars,
Mercurius, Jovi, Neptunus, Vulcanus, Apollo.*

Whose several Interests or Concerns are thus describ'd and distinguish'd by *Sallustius* (*περὶ θεῶν ἡ κόσμος*) *mundum efficiunt Jupiter, Neptunus, Vulcanus; animant Ceres, Juno, Diana; adaptant Apollo, Venus, Mercurius; custodiunt Vesta, Pallas, Mars.* Yet these Great Gods, though in degree above the rest, were not invest'd with absolute Rule, that being only reserved for Jupiter, according to *Æschylus* in *Prometh. vinc.*

*Ἄπαντα ἐπεχέου πλὴν θεοῖσι καὶ ἑαυτοῖς,
ἑλέυθε γὰρ οὐκ ἔστι πλὴν Διός.*

*Omnia sunt Diis concessa præter imperare,
Nam nullus est Liber nisi Jupiter.*

Who was (as *Apuleius Met. l. 1.* says of *Osiris*) *Deus Deum, Magnorum Potior, & Majorum Summus, & Summorum Maximus, & Maximorum Regnator.*

(f) So *Claudian de Bello Getico*,

*Ipsumque Jovem, turbante Typhæo,
Si fas est, timuisse ferunt*

K 2

When

When he amaz'd the rising Earth beheld,
How ev'n 'gainst Natures self, Nature rebell'd,
Saw Mountains heap'd on Mountains to aspire,
And Stars from the approaching Hills retire,

(g) Applicable to this Place may seem this not common and not unelegant Description of *Sidonius Apollinar. in Carm. 9. ad Felicem.*

*Non hic Terrigenam laqueor Cohortem
Admixto magè vividam veneno,
Cui præter Speciem modò corentem
Argues Corporibus voluminosis,
Alitè squamea Crura porrigentes,
In vestigia fauce definebant.
Sic formæ triplicis Procax Juventus,
Tellure Pedem proterens voraci
Cursabat Caput stupenda gressu;
Et cum Classica Numinum sonabant,
Mox contrà Tonitrus refibilante
Audebat Superos cingere plantâ.
Nec Pb'egræ legis ampliata rura;
Missi dum volitant per Astra Montes,
Pindus, Pelion, Ossa, Olympus, Oibrys,
Cum silvis, gregibus feris, Pruiniis,
Saxis, fontibus, Oppidis, levati
Vibrantium statissimum dextrâ.*

Charg'd with dire Arms by a (g) deformed Birth
Issuing from Ruptures of the teeming Earth.

No (b) Victim-Bearers yet the Gods had known,
Or that there were Powers Greater than their own;
Then did Heav'n's King this Starry Altar raise,
Whose fires ev'n yet with brightest Lustre blaze.

Near which the (i) Whale raising his scaley Limbs
In large Wreaths, wallowing on his Belly swims,
And gapes as ready just to seize his Prey:

The
Whale.

As when the same th' (k) expos'd *Andromeda*

Of th' Earth-born Race is not our Song
Who by mix'd Poisons grew more strong;
Their Limbs immeasurably vast;
About whose legs wreath'd Serpents cast,
With gaping Jaws which downwards bend,
Did like to cloven feet extend.
Three-form'd stupendious Race! that treads
Not upon heels, but runs on heads.
These when the Gods did sound to fight,
Mock'd at their Thunder; and in sight

Kick'd 'gainst the Skies with hissing feet.
Nor tell we here how they did meet
On *Pblegra's* Plains, and Mountains hurl'd
Against the Bright Lamps of the World;
How *Pindus*, *Pelion*, *Ossa* flew
Toss'd by their Hands, *Olympus* too
And *Oibrys* with their Woods and Flocks,
Wild Beasts, Towns, Fountains, Snows, and Rocks.

(b) The *Latine* hath *Hostiferum quemquam*; by *Barthius* (*Adversar. l. 24. c. 10.*) interpreted *Hostias ferentem*. *Servius in prim. Æneid. Hostia dicuntur sacrificia quæ ab his fiunt qui in Hostem pergunt.* We have therefore chosen to follow *Barthius* his Interpretation; *Scaliger* being here at a loss, who conceives some error to be in the word *Hostiferum*, and would instead thereof read *Pestiferum*.

(i) This Asterism is by the *Greeks* call'd $\kappa\upsilon\tau\theta$, $\pi\eta\gamma\iota\varsigma$ and $\rho\epsilon\phi\upsilon\varsigma$, by the *Latines* accordingly *Cete* and *Cetus*, *Balena*, *Pistrix*, *Leo*, or *U sus Marinus*; by the *Arabs* (from the *Greek*) *Alketus*. *Ptolomy* reckons therein 22 Stars, *Bayerus* 27. *Kepler* 25. Of which the bright one in the snout of the Whale is call'd *Menkar Alketus*, i. e. *Rostrum Ceti*. That in the Tail, *Danab Alketus*, i. e. *Cauda Ceti*, and both these are likewise call'd by th' *Arabs*, *Al Diphdaan*, i. e. *duo Ranae*. There are two also in his hands, (for this Fish is conceiv'd to be the same with *Dagon* or *Derceto*, the *Syrian* Idol; which was represented in the upper part after a humane shape, in the lower, after that of a Fish, and by the *Jews* nam'd *Adir Dag*, i. e. *Piscis Magnus*; de quo *Seldenus de Diis Syris Syntagm. 2.*) and are by the *Arabs* call'd *Al Naaman*, or according to Mr. *Hyde*, *Al Naamât*, i. e. *Strutibus Cameli*. The second Star in this Constellation is call'd *Capb Al Giedma*, i. e. *Manus truncata*. The 21st Star is call'd *Danab Al Ketus Sbemali*, i. e. *Ceti Cauda Borealis*. The 22th, *Danab Al Gienûbi*, i. e. *Cauda Australis*, and *Al Diphda Al Tbhni*, i. e. *Rana Secunda*. It is seen in the Meridian at Midnight from the beginning of *October* to the end of *December*.

(k) Of the exposure of *Andromeda* to this Sea-Monster, and the Combat betwixt that and *Persens*, see the Appendix. The Ground of which Fable may happily arise; for that the Ship in which she was carried away had for its Ensign, the Whale; the Story of which see in *Photius* his *Bibliotheca* from the Narrations of *Conon*; or in regard the Person by whom she was first demanded in Marriage was some Insulary Prince, and exercis'd Piracy, and for that reason compar'd to a Whale or Sea-Monster, of which see *Vossius l. 1. de Idololatr. & Scheffer. de Militiâ Navali. l. 1. c. 4.* But not to insist longer upon the Fable; Divers admit of the exposure of *Andromeda* to this Sea-Monster as a true Story; see the same defended by *Bartholom. Barrientus*, in *Sylv. Annotat. c. 1.* from the Testimonies of *Strabo*, *Josephus*, *St. Jerome*, *Ægesippus* and *Pliny*; the last of whom speaking of *Joppa*, thus writes: *Joppe Phœnicum, Antiquior terrarum Inundatione ut ferunt, insidet Collem, præjacente Saxo, in quo Vinculorum Andromede vestigia ostendunt.* And elsewhere reports that the Bones of this Monster were brought from *Joppe* to *Rome*, and among other stupendious sights were by *Marcus Scaurus* in his *Ædile-Ship* shown to the People, in length forty feet, his Ribs in height exceeding the tallest *Indian* Elephants, the thickness of his Back-bone being a foot and half over. Vide *Plin. l. 5. c. 13. and l. 9. c. 5.*

To

To her sad Fate approaching once beheld,
Who the forc'd Waves beyond their Shore impell'd.
In Heaven's South Part, the ^(b) Fish then from the Wind,
Call'd Southern, rises; close to which conjoyn'd
In mighty flexures ^(m) starry Rivers run,
One of their Heads flows from *Aquarius* Tun,
Whose Waters by communicated Streams
Meet in the midst, and mix Sidereal Beams.

'Twixt the Ecliptick and the ⁽ⁿ⁾ latent Bears,
Which 'bout the creaking *Axis* turn the Sphears,
Heaven's ^(o) stranger Orbe with these Stars painted shines,
Which Antient Poets call'd the Southern Signs.

The rest o'th' World lies under ^(p) Water hid,
Where unknown Realms, Lands to our Sight forbid,
Take from one Sun with us a common Light,
But ^(q) several Shadows, and a different Night.
Where Stars sinistral set, and dextral rise,
Their Heav'n as ample, nor less bright their Skies,
Their Stars as numerous, only thus outvy'd,
In that to them *Augustus* Star's deny'd,
Which does our World with Rayes propitious blest;
Earths present, and Heavens future Happiness.

That the Extreame which 'bout the neather Pole
Deck'd with bright Stars, though inconspicuous, rowl,
The upper Pole's resemble, with ^(r) Signs grac'd
Like that; where Bears with Fronts averse are plac'd,
And by one Dragon parted; we suppose;
Induc'd to credit what Example shows,

Ζώνη, ὀκείανον vocabant, says Scaliger upon this Place. For this Reason by the Eastern People these Southern Constellations are call'd *Chadre Teman*, i. e. *Penetralia Austri*, quasi sint in loco Occulto; as *Aben Ezra* cited by Mr. Hyde.

(q) As being to us *Ἀντιστοιχοί*. They having *Dextros Ortus* & *Sinistram Umbram*: We *Sinistros Ortus* & *Dextram Umbram*, And as *Macrobius* in *Somn. Scip.* l. 2. notes, *Idem Spl illis & obire dicitur nostro Ortus, & oriatur cum nobis occidet.*

(r) Our Authour here argues *ὅτι τὸ ἀνάλογον*, that about the Southern Pole there are, or ought to be the same Constellations, as about the Northern; which Error is to be attributed to the Ignorance of the Times wherein he lived, in which that part of the World was altogether unknown to the *Romans*. But Modern Experience evinces, that there are not only no such Asterisms as the greater and lesser Bear and Dragon; but also no Stars within many Degrees of that Pole. The nearest to it being a Star in the Tail of the *Hydrus*, call'd by the *Dutch*, the Water *Schlang*. Vide *Riccioli*, Tom. 1. l. 6. p. 410. Hence *Herigon* in his *Cursus Mathemat.* Tom. 1. p. 37. *Nulla Celi pars minoribus & paucioribus Stellis ornatur quam Austrina Circumpolaris*; for which Reason it may be stil'd (as by *Seneca* in *Hercul. Furiente*, it is) *Diuturnior Polus*.

(1) The Poets fabled this to have been the Fish, which saved *Phacetus* (or rather *Apbacius*) the Daughter of *Venus*, fallen into the Lake *Boeib*, and for that reason constellated; by the *Arabs* called *Al Hant Al Gienubi*, i. e. *Piscis Australis*; by *Higynus*, *Piscis solitarius*, and by *Bassus* in *Germanicum*, *Piscis Magnus*; and is said to have spawn'd the other two in the Zodiack. It is made up, according to *Ptolomy* and *Bayerus*, of 12 Stars, among which the Bright one in his Mouth is call'd *Al Diphda Al Animal*, i. e. *Rana prima*; and *Al Dajim*, i. e. *Agger*; and *Phom Al Hant*, i. e. *Os Piscis*, commonly but erroneously *Phomabant*. This glides by the Meridian at Midnight about the middle of *August*.

(m) This Stream is by *Scaliger* call'd *ῥοις ὑδατῶν*, i. e. *fusio Aquae*, and is different from that which by *Vitruvius* is call'd *fusio Stellarum*, (of which already in the sign *Pisces*, call'd likewise *ὀβυδισμοῦ ἰχθύων*) and is distinct also from that other starry stream call'd *Eridanus*, or *ῥοταμοῦ ὀρείων*, i. e. *Fluvius Orionis*. *Manilius* here gives to this stream as it were a double Head, making it to flow as well from the Mouth of the Southern Fish, as from the Urn of *Aquarius*, and to unite in the middle, as is likewise observ'd by *Gassendus* upon this Place, Tom. 1. l. 2. p. 543. Of the other Southern Constellations, unknown to the Antients, see in the Appendix.

(n) That is the Antartick or Southern Pole, to us invisible, which our Poet imagines to be adorn'd with the like Constellations as the Northern, and therefore he calls them the latent Bears.

(o) In respect to us, inhabiting the Northern Hemisphere. Not unaptly *Sidonius Apollinaris* calls the Stars on either side the Zodiack, *Exotica Sydera*, strange or foreign; quasi *ἐξω τῷ ζωδιακῷ*, *Extra Zodiacum*; as is noted by *Sitmondus*.

(p) That is that part of the Southern Hemisphere to us inconspicuous, being terminated by our Horizon; for the Antients, as is before noted, *τῇ περὶ τὴν σὺν ὀλίγῃ*

L

For

(j) To the same purpose likewise our Poet in the end of his 5th Book,

*Ipse suas Aether Flammas sufferre nequirit,
Totum & accenso Mundus flagraret
Olympo.*

Yet this Reason of our Authour *Picus Mirandula* (l. 1. in *Astrolog.* p. 255.) thinks only worthy of laughter. *Mallium* (so he calls *Mannilius*) nisi esset Poeta, Bone Deus! quo risu prosequeremur, qui Coelestes illas quas fingit Imagines paucis stellis inchoatas potius dicit, quam absolutas, Ne pluribus ibi ignibus accensis Incendio Mundus flagraret? But with the leave of that Prince of Learning, our Author is herein (as to the fiery nature of the Stars) defended by most of the Antients: Hence in *Ophew*, the Sun, Moon and Stars are said to be *Hypocrito Melu*, *membra Vulcani*: And *Cicero* in *secundo de Natura Deorum*, gives this Reason why the Stars are said to be nourished by moisture, *nihil ferè intereat aut admodum paululum, quod Aethrorum Ignis aut Aetheris Flamma consumat*. Nor wants he the suffrage of divers of the Fathers, Schoolmen and Moderns: In proof of which it may suffice to instance only what the Learned *G. Vossius* hath to this purpose, l. 2. *Idololatr.* c. 39. Unless (says he) the Stars be of a fiery Nature, I see no Reason why the Waters should be plac'd above the Heavens, as we are told both by the Writings of Moses and others, they are: But now the Reason is plain, to wit, that by them the exsting Fire of the Stars might be repress'd and temper'd, lest by their heat and fervour the whole Heavens should be dissolv'd: The same Reason being rendred by *St. Basil*, *St. Ambrose*, *Theodoret*, *Procopius*, *Damasceus*, *Beda* and others. Thus He. *Vide etiam Gassendum*, *Tom.* 1. l. 1. p. 502.

(t) *Cleanthes* in *Cicero de Natura Deorum* l. 2. urging reasons to evince the Belief of a Deity, among others gives this for the last and weightiest, *Aequabilitatem motus, &c.* The *Aequability* of the Motion and Conversion of the Heavens, Sun, Moon and Stars, their Distinction, Variety, Beauty, Order. The very view of which (says he) sufficiently declares them not to be fortuitous or casual: And again, *Quid potest esse tam apertum, tamque perspicuum cùm Caelum suspeximus, &c.* What can be

more evident or perspicuous, when we behold the Heavens and contemplate the Coelestial Bodies, than that there is a Deity, by whose Excellent Providence they are govern'd? Thus far *Cicero*, (with our Authour) from the bare suggestion of Nature, truly. What follows, where the World it self is said to be a God, is from the mistaken Principles of the Platonists and Stoicks, who (as before is noted) make the World to be a God, but a Secondary one; for that Power which they primarily call God, is by them term'd *Ratio & Mens*: by whom they affirm'd the World to be created: So *Cicero* in *Timeo*; *Deus ille Aeternus* (scil. *Mens*) hunc perfectè beatum Deum (scil. Mundum) procreavit. The World being in their sence the universal Fusion of the first Divine Mind; for so *Chrysippus* in *Cicero* in *primo de Natura Deorum* describes it: *Vim Divinam in Ratione esse positam, & universae Naturae Animam atque Mentem*. *Ipsamque Mundum Deum dici & ejus Animae fusionem universam*. The Divine Power is seated in Reason, and in the Mind of universal Nature. And this World is said to be a God, and the universal Fusion or Extension of that Mind. *Vide etiam Lipf. Philosoph.* Stoic. l. 1. Dissert. 8.

For Reason urges from Analogie,
The Parts unseen are like to those we see.

These several Stations, by large Skies disjoyn'd;
To all the Constellations are assign'd,

Yet think not they corporeal Figures are,
Or all their Members equal Lustre share;

(c) Heaven could not suffer so intense a Heat,
Were no Part voyd, but all with Fire repleat.

Some therefore cautious Nature kept from Flame,
Lest it should hazard the Coelestial Frame,

Only to mark their Figures out content,

And Signs by certain Stars to represent,

Whose Lights design their shapes; fire answers fire,

Mean to Extream, the Lower to the Higher,

It is enough they are not hidden quite.

Some Stars the Moon half full show greatest Light,

But all the nameless Commons of the Sky

Obscur'd by her completed Splendour, fly:

The brighter Signs yet nor their Number change,

Nor with less Stars in mixed Motion range,

But the same Course (the better to be known)

And Order, in their Rise and Setting, own.

Nor in this World may Ought more wonder raise

Than that the Whole Reason, and Laws, obeys,

Where Nothing's crowded, Nothing loosely roves,

Or crosses to its determin'd Order, moves;

What more confus'd in shew? yet what in Course

More certain? a clear Reason to inforce

That this World's (t) govern'd by a Deity

And is it self a God; nor casually

Together

The Forms
and Figures
of the several
Constellations
are corporeal.

Their rising
and setting
constant
and regular.

Hence the
Government
of the
World by
divine
Providence
is asserted.

Together met, as he would once perswade,
 Who first the VValls of this wide System made
 (*) Of Atoms, and to those resolves again;
 Of which, the solid Earth, the floating Main,
 The fiery Stars, and *Æther* that creates
 Infinite Orbs, and others dissipates,
 Consist: All which revert unto their Springs,
 And transmutate the various Forms of things.
 But who can think this World educ'd should be
 From such blind Grounds without a Deitie?
 If Chance did give, Chance rules this All; Whence are
 The Signs then in their Course so regular?
 Rising by Turns, as if by Laws injoyn'd,
 None posting on, whilst others stay behind?
 The same Stars Summer, the same Winter grace,
 Day takes, and leaves to Heaven one certain Face.
 What time *Troy's* State was by the *Greeks* undon,
 (*) Oppos'd did *Arctos* and *Orion* run.
 She the World's Top to circle still content,
 He facing her, to round th' whole Firmament.
 The times of obscure Night, were then (y) devin'd

(u) *Democritus*, whose follower was *Epicurus*, as is before noted. There is in *Derision* of this Opinion an Epigram of *Lucilius* in the *Greek Anthology*, l. 2. wherein there is a jocular Comparison between *Diophantus*, a very little Dwarf, and *Epicurus* his Atoms,

Ἐξ ἀτόμων Ἐπίκουρος ὅλον
 κόσμον ἔργασεν
 εἶναι, τοῦτο δὲ καὶ Ἀλκιμε λέ-
 πτότατον.
 εἰ δ' οὐτ' ἦν Διόφαντος, ἔργασεν
 ἂν ὅκ' Διοφάντης,
 τοῦ καὶ ὅτ' ἀτόμων πούλ' ἐπὶ
 λεπτότερος.
 Ἡ τὰ μὲν ἄλλ' ἔργασε συνεσθάναι
 ἐξ ἀτόμων ἂν,
 Ἐκ τούτων δ' αὐτὰς Ἀλκιμε
 τὰς ἀτμῆς.

Of *Atoms* *Epicurus* did compose
 This World, 'cause nothing he
 thought less than those.
 Had *Diophantus* liv'd then, he this
 All
 Had brought from him, for he is
 yet more small.
 Or though he held *Atoms* All else
 contriv'd,
 From Him yet sure he *Atoms* had
 deriv'd.

(x) Respecting this Place in
Homer, Iliad. 6.

* Ἀρκίον δ' ἦν καὶ Ἀμαξάν ὅττι
 κλησιν καλέσων,
 Ἡ τ' αὐτὰς σέφεται καὶ τ' ὀ-
 ρέωνα δοκεῖ.

*Ursumque quæ & Plaustrum cognomine vocant,
 Quæ ibidem vertitur & Oriona observat.*

Where ὀρέωνα δοκεῖ, answers to *Manilius* his — *Adversis frontibus ibant.* These two Constellations being plac'd
 ὅττι ὀρέας, in a direct line against one another, as two jealous Princes marking each others Motion, according to Mr. *Selden*
den his Observation in his Titles of Honour (c. 1.) for the Bear being Princess of the Northern Constellations, observes and
 looks at *Orion* Prince of the Southern. Which σχέσις or Position of these Constellations *Casaubon* (in *Sirabon. l. 1.*) con-
 ceives *Manilius* to have collected from the only Authority of *Homer* before cited.

(y) The observation of the time of Night from the rising or position of the Stars was usual among the Antients in the
 time of the *Trojan War*, by which they ordered their Watches, as by those they divided the Night. Instances whereof we
 have in *Ænripides* his *Iphigen. in Aulid.* and *Rhesus.* From the later of which take this:

Τινὸς ἀ φυλαχά; τίς ἀμείβῃ
 τὰν ἐμὸν πρῶτα;
 Δύεται Σεμέια, καὶ ἐπ' ἀπορῃ
 Πλάδες αἰθέροιαι.
 μέσση δ' αἰετὸς ὄρνις πτώται, &c.

*Cujus est vigilia? Quis per vices
 Succedit mihi primum?
 Jam occidunt signa, & septemgrade
 Pleiades Ætheria (oriuntur)
 Volat autem Aquila in Medio Cali, &c.*

The Manner and Method of their Observation is thus deliver'd by *Attalus*, an Antient Scholiast upon *Aratus*, as cited by *Hip-
 parchus.* Since *Sun-set* is the beginning of Night, and that the *Sun* is in always one of the 12 Signs; It is manifest, that knowing in what
 sign the *Sun* is, and in what degree thereof, it may be easily told, what sign and what degree will arise in the beginning of Night. For the
 part of the *Zodiack* which is Diametrically opposite to that which the *Sun* is in at his setting, will at the beginning of Night be seen to
 rise: which being observ'd and known, forasmuch as every Night six signs arise from the East, it may be told what part of Night an-
 swers to their rising, and how much is remaining between that and the rising of the *Sun*. But the Errours of this rude observation
Hipparchus refutes from the inequality of Time in the Ascensions of the several signs, some of them being less than their *Dode-
 catemoria*, others extending beyond; as for Example: *Cancer* is much less than the 12th part or division of the *Zodiack* al-
 lotted to it. *Virgo* takes up some part of *Leo* and *Scorpio*. The Southern Fish is almost wholly in the *Dodecatemoria* of *Aqua-
 rius*: So that their unequal and different rising must needs beget an Error in the Computation of Time, and consequently
 the hour of Night cannot thereby be truly determin'd. Vide *Hipparch. in Arat. Phenomen. l. 2. & Marcianum Capellam l. 8. c. 24.*

(2) The hours as they are now distinguish'd are by some conceiv'd not to have been in use with the Antients; for certain it is, says *Casaubon*, (*Animadvers. in Athenæum*, l. 1. c. 1.) that neither in the time of Plato or Aristotle, nor many years after them, was the Word *ὥρα* in use among the Greeks, as we now take it: And therefore Pollux reckoning up the Parts, by which the Day and Night were distinguish'd by the Antients, makes no mention thereof. Of this Opinion likewise is *Salmasius* in *Plin. Exercitat. Tom. 1. p. 650.* with whom *Menagius* seems to comply in *Observat. ad Laertium*. l. 1. p. 44. The contrary, yet, (viz. that the Day was then by the Greeks divided into Parts Analogical to the hours in use with us,) with clearer Arguments being defended by *Petavius* in *Uranolog. Dissertat. l. 7. c. 8.* And the learned *Leq Allatius de Mensurâ Temporum Antiquorum*, c. 4. And that among the Jews and other Eastern Nations the division of the day into hours was very antient, if not Coæval with the first division of Time into Days, Weeks, Months or Years, *Kircher* (*in Oedip. Ægypti. Tom. 2. part. 2. p. 225.*) endeavours to demonstrate. Indeed as to the Romans, *Censorinus de Die Natal. c. 23.* plainly affirms that the Word *Hora* was not known among them until 300 Years after the Building of Rome: They dividing the day into two parts only, which they call'd *Ortum & Occasum*. Afterwards, as *Pliny* (l. 7. c. 60.) witnesses, the Noonstead was added, call'd *Meridies*, quod *Partes Diei, bifariam tunc divisi, discernebat*, says *Censorinus*. These Parts of the Day they call'd *Tempestates*; so in the 12 Tables, SOL OCCASUS SUPREMA TEMPESTAS ESTO. The Manner of signifying the time of day was by a Beadle or Cryer at the Command of the *Prætor* or *Consul*. *Pliny* describes it thus: *The Consuls Beadle or Cryer standing in the Court, when he beheld the Sun between the Rostra and the Grægoctasis pronounced it was Noon. But when the Sun inclined downward from the Column named Moenia to the Common Gall or Prison, then he gave warning of the last Quarter of the Day, and so pronounced.* Nor had they any other means to know how the Day went, until after the time of the first Punic War. Afterwards they divided the Day (and so the Night likewise) into 12 Parts, which they call'd hours, not equal, but varying according to the length or shortness of the Day in Summer or Winter, and therefore call'd *Καὶρὸν καὶ ὥρην* *sen Temporalis*. Which Division or Distinction of Time they receiv'd from the Greeks, who deriv'd it from the Egyptians, as they from the Babylonians, or Chaldeans according to *Herodotus*; The Egyptians giving to the several hours of the day these particular Names. To the first, *Lampé*; to the second, *Alexidi*; to the third, *Terpsitibi*; to the fourth, *Phenon*; to the fifth, *Erebe*; to the sixth, *Diaugei*; to the seventh, *Proka*; to the eighth, *Painphé*; to the ninth, *Loitia*; to the tenth, *Porphuré*; to the eleventh, *Pauphont*; to the twelfth, *Truphé*. Those of the Night had likewise their distinct Denominations; But *Salmasius*, who (*in Diatrib. de Antiq. Astrolog.*) gives us these, says, he could never meet with the other. The Chinese antiently, and from them the Turkish Astronomers, divide the *ἡμέραν*, or natural day into 12 equal parts, each part they call *Jagg*, answering to our *Biberia*, and to every *Jagg* they apply a particular name from some Creature;

	Chin.	Turk.	Chin.	Turk.	Chin.	Turk.
As, to the	1. Zeb	Cescu. Mur.	2. Iiu.	Tut. Bos.	3. Yem.	Pars. Pardus.
	4. Mau.	Tuskan. Lepus.	5. Iin.	Lui. Crocodilus.	6. Six.	Tilang. Serpens.
	7. Vou.	Junad. Equus.	8. Vi.	Kui. Ovis.	9. Shin.	Pijin. Simia.
	10. Iou.	Dakuk. Gallina.	11. Su.	Eit. Canis.	12. Chai.	Tungus. Porcus.

Every one of these *Jaggs* they divide into eight Parts which they call *Geb*, and may be term'd *Scrupula horaria*. Again, they divide every day into 10000 Particles, calling each Particle *Fenac*, which may be interpreted *Scrupula Diaria*. *Vid. Epoch. Celebr. Ulugh Beigh Edit. per Gravium. p. 6.* Of the Oeconomical Distribution of the 12 hours of the day among the Romans; see *Martial. lib. 4. Epigr. 8.* and the particular explication thereof in *Stuckius de Antiq. Conviv. (l. 1. c. 11.)* and in *Gallucci in Virgilian. Vindicat. (Æneid. l. 9. loc. 2.)* The Invention of Sun-Dials for distinguishing the hours was not known in Rome until the Time of the Tarentine War; of which see *Pliny* and *Censorinus*, as before cited. Among the Greeks it was earlier, being attributed by some to *Anaximenes*; by others, to *Phercydes* of *Syracuse*, of which *Laertius* in his life. *Bechartus* in *Geogr. Sacr. l. 1. c. 14.* makes the Invention much antienter from the Testimony of *Homer* (*Odyss. 6.*) With the Jews it was 200 Years before the time of *Phercydes*, as appears by King *Achaz* his Dial. The use of the *Clepsydra* or water-hour-glass was first invented by *Ctesibius* of *Alexandria*, who flourished in the time of *Ptolomæus Evergetes*; first brought into use among the Romans by *Scipio Nasica*, as *Vitruvius* l. 9. c. 9. The use of Clocks or Watches seems not to be very antient; there not appearing any mention thereof earlier than in these Verses of *Bato* the Comick Poet, cited in *Athenæus*, l. 4.

— ὥστε περιφύειν
ὡρελόγιον δὲ τῆς ὥρᾱς λήγουσαν.

— ut aliquis putet
Non Ampullam Te circumgestare, sed Horologium.

Which *Bato*, *Casaubon* reckons *inter vicias Komædiaz Poetas*, (though his Conjecture be severely reprehended by *Allatius* in his Work before cited) and believes that Citation to be the only instance that is to be found in any Monument of Antiquity touching that Subject.

(a) To this Purpose, *Emmianus*, l. 8.

Mortalem summum Fortuna repente
Reddidit e summo regno ut famulus infimus esset.

Apposite likewise is that of *Juvenal*, Satyr. 7.

Servis Regna dabant, Captivis Fata Triumphos.

And of *Seneca* (*Controvers. l. 1. c. 1.*) *Mutabilis est Casus; dederunt viciis Terga Victories; & quos provexit fortuna, destituit. Quid referam Mariam Sexto Consulatu Carthagine Mendicantem, Septimo Imperantem?*

(b) Troy's

(b) *Troy's Ashes* now to what a glorious State
 She reinspires? (c) *Greece* suffers *Asia's* Fate.
 'Twere tedious to recount the Ages past,
 How oft the Sun hath seen the World new cast.
 All Things by humane Laws created, change :
 Lands to each other known, in time grow strange :
 Nations in course of many Years, put on
 A various Face ; but Heaven wears always one ;
 Grows not by length of Days, nor wastes with Age,
 Always in Course, yet faints not in its Stage,
 (d) Will ever be the same, since such 'twas ever ;
 Other than 'tis our (e) Fathers saw it never,
 Nor shall our Nephews : 'tis a God, and knows ;
 Nothing of Change, which Age and Time impose.
 That the Sun ne'r starts to the North aside,
 Nor changing Course back to the East does ride,
 And to strange Lands a new-born Day disclose ;
 That the Moon always the same (f) changes shows,
 The Laws observ'd of her Increase and Wain,
 That Stars themselves from (g) falling still sustain,
 And run in measur'd Courses, seems to Sense
 No Work of Chance, but Act of Providence.

These Signs divided thus by equal space
 Heavens azure (b) Ceiling with Gold fret-work Grace,

Durability of the Heavens Seneca declares. *Quid Mutationis Periculo exceptum? Non Terra, non Cælum, &c. What is exempt from the danger of Change? Not the Earth, not Heaven, not the universal Context of all things guided by the Conduct of God himself? It shall not always hold this Order; A Day will come that shall throw it quite out of its Course.* Senec. Epistol. 71.

(f) Appositely Macrobius in *Sonn. Scip.* l. 1. c. 6. *Similibus Dispensationibus Hebdomadum, Luna sus luminis vices sempiternâ lege variando disponit, and Statius (Sylv. l. 3.)*

*Servit & Astrorum velox Chorus, & vaga servit
 Luna, nec injussæ toties redit Orbita Lunæ.*

These Changes of the Moon the Ancient Greeks call'd φάσες, and from them the Latines, *Phases*, five *Apparitiones*. The Names of the said *Phases* or *Appearances*, especially of the four most notable, are these. The first, (reckoning her increasing Changes) *μυωδης*, i. e. *Corniculata*, about 60 Degrees distant from the Sun. This *Phase* is by the *Turks* and *Arabs* call'd *Nalka*, because it resembles the Figure of a Horse-shoe. The second, *διχοτομος*, i. e. *Bifida*, seu *Dimidiata*, at 90 Degrees distance. The third, *αμφορευτος*, i. e. *Gibbosa*, five *Dimidio Orbe Major*, when distant 120 Degrees. And lastly, *πανσεληνος*, when full and in Opposition to the Sun, or 180 Degrees distant, from whence in a contrary Order are reckoned her decreasing Changes. *Vide Cleomed. l. 2. c. 3. Vitruvium, l. 9. c. 4. ibidemque Philandrum; Geminum c. 7. Amian. Marcellin. l. 20. Plin. l. 2. c. 14. Ricciolum Tom. 1. l. 4. c. 3.*

(g) Hence the Stars receive their Denomination. *Stelle à stando.* Servius ad 1. Georg. from the Authority of Varro. *Stelle cadere non possunt, quarum natura est ut stent semper, unde & Stelle vocantur:* and from him Isidor. l. 3. c. 70. *Stelle dicte à stando, quia fixæ stant in Cælo, nec cadunt.* And Martianus Capella l. 8. *Stelle à stando, Sidera à Confidendo.* *Vide etiam Cassiodorum de Astronomia.*

(b) *Cælum* (says Pliny, from the Testimony of Varro) *hæc dubie à Cælati Argumento diximus,* from the Variety and Ornament of the several Constellations, (in variis Cælum laqueantia formas, as Manilius expresses it) imbellishing the same, as Carving or Fret-work, some curious Roof or Cieling. Hence Turnebus, *Cælum ita vocatum alii censent, quod sit cælatum impressumque variis signis.* *Vide Turneb. in Varron. de L. L. & in Adversar. l. 20. c. 29.*

(b) Meaning the Roman State and People; which rose from the Ruines and Ashes of subverted Troy; which may be illustrated by this of Cyprian de Idol. vanitat. *Regna non merito accidunt, sed sorte variantur. Imperium ante tenuerunt & Assyrii & Medi & Persæ; Et Græcos & Egyptios regnasse cognovimus. Ita vicibus potestatum Romanis quoque ut & cæteris imperandi tempus obvenit.*

(c) The Romans bringing upon Greece the same Desolation, which that once brought upon Troy, one of the most flourishing Cities of Asia; To this place may not impertinently be applied that Epigram of the Emperour Adrian in the Greek Anthology, l. 1.

Εκτορ, ἀρχὸν αἶμα, κατὰ χθονὸς
 ἔπεσ' ἀκούεις,
 καίρε, καὶ ἀμπλόσσον βαυὼν ἱερὸν
 παῖδ' ἰδοῦ.

Ἠλίου οἰκείται, κληνὴ πόλις, ἀν-
 δρες ἔχουσα
 σὺ μὲν ἀφανεστέρας, ἀλλ' ἔτι
 ἀρχιφίλῃς.
 μυρμιδῶνες δ' ἀπόλοιτο· περὶ στα-
 σι, καὶ λέγ' Ἀχίλλεα
 θεοσαλίκην κείναι παῖσαν ὑπὸ
 Αἰνείδ' αἰς.

Hector thou Blood of Mars, if
 Words thine Eare
 Now in the Grave may reach, rise
 and appear!

See thy fam'd Troy's by a new Race
 posselt,
 Though not so stout as Thee, vali-
 ant at least;

Foyl'd are the Myrmidons; tell
 Achilles, These,
 Thessaly now stoopes to th' Aenei-
 des.

(d) The Opinion of Xenophanes (as before noted) and of Aristotle; defended by Averroes, borrowed from Ocellus Lucanus ἐπὶ τῷ παντός.

(e) Not unlike to this is that Argument in St. Peter, Epistol. 2. taken up by the Libertines of that Age, *Ex quo Patres dormierunt, Omnia sic permanent ab Initio Creationis.* But against this unchangeable

(i) So says Aristotle in *prima de Caelo*, c. 9. ὅτι οὐρανός, ὅτι τόπος, ὅτι κενόν, ὅτι χεῖρος, i. e. neque Corpus, neque Locus, neque Vacuum, neque Tempus. But the Stoicks determine otherwise, who though they allow not of any thing corporeal, yet admit of a certain vacuity. In which *separate Iuanity*, or *imaginary space* (as both Modern Philosophers and Divines call it) they fancy the World to suspend. Peremptorily asserted by Lipsius: *Cogitantur cuicunque* (says he) *aliquid vacui extra Mundum vel invito occurrat: quod etiam Philo Judaeus palam adstruit, & in Scripturis Abyssum dici contendit. Vid. Lips. Physilog. Stoic. l. 2. Dissertation. 9. Et Jo. Baptist. Port. in Pneumatic. l. 1. c. 3. Nec non Gassendus, Tom. 1. part. 2. p. 186. Videtur etiam Cleomed. Meteor. l. 1. c. 1. Inque illum Balforem. Et Oronem de Guericke de vacuo spatio, &c. l. 1. c. 35. & l. 2. c. 5; 6. &c.*

(k) In Allusion to that of Varro: *Mundus Domus est Maxima Omnium*; and of Cicero (in *secundo de Natura Deorum*) *Est enim Mundus quasi communis Deorum atque Hominum Domus*. Consonant to which is that of Tertullian: *Totus hic Mundus una omnium Domus est*; and of Minucius Felix (in *Octav.*) *Una Domus est Mundus hic Totus*. See likewise Lipsius, as before cited, *Dissertat. 7.*

(l) Known is that Demonstration of Archimedes in *Propos. 1.* That the Circumference of every Circle is greater than threetimes the Diameter thereof by a part less than $\frac{1}{10}$ th and greater than $\frac{1}{100}$ th. Hence Manilius cautiously advises of this small difference that is to be made in computing the proportions betwixt the Diameter and Perimeter of the Sphere. See the same Argument in Pliny, *l. 2. c. 23.* and in Macrobius in *Sonn. Scip. l. 1. c. 19.*

(m) Having described the Celestial Phenomena and the Dimension of the Universe, Manilius proceeds to the Description of the Celestial Circles; differing therein from the Method of Aratus; who places the Mundane Dimension in the last Place. But this Disposition (as Scaliger observes) is only Arbitrary. However he prefers the Method of our Authour before the other.

Bove which is⁽ⁱ⁾ Nothing; there the Worlds height ends,
Nor further Natures Publick^(k) House extends,
Which Seas imbraces and the Earths round Ball.

All These in mutual Courses rise and fall,
As the revolving Skies, here downward bend
Beneath th' Horizon, and there reascend.

Now to what Compass Heaven's extreamest Round
Is stretch'd; what Limits the bright Zodiack bound,
Reason will teach; to whom there's nothing hard,
From whom by space or Bulk nothing's debarr'd;
To her all stoop; She founds the Depths of Night,
And Heaven it self is pervious to her Sight.

The Dimensions of the Universe.

How far the Stars are 'bove the Earth and Main,
So great the space is, which two Signs contain,
And if the Worlds^(l) Diameter you take,
That, with small Difference, will a third Part make
Of its Circumference; Four Signs then, (so far)
Heavens Zenith and its Nadir distant are;

And twice four added its whole Round compleat.
But since i'th' midst Earth hath its Pendant Seat,
'Tis two Signs distant from Heaven's Depth or Height.
Thus All which 'bove the Earth is reach'd by Sight,
Or underneath, by that unseen, extends,
Each way the space of two Signs comprehends:
And six times that measures the Circle, where
Twelve Constellations equal Mansions share.

Nor wonder that the self same Signs create
Uncertain Births mix'd with much different Fate;
Since Each six rising with their Lights entire,
So great a space, and so long time require.

It rests, We now th' Ætherial^(m) Bounds design,
The Circles which the parted Heavens confine,

Of the Heavenly Circles.

And

The Arctick
Polar Cir-
cle.

And of the Stars the splendid Order steer.

(n) One tow'rd the North sustains the shining Bear,
And from the Pole (o) six Parts of Heaven retires,

The Sum-
mer Tro-
pick, or
Tropick of
Cancer.

The other touching (p) Cancer's utmost Fires,
(Where Phæbus consummates his Light and stay,
Bearing through (q) tedious Rounds the tardy Day)
Does from the Season, and (r) Mid-Summers heat
Derive its Name; and to the Sun's Race set
Th'extreamest Bound: which (s) five Parts of the whole
Declines the Circle of the Northern Pole.

(n) Whence call'd the Arctick Circle ἀρκτικός i. e. ab arctā, (one of the Constellations so named) being totally compriz'd within it.) It is likewise call'd Septentrionalis & Borealis, from its Situation, and contains within it the Northern Frigid Zone, and terminates the Temperate. It is doubly to be considered, either according to the Modern, or Antient Hypothesis; According to the Moderns, It is a lesser Circle Parallel to the Equator, passing about the Axis of the World by the Northern Pole of the Ecliptick: According to the Antient it is described a Circle passing about the Axis of the World, by the Intersection of the Horizon and Meridian, of an Indefinite Magnitude, in respect to the several Situations of

divers Regions more or less Northerly posited, of which Chalcidius (in Timæum Platonis) Circuli vicini Polaris, i. e. Septentrionalis & huic diversus Antarcticus neque Magnitudine neque Positione solidati sunt; sed pro differentia Regionum Aquilonanae itemque Australis, apud quosdam Majores, apud alios Minores putantur. See Scaliger upon this Place, Geminus, and upon him Petavius in Uranolog. Gassendus, Tom. 1. l. 3. p. 591. Pinciernus in Parerg. Otii Marp. l. 2. c. 13. and Grotius in Arati Phenomen.

(a) The Antient Greeks divided the Sphere into sixty Parts (whereof one was equal to six of the Common Division of 360 Degrees) This manner of Division our Authour (as following Eudoxus and Hipparchus) here makes use of, though hereafter in describing the Zodiack he takes up the Common way of dividing a Sphere or Circle into 360 Parts or Degrees; which shews the same to have been also usual with the Antients at least about his Time. According to the first Division our Authour here makes the Arctick Polar Circle to be distant from the Pole six of those sixty Parts, making thirty six Degrees according to the later Division; which yet cannot be understood of the Roman Horizon, wherein Manilius then wrote; but is to be applyed to that of Cnidus or Rhodes, according to the Doctrine of Eudoxus and Hipparchus, whom Manilius here follows, as is rightly observ'd by Scaliger upon this Place, and Gassendus, as before cited. And generally the rest of the Greeks gave the like Situation of this Circle in the Athenian Horizon, and by a Catachresis, universally in any other Part of Greece. This being here premis'd and observ'd, the Reader will the better understand the following Measures and Descriptions which our Authour uses in the position of the Cœlestial Circles.

(p) That is the Tropick of Cancer. The Tropicks being so call'd from the Word τροπή, which signifies Conversion or turning; because the Sun, when it comes at those Circles, turns back to the Equator again, nor ever goes beyond those Bounds either to the North or South. Hence the Egyptians, as is noted by Clemens Alexandrinus (l. 5. Stromat.) Hieroglyphically decyphered the Tropicks under the Figure of two Dogs, as if they were Guards deputed by Nature to keep in and restrain the Sun from running beyond his Bounds. The first among the Greeks, who found out these Tropicks, is said to be Thales, the Milesian, of which he wrote a particular Treatise according to the Testimony of Eudemus, cited by Laertius.

(q) Not unlike is that of Nemesianus,

Postquam Phæbus candentem fervidus Axem
Contigerit; tardasque vias, Cancricque Morantis
Sidus ineft

Where Ulpian gives the Reason of that Epithete Morantis, quia Incrementa Dierum tardè adeo consummantur & diminuantur, ut vix percipi possit, & quasi sistatur Sol; whence the Solstice. The Explication whereof cannot be better given than in the Words of Julius Scaliger in Problemat. Gellian. Is Circulus quem Sol quotidie signat, non est Circulus, sed magis quedam Spira. Neque enim Revolutionis finis, eodem committitur, unde initium habuerat: Major enim Distantia est à puncto, unde digressus est, ad punctum ad quem Hora 24 cum perduxere, ubi propior sit iis signis quæ propius ad Equinoctium accedunt, propter obliquitatem. Itaque cum tendit ad Solstitia propter lineæ prope rectitudinem, vix variat, ideo Solstitia dicta. That Circle which the Sun by its daily Motion describes, is not a Circle, but rather a Spiral Line. For the end of its Revolution is not terminated in the point, whence it began. Its Distance from that Point whence he digrest, unto that to which he is brought by the Revolution of 24 houres, being greater when he is nearer those Signs which are nighest to the Equinoctial by reason of the Obliquity of his Course. But when he approaches the Solstitial Points by reason of the almost directness of the said Line, there appears no variation of his Course, whence it is call'd the Solstice.

(r) This Tropick is call'd τροπικός θερινός, i. e. Tropicus Æstivus, from the Heat of Summer, which We in the Northern Hemisphere enjoy, when the Sun is near that Circle. It is describ'd a lesser Circle Parallel to the Equator, whose distance from thence is equal to the Sun's greatest Declination or the Obliquity of the Zodiack, which it touches in the first point of Cancer. Its Office is on one side to terminate the Torrid Zone; on the other, the Northern Temperate one, and to make the Summer Solstice and longest day Northward, and the Winter Solstice, or shortest Day Southward.

(s) That is 30 Degrees according to the usual and received Division; see the like Distribution; as to the Distances of these Parallel Circles, in Geminus conform to this of Manilius, εἰς πέντε τοὺς φαινόμεν. p. 19.

(^t) This Circle is call'd by The(^t) Third, which the Worlds middle Region holds, *The Equator or Equinoctial Circle.*
 the Greeks *ἰσημερινός*, by the Latines, *Æquidialis*, *Æquinoctialis*, *Æquator* and *Cingulum Mundi*; Mariners commonly call it the Line: It is one of the greater Circles of the Sphere, whose Poles are the same with the Poles of the World, from either of which it is equally distant, dividing the Cæstial Globe into the Northern and Southern Hemisphere. It is describ'd, according to *Clavius* (in *Sacrobosc.*) by an Imaginary Line drawn from the Center of the World and extended to the first Point either of Aries or Libra, and thence carried about by the Diurnal Revolution of the Primum Mobile. In this the Sun being posited (which happens twice every Year, when he enters the first Degrees of Aries and Libra) it makes the Days and Nights even.

(ⁿ) That is four Parts of 60, according to the Antient Division, or 24 of 360 according to the later and commonly received.

(^x) This is called the Tropick of Capricorn, and is describ'd a smaller Circle Parallel to the Equator, whose Distance from thence is equal to the Sun's greatest Declination, and touches the Ecliptick in the first Point of Capricorn; on one side bounding the Torrid Southern Zone; on the other, the Southern Temperate one; making the Winter Solstice or shortest Day Northward, and the Summer Solstice and longest Day Southward.

(^y) For this reason says *Macrobius* (*Saturnal. l. 1. c. 21.*) the Egyptians represented the Statue of the Sun with his Head shaven on one side, and long Hair on the other. By the first intimating the time of the Winter Solstice, *cum velut abrafis Incrementis, angustâ manente Extasiâ, ad Minimum Diei Sol pervenerit Spatium.* By the later, the Summer Solstice, or his full grown Splendour, to which he arrives by Degrees, emerging from those straits of Light in his abode in this Winter Tropick: or to express it in *Macrobius* his own Words, *Ex quibus latebris vel Angustis, rursus emergens, ad æstivum Hemisphaerium nascens, in Augusta porrigitur.*

(^z) Of this We have given the reason and explication, in the Note upon the Tropick of Cancer, and shall here only add, that the Antient Egyptians when they would express the Course of the Sun in his Solstice, signified the same by the Hieroglyphick of two feet fastned together; (as represented by *Pierius, l. 5. c. 41.* and *Casalius de Veter. Egypt. rit. c. 20.*) Intimating thereby the slowness of his Motion, or rather Stationary Condition, to which I know not whether our Authour in this place may allude, when he says,

Vixque dies transit —

As if the feet of the Day were fetter'd.

(^f) The Antartick or Southern Polar Circle; which is describ'd a smaller Circle, Parallel to the Equator, passing about the Axis of the World by the Southern Pole of the Ecliptick, comprehending the frigid Southern Zone, and terminating the temperate; and is call'd the Antartick Polar Circle, in opposition to the Artick, before describ'd, to which it is equal.

And

And by ^(b) five Bounds distinguish'd into ^(c) Climes,
Marks out the Difference of Place and Times.
Which (Parallels) One Course with Heaven partake,
And equal Rise with that and Setting make,
Since in th' Æthereal Texture they observe
Their stated Distance, and thence never swerve.
Passing a-cross by either Pole ^(d) two more
There are, which intersect all Those before,
And themselves too; concurring in th' Extreame
Of the Worlds *Axis* at right-angled Scheams,
Which mark the Seasons out, and Heaven beside
Into four Quarters equally divide.

*Column
Equino-
diorum.*

Of these, through highest Heaven its Course ^(e) one steers
Parting the Serpents Tail and undrench'd Bears,
And Tips of *Scorpio's* Claws, born through Mid-skies,
• Of *Hydra* cutting the Extremities
And Middle of the Southern *Centaur*, then
Concurring in the Adverse Pole, agen
• Returns by the huge Whale: whose Scaly Chine,
Bright *Trigon*, and the Bounds the Ram confine
It marks; then by *Cepheus* Waste doth run,
Her Mothers Head, and ends where it begun.
By th' midst of this, the Worlds Extremities,
And the Fore-feet and Neck of Helice,
(Which first of all when *Sol* withdraws his Light
With seven fair Stars illuminates the Night)

*Column
Solstitio-
rum.*

longest day there exceeding the ordinary Horary Measure, unless by a kind of Analogy We reckon Moneths and half Moneths for hours and half hours. Those Climates are again by the Moderns subdivided by drawing in the Middle of each Climate another Parallel Line, dividing the same into two smaller Zones, which by a Peculiar name are term'd *Parallels*: Of which, the more remote from the *Æquator* hath the longest Day of the Year differing from that nearer to it by the space of $\frac{1}{4}$ of an hour. These are in number double to the Climates. *Vide Weigel. Method. Spheric. l. 1. Sect. 1. Cap. 3.*

(d) These are the *Columni*, which are two great Circles, cutting each other at right Angles in the Poles of the World. Whereof one passes by the *Equinoctial*, the other by the *Solstitial* Points of the *Zodiack*. They are call'd *Κόλμοι*, i. e. *Mutuli*, because in our oblique Position of Sphere, they never entirely appear above the Horizon, either at once or by Successive Conversion.

(e) The *Columnus Æquinoctiorum* is describ'd a great Circle of the Sphere, passing by the Poles of the World, and cutting the *Æquator* at right Angles in the two *Equinoctial* Points or first Degrees of *Aries* and *Libra*, whose Poles are in the first Points of *Cancer* and *Capricorn*, or otherwise whose Poles are 90 Degrees distant from the first Points of *Aries* and *Libra*.

(b) The four Parallel lesser Circles before described, that is to say, the two Tropicks, and two Polar Circles, mark out the Heavens into five Zones, which by the Latines are call'd *Fascie*, *Cinguli*, *Plaça*; and by Cicero, *Macula* and *Ora*. That included between the two Tropicks, is call'd the Torrid Zone, which *Polybius* divided into two, parted by the *Æquator*; but he is not followed therein by any. The two included between the Tropicks and the Polar Circles, are call'd the temperate; the other two included within the Polar Circles, are call'd the Frigid Zones. Of these *Thales* is said to have been the Inventor, though *Pofidonius* cited by *Strabo* without ground ascribes it to *Parmenides*.

(c) The Distinction of the Zones not sufficing the Antients to mark out the various Position and Situation of several Regions on either side of the *Æquator*; They added divers other Parallel Circles, which they call'd *Climates*. A Climate being a little Zone included between two Circles, parallel to the *Æquator*, or between the *Æquator* and one Circle parallel thereunto, mutually distant from one another by the Arch of a Meridian, answerable to an half hours difference, by which the longest day of the Year under one Parallel varies from the longest Day of the Year under another. They are call'd *Climata*, *quasi Inclinationes*, as it were deflexions from a right Position of Sphere, or so many steps and degrees, mounting from the *Æquator* towards the Poles. The Antients reckon'd only seven, which they distinguish'd by the Names of the Places over of through which they pass'd: *Viz. διὰ Μεσσηνίας, διὰ Συρίας, &c.* i. e. *Per Meroen. per Syenen. per Alexandriam, per Rhodum, per Romam, per Pontum, per Brittaniam.* But Modern Astronomers and Geographers reckon 48. that is to say, from the *Æquator* on each side, to either of the Polar Circles 24. At which the Climates end; the

N

The

(f) The *Colurus Solstitialium* is a great Circle, passing by the Poles of the World and Poles of the Zodiac, cutting both the *Æquator* and *Ecliptick* at right Angles in the Solstitial Points or first Degrees of *Cancer* and *Capricorn*, and hath its proper Poles in the first Degrees of *Aries* and *Libra*. To these two Circles are to be applyed this Vulgar Distich:

*Hec duo Solstitium faciunt Cancer, Capricornus,
Sed Noties æquant Aries & Libra Diebus.*

(g) The Meridian Circle, by the *Greeks* call'd *Μεσημβριος*, by the *Latines*, *Meridianus*, and by *Astronomers* *Linea Medii Cæli*, and *Medii Diei*, *Cuspis Regalis*, *Cardo Regius*, and *Medium Cæli*. It is describ'd a great Circle, passing by the Poles of the World, and the Zenith and Nadir Points, and hath its proper Poles in the *Æquinoctial* Points of East and West, though *Scaliger* upon this place (defended therein by the Learned Mr. *Isaac Vossius* Not. in *Melam.*) will have the Poles of every Meridian to be the Poles of the World. It is call'd Meridian, because when the Center of the Sun reaches it, it is Noon or Mid-day, to all such as are directly under that Circle, when the Sun is above the Horizon.

(h) The Reason thus rendred by *Macrobius* in *Som. Scip. l. i. c. 15.* *Quia Globosius Terra Habitationes omnium æquales sibi esse non possunt; non eadem Pars Cæli omnium verticem despicit. Et ideo unus omnibus Meridianus esse non poterit: sed singulis Gentibus super verticem suum proprius Meridianus efficitur:* and therefore the Meridian is distinguished into the General and Particular; the General being one and always the same; the Particular, on the contrary, mutable and diverse, according to the change and diversity of Place, either Eastward or Westward, and may be imagined as numerous as there are vertical Points. Vide *Bartschium* in *Planisphæ. Stellar. c. 2.*

(i) *Stoefler* in his Commentary upon *Proclus*, conceives that *Manilius* here by the Golden Orb, means the Meridian Circle, and imagines it to deserve that Title, because the Island *Taprobana*, being as he says, in *Meridiem exposita*, is famous for its plenty of Gold and Silver. A ridiculous Interpretation; for *aureus Orbis* is not to be understood of the Meridian Circle; but of the Globe of the Sun, coming to and pressing upon the Meridian.

(k) This Place hath exercis'd and foil'd the Wits of the greatest Criticks; the Verse in the *Latine* is this,

Nos primam, & summam sextam numeramus utramque.

Scaliger interpreting *Primam & summam* for one and the same hour; *quia summâ horâ Noctis* (i. e. *duodecima* says he) *confecta, incipit prima diei*, as the *Athenians* us'd to term the last day of the Month *ἔστω νέαν*, *The Old and the New*. But this is far from the sense of *Manilius*. *Gassendus* endeavouring to mend the matter, instead of *primam & summam*, conceives it ought to be read *Imam & Summam*, *ob perspicuum inter Imam & Summam Antithesin* (says he,) by *Imam* understanding the Hour of Mid-night, by *Summam* that of Mid-day; but this is yet wide from the Mark. *Salmassius* undertaking to put a better sense upon the words than the former, is himself gravel'd; for thus he expounds this and the 3 foregoing Verses. *Cum Sol oritur Romanis, &c.* when the Sun (says he) rises at Rome, it is their first Hour of the Day, but to the *Indians* their sixth, or Noon; and again when it is Noon to the Romans, it is Sun-set to the *Indians* or their last Hour of the Day; so either of these Hours, viz. the first and the last (says he) by reason of the Diversity of Meridians is reckon'd for the sixth hour; which Interpretation reaches not the meaning of *Manilius*; being justly reprov'd by *Petavius*, in *Uranolog. l. 7.* who thus expounds both this and the three foregoing Verses. *Sciendum est* (says he) *Manilius*, *Tractum illum terrarum & ὀρνέων, ubi tum degebat, in medio ponere, & quæ utrinque distant ab eo loci gradibus longitudinis 90, cum Habitatione suâ conferre. Quia ad Ortum fissi sunt Eos appellare, qui ad Occasum, Hesperios, &c.* Hence he infers, when the Sun seems to rise at Rome, it is in the Meridian of those that are posited 90 Degrees Eastward from thence; and again, when the Sun at Rome seems to set, it makes the like sixth Hour or Noon to those so posited Westward: Either of which sixth Hours or Noons refers to those Eastward or Westward, they at Rome count not their sixth Hour, but name the one, the first, the other, the last Hour of their Day. This Exposition of *Petavius* (whereunto our Interpretation is consonant) speaks the genuine sense of the words, which I held my self oblig'd thus to clear, lest the Authority of the other great Persons might be objected against us, or impose upon the Reader.

When

The (f) other runs; the Crab and Twins divides,
By the fierce Dog and *Argo's* steerage glides;
Then cross the formers travers'd Signs is born
By the South Pole; Thee touching *Capricorn*!
Parting the Eagle from its Starry Fires
By the Lyre running, and the Dragons Spires;
Then cuts the less Bears Tayl and hinder Feet,
And makes its End with its Beginning meet.

The Seasons thus have fixt within these Rounds,
Their Everlasting Seats and changeless Bounds.

These two are moveable: Whereof one Bend
Does through Mid-Heaven from (g) *Helice* ascend,
The Day distinguishes, the sixth Hour tries,
And at just distance East and West descries,
Changing the Signs by turns, still as we run,
Or tow'rd the rising or the setting Sun,

Cutting Heavens hight ith' midst; and with Earth's Place,
Varies the Skies Position, and Times Race.

(b) All have not one Meridian; th' Hours fly round:
When first we see *Sol* rise from th' Eastern Sound,
'Tis their sixth Hour by his (i) gold Orb then prest;
Such theirs, when he to us sets in the West.

These two (k) sixth Hours we count our first, and last,

The Meridian.

When from th' Extreams of Light ⁽¹⁾ chill Beams are cast.

The Hor-
izon.

The ^(m) others Bound if thou desir'st to know,
Look round about far as thy sight will go, (close,
What e're Earths Surface with Heavens Verge doth
And the divided Hemispheres compose;
Couches in Seas the Stars and thence doth send;
Rounding the travers'd Earth with a slight Bend;
That, shifting Place about the World still flies,
Now more and more unto the South applies,
Now to the North again as much inclines,
Now runs against, now with the ⁽ⁿ⁾ moved Signs.
But wherefoe're its wandring Course it steers,
As now to this, then to that Part it bears,
It changes still; a new Arch always making;
For leaving now this Heav'n, then that forsaking,
One half 'twill still disclose, or hide, and sign
With varying Limits which the Sight confine.
This is terrestrial, 'cause the Earth it rounds,
And call'd Horizon, 'cause the sight it bounds.

To these two others add, obliquely born,

The Zodi-
ack.

Whereof the ^(o) one twelve radiant Signs adorn,
Through which the Sun runs his Career of Light,
And the Moon follows in her Coach of Night,
And five Stars more 'gainst Heavens swift Course ad-
Their ^(p) oppositely Nature-guided Dance. (vance

(1) By Reason of the obliquity and depression of the Suns light at Morning and Evening, the Air likewise being then coolest in regard of the chill Breezes usually stirring. Hence the Evening in Genesis 3. ver. 8. is call'd *Rush*, i. e. *spiritus seu ventus Diei*; and what by the *Septuagint* is there rendred *το δ' ἄλινον*, or the Evening, is by others rendred *το πνεύματι*, and *το ἀνέμω τ' ἡμέρας*, i. e. *ad spiritum seu ventum Diei*. Vide *Salmasii in Epictet. et Simplic. p. 125*.

(m) This Circle is call'd Horizon, from the Greek *ὁρίζων* coming from the Verb *ὁρίζουμαι*, which signifies to bound, or terminate, for which reason it is by the Latines called *Finis* and *Finis*, because it bounds the sight. It is divided into the Rational (which is likewise call'd the Natural and Astronomical) and the Sensible (which is likewise call'd the Physical, Apparent and Artificial:) the Rational Horizon is describ'd a great Circle of the Sphere, whose Poles are the Zenith and Nadir Points, (though Scaliger with the approbation of Mr. Isaac Vossius makes the Poles of every Horizon to be as well the Equinoctial Points of East and West) dividing the Globe equally into the upper and lower Hemisphere. The Sensible Horizon is describ'd a smaller Circle, parallel to the Rational, dividing the Sphere into two unequal Segments, of which the uppermost is the least. This though in respect to any one particular place, it be immoveable, yet generally it is to be conceiv'd mutable, forasmuch as when we change any Place upon the Earth, we likewise change the Horizon.

(n) The Latine hath — *Mota sub Astra*. Which *Salmasius* (in *Plin. Exercitat. p. 661*) Criticizing upon this Place, will needs read *mota sub Astra*. Interpreting *mota Astra* *το ἀφανή*, i. e. *not apparent*; and by those words conceives our Authour implies the Antartick Pole, to us invilible. But as *Petavius* says, *mi-*

sum esse præstat, quam talia dicere; for *Manilius* by — *Mota sub Astra*, means only the shifting of the Horizon East or West, either against or with the Course of the Stars, as *Petavius* rightly expounds those Words. *Per Mota Astra* (says he) *Orientem atque Occidentem breviter eleganterque designat Manilius. Vide illum, Uranolog. l. 7. c. 14.*

(o) That is the Zodiack; by *Ptolomy* call'd *κύκλος τῶν ζωδίων*, i. e. *Circulus Animalium*; because parted into 12. Signs, resembling men and other living Creatures. The Jewish Astronomers give it several other Denominations, as *Gagal Hammazaloth*, i. e. *Orbis Signorum*, and *Ighul Hammazaloth*, i. e. *Circulus Signorum*, and *Ophyn Hammazaloth*, i. e. *Rota Signorum*, and *Ezer Hammazaloth*, i. e. *Zona Signorum*. The Syrians call it *Chudronûtho de Malsûshe*, i. e. *Circulus Signorum*, and the Arabs *Phelek Al Burugi*, i. e. *Orbis Signorum*. By the Latines it is call'd *Signifer*, and by the Greeks *Συμφορῶδες*, and is describ'd a Circle or rather a Fascia or Zone obliquely passing from East to West by the Equinoctial and Solstitial Points, parted in the midt by the Ecliptick, which divides it into two Parts, the one Northern the other Southern, which are terminated by the Circumferences of two imaginary Circles less than one of the great Ones, distant so far from the Ecliptick, as is the greatest Latitude of any Planet from thence. The Invention of this Circle is by some ascrib'd to *Pythagoras*, by others, to *Oenopides* the Chian, by some again, to *Anaximander* the Milesian. Vide *Plutarch. de Placit. Philosoph. & Plin. l. 2. c. 8.*

(p) Meaning the Primary and proper Motion of the Planets from the West to East; for their Secondary or Diurnal Motion from East to West is not their own, but that of the *Primum Mobile*, by which they are violently carried about contrary to their own Course. Which double Motion of the Planets is elegantly thus describ'd by *Germanicus in Arateis*:

*Omibus his gemini Motus, quorum alter ab ipsis
Nascitur, & proprios ostendit sydere Nisus,
(Tunc Mundum subeunt lento pede) concitus Alter
Invitos rapit, & Calci circumrotat Orbem.*

All these have double Motions; one their own,
By which their proper Tendency is shown,
That's a slow March; th' other's swift, and bears
Them running Counter, back with the rapt Spheres.

(q) Though our Authour here speaking Poetically, make the Zodiac a visible Circle, because the 12 Signs moving in it are visible; yet properly speaking as it is taken for a *Fascia* or Zone, it is but λόγος Σειρήν, perceivable only by Reason. And therefore *Geminus in Itaq.* says rightly, that of all the Circles in the Heavens, only the *via Lactea* is perceivable by sense, the rest being no otherwise discernible than by the Eye of Reason.

(r) Hence by the Arabs call'd *A' Mintaca* and *Nitac*, i. e. *Baltheus*; and by the Jewish Astrologers, *Cheshb Eph' dath Haggalgal*, i. e. *Opus Phrygianum*; or *Limbus Textilis*, according to *Scaliger*. Why this Circle above any of the rest is call'd *Baltheus seu Cingulum* (from the like denomination of Ζώνη and ζώνη given to it by the Greeks) take from *Uliius in Nemes.* p. 341. *Ideo veteres Zodiacum Baltheum dixerunt Astrologi, quia obliquus Meridianum secat.* And before him *Balsoreus (in Libr. 1. Cleomed.)* *Zodiacus Appellatum Balthei, (quem etiamnum hodie transversum gestimus) apud Manilium meruit. Et omnino hac forma Balthei, à dextro humero ad laevum sinistrum per medium Corpus oblique ducti, Zodiaci Sicutum optime exprimit.*

(s) *Sacroboscus (says Ricciolus Tom. 1. l. 1. p. 19. in Schol.)* and *Clavius* upon him, give to the Zodiac 12 Degrees of Latitude, because for the most part the Planets recede not from the Ecliptick above 6 Degrees on either side. But *Regiomontanus* extends the Latitude thereof to 16. others otherwise. For *Kepler* gives 7 Degrees of Northern Latitude to *Mars*; to *Venus* in her greatest Evagation 10, or according to *Argol (Pandof. Spher. c. 29)* 9. — 3'. So that the Total Latitude of the Zodiac according to Modern Observation is extended to no less than 20 Degrees.

(t) The *Galaxie*, or *Milky way*, by the Greeks call'd γαλαξία and κύκλος γαλακτικός, by the Latines *Circulus lacteus*, and *Orbis lacteus*. By the Arabs according to *Scaliger*, *Tarick Al lubbana*, i. e. *Via lactea*; according to *Kirker*, *Almegires* or rather *Magierra*, i. e. *Trachitrix*, and *Tarick Al Tibn*, i. e. *Via straminis*; and to the same sense by the *Æthiopians*, *Chasara's Saman-gadu*. (Is according to the *Ægyptian* Fable in her flight from *Typhon* scattering bundles of fired straw to retard his pursuit, whence the Original of that Name) In *Syriack* it is called *Shevil Téno*; by the *Persians*, *Rab Kabkeshân*, i. e. *Via Paleamtrabens*; the *Turks* call it *Samân Ugbrisi*, i. e. *Paleam rapiens*. In the *Coptick* Tongue it is called *Pinôiren Tépioc*, i. e. *Via straminis*; others call it *Viam Romæ*, and *Viam Sancti Jacobi*. The *Turks*, *Hâgjiler Tuli*, i. e. *Via festum Agentium*, or the way of Pilgrims to *Mechæ*; by the *Ægyptian* Astrologers call'd *Porta Mansionum Lunæ*. It is a great Circle having for Center the Center of the World, or rather an oblique Conspicuous Zone, of a different Breadth or Latitude, being no where broader than 10 Degrees, and in some places not exceeding 6 or 7. in some stretching to 8 or 9. Where its Course is not divided. From this Circle, as *Pliny (l. 18. c. 29.)* reports, the Antients believ'd all Plants received their Milky Juice or Nourishment; and hence perhaps is that Arabick Name of *Um Al Sam*, i. e. *Mater Cali*, (quasi ejus lactatrix) Nor less famous for the strange Productions, which Modern Experience hath observed therein; it being found the Store-house from whence have issued all the new *Phænomena's* that have hapned either in this or the precedent Age.

On whose Top *Cancer*, Base the Goat resides,
Twice through th' *Æquator* runs it, twice divides
At *Libra* and the Ram; whose sloping Bend
Obliquely by three Circles does extend;
Not hid; nor, as the rest (discern'd alone
By mental view) ^(q) to mental view is shown;
But shines a glittering ^(r) Belt with bright Stars grac'd,
And girdles with its golden Fires Heavens Waste.
Degrees three hundred and thrice twenty counts
Its Circles Round; its Breadth to ^(s) twelve amounts:
Within which measur'd Limits is confin'd
The Planet's Motion, variously inclin'd.
The ^(t) other, carried tow'rd the oppos'd Bears
Its Course close by the Artick Circle steers,
And by inverted *Cassiopea* tends;
Thence by the Swan obliquely it descends
The Summer Tropick, and *Jove's* Bird divides,
Then cross th' *Æquator* and the Zodiac glides
'Twixt *Scorpio's* burning Tail, and the left Part
Of *Sagittarius*, near the fiery Dart;
Then by the other *Centaure's* Legs and Feet
Winding, remounts the Skies (again to meet)
By *Argo's* Topsail and Heaven's middle Sphere,
Passing the Twins t' o'rtake the Charioteer;
Thence *Cassiopea* seeking Thee does run,
O're *Perseus* Head, and ends where it begun.
Three middle Circles and the Zodiac too
Twice passing, and by that as oft past through.

Galaxie or
the Milky
Way.

Nor

Nor needs it to be fought ; its obvious Course
It self illustrates, and the fight doth force ;
For in the azure skies its candid Way
Shines like the dawning Morn, or closing Day ;
And as by often passing o're some Green,
An even Path, parting the Mead, is seen ;
Or as a Ship plowing the Seas smooth Plain,
Of foaming Bubbles leaves a silver Train :
So shines its milky Path in the dark Night,
Parting the blew Skies with its numerous Light.
And as through Clouds the Rainbow does extend,
So on *Olympus* Height shows its white Bend,
And Mortals fills with Wonder, whilst they spy
New Lights unknown Flames darting through the sky.
The sacred Causes humane Breasts enquire,

Various Opinions concerning the Galaxy.

Whether the Heavenly ^(*) Segments there retire
(The whole Mass shrinking) and the parting Frame
Through cleaving Chinks admits the stranger flame ?
Astonishment must sure their Senses reach
To see the Worlds wounds, and Heavens gaping breach!
Or meets Heaven here ? and this white cloud appears
^(*) The Cement of the close-wedg'd Hemispheres ?
Or seems that old Opinion of more sway
That the Sun's ^(y) Horses here once ran astray,
And a new Path mark'd in their straggling flight
Of scorched Skies, and Stars adusted Light,
Changing to paler white Heavens azure Face,
And with the burnt Worlds Ashes strew'd the Place ?
Fame likewise from old Time to us succeeds
How ^(z) *Phaëton* driving his Fathers Steeds
Through radiant Signs, and with a wounding Eye
Viewing th' approached Beauties of the Sky,

(*) The Opinion of *Diodorus*, who conceiv'd the *via lactea* to be a Coelestial fire, of a dense and compacted Nature, shewing it self through the Clefts of the flaring and dividing Hemispheres, as *Macrobius* in *Sonn. Scip.* (l. 1. c. 15.) expresses it, *Ignem densata concretæque nature, in unam curvi Limitis Semitam Discretionem Mundana fabrica coacervante concretum.* Hence says *Gassendus* we may observe *Genium Stoicæ Providentiæ.* They calculating the Destruction of the World to commence from the Breach or loosening of the Commissures of the closed Globe. To which doubtless *Manilius* here alludes. *Vide Gassend. Tom. 1. l. 1. p. 506, 507.*

(*) The fancy of *Theophrastus*, that great Philosopher, who declar'd the *Galaxie* to be no other than the soldering and knitting together of the Hemispheres. So *Macrobius* delivers it, *Lactem dixit esse Compagem, quâ de duobus Hemisphaeriis Cæli Sphæra solidata est ; & ubi Ora convenerint notabilem Claritatem videri.* *Vide illum loco citat.*

(y) *Oenopides Chius* (according to *Achilles Tatius* in *Arat. Phenomen.*) affirmed that this Circle was antiently the Course of the Sun ; till frighted from that Tract by *Thyestes* his bloody Banquet, he chose this he now holds in the *Zodiac*, but left behind him the Impression of his former Course. Of

which ridiculous Opinion was likewise *Metrodorus*, and some other *Pythagoreans*, whence *Plutarch* in *Plat. Philosoph.* l. 3. c. 1.

(z.) See *Ovid Metamorphos.* l. 2. and *Plutarch loco citat.*

O

(Whilst

(Whilst in his Chariot proud he childlike plays,
 And things yet greater than his Sire essays)
 Left the known Path, and a rough Tract imprest
 In the smooth Skies, whilst wand'ring Flames infest
 Th' affrighted Signs, not brooking the loose Course
 Of th' erring Chariot and ill-guided Horse.
 Hence the whole World became a fiery spoyl,
 And burning Cities made Earths funeral Pile ;
 When from the hurried Chariot Lightning fled,
 And scattered Blazes all the Skies o'respred ;
 By whose approach new Stars enkindled were,
 Which still as Marks of that sad Chance appear.
 Nor must that gentler Rumour be suppress'd,

(a) Eratosthenes as cited by Achilles Tatius in *Arati Phenomen.* is reputed the Father of this Fable, in his Book entituled *καταμερσις*, i. e. *Partitio* (or rather *καταμερισμοί*, i. e. *Asterismi*) which is by Achilles Tatius thus related. τὸ γὰρ Ἡρακλῆος ἐπὶ βρέφους ὄντος, &c. Hercules being an Infant sucking at Juno's breast, and too hardly pressing the Nipple, she suddenly withdrew it, and spilt the milk, which form'd this Circle in the Heavens. The like (says he) is reported by the same Eratosthenes of Mercury's sucking Juno.

How ^(a) Milk once flowing from fair Juno's Breast,
 Stain'd the Coelestial Pavement ; from whence came
 This Milky Path, its Cause shown in its Name.

Or is't a ^(b) Crowd of Stars crowning the Night?
 A candid Diadem of condens'd Light ?

Or ^(c) valiant Souls freed from corporeal Giv's
 Thither repair and lead Æthereal Lives ?

There the ^(d) Atrides, there th' Æacides,

Fierce ^(f) Diomede ; He, who through Lands and Seas

(b) This is the true Cause of the *Galaxie* ; which long since by Conjecture and probable Reason was asserted by Democritus, as Plutarch (in *Placitis Philosoph.*) attests. But since the Invention of the Telescope, clearly demonstrated by Galileo, Kepler, and others.

(c) The antient *Ethnicks* believed the condensed light of the Milky way to proceed from the Crowd and multitude of valiant, wise, and Pious Souls inhabiting that Circle. Hence Macrobius in *Sonn. Scipionis.* *Rursus filium Pater, ut in Deos Pius, ut in homines Justus esset, hortatus Premium adjecit, Ostendens Lacineum Circulum, virtutibus debitum, & Beatorum Cætu refertum.* Believ'd no less even by Christians, (as is manifest by that Prayer of Ausonius in *Ephemeride* :

*Pande viam quâ me post vincula Corporis agri,
 In sublime feram ; puri quâ lactea Cæli
 Semita ventose superat vaga lumina Lune :
 Quâ Proceres abiêre Pii.—*)

Of the Original of which Errour La Cerda (in *Virgil. Bucolic. Eclog. 5.*) from the Authority of Philo (*πρὸς φιλόσοφον*) gives this Reason. *In the highest Heavens* (says Philo) *are most pure Souls, which the Greek Philosophers call Heroes ; Moses from their Office, Angels.* Whence it may appear that the Heathens having some dark Notion of the Angels, called them by the Names of their Heroes, and fixed them here. *Vide etiam Turneb. Adversar. l. 13. c. 2.*

(d) Agamemnon and Menelaus the Sons of Atreus, Kings of Mycenæ and Sparta, and Generals of the Grecian Forces against the Trojans.

(e) Achilles The Grand-child of Æacus by Pelus and Thetis, the most signal of the Greeks in the Trojan War, and Pyrrhus or Neoptolemus his Son.

(f) Son of Tydeus and Deiphile, King of Ætolia, one of the most valiant Commanders of the Greeks against the Trojans.

His

Believ'd
 antiently
 the Seat of
 Heroick
 Souls.

His Triumphs over conquer'd Nature rear'd,

(g) Subtle *Ulysses*, We believe inspher'd.

There *Nestor's* thron'd among the *Grecian* Peers,

Crown'd with (b) a triple Century of years.

(i) *Aurora's* Black Son, He who (k) *Lycia* sway'd
Jove's Royal Issue; and Thou (l) *Martial* Maid!

The Kings whom *Asia* did or *Greece* beget,

Or (m) *Pella* justly greatest in the Great.

(g) That Epithete being peculiar to him, who is likewise call'd πολυμήτης & πολυμήχανος; ob multiformem prudentie varietatem, says *Cælius Rhodigin.* l. 14. c. 18. and *Polyeides* à perspicaci solertiâ rerumque prudentiâ, as *Janus Parrhasius* Syllog. 4. Epistol. 39. The Mythology of *Ulysses* (by which is chiefly denoted Wisdom, quæ invicta per omnia pericula intrepidè pertransit) See in *Natalis Comes* l. 9. c. 1.

(b) — *Senectâ*
Insignem Triplicem —

Says the Original in an indefinite sence, by *Senectâ* expressing what *Homer* (*Iliad.* 1.) calls γυνεὸν; i. e. *atatem*, seu *avum*. Hence *Nevius* in *Alceste* (as cited by *Aulus Gellius*) calls *Nestor* *Trisecl-senem*, and by *Horace* he is stil'd *Senex ter ævo functus*. But there is much difference among the Antients about the extent of this γυνεὸν or *Ætas*; the same being diversly interpreted by divers. *Herodotus*, as cited by *Censorinus de Die Natal.* c. 171. stretches it no further than to 25 years. *Zenon* and *Heraclitus* to 30, with whom consents *Artemidorus Oneirocrit.* l. 2. c. 75. according to which Computation *Porphyrus* (in libro de *Homericis Questionibus*) and *Enstatius* determine of the longevity of *Nestor*. Others enlarge it, making 3 γυνεὸν equal to 100 years. So *Herodotus* l. 2. and *Clemens Alexandrinus Strom.* l. 1. p. 335. But taken in its greatest extent, a γυνεὸν or *Ætas* amounts to no less than 100 years, as appears by *Genes.* c. 15. v. 13 and 16. and according to this Computation most of the *Latines* sum up the Age of *Nestor*. So *Ovid* in the person of *Nestor*:

— Vixi
Annos bis Centum, nunc tertia vivitur ætas.

In which sence *Tibullus*, *Propertius* and *Juvenal* are to be taken, when they say of *Nestor* that he liv'd *ternâ* and *trīs Sæcula*; and so we have adventured to interpret *triplicem Senectam*. Vide *Francisc. Floridum Sabinum.* *Lecl. subcifu.* l. 2. c. 3.

(i) *Memnon* the Son of *Aurora* by *Tithon*, who came to the succour of *Troy* with 20 Thousand Foot, and 200 Chariots, being sent (according to *Diodorus Siculus*, l. 2.) by *Teutamo*, King of the *Assyrians*, slain by *Achilles*, or rather by the Treachery of the *Thessalians*, famous for the yearly combat performed at his Monument by the Fowls called *Aves Memnonie*, raised from his Ashes, as it were in an Annual Parentation to his Memory. Of which see *Ovid Metamorphos.* l. 13. *Pliny* l. 10. c. 26. *Solinus*, and his Exercitator *Salmasius* *Tom.* 2. p. 870. and 871. Nor less signal for his Statue at *Thebes* in *Ægypt* after the fashion of a man sitting, of an entire black Marble, the upper part being broken off from the seat by some Earth-quake, as both *Strabo* and *Pausanias*, eye-witnesses, report; which every day at the Sun rising, or as *Philstratus* says, when touched by the Sun-Beams, rendred a sound not unlike that of a Harp or Lute. Chearful at the Sun's approach, at his deparure or setting, sad. *Strabo* yet doubting whether the Musical sound proceeded from that Cause, or from some Artifice, within the Basis of the Statue, or from some of the Company or by-standers. Vide *Strabonem* l. 17: The Satyrist *Juvenal* (*Satyr.* 1.) ascribes it to Magick.

Dimidio Magica resonant ubi Memnone chorde.

See likewise *Cælius Rhodiginus Antiqu.* *lecl. libr.* 22. c. 5. and *Schottus in Ortel. Tabul.*

(k) *Sarpedon* King of *Lycia*, Son of *Jupiter* and *Europa*, according to *Herodotus* and *Diodorus Siculus*; but as *Homer* will, of *Jupiter* and *Laodamia*; slain in the defence of the *Trojans* against the *Greeks* by *Patroclus*, of whom *Jupiter* in *Virgil*,

— Occidit una
Sarpedon mea Progenies —

who is said to have mourned his loss with tears of blood, as *Homer Iliad* 16. *Ansonius* bestowing upon him this Epitaph:

*Sarpedon Lycius, genitus Jove, Numine Patriæ
 Sperabam Cælum, sed teger hoc tumulto,
 Sanguineis fletus lachrymis, ben ferrea fata!
 Et paritur luctum qui prohibere potest?*

*I Lycia's King, Jove's Son, who thought to gain
 Heaven by my Birth, Sarpedon, here lie slain:
 Wept for with bloody Tears; dire fate! must he
 Know grief, who souls from grief can only free?*

(l) *Penthesilea*, Daughter of *Mars*, according to *Diodorus Siculus* (l. 2.) whence by our Poet, stil'd *Mivortia Virgo*; and by *Calaber*, l. 1. *Ἀφίτας*, *Κροή*, Empress of the *Amazons*; signal for her valour against the *Greeks* in the defence of *Ilium*, falling at length by the destroying hand of *Achilles*, which see in *Calaber. locositato*.

(m) To the same purpose *Mela* l. 2. c. 3. *Macedonum Populi centum quinquaginta urbes inhabitant, quarum Pella & Maxima & Illustris.* *Alumni efficiunt; Philippus Græciae Domitor, Alexander eiam Asiae.* It was seated upon a Lake, not far from the Sea, into which run the two Rivers, *Axius*, now called *Bardari* or *Vardari*, and by some *Vistritzæ*, and *Ludius*, now *Castoro*. The *Greeks* at this day call it *το πολυτίτσια*, i. e. *Parus Palatia*, where are dayly dig'd up Marbles with Antient Inscriptions; and the foundations of Princely Buildings, in the Place, where the Inhabitants believe the Pallace of *Philip* and *Alexander* stood, as the learned *Lucas Holstenius* (in *Annotat. in Ortelium*) from the Authority of *Crispulus* reports. By the *Romans* it was called *Colonia Julia Augusta*, being made a Colony either by *Augustus Caesar*, or some other of the *Roman* Emperours, as the curiously diligent *Spanhemius* proves from the Testimony of Antient Medails, in *Dissertat. de Præst. & usu Numism.* *Dissert.* 9. Vide eiam *Patin. in Num. Imper. Rom.* p. 195 and 370. By the *Turks* it is at this day call'd *Jeniza*, or *Jenizza*, which in their Language signifies a New Town,

(n) The *Athenian* Lawgiver, who deserv'd that Epithete, *Legis* *Moderamine* *Legibus*; for the Justice and Equity of his Laws; as *Ammianus Marcellinus* (l. 22.) attests: who further adds that the Model of his Laws, *Romano quoque Juri maximum addidit Firmamentum*, added also to the Roman State the greatest Foundation. For the Romans as *Livy* (l. 3.) writes, agreeing concerning Laws in General, but differing about the Law-giver, sent Embassadors to *Athens*, *Sp. Posthumius Albus*, *A. Manlius*, and *P. Sulpicius Camerinus*, commanding them to transcribe the renowned Laws of *Solon*: which transferred out of the Books of *Solon*, the *Decemviri* expounded in the 12 Tables, as *Aurel. Victor de Viris Illustr.*

There those whom Wisdom hath exalted, shine;
Just (n) *Solon*, stout (o) *Lycurgus*, the (p) Divine
Plato, and (q) He who made him such; whose Doom
Justlier (r) condemns his *Athens*: He (s) by whom
Persia was foyl'd, which strow'd with Fleets the Main,
And Roman Worthies, the more numerous Train.

There's all their (t) Kings but the Proud *Tarquin*; there
(u) Th' *Horatii*, who their Sides sole Army were;
(x) *Scævola* glorying in his Arms stump; then,

(o) The famous *Spartan* Legislator; who to ennoble his Laws pretended he received them from *Apollo*, as *Cicero* (*de Divinatione* l. 1.) or according to *Lucian* (*in Astrolog.*) τὴν πολιτείαν πᾶσαν ἐκ τοῦ θεοῦ διατέτακτο, deriv'd from his skill in *Astronomy*; He tempering his Laws according to the Course and Influence of the Celestial Bodies. Hence one of his Laws was, that the *Spartans* should never go forth to War before the full of the Moon. But rather according to the *Scholias* of *Thucydides* (in l. 2.) really compil'd out of the Laws of the *Cretans* and *Egyptians*. See besides *Plutarch* (*in vita Lycurgi*) the learned *Jo. Meursius Miscellan. Laconic.* l. 2. c. 5.

(p) That Epithete being given him for the excellency of his Style, Manners, and Philosophy; of which *Cicero* in *Tusculan.* l. 9. *Credamus* *Panetio* (speaking of *Plato*) quem omnibus locis Divinum, quem Sapientissimum, quem *Homerum Philosophorum* appellat; nay he sticks not elsewhere to call him *Philosophorum Deum*. By *Numerius in Clemens Alexandrinus* (*Stromat.* l. 1.) he is stil'd Μωϋσῆς Ἀθηναῖος. *Moses Atticissans. Vide etiam Suidam in voce Νεμύσιος*.

(q) *Socrates* the Instructor of *Plato*.

(r) The unjust Condemnation of *Socrates* brought a General Calumny upon *Athens*. Hear *Socrates* in defence of himself in *Xenophons Apologie* εἰ δὲ μέντοι ὅτι ἀδίκως ἀποβήσκα, &c. *That I die unjustly will not trouble me. It is not a reproach to me, but to those that condemn'd me.* Nor brought it only a Calumny, but a Calamity likewise; for as *Eunapius* (*in Edeffio*) observes, from thence forward the *Athenians* did nothing considerable, but the City by degrees decay'd, and with it all Greece.

(s) *Scaliger* by *Persidis Victor* (in the Original) understands *Xerxes* the *Persian* Monarch; so likewise *Tanaquil Faber* (*not. in Lucret.*) who instead of *Victor* would read *Refitor*. We rather conceive *Themistocles* to be here meant, Authour of that signal Defeat given to *Xerxes* his Naval Forces, before *Salamis*, wherein was the strength of all *Persia*, (of which in *Herodotus*, l. 8.) For what had timorous *Xerxes* to do among the valiant Heroes? The Verse in the *Latine* is thus commonly read,

Persidis & Victor strârat qui Classibus aquor.

Gronovius (*in Diatrib. ad Statii Sylv.*) instead of *qui*, reads *que*, which gives us clearly the sense of the Verse according to our Interpretation.

(t) *Festus* (*in brevissimo*) *Regnaverunt Romæ per annos 243. Reges numero septem, &c. Romulus* the first, who Reigned 37 years, (then the Senate for one year) *Numa Pompilius* 43. *Tullus Hostilius* 32. *Anicus Marcus* 24. *Priscus Tarquinius* 38. *Servius Tullius* 44. & *Tarquinius Superbus* 25. in the last of which years he was expell'd by *Brutus* and his Faction.

(u) The Story of the 3 *Curatii* and the 3 *Horatii* Brethren, the first *Albans*, the other *Romans*, (who when the two Armies under the Command of *Metius Suffetius*, General of the *Albans*, and *Tullus Hostilius* King of the *Romans* were ready to joyn, upon Parley, were chosen out on both sides to end the quarrel by Combate) is sufficiently known, recorded by *Livius*, l. 1. *Dionys. Halicarnass.* l. 3. *Lucius Florus* l. 1. c. 3. *Aurel. Victor de viris Illustr.* and others. One of the *Horatii* only surviving the Duel, to which *Manlius* elsewhere alludes, l. 2.

*Nulla Acies tantum vici; pendebat ab uno
Roma viro*

No Battle ever was so fought; Rome's state
Depended upon one man's single Fate.

(x) So *Sidonius Apollinaris* in *Carminibus de Narbone*,

— *Trunco Mutius eminet lacerto.*

Than whom none is more celebrious in the Roman Stories; his daring Attempt compriz'd in this Epigram in *Catalect. Veter. Poet.*

*Lictorem pro Rege necans nunc Mutius ultro
Sacrificio propriam concremat igne Manum.
Miratur Porfenna virum, penamque relaxans
Maxima cum obsis fœdera Victor inis.
Pius flammis Patriæ confert quàm fortibus Armis,
Una domans Bellum funere dextra suo.*

Stead of the King his Lictor *Mutius* slew,
Then makes his Hand in Flames its Error rue.
Porfenna wonders; does his Pains release,
And Victor with th' e'en vanquish'd makes a Peace.
More to his Country, than stout Arms and Swords,
By its self Ruine one Brave Hand affords.

Rewarded by the Senate with the Ground where *Porfenna* pitch'd his Pavilion and Camp; call'd from thence *Mutia Prata*; and honour'd with a Statue; which seems too great a Reward for an Act of Desperate Assassination, (for it is censur'd no other by *Tertullian* in *Apolog.*) and derogatory from the Roman Magnanimity to encourage or recompence such an Attempt against a free Prince, waging a fair and lawful War. But *Paganinus Gaudentius* excuses the Roman Senate, as rewarding the Success, not Intention of his Act. *Vide illum de Fatti del Grand. Alessandro.* See likewise *Alberic. Gemilis* arguing upon this Act of *Scævola's Pro & Con.* l. 1. & 2. *de Armis Roman.*

(y) *Clælia*

(1) *Clælia* although a Maid more Brave than Men.

(2) *Cocles* with *Rome's* Walls crown'd which he maintain'd,
And He who by a Crows Assistance gain'd
Both Spoils and Name, (a) *Corvinus*! on whose Crest
Phæbus does in his black-plum'd Emblem rest.

(b) *Camillus* too, who Heaven with *Jove* may claim,
Whom saving *Rome*, We may *Rome's* Founder name.

(1) A Roman Virgin, one of the Hostages (amongst others of her Sex) in *Porfenna's* Camp, who one Night deceiving her Keepers lead her Fellows within the shot and darts of the Enemies to take the *Tiber* and swim to *Rome* for their Liberty: For which Fact admir'd even by *Porfenna*, who extoll'd *Rome* as happy not only in breeding Men of Valour, but Virgins of like Bravery; The Romans perpetuating her Memory by a Brazen Equestral Statue at the Head of the *via sacra*: under which, as *Aldus Maunius* (in *Cicer. Offic. l. 1.*) affirms, were these Verses engraven:

VOS ETENIM JUVENES ANIMUM GERITIS MULIEBRE
ILLA VIRAGO VIRI —

Paul Merula conceiving *Ennius* to be the Author of those Verses in 4 *Annal.* and to be the very *Encomium* which *Porfenna* gave of her daring spirit. This Statue *Dionys. Halicarnass. l. 5.* reports to have been destroyed by the firing of the Neighbouring Houses before his Time. See likewise *Livy l. 1. Plutarch in Vita Poplicolæ Valer. Max. l. 3. c. 2.* and *Pliny l. 34. c. 6.* who yet from the Authority of *Annus Facialis* reports it was not *Clælia* but *Valeria*, the Daughter of *Publicola* that was so honoured. But it were Injury to deprive this Lady of her Antient Merit, whose Story affords such *Romanticque* Divertisement to our Modern Ladies.

(2) *Horatius Cocles*, so called for having formerly lost one of his eyes in a Combat; renowned for his Valour in singly defending the *Sublician* Bridge against a whole Troop of the *Thuscans*, until the Bridge (as he directed) was cut down behind him, who then, armed as he was, threw himself into the *Tiber*, crying out, *Veniat si quis vult sic euntem sequi*; and swam safe (notwithstanding a multitude of Darts and Javelins thrown after him) to *Rome*: yet *Polybius* (l. 6.) expressly affirms him to have perished in the Attempt. However it was, he is said for this eminent piece of service to have been by the Romans rewarded with as much ground, as could be ploughed in one day, and honoured with a Statue in the *Comitium* with a Civic Wreath or Mural Crown. Which Statue of his coming after to be stricken with Thunder; The Romans consulting the *Etruscan* South-sayers about the Omen, were by them (out of Malice to such a Monument of exemplary valour performed against them) persuaded to take the Statue from the Place, where it stood, and to set it in some obscure low ground, where the Sun might not shine upon it. This being performed, and the People understanding at whose instance it was done; the South-sayers were called before them and examined; who confessing their perfidious intent, were condemned and executed, and the Statue planted in a higher Place, in the *Area* of *Vulcan's* Temple, which proved happy and successful to the Commonwealth. Upon this Occasion grew that Common Proverb (expressing the sense of that Greek Verse in *Hesiod*

Ἡ δὲ κακὴ βελὴ τῷ βελούστει· κακὴν.

Malum Consilium Consultori Pessimum.

To be taken up and sung by the Young People and Children of *Rome*, as *Anlus Gellius*, from the Authority of the *Annales Maximi* and *Verrinus Flaccus* his memorable Stories, relates. l. 4. c. 5.

(a) *Marcus Valerius*, who when *Camillus*, the younger, pursued the Reliques of the *Galli Senones*, being then a Tribune of Colonel, undertook the Combate with the Giant-like General of the *Gauls*, who dared the stoutest of all the *Roman* Army to a single Encounter. In the Conflict a Crow is said to have peached upon *Marcus Valerius* his Helmet, and to have assaulted the face of his Enemy, wounding him with his Beak and Talons, and buffering him with his wings, by which Assistance he vanquished and slew the *Gaul*, and from thence gain'd the Surname of *Corvinus*; rewarded beside with a Donative of ten Oxen, and a Crown of Gold; as *Livy l. 7. c. 36.* reports. Which Story of the Crow the learned *Vossius* (*Idolatr. l. 1. c. 27.*) conceives to be fabulous, and will have it to be only a Figure of a Crow upon his Crest or Helmet, according to the Custom of the Antients who adorn'd their Casques with the Effigies of several Birds and Beasts. Against which his Conjecture we shall only oppose these Words of *Anlus Gellius l. 9. c. 11. de M. Valerio, qui Corvinus appellatus est, ob Auxilium Propugnati- onemque Corvi Alitis, haud Quisquam est Nobilium Scriptorum qui secus dixerit.* *Augustus* *Cæsar* erecting a Statue to *Corvinus* in the *Portico* of his *Forum*, as the said *Gellius* affirms *Rei Pugnaque Monumentum*. Nor seems it more incredible than what is reported of *Alexander the Great*, while he fought in the Battle at *Arbela* against *Darius*, that an Eagle all the while hovered over his Helmet, nor left him, till he had obtained the Victory; touching which see *Quintus Curtius l. 4. c. 15.* Of this *Corvinus*, *Plutarch* (in *Mario*) reports, that like him there was none, upon whom the *Roman* People conferred so many Magistracies, nor any, whose Suits or Petitions they answered with such readiness. He was six times *Consul*, as often *Prætor*, and as many times *Ædile*, once *Censor*, and twice *Dictator*. Vide *Pighii Annal. Rom.*

(b) A most signal Example of Loyal Magnanimity, who being by *L. Apuleius* Tribune of the People, accused as though he had unjustly divided the *Veientine* Spoils, and a day appointed for him to answer; not brooking such an Affront, before the day of hearing came, betook himself to a voluntary Exile; upon whom in his absence the enraged People imposed a heavy Fine. In the interim the *Gauls* besieging the *Capitol* and ravaging the Country about, as far as *Ardea*, whither *Camillus* had retired himself; He (notwithstanding the Injury done him by his ungrateful Country men) persuades the *Ardeates* to take up Arms against the *Gauls*, fights and defeats them; whereupon by the remainder of the *Roman* Army, which after the Overthrow at *Allia* were escaped to *Veii*, he was chosen General, and by a Decree of the Senate call'd home from Banishment, and though absent made *Dictator*; yet would he not return, till all Acts touching his Magistracy and Restitution were solemnly pass'd by the People. Seven Months had the *Capitol* been besieg'd, and at last, capitulated to give the *Gauls* a vast sum of Gold to quit the siege; at which instant *Camillus* arrives with his Army, commands the money not to be paid, laying his Country was to be freed by Steel, not Gold; and thereupon charges the *Gauls* within the Ruins of the City, defeats them, pursues them in their flight in the *Gabine* way, and makes so general a slaughter of them, that hardly any escaped to carry home news of their Overthrow. For this and other his eminent services to his Country (among which that of hindring the People from quitting *Rome* for *Veii*, is to be reckon'd, whereby, as *Vilior* says, & *Oppidum Civibus & Civis Oppido reddidit*) he was thought worthy to be stil'd the second Founder of *Rome*, and call'd by the name of *Romulus*: Of which see *Livy l. 6. Cassiodorus in Chronic. Eutropius libr. 1. and Aurel. Vilior. de Vir. Illust. c. 23.* He was 6 times Tribune, 4 times triumph'd, was once *Censor*, 5 times *Dictator*, and thrice *Interregent*.

P

The

(c) *Lucius Junius*, Son of *Marcus Junius* by *Tarquinius*, the Sitter of *Tarquinius Superbus*, to avoid the Tyranny of the King his Uncle, who had put to death his Brother *Marcus*, feigned himself to be a Fool, and thereby gain'd the Surname of *Brutus*; notorious for expelling the Regal Power, and the whole Family of the *Tarquins* out of *Rome*, and introducing the Government of Consuls; of which he was the first, and for a time the sole, notwithstanding his *Colleague Collatinus*; to which *Virgil* alludes

The Generous (c) *Brutus* her Infranchiser,

(d) *Papyrius*, who reveng'd the *Pyrrhick* War;

Stayd (e) *Curius*, and (f) *Fabricius*, a stern Pair!

(g) *Marcellus*, who the third (b) rich Trophies bare

Consuls; of which he was the first, and for a time the sole, notwithstanding his *Colleague Collatinus*; to which *Virgil* alludes

*Consulis Imperium hic primus, seuque secures
Accipiet.* —

He was honoured by the *Romans* with a Brazen Statue, plac'd in the Capitol among those of their Kings with his sword drawn as *Plutarch* in his life, being slain by *Aruns*, Son of *Tarquinius* (as he by *Brutus* singly encountering one another) for whom the *Roman* Ladies and Matrons kept a solemn mourning, during the space of one whole year, as for their Publick Father and Avenger of the violated Chastity of their Sex. See *Livy* l. 2.

(d) The *Papyrii* Father and Son were signaliz'd by their Triumphs over the *Samnites*, *Lucanians*, *Tarentines* and *Brutians*, who all join'd with *Pyrrhus* against the *Romans*. The Father was twice *Dictator*, five times *Consul*, and thrice triumph'd over the *Samnites*; whom *Livy* doubts not to compare with *Alexander* the Great, and reckons him the fittest General to have opposed him, had he after the Conquest of *Asia* turn'd his Arms upon the *Romans*: Of which *Livy* l. 9. c. 16. But the *Papyrius* here meant, is the Son; who with *Sp. Carvilius* triumph'd over the *Samnites*, *Lucanians*, *Tarentines* and *Brutians*; having compell'd *Milo*, the Prefect of King *Pyrrhus*, to deliver up *Tarentum*; which he dismantled and spoyle'd of all its strength by Sea and Land: by which Victory he put an end to the most desperate War, which (till then) the *Roman* People had ever been engag'd in. The Memory of this Victory and Triumph is preserv'd in some silver Coins; On one side of which is the armed head of *Rome*, with the *Rostrum* or Beak of a Ship, thereby signifying the increase of Naval Power to the *Romans* by the Conquest of *Tarentum*: On the Reverse the Figure of Victory in a Chariot drawn by four Horses, implying the Advantage and Superiority, which that Victory gave them by Land. The Inscription this. L. P A P Y R I. L. F. S P. N. C U R S O R. See *Vinsand. Pighii Annal. Rom. Tom. 1. p. 447.*

(e) *Manius Curius Dentatus*; so call'd for that he was born with teeth: by *Valerius Maximus* stil'd, the most exact Rule of *Roman* Frugality and perfect Pattern of Fortitude, famous for his exemplary Abstinence, and his refusal of a vast sum of Gold presented him by the Embassadors of the *Samnites*, saying he held it more honourable to command over those that were rich, than to be rich himself; nor less ennobled by his many Victories and Triumphs over the *Samnites*, *Sabins*, *Brutians*, *Apulians*, *Lucanians*, and the defeat and expulsion of King *Pyrrhus* out of *Italy*, making good the Character he gave of himself, *that he was neither to be corrupted by money, nor vanquish'd by Arms*. See more of him in *Cicero*, (in *Cato. M.*) *Valerius Maximus* l. 4. c. 3. & *Aurel. Vict. de Vir. Illustr. c. 35.*

(f) *C. Fabricius Luscinus*, of whom *Valerius Maximus* says, *that in Honour and Authority he was greater than any Roman Citizen of his time; but in estate as mean as the poorest*; who yet when solicited by *Pyrrhus* with the offer of the fourth part of his Kingdom to become his Friend, refused with scorn so great a Bribe. No less exemplary for his Justice; for when *Pyrrhus* his Physician offer'd him in hopes of reward to poison his Prince; *Fabricius* was so far from accepting the Offer, that he discovered the treachery to *Pyrrhus*, and sent back the Traytour, bound, to receive the just recompence of his villany: whereupon *Pyrrhus* is said to break out into this expression, *That it was harder to draw Fabricius from Honesty, than the Sun from his Course*. See (besides *Seneca* *Epist. 120.*) *Valerius Maximus*, l. 4. c. 3. *Aurel. Vict. de Vir. Illustr. c. 39.* and *Eutropius* in *Brev. Histor. R. m.* To which I shall only add what I find mentioned by *Severinus* in *select. Numismat.* touching an antient silver Meddaille, having on one side the head of *Juno*, with this title, M O N E T A; on the Reverse the several instruments of Coynning, with this Inscription, S A L U T A R I S; which Coyn the said *Severinus* conceives was stamp'd in honour, and as a Memorial of this great General. The occasion this; When the *Romans* (as *Suidas* in *voce* *MOVHTA* reports) were in the War against *Pyrrhus* impoverished, they were by *Juno*, whom they consulted by sacrifice, told, That if they wag'd War with the Arms of Justice, they should not want money: which Admonition *Fabricius* observing, gained to himself the honour of Equity and Justice, as well as Valour and Conduct, and by those means obtain'd a glorious Victory, which brought with it a vast Treasure to the *Roman* People, and so rendred M O N E T A M taken in which sence you will, S A L U T A R E M to the Commonwealth.

(g) *Marcus Claudius Marcellus*, of whom thus briefly the Triumphal Tables.

M. CLAUDIUS. M. F. M. N.
MARCELLUS. ANNO. P. R. C.
D XXXI. COS. DE. GALLIS.
INSUBRIBUS. ET. GERMANIS.
K. MART. ISQUE. OPIMA.
SPOLIA. RETULIT. DUCE.
HOSTIUM. VIRDOMARO. AD.
CLASTIDIUM. INTERFECTO.

M. CLAUDIUS (M. F. M. N.) MARCELLUS CON-
SUL IN THE DXXXI. YEAR AFTER THE
BUILDING OF ROME, TRIUMPH'D OVER
THE GALLI INSUBRES, AND GERMANS
IN THE KALENDS OF MARCH, AND BARE
RICH SPOILES FROM VIRDOMARUS, GE-
NERAL OF THE GAULS, WHOM HE SLEW
AT CLASTIDIUM.

To this *Ausonius* alludes (in Monosyllab.)

Tertia opima dedit spoliatus Aremoricus Lars.

Lars being there no proper Name, but Title, signifying as much as Prince. See *Scaliger* in *Propert. p. 237.* *Aurelius Victor* de *Vir. Illustr.* adds, that he first taught the *Roman* Souldiers how to make a Retreat, without turning their Backs, and at *Nola* made it appear that *Hannibal* was vincible; he took the City of *Syracuse* after a 3 years siege; and when denied by the Senate through the calumny of his Enemies a Triumph at *Rome*, he of his own accord and at his own expence triumph'd at Mount *Albanus*; being the fifth time *Consul*, he was slain, over-reach'd by the treachery, rather than valour of *Hannibal*. See more of him in *Virgil* lib. *Aeneid. 6.* *Propertius* l. 4. *Eleg. 11.* *Livy* l. 27. c. 16 and *Plutarch* in his life, call'd by *Hannibal*, the sword of *Rome*.

(h) These the *Romans* call'd *opima spolia*, *quasi optima, ampla, magnifica vel honorifica*, in which sence by *Plutarch* (in *vita* *Marc. li.*) call'd TIMIA, according to whom the conditions requisite to those spoils were; First, that they were to be taken by the General of one Army from that of another; Secondly, that they were to be taken in Battle; Thirdly, in *Prima Acie*, in the first Part or Front of the Battle; to which *Livy* adds a fourth, That they were to be born or carried to *Jupiter Feretrius* by the *Victor* General, whence *Jupiter* according to *Propertius* (l. 4. *Eleg. 11.*) had that Title of *Feretrius*. See this noted by *La Cerda* in *6. Virgil. Aeneid.* by *Alexander ab Alex. Gen. l. Dierum* l. 1. c. 14. and *Janus Rutgersius Var. Lecl. l. 4. c. 7.* The first that ever won the Spoils and Triumph'd was *Romulus*, having slain *Acron*, General of the *Cenineses*.

And

And ⁽ⁱ⁾ *Cossus* Second, from Kings spoyl'd of Lif
The ^(k) *Decii* in their Vows at noble strife,
In Honours equal ; ^(l) *Fabius*, *Romes* Defence,
In War unconquer'd, by the War's suspense

(i) Of him thus *Livy*, l. 4. *Corn. Cossus* eximia pulchritudine corporis ; Animo & viribus Par. And the Triumphal Tables,

AULUS. CORNELIUS. (M. F. SER. N.) COSSUS. ANNO. POST. R. C. CCCXXV. COS. DE. VEIENTIBUS. ISQUE. SPOLIA. OPIMA. RETULIT. DUCE. HOSTIUM. LARTE. TOLUMNIO. AD. FIDENAS. INTERFECTO.

AULUS CORNELIUS (M. F. SER. N.) COSSUS BEING CONSUL IN THE YEAR CCCXXV. AFTER THE BUILDING OF ROME, TRIUMPH'D OVER THE VEIENTINES, AND BARE RICH SPOILS FROM SINCE TOLUMNIO'S GENERAL OF THE ENEMIES, SLAIN BY HIM AT FIDENÆ.

Of which *Ovid* briefly in this Pentameter, as cited by *Priscian*,

Larte ferox caso Cossus opistulit, &c.

See likewise *Propertius* l. 4. *Eleg.* 11. *Livy* l. 4. *Valer. Max.* l. 2. *Amel. Victor. de Viris Illust.* and *Servius* in *Octav. Virgil. Æneid.*

(k) Of the *Decii* (Father and Son) devoting themselves to a voluntary death for the Good of their Country, the Roman Stories are full: See *Livy* more particularly, l. 8. and l. 10. Hence *Lucan* l. 6. calls them

Lustrales bellis Anin —

As if they had been propitiatory sacrifices for the weire of the Roman Legions in time of hazard, concerning which *Valerius Maximus*, l. 5. c. 6. *Dignosci arduum est utrum Roma Civitas utilis habuerit Decios vivos, an amiserit: quoniam vita eorum ne vinceretur obstitit, mors fecit ut vinceret.* I shall only add what is not commonly taken notice of, that there were not two only, but three of this Name and Family, who devoted themselves as sacrifices for the good of their Country; of which thus *Cicero* in *Tusculan. Question.* l. 1. *Si mors timeretur, non cum Latinis decertans Pater Decius, cum Etruscis filius, cum Pyrrho Nepos, se hostium telis obtulissent.*

(l) *Quintus Fabius Maximus Verrucosus* call'd the Buckler and Shield of Rome, as *Marcellus* the Sword; who as *Ennius* says, *cunctando Romanam restituit Rem*; or as *L. Florus* more nearly to the sense of our Authour: *Novam de Hannibale Victoriam commentus est non velle pugnare.* Hence the Proverb, *Romanus sedendo vincit.* *Propertius* likewise, l. 3. *Eleg.* 3. stiling his wary and deliberate prosecution of the War *Videlicet Moras*: Of whose Actions (so generally noted in the Roman Stories) we cannot give a better Summary than what is contained in this following Antient Inscription on a Marble found long since at *Arretium*, as *Marlianus* reports, and extant at *Florence* in the House of *Perus Victorius*, as *Panvinus* in his *Festi* affirms.

Q. F. MAXIMUS.

DICTATOR. BIS. COS. V. CENSOR. INTERREX. II. ÆD. CUR. Q. II. TRIBUN. MIL. II. PONTIFEX. AUGUR. PRIMO. CONSULATU. LIGURES. SUBEGIT. EX. IIS. TRIUMPHAVIT. TERTIO. ET. QUARTO. ANNIBALEM. COMPLURIBUS. VICTORIIS. FEROCEM. SUBSEQUENDO. COERCUIT. DICTATOR. MAGISTRO. EQUITUM. MINUCIO. QUOIUS. POPULUS. IMPERIUM. CUM. DICTATORIS. IMPERIO. ÆQUAVERAT. ET. EXERCITUI. PROFLIGATO. SUBVENIT. ET. EO. NOMINE. AB. EXERCITU. MINUCIANO. PATER. APPELLATUS. EST. CONSUL. QUINTUM. TARENTUM. CEPIT. TRIUMPHAVIT. DUX. ÆTATIS. SUÆ. CAUTISSIMUS. ET. REI. MILITARIS. PERITISSIMUS. HABITUS. EST. PRINCEPS. IN. SENATUM. DUOBUS. LUSTRIS, LECTUS. EST.

QUINTUS FABIVS MAXIMVS

TWICE DICTATOR, FIVE TIMES CONSUL, TWICE CENSOR, AND INTERREX, AND TWICE ÆDILE OF THE CHAIR; TRIBUNE OF THE SOULDIERS, HIGH PRIEST AND AUGUR. IN HIS FIRST CONSULATE HE SUBDU'D THE LIGURIANS AND TRIUMPH'D OVER THEM. IN HIS THIRD AND FOURTH HE REPREST AND RESTRAIN'D HANNIBAL RAGING WITH MANY VICTORIES BY CLOSELY FOLLOWING HIM: BEING DICTATOR, HE RELIEV'D MINUCIUS MASTER OF THE CAVALRY (WHOSE COMMAND THE PEOPLE HAD EQUAL'D WITH THAT OF THE DICTATOR) AND HIS DISCOMFITED ARMY. AND FOR THAT CAUSE WAS BY THE MINUCIAN. ARMY CALL'D FATHER. IN HIS FIFTH CONSULATE HE TOOK TARENTUM AND TRIUMPH'D, ACCOUNTED THE MOST WARY CAPTAIN OF HIS AGE, AND THE MOST EXPERT IN ALL MILITARY AFFAIRS, ELECTED PRINCE OF THE SENATE FOR TWO LUSTRES.

See likewise *Antonius Augustinus*, *Dialog.* 10th, and *Pighii Annal. Roman.* Tom. 2. p. 132. and *Paul Merula* in *Commentat.* ad *Ennii Annal.* l. 8. p. 467.

(m) Marcus Livius Salinator, Consul with Claudius Nero in the 546th year after the building of Rome, triumphed for the overthrow of Asdrubal the Brother of Annibal, who came into Italy with a great Army intending to joyn with that of his Brothers, which (if effected) had prov'd the Ruine of the Roman State. But Nero, who attended the motion of Annibal in Apulia, secretly upon notice of Asdrubal's Arrival, not far from Sena or Senogallia, (where Livius

was encamped) taking with him 7000 Foot and 100 Horse of the choicest of his Camp, left the rest to face Hannibal, and marching with incredible speed, joyn'd his Forces with those of his Fellow Consul, who together defeated the whole Army of Asdrubal and slew him in the Battle. Nero returning his Camp before Hannibal understood any thing of his departure, or heard news of his Brothers' defeat: The first notice he had brought with him) to be cast before the Camp of Hannibal; which he seeing cryed out, That the Fortune of Carthage was overthrown. Of this Meritorious Act of Nero's, thus trace, Carm. l. 4. Od. 4.

Livius the Victor of slain Asdrubal,

Wh Nero the joynt Authour of his Fall.

T. Scipio's unto Carthage both one Fate:

Pompey, 'fore Caesar Prince of Rome's great State,

And th'w'd World, which thrice his Triumphs sung,

And 'llius worthy Heaven for his sweet Tounge.

Quid debeat o Roma Neronibus
Tectis Metaurum Flumen, & Asdrubal
Devictus, & pulcher fugatis
Ille dies Latio tenebris.

What Rome thou ow'st to Nero's Name
Metaurus and slain Asdrubal proclaim,
And that bright Day,
Which chac'd from Latium Night away.

(n) Of these Scipio's the one was Publius Cornelius Scipio, who being Pro-Consul of Africa in the second Punick War drew Hannibal from Italy to the Defence of his own Country, whom he defeated and brought the Carthaginians to sue for Peace and acknowledge themselves tributary to the State of Rome; for which he triumphed, being call'd Scipio Africanus Major: The other, the Son of Aemilius Paulus Macedonicus, adopted into the Cornelian Family by the Son of Africanus Major, and call'd Publius Cornelius Scipio Aemilianus, who took and utterly deoyed Carthage in the third and last Punick War, and reduced Africa into the Form of a Roman Province, for which he triumphed and gained the Sir-name of Africanus Minor, famed for his Justice and Military Science; whence is that Adagio, *Scipione Justior, & Militarior*: in Tertull. Apol. get. c. 2. These Virgil in 6 Aeneid. calls

Geminus duo Fulmina belli
Scipiadæ, Cladem Lybie

Of whom likewise Lucius Florus says, *Fatale Africa Nomen Scipionum ridebatur*. See more of them in Livy, Velleius Paterculus, Orofinus, Appian. de Bello Civil. Lucius Florus, Aurelius Victor, & Eutropius.

(o) Velleius Paterculus, l. 2. speaking of Pompey designed General in the War against the Pyrates, says, it was voted by Decree of the People and Senate, that *Cn. Pompeius ad eos opprimendo mitteretur, essetque ei Imperium æquum in omnibus Provinciis cum Proconsulibus usque ad Quinquagesimum Miliarium à Mari*. Quo. S. C. pene totius Terrarum Orbis Imperium uni viro deferrebat: Confirmed by Plutarch in Pomp. and further asserted by some Antient Coins, stamped in honour of the said Pompey, with this Inscription:

MAGNUS IMPERATOR.

And on the Reverse of some others (in token of his Dominion by Sea and Land) a Scepter figur'd erect between a Dolphin and an Eagle. See Fulv. Ursin. in famil. Pomp. p. 204.

(p) Commemorated by Albinus the Poet (not the Historian) in his Poem of the Gifts of Pompey the Great, out of which Præfian l. 7. cites these Verses.

Ille cui ternis Capitolia celsa Triumphis
Sponte Deum patuere, cui freta nulla recessos
Abscondere Sinus, non tuta Manibus Urbes.

In which Verses are celebrated the three Triumphs of Pompey; the first from Africa over King Iarbas; the second from Spain over Sertorius; the last from Asia over Mithridates and the Pyrates. See *Pompeia* in Schol. in Fragment. Historic. But what is to be chiefly noted, these Triumphs were permitted to Pompey contrary to the Express Decrees of the Roman State, before he had undergone any Magistracy, being only a private Knight; which Privilege none before him ever enjoyed. But it was in a Time *quo silebant inter Arma Leges*. Of the stupendious Splendour and Luxury of these Triumphs, especially of the last, see particularly Pliny l. 37. c. 2.

(q) Marcus Tullius Cicero; of whom it were lost Labour to speak, save in a Language equal to his own: And therefore I shall only salute him, as Pliny does l. 7. c. 30. *Salve Primus omnium Pater Patriæ appellate. Primus in Toga Triumphum, Linguaeque Lauream meritis; & facundia Latinarumque literarum Parens; atque (ut Dilector Caesar Hostis quondam Tuus de te scripsit) Omnium Triumphorum Lauream adepte Majorem, quanto plus est Ingenii Romani Terminus in tantum promouisse, quam Imperii.* (i.e.) Hail Thou who of all Men wert first saluted Father of thy Country, who first deservedst a Triumph in thy long Robe, and a Laurel Garland for thy Language. The only Father of Eloquence; and Latian Learning; and (as Caesar Dilector sometimes thine Enemy hath written of thee) honoured with a Crown so much more glorious than those of other Triumphs, by how much nobler it is to have enlarged the Bounds of Roman Wit than those of its Empire.

There

There the great ^(r) *Claudian* Progeny does shine,
And all the Worthies of th' ⁽¹⁾ *Æmilian* Line ;

⁽²⁾ *Metelli*, signal for their Noble Name ;

^(*) *Cato*, who Fortune ev'n in Death o'rcame ;

^(*) *Agrippa*, Souldier from his Mothers Brest ;

(r) Of the *Claudian* Name there were two Families, one *Patrician* the other *Plebeian*. Of the first, were the several Surnames of the *Plebeii*, *Centones*, *Nerones*, *Regillenses*, *Crassini*, *Caci*, *Crassi*, *Caudices*, *Hortatores*, *Rufi*, *Sabini*, *Canini*. Of the latter, which yet was more signal than the first, were those of the *Marcelli*, *Æterni*, *Æfelli*, *Clitii*, *Flamini*. All descended from *Regillus* a Town of the *Sabines*, whose

Chief was *Atta Tati* *Clausus*, who about the sixth year after the Expulsion of *Tarquinius Superbus* came to *Rome*, and was admitted into the *Patrician* Order ; changing his Name into *Appius Claudius*. Of the Original of which Family thus *Virgil* (*Æneid*. 7.) more Poetically, than truly (for he alludes to this very *Appius Claudius*)

*Ecce Sabinorum præco de sanguine, Magnum
Agmen agens Clausus, Magnique ipse Agminis instar,
Claudia nunc à Quo diffunditur & Tribus, & Gens
Per Latium* —

See *Clausus* of old *Sabine* blood, who brings
A Mighty Troop, himself as Great ; whence springs
The *Claudian* Tribe, and Family, now spread
Through *Latium* —

Plutarch derives them from *Sparta*, and makes them to have been part of a *Lacedæmonian* Colony planted in *Italy* : This Family in the Time of *Tiberius* (who was of the same Race, and whom perhaps the Poet in this Place flatters, as being the designed Heir to *Augustus*) was signaliz'd with 28 Consulates, 5 Dictatorships, 7 Censorships, as many Triumphs, and 2 Ovation ; as *Suetonius* in *Tiberio* witnesses. See more in *Antonius Augustinus de Familiis Roman.* and *Andreas Schottus* in his *Idea Rom. Hist.* ad *Pigbii Annal.*

(1) The *Æmilian* Family some derive from *Mamercus* the Son of *Pythagoras* the Philosopher call'd *Ἀρχιμήδης* from his Affability and singular Humanity, as *Plutarch* in *Numa*, and in the life of *Paulus Æmilius*, and *Festus* in voce *Æmil.* attest. Others, as the same *Festus* notes, deduce it from *Ascanius* who had two Sons *Iulus* and *Æmylus*, the later of whom is supposed to have given the Origine to that Name and Family. It was one of the most celebrated in all *Rome*, and honour'd even from the first times of the *Roman* Liberty until the Empire of *Augustus*, with the most signal Magistracies of that State. It was of *Patrician* Degree, and distinguished into 5 Principal Surnames, of the *Barbule*, *Lepidi*, *Mamercini*, *Papi*, and *Pau'i* : To these *Onuphrius* adds the *Bae*, *Liviani*, *Marci*, *Porcini*, and *Privernates* ; to whom likewise are to be added the *Regilli* and *Scauri*. See all these with their several Honours and Performances enumerated by *Antonius Augustinus de Famil. Rom.* and *Pigbii* in *Annal.*

(2) The *Metelli* were the Noblest Branch of the *Cecilian* Family ; which though it were Originally *Plebeian*, rose yet to the greatest Honours which the *Roman* Commonwealth could afford : Nineteen of which Name in the space of 280 years were signaliz'd with 4 Chief Priesthoods, 2 Dictatorships, 3 Presidentships of the Senate, 7 Censorships, 9 Triumphs, 20 Consulships, and 2 Masterships of the Cavalry. The most famous of the *Metelli*, were *Metellus Macedonicus*, so call'd from his Conquest of *Macedonia*, whose saying it was *That he would burn his shirt if he thought it could know his Designs or Counsels*. *Metellus Numidicus* so call'd from his Triumph over *Jugurth* King of *Numidia*, and *Metellus Pius* who gain'd that Surname by his assiduous Supplication and Intercession for the recalling of his Father from Banishment, which at last he effected : See *Aurel. Victor de Viris Illustr.* & *Valer. Maximus*. The Name (notwithstanding its great Nobility) seems to be deriv'd from some servile Military Employment, touching which thus *Festus* in voce *Metell.* *Metelli dicuntur in re Militari quasi Mercenarii.* *Attius Annal.* 17.

Calones, Famulique, Metellique, Caculeque.

A quo Genere Hominum *Cecilia* Famula Cognomen putatur dictum. See more of this Family in *Antonius Augustinus*, and *Schottus* ad *Pigbii Annal.* as likewise *Ursinus* in *Numism. Gentis Cecil.* Vide etiam de Origine hujus Nominis *Meurs.* Exercit. Critic. part. 2. p. 108.

(*) *Marcus Porcius Cato* call'd *Uticensis* from *Utica* the Place of his Death, and *Minor*, to distinguish him from *Cato Major* or *Censorinus*, thus character'd in *Velleius Paterculus*. *Per omnia Ingenio Diis quam Hominibus propior : Omnibus humanis vitiis immunis, semper fortunam in sua Potestate habuit.* The great Assertor of the *Roman* Liberty in time of the Civil wars between *Pompey* and *Caesar* ; choosing rather to dy in freedom by his own Hand, than to fall a Captive into those of the Conqueror. Of whose resolute and Heroick Death, see *Seneca l. de Providentia*, and almost every where else. And particularly *Dion Cassius l. 43.* This is further observable of him, that though he himself chose rather to dy, than to submit to *Caesar*, yet at his Death he perswaded his Son to do so, giving for it this Reason ; *That he having always liv'd in Liberty and a free State, could not in his old Age be brought to change that manner of life, and subject himself to a servile condition ; but for his Son, he being born and having lived in other Times, he advised him to comply with the Fortune that should be offered him.* See *Dion Cassius* loco citato : Which Reason is likewise hinted at by *Cicero* in primo de *Offic.* *Ceteris forsitan vitio datum esset, si se interemissent, propterea quod eorum vita lenior, & mores fuerant faciliores : Catoni autem cum incredibilem tribuisset Natura Gravitatem, eamque ipse perperuam Constantiam corroboravisset, semperque in proposito, susceptoque consilio permanisset ; moriendum potius, quam Tyranni vultus aspicendum fuit.* *Manilius* elsewhere (*l. 4.*) calls him

— *Invidium devictâ Morte Catonem.*

(*) *Marcus Vipsanius Agrippa* though of a mean Family, by his Merits and Valour attained to that eminent Degree, as to be Second in the Empire under *Augustus*, and to become his Son in Law : Of which thus *Tacitus* in primo *Annal.* *Marcum Agrippam ignobilem loco, bonum Militia & Victoria Socium geminatis Consulatus extulit ; mox defuncto Marcello, Generum sumpsit.* *Velleius Paterculus* giving this further Elogy of him, That he was *Virtutis Nobilissima, Labore, Vigilâ, periculo invictus, parendique, sed uni, scientissimus, aliis sanè imperandi cupidus ; & per omnia extra dilationes positus, consultiisque facta conjungens.* To whom *Augustus* may justly be said to owe the Establishment of his Throne and Empire by those 2 Memorable Victories gain'd by his Conduct and Valour, over *Sextus Pompeius* near *Sicily*, and *Marcus Antonius* near *Actium*, for which he merited a Naval Crown : Yet this great Statesman, and Souldier, the latter of which he was even born as *Manilius* here intimates, (for we read with *Sealiger* upon his last and better thoughts — *Matrisque sub Armis, not Martis ; by Armis* understanding *Armas*, i. e. *Ulnas*, not *Arma* ; as if *sub ipsa Matre cum lacte imbibisset Militarem Scientiam* : Though we cannot but here acknowledge the Interpretation of *Spanhemius* (*in Dissertat. de Numism.*) to be very ingenious, who understands by *Matris*, *Patrie*, *sen Romæ belligerantis*, that Title of *Mater* being often by the Antients apply'd to *Rome*) was of that equal and moderate Temper, that he never advis'd *Augustus* to any Actions but those of Humanity, Honour, and Publick Utility ; the Glory whereof he never arrogated to himself nor made of the great Honours and high Charges conferred upon him, any Advantages to his own private Gain and Pleasure, but converted and applyed them wholly to the profit of his Prince and Country. Indelible Characters of an excellent Subject and Patriot !

Q

(1) *Venus*

(1) Meaning *Julius Cæsar*, of whom *Velleius Paterculus* (l. 2.) *Nobilissimâ Juliorum genitus Familiâ, & quod inter omnes Antiquissimos constabat, ab Anchise ac Venere ducens Genus.* The *Julian* Family taking its Name from *Julus* the Son of *Æneas*, and Grand-Child of *Venus*; whence *Virgil* (*Æneid.* l. 1.)

(1) *Venus* her *Julian* Offspring, repossess

Of Heaven, whence first descended; which now proves

The Rule of great (2) *Augustus* joyn'd with *Jove's*;

Who 'mong the Deathless Deities inroll'd,

His Father and *Quirinus* doth behold.

Nasceretur pulchrâ Trojanus Origine Cæsar
Julius, à Magno demissum Nomen Iulo.

More high th' Immortal Gods have fix'd their Seat,

Next whom, is This, with Godlike Men repleat.

But of the Stars're we the Laws rehearse,

Confirm'd by *Livy* l. 1. *Strabo* l. 19. *Appian de bello Civil.* l. 2. and the Testimony of *Cæsar* himself, in his Funeral Oration upon *Julia* the Wife of *Caius Marius*, his Aunt; as recorded by *Suetonius*, where he thus speaks. *Amica Mea Julia Maternum Genus ab Regibus ortum, Paternum cum Diis Immortalibus conjunctum est. Nam ab Anco Marcio sunt Reges, quo Nemine fuit Mater. A Venere Julii, cujus Gentis Familia est Nostra.* Hence the Title of *VENUS GENETRIX* on the Roman Coyns stamped in Honour of *Julius* and *Augustus*; and this Inscription mentioned in *Gruterus*:

And fatal Changes, We the Universe

Must first compleat; and shew what does dispen

Throughout the Whole, or Light, or Influence. (bend,

Some Stars there are which 'gainst the World's Course The Seven Planets.

And wand'ring 'twixt the Earth and Heaven suspend.

VENERI GENETRICI
D. JULI.
IN MEMORIAM GENTIS
JULIÆ &c.

See more to this purpose in *Ursinus in Famil. Jul.* And as to the Pretence of its Original see the same discussed by the Learned *Bochartus* in his Particular Tract entituled, *Num Æneas unquam fuerit in Italia.*

(2) *Scaliger* here questions *Manilius* for giving to *Augustus* a share in the Government of Heaven before he was translated thither. *Quare dicit Calum regi ab Augusto quod nondum tenebat? Hoc mortuo melius conveniret* (says he.) But that Illustrious Critick might have remembered, That *Augustus* was even in his life time (such was the desperate Adulation of those Times) reputed and honoured as a God, and had his Priests, Altars, Sacrifices, and Temples, as is manifest by those Altars with their Inscriptions erected to him at *Lyons* and *Narbon*: To which *Horace* alludes (*Epist.* l. 2.) where he says that *Augustus* had that Præminence above either *Romulus*, *Bacchus*, *Castor*, or *Pollux*, who were not honoured as Deities till after their Deaths. For this Reason *Manilius* while yet living gives him a share in the Celestial Government, as another *Jupiter*. And hence *Philippus* in that flattering but ingenious Epigram of his (in *Antholog.* l. 1.) upon occasion of a Laurel springing out of an Altar dedicated to *Augustus*, at *Arragon* in *Spain*, calls him *Ζῆνα ἑ Αἰνείδην*, *JOVEM ENEADEM*. Nor did *Augustus* think less of himself, as may appear by his facetious and yet tart Answer to the *Arragonians* who told him of that Prodigy of the Laurel, or rather Palm, as *Quintilian* relates it: *Apparet (inquit) quàm sæpe accendatis.* It is a sign (said he) how often you kindle fire there; taxing them thereby of Negligence in his Worship: For if they had frequently sacrificed, the Laurel or Palm could not have grown there. And that he had equal share with *Jove* himself in the Vows and Addresses of Suppliants appears by this Ancient Inscription found near *Nîmes* in *France*:

SANCTITATI JOVIS
ET AUGUSTI SACRUM
LUCILIUS
CESTTI FIL. &c.

Of which *Gruterus* (in *Inscript.*) and *Guiranius* (in *Explicat. Num. Nemaus.*) But of the servile and Idolatrous Adulation of the Antients, and particularly of the *Athenians* and *Romans* towards their living Kings and Emperours; see *Athenæus Deipnosoph.* l. 6. c. 14 and 15. and the learned *Casaubon* thereupon.

(a) Having finished the Description of the fixed Stars and their several Asterisms, together with the Doctrine of the Celestial Circles: The Poet to compleat his Work, adds a brief mention of the several Planets according to their Order and Position; and then subjoyns (as a Close to the Whole) a short Enumeration of Comets, and other fiery Meteors. Of the Planets the first is

As

As ^(b) Saturn, ^(c) Jove, ^(d) Mars, ^(e) Phœbus, ^(f) Maia's Son,
Plac'd under these 'twixt ^(g) Venus and the ^(h) Moon.

Others there are too of less usual kind ;

For Suddain Flames streaming through Skies We find,

And Times more rare have Comets seen to blaze

(i) And loose midst mighty stars their threatening Rays.

Comets
and fiery
Meteors.

(b) Saturn; by the Greeks call'd *Κρόνος* from the slow time of his motion; by Plato in *Timæo* *Φαίλων*, i. e. *Apparens*; as being of all the Planets the least obscur'd under the Sun's Beams; by others *Λάμπερ*; and by Plutarch (in *facie Luna*) *Νυκτιγέτης*, i. e. *Noctis Castor*. In a fragment of an Ancient Astronomical Poem (cited by Scaliger in *Ausonian. Lest.*) stil'd *Pollucis Proles*; which by Fulgentius is thus explained, Saturn (says he) is called the Son of Pollux, *five à pollendo*, five à *pollucibilitate*, i. e. *humilitate*.

In Hebrew this Planet is call'd *Schabtai*, i. e. *Saturni seu Quies*. The Arabs call it *Zohab* from *Zabala*, which signifies *abscedere*, *recedere*, vel *discedere*, quod multum retrogradus sit, says the Learned Doctor Pocock (Not. in *Carm. Targui*.) By the Chaldeans it is called *Cann*, by the Egyptians *Rephan*, i. e. *Dens Temporis*, and (according to Achilles Tatius) *Νεμεστος* *Asis*, *Nemesis Stella*; by Astrologers term'd *Infortuna Major*.

(c) This Planet is in Hebrew call'd *Cochab Tzedek*, i. e. *Stella Justitia & Equitatis*; by the Greeks, *Ζεύς*; by Plato in *Timæo*, *Phaëton* from its brightness; by the Latines, *Jupiter*, i. e. *Jovans Pater*; by the Egyptians, *Picheus*, i. e. *Dens vite*, answering to the Greek, *Ζεύς*; by Achilles Tatius (in *Ifagog.*) *Ὀσεύδης* *Asis*, *Osiridis Stella*; by Hesychius, *Molobobar*, or rather (as Vossius *Idololatr. l. 2.* conceives the word ought to be read) *Μολοχ Βααλ*. In the Phrygian Tongue *Mazens*, (si fides Hesychio, says Mt. Selden.) In the Chaldee, *Taus*; in Arabick, *El Meftiri*. The Ancient Germans called this Planet *Taranis*, or *Taran*. Astrologers entitle him by that of *Fortuna Major*: Which they have from the Jews who call this Planet by the Name of *Mazal Tob*, i. e. *Sidus bonum*, seu *fortuna bona*. And therefore among them it was usual in the Marriage Ceremony for the Bridegroom to deliver to the Bride a Ring in which was inscrib'd *MAZAL TOB*. This Star in their Opinion conducing much to Fertility, and the Propagation of Children. As Mr. Selden (from the Authority of Munster) de *Diis Syris, Syntagm. primo*.

(d) Mars, call'd likewise by the Latines, *Gradivus*, seems to be derived from the Hebrew, *Maratz*, which signifies strong and powerful; or from *Mechares*, destroying, (as the often cited G. Vossius de *Idololatr. l. 2.*) call'd also in Hebrew, *Maadim*, from his Colour resembling Blood. In Greek, *Ἄρης*, and *Ἡρως* from his fiery light, as also *Θύρας* or *Thuras*, quasi *Thracum Deus*, according to Bochartus his Interpretation (*Phaleg. l. 3. c. 2.*) By the Egyptians call'd *Meloch*, i. e. *Dens Destructionis*, and (according to Vossius Valens, as cited by Mr. Selden de *Diis Syris Syntagm. primo*) *Artes*, ὅτι ὁ ζωὴν παραχρῆτης ἔχει, as being the Destroyer of Life; and according to Pliny and Achilles Tatius *Ἡρακλῆς* *Asis*, *Herculis Stella*; by the Emisæans, and those of *Edessa* styl'd *Ariz*, whom they believ'd to be *ἡγεῖς* *Asis* seu *Affector Solis* (as Julian the Apostate in his Encomiastick Oration upon the Sun;) by the Chaldeans call'd *Ariz*, i. e. *pravidus*; by the Arabs, *El Marigh*, i. e. *Sanguinolentus*. Astrologers stile him *Infortuna Minor*.

(e) This glorious Luminary is in Hebrew call'd *Chamab*, or *Schemash* from his Heat, or *Adon Schemez*, i. e. *Dominus Sol*; by the Phœnicians, *Baal Schemash*, i. e. *Dominus Celi*; in Chaldee, *Schemso*; in Arabick, *El Schems*; by the Greeks, *Ἥλιος* & *Ἡέλιος* quasi *ἥος* ὡς *ἥλιος*, i. e. *Lux*; whence the Latine, *Phœbus*; call'd likewise *Titan* and *Apollo*, *Cor Celi*, *Oculus Jovis*, & *Ὀμπερ* *Al. Ἡέλιος*, i. e. *Oculus Jovis*. By the Egyptians styl'd *Potiris*, i. e. *Dens Sanctus*, and *Osiris* from his vital and kindly Heat, as on the contrary *Typhon* and *Setib* from his violent and destructive fervor, call'd by them likewise *Horus*; by the Persians call'd *Mihra*, i. e. *Dominus* seu *Dynasts*; by the Arabs antiently *Urotali*, i. e. *Lucis Deus*, and *Dufares*, or *Dai. Ufar*, i. e. *Dens perustrans*, as *Sobedius de Diis German.* interprets those Names; by the Syrians according to Macrobius call'd *Adad*; or as Scaliger and Mr. Selden would rather have it, *Abad*, or *Elbad*, i. e. *Unus*, or as Pontanus (Not. in *Macrob.*) *Badad*, i. e. *Solus*, *Unicus*.

(f) Mercury is in Hebrew styl'd *Cochab*, or *Cochab*, i. e. *Stella fulgens*, and *Choteb*, i. e. *Scriba seu literatus*, and *Margimab*, i. e. *Negotiator*, and *Merkolis*, whence some derive the Name *Mercury*, though Arnobius l. 3. says he is so call'd by the Latines, quasi *Medicurrus*, from his Office as Messenger between the Gods and Men. In the Astronomical Fragment before cited he is call'd *Semo*, quasi *seu in infimis orbibus* (says Scaliger in *Auson. Lest.*) as those Deities were likewise call'd *Semmes*, quasi *infimis orbibus*, being *Majores Homidibus*, *Minores Diis*, as Fulgentius expounds the Word; by the Phœnicians call'd *Sumet*, i. e. *Minister* says Bochartus (*Phaleg. l. 1. c. 2.*) call'd by them likewise *Adored*. By the Chaldeans, *Nabu*; and as Hesychius says, *Sabab*; which latter makes the same with *Sasab*. He is likewise by the Emisæans and Edessæans call'd *Momimus*, They holding him to be one of the *Suns* *negid* *eg* or *Affectors*, as *Ariz* or *Mars* was another, according to the Testimony of *Julian* before cited. By Astrologers he is stil'd *Fortuna per Aspectum*, or (according to *Apuleius de Mundo*) *Communis Stella*; as participating of the Nature of the Star, with which he is in Conjunction, good with the good, bad with the bad. Hence the Author of the Fragment after *Conformis de Diis Natal. Stella Mercurii fit similis illi quæm videt*.

(g) Venus in Hebrew is call'd *Nogab*, i. e. *Lux*. The Name *Venus* coming from the Hebrew Word *Benot*, by the change of the first and last Letters; as Mr. Selden de *Diis Syris Syntagm. 2. c. 7.* and Vossius *Idololatr. l. 2. c. 22.* derive it. By the Greeks call'd *Ἀφροδίτη*, and *Φωσφόρος*, i. e. *Phosphorus seu Lucifer*, when she is the Morning Star, as *Ἑσπερος*, i. e. *Hesperus*, *Vesper* and *Vesperugo*, when she is the Evening Star; by *Timæus Locrus* call'd *Ἥγος* *Asis*, i. e. *Jovonis Astrum*. The Egyptians call her *Sureth*; the Chaldeans, *Sphurphara*, and *Astaroth*; by the Arabs named *Elzabareth* and *Chabar*, i. e. *Magna*.

(h) This Planet or Luminary is in Hebrew call'd *Lebanab* or *Laneab* from its white Colour; by the Greeks *Σελήνη*, from the renewing of its Light. She is by them likewise honoured with the Title of *Μήτηρ Κόσμου*, and *Πλήκτρον Κόσμου*, as *Gallimin. notis in Pselum* (*ἡ δὲ ἱερώ. Δελμ.*) By the Latines, *Luna*, quasi *Lucuna* or *Lucina*, the middle Syllable being cast away; as *Isidor. (Orig. l. 8.)* and before him *Cicero (de Nat. Deorum l. 2.)* *Luna à Lucendo, eadem enim Lucina*. Or as Vossius (*Idololatr. l. 2.*) derives it from an Oriental Original, *Luna potius à Lon*, i. e. *pernoctavit*, and Metaleptically, *quævis*: In regard as the Sun is President of the Days Labour, so the Moon is Surintendant of the Nights Rest and Quiet: By the Egyptian Copies call'd *Isis Pechoy Atephoom*, i. e. *Dominæ Maris & humidorum*; by the Chaldeans, *Schaorn*; by the Persians, *Ansis*; by the Arabs, *Alkamér*, and *Abitar*, and *Alisa*; by the Indians ador'd under the Name of *Schendra*.

(i) According to the Vulgar Belief, who conceive Comets to be fore-runners of great Troubles and Commotions; by which Manilius here equalizes their Extinction.

Q 2

Whither

(k) Alluding to the opinion of those who hold Comets to be generated of Elementary Matter, that is of Exhalation and Vapour; the first from the Earth hot and dry; the other from the Water, hot, moist and unctuous, carried by their Lightness above the Aery Region, where compacted they are by Motion of the superiour Orbs set on fire. Of which Opinion is Aristotle and his followers, and (differing only as to place) Galileo Rosbmannus, Guiducci, and some others. See Gassendus Tom. 1. part. 2. p. 700. and Ricciolus in Almagest. Nov. Tom. 1. l. 8. and Fromond. Meteorolog. l. 3.

(l) Touching the Duration of Comets, Pliny (l. 2. c. 25.) makes the shortest to be *Septem Dies*, the longest *Oliginta*, or rather (as Muretus conceives the Text of Pliny ought to be read) *C. & Oliginta*, a 180 Days; which Emendation Tycho Brahe Progygn. l. 3. p. 273. (though Scaliger seem to disallow it) approves of. And so long Seneca (*Natural. quest. l. 7.*) affirms the duration of one seen in the beginning of Nero's Reign. Josephus de Bello Judaico l. 7. reports one to have continued a whole year a little before the Destruction of Jerusalem in the form of that which is called *Xiphias*, or the Sword Comet. But this Tycho conceives to have been supernatural and extraordinary; so that the longest Duration of Comets (their ordinary not extending to half that space) seems not to be above six Months: Of which continuance we find in History only three. The first that of Nero's beforementioned in the year of Christ 64. the second in the year 603. not long before the appearance of the Impostor Mahomet; and the last in the year 1240. observed by Albertus Magnus.

(m) The Word Comet though when strictly taken it signifies *Stellam Crinitam*, and *Sidus Cincinnatum*; yet in a larger sense it is us'd as a common and general Name for all sorts of fiery Meteors: Of which Pliny (l. 2. c. 25.) reckons twelve several Species: Viz. *Cometa*, *Pogonias*, *Aconias*, *Xiphias*, *Discens*, *Pilates*, *Ceratus*, *Lampas*, *Hippus*, *Argentisomus*, *Hircus*, *Longchies*, *sen Hasta*. Divers of which are by our Poet here enumerated; whose Explanation we shall give in the following Notes; and shall only add the Distinction which is made by a Reverend and Learned Authour upon this Subject, who will have such Meteors to be peculiarly called Comets, as are super-Lunary, and have (as he says) *proprium Ætherium, Geometricum motum, qualis esse solet Planetarum*; to the others he gives the Name *κομηντοειδῆ*, as having some Resemblance with, but differing as to their Motion, Place, and other Affections, from Comets properly so called; their Birth and existence being within the sublunary Sphere. Vide D. Stib. Wardi Praelec. de Cometis.

(n) These kind of Meteors are by the Greeks properly called *ἀπὸ τῆς κομῆς*, a *Coma*, *κομήτου*, i. e. *Stelle Crinitae*, *sen Cincinnatae*, as is before noted; whose blaze rises upward, above the Head or Body of the Comet, whence Pliny calls them *Comarum modo in vertice Hispidus*: But when the Chevelure is round about equally diffused, then the Comet is called *Rosa*.

(o) Thence called *παγωνίας*, i. e. *Barbata*, from the Greek *παγων*, i. e. *Barba*, which the Vulgar distinguish not from that which is called *Caudata*, as Fromondus observes, l. 3. c. 4. That difference being caused only by its Respect to the Sun, for if it appear in the Morning before the Sun-rise it seems bearded, the Blaze tending in *Anteriora*, before the Sun, Westward; but if it appear in the Evening the Sun being set, then it seems *Caudata*, the Train flowing from behind the Sun, Eastward: But it is more properly said to be *Barbata*, when the Head or Body of the Comet is above, and the Train or Stream underneath flowing downward τὰ σχηματὶ παγωνος *More Barba*, in opposition to that which is called *Crinita*, whose Hair or Bush is above the Head of the Comet. See Stobæus Eclog. Physic. l. 1. And Suidas in voce Κομήτου.

Whither as (k) Earth transpires its Native fumes,
Those humid Spirits the hot Air consumes,
When a long Drouth from Clouds hath clear'd the Sky
And Heav'n by the Sun's scorching Beams grows dry;
Whence fitting Aliment is snatch'd by Fire,
And Matter like to Tinder flames acquire.

Their Ori-
ginal.

And since the Principles which Air compose
Are not gross Bodies, but like Smoke that flows,
The fiery Substance is not permanent,

But with the Comet, (l) soon as kindled, spent.
Else, if its Rise and Fall were not so nigh,
We should another Day in Night descry,
And the couch'd Sun, when from the watery Deep
Return'd, would the whole World surprize in sleep.

Then since the arid Vapour is not us'd
To be alike attracted, or diffus'd;
Hence (m) several Shapes to Meteors are assign'd,
As in dark Nights their suddain Births they find:
For now (like long hairs flowing from some head)
The Flame is in dishevell'd (n) Tresses spread;
Then what a fiery Peruke first appear'd,
Assumes the Figure of a blazing (o) Beard.

Their sev-
eral kinds.

Comets or
Stelle Cin-
cinnatae.

Pogonias
or Stelle
Barbatae.

Sometimes

Sometimes 'twixt equal-bounded Sides it flows;

Dokus or Trabs.

And a square (p) Post, or a round Pillar shows,

Pithetes.

Like a big-bellied (q) Tun now its swoln Beams

Dilate, and then contract to narrower Streams;

Bostruchias.

Like little (r) Locks which in small Curles are ti'd,

Stipula Ardentes. Lampadias. Stella Cadens.

Now like fir'd (s) sheafs, now like branch'd (t) lamps descri'd,

Now falling (u) Stars seem to shoot every where,

When wandering Lights do sparkle in the Aire:

Acomia.

And darted Flames swift (x) Arrows imitate,

When the dry Train runs in a narrow Strait,

For every Thing does mixed Fire infold;

That dwells in pregnant Clouds which Thunder mold,

Pierces Earths Veins; Heavens Terrors counterfeits

From *Aetna's* Caves; in Springs cold Water heats;

(p) This Comet or Meteor is called in English a Beam or Post; in Latine, *Trabs*; in Greek, *πυρρην Δορκς*, i. e. *Ignis Trabs*. When extended to an extraordinary length, it was by the Greeks likewise called *ὄδδς*, i. e. *Via*, as *Aristotle Meteorolog. l. 1. c. 6.* affirms. *Pliny (l. 2. c. 26.)* reports such a one to have appeared at what time the *Lacedaemonians* (vanquished in Fight at Sea) lost the Empire of Greece; and *Charimander* in his Book of Comets, as cited by *Seneca (Natur. Quest. l. 7.)* relates the like Meteor or unusual Brightness and Greatness to have been observed by *Anaxagoras*, for many days continuance. *Callisthenes* likewise affirms such a one to have appeared a little before *Buris* and *Helice* were swallowed up in the Sea: The difference between a *Trabs* and *Columna* is this: The first is of an oblong Form in a down lying Posture, the latter appears in an erected Figure. *Vide Fromond. Meteor. l. 2. c. 3.*

(q) Call'd therefore by the Greeks *πιδας, πιδης, and πιδης* from *πιδος Dolium*, and thence by the Latines, *Pithetes*, thus described by *Pliny (l. 2. c. 25.) Pithetes Doliorum cernitur Figura in Concavo fumida Lucis*, i. e. *Pithetes is seen in the form of a Barrel or Tun, within the Concave of a humid or smoky Light*; which according to *Seneca (Natur. Quest. l. 7.)* *vel fertur, vel in uno loco flagrat.* And to this kind is to be reduced the Meteor called *Tenaculum*, *sub cinere fumo Luridum*, says *Ricciolus Almag. Nov. Tom. l. 1. 8.*

(r) Known by the Name of *βουρρίας*, from the Resemblance it bears to a small Lock or Curle of Hair, which in Greek is *βουρρύν*; in Latine, *Cincinnulus*.

(s) *Manilius* here describes these kind of Meteors by the Periphrasis of *Hirta Messis*: They are commonly called *Stipula Ardentes*, resembling the firing of Straw or Stubble in the Fields. Which appear (as *Aristotle* says) when the Exhalation that causes them is extended to a considerable breadth and length.

(t) Called therefore *Lampadias*, imitating burning Lamps or Torches, which *Manilius* here divides into *Fissus Ramosus*, branched sprays, and are not seen but in their Fall. Of these kinds *Pliny (l. 2. c. 26.)* reports one to have appeared at Noon in sight of all the *Roman* People, at what time *Cesar Germanicus* exhibited a Prize or Spectacle of Fencess. He makes of them a double difference; the first called *Lampades*, Lamps or Torches, which burn only at the Tops, though they draw a long fuming Train after them. The other called *Belides* (commonly englished Lances) burning through the whole Extent or Length of their Train: Of which last sort (says he) there were some seen in the Calamity of *Mutina* when that City was sack'd.

(u) *Anaxagoras* would have these kind of Meteors to be sparkles falling from the fiery Region. By *Eunapius* in *Aedes*, they are called *ἀπορροὶ τινὲς Ἀστρον*, *Effluentia seu Trajectiones quadam Stellarum*; by *Aristotle* *ἑρριζοῦν* and *Ἀστρον*, *discurfus*, seu *Stella fluxus*; By the *Arabs* called *Shibab*: which (as I find in the Commentator upon *Ulugh Beigh's* Tables) is expounded, *Stella qua nocte incedis sicut Ignis*; and *Stella Demones pellens*; for the Antient *Arabs* and Eastern People fancy'd falling Stars to be fiery Darts lanc'd from Heaven against the Devils or evil Spirits of the Aire, as is likewise observed by the Learned *Golius (notis in Alferganum. p. 65.)* But *Fromondus (Meteor. l. 2. c. 3.)* according to the Doctrine of *Aristotle* describes them to be a fiery Exhalation expelled out of a Cloud, having the Resemblance of a true Star falling. They are conceived to come from the same Cause and Origine as Lightning, though they are not attended by Thunder, at least as to us perceivable; Bearing the same Proportion to Lightning, as the firing of a Musquet does to that of a Canon. For as at a great distance we may see the Fire of a Musquet, but scarce hear its Noise; but of a Canon within the same Distance we may both see the Fire and hear the Noise: So by reason of the Exility of the Exhalation we hear not the Noise when these falling Stars break from a Cloud, as we do Thunder when ushered by Lightning. *Fromondus* compares these Meteors to our kind of Fireworks called Rockets (though their Motions be different, the one being forced upward the other downward) which run in a Train and fall in the manner of Stars. And therefore *Pliny* calls them *Scintillas & Discursus Stellarum*; *Ptolemy*, *Trajectiones*; both which our Poet expresses when he says they shoot and sparkle:

(x) Call'd in Greek *Ἀκοντίας*, and from thence in the Latine *Acontiz*, which as *Pliny* says *Jaculi modo vibrantur occurrentis significatu*. Of which the Emperour *Titus*, or (as some will) *Tiberius*, is said to have written an excellent Poem. This Meteor when it appears in a shorter form is called *ἑρριζας*, i. e. *Ensis Gladius*, seu *Pugio*, the Head or Body of the Comet representing the Hilt, the Ray or *Jubar*, the Blade of a sword, and appears of all others the most Pale:

R

Lurks

Lurks in hard Flints, and in green Bark finds Room,

(y) To this Accident *Viruvius* (l. 2. c. 1.) ascribes the Original of our Culinary Fire; where he says, *Ab Tempestatibus & ventis densa crebrisque Arboribus agitata, & inter se terentes Ramos, Ignem excitaverunt.* Which being observ'd by the Ancients, they from thence derived their *Ignisaria*, by rubbing one stick against another, until being heated they caught Fire, which they fed by dry Leaves, and such like combustible Fuel. This Part says *Turnebus* (not in *Theophrast. de Igne*) was by them called *εὐχόμενος*, i. e. *Fucus*, or according to the Scholiast of *Apollonius sophus*, i. e. *Strator*. Which we may compare with our Tinder. The other parts which were the sticks they called *τέρετρον*, i. e. *Terebrum*, and served instead of our Flint and Steel. The Trees most subject to this manner of taking Fire, are reckoned the Fig-Tree, Laurel, Oake and Ilex, the Tile-Tree, Ivy and Vine, but especially the Laurel. *Caneparius de Atramentis* c. 13. reckons up these several ways of generating and kindling Fire. *Propagazione, Putredine, Coitione, Antispasmi, Frictione, & Percussione.* Which he reduces to these three kinds, Propagation, Coition, and Motion. In which the rest are included; for *Putredo*, and *Antispasmi* kindle fire by compelling the dispersed Heat to unite together, and therefore fall under the head of Coition, as Friction and Percussion under that of Motion.

When Woods by their (y) Collision flames assume;
So fertile every Matter is in fire.

Nor suddain Flames breaking through Skies admire,

Nor frequent Coruscations by Earths hot

Exhaling Vapours in the Aire begot,

Which the swift-feeding Flame pursues or flies;

Since trembling Lightning darted through the Skies,

Thou mayst behold in midst of falling Rain,

And Thunder through forc'd Clouds its way constrain:

Whether from (z) fiery Seeds inclos'd in Earth,

And thence emitted, Comets draw their Birth,

Or Nature did those fading Lights design

As (a) sub-united Stars in Heaven to shine,

Or the (b) Sun's rapid Course these Meteors rears

And draws t' himself, his flames involving theirs,

And now dismisses; Like (c) *Cyllenius* Light,

Or fair (d) *Dione's* Star, Usher to Night;

Which often shine, as oft the light delude,

(Hiding themselves) and then again are view'd:

Their
Causes
further en-
quired in-
to.

(z) He resumes his former Arguments touching the Original of Comets, and begins with that of the *Peripateticks*, asserting (as is before noted) Comets to come from a sulphureous unctuous ignescent matter exhaling from the Earth and Sea, &c. *Vide Aristotel. Meteor. l. 1. c. 7. and 10.*

(a) The Opinion of *Anaxagoras* and *Democritus*; who held Comets to be the Coapparition of wandering Stars or Planets, which when they approach near each other seem mutually to touch, and to become as it were all one; or as *Plutarch* expresses it, *A Conjunction of divers Stars meeting with their Lights together*; or according to *Laertius*, *a Concourse of Planets emitting Flames.* Of which Opinion likewise was *Zeno* in *Seneca Natural. Quest. l. 7. c. 19.* Our *Zeno* (says he) was of the Opinion of those who judged the Stars to concur, and intermingle their Rays, and by that Society of Light to beget the Image of a long Star; which Collucency from the Conjunction of the Rays of divers Stars or Planets *Manilius* here calls *Subjuncta Sidera.*

(b) The Chaldeans (as *Stobaeus Eclog. Physic. c. 3.* delivers their Opinion) held that there were other Planets besides those ordinarily observed, which are sometimes inconspicuous, in regard they move at a great distance above us. But now and then appear when they come nearer to the Earth, and run a lower Course; at which time by those who know them not to be Stars, they are called Comets. Again, they seem to disappear and vanish, when they retire back into the Depth or Profundity of the *Ætherial Region*: As Fishes cease to be discerned when they sink down into the Bottom of the Sea. Of which Opinion likewise *Seneca* reckons *Apollonius Mindius*; who held these to be *æterna Nature Opera*; Or, to use *Pliny's* Words, *esse Sydera Perpetua; suoque ambitu ire, sed non nisi relicta à sole cerni.* Whence by *Manilius* they are said sometimes to be involved, sometimes dismissed by the Sun. See *Ricciolus in Almagest. Nov. Tom. 2. l. 8. and Gassendus Tom. 1. l. 5. c. 1.*

(c) *Mercury*; who because he makes an almost equal Course with the Sun, and ascends not (as *Aristotle* says) to any great Height above the Horizon, is therefore seldom seen.

(d) *Venus*; so called from her Mother *Dione*; Daughter of *Tethys* and *Oceanus*: Whence that of *Theocritus* (*Eidyll. 15.*) *Κύνη Διωνότα Διόνα Κυπρί*: And of *Virgil. Æneid. 3.*

Sacra Dioneæ Matri ———

Or

Or God in Pity to our humane State,
Sends these as ^(c) Nuncio's of ensuing Fate,
Never did Heav'n with these fires vainly burn ;
Deluded Swains their blasted Labours mourn,
And the tir'd Husband-man to fruitless Toyl
Compels his Oxen in a barren Soyl :
Or the lethiferous Fire their Bodies kills,
Wasting their Marrows out with lingring Ills,
People consumes, whole Towns depopulates,
Whilst flaming ^(f) Piles conclude the publick Fates.
Through ^(g) Erethean Lands as that ^(h) Plague stray'd,

Their Calamitous Efflu.

(e) The Belief of the Illiterate ; asserted likewise by the Learned of divers Ages. Several of the Antient Fathers maintaining the Opinion , That Comets are made by the immediate Act and Power of God , and designed for the Terrour , Destruction , or Admonishment at least , of the offending World , especially of Princes. Fautors of which Opinion are reckoned Tertullian , Nicephorus , Damascens and Saint Austin. Vide Ricciolum Almagest. Nov. Tom. 2. l. 8. Petit Dissertac. sur les Cometes , where he discourseth against that Opinion ; and L'escaloperius in Cicero. de Natur. Deorum , moderating the Assertion of Damascens , who held Comets to be sent by God as the peculiar fore-running Signs of the Death of Kings and Potentates.

(f) By burning of the Dead , which was customary with most Nations amongst the Antients ; especially with the Athenians , and the Greeks in general , for so says the Scholiast of Thucydides (l. 2.) εἶπεν γὰρ ἢν νόμος Ἀθηναίων ἔστιν ἡ παλαιὰ ἔλλασι. It was established by Law among the Athenians ; and all the Greeks. The Ground and Reason thereof proceeding from their Opinion , that what was Divine and Immortal in Man , was by that fiery Vehiculum carried up to Heaven , and what ever was Terrestrial and Mortal , subsided in the Ashes. They did by that Means likewise as they conceived (according to the Testimony of Pliny l. 7. c. 54.) avoyd the Infection of the Aire by the Putrefaction of buried Carcasses ; but especially the Injury or Ignominy which might be done to the Bodies of the Dead , by taking them out of the Grave ere consumed. For which reason the Tyrant Sylla ordered his Corps to be burned , lest he might be served in the same kind as he before had served his Enemy Caius Marius ; whose Body he caused to be digged up and thrown into the River Aniene , (now Teverone) as Cicero in secundo de Legibus , and Plutarch in his Life testifies. This Custom of burning the Dead ceasing among the Romans about the Time of Maximinus the Tyrant , or not long before : It being hard to point out the Precise Time : Seeming to be abolished by the contrary Custom of the Jews and Christians , especially by the Prevalence of the latter. Vide Kirkmanum de funere Rom. l. 1. c. 2. & Meursium de funere , necnon Vales. Not. in Euseb. Histor. Ecclesiast. l. 9. c. 8.

(g) The Athenian Territories : so called either from Eretheus the Son of Vulcan and Minerva , Daughter of Breus , or Cranaus , or from Eretheus Son of Pandion. Diodorus Siculus (Bibliothec. l. 1.) makes him to have been by Birth an Egyptian , and that in time of a general Famine , he brought great store of Corn from Egypt to Athens , and for that signal Benefit , was by the Athenians made their King. Herodotus (l. 8.) calls him Earth-born , where he says that in the Castle of Athens there was the Temple Ἐρεχθίδος τῆς γῆς γένεος λεγομένης , of Eretheus the Earth-born ; alluding perhaps to the fabulous occasion of his Birth (of which Apollodorus Bibliothec. l. 3.) Or in regard of the incertainty of his Parentage ; whence those whose Original was not known were by the Antients reputed Terræ filii. Vide Cosaubon. in 6. Satyr. Persii upon these Words

Terra est jam filius —

Eusebius in Chronic. makes him Brother to Perseus , but erroneously : Vide Scaliger. Animadvers. in Euseb. and Meursii de regno Attico l. 2. c. 1. and 7.

(h) He alludes to that Memorable Plague at Athens , which hapned in the beginning of the Peloponnesian War ; of which Lucretius l. 6.

——— Mantis Efflu
Pinibus in Cecropia funestos reddidit Agros ,
Vastavitque Vias , exhaussit Civibus Urbem.

Accurately described by Thucydides (l. 2.) and thence paraphrased in English Verse after the Pindarick Way , by the excellent Pen of Doctor Spratt ; who for that Reason merits with Thucydides himself (in Virgil. Catalept.) to be filed

——— Tyrannus Attica Febris —

(i) *Jo. Meursius* in his particular Treatise *de Fortuna Atica*, c. 10. conceives the Epithete *Antique* to be here given to *Athens* by *Manilius* for distinction sake, because (as he would have it) that City in *Manilius* his Time (whom he styles as falsely as inconsiderately *Inferioris Ævi Scriptorem*) was call'd *Nova Athene*. This he would seem to make out from the Authority of this following Inscription in *Gruterus*, extant at *Millan*; cited likewise by *Scaliger* in 5. *de Emendatione Tempor.* & in *Animadvers. in Euseb. ad Numer. MMCXLVII.*

(i) Old *Athens* waste by (k) peaceful Funerals lay'd,
When each contracted others Death; whilst Art
No Cure could find, nor Prayers no help impart;
Care to the Sick, and Funerals to the Dead,
Ev'n (k) Tears were wanting: Those no Mourners shed.

IMP. CÆSAR. T. ÆLIUS HADRIANUS
ANTONINUS
AUG. PIUS. COS. III. TRIB. POT. II. P.P.
AQUÆDUCTUM IN NOVIS ATHENIS COEPTUM
A DIVO HADRIANO PATRE SUO,
CONSUMMAVIT. DEDICAVITQ.

But against this his Opinion we oppose the better Judgment of *Salmasius*; who (in *Not. in Ælium Spartianum*) makes it evident that the *Grecian Athens* was never call'd *Nova Athene*. But that that Part of it which was re-edified by *Hadrian*, was expressly call'd *Hadrianopolis*; as is clear from the Testimony of *Spartianus*. Besides, *Quis credat Inscriptionem Latinam in Urbe Græca fuisse positam*, says *Salmasius*? Or what Relation had the Works or Structures at *Athens* in *Greece*, to *Millan* in *Italy*? *Quid Mediolano cum Athenis*? Says *Scaliger Animadvers. in Euseb.* With fairer Probability therefore conclude we (as *Salmasius* does) that the *Nova Athene* mentioned in the foregoing Inscription was a Town so called in *Liguria* a Region of *Italy* (which comprizes part of the Dutchy of *Millan*) whereto *Stephanus de Urbibus*; and that *Manilius* by that Epithete means no more than to set out a Matter of fact of great Antiquity without any reference to the Novel Conceit, or Nominal Distinction, which *Meursius* fancies.

(k) *Tanaquil Faber* in his Notes upon the sixth Book of *Lucresius* by way of Collation cites these two Verses of *Manilius*, thus read in the Original.

Qualis Eretheos Pestis populata Colonos
Extulit Antiquas per funera Pacis Athenas.

Which Verses he undertakes to correct or amend, but truller to corrupt after this manner.

Qualis Eretheos olim populata Colonos
Extulit Antiquas per funera, Pestis Athenas.

He confessing that he made that Alteration for this Reason, *Because he never yet saw any that could understand the meaning of funera Pacis*. But that nimble Critick might have forborn the exposing of his own or others Ignorance in that Point, and have left *Manilius* his Elegancies unblemished by so rude an Interpolation; who ingeniously uses the expression of *funera Pacis*, or Peaceful funerals in Opposition to (*cruenta funera*, or *funera Belli*) those occasioned by the Sword. For as *Thucydides* observes, the *Athenians* were at once doubly afflicted, *Ἀθηναῖοι τε ἐνδὸν θυμολόντων, καὶ γῆς ἔξω ἀπὸ πολεμίων*, *Hominibus inter Urbem morientibus, Terræque extra vastatâ*. Which Place his Scholiast illustrates by applying this Verse of *Homers*.

Εἰ δὴ ὅμῃ πόλεμος τε δαμάει καὶ λοιμός Ἀχαιῶν.
Siquidem simul Bellumque damat & Pestis Achivos.

Now the Mortality occasioned by the Plague, *Manilius* here describes by the Periphrasis of *funera Pacis*; which had brought upon *Athens*, unconflicted by any Enemy within, a greater Destruction than the bloody Effects of War had done upon its Territories without.

(l) Tears were a main part of Funeral Exequies, whence that of *Servius* in *Virgil*. *Sine fletu non est Sepultura*. The want of them being reckoned as unfortunate as the Deprivation of Funeral it self. *Virgil* (in 11. *Æneid.*) joyns them as alike calamitous.

Nos Animæviles, inhumata, infletaque Turba.

And *Ovid* (*Metamorph. 11.*) brings in the drowned *Ceyx* appearing, and thus speaking to his *Halcyon*:

Surge, age, da Lacrymas, Lægubriaque indue, nec Me
Indeploratum sub inania Tartara mitte.

Rise, weep, and put on black, nor undeplor'd,
For pity, send Me to the Stygian Ford. G. S.

The Antients believing the Dead to be comforted and delighted with the Tears of their surviving Friends. And upon this Ground it is that We meet so frequently in the Antient Epitaphs with *LACRIMAS POSUIT*, and *CUM LACRIMIS POSUIT*, and *LACRIMIS ET OPOBALSAMO UDUM CONDIDIT*, and *TUMULUM LACRIMIS PLENUM DEDIT*. Of which *Gutherius* (l. 1. *de Jure Manium*) affords the Examples. Wherefore not unfitly does *Manilius* here, by the Defect of so mean and ordinary an Obsequie, aggravate the Miseries of a Pestilential Mortality, by which Mankind is deprived of all the Resentments and Benefits of commiserating Humanity.

The

The wearied Flame did from its Office cease,
And Heaps of ^(m) fir'd Bones burnt dead Carkasses;
Whilst to so great a People scarce an Heir
Remain'd: Such Woes dire Comets oft declare.
They bring with them the Worlds ⁽ⁿ⁾ last Funeral Fire,
In which sick Nature one Day must expire.

Suppos'd
to occasion
the Worlds
General
Conflagra-
tion.

Wars they proclaim too, Tumults to arise,
And open Arms from secret Treacheries.

So when the Nations late from Faith withdrew,
When the fierce Germans our great ^(o) Varus flew,

(m) *Thucydides* delivers the same historically. Some (says he) when one Body was burning, brought another, and casting it upon it went their Way. Leaving the Reliques of one fired Carkass to burn another. For as Dr. *Sprat* ingeniously paraphrases upon that part of the Story,

*The Woods gave Funeral Piles no more,
The Dead the very fire devour.*

A sadder kind of Funeral than that which *Virgil* (*Æneid.* 11.) gives to the slaughtered Latines, for they had yet Wood to burn them.

*Cetera confusæque ingentem Cædis Aceruum
Nec Numero, nec Honore cremant* —

Upon which last Words *Gutherius* observes, *Nec Numero nec Honore combusti dicuntur, qui confuso Lignorum Aceruo, lento dabantur Igni, multis Corporibus simul congestis.* And this by *Macrobius*, is called *Tumultuarium funus*, only used in calamitous Accidents. In which kind of promiscuous Funeral it is noted by *Macrobius* that it was usual to every ten Mens Bodies to add one Womans to make them burn the better. He gives the Reason likewise; *Quod Muliebri Corpus juvabat arduos Viros, non Caloris erat, sed Pinguis Carnis & Oleo similis.* Vide *Macrobius Saturn.* l. 7. c. 7.

(n) *Manilius* here will have Comets to be the Usurers of the Worlds general Conflagration. Which Opinion seems to be grounded upon this supposition, That the *Æther* by reason of the long Consumption of its humid Aliment shall be then fitted for such fiery Productions; at which time likewise the Sun and Stars having wasted all the Elementary Supplies, shall reduce the World into Flames. Being the Opinion of the Stoicks, especially of *Zeno*, *Cleanthes*, *Chrysippus*, and (but doubtingly) of *Panætius*; of which *Cicero* in *secundo de Natura Deorum*: Though the Doctrine be as antient as *Heracitus*, *Empedocles*, and *Hyppasus* the *Metapontine*. Yet was it not by them believed that this Conflagration should bring with it a total, substantial Destruction, but rather a purifying Renovation of the World: For so *Cicero* delivers their Opinion where he says, *Ad extremum Omnis Mundus ignescet. Itz relinqui nihil præter Ignem; à quo rursus animante ac Deo Renovatio Mundi fiet, atque idem Ornatus orietur.* Christian Philosophy likewise declaring not only the Worlds *ἑκτασις* or Conflagration; but its *ἀπικοδόσις* or Restoration. See *Lipsius* in *Stoic. Phil. Dissertac.* 22, and 23. *Debrinus* in *Commentar. ad Octav. Senec.* p. 533. *Gassendus* *Tom.* 1. *Syntagm. Philosoph.* part. 2. p. 178. and *L'escalopier* in *Cicéron. de Natur. Deorum.* l. 2. *Scil.* 118.

(o) Divers, and some eminently learned (among whom is *Sleydan* de 4. *Imper. Stadist.* in *L. Florum*, and the excellent *Gassendus* in *vita Epicuri*) conceive the *Quintilius Varus* here mentioned to be the same with that *Quintilius Varus*, of whose Death *Horace* in that consolatory Ode of his to *Virgil* (*Carm.* l. 1. *Od.* 24.) But since it is evident that *Quintilius Varus* who was General of the Roman Legions in Germany was not slain till twenty eight years after the Death of *Virgil* (to whom that Ode is directed) *Virgil* dying in the DCCXXXIV year of Rome, and *Varus* not till DCCLXII year of the same (at which time neither *Virgil* nor *Horace* were living) It must be against all Reason and Chronology to imagine him the same with that *Quintilius Varus* whom *Horace* there bewails. He being justlier conceiv'd to be the same with him mentioned by *Eusebius* in *Chronic.* in these Words. *Olympi CLXXXIX. Quintilius Cremonensis Virgilii & Horatii familiaris, moritur. Servius* likewise styling him *Gognatum Virgilii*, and therefore *Horace* makes this Particular Application of his Loss to *Virgil*.

*Multis ille quidem flebilis occidit,
Nulli flebilior quàm Tibi Virgili.*

See *Torrentius* in his Notes upon that Ode, and *Tonaquil Faber* expressly discussing this Point. (*Epistol.* 46. l. 2.) But the *Quintilius Varus* here meant, was the Son of *Sextus Quintilius Varus*, who (together with *Artius Varus*) warred against *Jul. Cæsar*, as we find in his *Commentaries de bello Civili* l. 2. and was slain afterwards in the Battle with *Brutus* and *Cassius* against *Augustus* by the Hand of his Freeman, *Quem id facere coegerat cum se insignibus Honorum velasset*, as *Velleius Paterculus* l. 2. c. 71. relates. Whose Fate his Son followed though in a different Cause, *Quippe*, (to use *Paterculus* his Words) *Paterni, Avitique Exempli Successor, se ipse transfixit.* He was before the Generalship of the Army in Germany, Prefect of Syria; *Quam, Pauper; Divitem ingressus, Divem, Pauperem reliquit*, as the same *Velleius Paterculus* testifies l. 2. c. 117.

S

And

(p) Of this sad defeat of *Quintilius Varus*, and the Roman Legions by the Germans under the Conduct of *Arminius*, (occasioned by *Varus* his overweening confidence, who in the midst of an Enemy Country, undertook to rule by the bare Formalities of Law, a fierce and warlike People whom the Power of the Sword could not terrify or subdue.) See *Strabo* l. 7. *Velleius Paterculus* l. 2. *Lucius Florus* l. 4. c. 12. *Tacitus Annal.* l. 1. *Sueton.* (in *August.*) and *Dion Cassius* l. 56. A Disaster so resented by *Augustus* that it brought him almost to despair; who often in Passion knocking his Head against the wall would cry out, *Quintili Varri, redde Legiones.* *Quintilius Varus*, restore Me my Legions! The Place of this defeat *Cluverius* (in *Antiqu. Germ.* l. 3.) will have to be near the Town of *Dietmel*, antiently *Theutoburgium*; for thus (from the forenamed Authorities) he describes *Varus* his March as he was train'd by the tubility of *Arminius* from his Camp at *Alizon*, now *Eisen*, towards the Borders of the *Cherusci*. First passing through the utmost Bounds of the *Marfi* towards

a Town which now is called *Teuten Meyer*, he came to the *Woody Hills*, where is the Castle at this Day called *Falkenberg*: In the *Valley* beneath which runs the River vulgarly called *Beerlebecker Beck* so named from the Town *Beerlebek*; then entering the confines of the *Cherusci*, he was there between the said Mountains, and the Town of *Theutmel* or *Dietmel*, set upon, and his whole Army defeated and slain. *Otho Frisingensis* l. 3. reports this Defeat to have been given within the Territories of *Ausburg* near a Place where there is a Hill by some said to be raised by the heaped up Bones of the slaughtered Romans, and therefore called *Perleib*, *quod ibi Legiones perierint*: But that gross Error is refuted by *Velferius* l. 1. *Rerum August. Vindel.* *Berneggerus* in *Sueton.* affirms the Place where this Defeat was given, to be at this Day by the Germans in Memory of their Victory called *Winfeldt*, near the Town *Horn* in *Westphalia*, not far from *Dietmel* aforesaid. But one Place or Time was not sufficient to comprize so signal a Disaster, for the Fight (or slaughter rather) was continued for three days. The first Days Conflict was near the Head of *Luppis*, now called *Lips-spring*; the second Days Discomfiture was carried more remote from thence toward the Castle of *Falkenberg*; the third and final Defeat was in the Fields (from their Victory by the Germans called *Winfeldt*) between *Horn* and *Dietmel* before mentioned. *Vide Monument. Paderbornens.* p. 35.

(q) He refers to the Civil Wars raised by *Brutus* and *Cassius*, who on these Plains fought a desperate Battle against *Augustus Caesar*, wherein they both perished together with the Roman Liberty: Of which see *Livy Epitom.* l. 124. *Plutarch* (in the Lives of *Marcus Antonius* and *Brutus*) *Lucius Florus*, l. 4. c. 6. and *Appian de Bellis Civilibus* l. 4. These Plains were so called from the Town *Philippi*, heretofore called *Bunomus* or *Bunomia*, *Datus* and *Crenides*; the last name being given it from the many Springs there rising, but afterwards renamed from *Philip* the Father of *Alexander* its Reedifier, particularly described by *Appian* (*loco citato*) a Place fatal to the Roman Common Wealth; by most conceived the same with the *Pharsalian* Plains where *Pompey* received his last and fatal overthrow; but erroneously. For those were in *Thessaly* near the River *Pharsalus*; these in *Thrace* or the utmost Limits of *Macedonia* not far from the River *Strimon*. *Vide Bunonem* in *Cluver. Introduct. Geograph.* l. 4. c. 8. However the Poets generally, and *Virgil* himself, with our *Manilius* confounds them with the *Pharsalian* Plains; as in this Verse in *I. Georgic.*

Romanus Acies iterum videre Philippi:

And in compliance with that Vulgar Opinion *Caellavius* in this following Epigram upon the present Subject.

*Pharsalis Ausonias frangit rursus Hasta Secures,
Et rursus Æmæbio Pulvere Roma cadit.
Credo suum Macetum Tellus imitatur Alumnum:
Hic Orbem, Illa Urbem vicis & Orbis Heram.*

Once more *Pharsalia* routs *Ausonian* Bands,
And *Rome* once more falls on *Æmæbian* Sands.
The Land sure imitates her great Son; He
The whole world vanquish'd; the worlds Empress she.

(r) The Memory of this Victory, which seems chiefly to be attributed to the Valour of the *Prætorian* Cohorts, is preserved in some antient Medails, on one side whereof is the Figure of Victory standing upon a Globe, holding forth in her right Hand a Laurel Wreath with this Inscription, V I C T. A U G. On the Reverse three Military Ensigns with this Inscription, C O H O R. P R Æ T. P H I L. See *Goltzius*, *Occo*, and *Patin* in *Numism. Imp. Rom.*

Yet

Yet ends not there : the ⁽¹⁾ *Actian* Battle's fought ;
When Armies as a fatal ⁽²⁾ Dowry brought,
Once more engag'd for the Worlds glorious Prize,
And fought at Sea, a Ruler of the Skies ;
When Fleets did on a Womans Sway depend : (tend.
^(u) *Nile's* Timbrels gainst *Rome's* ^(x) Thunder durst con-

(1) The Battle of *Actium* was one of the most signal that ever was fought at Sea ; upon whose Success depended no less than the Empire of the whole World. The Chiefs interess'd were *Augustus Cæsar*, and *Mark Anthony*, abetted with all the Strength of the East and West. *Plutarch* reckons on *Mark Antonies* side no less than eleven Kings engaged, whereof six were personally present in the Action. The Battle being denominated from the Town of *Actium*

um in *Epirus* seated upon a Promontory of the same Name, at present call'd *Capo Figalo* at the Mouth of the *Ambracian* Golf, known at this Day by the Name of *Golfo de Larta*; near to which on the third of *September* in the 723. year after the building of *Rome*, (as *Brieti* computes it) the Engagement hapned. *Augustus* his Fleet consisting of 400 stout Men of War, *Mark Antonies* being double that Number, and of much greater Burden. But by the Valour and Conduct of *Agrippa* the Victory after a long and dubious Dispute rested on *Augustus* his side; *Cleopatra* first flying, and after her *Antony* shamefully following. See *Virgil*, *Æneid*. l. 8. *Horace* *Od.* 37. l. 1. and *Epod.* 9. *Plutarch* in the life of *Mark Antony*, and particularly *Fournier* in the fifth Book of his *Hydrographie*, where he treats de la Puissance Navale des Anciens. p. 217, and 218.

(2) So by *Sidonius Apollinarius* (in *Panegy. ad Majorian.*) the Army which *Mark Anthony* and *Cleopatra* brought against *Augustus* is called *Dotalis Turba* in this Verse,

Dum venis à Phario dotalis Turba Canopo.

For *Anthony* had promised to *Cleopatra*, by the help of that Army to give her the *Roman* Empire for her Dowry; confirm'd by *Propertius* l. 3. *Eleg.* 1.

*Conjugis obsceni Pretium Romana poposcit
Mænia* —

And *Lucius Florus* l. 4. c. 11. *Mulier Egyptiaca ab ubrio Imperatore Pretium Libidinis, Romanum Imperium petis, & promisit Antonius*, to which *Albinovanus* (speaking of *Mecenas*) alludes.

*Hic modo Miles erat, ne posset Fæmina Romam
Dotaletm stupri, turpis, habere sui.*

And the Authour of this Epigram (in *Catalect. Veter. Poet.*)

*Venerat Eoum quasiens Antonius Orbem
Et conjuncta suis Parthia Bella gerens,
Dotaletmque petens Romam Cleopatra Canopo, &c.*

(u) *Manilius* here calls them *Isaca Sistra*, the *Sistrum* being a kind of Musical Instrument or *Crepitaculum* used in the Sacrifices of *Isis* to whom it was sacred; reputed to have been her Invention, and thence so named according to *Isidor*, or from the Greek Word, *σεσω*, i. e. *quatio*, because it was shaken (when play'd on) *crispante Braccio*, as *Apuleius* (l. 1. *Metamorph.*) describes it. It was made in form of a Racquet, of Iron, Brass, Silver, and, sometimes, of Gold; through the Rim, Webb, or Border thereof was put several small Rods, of the same Metal with the *Sistrum*, on which were hung divers Rings, which, when shaken by the Handle, made a kind of gingling Noise. The Greek Poet *Hedylus* in an Epigram of his cited by *Asbenaus*, seems to derive the Invention of the *Sistrum* from the murmuring Sound which *Nilus* makes passing through the Cliffs and rocky Places; touching which, see *Casaubon*, *Animadvers. in Asbenaum*, l. 11. c. 13. It is by *Scaliger* (in *Copam Virgil.*) and *Salmasius* (in *Flav. Vopisc.*) confounded with the *Crotalum*, but erroneously, as observed by *Pignorius* (de *Servis*, p. 81.) where the Differences are clearly stated from their contrary Figures. It was the peculiar Instrument of *Ægypt*: That Land being by the Prophet *Esay* (c. 8. v. 1.) according to the Interpretation of *Bochartus* (in *Geogr. Sacr.* l. 4. c. 2.) called *Terra Cymbali Orarum*, i. e. *Cymbali Marginati* The Land of Timbrels with Rims or Borders (to distinguish them from the Timbrels of other Countries) and not as our English Translation reads it, the Land shadowing with Wings. *Isidore* yet affirms the *Amazons* to have used this sort of Timbrel in their Wars instead of Trumpets, as well as the *Ægyptians*; and gives the Reason, *quia Inventrix ejus erat Mulier* (namely *Isis*.) *Kirker* likewise (in *Arte Magna Conson. & Disson.* l. 2.) reports the Jewish Timbrel which they call *Thoph*, to have been of the same Fashion with, and made in Imitation of the *Ægyptian Sistrum*; And that the Hebrew Virgins used it in their Solemn Dances, as he proves by the Examples of *Moses* his Sister, and *Jephie's* Daughter: The use thereof being yet continued in *Palestine* as he affirms from the Testimony of credible Witnesses, the Figure whereof he gives us correspondent to that of the *Ægyptian Sistrum*; of which see more in *Plutarch*, (l. de *Iside & Osyride*) *Jeronymus Bossius* in his particular Tract entitled *Isiscus seu de Sistro*, *Dempster* in *Paralipom. ad Rosin.* l. 2. *Pierius Hieroglyph.* l. 4. c. 6, and 7. *La Cerda* in 8. *Æneid. ad Vers.* 696. and *Kirker* in *Oedip. Ægypt.* Tom. 1. & alibi.

(x) *Tristan* in his Historical Commentaries (Tom. 1. p. 82.) conceives by the Thunder here mentioned, some Tempest of Thunder, which he observes to have been always favourable and auspicious to *Augustus*, and instances particularly (from *Apian*) in the Conflict against *Sextus Pompeius*; imagining the like propitious Accident to have happened in this against *Mark Anthony* and *Cleopatra*. But his Conjecture is without Ground: for the Poet intends no more in this Place than to set forth the Engagement between the Forces of *Augustus* under the Protection of *Jupiter Capitolinus* or *Tonans*, the *Roman* Deity; and those of *Anthony* and *Cleopatra* under the Protection of *Isis*, the *Ægyptian* Goddess. Hence that in *Catalect. Vet. Poet.*

— *Capitolino Sistra minata Jovi.*

And *Propertius* speaking of *Cleopatra* Lady General in the Battle of *Actium*,

Ausa Jovi nostro latrantem opponere Anubim.

Consonant to which is that of *Lucan.* l. 10.

Terræ illa suo, si fas, Capitolis Sistro.

S 2

There

(1) He calls it the Servile War, because the Forces of *Sextus Pompeius* were compos'd of Slaves and Prisoners which he had pick'd up to manage his *Pyraieck* War. To this *Lucan* alludes l. 1.

*Accedant fatis, & quas premis a-
spera, Claffes,
Leucas, & ardenti Servilia Bella
sub Ætna.*

See *Laurentius Abstemius Sylloge* 4.
Var. Annotat.

(2) *Manilius* (as is well observed by *Spanhemius* (in *Dissertat. de Numism.*) alludes in this Place not unappositely to the Title of INVICTUS usually given to the Roman Emperors. Of whom perhaps *Augustus* was the first that enjoyed it. In after Times we find it frequent. Hence in the Coyns of *Septimius Severus* INVICTO IMPERATORI, and of *Geta* SEVERI INVICTI AUG. P. FIL. and of *Alexander Severus* INVICTUS AUG. So likewise in these Ancient In-

scriptions within the Territories of *Verona* collected by *Panninius*:

IMP. CÆS. M. AUR. CLAUDIO
P. F. INVICTO AUG.

and

IMP. CÆS. M. AUR. MAXENTIO
P. F. INVICTO AUG.

Rome likewise being frequently honoured with the same Attribute, as in the Coyns of *Constantinus*, *Priscus Atabalus*, *Alexander* the Tyrant, and *Atabalarius*, where we find the Inscriptions of ROMA INVICTA, and ROMA INVICTA ÆTERNA. Of which in *Goltzius*, *Oeco*, *Tristan*, and *Patin*.

There yet remain'd the (1) servile War behind;
When with his Countries Foes young *Pompey* joyn'd,
Harra's'd those Seas his Father did defend.

But this suffice the Fates; now let Wars end;

And Adamantine Fetters Discord bind,

To close Restraint eternally confin'd.

Whilst Father of his Country (2) ne're o'recome,

Augustus lives; such too beneath him, *Rome*.

And when a God she to a Heavenly Throne

Resigns Him up; else in the World seek None.

FINIS.

APPENDIX.



APPENDIX.



Intending the subsequent Appendix as a further Illustration of the Precedent Poem, I find myself obliged to follow the same Method which our Author himself hath laid down, and to trace him in his own steps, through the main Design of his Work; in the very Front whereof appears, as it were lightly delineated,

The ORIGINAL and PROGRESS of ASTRONOMY.

Of which ere we begin to speak, it will be requisite to give some Account of its NAME. It is derived ἀπὸ τοῦ νόμου τῆς ἀστρονομίας because it teaches the Laws and Rules whereby the Motions of the Stars are regulated and determined; being anciently, by a Promiscuous Community of Denomination, called also *Astrology*: For what is, by *Plato*; call'd ASTRONOMY, is, by *Aristotle* and others, term'd ASTROLOGY. Thus *Thales* is said first among the *Greeks* ἀστρολογῆσαι, to *Astrologize*, who never treated of the *Judiciary Art*: So to *Pherecydes* they gave the Title of *Astrologer*, though he was absolutely an *Astronomer*; and the *Astronomical Treatise* of *Phocæus* the *Samian*, which some have ascribed to *Thales*, bears the Inscription of *Nautical Astrology*. On the contrary, our *Manilius* inscribes his Poem, which treats (all but the First Book) of *Judiciary Astrology*; ASTRONOMICON. But this Synonymy in after-times ceased: For this Celestial Science, known anciently in *Greece* by that Part of it only, which was properly call'd *Meteorologick*, as considering the Motions of the Stars with the Reasons thereof, came, in succeeding Ages, to receive the Addition of another Part, call'd *Apotelesmatick*, which teaches to divine and prognosticate from the Site and Aspects of the fixed Stars and Planets, their Influence as to the Production of future Events. And when this last became transplanted into *Greece*, and had there taken Root, there was given to it (as a peculiar and distinctive Appellation) the Name of *Astrology*, there being reserved to the former only that of *Astronomy*; which is properly understood, and so described to be, *That Science which contemplates the Motion, Distance, Colour, Light, Order, Place, Magnitude, and the like Adjuncts of the fixed Stars and Planets, without any respect to the Judiciary Part.*

a Salmajid
Plin. Enchirid.
lat. Tom. 1. p. 6.

As *Astronomy*, so its Professors were doubly distinguished. *Plato*, in *Epinomis*, differences them by the Titles of ἀστρονομισταί, and ἀστρονόμοι. By the first, he means those who observe the Rising and Setting of the Stars, in Order to the Prognostication of the Seasons of the Year, and Temperature of the Air; these he calls *Astronomers*, according to *Hesiod*: by the later, he understands those, whose study is particularly confin'd to the *Theory of the Planets*.

A

As

As to its ORIGINAL, we cannot reasonably refer it to a better Parent than Admiration. So says * *Gassendus*, *Originem ipsi fecit Admiratio*. For our Forefathers admiring the Splendour, Variety, Multitude and Magnitude of the Stars, together with their constant and regular Motion, transferred their Admiration into Observation, and that in process of time into Tables, or *Paraepemata*, for the Information of Posterity. And upon this Ground we may, with * *Ricciolus*, affirm *Astronomy* to be as ancient almost as the Stars themselves, and that it was first (with other divinely infused Arts) reduced to Experiment and Practice by *Adam* himself, and by his Posterity perpetuated, as we find by * *Josepbus*, who writes that *Seth*, having been instructed therein by *Adam*, and understanding that the World was twice to perish, once by Deluge, afterward by a general Conflagration, reduc'd this Art to an Epitome, and inscrib'd it on two Pillars; the one of Brick, against the Violence of Fire; the other of Stone, against the Inundation of Waters: One of which (that is the Pillar of Stone) he affirms to have been extant in his Time, in a Place call'd *Syrias* or *Seirath* * conceived to be the Land bordering upon Mount *Ephraim*, not far from *Jericho*.

* *Introduç. Astron.*

* *Prefat. in Tom. 1. Almagest. Nov.*

* *L. 11. Antiq. Jud. c. 3. & 8.*

* *Mr. Is. Voss. l. de Aetate Mundi, p. 271.*

Astronomy being thus brought into the World, was cultivated and improved by the following Patriarchs, who, by reason of their long lives, had the Opportunity of observing and noting many Astral Revolutions. To which end chiefly (according to the Opinion of some of the Jewish * Doctors) the Prolongation of their Lives was by divine Providence in a manner miraculously extended. Among whom, in this Science the most celebrated is *Enoch*, whose Books upon this Subject are said to be extant at this Day; whence *Tertullian* and *Origen* produce several Citations.

* *Rabbi Isaac Abarbenel, Dissertat. de longevitate prim. Patr.*

But to what Extent of Improvement this Science was brought before the Flood is uncertain.

This only from the Testimony of *Origen*, citing the Books of *Enoch* before mentioned, appears, That the Stars were then reduced into Asterisms, under peculiar and distinct Denominations: Touching which Names the said *Enoch* wrote many secret and mysterious things. And Scripture makes it manifest, that the Year then, as now it is, was computed by 12 Revolutions of the Moon, to one of the Sun's through the Zodiack. For in *Genesis*, it is said, that *Noah* entred into the Ark the 17. Day of the 2. Moneth; there is likewise express mention, of the 7. and the 10. Moneth; and that on the 27. Day of the 2. Moneth of the Year following, *Noah* went out of the Ark. Whence we may infer, that the Patriarchs had then the knowledge, as well of the Sun's Course as of the Moons, with their Periods, and in probability of the other Planets. And that the Opinion of those, who conceive the Year, before the Flood, to have been only Menstrual, deserves to be exploded, as most absurd and ridiculous.

After the Flood, and the Dispersion of Mankind over the face of the Earth, the Study of *Astronomy* began to be improved by several Nations, who doubtless had derived the Knowledge thereof from *Noah* and his Posterity. So that it may seem no wonder, if at one and the same Time divers Persons in divers Regions applied themselves to the Observation and Study of this Astral Science. Hence arises among several Nations the Contest for the Glory and Honour of its Invention. But seeing it is clear beyond all Controversie, that Mankind issued and dispersed themselves out of *Asia* into *Africk*, *Europe*, and other parts of the World, the Glory thereof ought in the first Place to be attributed to the *Asiatics*; and among them chiefly to the *Babylonians*, *Chaldeans* and *Bactrians*. Among whom are principally celebrated *Evahdnes*, *Belus*, *Zoroaster*, and his Successor *Otanes*; as likewise

wife *Cidenas*, *Naburian*, *Sudinus* and *Seleucus* the *Chaldean*; before whom yet is to be reckoned the Patriarch *Abraham*, and his Father *Thare*, as great Improvers of those Inventions, which had been handed down to them from their Forefathers, and the Sons of *Noah*.

From the *Affyrians* and *Chaldeans* it came in the next Place to the *Egyptians*, brought thither by the Patriarch *Abraham*, as * *Ensebius* proves, from the Authority of *Josephus*, *Eupolemus*, *Artapanus*, *Melo* and others, as cited by *Alexander Polyhistor*; though *Eupolemus* seem to infer, that *Abraham* first taught the same to the *Phenicians*, before his Descent into *Egypt*.

* L. 9. *Prepar. Evangel.* c. 16, 17, 18, &c.

There are others yet who attribute the Honour of its Invention to the *Egyptians*, before the *Chaldeans*, conceiving that Tradition of *Abraham's* instructing the *Egyptian* Priests to be inconsistent with Reason; since *Abraham's* * Stay in *Egypt* (however *Artapanus* report it to have been 20 years) seems not to have been above 3 Moneths; most of which time was spent in Fears, Jealousies, and Dangers, which in all Probability would not permit him to communicate, at leisure and with freedom, the Mysteries of that sublime Science.

* *Vid. Gassend. in Prefat. ad Vit. Tych. Brahai, mecon Dom. Jo. Marsham. Canon. Chronolog. p. 71.*

They add further, that the *Egyptians* were so far from receiving the Knowledge of *Astronomy* from the *Chaldeans*, that on the Contrary, they affirm the *Chaldeans* to have been first instructed therein by the *Egyptians*. To prove which they produce the Testimonies of * *Diodorus Siculus*, and * *Hyginus*; The former writing that *Babylon* was a Colony of the *Egyptians*, founded by *Belus*, Son of *Libya*, who therein instituted a College of Priests, who were to contemplate the Stars in the same manner as those in *Egypt*: The later reporting, that one *Evahdnes* is said to have come from beyond the Seas into *Chaldea*, and there to have taught *Astronomy*.

* *Bibliothec. l. 1. a Fabul. 271.*

But it seems strange, if this Science were known to the *Egyptians*, before the *Babylonians* and *Chaldeans*, that yet the *Egyptian* Observations should be so much later than those of the *Babylonians*; for we find scarce any of the *Egyptians* to precede the Time of *Alexander* the Great his Death, than which even those of the *Greeks* are earlier; whereas the Observations of the *Babylonians* appear to have been made almost 2000 years before that Time.

Others there are who would rob both the *Chaldeans* and *Egyptians* of this Honour, and assign the Invention thereof to the *Ethiopians*; of which Opinion is *Lucian*, *μετ' Απολλογίας*. But this Assertion seems to want much of Validity, as being opposed by the general Stream of Tradition, and that long before *Lucian's* Time.

Nor wants *Africa*, besides the *Egyptians*, and *Ethiopians*, other Pretenders to the Invention of *Astronomy*; particularly the *Mauritanians*, who are said to have been instructed therein, by *Atlas* (the Son of *Libya*) their King.

From the several Nations before mentioned *Astronomy* seems to have been divided anciently into Three Principal Sects, that is to say, the *Affyrian*, comprehending the *Babylonian* and *Chaldaick*, the *Egyptian*, and the *Atlantick*: of which last yet the *Greeks* and *Romans* made no reckoning, for among them were only enumerated these 3 Sects, the *Chaldaick*, *Egyptian* and *Grecian*; the Original and Progress of which last comes next to be described.

To pass by the fabulous Age, touching which there is nothing certain, we shall only

only confine our Discourse to the Historical, which began with the Olympiads. Nor do any Monuments of this Later inform us, that the Greeks had made any considerable Advance in *Astronomy*, before the Death of *Alexander* the Great. For, excepting some few Observations of Eclipses, made by *Thales* and *Anaxagoras*, the rest of the Greeks imployed their Studies no further, than in noting the Rising and Setting of the fixed Stars, and accommodating the Cycles of the Sun and Moon to the Constitution of the Civil Year; to which end they observed the Solstices and Equinoxes: *Oenopides*, *Cleostratus*, *Harpalus*, *Democritus*, *Meton*, *Euclemon*, or *Endoxus*, having not delivered to us any thing of the proper Motion of the fixed Stars, or their certain Distances from one another, nor yet (says *Ricciolus*) of the Revolutions of the Planets, or the Periods determining the Apocatastasis of the Moons Anomaly and Latitude.

And yet such was their Self-conceit and Presumption, as confidently to affirm, that Astronomy ow'd its Invention to them, and particularly to the *Rhodians*, from whom they will have the *Egyptians* to have receiv'd it, as *Diodorus Siculus* reports in the story of the *Heliada*. Others of them ascribe its Original to their Poet *Orpheus*. But these assertions favouring too much of the Fable, perswade us rather to conclude with the Opinion of those, who maintain Astronomy to have been first brought into Greece by *Thales* the *Milesian*, who derived it from the *Egyptians*.

From him it was improv'd by *Anaximander*, *Anaximenes*, *Anaxagoras*, *Democritus*, *Empedocles*, *Euclemon*, *Meton*, *Endoxus*, and others of the *Athenian* School, till the Time of *Alexander* the Great his founding the City of *Alexandria* in *Egypt*. After which the *Ptolemies*, his Successors, erecting there an Academy for all manner of Studies, the *Grecian* Astronomy made its Retreat thither, and under those Princes flourished in equal Glory with the *Egyptian*. From thence we hear of the famous Names of *Autolychus*, *Calippus*, *Timochares*, *Aristyllus*, *Eratostrhenes*, *Conon*, *Hipparchus*, *Sofigenes*, *Theon Senior*, *Ptolemy*, *Paulus Alexandrinus*, *Theon Alexandrinus*, and his Daughter, the Excellent, but Unfortunate, *Hypatia*.

* Orat. 49. Among the *Romans* it was long before it gain'd Acquaintance, or Professors. For though * *Dion Prusiensis* affirm the *Italians* to have been instructed by the *Pythagoreans*, and that in Probability the Doctrine of *Philolaus*, *Timæus*, *Archytas* and others (the fame of whose Learning invited even *Plato* himself to make a voyage into *Italy*) could not be concealed from the curious and ingenious Spirits of *Rome*: Yet that Martial City being more addicted to Arms than Arts, slowly entertained, these kind of speculative Studies. And therefore (to pass by the rude Essays of *Numa Pompilius*) we find in the *Roman* Stories no Mention of any Persons considerably knowing therein, before *Caius Sulpicius Gallus*, who was Legate to *Æmilius Paulus* in the War against *Perfes* King of *Macedon*, who first among them published a Discourse of Eclipses. After him we hear of *Lucius Taruntius*, *Nigidius Figulus*, *Varro*, and *Cicero*, who applied themselves to the Study of Astronomy; But to none of the *Latines* is that Science so much indebted as to their Great Dictator *C. Julius Cæsar*, who

Ancien.

media inter Prælia semper
Stellarum, Cœlique Plagis, Superisque vacabat.

He with the assistance of *Sofigenes*, the *Egyptian*, reduced the *Roman* Year to the Course of the Sun, which we yet retain, and wrote, in Greek, of the Stars. From him Mathematical Arts, and particularly *Astronomy*, began to flourish among them; his Nephew and Successor *Augustus*, by his Example encouraging the same.

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in Astronomy, which yet he is said to have contaminated by the addition of divers Magical arts.

2847. NEBROCH, or NEMBROTH; or NIMROD, the son of *Chus*, the son of *Cham*, and the first King of *Babylon*, is reported to have writ some things in Astronomy and Astrology, as *Simler* affirms in *Biblioth. Gesner*.

2346. BELUS the *Assyrian*, King of *Babylon*, by *Pliny* (l. 6. c. 26.) stiled *The Inventor of the Science of the Stars*, to whom *Semiramis* his Daughter erected a Temple in the middle of *Babylon*, of an exceeding Height, by the Help whereof the *Chaldeans*, who addicted themselves there to Contemplation of the Stars, did exactly observe their risings and settings: of which *Diodor. Sicul. l. 2*.

2069. ABRAHAM the Patriarch, instructed by the Posterity of *Noah*, (from whom he was the tenth, as *Noah* was from *Adam*) taught this Knowledge to the *Phœnicians* and *Egyptians*, as *Ensebius* attests. He is said to have inscribed on two Pillars (as *Seth* before had done) whatever related to the Astronomical Science, as *Ranzovius* from the Authority of *Marianus Scotus* affirms in *Catalog. Astronom.*

1990. ZOROASTER, called PERSO-MEDUS, the first of the *Magi*, and a most knowing Astrologer, besides four Books, *De Naturâ*, left five others of *Predictions, Ex inspectione Stellarum*, as *Suidas* testifies in *Voce Ζωροάστρης*, which yet by *G. Vossius* are supposed not to be authentick, *De Scient. Mathemat. p. 371*.

1800. COELUS, the most ancient of the *Ethnick* Gods, by the *Greeks* called *Ουρανός*; which name he acquired by his continual Observations of the Heavenly Bodies. His sons were *Saturn, Hyperion, Iapetus, &c.*

1750. HYPERION, the son of *Cœlus*, is said to have demonstrated the Course of the Sun and Moon, and thence the people took occasion to call his Son, *Helius*, and his Daughter, *Selene*, as *Diod. Sicul. l. 3*. affirms.

1593. MOSES, by Extraction a *Chaldean*, by Birth and Education an *Egyptian*, the Great Legislator of the *Jews*, and first truly Divine Philosopher, is not to be omitted in this Catalogue of Astronomers; for *Philo Judæus*, in his life (l. 1.) affirms, *That he received from the Assyrians the Chaldaick Learning of the Stars, and Knowledge of the Heavens; In which likewise he improved himself from the Doctrines of the Egyptians, chiefly addicted to Mathematical Studies.*

1590. • ATLAS, King of *Mauritania*, inventor of the Sphere, and therefore by the Poets feigned to have supported Heaven.

1590. PROMETHEUS, Brother to *Atlas*, instructed the *Assyrians* in Astronomy; making his Observations on Mount *Caucasus*, with that assiduous care and solicitous study, as gave occasion to the Fable of his being tortured by a Vultur feeding on his Liver.

1480. HERMES, called likewise THEUT or THOTH, and MERCURIUS TRISMEGISTUS, a great Propagator of Astronomy among the *Egyptians*. Something bearing his name was printed at *Norimberg* 1532. His Books called *Γενικά* did treat *περὶ ἀποκαταστάσεως ζωδίου*, as we find in *Ensebius*; and *Iamblicus*, (out of *Charemon*) speaks of other his Writings upon the same subject.

1445. ENDYMION, a curious Observer of the Moon's motion: which on Mount
B Latmus

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Latmus he used to contemplate, and for that cause was fabled to have been her Paramour.

1360. **BELLEROPHON**, Son of *Glancus*, Prince of *Corinth*, who is fabled to have backed *Pegasus* the winged Horse, and soared up to Heaven, is by *Lucian*, (περὶ Ἀσεολογίας, reputed a great Astronomer; for thus he writes of him. *I believe not at all* (says he) *the Story of his winged Horse. But this I conceive of him, that he being much addicted to Astronomical Contemplations, and conversant in the Observation of the Stars* (ἐς ἑρμανὸν ἐχὶ τῶ ἵππῳ ἀναβῆναι, ἀλλὰ τῇ διανοίῃ) *was carried up to Heaven not by a Horse, but by his Mind.*

1345. **CEPHEUS**, King of *Ethiopia*, a Royal Promoter, and Advancer of Astronomical Studies, of whom we have already made mention in our Notes upon the Constellations.

1238. **HERCULES**, called *Μεσαγέτης*, or *Musarum ductor*, to distinguish him from the other *Hercules*, was so well learned in the Doctrine of the Sphere, that he is therefore feigned to have eased *Atlas* of his burthen; whence *Ovid*,

Hercule supposito Sydera fulsit Atlas.

1205. **ATREUS**, Brother to *Thyestes*, King of the *Argives* was, according to the testimony of *Lucian*, (περὶ Ἀσεολογίας) an excellent Astronomer. For when the *Argives* by publick consent had decreed, That the Kingdom should be given to him of the two who should manifest himself the most learned in the knowledge of the Heavens; *Thyestes* is thereupon said to have made known to them the Constellation in the Zodiack called *Aries*. But *Atreus* discovered to them the course of the Sun, with his various rising and setting, demonstrating his Motion to be contrary to that of the Heavens; Whereupon they elected him to be their King.

1200. **PALAMEDES** found out many Observables concerning the Stars, their Measures, Distances, and Motions, as we find exprest in *Sophocles*.

1012. **SOLOMON**, King of *Israel*, besides his other divinely infused knowledge, was excellently skilled in the course of the Heavens, and order of the Stars, as it is said of him, *Wisdom, chap. 7. v. 19.*

716. **NUMA POMPILIUS**, second King of the *Romans*, first Authour of the *Roman* year, which he so disposed (to the end the Lunar might agree with the Solar year) that every four years there was an Intercalation of 45 Days, which he divided and adjusted after this manner, adding to the first 2 years 22 Days, and inserting in the latter 2 years 23 Days. *Vid. G. Voss. de Scient. Math.*

660. **NECEPSO**, though but a petty Prince of some part of the lower *Egypt*, was one of the greatest Instauratours of Astronomy in that Nation, and brought into practice and publick use, whatever *Thoth*, or the first *Mercury* had invented, or *Siphoas*, Son of *Vulcan*, the second *Mercury* had deposited in writing in the private Archives of their Temples. In which Writings of *Mercury* were contained (besides Hieroglyphicks and other sacred Ceremonies) Cosmography, Geography, the course of the Sun and Moon, and of the other five Planets; as *Clem. Alex. Strom. l. 6.* testifies.

660. **PETOSYRIS**, an *Egyptian* Priest, and Philosopher, wrote, according to the testimony of *Suidas*, of *Astrology*, collected out of the Sacred Books of the *Egyptians*;

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Egyptians, which he dedicated to *Neceps*, one of the *Egyptian* Kings immediately before mentioned, yet extant (as *Simler*, in *Biblioth. Gesneriana*, affirms) in *Biblioth. Carpeni & Sancti Angeli*.

600. PHOCUS SAMIUS wrote *de Astrologia Nautica*, as *Diog. Laertius* testifies. This *Phocus* is conceived to be the same to whom *Solon* inscribed a Poem, as *Plutarch* writes.
590. THALES, the *Milesian*, one of the *Greek* Sages, first Introducer of Astronomy among the *Greeks*. He first observed the apparent Diameter of the Sun to be the 720th part of the Orb in which he moves; first found out, or at least denominated the Constellation of the *Lesser Bear*, and first foretold *Eclipses*, particularly that memorable one, happening in the time of the Battle between *Halyattes* King of *Lydia*, and *Astyages* King of *Media*, recorded by *Herodotus*. He first divided the Celestial Sphere into five Zones, and composed two Treatises, the one of the *Tropicks*, the other of the *Æquinoctials*, therein asserting the obliquity of the Zodiack, and distinguishing the Seasons of the year; and measured the height of the *Egyptian* Pyramids by their shadows.
560. OENOPIDES, the *Chian*, is highly commended by *Plato*, *Proclus*, and *Theon Smyrnaeus*, for his eminent Knowledge in Astronomy; *Eudemus* asserting him to have first found out the Obliquity of the Zodiack. *Ælian*, in his *Various Histories* (*lib. 10. c. 7.*) reports, that he set up a Brass-Table at the *Olympicks*, having written thereon the Astronomy of *LIX.* years; within which Term or space he comprized the Great Year, or the *Annus magnus vertens*.
544. ANAXIMANDER, Country-man, Companion, Kinsman, and Disciple to *Thales*, first asserted the Moon to receive light from the Sun, yet withall affirming that she hath a light of her own, but very thin. He first erected a *Gnomon* at *Sparta*, to discover by the shadow of the Sun the times of the Solstices and Equinoxes. The invention of the Zodiack's Obliquity, is likewise attributed to him.
540. HYSTASPES Son of *Arfames*, or *Arfases*, King of *Persia*, and Father of *Darius*; of whom thus, *Ammianus Marcellinus*; (*l. 24.*) *Hystaspes was a most Wise Person, who boldly penetrating into the Inner Parts of upper India, came to a woody Desert, whose calm Silence was possess'd by those high Wits the Brachmannes. Of these he learnt the Discordant Concord of the Motions of the Stars, and of Heaven, and of pure Rites of Sacrifice, which, returning into Persia, he contributed as an Addition and complement to Magick.*
540. CLEOSTRATUS, the *Tenedian*, is said first to have studied the Parts, of Division of the Zodiack, and noted the Commencement of the Sign *Aries* and *Sagittary*. He invented a Luni-Solar Cycle, consisting of eight Solar years, thence called *Oëtaeteris*, in lieu of the *Tetraeteris*, which the *Greeks* before used, touching which see *Ricciolus Almagest. l. 4. c. 19.*
530. ANAXIMENES of *Miletus*, Friend, Disciple, and Successour to *Anaximander*, first demonstrated the Eclipse of the Moon to be by the Earth's Interposition between Her and the Sun, and maintained the Stars to move, not only above, but about the Earth.
520. HARPALUS corrected the *Oëtaeteris* of *Cleostratus*, according to whose opinion, at the expiration of every ninth year, the New Moon returned again at the same hour, unto the same point of the Heavens; in which it was nine years before.

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But this Cycle, proving erroneous, was afterwards corrected by *Meton*.

509. **PYTHAGORAS**, the *Samian*, travelled into *Egypt* and *Chaldaea*, to improve himself in the study of Philosophy and Astronomy. He first discovered, that *Lucifer* and *Hesperus* (believed before to be two several Stars) were but one and the same, being the Planet *Venus*. The invention of the Zodiack's Obliquity is likewise ascribed to him. He first gave to the World the name $\kappa\omicron\sigma\mu\omicron$, from the order and beauty of all things comprehended in it; asserting the same to be made according to musical proportion; and the seven Planets to have an harmonious motion and Intervals correspondent to musical Diastemes. He held the Sun (by him and his followers termed the fiery Globe of Unity) to be seated in the midst of the Universe, and the Earth to move about it.
490. **ALCMÆON**, of *Crotona*, son of *Perithus*, Disciple to *Pythagoras*, a Physician and Physiologist, asserted that the Planets held an opposite course to that of the fixed Stars, as *Plutarch* affirms, *Plac. Philosoph. l. 2. c. 16*.
480. **ANAXAGORAS CLAZOMENIUS**, Disciple to *Anaximenes*, held the Moon to be a dark Body enlighthned by the Sun, and to be habitable, having Plains, Hills, and Waters, as the Earth hath.
470. **DEMOCRITUS**, of *Abdera*, Disciple to *Anaxagoras* & *Leucippus*, wrote of the Sun and the Moon and the other Planets, of the *Annus Magnus*, and Astronomical Prognosticks. Of which *Pliny*, *Hist. Nat. lib. 18. cap. 35*. and the Scholiast upon *Apollonii Argon. lib. 2*. cites him $\epsilon\iota\ \tau\acute{\alpha}\ \pi\epsilon\lambda\ \alpha\sigma\epsilon\gamma\upsilon\omicron\mu\acute{\iota}\alpha\varsigma$. *Laertius* mentions his $\epsilon\iota\kappa\alpha\sigma\tau\acute{\iota}\varsigma$, five $\alpha\sigma\epsilon\gamma\upsilon\omicron\mu\acute{\iota}\alpha$, his $\pi\alpha\epsilon\delta\alpha\gamma\gamma\acute{\iota}\mu\alpha$, and $\omicron\upsilon\epsilon\gamma\upsilon\sigma\epsilon\gamma\alpha\phi\acute{\iota}\nu$.
470. **EMPEDOCLES**, who studied under *Parmenides*, *Pythagoras*, & *Anaxagoras*, wrote (besides his other Pieces of Philosophy) of the Sphere, in Verse, yet extant; though the same, by some, be ascribed, not to him, but to *Demetrius Triclinius*.
450. **TIMÆUS LOCRIUS**, a *Pythagorean* Philosopher, wrote *de Naturâ Mundi*; from which Piece *Plato* borrowed the greatest part of his Dialogue entituled *Timæus*, in the beginning whereof he commends *Timæus*, as most knowing and skilful in Astronomy.
432. **METON**, an *Athenian* Astronomer, observed, with *Euctemon*, the Solstices, and instead of *Cleoftratus's* *Oëtaeteris*, introduced a *Novendecennial* Cycle, called *Meton's Cycle*, or the *Golden Number*.
432. **HIPPOCRATES** wrote of judging of Diseases by the Rules of Astronomy, which by *Gesner* is said to have been published by *Joannes Ganiwetius*, at *Lyons*, in the year 1508. an imperfect MS. Copy whereof is now extant in *Gonvil* and *Caius* College in *Cambridge*.
432. **EUCTEMON** observed, at *Athens*, the Solstices 108 years before the death of *Alexander* the Great; see more of him in *Pliny*, *Hist. lib. 18*.
430. **PHILOLAUS**, of *Croton*, a *Pythagorean* Philosopher, maintained the opinion of the Earth's motion about the Sun. Of which sentiment was likewise *Selenus*, *Cleanthes Samius*, *Leucippus*, and *Ecphantus*, as also
430. **HERACLIDES PONTICUS**; who wrote (as we find it cited by *Chalcidius*,

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Chalcidius, in *Timæum*) of the Planetary Spheres, or Circles, conceived by *Meursius*, to be that Piece of his, which bears the Title *περὶ τῶν οὐρανῶν*, which he inscribed to *Democritus*, as *Laertius* affirms in his Life. There is also another *Heraclides* mentioned by the same *Laertius*, who writ *De Astrologia*.

420. PLATO, the Divine *Athenian* Philosopher, travelled into *Egypt*, under pretence of selling Oyl, but indeed to fetch from thence a far more noble Merchandise, Astronomy; informing himself by their Priests of the Celestial motions; and hath, in his *Timæus*, *Epinomis*, and other his Dialogues, left sufficient testimonies of his improved knowledge, treating therein of several Parts of Astronomy, and particularly of the Celestial System.

410. THEÆTETUS ATHENIENSIS; Disciple to *Socrates*, and a familiar Friend of *Plato's*, a Philosopher and Astrologer, as *Suidas* affirms, who yet gives us no account of any Writings of his in Astronomy.

410. HERMES ÆGYPTIUS, Disciple to *Plato*, writ *De Sole*; *De Imaginibus Martis*; *De Imaginibus Jovis*; *De Imaginibus Saturni*; *De Septem Annulis Planetarum*; *De Medicinis & Conjunctionibus Planetarum*. To him likewise is attributed the Book, *De duodecim Herbis duodecim Signis attributis, & aliis herbis septem Stellis dicatis*; as *Simler*. in *Biblioth. Gesner*.

405. ARCHYTAS TARENTINUS, a noble *Pythagorean* Philosopher, Mathematician, and Cosmographer, whom *Horace* calls

——*Maris ac Terræ, numeroque carentis Arenæ*
Mensorem.——

He wrote several Works (though none of them have been so happy as to escape the injury of Time) both Physical, Moral, and Mathematical; particularly (to instance only what is pertinent to our subject) a Treatise, *περὶ τῶ πάντων*, *De Universo*, cited by *Simplicius* in *Aristot. Categ.* as noted by *Meursius*, in *Hesych. De viris illustribus*.

404. HELICON CYZICENUS, a familiar Friend of *Plato's*, and an eminent Astronomer, who having foretold to *Dionysius* the Tyrant an Eclipse of the Sun (which hapned at *Athens* 3^o Sept. feria 6^a hora 9. ¹/₄ post mediam Noctem) was, for that, rewarded by him with a Talent of Silver.

390. PHILOSOPHUS, one of *Plato's* Disciples, so called by his proper name; wrote of Eclipses, of the distance and magnitude of the Sun, Moon, the Earth, and the other Planets, as also of Lightnings, and several other Pieces, mentioned by *Suidas*. *Gesner* is of opinion, his name might be corrupted, and that it ought to be read *Philippus Opuntius*.

368. EUDOXUS CNIDIUS, the Son of *Æschines*, instructed by *Archytas*, in Geometry; in Physick, by *Philistio*, the *Sicilian*; in Philosophy, by *Plato*; travelled into *Egypt*, and of the Priests there learned the proper motions of the Planets, which he first communicated to his Countrymen the *Greeks*. He wrote *De Mundo*, *De Cœlestibus*, *De Phenomenis*, *Astrological Fasti*, with *Prognosticks*. He reformed the *Octaëteris* of *Harpalus*, and introduced a new one of his own; of which yet others make *Dositheus* the Authour. He wrote likewise an Astronomical Poem, as *Suidas* affirms. But his two most celebrated Pieces were his *ἑννομήεν*, *sen Speculum*, & *φανόμενα*, *five Apparentium*, as *Hipparchus* (in *Aratais*) witnesses:

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ces. He is reported to have been so greatly enflamed with the love of Astronomy, that he usually professed he would willingly (as the Poets fable of *Phaeton*) perish by the scorching beams of the Sun, provided he might first approach so near it, as clearly to discern its Figure and Magnitude. *G. Voss.*

366. XENOCRATES CHALCEDONIUS, a *Platonick* Philosopher, writ, among divers other Works, one Book, *περὶ διαστημάτων*, *De Intervallis*, and six Books, *ἢ περὶ Ἀστρολογίας*, *De his quæ circa Astrologiam versantur*, as *Laertius* in his Life. There is likewise a Piece under his Name, *De Influentia Planetarum in Corpora*; mentioned by *Jac. Phil. Thomasinus* among the MS. of *Jo. Rhodius* (in *Bibliothec. Patavin.*)
360. DEMOPHILUS, son of *Ephorus*, according to *Gesner*, writ certain Pieces, called *Astronomica*; And his *Apotelesmata*, as *Labbe* reports, are in the French King's Library.
350. CALIPPUS CYZICENUS, an eminent Philosopher, of whose Systeme of the Celestial Sphere *Aristotle* makes mention, in his *Metaphysics*. He was Author of a Luni-Solar Cycle of LXXVI. years, consisting of four Metonick Cycles reformed.
340. ARISTOTLE, besides his other learned Works in Philosophy, hath left several testimonies of his study in Astronomy, particularly in his Book *De Cælo*. He left likewise a Book entitled *Ἀστρολογικόν*, as *Diog. Laertius* testifies in his life. There is likewise a Treatise under his Name, *De Astrologia Navali*, extant in MS. in *Bibliothec. Sancti Joannis in Viridario Patav.* as *Thomasinus* in *Bibliothec. Patavin.* attests.
322. THEOPHRASTUS, of *Eveffus* in *Lesbos*, a great Philosopher, Disciple and Successor to *Aristotle* in the *Lycæum*, wrote six Books of *Astrological History*, and particularly of *Democritus's* Astrology.
322. EUEMUS of *Rhodes*, one of *Aristotle's* Disciples, in emulation of *Theophrastus*, wrote likewise some *Astrological Histories*, in which he described the Lives and Inventions of divers Astrologers and Astronomers, together with the Original and Progress of Astronomy, as *Clemens Alexandrinus*, and *Laertius* affirm; and from them *Jonsius*, lib. 1. cap. 15. *De Script. Histor. Philosoph.*
300. ARISTYLLUS was Contemporary with *Calippus*, and, together with *Timocharis*, observed the Declinations of the Fixed Stars mentioned by *Ptolemy* in *Magn. Construct.* as also in the Greek *Prolegomena* to *Aratus*, where we find several others of the name famous for Astronomy.
300. AUTOLYCHUS PRYTANÆUS, Tutor to *Arcefilans*, left two Books, yet extant; the one, *De Sphæra Mobili*, the other, *Of the Rising and Setting of the Fixed Stars*, some parts whereof are translated by *G. Valla*. The former published by *Mersennus* according to the Translation of *Maurolycus*, and the Propositions illustrated, in *Synops. Mathemat.*
294. TIMOCHARES the Astronomer, (as may be collected out of *Ptolemy's Almagest. lib. 7. c. 2, & 3.*) observed the Fixed Stars, and particularly, one of the eight Stars in the Constellation of *Lyra*, mentioned by *Theon* upon *Aratus*.
282. MANETHO, an Egyptian Priest at *Heliopolis*, and *Notarius Sacrorum Penetrantium per Ægyptum*, writ *Physiologica Apotelesmatica*, in Verse, and other Astronomical

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His *Apotelesmaticks* are reported to be yet extant in the *Florentine Library*, by *Simler. in Biblioth. Gesner.*

280. ERACUS ASTRONOMUS is said to have written something in Astronomy, about the time of *Ptolemæus Philadelphus*, as *Gesner* testifies.

280. ARISTARCHUS SAMIUS, following the Opinion of *Pythagoras* and *Philolaus*, maintained the Earth to move about the Sun. He wrote a particular Treatise of the Distances and Magnitudes of the Sun and Moon, yet extant, translated and commented upon by *Commandinus*, with some Explications of *Pappus Alexandrinus*, and animadverted by Mr. *Forster*, in his *Miscellanies*. There is another Piece which goes under his Name, of the *Mundane Systeme*, its parts, and motions, published in *Latine* by *Robervalle*, and *Mersennus* in his *Mathematical Synopsis*. But the same, by *Menagius*, (*in Diog. Laert.*) and *Descartes*, in his *Epistles*, is censured as a supposititious Piece of *Robervalle's*, and not the genuine Work of *Aristarchus*.

280. ARATUS SOLENSIS, at the Command of *Antigonus Gonatas*, turned into a *Greek Poem* the *Phænomena* of *Eudoxus*, translated into *Latine Verse* by *Cicero*, *Germanicus Cæsar*, and *Avienus*, and commented upon, by the several Commentatours hereafter mentioned, as they are cited at the end of the *Prolegomena* in the Edition of *Junta*, in folio.

AGESIANAX, ALEXANDER ÆTOLUS, by *Strabo* likewise reckoned, *inter Homeri Interpretes*. ALEXANDER EPHESIUS, (of whom hereafter more particularly.) ANTIGONUS GRAMMATICUS, APOLLONIUS GRAMMATICUS, APOLLONIUS GEOMETRA, ARISTARCUS GRAMMATICUS, ARISTARCHUS SAMIUS, ARISTOPHANES, ARISTYLLUS GEOMETRA Major, ARISTYLLUS GEOMETRA Minor, ATTALUS RHODIUS, BOETHUS, CALLIMACHUS CYRENÆUS, CALLISTRATUS TENEDIUS, CRATES, DIDYMUS GNIDIUS, DIDYMUS PONEROS, *sive Laboriosus*. DIODOTUS, perhaps the same with him mentioned by *Alexander Aphrodisæus* in the first Book of his Commentaries in *Meteor. Aristot.* by whom he is stiled a most learned *Astrologer*. EVÆNETUS, HELIODORUS STOICUS, HERMIPPUS, NUMENIUS GRAMMATICUS, PARMENIDES, PARMENISCUS GRAMMATICUS, mentioned by *Hyginus* and *Pliny*. PYRRHUS MAGNESIUS, SMINTHES, THALES, TIMOTHEUS, ZENO.

There are some few others who have likewise commented upon *Aratus*; the Mention of whom the Reader will find elsewhere in this Catalogue.

270. ERATOSTHENES, a Native of *Cyrene*, succeeded DEMETRIUS PHALEREUS in the charge of the *Alexandrian Library*. He wrote *κατασκευασμοί*, being a Comment on the several Asterisms of *Aratus*, lately printed; (perhaps the same with that Piece which is cited under the Title of *Astronomica*, by *Suidas*, *Plutarch. de Placit. Philosoph.* *Hipparchus*, *Ptolemy*, and *Proclus in Timæum*) Of the *Zones*, and of the measure of the Terrestrial Globe. He caused likewise several *Armilla*, and other Mathematical Instruments to be placed in a publick Portico,

at

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at *Alexandria*, for observation of the Celestial Motions. He was a most skillful Geometer, and writ a *Treatise de Medietatibus*, mentioned by *Pappus* in his Mathematical Collections, not now extant.

270. **BEROSUS**, the *Chaldean*, of whom *Josephus* (*l. 1. Antiqu. Judaic. c. 8. & in l. 1. contra Appion.*) writes, that he was, γράμματα καὶ περὶ παιδείας ἀναρεσκομένοις ἐν τῇ περὶ ἀστρονομίας, &c. Most celebrated among those conversant in the study of Astronomy, and the Philosophy of the Chaldeans, of which he published Books among the Grecians. He flourished in the time of *Antiochus Soter*, and hath left it recorded, that, among the *Chaldeans*, he observed Astronomical Ephemerides of 480. years, inscribed on baked Bricks or Tiles. He is said likewise to have invented divers kinds of Sundials, and, for the certainty of his Predictions, to have been rewarded by the *Athenians* with a Statue, having a golden Tongue in its mouth.
270. **APOLLONIUS MYNDIUS**, by *Seneca* (*Natur. Quaest. lib. 7.*) styled *peritissimus inspicendorum naturalium*, travelled into *Chaldea*, to be instructed in Astronomy, and wrote particularly, *De Cometis*.
270. **EPIGENES BYZANTINUS**, Contemporary and Partner in Study and Travels with *Apollonius*, by *Pliny* (*lib. 7. c. 56.*) joyned with *Berosus* and *Critodemus*, and reputed to have been an Authour of equal credit with the best, hath left it recorded, that, among the *Babylonians*, there were found Ephemerides, containing the Observation of the Stars, for the space of 780. years, inscribed in Brick and Tiles. He wrote likewise, as *Seneca* affirms, *Of Comets*.
270. **ARCHIMEDES** of *Syracuse*, famous, besides his other Mathematical Works, for his admirable artificial Sphere of Glass, wherein the Motions of the Sun, Moon, and the other Planets were represented, to the astonishment of the Beholders, celebrated by *Claudian* in a particular Epigram. In his Book entituled *Ψαμμίτης* (*scu Arenarius*) he examines divers Astronomical Hypotheses as to the Distances of the fixed Stars, of the Diameters of the Earth, Sun, Moon, and other Planets, according to the opinions of *Aristarchus Samius*, *Endoxus*, and others of the Ancient Astronomers, being commented upon by *Paschasius Hammel*, *Rivaltus*, and *Mersennus*. The Lemmata of *Archimedes* recovered out of the Rubbidge of Antiquity were published in Mr. *Forster's* Miscellanies, as likewise by *Borellius* at the end of the three latter Books of *Apollonius*.
260. **CONON**, an excellent Geometrician and Astronomer collected divers Observations made by the *Chaldeans*, of the Solar and Lunar Eclipses, wrote six Books of Astrology, (not now extant) and invented the Constellation called *Coma Berenices*. Celebrated he is by *Pliny* and *Hyginus*.
168. **C. SULPITIUS GALLUS**, a Roman Tribune, by his skill in Astronomy, much encouraged the Roman Army in the War against *Perses*. For when the Souldiers were terrified with the Eclipse of the Moon, by his Oration to them he made it appear, that what they apprehended as a Prodigy, was only the effect of a natural Cause, describing to them the Reasons of the Eclipse; and so animated the drooping Army with fresh courage, to the attaining of a glorious Victory.
140. **HIPPARCHUS**, (by the *Arabs* and *Eastern* Writers called *Abrachys*) whom some make a Native of *Nice*, a City in *Bithynia*; others, a *Rhodian*, Prince of Astronomers in his time. He wrote a Catalogue of the fixed Stars, several Observations of the *Æquinoxes*, mentioned by *Ptolemy*; of the Moon's monthly motion, according to Latitude; A Collection of divers Observations of the *Chaldeans*, touching

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touching Eclipses, by him examined and compared. *Chalcidius*, in *Timæum*, cites a Book of his, *De Seceſſibus atque Intervallis Solis & Luna*; which *Menſius* (Not. in *Chalcid.*) conceives to be the ſame mentioned by *Pappus* (in 5. *Syntax. Ptolem.*) under the title *περὶ μεγέθων καὶ ἀποστημάτων*, i. e. *De Magnitudinibus & Diſtantiis*. He hath left likewiſe (yet extant) three Books, by way of Comment upon *Aratus*; in which he ſhows *Aratus* to have taken all from *Endoxus*, and to have followed him even in his Errours; firſt publiſhed from a Manuſcript in the *Medicean Library* by *Petrus Viſtorius*; and ſince in *Greek* and *Latine*, by *Dionyſius Petavius* in *Uranolog.*

86. **NIGIDIUS FIGULUS** wrote a Comment, *De Sphæra Græcæ & Barbaricæ*, mentioned by *Servius*, in *Georg. Virgil*, whence the Commentatour in *Germanici Arat.* cites divers particulars.

86. **L. TARUNTIUS FIRMANUS** a familiar Friend of *Varro's*, and a great Aſtronomer. He calculated the Nativity of *Romulus*, and the Horoscope of *Rome's* foundation, and wrote, in *Greek*, of the Stars. He is mentioned by *Cicero* and *Plutarch*, though with ſome ſmall variety in the writing of his name.

86. **MARCUS VARRO**, the moſt learned of his time among the *Romans*, wrote of Aſtronomy, of which *Cassiodorus* makes mention; in *Mathem. Diſcipl.*

83. **GEMINUS**, a Native of *Rhodes*, wrote an *Iſagoge in Meteora*, and in *Arati Phenomena*; out of which *Proclus's* Sphere is for the moſt part compiled, publiſhed by *Petavius*, in *Uranolog.*

60. **POSIDONIUS ABAMENSIS SYRUS**, a *Stoical* Philoſopher, Diſciple, and Succeſſour to *Panætius*, obſerved, at *Rhodes*, the Star *Canopus*. He is commended by *Cicero*, for an *Artificial Sphere*, by him made, repreſenting the motions of all the Planets. *Laërtius* mentions a Book of his *περὶ μετεώρων*, *De Meteoris*; and another *περὶ τοῦ κοσμοῦ*. And *Labbeë*, in his Catalogue of Manuſcripts, mentions another Piece of his, *Of the Original of Comets*, and *περὶ ἀστέρων διαφάντων*, extant in the *French King's Library*.

80. **M. TULLIUS CICERO** tranſlated the *Phænomena* of *Aratus* into *Latine Verſe*.

52. **THEODOSIUS TRIPOLITA** ſignalized his name by his three Books *Sphæricorum*, and his twelve Propoſitions, *De Habitationibus*, both publiſhed by *Merſennus*, in his *Synopſis Mathemat.* He wrote likewiſe *De Diebus & Noctibus*; and *Sceptica capita Aſtrológica*, as cited by *Laërtius*.

45. **JULIUS CÆSAR**, firſt of the *Roman Emperours*, according to the teſtimony of *Pliny*, wrote of Aſtronomy in *Greek*; *Macrobius* affirming likewiſe, that he left ſeveral not unlearned Books of the motions of the Stars, which he derived from the Doctrine of the *Egyptians*.

45. **SOSIGENES**, a famous Aſtronomer of *Alexandria*, whoſe aſſiſtance *Julius Cæſar* made uſe of, in reforming the *Roman year*, and reducing it to the courſe of the Sun, which we yet retain. Of this Argument he writ three Diſcourſes, as *Pliny* witneſſeth, *lib. 18. c. 25.*

30. **DIONYSIUS AFER**, called καὶ ἑξοχὸν *Geographus*, wrote a *Greek Poem*, *De ſitu Orbis*. He was ſent, by *Auguſtus*, before his adopted ſon *Caius*, into the Eaſt, the better to deſcribe to him thoſe Regions and Provinces.

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30. ALEXANDER EPHESIUS, surnamed LYCHNUS, wrote besides his Historical Pieces, an Astronomical Poem of the Heavens, and another of the Description of the Parts of the Earth. He is mentioned by *Strabo*, lib. 14. and therefore cannot be less ancient than these times. He wrote likewise a Comment, in *Arati Phænomena*.

20. P. OVIDIUS NASO, the most Ingenious of the *Latine* Poets, besides that he translated *Aratus* his *Phænomena* into Verse, which is lost; hath left six Books, *De Fastis Romanorum*, yet extant, being a *Calendar*, describing their Year, Moneths, Festival Days; together with the rising, and setting of the several *Constellations*, and the most noted of the fixed Stars; dedicated by him first to *Augustus*, afterwards revised in his Exile, and addressed to *Germanicus Caesar*.

20. STRABO, the Geographer, hath left us the Description of the World in seventeen Books, wherein there are divers Astronomical Disquisitions.

20. ARTEMIDORUS COSMOGRAPHUS was Contemporary with *Strabo*, and wrote upon the same Subject.

15. MARCUS MANILIUS wrote five Books of *Astronomicks*, (*Versibus Heroicis non contemnendis*, says *Ricciolus*, in *Chron. Astronom.*) which he dedicated to *Augustus Caesar*, wherein he comprehended as well the *Astronomy*, as the *Astrology*, of the Ancients, according to the Doctrine of the *Chaldeans* and *Egyptians*; the first of which five Books, treating of the *Sphere*, is the Subject of our present Undertaking.

The few following Authours, not being reducible to the certain time wherein they flourished, either before or after our Saviour's Nativity, are, for want of authentick Testimony, in this place, ambiguously inserted.

BOLUS MENDESIUS, a *Pythagorean* Philosopher, wrote (among other things) *de Signis ex Sole & Luna, & Ursa, & Lucerna, & Arcu Cœlesti*, as *Snidas* testifies in voce βολα.

LASBAS BABYLONIUS wrote of Astronomy, in a Book entituled *Selech*, cited by *Johannes Camaterus*, in *Opere Astrologico*, especially in the Chapter *De Canonibus Astrorum, & Sorte Fortune*; extant in Manuscript, in the hands of my worthy Friend, Mr. *Thomas Gale*.

ZEUCHRUS, or TEUCHRUS, or TEUCER BABYLONIUS, by *Scaliger*, in *Manilium*, and *Salmasius*, *De Annis Climactericis*, stiled an ancient Authour, wrote, *De Decanis Signorum*; some Fragments of his, according to *Labbe's*, being extant in the *French King's Library*.

ALBU-BATUR is, by *Junctinus*, placed in the Catalogue of Astronomers about the 500. year before Christ; he writ *De Nativitatibus*, Printed at *Noremburg* by *Johannes Petreius*, in the Year 1540. but wanting good Authority to confirm the Time wherein he flourished, We have rather inserted him in this Place.

PAPYRIUS FABIANUS, is mentioned by *Pliny* in several places of his *Natural History*, out of whose Works he has made frequent Citations, upon several arguments and occasions, being by him stiled *Astrologus & Physicus*, upon which score we have given him a place in this Catalogue.

DOROTHEUS

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DOROTHEUS SIDONIUS wrote an *Apotelesmatick Poem*, as cited by *Athenæus*, of which little or nothing is now extant, except what is preserved in the *Excerpta*, mentioned in *Labbe's Bibliotheca*. *Simler* (in *Biblioth. Gesner*) will have *Manilius* to have followed and imitated him, in his *Astronomical Poem*; *Scaliger*, (in *Manilium*) and *Vossius*, affirming the like to have been done by *Omar*, *Mesfalab*, and *Alchabitius* in their *Astrological Tractates*. *Julius Firmicus* gives this Character of him, that he was *Vir prudentissimus qui Apotelesmata verissimis & disertissimis versibus scripsit*. I find likewise in *James's Eclog. Oxon. Cant.* a Piece under the name of *Dorotheus*, *De esse Solis in Domibus Planetarum*. But whether that Authour be the same with this *Dorotheus*, is altogether uncertain.

CRITON NAXIUS writ an *Oſtaëteris*, which some (sayes *Suidas*) will have to be that of *Endoxus*. *Gesner* writes thus of him; *Hanc dubio est Criton Astronomus, cujus Plinius meminit, lib. 18. c. 31.*

ANTIMACHUS HELIOPOLITANUS *Ægyptius* is by *Suidas* said to have written *κοσμοποιεῖν*; *Mundi fabricationem*, in a Poem of 3780. Verses.

SPORUS NICENUS wrote a Comment upon *Aratus's Phenomena*, He is mentioned in the *Ifagoge* of *Leontius Mechanicus*.

LEONTIUS MECHANICUS wrote *περὶ κατασκευῆς Ἀερίδας Στάλογος*, Printed, inter *Astronomica Veterum Scripta Ifagogica Græca & Latina*, Ex Officinâ *St. Andreae*, 1589.

DIONYSIUS CORINTHIUS writ a Treatise of *Meteorologicks*, as *Suidas* affirms.

LASUS MAGNES, in the Life of *Aratus*, **MONOPHANTUS**, by *Theon*, upon *Aratus*, and **PHILIPPUS**, by *Hipparchus*, in his *Exegesis*, are mentioned for Astronomers; as is likewise **MNESISTRATUS**, by *Censorinus*.

ANTIOCHUS wrote in *Greek Thesauri Apotelesmatum*, distinguished into 107. Chapters, extant at Rome in the *Vaticane Library*; as *Simler*, in *Bibl. Gesner*, affirms. He is mentioned more than once by *Firmicus*.

DOSITHEUS ASTROLOGUS is mentioned by *Pliny*, lib. 18. c. 31. to have written *Of the Rising and Setting of the Stars*.

JULIANUS LAODICENSIS PHILOSOPHUS, wrote *Ἀποτελεσματικά*, as *Gesner* affirms.

BELINUS, a Greek Authour, seemeth to have written on this Argument, as the Title of his Book, *De judiciis Futurorum*, and *De Imaginibus*, imply. See *Gesner*, and something of him now extant in his Majesty's Library at *St. James's*.

GEZ, perhaps **GESSIUS**, a Greek Authour, wrote *Libros Imaginum, Et De Stationibus, Et De Imaginibus Veneris*, as *Gesner* testifies; if yet those Treatises may not be Philological, rather than Astrological.

APOMASARIS *Apotelesmata*, with some other Authours of that kind, are extant in the *Vaticane Library*, and in that of *Ansburg*, as *Simler* affirms, in *Biblioth. Gesner*.

HELICONIUS,

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HELICONIUS, according to the testimony of *Suidas*, writ *Ἀπτελεσµατικά, καὶ περὶ Διοσµιδῶν*, i. e. *De Syderum & Tempestatum Effectis, Et De Aëris Signis*.

DEMETRIUS TRICLINIUS writ *De Schematismis Lunæ, & Maculâ in ejus facie*, extant in the French King's Library; to whom is likewise ascribed that Greek Poem, *De Sphæra*, attributed to *Empedocles*; and for such translated into Latine, and published by *Q. Sept. Florens Christianus*. *Simler* in *Bibl. Gesner.* ascribes to him another Work, under the Title of *Inventum Astronomicum*, written in Greek.

POLEMON ATHENIENSIS, supposed the same with Him who was Disciple to *Xenocrates*, writ a Book *de Interpretatione Naturæ Signorum*, translated into Latine by *Nicholaus Petreius Corcyraus*, and Printed at Venice, apud *Gryphum* 1552. cum aliis quibusdam, as *Simler*, in *Epitome Bibl. Gesner.* testifies.

EUTHYMIUS writ, in Greek, a Synopsis of Astronomy, or as *Simler* entitles it, *De Sphæra*, extant in the French King's Library.

DION NICÆNUS writ *De Septem Planetis*.

GIAPHAR ASTROLOGUS wrote a Book which he entituled *Major Introduçtorius*. He wrote likewise a Book of *Commentaries*, and another, of *Experiments*, mentioned by *Gesner*.

CAUDAS ASTROLOGUS wrote Nine Books *de Annulis Astronomicis*, a Book *de Tribus figuris Spirituum*, and another *de figura Almandal*, as *Simler*, from the Authority of *Gnil. Pastregicus, de Originibus Rerum*, affirms.*

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10. MODERATUS COLUMELLA, *De Re Rustica*, hath left an *Astrological Calendar*, with *Prognosticks*.

14. THRASYLLUS, Native of Mendes, a City of Egypt, *multarum Artium scientiam professus* (sayes the old Scholiast of *Juvenal*) *prostrems se dedit Platonicæ Sectæ, ac deinde Mathesi, quâ præcipuè vixit apud Tiberium*. By *Mathesi*, is to be understood chiefly *Astronomy*, or rather *Astrology*, according to the Doctrine of the *Chaldeans*, in which he instructed *Tiberius*. He wrote likewise *Of Musick*; out of which *Porphyry*, upon *Ptolemy's Harmonica*, and *Theon Smyrnenus* cite some Pieces. See more of him in *Paganinus Gaudentinus, De Philosophia apud Romanos, cap. 54.* and *Vossius de Histor. Græc. l. 4. c. 16.*

14. TIBERIUS CÆSAR, the Emperour, was skilful in Astronomy and Astrology, instructed therein by *Thrasyllus, quem ut Sapientie Professore contubernio admoverat*, sayes *Suetonius*, especially during his recess or exile at Rhodes. He had the luck to predict many future Events, particularly to foretel, by inspecting *Galba's Nativity*, that he should one day be Emperour; which he declared (*Galba* being then but a Youth) in these words, *Et tu, Galba, quandoque degustabis Imperium*, as *Tacitus* relates it, though *Suetonius* and others apply it to *Augustus*. He is also reported to have had always by him the *Genitures of all his Nobility*, and that according as he found his own or the Kingdom's Horoscope to be well or ill looked upon by theirs, so he let them stand, or cut them off by Legislative Astrology; to use the expression of the famous Mr. Gregory.

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15.

GERMANICUS CÆSAR, that excellent Prince, translated *Aratus* his *Phænomena* into *Latine* Verse yet extant.

25. CHÆREMÓN, a Philosopher of the *Stoical* Sect, by birth an *Egyptian*, Master to *Dionysius Alexandrinus*; wrote of the *Egyptian* Astrology, as we find by the mention made of him in *Jamblichus*, *De Mysteriis, Ægypt.* although both the *Latine* Translatours mistook his Name. He wrote also *De Cometis*, as *Origen* and *Seneca* testifie, the latter of whom calls him *Charimander*, and not *Chæremón*, which *G. Vossius* conceives to be a mistake in the Text. He is mentioned by *Strabo* (*lib. 17.*) to have attended *Ælius Gallus* in a Voyage from *Alexandria* up into *Egypt*, whence we may conclude him to have flourished, about the latter end of *Augustus*, or beginning of *Tiberius's* Reign.
34. DIONYSIUS AREOPAGITA may justly be admitted into the number of Astronomers, since it is reported of him, that, at *Heliopolis* in *Egypt*, together with *Apollonius*, he observed that miraculous Defection of the Sun, at the time of our Saviour's Passion: Whereupon he broke out into this Exclamation, *Aut Deus Naturæ patitur, aut Mundi machina dissolvitur.* He was afterwards converted to the *Christian* Faith, for which he died a Venerable Martyr, being aged above one hundred years.
34. JULIUS HYGINUS, whom some would have to be the Freed-man of *Augustus*, others, with more probability, of *Severus* and *Antoninus*, or of *Julia Severa* the Empress, wrote the *Astronomicum Poeticum*, *De Mundi & Sphæræ partibus*, and the *Fables* of the several *Asterisms*, yet extant.
50. SENECA, the Philosopher, occasionally intermingles in divers of his Writings several Astronomical Dissertations, and, in the seventh Book of his *Natural Questions*, hath expressly written of *Comets*.
60. ANDROMACHUS CRETENSIS was Physician to *Nero*, and about the latter end of his Reign wrote (as it is affirmed by *Lucas Gauricus*, and *Clavius*, in *Sacroboscum*) the first of any touching the *Theory of the Planets*; His Writings are much commended by *Galen*.
80. PLINY the Elder, in the second Book of his *Natural History*, hath written many things touching the Celestial Bodies.
90. JARCHAS Prince of the *Brachmannes* was a famous *Astronomer* according to the Testimony of *St. Jerome ad Paulinum*, whose Words are These, *Apollonius*, (whether the Magician as vulgarly reputed, or the Philosopher according to the Tradition of the *Pythagoreans*) went to the *Brachmannes* that he might hear *Jarchas* sitting on a Throne of Gold, and discoursing of the daily Revolution and Motion of the Stars. *Damis* likewise reports that the said *Jarchas* gave to *Apollonius* seven Rings inscribed with the Names of the seven Planets, which he was to wear successively every Day One. See *Rantzow. in Catalog. Astrol.*
90. APOLLONIUS TYANÆUS wrote four Books, *de Divinatione Astrologica*, as *Philostratus* relates in his Life, though none of them be now extant.
90. PLUTARCHUS CHÆRONENSIS, in his Book, *De facie in Orbē Lunæ*, and in his Work, *De Placitis Philosophorum*, hath shown himself studious and skilful in *Astronomy*.

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91. **MENELAUS**, a most eminent Mathematician and Astronomer, was an Observer of the Stars for a long time, both at *Rhodes* and at *Rome*. He hath left Three Books *Sphaericorum*, published by *Merfennus*, in his *Synopsis Mathematica*.
92. **AGRIPPA**, the Mathematician, observed (as it is reported by *Ptolemy* ἐν μεγ. συντάξ.) the Conjunction of the Moon with the *Pleiades*, happening *Anno Nabonassar*. 840. Nov. 29.
95. **ASCLETARION** was an Astrologer in the time of *Domitian*, whose fate he had predicted; for which being questioned and avowing the Prediction, he was asked by the Emperour what his own fate would be? To which he confidently reply'd, that *he should be torn in pieces by Dogs*. Whereupon *Domitian* commanded that he should be immediately slain, and carefully buried, that the vanity of his Art might appear: But a sudden and violent tempest happening at the interment of him, his body was deserted, and the Dogs came and tore it in pieces. See *Sueton. in Domit.*
120. **HADRIANUS** the Emperour was singularly well skill'd in Astronomy, and particularly in Judiciary Astrology, according to the Testimony of *Ælius Spartianus* in his Life, who affirms that he used yearly in the Evening of the Calends of *January* to calculate what ever should happen to him for the whole year following. And in the Life of *Vernus*, His Successour, he gives us this further Testimony, which take in his own Words: *Fuisse Adrianum peritum Matheſeôs, Marius Maximus usque adeò demonstrat, ut enim dicat cuncta de se scisse, sic, ut omnium dierum usque ad horam mortis futuros actus antè perscripserit.*
130. **AQUILA PONTICUS** was a learned Mathematician of *Synope*, first a *Christian*, but afterwards, by the Church, for his too great adherence to Judiciary Astrology, excommunicated; whereupon he became a *Jewish* Profelyte, and translated the *Old Testament* (though not very sincerely) into *Greek*.
132. **THEON ALEXANDRINUS Senior** (whom some would have to be the same with that *Theon Smyrneus*, who wrote in *Mathematica Platonis*, published by *Bulialdus*) made several Observations of the Planet *Venus* in the sixteenth year of the Emperour *Hadrian*, mentioned by *Ptolemy* cap. 10. *Almagest*. In the Library at *Ausbourg*, there is extant a Tractate of his περὶ συνόδων, ἢ περὶ πινυμένων.
134. **PHLEGON TRALLIANUS**, the Freed-man of *Hadrian* the Emperour, among other his Works, wrote *De Olympiadibus*; in which, according to the testimonies of *Origen* and *Eusebius*, he made a Chronological remark on the obscuration of the Sun, which happened at the time of our Saviour's Passion.
135. **CLAUDIUS PTOLEMÆUS** a Native of *Pelusium*, descended as some would have it of the Royal Race of the *Ptolemies* Kings of *Egypt*; The Prince in his Time of Astronomers, Geographers, and Astrologers; His Principal Works being eight Books of Geography, thirteen Books, μεγάλῃς συντάξεως, commonly called *Almagestum*; περὶ οὐρανοῦ συντάξις, seu *Quadripartita Syntaxis de judiciis Astrorum*; And *Parapegma de Apparentiis & Significationibus Inerrantium Stellarum*, de *Analemme*, &c. there are likewise ascribed to him κανόνες περὶ ὁρίων, i. e. *faciles & expediti*, upon which *Theon Alexandrinus Jun.* is reported to have commented, or rather (as *Golius* in *Alferganum* from the Authority of *Kensian Gilæus* notes) to have composed himself, and to have given them the Title of *Canones Ptolemaici*, because computed according to the *Hypotheses* of *Ptolemy*.

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135. **SEXTUS EMPIRICUS**, Nephew to *Plutarch* the Philosopher, in his *Hypotyp. Pyrrhon.* writes sharply against *Judiciary Astrology*.
140. **HEPHÆSTION THEBANUS** wrote *de Configurationibus Stellarum*, as cited by *Salmasius*, *De Annis Climactericis*, and others. Of whom divers *Excerpta*, *De duodecim Zodiaci Signis & eorum Effectibus*, are published by *Camerarius*, in Greek and Latine, amongst his *Astrological Collections* Printed at *Norimberg*. Of this Authour also three Books *ἑξήκοντα* are, by *Simler*, affirmed to be yet extant, in *Bibliotheca Strozzeæ*.
140. **CLAUDIUS GALENUS** Native of *Pergamus* in *Asia*, the most famous Physician of his time, in which Function he served three Roman Emperours, *Adrianus*, *Lucius Verus*, and *Antoninus Pius*. That he was learned in Astronomy and Astrology appears by his Books, *de Diebus Decretoriis*, his *Epid.* and his *Mathemat.* His Father likewise being well skilled therein, for thus (according to the Testimony of *Antoninus Fumanellus* cited by *Rantzovius* in *Catalog. Astronom.*) he writes of Him. *Pater Meus Optimus fuit Mathematicus, Exercitatus quandoque in Geometria, Arithmetica, Architectura, & Astronomia.*
160. **APULEIUS** (if the Piece bearing his name be genuine) wrote *De Sphæra*, now extant, with other Astronomical Tractates, amongst the Manuscripts in the Library at *Westminster*, and in that of *Nicholaus Trivisanus* of *Padua*, as cited by *Thomasinus* in *Bibliothec. Patavin.* under this Title, *Sphæra Apuleii Platonici.*
171. **LUCIAN** the Philosopher, a Native of *Samosata* (at this Day *Scempfat*) a City in *Syria*, in the Province of *Comagene*, the facete Authour of the Ingenious Dialogues, wrote a Particular Treatise of Astrology, or Astronomy, setting forth it's Original, Antiquity, and Excellency. In which Dissertation, and in his *Saturnalia*, *Bourdelotius* affirms he hath inserted many things taken from our *Manilius*.
230. **ANDRUZAGAR**, an *Arabian* Astrologer, is said to have flourished about this time, by *Junctinus*, in his Catalogue.
238. **CENSORINUS**, in his Book *de Die Natali*, hath written divers things touching the Harmonical Systeme of the Heavens.
283. **ANATOLIUS ALEXANDRINUS**, Bishop of *Laodicea*, in *Syria*, is mentioned by *St. Hierome* in his Book *De Scriptoris Ecclesiasticis*, to have been well skilled in Astronomy.
298. **RABBI ADDA**, about the end of *Dioclesian's*, or beginning of *Constantinus's* Reign, composed an *Hebrew Calendar*, and Rules for finding out the *Tekupha's*, or revolution of the Equinoxes.
314. **JULIUS MATERNUS FIRMICUS**, a *Sicilian*, about this time wrote eight Books *Astronomicôn*, containing Astrological Precepts, which, like an ungrateful Plagiary, he transcribed for the most part out of *Manilius*, without making the least mention of his name.
320. **VETTIUS VALENS**, of *Antioch*, by some called *Vestius Valens*, a famous Astronomer, or rather Astrologer of the same time, who calculated, for *Constantine* the Great, the fate of New Rome's Foundation, as *L. Taruntius* had done that of Old Rome; by *G. Vossius* conceived to be the same with him, of whose Works some Pieces are published by *Jochimus Camerarius*, in *Astrologitis Veterum opusculis*;

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ISTUM. *lis*, Edit. Norimberg. Anno 1532. His *Anthologia* is now intended for the Press, at Paris, by the care, as I am informed, of Monsr. Huetius.

325. PORPHYRIUS, a famous *Platonist*, but bitter Enemy to *Christianity*, wrote an *Isagoge of Astronomy* in three Books, as *Suidas* testifies. His *Isagoge to Ptolemy's Apotelesmatice*, is also here to be mentioned; Printed at *Basil*.
340. MARIUS VICTORINUS AFER, Master to St. *Jerome*, among many other Works translated *Porphyrius* his *Astronomical Isagoge*, into *Latine*, yet extant with the Comment of *Boetius* thereupon, as *Gesner* affirms.
360. THEON ALEXANDRINUS *Junior*, a Philosopher, contemporary to *Pappus*, and an excellent Mathematician. He observed an Eclipse of the Sun in the year of *Nabonassar* 1112. and besides other Mathematical Tractates, wrote (according to *Suidas*) *De ortu Caniculæ*, *Canonem expeditum in Ptolemaum*, a Commentary in *parvum Astrolabium*, and upon *Ptolemy's Almagest*, in eleven Books first published at *Basile*, by *Joachimus Camerarius*, according to the *Greek Manuscript*, brought into *Italy* by Cardinal *Bessarion*, and from thence into *Germany*, by *Regiomontanus*; as also upon *Aratus's Phenomena*, this last lately Printed at the Theater in *Oxford*; but upon no account so famous, as that of being Father to the excellent *HYPATIA*.
375. ABYDAS ASTRONOMUS is mentioned by *Epiphanius*; against whom *Bardefanes* the *Syrian* (in his Book *de fato*) writ, who flourished in the time of *Antoninus Verus*.
378. PAULUS ALEXANDRINUS wrote an *Astronomical Isagoge*, or Introduction; perhaps the same whom *G. Vossius* calls *Paulus* the Philosopher, who wrote likewise *Apotelesmatica, sive, de Effectibus Syderum*, Published by *Rantzovius*.
390. MACROBIUS-AMBROSIUS-AURELIUS-THEODOSIUS, Consul of *Rome*, born at *Parma*, contemporary with *Symmachus*, wrote two Books, *De Somnio Scipionis*, wherein he handles divers *Astronomical Arguments*, as he does likewise in his *Saturnalia*.
390. CLEOMEDES, a learned Astronomer and Philosopher of the *Stoical Sect*, wrote two Books *κυκλικῆς θεωρίας μετεώρων*, i. e. *De Contemplatione Orbium Cælestium*, first published, in *Greek*, by *Conradus Neobarus*, afterwards translated into *Latine*, by *Georgius Valla*, and commented upon by *Robertus Balforens*, Printed at *Bourdeaux* 1605. 4^o.
395. SEXTUS AVIENUS RUFUS, an elegant Poet, by birth a *Spaniard*, translated the *Phænomena* of *Aratus* into *Latine Heroick Verse*, and likewise paraphrased *Dionysius Afer*, *De Situ Orbis*, and wrote, in *Iambicks*, *De Oris Maritimis*.
399. FLAVIUS MANLIUS, or MANLIUS THEODORUS, Consul of *Rome* is celebrated for his great *Erudition*, having written several Pieces both in *Philosophy* and *Mathematicks*, particularly in *Astronomy*, as may appear by that elegant *Panegyrick Poem* written in praise of him, by *Claudian*; whence we have taken these following Verses to shew his *Indeavours* on that Subject.

—Elementa doces, semp̄rque fluentis
Materiae causas; quæ vis animaverit Astra,
Implèritque choro: quo vivit Machina Motu.

Sidera

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*Sidera cur septem retrò nitantur in Ortus
Obleſcata Polo, variſque meatibus idem
Arbiter, an gemina convertant Æthera Mentes.*

But the Injury of Time hath not left us any Remains of theſe his curious and learned Labours.

400. PAPPUS ALEXANDRINUS, beſides other his Mathematical Works, wrote a Comment upon *Ptolemy's Almageſt*, and in his fixth Book of Mathematical Collections hath left ſome Explications, In *Ariſtarchum Samium*, De *Magnitudinibus & Distantiis Solis & Lune*, yet extant, and tranſlated by *Commandinus*; publiſhed at *Pefaro*, 1572. and likewise to be found in Mr. *Foſter's* Miſcellanies.
400. HYPATIA, Daughter to *Theon Alexandrinus Junior*, and Wife to *Iſidorus* the Philoſopher, which name ſhe her ſelf more juſtly merited, as being eminently learned in the Mathematicks and Philoſophy, which ſhe publickly profeſſed and taught, till by the barbarous *Chriſtians*, or Monſters rather, of *Alexandria*, out of meer envy for her admirable ſkill in *Aſtronomy*, and other Mathematical Learning, ſhe was moſt inhumanely murdered and torn to pieces, in the very Cathedral Church. She wrote (beſides a Comment upon *Diophantus*, and another upon *Apolonius's Conicks*) an *Aſtronomical Canon*, as both *Hefychius* and *Suidas* affirm.
400. About this Time flouriſhed two *Ægyptian* Monks; ANIANUS, who, after the Example of *Eusebius*, writ a Chronological Work; and PANODORUS, who to his ſkill in Chronology added the Knowledge of *Aſtronomy*. Out of the Fragments of which laſt *Syncellus* hath excerpted many things, as *Scaliger* likewise, in his *Eusebian* Animadverſions.
410. SYNESIUS, firſt a Heathen Philoſopher, afterwards a Chriſtian, and Biſhop of *Cyrene*, writ, among other his Works, *De Inſtrumentis Aſtronomicis*, being a Diſcourſe occaſioned by his preſenting *Pæonius* with an *Aſtrolabe*, and is extant in his Maſteſty's Library at St. *James's*. There are alſo extant divers *Epistles* of his to the before mentioned *Hypatia*, with this direction, τῇ φιλοſοφῶ.
434. AETIUS AMIDENUS (*Comes & Medicus*, ſayes *Ricciolus*) wrote *Hemerologium*, *De Significationibus Stellarum*, tranſlated firſt out of *Greek* into *Latine*, by *Cornarius*, and ſince publiſhed by *Petavius*, *Uranolog.* pag. 421.
437. S. CYRILLUS, Biſhop of *Alexandria*, beſides other Works of his, wrote *De Cyclo Paſchali*, mentioned by *Sigebertus Gemblacenſis*, in *Chron.*
460. BACHARIUS MACCÆUS, a *Britain*, Diſciple of St. *Patrick*, Publiſhed a Book, *De Prognosticis Nativitatum*, according to *Balaus*.
466. S. PROSPER AQUITANUS, Biſhop of *Rhegium*, compoſed a *Paſchal Cycle*, conſiſting of 532. years.
467. VICTORINUS AQUITANUS, whom *G. Voſſius* conceives to be more truly called *Victorius*, compoſed a *Paſchal Cycle*, being by Pope *Hilarinus*, for his eminent ſkill in *Aſtronomy*, invited to *Rome*, to undertake the correction of the Calendar. Yet his *Paſchal Cycle* ſeems to have been not long after reformed by *Victor*, Biſhop of *Capua*, who likewise wrote on the ſame Subject.

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469,

THEODORET, Bishop of *Cyrus*, is by *Junctinus*, in his Catalogue, put into the number of Astronomers, as also by *Ricciolus*, in *Chron. part. 2.*

470. MAUGANTIUS, a *Britain* by extraction, a famous Philosopher, and Mathematician, in the time of *Vortigern*, to whom he was principal Physician, as *Geoffry* of *Monmouth* reports. He studied in the City of *Chester*, in which at that time Astronomy, and all other Arts flourished, and, from the diligent observation of the course of the Stars, and Planets, became more eminently learned in Astrology, than any of his time. He calculated the prodigious conception of *Merlin*, and wrote *De Magia Naturali*.
480. AMBROSIUS MERLINUS, a *Britain*, in the time of King *Vortigern*, was famous for his admirable skill in Astronomy and Astrology, of whom *Balæus* thus writes; *Merlinus in Urbe Legionum (Caerlleon) Studiis diligenter incubuit, & eruditis Artibus & literis operam dedit, Magia potissimum Naturali. Unde Astronomiæ tandem peritissimus futura prædixit multa, quibus sequenti sæculo mirabilem se præbuit.* He wrote a particular Treatise of a certain Comet, which appeared in his time, as *Balæus* testifies, and a Book of obscure Predictions translated into *Latine* by *Geoffry Monmouth*, as *Gesner* affirms.
490. CARPUS ANTIOCHENUS wrote *Ἀστρονομικὰ*, i. e. *Rei Astronomicæ libros*; of which *Proclus*, in *primum Euclidis*, makes mention. To him Mr. *Selden* ascribes the Books commonly entituled *Ptolemæi Centiloquium*. Vid. *Selden. de Diis Syr. Symagm. 1. seu de Teraphim*.
490. CASSIODORUS, a Person of Consular dignity, and honoured with the most eminent Charges of State in the time of *Anastafius* the Emperour and *Theodoricus* King of the *Goths*, afterwards a Recluse in the Monastery of *Cassina*, wrote, amongst other things, *Of Astronomy, & De Computo Ecclesiastico*.
500. SIMPLICIUS, a Native of *Phrygia*, an eminent *Platonick* Philosopher, and excellent Commentator upon *Aristotle*, *De Cælo*, merits to be here mentioned.
500. MARIANUS, *Marci Confidici F.* wrote a *Metaphrasis* of *Aratus*, in *MCCCXL*. Iambicks. He lived in the time of *Anastafius* the Emperour. See *Simler* in *Bibl. Gesner*.
500. THIUS ATHENIENSIS wrote seven Books of *Observations of the mean Motions of the Stars*, so much the more acceptable (*sayes G. Vossius de Scient. Mathem.*) in regard that from *Ptolemy's* time unto that of *Albatagnius*, there are not any Observations of the Celestial motions extant. These, transcribed from a Manuscript in the King of *France's* Library, were first published by *Bulialdus*, at *Paris*; Anno 1645.
500. PROCLUS LYCIUS, a *Platonick* Philosopher, surnamed DIADOCHUS, Disciple to *Magnus Syriannus*, taught for a long time at *Athens*, and writ a Comment upon the first Book of *Euclid*; *Of the Sphere*, (being for the most part an Epitome of *Geminus*;) *Of the Astrolabe* and *Astronomical Hypotheses*, (being a Compendium of *Ptolemy's Almagest*.) There was another *Proclus* surnamed *Siccensis*, who was Master, or Tutor, to *M. Antoninus* the Emperour, confounded by some with this *Proclus Diadochus*; but without all reason. For *Diadochus* flourished not till the Reign of *Anastafius*, being 300. years after *Siccensis*. *Ricciolus* conceives this *Proclus Diadochus* to be the same with *Proclus* the famous Mathematician, who as *Zonaras (part. 3. Annal.)* reports, made, in imitation of *Archimedes*, Burning-Glasses,

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Glasses, with which he fired *Vitalianus* his Fleet, at the Siege of *Constantinople*; and was employed by *Anastasius* the Emperour, as Interpreter of his Dreams.

500. **MARINUS NEAPOLITANUS**, Disciple to *Proclus Diadochus*, wrote, *Prævia ad Phænomena*, and *Phænomenon Librum singularem*, says *Voss. de Scient. Math.* p. 166. who yet doubteth whether this be not another *Marinus*, who writ *περὶ στοιχείων*, ad *Euclidem*.

530. **JOANNES LAURENTIUS PHILADELPHENSIS LYDUS**, wrote in the time of *Justinian* the Emperour, *περὶ μηνῶν*, *de Mensibus*, with other Mathematical Tractates, mentioned by *Photius*, and *Suidas*, yet extant in MS: in the Library of my honoured and most learned Friend, Mr. *Isaac Vossius*.

530. **DIODORUS MONACHUS**, Bishop of *Tarsus* in *Cilicia*, wrote (according to *Suidas*) *contra Astrologos & Fatum*; he put forth likewise a Book *de Sphæra*, & *septem Zonis*, of the Annual Progress of the Stars, and of the Sphere of *Hipparchus*.

536. **DIONYSIUS EXIGUUS**, by birth a *Scythian*, but a *Roman* Abbot, wrote a *Paschal Cycle*, or rather corrected that of *Victorinus*, or *Victorius*, as *Victorius* had done that of *Theophilus*, and he, that of *Cyrillus*. This *Computus*, or Cycle was observed by the *Latine* Church, until the correction of the Calendar by Pope *Gregory XIII.* From this *Dionysius*, the *Christians* first learnt to reckon their years, from the *Nativity of our Saviour*, thence called *Æra Dionysiana*; whereas before, they reckoned, from the *Persecution of Dioclesian*.

550. **TRIBONIANUS SIDETES**, a Civil Lawyer in the time of *Justinian* the Emperour, wrote a Comment upon *Ptolemy's Canon*, in Verse. He published likewise *Concentum Mundana & Harmonica Dispositionis*; and another Book, *de Planetarum domiciliis*, as likewise *de Mensium Permutatione*, and some other Pieces; of which *Suidas*.

550. **PHILIPPUS MEDMÆUS**, so called from *Medme*, a Town of *Italy*, by *Stephanus*, in *Voce Medme*, fil'd δ' Ἀεσιλόγος, which *G. Vossius* conceives ought to be read, δ' Ἀσεολόγος. for he wrote *de Ventis*, as they are foreseen or predicted, from the Position of the Stars, or Constitution of the Heavens. He also flourished in the time of *Justinian* the Emperour.

574. **PHILOPONUS**, surnamed *Grammaticus*, deserves here to be recorded for his Comment in *Astrolabium planum*, siue de usu *Astrolabii*, written in *Greek*, yet extant in *New Colledge*, *Oxford*, and (as *Simler* in *Bibl. Gesner.* adds) in the *French King's Library*.

580. **BUZUR-GIUMHUR**, an ancient *Persian* Authour, being one of the Counsellours and Courtiers of *Nushirvân* King of *Persia* (in the 42. year of whose Reign *Mahomet* the false Prophet was born) wrote *De Questionibus Astrologicis*.

600. **MARTIANUS FELIX MINÆUS CAPELLA**, in his Work, entituled, *De Nuptiis Mercurii cum Philologiâ*, wrote of *Geometry*, *Arithmetick*, *Musick*, and *Astronomy*.

636. **ISIDORUS**, Bishop of *Hispalis*, or *Sevil*, in *Spain*, Son to *Severianus*, Duke of *Carthage*, in his Book, *De Originibus*, hath inserted a *Compendium*, or *Epitome* of all the *Mathematicks*; and in his Book, *De Mundo*, with the like brevity treated of the

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- the Sphere. The Astronomical Poem, (of which the Fragment is published by *Pythæus* among the Ancient *Latine* Poets by him set forth) under the Name of *Fulgentius*, is by *Pythæus* conceiv'd to belong to *Isidore*, at the End of whose Works it is commonly inserted without any other Name to it; if yet (as *Pythæus* adds from the Conjecture of a certain Learned Person) it may not rather be ascribed to *Varro Atacinus*.
640. **HEMOALDUS**, an *English* man, surnamed **PROVIDUS**, between whom and Venerable *Bede* there was great familiarity, to whom he addressed his Book *De Rebus Mathematicis*, yet extant, as *Bede*, on the other side, did an Epistle to him, *De Ratione Quadrantis Anni, sive, de Bissexto*.
680. **THEODORUS MELITENIOTAS**, *Magnus Sacellarius Magnæ Ecclesiæ Constantinopolitanæ*, wrote of Astronomy, and particularly upon *Ptolemy's* Astronomical Syntaxis, or *Almagest*, the Proem of which Work from a MS. out of the Library of Mr. *Isaac Vossius*, *Bulialdus* lately published, at the end of his learned Comment, upon *Ptolemy's* *ἡ ἀστρονομία καὶ ἡ γωνία*.
700. **BEDA**, commonly called *Venerable Bede*, was renowned for his knowledge and study of Astronomy, amongst whose Works there is yet extant, *De Argumentis Lunæ*, *De Ephemeride*, *De Embolismis*, *De Circulo Decennovenuali*, *De Cyclo Paschali*, *De Circulis Sphæræ & Polis*, *De Planetis & Signis Cœlestibus*, *De Astrolabio*, & *De Æquinoctio Vernali*.
709. **ADELMUS DUROTELLUS**, *sen* **BLADUNIUS** (*i. e.* **MALMESBURIENSIS**) Son of *Kenred*, and Grandchild of *Ina*, King of the *West-Saxons*. Bishop of *Sherburne*, (now translated to *Salisbury*) wrote *De Cyclo Paschali, contra Britannos*, and *De Astrologia*, as *Balæus* affirms.
770. **FLACCUS ALBINUS**, *sive* **ALCUINUS**, an *English-man*, born in *Yorkshire*, Scholar to *Venerable Bede*, and Tutor to *Charlemagne*, to whom he was sent upon an Embassie by *Offa* King of the *Mercians*, and, for his exquisite Learning, invited by *Charlemagne*, to continue with him in *France*; which he did; persuading that Prince to erect the University of *Paris*. He was excellently well skilled in all the Parts of the Mathematicks, which he publicly taught; and wrote *De Septem Artibus Liberalibus*, and *De Astrologia*, as *Vossius*, *De Scient. Mathemat.* testifies.
770. **CHARLEMAIGNE**, King of *France*, and Emperour, instructed by *Alcuinus* aforesaid, became excellently well skilled in the Mathematicks, particularly in Astronomy, insomuch that he wrote *Ephemerides*, and was extremely delighted in making observations of the Stars. He gave names to the Moneths of the Year, and to the Winds; in *High-Dutch*, which continue to this Day. He was, by a King of *Persia* his Contemporary, upon the knowledge he had of his affection to Astronomical Studies, presented with a Piece of Clock-work, showing the motion of the Planets; which the Emperour being then at *Paderborne*, in *Westphalia*, received with no less admiration than pleasure. *Vid. Voss. De Scient. Mathem. c. 35.*
790. **JOHANNES CAMATERUS**, Chamberlain to the Emperour *Porphyrogeneta*, writ *De Genethliis*, & *Syderum positione*, & *Astrologiam Chaldaicam*, in Verse, now in the Possession of my Learned Friend Mr. *Tho. Gale*.
827. **ALMÆON**, whom some call **ALMAMON**, the deservedly renowned Califfe of *Babylon*, (as Mr. *Graves* styles him in his *Pyramidograph*.) fifty years before

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fore the time of *Albategnius*; observed the greatest Declination of the Sun to have been 23° . (according to *Blancanus* and *Herigone*) or 23° . and $35'$. (according to *Ricciolus*, from the authority of *Alfraganus*.) He first commanded *Ptolemy's* *μεγίστη συντάξις* to be translated into *Arabick*; which Translation gave that Work the corrupt, but now common name of *Almagest*. He found by observation and measuring in the Plains of *Singar*, that one Degree of a great Circle on the Earth is equal to 56. miles. His Astronomical Designs were so acceptable to the *Genius* of that Nation, that in the Times succeeding, no less than Thirty Kings are said to have emulated his Example; as is observed by *Golius* (*notis in Alfergan.*)

446. EGMUNDUS, surnamed ASTROLOGUS, is by *Ricciolus* put also into the Catalogue of Astronomers about this Time.

860. MESSHALA ARABS, *five* MESSAHULACH, signalized his Name by his Book *De Receptionibus*, & *De Conjunctionibus Planetarum*, & *De Revolutionibus Annorum Mundi*. He wrote likewise, *De Elementis* & *Orbibus Cælestibus*; a third Book, *De Ratione Circuli* & *Stellarum Operationibus*; and another, *De Compositione* & *Utilitate Astrolabii*: The first Printed at *Venice*, Anno 1493. with *Ptolemy's* *Quadripartitum*; The second, at *Norimberg*, by *Montanus* and *Neuberns*; The third, at *Basil*, by *Hervagius*, Anno 1533. And the fourth and last, by *Henricus Petri*, in *Appendice Margaritæ Philosophicæ*.

879. LEO PHILOSOPHUS writ something in Astrology, yet extant in the *French King's Library*, as *Labbeë* testifies, in *Catal. MS.*

880. ALBATEGNIUS or trulier ALBATTANIUS ARACENSIS, called likewise MAHUMETES TINEU, *vel* MAHUMETES ARACENSIS, or (but mistakenly) ARAC TENSIS, from the City of *Arrac*, commonly, but corruptly, called *Araçta*, in *Syria*, Son of *Geber Auchan*, Son of *Cruen*, Prince of *Syria*, made diligent observations of the Stars, both at *Arrac* and *Antioch*: And finding that *Ptolemy's* Canons in his time dissented much from the course of the Heavens, he made new Tables of his own. He wrote a Book *De Scientia Stellarum*, first translated out of *Arabick* into *Latine*, by *Plato Tiburtinus*, and illustrated with Annotations, by *Jo. Regiomontanus*. He observed the Sun's greatest Declination to be 23° . $35'$. and the first Star of *Aries* to be 18° . $2'$. in Longitude from the Equinoctial Point. His Observations were Printed at *Norimberg*. His Book *De Numeris* & *Scientia Stellarum*, according to a Transcript thereof, taken by *Lucas Valerius* (Publick Professour of Mathematicks at *Rome*) out of the *Vatican Library*, was reprinted more correctly in *Latine* at *Bologna* in the year 1645. and dedicated by *Bernardinus Ugulottus* to *Ferdinand* the second Grand Duke of *Tuscany*.

890. ACHILLES TATIUS wrote a Book *De Sphæra*, as *Suidas* affirms, part of which *G. Vossius* conceives to be his Commentary in *Aratum*, Published in *Greek*, and *Latine*, by *Petavius*, in *Uranolog.*

930. MOHAMMED IBN ZACHARIÆ AL RAZI wrote many Books in several Sciences, and among the rest, a Particular Astronomical Treatise, as I find it mentioned in the Catalogue of *Golius* his Manuscripts. He died in the year of the *Hegira* 320. of *Christ* 932.

936. ABDORRAHMAN ALSUPHI, commonly (but corruptly) called AZOPHI, or ELZUPHI, or EBENNOZOPHIM, an *Arabian* Astronomer, Authour of the *Persian Tables*, in which, says *Ricciolus*, *Stellarum Schemata* & *loci ordinata sunt*. The Work transcribed by his Son, with the Delineation

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tion of the Celestial Signs in Miniature by the same hand, is extant among the Manuscripts of *Jacobus Golius*.

950. ALFRAGANUS MAHUMEDES, or AMETUS, or AHMED, or MUHAMED, the Son of *Amet*, called *Alfraganus*, or rather *Alferganus*, from the City *Fergana*, in the Province of *Sogdiana*. He wrote *Elementa Astronomica*, compiled chiefly out of *Ptolemy*, which by *Rabbi Jacob Anvolius* were turned into *Hebrew*, and by *Johannes Hispalensis*, in the year 1142. translated out of *Arabick* into *Latine*, but lately published in *Arabick* and *Latine*, by the famous *Jacobus Golius*, with learned Notes, which yet he lived not to compleat. He writ likewise *de Astrolabii Descriptione & Usu*, and a Book of Dialing, as *Golius* in his Notes asserts. *G. Pafregicus* mentions another Treatise of *Alfraganus*, entitled *De Aggregationibus Stellarum*. *V. Simler. Bibl. Gesner.*
956. HALI BEN RAGEL is about this time, by *Ricciolus*, inserted into the number of Astronomers.
970. ARZAH'EL ALA BEN writ *Tables and Canons of the Motions of the Celestial Bodies*, preserved in MS. in the Library of *Merton Colledge* in *Oxford*, and in that of *Caius* and *Gonvil* in *Cambridge*, according to *Jamesius Eclog. Oxon. Cant.* Whether the same with *Arzabel Hispanus* (of whom in the next Century) we leave to be considered.
980. ALI IBNO' L HOZEIN, a *Persian*, wrote of the Theory of the Planets, as *Abul Pharagius* in *Hist. Dynast.* witnesses, and *De Demonstratione Planisphaerii*, as *Hottinger*, in *Smegm. Orient.*
980. ALFARABIUS *Arabs*, stiled by *Blancanus*, *Astronomus celebris*, called likewise ABUNASR, according to *Abul Pharagius*, in *Histor. Dynast.* under whose Name *Simler*, in *Bibl. Gesner.* affirms, there is extant a Piece entitled *de Compositione Astrolabii*.
984. ETHELWOLDUS WENTANUS, of the Race of the *West-Saxon* Kings, sometime Abbot of *Abington*, afterwards Bishop of *Winchester*, wrote, among other Works of different Subjects, a Treatise *de Planetis*, & *de Climatibus Mundi*, as *Balæus* affirms.
995. MUHAMMED IB'N AHMED ALBIROUNI, a *Persian* Astronomer, wrote *De modo mensurandi Altitudinem Stellarum*, as also an Explication of the use of the *Astrolabe*, extant amongst the Manuscripts of *Jacobus Golius*.
996. IB'N JONES, or JOUNIS, an *Egyptian*, wrote *Astronomical Tables*, together with a History of Various Observations, and the reason of Calculating the Celestial Motions; which he dedicated to *Hakgin*, perhaps *Elhacain* King of *Egypt*, who flourished about the year 373. of the *Hegira*, of *Christ*, 996.
1004. ABBO FLORIANCENSIS, so called as being Abbot of the Monastery of *Fleury*, in *Burgundy*, a *French* man, Native of *Orleans*, among other Works, wrote *De Motibus Stellarum*, *De Planetarum cursu*, & *Demonstrationes Astronomicæ*.
1030. CAMPANUS NOVARIENSIS, an eminent Astrologer and Astronomer. He found a peculiar way of erecting a Celestial Scheme, by division of the prime vertical Circle, which way *Gazulus* followed. He wrote, besides *Theoricas Planetarum*, *De Sphæra*, & *De Computo*; Another Piece, *de Compositione Astrolabii*; and

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and a Calendar. *Simler* mentions another Piece of his entitled *Breviloquium duodecim Signorum Zodiaci*, which he says in his Time was extant, apud *M. Dresserum* in MS.

1032. ABU-ALI-IBN SINA, commonly called AVICENNA, a famous Physician, whose life is exactly written and prefixed to *Plempius's* Translation of the second Books of *Avicen's Canon Medicinæ*, and of whom an excellent account is given in *Abul Pharagius* his History of the Dynasties. He writ *De Astronomia & Chronologia*, mentioned amongst the Manuscripts of *Jacobus Golius*. He was born in the year of the *Hegira* 370. and died in the year 428. which are the years of Christ, 980. and 1036.
1035. IB'N HAITEM wrote touching the motion of the Center of the Moon's Epicycle; Of the difference of the Solar and Lunar Year; Of the Dimensions of the Earth, Sun, and Moon; And *De Motu Circulari*: As also touching the exact method of taking the Elevation of the Pole. He died at *Grand-Cairo* about the Year of Christ, 1038.
1050. HERMANNUS CONTRACTUS a Monk, but of noble Extraction, as being Son of *Wolferad*, Earl of *Varinge* in *Suaben*, (which Surname of *Contractus* he gained à *membrorum contractione*, as *G. Vossius* affirms) wrote three Books *De Compositione Astrolabii*, and one *De Utilitate Astrolabii*. He wrote likewise another *De Eclipsibus*, and translated the Works of several Arabian Astronomers into *Latine*.
1050. ISAACIUS ARGYRUS MONACHUS wrote *de Cyclis Solis & Lunæ*, and *de Computo Ecclesiastico*; which last *Petavius* hath published in *Greek* and *Latine*, in *Uranolog*. His Astronomical Tractates are said to be kept in MS. in the Library at *Ausburg*; and what other Mathematical Pieces he wrote, will appear in *Simler's* Epitome of *Gesner's Bibliotheca*.
1060. OLIVERIUS MALMESBURIENSIS, by some called ELMERRUS, wrote *Astrologorum Dogmata quedam*, and another Book, *De Signis Planetarum*; as *Balæus* testifies.
1070. GULIELMUS, *Abbas Cœnobii Hirsaugiensis*, in the Diocess of *Spires*, composed Three Books *Rerum Philosophicarum, & Astronomicarum*; Printed at *Basile*, 1431.
1070. ARZACHEL HISPANUS, an Arabian by extraction, 190. years after *Albategnius*, observed the greatest Declination of the Sun to be $23^{\circ}. 34'$. Some make him a Native of *Toledo*, being called likewise *Abraham Elzara Keel*. *Georgius Joachimus Rheticus*, in the Preface to his *Ephemerides*, makes him to be the Author *Toletanarum Tabularum*, and that he left 402. *Observations*, touching the Sun's *Apogæum*. Vid. *Ricciol. in Chronol. Astron.*
1071. ROBERTUS LORRAINE, so called by the English, by reason he was Originally a *Lorrainer*, Profest and taught both in the Schools of *France* and *Belgia*; Philosophy, Rhetorick, and Mathematicks, for which Reason he was well esteemed by *William* the Conquerour, and advanced to the Bishoprick of *Hereford*; He wrote *de Stellarum Motibus, Tabula Mathematica, & de Lunari Computo*. See *Balæus*.
1072. ALHAZEN ARABS, wrote, besides seven Books of *Opticks*, one *De Crepusculis*, in which, says *Blancanus*, *Aeris suprema multitudo acutissime rimatur*.
Fredericus

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Fredericus Risner published and illustrated his Works with a Comment and Sculps, and makes mention of three other Signal *Arabians* of the same name, as *Ricciolus* (*Chronic. Astron.*) affirms.

1090. **CEBER HISPALENSIS ARABS**, explained *Ptolemy's Almagest*, in nine Books, first Printed at *Norimberg* by *Petreius*, Anno 1533. together with *Petrus Apianus*, his Scheme or Instrument of the *Primum mobile*. In the beginning of which Work he treats of Spherical Triangles, as far as requisite to Astronomical Calculations; from whence, (says *Mersennus*, in *Synops. Mathemat.*) *Purbacchius* and *Regiomontanus* excerpted many things in their Epitome of *Ptolemy's Almagest*. His chief study was to amend what he found defective in *Ptolemy*. However *Copernicus* stiles him *Ptolemæi Calumniatorem*.
1100. **ALKINDUS**, a Philosopher and Astrologer, wrote, much about this time, a Piece entitled, *De Temporum mutationibus*: And about the Year 1235. *Jacobus Alkindus* wrote, among other things, *De Radiis Stellarum*, yet extant in *France*. See *Labbe's Bibliotheca*.
1115. **RABBI ABRAHAM** wrote *de Sphæra*, says *Blancanus*, from the Authority of *Christmannus in Alfraganum*.
1130. **ATHELARDUS**, *Bathoniensis Cœnobii Monachus, Philosophus, Astronomus, Rhetor, ac Poeta non vulgariter eruditus* (says *Baleus Cent. 2.*) leaving *England*, out of a desire to enrich himself by the Acquisition of Foreign (especially the Eastern) Learning, travelled into the Oriental Parts, and having made a Peregrination through *Egypt* and *Arabia*, and in a great measure satisfied his curious and learned Appetite, he returned into his own Country, and published, among other Works of his, a Treatise of *Ezychiafarim*, of the seven Planets, by him translated out of *Arabick*; he wrote likewise a Book *de septem Artibus Liberalibus*, and another, *de Astrolabio*.
1132. **RICHARDUS**, *Monachus Eboracensis*, wrote upon *Arzabel's Tables*, now extant in the Publick Library at *Oxford*.
1140. **ALMÆON ALMANSORIUS**, in the year 1140. observed the greatest Declination of the Sun to be $23^{\circ} 33'$. His Aphorisms, Propositions, or Astrological Sentences, *Hervagius* published in the year 1530. together with *Julius Firmicus*. This *Almaon*, *Vossius* conceives to be different from *Almaon* King of the *Arabs*, of whom before.
1142. **JOANNES HISPALENSIS** first translated into *Latine*, *Alfraganus*, as *Blancanus*, from *Christmannus*, and from them both *Vossius*, *de Scient. Mathem. c. 35.* affirm. He likewise translated *Alcabicius* his *Isagoge ad Magisterium Judiciorum Astron.* He writ likewise *Epitome totius Astrologiæ*, first Printed at *Norimberg* 1548. with *Jochimus Hellernus* his Preface, *contra Astrologiæ Adversarios*, as *Simler. Bibl. Gesner.* hath noted.
1144. **RODOLPHUS BRUGENSIS**, a Mathematician of *Tholouze*, translated into *Latine*, and Published *Ptolemy's Planisphere*, which he dedicated to his Master, *Theodoricus Platonius*, (as *Gesner* testifies) Printed together with *Aratus*, by *Valderus*, at *Basile*, 1536.
1149. **ALPETRAGIUS**, an Astronomer of *Marocco*, as *Ricciolus* affirms. He wrote *Theorica Physica*, translated out of *Latine* by *Calo Calonymus Parthenopæus*, and

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and likewise, *De Astrologia*, says *Vossius*, who conceives him to be the same with him mentioned in *Summa Alberti Magni*. He observed the Declination of the Sun to be the same with that of *Almaon*.

1150. ABRAHAM ABENE-ZRA, or, according to others, A VEN-HESRE, a great Astronomer and Philosopher, wrote a Book entitled *Mispatho Hamazsaloth*, i. e. *De Judiciis Signorum*; and another, called *Taamin*, i. e. *Rationum Astronomicarum*; and a third, *De Luminaribus & Diebus Criticis*, says *Ricciolus*. This last was revised and published at Rome by *Angelus Blondus*, as *Vossius*, in *Addend. ad L. de Scient. Mathemat.* affirms. There is likewise extant under his name, a Book, amongst the Manuscripts of *Jacobus Golius*, entitled, *De Anni magnitudine*, and *Indorum Astronomia*.
1150. MANUEL COMNENUS, Emperour of *Constantinople*, wrote several Astronomical Tractates, yet preserved in the *Vatican Library*; as *Simler*. in *Bibl. Gesner*. testifies.
1160. JOHANNES DE HEXHAM, so called from the place of his Nativity, a Town in the Bishoprick of *Durham*, a *Benedictine Monk*, wrote, among other things, *De Signis & Cometis*.
1160. RABBI MOSES BEN-MAIMON, commonly, from the initial Letters of his Name, called *Rambam*, among many other Works, writ *De Astrologia, five Siderum Viribus & Effectis*, first published in *Hebrew*, afterwards translated into *Latine*, by *Joannes Isaac Levita Germanus*, Professor of the *Hebrew Tongue* in the University of *Colen*, and there Printed by *Maternus Cholinus*, in the Year 1555.
1160. AVERROES, an *Arabian Physician* of *Corduba*, for his diligence in commenting upon all the Works of *Aristotle*, called *Commentator Magnus*, and simply *Commentator*, reduced *Ptolemy's Almagest* into an Epitome.
1164. SIMEON, Monk of *Durham*, wrote *De Cometa, & Combustione London, & aliis injuriis*, as I find it cited by *James's Eclog. Oxon. Cant.* who affirms the same to be extant in *Benet-Colledge Library* in *Cambridge*. *Balæus* says of him, that he was *Vir suo sæculo in multis Scientiis eleganter instructus, præsertim Mathematicis*.
1166. ALBUMAZAR, otherwise called ABU-ASSAR, and JAPHAR, wrote Eight Books *De Magnis Conjunctionibus, & Annorum Revolutionibus*, and is reported to have observed a Comet, in his time; to have been above the Orb of *Venus*. He wrote likewise *Introductio in Astronomiam*, Printed in the Year 1489.
1170. ROGERUS HEREFORDIENSIS, of whom *Balæus* says, That he was, *Astrorum Peritus, & Metallorum Indagator Maximus*, wrote *In Artem Judicariam; Theoricam Planetarum; De Ortu & Occasu Signorum*, and *Collectaneum Annorum Planet.*
1170. CLEMENS LANTHONIENSIS, so called from the Town of *Lanthony* near *Gloucester*, an *Augustine Fryer*, wrote, among other things, *De Orbibus Astrologicis*, and flourished about the same time.
1170. HUMENIUS ÆGYPTIUS, about this time, wrote *Astronomical Tables*, which *Christmannus*, in *Alferganum*, affirms to be yet extant in the *Palatine* (now the *Vaticane*) Library, as also in the Publick Library at *Oxford*.

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1190. **DANIEL MORLEY**, so named from the place of his birth, a Town in *Norfolk*, out of his great inclination to promote and advance Mathematical Learning, having sometime studied in the University of *Oxon*, travelled to *Toledo*, in *Spain*, to instruct himself in the Language and Learning of the *Arabians*, which there chiefly flourished, and, after his return home, wrote *De Inferiori Mundo*, One Book; Another, *De Superiori Mundo*; and a Third, entitled, *Principia Mathematices*.
1199. **OMAR ASTROLOGUS**, or **HOAMAR** or **HOMAR**, Son of *Belnal Fargardian*, a Native of *Tyberias*, wrote Three Books *Of Nativities*, published by *Hervagius*, together with *Firmicus*, 1532.
1200. **HALY ABEN RODOHAM**, an *Arabian*, or according to *G. Vossius*, an *Egyptian*, wrote a Commentary upon *Ptolemy's Centiloquium* and *Quadripartitum*, Published by *Octavianus Scotus*, at *Venice*, together with other *Arabian Astrologers*. He wrote likewise *De Radiorum Projectionibus*, and *Three Nativities*, whereof one his own, annexed to his other Works. This very Year he observed a Comet in the fifteenth Degree of *Scorpio*; of which more in the History of Comets.
1200. **LEOPOLDUS DE AUSTRIA**, Son of the Duke of *Austria*, *Episcopus Frisingensis*, writ Ten Tracts, *De Astrorum Scientia*, Printed at *Augsbourg*, 1489.
1210. **GILBERTUS LEGLEY**, *Philosophus & Mathematicus suæ ætatis non vulgaris* (sayes *Balæus*) wrote *Compendium in Astronomia*, & in *Prognostica Hippocratis*. He was Physician in Ordinary to *Hubert*, Archbishop of *Canterbury*.
1224. **JOANNES ÆGIDIUS**, *vel de SANCTO ÆGIDIO*, born at *St. Albans*, *Philosophus Summus*, Physician to *Philip King of France*, Professour of Physick and Philosophy, both in the University of *Paris* and *Montpelier*; He wrote *Prognostica Futurorum*, and another Book, *de Materia Cæli*. *Balæus*, *de Scriptor Brit.*
1240. **ALEXANDER DE VILLA DEI**, *Dolensis*, wrote of the Sphere. He published likewise a Book of Arithmetick, and *Computum Ecclesiasticum*; as *G. Vossius*, *De Scient Math.* affirms.
1240. **GEORGIUS MEDICUS CHRYSOCOCCA**, writ *De Inventione Feriæ*, and an Exposition *Syntaxeos Persarum*, with several Tables *Mediorum Motuum*, published by *Bulialdus*, at the end of his *Astronomia Philolaica*.
1252. **RABBI IASAC HAZAN**, i.e. *Cantor*, as being Chaunter to the Jewish Synagogue at *Toledo*, was one of the Principal Compilers of the *Alphonsine Tables*.
1252. **ALBERTUS MAGNUS**, Bishop of *Ratisbon*, one of the most learned Persons of his Age, among other the various Monuments of his Wit and Learning, wrote *De Sphæra*, *De Astris*, *De Astronomia*, and *Speculum Astronomicum*; as *Simler. in Bibl. Gesner.*
1253. **ROBERTUS LINCOLNIENSIS**, Bishop of *Lincoln*, commonly called *Grossa Testa*, in *English*, *Grouthead*, writ a Compendium of the Sphere, Published first by *Lucas Gauricus*, 1531. He wrote likewise *De Cælo & Mundo*, *De Sphæra Cælesti*, *Theoricam Planetarum*, and *In Astrologiam*, as *Balæus* affirms.
1255. **ROGERUS BACON**, a *Franciscan Fryer* of *Oxford*, a most acute Philosopher

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- sopher and admirable Mathematician, insomuch that he was reputed, but falsely, a Necromancer. Out of whose vast number of Books written upon several subjects, by which he hath eternized his name, we shall select only what is proper to our purpose, as they are enumerated by *Balaus*. He wrote a particular Treatise, *De Utilitate Astronomiæ*; *Introductio in Astrologiam*; *De Cælo & Mundo*; *De Cosmographia*; *De Radiis Solaribus*; *De Locis Stellarum*; *De Aspectibus Lunæ*; *Et Prognostica ex Siderum cursu*, with other Pieces of Opticks very considerable in that Age.
1255. ALBUASSIN, or ALBOAZEN HALY, Son of *Aben Ragel*, wrote *De Stellarum Fixarum motu ac locis* (according to *Ricciolus*, *Chron. Astron.*) as also *De Judiciis & Fatis Astrorum*, translated at the command of *Alphonsus* King of Castile, out of *Arabick* into *Spanish*, by *Judas Ben Musce*, and out of *Spanish* into *Latine*, by *Ægidius de Thebaldis*, of *Parma*, Printed at *Basile* 1550. He writ likewise another Book *Signalium Astronomiæ*, as *Simler. in Bibl. Gesner.* affirms.
1256. JOHANNES DE SACRO BOSCO, an *English* man, born at *Hallifax*, anciently called *Holy-wood*, from which he took his name. After some time of study at *Oxford*, he became a Doctor of the University of *Paris*, and compiled, out of *Ptolemy*, *Albategnius*, *Alfraganus*, and others of the Ancients; his Four Books *De Sphæra*, commented upon by *Vinetus*, *Junctinus*, *Clavius*, *Barocius*, and divers others. And though *Barocius* hath detected and published no less than 84. Errors in that Work of *Sacroboscus*, yet it still keeps up its credit in the Schools, as a *Classick* Piece.
1256. ALPHONSUS x. King of *Castile* and *Leon*, having sent for the most learned among the *Moors*, *Arabs*, and *Jews*, began the Instauration of *Astronomical* Tables, which in the Year 1252. he first published, having, in Books, Instruments, and other Necessaries, relating to that Work, expended no less than four hundred thousand Crowns. These Tables, from his Name called *Alphonfine*, being defective, grounded partly upon *Cabalistick* Figments, he afterwards (*viz. Anno* 1256.) Published more correct. He observed in the Year 1250. the first Star of *Aries*, to have been distant from the Equinoctial Point $23^{\circ} 40'$. as *Blancanus* reports. *Ricciolus* affirms; that *Egnatius Dantes*, in the fourth Part of his *Astrolabe*, reports, that he saw a Book of all the *Alphonfine* Instruments; translated out of *Arabick* into *Spanish*, and thence into *Latine*.
1260. PROFATIUS, a *Jew*, about this time, applied his study to the Observation of the Stars. He writ Tables of the Motion of the Eighth Sphere, as *Balaus* affirms; and found the Sun's greatest Declination to be $23^{\circ} 32'$. His Almanack *Perpetuum* is now extant in several of our Libraries.
1260. JOHANNES PECKHAM, a *Franciscan* Fryer, and Archbishop of *Canterbury*, wrote among other learned Works of his, *De Sphæra*, and *Theoricam Planetarum*.
1269. VITELLIO THURINGO-POLONUS, an excellent Mathematician, wrote Ten Books *ἑξ ὀπτικῆς*, i. e. of the nature, reason, and projection of Visual rayes, &c. commonly called *Perspective*; Printed first at *Norimberg* by *Petreius*, Anno 1535. and afterwards reprinted, and adorned with Figures, by *Frederick Rissner*, at *Basile*, 1572. a Work subservient to Astronomy.
1270. ——— ODINTON, a *Benedictine* Monk in the Abbey of *Evesham*, and an *English* man, Scholar to *Profatius* the *Jew* and of *Jewish* Extraction, endeavoured to vindicate his Name from Oblivion by his Book, *De Motibus Planetarum*, and *De Mutatione Aeris*; as *Balaus* affirms;

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1272. **COGIA NASIR EDDIN TUSÆUS**, wrote *Astronomical Tables*, which he dedicated to *Ile-Chan*, Prince of the *Tartars*, and a Treatise of the *Astrolabe*, in twenty Chapters, as I find mentioned in the Catalogue of *Golius's* Manuscripts. He died in the year of the *Hegira* 675. of *Christ*, 1276.
1272. **KOTBODDINUS SHIRAZITA**, wrote a Book entitled *Donum Regium seu Universæ Astronomiæ Syntagma*. He was contemporary with *Nasir Eddin Tusæus*.
1275. **THEBIT BEN CHORA**, i. e. the Son of *Chora*, by Profession a *Jew*, and according to *Leland*, born in *England*, though others make him a Native of *Spain*, first introduced the motion of Trepidation in the Eighth Sphere (by some called *Motus Accessus & Recessus*) from North to South; and observed the Sun's greatest Declination to be $23^{\circ}. 33'$. He wrote likewise *De significationibus Planetarum*; *De Capite & Cauda Draconis*; *Demonstrationes in Almagestum*, and *Additiones in Spherica Menelai*, as they are particularized by *Balæus*. There are mentioned likewise other Treatises of his Writing, as *Præctica Planetarum*; *Canones Astronomici*, and *De Prognosticatione Temporum*, said to be extant in his Majesties Library at *St. James's*.
1282. **GUIDO BONATUS FORO-JULIENSIS**, wrote *Theoricæ Planetarum*, Published at *Venice*, 1506. He wrote likewise, *De Astrologia Judiciaria*.
1290. **HENRICUS BATEN** of *Mechlin*, Dr. in Theology, Chancellour of the University of *Paris*, and Chaunter and Canon of *Liege*, Published a Book, *De Erroribus Tabularum Alphonsinarum*, as *Ricciolus* affirms, in *Catal. Astronom.*
1290. **MICHAEL SCOTUS**, surnamed *Mathematicus*, for his eminent skill in that kind of Learning, by *Balæus* stiled, *Eximius Physicorum Motuum, Cursusque Siderei Indagator*, Published a Comment, *super Authorem Sphæræ*; Four Books, *De Constitutione Mundi*; Two Books, *De Cælo & Mundo*; *Imagines Astronomicæ*; And *Dogmata Astrologorum*; *De Signis Planetarum*, l. 1. *De Natura Solis & Lunæ*, l. 1. Printed at *Venice* 1546. He wrote likewise other *Opera Astrologica*, of which the MS. is extant in the *Bodleian Library*.
1293. **GULIELMUS DE SANCTO GODIALDO** gained about this time the honour and repute of an able Astronomer, that is, as *G. Vossius* notes, twenty years and more after the Publication of the *Alphonfine Tables*.
1300. **PETRUS DACIUS**, or **DE DACIA**, as *G. Vossius*, from the Authority of *Trithemius*, callshim, Published *Astronomical Tables*, extant in MS. in the Library of *Benet-Colledge* in *Cambridge*. He wrote likewise, *De Calculo, sive Computo*; and set forth a Calendar.
1310. **ISAAC ISRAELITA**, wrote a Book entitled *Jessod Holam*, i. e. *De Fundamento Mundi*; in which he often takes occasion to treat of the Motion of the Eighth Sphere.
1320. **PETRUS DE APONO**, called likewise **CONCILIATOR**, *Ob Librum, quo Veterum Medicorum Scripta conciliat*, (says *G. Vossius*, de *Scient. Mathematic.*) wrote *De Astrolabio Plano*, Published at *Venice*, 1502.
1320. **NICHOLAUS TRIVET**, a *Dominican Frier*, Son of *Sir Thomas Trivet Knight*, one of the Judges of the Courts of Common Law in *Edward* the

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1320. JOHANNES BACONTHORP, a Carmelite Fryer in the Monastery of Blackney, in Norfolk, reputed one of the most learned of his time, stiled Doctor Resolutus, wrote four Books, *De Cælo & Mundo*; One, *De Sphæra Judiciali*; and another, *De Astrorum Scientiis*.
1320. NICHOLAUS OCKHAM, a Franciscan Fryer, in Cœnobio Oxoniensi; Praeceptor Publicus (sayes Balæus) wrote, *De Latitudine Oppositionum*, and another Book, entitled, *Astrologi Judicium*.
1322. ISMAEL ABULEEDA, Sultan of Syria, Assyria, and Persia, an illustrious Cosmographer, and Geographer, whose Tables the learned Mr. Graves published in the year 1650. in Arabick and Latine.
1322. CICHUS ASCULANUS, Dr. of Physick, Philosopher, and Publick Professour of Astronomy at Bologna, was accused for a Necromancer, and burnt at Florence (being LXX. years of age) Anno 1328.
1326. RICHARDUS WALLINGFORD, so called from the Town of Wallingford, where he was born; Son of a Blacksmith; after some time of Study in Oxford, betook himself to a Monastick life, in the Abby of St. Alban, whereof he had the Honour to be Abbot. He was excellently well skilled in Arithmetick, Astronomy, and Geometry. He caused to be made a famous Clock or Horologe, for the use of the Monastery, being (according to the Words of Leland) a miraculous Fabrick, *sive quis Cursum Solis seu Luna, seu fixa Sidera notet, sive iterum Maris Incrementa & Decrementa, seu Lineas una cum figuris ac Demonstrationibus, ad infinitum penè variis, consideret*. For the better Explanation of which Curious Piece, and the orderly regulating thereof; he published Canons or Rules, in a particular Treatise, which he entitled *Albion*. Alluding something to the Name of the Monastery; But thereby chiefly expressing this sence or meaning, in English, *All by One*, i. e. *Omnia per Unum*, as Balæus reports. He wrote besides his fore-mentioned *Canones in Albionem*; a Book, *De Judiciis Astronomicis*; and another, *De Rebus Astronomicis*.
1330. JOHANNES DANK, a Native of Saxony, writ *Canones Eclipsales, Canones Tabularum, & De Astrolabio*, as Gesner testifies.
1330. GUALTERUS CATTON, an English Fryer in the Convent of Cordeliers at Norwich, a learned Theologue and Philosopher, published a Treatise *Adversus Astrologos*.
1335. RABBI LEVI, eminent in all kind of Learning, and particularly in Astronomy, wrote a Book called *Milhamot-Hessefem*, i. e. *Defensionem Dei*.
1340. JOHANNES BARWICK, by some (but corruptly) called BRENANTIUS, surnamed likewise BRITANNUS, a learned English Franciscan Fryer, published several Books, *De Astrologorum Prenotionibus*; in which he impugnes Judiciary Astrology.
1340. ROBERTUS HOLCOTH, a Dominican Fryer, of Northampton; of whom Balæus sayes, that he was *penè infinite lectionis Homo, atque ingenii solidissimus*, wrote *De Effectibus Stellarum*; and another Treatise, *De Motibus Stellarum*, as G. Vossius affirms, out of Possevinus.

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1340. GAUFREDUS DE MELDIS, published a Treatise, entitled *Judicium Stellæ Comatæ Anno Dom. 1330.* and of two other Comets, which appeared in the years 1337. and 1338. preserved yet in Manuscripts in the Library of *Pembroke Colledge in Cambridge.* See *James, Eclog. Oxon. Cant.*
1341. RABBI DAVID ABUDERKEM, writ a Treatise, entitled, *Ordo Interpolationis.*
1342. JOHANNES MANDOVICH, sometime Fellow of *Merton Colledge in Oxford*, a learned Physician and Astronomer, published *Astronomical Tables.*
1347. JOANNES ESTWOOD, or ESTWED, or ESCHUID of *Ashenden*, sometimes Fellow of *Merton Colledge in Oxford*, highly commended by *Jo. Picus Count of Mirandula*, wrote a Book, which he entitled *Judiciale Astronomicum, sive Summa Judicialis.* He published likewise *Elucidarium Planetarum, Tabulæ Planetarum*, and Canons of their Utility and Practice; of the Conjunction of *Saturn* and *Mars* in *Cancer* 1357. and of the Conjunction of *Saturn* and *Jupiter*, & *de Signis Conjunctionum.* His *Judiciale Astronomicum sive Summa Anglicana, or Judicialis, vel de Accidentibus Mundi* (for those several Titles it bears) was Printed at *Venice* in the year 1442. and is yet extant in MS. in the Publick Library at *Oxford*, and in that of *Oriel Colledge.* It was afterward Printed at *Venice* in the year 1489. and elegantly for that Age, at the Charge of a *Patrician*, for the Honour of whose Name (because Noblemen in those Dayes would be at the charge of Printing of good Books) I will subscribe what follows, as I received it from my very deserving and ingenious Friend, Mr. *Francis Bernard*, in whose Possession the said Book (among other curious ones with which he is stored) now is. *Summa Anglicana Johannis Eschuid, Opus factum est tum Diligentia, tum Impensâ Francisci Bolani Patritii Veneti, Viri certè bonarum Artium studiosi, Clarissimi quondam Oratoris Candiani; Nec defuit Impressoris Johannis Lucilii Santritter Herbronensis Germani maxima Lucubratio, maximus Labor, & Diligentia.*
1350. NICHOLAUS CABASILAS, a *Grecian*, Archbishop of *Theſſalonica*, wrote a Comment upon *Ptolemy's Almagest.*
1350. JOANNES ELIGERUS of *Gondersleben*, a *German*, writ *de Compositione Astrolabii; de Utilitate Astrolabii; de Utilitate Quadrantis;* Two Books *de Magnete*, and One *de Astrogometro;* and several other Pieces, as *Simler* in *Bibl. Gefner.* affirms.
1350. JOHANNES DE SAXONIA, and JOHANNES DE LIGNERIIIS, both *Germane Astronomers*, and Contemporaries. The latter put forth *Canones Primi Mobilis*, together with Tables, and a Book *De Sphæra.* He is reckoned by *Petrus Cirvellus Daiœensis*, in his Preface in *Sphæram Mundi*, to have been one of the four most celebrated Astronomers, that had flourished between the times of *Alphonſus* and *Purbachius*; as cited by *Vossius* in *Addend. ad Scient. Mathemat.*
1350. GUILIELMUS GRIZAUNT; an *English* man, Fellow of *Merton Colledge in Oxford*, and Dr. of *Physick*, leaving *England*, settled at *Marseilles* in *France*, where he dyed in much Esteem for his Knowledge and Practice in *Physick*, leaving behind him a Son of his own Name, who was first Abbot of the *Canons Regular* at *Marseilles*, afterward Pope of *Rome*, by the Name of *Urban* the Fifth: Of the Issue of his Brain, I find these following, mentioned by *Baleus*, relating to our Purpose,

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pose. *Speculum Astrologia; De Magnitudine Solis; De Qualitatibus Astrorum; De Significationibus Eorundem.*

1360. JOHANNES KILLINGWORTH, Fellow of Merton Colledge in Oxford; wrote *De Judicio Astronomia; Canones & Tabula Astronomica; De Crepusculis; & De Nubium Ascensionibus.*
1360. NICEPHORUS GREGORAS writ *De Astrolabio*, extant in the King's Library at St. James's. Gesner mentions another Piece of his, *De Calumniatoribus Astronomia, & De Astronomia.* Andreas Cellarius, in *Præloquio Harmon. Macrocosm.* reports that in the 27th year of his Age he applied himself to *Andronicus Palæologus*, Emperour of Constantinople, offering to him Reasons for the Emendation of the Roman Calendar.
1360. LUDOVICUS CAERLION, so called from the Town of Caerlion in Wales, where he was born, a learned Theologue and Physician, wrote *De Eclipsi Solis & Lune; Tabula Eclipsium Solis & Lune, secundum Diametros Richardi Wallingfordi*, now extant in his Majesty's Library at St. James's; *Canones Eclipsium; De Tabulis Umbrarum; and Fragmenta Astronomica.*
1363. IB'N SHATER DAMASCENUS, filed by Mr. Graves, *Sedulus Cæli Siderumque Inspector*, by many Observations made at *Damascus*, found the Obliquity of the Zodiack to be $23^{\circ}. 31'$. He wrote likewise *Canons*, and universal *Precepts of Astronomy*, and *Of Astronomical Instruments*, and their use; as likewise *De extruendis Cæli Thematibus*, as cited by Hottinger, *Smegm. Orient.* His Tables are extant in the Publick Library, at Oxford.
1370. JOHANNES BOCCACIUS is about this time numbred among Astronomers by *Gualterus*, in *Chronico*, as cited by *Ricciolus*, in *Catalog. Astron.*
1370. THEOPHRASTUS PARACELSUS, besides his many other Works in Physick and Chymistry, hath left some *Astronomical and Astrological Fragments*, published by *Gerardus Dormus*, together with his Book, *De Meteoris & Tribus Principiis*: He writ *De Astronomia Magna, & Astronomia Magna Compendium*, Printed in the year 1584.
1370. RICHARDUS LAVINGHAM, of *Suffolk*, Professour of Mathematicks, Philosophy, and Theology in the University of Oxford, composed a Book, *De Planetarum Distantia; Compendium Meteororum*, in four Books, and two Books, *De Cælo & Mundo*. He was killed in that Popular Tumult; wherein *Simon Sudbury*, Archbishop of Canterbury, was murdered.
1370. SIMON BREDON, or BRIDON, alias BIRIDANIUS, born at *Winchcomb* in *Gloucester-shire*; Fellow of Merton Colledge in Oxford, Dr. of Physick, and Professour of Astronomy, wrote, according to *Balæus*, Two Books *In Demonstrationes Almagesti*; One, *In quadam Capita Ptolemai*; *De Rebus Astronomicis*; *Æquationes Planetarum*; *De Latitudine Planetarum*; *Super Introductorio Alcabitii*; *Astronomia Calculatoria*; and *Astronomia Judiciaria*. His Book *De Æquationibus Planetarum*, is yet extant in Manuscript, in the Library of *Peter-House* in *Cambridge*.
1370. NICHOLAUS DE LYNN, so named from the Town where he was born, in *Norfolk*, a Carmelite Fryer, *Astrologorum sui Temporis in Anglia celeberrimus ac maximus*, sayes *Balæus*. He wrote *Canones Tabularum*; *De Natura Zodiaci*; *De*

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1378. **BLASIUS PELACANIS**, or (as the *Italians* write him) **BIAGIO PELACANO**, of *Parma*, by *Alberto Leandro* (in *Descript. Ital.*) stiled an Excellent Philosopher and Astronomer ; left (sayes *Simler* from the Authority of *Jovius*) *Quæstiones Subtilissimæ*, in *Astronomia & Optica*. He taught at *Pavy* under *Jo. Galeazzo* first Duke of *Millain* ; His Book being yet extant in MS. in the *Medicean Library*.
1385. **LEO** Emperour of *Constantinople*, Son of *Basilus Macedo* was very learned in *Mathematicks*. His *Tactica*, sive *de Acie ordinanda*, are yet extant, Printed at *Basile*, 1554. And some MSS. of his are in the *French King's Library*, entitled *Logarica* (an Obsolete Word instead of *Logistica*) and are supposed to contain some Astronomical Computations, and an Exercise upon *Diophantus*.
1390. **HENRICUS DE HASSIA**, a *Germane*, Professour of Theology and Astronomy at *Vienna*, having shewn his Knowledge in the latter, in his Comment upon *Genesis*, lib. 1. and in *Theoricis Planetarum*, as *Ricciolus* affirms.
1390. **JOHANNES CHYLMARK**, Fellow of *Merton Colledge* in *Oxford*, *Mathematicus insigniter doctus*, as *Balæus* characters him, published a small Treatise, *De Accidentiis Planetarum*.
1390. **JOHANNES SOMER**, a *Franciscan Fryer*, in the Convent of that Order at *Bridgewater*, wrote *Calendarii Castigationes ; Tertium Calendarii ; Astrorum Canones ;* and *De Quantitate Anni*.
1390. **RICHARD** the Second, King of *England*, wrote something in Astronomy or Astrology, now extant in his Majesty's Library at *St. James's*.
1396. **JOANNES DE LINERIIS**, or **DE LINARIIS**, *Siculus*, wrote *Canones primi Mobilis*, of which mention is made by *Zacutus* in his Tables. He wrote likewise *Canones Quadrantis compositivi & operativi* ; which Pieces of his are extant in MS. in the Library of *Nicholaus Trivisanus* of *Padua*, as I find in *Thomasinus* his *Bibliothec. Patavin.*
1400. **GERARDUS CREMONENSIS** translated *Geber*, out of *Arabick* into *Latine*, and put forth *Theorica Planetarum* ; but such as are severely censured by *Jo. Regiomontanus*.
1400. **JOHANNES DE EGMUNDA**, Professour of Astronomy at *Vienna*, Published Tables, *De Motibus Planetarum*, & *de Luminarium Eclipsibus*, calculated for the Meridian of *Vienna*. He wrote likewise *De Astrolabio*, together with other Works, which are said to be yet extant in the Library at *Vienna*.
1402. **GALFRIDUS CHAUCER**, a learned Knight, and Prince of *Englisb Poets*, *Cui Veneres debet Patria lingua suas*, to use *Leland's* Encomium of him, merits a place in this Catalogue, for his Book of the *Astrolabe*, which he composed for the use and instruction of his Son.
1410. **JOHANNES WALTERUS**, Scholar, at first, in the Colledge of *Winchester*, afterwards, Fellow of *New-Colledge* in *Oxford*, where he chiefly applied himself

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1410. GULIELMUS BATECUMB, alias BADECON, Professour of Mathematicks in the University of Oxford, wrote *De Sphæra Concava*; *De fabrica & usu ejusdem*; *De operatione Astrolabii*, and *De Sphæra Solida*. He is said to have flourished in the Reign of King Henry V. by *G. Vossius*; and by *Balæus* he is ranged among the Authours of this time.
1410. PETRUS ALIACENSIS, Cardinal and Bishop of Cambray, and Chancellor of the University of Paris, wrote, besides his other Theological Works, *Quæstiones in Sphæram Sacrobosci*; *De Reformatione Calendarii*; and another Treatise, entitled, *Concordia Theologia & Astronomia*.
1419. JOHANNES GERSON, Chancellor of the University of Paris, put forth at Lyons, *Trilogium Astrologia Theologizata*; or as *G. Vossius* mends the Title, *Trilogium Astrologia ad Theologia Trutinam expensa*.
1434. PROSDOCIMUS DE BELDEMANDO of Padua, some time before Jo. Baptista Capuanus, Published a Comment in *Sphæram Sacrobosci*, which Lucas Gauricus caused to be Printed in the year 1531. He writ likewise *Canones Operativi & Compositivi Astrolabii*, and *Canones de Motibus corporum Cælestium*, written in the year 1434. Whereof a MS. transcribed by Candus Master of Arts and Doctor of Physick, Nephew to the said Beldemandus, is extant in *Bibliotheca Candelarii*, as *Thomasinus* affirms in *Bibliothec. Patavin.*
1436. GEORGIUS TRAPEZUNTIUS, born in Creet, but taking his name from Trapezond, a City in Cappadocia, translated into Latine, Ptolemy's *Almagest*; to which he added, of his own, an *Isagoge*, together with a Comment. He commented likewise upon Ptolemy's *Centiloquium*, and wrote a Book, *De Antisciiis*; and another with this Title, *Cur Astrologorum judicia plerunque fallant?* as *Voss.* de *Scient. Mathemat.* affirms.
1437. ULUGH BEIG, Nephew to the Great Tamerlane, put forth most exact Astronomical Tables in Arabick, of the Longitude, and Latitude of the Fixed Stars, calculated for the Meridian of Samarcand. To which were added the Commentary of Ali-Cushgi. But the said Tables, collated with Three Persian Manuscripts in the Bodleian Library, about the year 1665. were translated into Latine, and Printed with the Arabick at Oxford, by Doctor Hyde, Keeper of the said Library, to which he added his own most learned Commentary, together with *Mohammedes Tizinus* his Tables, of the Declination and Ascension of the Fixed Stars, in Arabick and Latine.
1437. ALI CUSHGI wrote *Astronomica*, extant among the Manuscripts of *Jacobus Golius*. He flourished in the time of *Ulugh Beig*, to whom he was assistant in composing his Tables.
1437. KADI ZADA, or as the Persians pronounce it, KAZI ZADE, whose name more fully expressed is MULANA SALAH EDDIN MUSA, surnamed *Cadi-Zadi Rumens*, was one of the Assistants to *Ulugh Beig*, in calculating his Astronomical Tables.
1437. MULANA GIJATH EDDIN GIEMSHID Published a Piece, by him entitled *Scala Cæli*; or *Of the Distances and Magnitudes of the Celestial*

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1438. JOHANNES GAZULUS, of *Ragusa*, a great Astronomer and Astrologer, flourished about this time; of him *Simler* writes, that *Nescio quid Astronomicum scripsit*; He is named by *Joannes Regiomontanus*, in his *Tables of Directions*; and what he writ was a Method of the erecting a Celestial Figure or Scheme, which is now called the Way of *Campanus* and *Gazulus*.
1440. HUMPHREY, Duke of *Gloucester*, surnamed *The Good*, Son of *Henry* the Fourth, King of *England*, *Nobilitatis omnis, atque Eruditionis Phoenix planè Unicus*, as he is stiled by *Balæus*, was a great Lover of Astronomical and Astrological Learning, and set forth *Tables of Directions*, of his own Composing.
1440. GEORGIUS THEMISTUS PLETHO CONSTANTINOPOLITANUS composed a Book, entitled, *De Mensium ac Annorum Ordine, Dierumque Recensione*.
1440. NICHOLAUS CUSANUS, born at *Cusa*, a Town seated upon the *Moselle*, in the Diocess of *Treves*, known by the title of Cardinal of *St. Peter's ad Vincula*, a most subtile Divine, Philosopher and Mathematician, wrote (besides other his Works, not relating to our Subject) *De emendatione Calendarii*; and *De Stellarum Fixarum Canone*.
1450. GEORGIUS PURBACCHIUS, so called from the Town of *Purbach* (the Place of his birth) in the Confines of *Bavaria* and *Austria*, was publick Professor of Mathematicks both at *Ferrara* and *Vienna*, and a great Instaurator of Astronomy. His first Essayes were several Tractates of Dyalling, with Tables fitted for the variety of Climates, a Small Piece, with a Table thereto, of the Sun's Altitude; Astrolabial Canons (as *Gassendus* terms them) with a Table of Parallels, proportioned to every Degree of the Equinoctial. The making and use of Solid Spheres, or Globes, especially the Celestial, to which he added a New Table of all the Fixed Stars, with their augmentation of Longitude, from *Ptolemy's* time, to his own. But his chiefest Work (after his Theory of the Planets, and Tables of Eclipses) by which he intended to signalize his Name, was the Reducing of *Ptolemy's Almagest* into a correct Epitome, or Compendium, being chiefly encouraged thereunto by Cardinal *Bessarion*, which he lived not to complete, but left the same, by Testament, to be fulfilled by his Scholar *Johannes Regiomontanus*.
1450. JOHANNES FUSOR, or FUSORIUS, contemporary with *Purbacchius*, published Tables of Sines and Chords; and by command of *Charles VII.* King of *France*, made Observations for the better composing of new Tables of the Celestial Motions, as *Gassendus*, in the Life of *Purbacchius*, testifies, extant in MS. in the Library of *Nicholaus Trivisanus* of *Padua*, as *Thomasinus* in *Bibliothec. Patavin.* affirms.
1460. GUILIELMUS BOTONER, an *English* Knight, noble by Extraction, but much more ennobled by his Learning, as well in History, Physick, as Mathematicks, Published with other Works, upon several Subjects, a Book, *De Astrologiæ Valore*.
1460. JOHANNES JOVIANUS PONTANUS, a *Neapolitane*, acquired no little honour and esteem, by his Astronomical Studies and Writings. He translated into *Latine*, *Ptolemy's Centiloquium*, and published it with an Exposition or Comment thereupon, and wrote XIV. Books, *De Rebus Cælestibus*, and Five others, in

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in elegant *Latine* Verse, entitled, *Urania, five, De Stellis*; and One other, in Verse, *De Meteoris*.

1460. MICHAEL SCOTUS, a diligent Observer of the Stars, at the desire of the Emperour Frederick the Third, put forth, (about this Time) *Quaestiones in Sphaeram Joh. de Sacro Bosco*, as Ricciolus, *Chronol. Astronom.* affirms; which certainly is a great mistake: for Frederick the Third came to the Empire much earlier, and was deposed in the year 1323. Scotus flourishing according to Balus in the year 1290. about which time the Reader will find him already inserted in this Catalogue.
1460. JOHANNES MULLERUS, commonly called JOHANNES REGIOMONTANUS, or DE MONTE REGIO; from Cunisberg a Town in Franconia, where he was born, Disciple to Purbacchius, finished the Epitome (begun by his Master) of Ptolemy's *Almagest*. He published likewise Tables of Directions and Eclipses, and first of all in that Age set forth Astronomical *Ephemerides*, of many years duration, Printed at Augsburg 1488. He wrote likewise *De Theoricis Planetarum*, & *De Cometis*, and published a Treatise *De Triangulis*, Printed at Basile in folio, by Daniel Santbeck, and is still a Book of good account, as containing in it divers extraordinary Cases about plain Triangles. He assisted Sixtus IV. (by whom he was honourably to that end invited) in the emendation of the Julian Calendar, though he lived not to perfect what he had begun. He dedicated his Tables of the *Primum Mobile*, to Matthias Corvinus, King of Hungary, who not only rewarded him with 800. Hungarian Crowns, but also made him his daily Guest, for some time, at his Table, justly deserving to be honoured by Posterity, as the great Advancer of all Mathematical Learning, especially of Astronomy, as well by his own Labours, as the publishing in Print, at Norimberg, the most eminent Authours among the Ancients in that Science; particularly our *Manilius*, *Ptolemy*, *Theon*, *Proclus*, *Menelaus*, *Theodorus*, *Firmicus*, *Hyginus*, and others, to the number of Thirty at least. He observed the Sun's greatest Declination to be $23^{\circ} 30'$. He died, as some write, at the 33^d. or, as others, at the 40th. year of his Age, not without the suspicion of being poisoned by the Sons of Georgius Trapezantinus, the envious opposers of his merits, and lies buried at Rome, in the *Pamtheon*. See more of him in *Gassendus*, who writ his Life.
1462. JOHANNES BLANCHINUS, was, as *Blancanus* affirms, of Ferrard, but more truly, as Ricciolus, of Bologna, and composed Astronomical Tables, which he dedicated to the Emperour Frederick the Third, to whom he was both well known and acceptable. These Tables, with new ones of his own, and more correct Canons, and several Additions, were by Lucas Gauricus published at Venice, 1526.
1470. EBERHARDUS SCHLUSINGERUS of Gasmanstorf in Franconia, Doctor of Physick at Zurich, writ a Treatise of Comets, and of their Significations; particularly of a Comet which appeared at Zurich in the year 1472. He writ likewise an *Introduction to Astrology*, chiefly relating to Medical Elections.
1473. BESSARION, by birth a Grecian, Cardinal of the Roman Church, and Patriarch of Constantinople, a great Favourer of Astronomical Studies: He left (among other his various and learned Works) a small Treatise, whereof the Manuscript is extant in the Emperour's Library at Vienna, entitled *Methodus cognoscendi quot horis, singulis Noctibus Luna fulgeat*; as the same is cited by Simler in *Biblioth. Gesner*.
1474. ABRAHAM ZAGUT, or ZACUTI, was first publick Professor of Astronomy

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Astronomy at *Carthage*, afterwards at *Salamanca*, of whom *Ricciolus* affirms, that he was *Astronomia consultissimus*. *Vossius* sayes he was Astrologer to *Emanuel King* of *Portugal*. He wrote *Fasti, sive Almanach perpetuum omnium cœli Motuum*, Printed at *Venice* 1502. In the Preface of which Work he makes mention of *Abenverga*, a Jew, his Astronomical Tables, but without giving any account of the Time wherein he flourished. In the year 1474. he observed the Star called *Spica Virginis* to be in the $17^{\circ} 10'$ of *Libra*, as *Ricciolus* from the Authority of *Augustinus Riccius* affirms. His *Almanach Perpetuum sive Ephemerides* were calculated for *Salamanca*, the *Radix* they began from was the year 1472. but the Places of the Planets were taken from *Regiomontanus* his *Ephemerides*; his first part (which whether ever Printed is uncertain) beginning from that year. He writ the Preface to the Bishop of *Salamanca*, (who he was doth not appear) *Joannes Michael Germanus* made the Problems before it, *Alphonfus de Corduba Hispalensis* made a Canon of the Equation of *Venus*, and discourses a little of the Errours of *Zacutus*. In the same Book one *Oclavius Sfortiades Episcopus Aretinus*, sayes, that *Marcus Antonius Grimanus Patricius Venetus*, *Juntæ Calcographiæ imprimendam tradidit Novam Tabellam*, utpote *Supplementum Equationis Veneris in 30 Revolutionibus, quam suæ Celsitudini Abraham Zacutus ex Damasco destinaverat paululum antequam Diem clauderet Novissimum*. *Gauricus* (being but a young Man) corrected and put out the Book at *Venice Anno* 1515.

1475. JOANNES ODDI, of *Padua*, by *J. Phil. Thomafinus* (in *Bibl. Patav.*) stiled *Physicus, & Astronomus* (upon the Score of which last, We give him place in this Catalogue) wrote a Book which he dedicated to *Frederick Duke of Urbine*, de *Impressionibus Elementorum*, de *Copia rerum*, & *Pretio*, de *Bello*, de *Religione*, de *Principibus*, de *Civitatibus*; which I conceive to be some Astrological Discourse, or Prognostick, extant in MS. in the Library of *Hippolytus Oddi* of *Padua* Knight of *St. Mark*.

1475. JOHANNES BAPTISTA CAPUANUS SIPONTINUS, De *Manfredonia*, and as *Ricciolus* affirms, Canon Regular of the Church of *Lateran*, while he was a secular Person, his name was *Franciscus Capuanus*, and he was publick Professour of Astronomy at *Padua*, at which time he wrote an Exposition, In *Sphæram Sacrobosci*. Being afterwards made a Bishop he revised it, and dedicated it to his Fellow-Canons, sometime his Auditours. He wrote likewise In *Theoricis Purbacchii*, *Computus Ecclesiasticus*, and a Book, *De Compositione Quadrantis*.

1475. ANDALO of *Genua*, a most excellent Mathematician, wrote of the *Astrolabe*, Printed at *Ferrara* 1475.

1478. THEODORUS GAZA wrote in Greek, De *Mensibus*, & De *Anno*, in which sayes *Ricciolus*, *Astronomiæ non inscium se ostendit*; Published by *Petavius*, in *Uranolog*.

1480. CHRISTIANUS MOLITOR, of *Clagenfurt*, was, as *Ricciolus* affirms, *Astronomus insignis*, and wrote, at *Vienna*, *Opuscula Astrologica*, which, according to the testimony of *Vossius*, *apud Doctos in magno pretio habentur*.

1480. NICHOLAUS ORESMIUS wrote a particular Treatise, by way of Commentary, against the Superstition of *Judiciary Astrology*. He is cited by *Joannes Picus Mirandula*, by the name of *Nicholaus Orem*, to have written a Book, *De Proportionibus Proportionum*, as *Simler* in *Biblioth. Gesner* attests.

1480. ALEXANDER ACHILLINUS, of *Bologna*, Professour of Philosophy, wrote *De Orbibus Cœlestibus*. ALCHA-

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- ALCHABITIUS**, or **ALCABITIUS**, called likewise **ABDILAZUS**, an *Arabian*, composed an *Isagoge*, or Introduction, *Ad scrutanda Astrorum judicia*, and writ *De Planetarum Conjunctionibus*. *Ricciolus* affirms he wrote four Tractates, in which he comprized the Elements of Astrology, commented upon by *Naiboda*. *Johannes Hispalensis* first translated him into *Latine*, Printed at *Venice* in the year 1491. and 1521. together with the exposition of *Joannes de Saxonia*, and the Emendations of *Antonius de Fantis*, Doctor of Physick at *Trevigi* in *Italy*. He wrote likewise of *Opticks*, of which see *Vossius*, *De Scient. Mathemat.* There is a MS. Treatise in the *Bodleian Library*, entitled *Introductio ad Judicia Astronom.* under the Name of *Algabicus*; I know not whether mistaken for *Alchabitus*.
1480. **MARCILIUS FICINUS**, an eminent *Florentine* Physician, Philosopher, and Astronomer, who both in his Notes *In Timæum Platonis*, and other his Dialogues, discourses learnedly, as occasion requires, upon several Astronomical Subjects, having likewise put forth an Apology, *De Medicina Astrologiæ jungenda*; a Disputation *Contra Judicia Astrologorum*; and a Book, *De Sole & Lumine*. In his Book, *De vita cælitus comparanda*, he shews himself very Learned in Astrology, though he writ against the *Astrologasters*.
1482. **JOHANNES KENT**, alias **KAYLE G**, Native of *Caermarden* in *South-Wales*, a Great Philosopher, Botanist, and Mathematician, of which Studies he was Professour in the University of *Cambridge*, put forth *Astronomical Tables*.
1488. **JOANNES ANGELUS** put forth *Opus Astrolabii Plani cum Tabulis*, Printed *August. Vindel.* 1488.
1490. **JOHANNES ERGHOM**, of *York*, an *Augustine* Fryar, having, at *Oxford*, professed Logick, Natural Philosophy and Theology, gained to himself the repute of an eminent Scholar, and put forth a Book of Astrological Calculations.
1490. **JOHANNES PICUS**, Count of *Mirandula*, *Ingeniorum Phœnix*, as some have stiled him, besides other Works of exquisite and profound Learning, wrote Twelve Books *Against Judiciary Astrology*.
1490. **NICHOLAUS COMES DE COMITIBUS**, a Noble *Italian*, wrote a Tractate, *De Motu & Recessu Octavæ Sphæræ*, extant in MS. among those of *Nicholaus Trivisanus* of *Padua*, recorded by *Jac. Phil. Thomasinus* in *Bibliothec. Patavin.*
1490. **PONTICUS VIRMIUS**, alias **VIRUNNIUS**, Native of *Trevigi* in *Italy*, Professour of Philosophy, writ, besides many other Works upon different Subjects, a Commentary *In Sphæram Johannis Sacrobosci*.
1490. **JACOBUS SCHONHEINTZ**, Professour of Mathematicks and Philosophy, in *Academia Herbipoli*, writ an Apology in vindication of Astrology; against *Jo. Picus* Count of *Mirandula*.
1490. **DOMINICUS MARIA NOVARAS FERRARIENSIS**, Professour of Astronomy in *Bologna*, and Master to *Copernicus*, is said to have observed the Sun's greatest Declination to have been $23^{\circ}.29'$. He was a great Promoter of Astronomical Observations, both by his teaching and practice.
1491. **BERNARDUS WALTHERUS**, of *Norimberg*, Disciple to *Regiomontanus*, and a Continuator of his Observations, wh ch with his own were published;
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- first at Norimberg ; afterwards together with the *Hassian* and *Tychonick*, by *Willebrodus Snellius*. He was a great Observer of the Stars, and partly from the Authority of *Alhazen* and *Vitellio*, partly by his own experience, made it appear of how great moment the Doctrine of Refractions is, in relation to the Stars, when near the Horizon.
1492. HERMOLAUS BARBARUS, a Noble Patrician of *Venice*, and Patriarch of *Aquileia*, besides his other eminent Works, both in Historical and Critical Learning, writ a Book, *De convenientia Astronomiae & Medicinae*.
1493. CHRISTOPHORUS COLUMBUS, a Native of *Genua*, by *Blancanus* stiled *Argonautarum Princeps*, trusting to his skill in Astronomy and Geography, by a high and daring, yet a happy and successful undertaking, discovered, to the *Old*, a *New World*.
1494. JOHANNES ABIOSUS, of *Naples*, Doctor of Physick, and Professour of Mathematicks, writ Dialogues in defence of *Judiciary Astrology*, in which he predicts many Schismes and future Changes to happen in the Church. He dedicated his Books to *Alphonfus* King of *Sicily*.
1494. JOANNES LUCILIUS SANTRITTER HEILBRON-
NENSIS, reduced the *Alphonfine* Tables into a most easie Order and Method, to which he added Tables of his own, with Rules or Canons thereunto. He writ likewise a Book of the Judgements of Nativities, Printed at his own Shop in *Venice*, 1494.
1494. JOANNES ANGELUS BAVARUS, of *Aichen*, put forth a Correction of the *Romane Calendar*, a Plain *Astrolabe*, a Treatise of Nativities, and of unequal Hours in each Climate of the World, as also Ephemerides, and various Prognosticks, Printed at *Venice* in the year 1494. He died in the year 1512. at which time he was about finishing *Purbacchius's* Table, of the Equations of the Planets Motions.
1494. LAURENTIUS BONINCONTRIUS MINIATENSIS, writ Three Books, *De Rebus Cælestibus*, in Heroick Verse, Printed by *Robert Winter*, at *Basile*, in the year 1540. with the accession of divers Observations of the Eclipses of the Sun and Moon, made by *Philippus Melancthon*, *Johannes Stigelius*, *M. Acontius*, *Joachimus Camerarius*, and *Georgius Æmilius*. He was the first that wrote a Comment upon *Manilius's Astronomica*, Printed both at *Bologna*, and at *Basile*.
1495. JACOBUS FABER, besides his Arithmetical Epitome of *Boëtius*, and his Comment upon *Jordanus Nemorarius*, wrote also a Commentary, *In Sphæram Sacrobosci*.
1495. RAPHAEL VOLATERRANUS, a Chronologer and Cosmographer, who in the third Tome of his XXXVIII. Books *Urbanorum Commentariorum*, collected (as himself affirms) out of more than a thousand *Greek* and *Latine* Authours, hath written, *De Philologia, sive Artium Rudimentis*, in which those of *Astronomy* are included.]
1495. LUCIUS BELLANTIUS, of *Siena*, wrote Twenty Questions touching the truth of Astrology, and Twelve Books in defence of Astrology, against *Picus Mirandula*, Printed at *Florence* and *Basile*. To which are annexed the Dialogues of *Gabriel Pirovanns*, *De Veritate Astrologia*.

CONRADUS

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1497. **CONRADUS COCUS WIMPINÆ DE BUCHONIA**, Professor of Theology at *Frankfort*, and *Leipsick*, writ, among divers other Tractates, six Books *De Corporibus Cælestibus*, as *Simler* testifies.
1500. **STEPHANUS ROSINUS** of *Ausbourg*, Professor of Philosophy, Batchelour of Divinity, and Canon, at *Vienna*, taught Astronomy there, and published Tables of the Declinations of the fixed Stars, with Prognosticks.
1500. **JOHANNES MANTZ**, of *Plabeim*, a famous Theologue, and Astronomer, in his time, wrote *Prognostica ex Stellis*.
1500. **ANDREAS STIBORIUS**, a *Bohemian*, Canon and Professor of Mathematicks at *Vienna*, a most acute Astronomer. He composed an Epitome of *Ptolemy's Almagest*, *Albategnius*, and *Geber*; wrote five Books touching Shadows; a Book of Astronomical Instruments, of the first and second *Mobile*, with his own Canons, and those of the Ancients; an Introduction in *sensilem Astronomiam*; a Book of Mathematical Authours; and of the *Primum Mobile* divided into four parts, and handled *Geometricè*, *Arithmeticè*, *Exemplariter*, & *Instrumentaliter*. See more of him in *Vossius, de Scient. Mathemat.*
1507. **MARCUS BENEVENTANUS**, a *Celestine-Monk*, wrote upon *Thebit*, *De Octava Sphæra*. He likewise corrected *Ptolemy's Planisphere*, and together with *Johannes Cota* of *Verona*, *Scipio Carteromachus*, of *Pistoia*, and *Cornelius Benignus*, of *Viterbo*, *sedulam navavit operam in Geographia Ptolemæi corrigenda*, sayes *G. Voss. De Scient. Mathemat.*
1507. **BARTHOLOMÆUS VESPUCIUS**, a *Florentine*, publick Professor of Astronomy in the University of *Padua*, where he drew many into admiration of his Learning. He commented in *Sphæram Sacrobosci*, and put forth an Oration, in *Laudem Quadrivii*, sive, *Quatuor Disciplinarum Mathematicarum*; chiefly of Astrology.
1508. **JOHANNES GANIVETUS**, of the Order of *Minime* Fryars at *Vienna*, put forth a small Astronomical Treatise, beginning with these words, *Quod Cæli enarrant*, &c. To which he added an Abbreviation of *Aben-Ezra*, *De Luminaribus & Diebus Criticis*, with the Astrology of *Hippocrates*, as *Gesner* affirms; Printed at *Lyons*, in the year 1508.
1509. **JOHANNES EZLER**, of *Mentz*, published a Piece entitled *Speculum Astronomicum*, in which he treats of the Causes of the Errours in Astrology proceeding from the neglect of the Equation of Time. He put forth likewise the Theory of the Planets, and of the Eighth Sphere; Printed at *Basil*, by *Henricus Petri*, 1509. *Unde cum Theoricis Purbacchii.*
1510. **JACOBUS LOCHER, PHILOMUSUS GERMANUS**, wrote among other things, a Treatise *De Cometa*, mentioned by *Simler. in Bibl. Gesner.*
1513. **AUGUSTINUS RICCIUS**, of *Casal*, wrote a learned Treatise, *Of the Motion of the Eighth Sphere*, in which he professes to have learnt Astronomy of *Abraham Zaguti*, at *Carthage* and *Salamanca*. He wrote likewise an Epistle touching the Authours of Astronomy, wherein he shews the same to have come originally from the *Hebrews*. In which Work of his (sayes *Simler. in Bibl. Gesner.*) are contained *Platonica quedam & antiqua Magiæ Dogmata.*

JOHANNES

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1528. JOANNES FERNELIUS of *Ambois*, a famous *French* Physician, and as eminent a Geometrician and Astronomer, wrote besides other his Learned Works, a particular Treatise, entituled, *Cosmotheoria*, in which he explains the Motions, Site, Magnitude and Theory of the Celestial Bodies; and another Piece, called *Monalosphærium*.
1530. JOHANNES CARIO, besides his Chronological Work, left, as *Vossius* terms them, *Præcticas Astrologicas, nec non Ephemerides*, beginning with the year 1536, and ending in the year 1550.
1530. JACOBUS MILICHIUS, Professour of Mathematicks at *Wittemberg*, and Tutor to *Erasmus Reinholdus*, wrote a Commentary upon the Second Book of *Plinius Secundus*, the Subject whereof is chiefly Astronomical.
1530. ORONTIUS FINÆUS, of *Dauphiné*, *Regius Professor* of Mathematicks at *Paris*, wrote *De Sphæra*; *Of Cosmography*; *Of the Theory of the Planets*; *Astronomical Canons*, or *Problems of the Primum Mobile*; *Of the difference of Longitude, to be found by the Moon*; and several other Pieces; which (as *Blancanus* advises) ought to be read *cum Antidoto Petri Nonnii de Erroribus Orontii*.
1530. HIERONYMUS FRACASTORIUS, a Native of *Verona*, an excellent Poet, Physician, Philosopher, and Astronomer, Published a Book *De Orbibus Excentricis & Homocentricis*, which he dedicated to Pope *Paul III*.
1530. SEBASTIANUS MUNSTERUS was famous for two things, as *Vossius* affirms, to wit, *Hebræis Literis, & Mathesi*. As to what concerns our purpose, he wrote Notes, *In Geographiam Ptolemæi, & Universalem Cosmographiam*, and of *Dyalling*; as also *Organum Uranicum*, wherein the Theories of the Planets, and their Motions were computed for an hundred years and more. He was also Authour of the *Canones super novo Luminarium Instrumento*.
1530. JOACHIMUS FORTIUS RINGELBERGIUS of *Antwerp*, wrote *De Horoscopo, De Tempore, De Cosmographia*, and Three Books of *Astrological Institutions*.
1530. JOHANNES ROBINUS, in *Englisch*, *Robins*, was a great Astrologer, and put forth a Book, *De Portentosis Cometis*, dedicated by him to King *Henry VIII*. which *Balæus* calls, *Opus valde Lucidum*, now extant in Manuscript, in the hands of Mr. *Thomas Gale*.
1530. SIMON GRYNÆUS, Native of *Viring*, a Town in *Suecia*, or *Suaben*, merited eminently in all kind of Learning, particularly by publishing, in *Greek*, the *μεγάλη σύνταξις* of *Ptolemy*, to which he added a Preface of his own touching the use thereof, Dedicated to King *Henry the Eighth of England*, Printed at *Basil*, 1538.
1531. HENRICUS GLAREANUS, a Geographer, Chronologer, Musician, and Physician, Native of *Glarona*, commonly called *Glarys*, a Town in *Switzerland*, put forth a Book *De Geographia*, induced chiefly thereunto, as he pretends in his Preface, because he found the Sphere of *Proclus* to be too concise, and only fitted to the Horizon of *Greece*, and erroneous, as to the Description of some Circles; and *Sacroboſcus* in his *Parallels and Climates*, mutilous and defective. He published likewise other Pieces, both in *Astrology* and *Cosmography*, being (according to the testimony of *G. Vossius*) *Vir undequaque doctissimus*.

ACHILLES

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1532. **ACHILLES P. GASSARUS** of *Lindaw*, by *Gesner* stiled *Medicus & Mathematicus præstantissimus*, put forth a *Chronology* from the beginning of the World to the year of Christ 1532. He published likewise a *Mathematical Table*, entituled, *Sciaterion Pedarium*, Printed at *Zurick*.
1533. **JODOCUS CLITCHTHOVÆUS NEOPORTICENSIS**, writ a Comment upon *Jacobus Faber* his Theory of the Planets.
1533. **GEORGIUS PRUCNER**, of *Ruspach*, left behind him (sayes *Simler* in *Bibl. Gesner.*) very fair and exquisite Astronomical Instruments, and several Books collected by him, in *Astrorum Scientia*, yet preserved at *Vienna*, in *Bibliotheca Facultatis Artium*.
1534. **JACOBUS CEPORINUS** of *Zurick*, eminently learned in the Hebrew, Greek, and Latine Languages, put forth a Commentary upon *Dionysius* his *Periegesis*, and *Aratus* his *Astronomicon*, Printed at *Basil*, by *Wolphins*, in the year before mentioned, as *Gesner* testifies.
1535. **LUDOVICUS DE RIGIIS**, published *Astrological Aphorisms*, addressed to the Patriarch of *Constantinople*, Printed at *Norimberg*, in the year 1535. together with *Ptolemy's Tetrabiblos*.
1535. **JOHANNES STIGELIUS**, Native of *Gota*, a City in the Province of *Thuringen*, in *Germany*, an ingenious Poet and Mathematician, Professour at *Wittenberg* and *Jena*, put forth *Prognosticks* upon the Eclipse of the Moon happening in the year 1536, as likewise others upon one of the Sun in the year following, and upon one of the Moon, and another of the Sun, in the year 1551.
1536. **JACOBUS KÆBELIUS**, besides an Arithmetical Treatise, Published another of the *Astrolabe*, in *High-Dutch*, which was Printed afterwards in *Latine*, at *Paris*.
1536. **JACOBUS ZIGLERUS**, of *Landaw*, a City in the Province of *Vasgow*, in the lower *Alsatia*, set forth *Constructionem Solidæ Sphæræ*, Printed at *Basil*, by *Valderus*, together with *Aratus* and his Scholiast, in the year 1536. He wrote likewise *Scholia in Procli Lycii Sphæram*; and *De Canonica per Sphæram operatione*; and *De Hemicyclo Berosi*, mentioned by *Vitruvius*, l. 9. c. 9. He published likewise a Comment upon the Second Book of *Pliny's* Natural History; in which he explains the most obscure, especially Astronomical, Places therein.
1536. **NICHOLAUS COPERNICUS**, by *Bulialdus*, not without reason, stiled *Vir absolute subtilitatis*, a Native of *Thorne* in *Prussia*, and Canon of the Church of *Frewenburg*, the Cathedral of *Warmerlandt*, Scholar to *Dominicus Maria*, of *Ferrara*, to whom he was Assistant in making his Astronomical Observations at *Bologna*, and Professour of the Mathematicks at *Rome*, honoured at his Publick Lectures with the Assembly of the most Illustrious Persons in that City, whence returning into his own Country, he wholly applied himself to the study and instauration of Astronomy, finding the Sun's greatest Declination to be 23°. 28'. The year before his Death, at the instance of the Cardinals, *Schomberg*, and *Ghisi*, he published his Noble Work, *De Revolutionibus Orbium Cælestium*, in Six Books, in which he not only revived, but most happily united, and formed into an Hypothesis of his own, the several Opinions of *Philolaus*, *Heracledes Ponticus*, and *Ecphantus Pythagorens*. For according to the opinion of *Philolaus*, he made the Earth to move about the Sun, as the Center, whence its Annual Motion; And with *Heracledes*

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Heracledes and Ecphantus, he likewise gave it a Motion like that of a Wheel about its own Axis; whence its *Diurnal Motion*; an Hypothesis so near the Truth, that like that when persecuted, maugre all Opposition,

*Per dayna, per cades, ab ipso
Sūmit opes animūque ferro;*

As *Ricciolus* (though a Dissenter from it) observes.

1536. **ANDREAS OSIANDER** took not only care in publishing the first Edition of *Copernicus* his Book *De Revolutionibus*, but condescended to be Overseer of the Press, while it was Printing, to which he added a brief Preface of his own, therein chiefly endeavouring, because of the seeming Novelty of the Opinion, to persuade the Reader, to look upon it as an assumed Hypothesis; rather than an asserted Tenet. To which purpose, about that time was published this Distich,

*Quid tum si mihi Terra movetur, Solque quiescit
Et Cælum? Constat Calculus inde Mihi.*

Of which *Gassendus*, in *Vitâ Copernici*.

1536. **JOHANNES SCHONERUS**, a Native of *Carolostadt*, Professour of Mathematicks at *Norimberg*, put forth Astronomical Tables for their perspicuity called *Resolutæ*, and a Book *De usu Globi Stelliferi, De Compositione Globi Cœlestis, De Usu Globi Terrestris & de Compositione Ejusdem*; as also another Piece, called *Æquatorium Astronomicum; Libellus de Distantiis Locorum per Instrumentum & numeros investigandis; De Compositione Torqueti; In Constructionem & Usū Rectanguli sive Radii Astronomici Annotationes; Horarii Cylindri Canones; Planisphærium seu Meteoroscopium; Organum Uranicum; Instrumentum Impedimentorum Luna*. All Printed at *Norimberg* in fol. 1551.

1536. **GEORGIUS VALLA**, an *Italian*, Native of *Piacenza*; among other his Learned Works, wrote a Treatise in four Books *De tota Astrologia*, In which, *Fabrica Ususque Astrolabii exaratur, & quæ Signorum in exhibendis Medicaminibus sit habenda Observatio*. He writ likewise a Commentary in *Almagestum & Quadripartitum Ptolemæi*, and translated out of Greek into Latine, *Proclus Diadochus* his *Hypotypes Astronomicarum Positionum*, and *Cleomedes de Contemplatione Orbium Cœlestium*. V. *Simler*. in *Biblioth. Gesner*.

1537. **JOHANNES BAPTISTA AMICUS COSENTINUS**, wrote *De motu Cœlestium, juxta Principia Peripatetica*, Published in the year 1532.

1537. **PETRUS PITATUS**, of *Verona*, wrote *Isagogen ad Ephemerides*, and *De novo Calendario instituendo*, which he addressed to Pope *Paul III*. He wrote likewise an *Explication of the Rising and Setting of the Fixed Stars*, Printed at *Basil*, 1568.

1537. **JOHANNES LUCIDUS SAMOSATHEUS**, about this time put forth his learned Chronological Labours, *non sine Eruditiæ Cavæ Applausu*, says *G. Vossius*; in which are contained *Emendationes Temporum ab Orbe condito*, with *Canons in perpetuam Temporum Tabulam*; *Of the true Day of our Saviour's Passion*; And an *Epitome of the Emendation of the Romane Calendar*, Printed at *Venice* by *Junta*, 1537.

BONETTUS

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1537. BONETTUS a Jew, put forth a small Treatise *De Annulo sive Instrumento Astronomico*, Printed at Marpurg 1537.

1537. SYMPHORIANUS CAMPEGIUS (*alias* CHAMPERIUS) *Eques Auratus Lugdunensis*, a French-man, among other Learned Works of his in Physick and Philosophy, put forth several Mathematical Treatises, and particularly One of *Astronomy*, Printed by Henricus Petrus, at Basil 1537.

1538. JOHANNES GIGAS STAINFORTENSIS, Published *Enchiridion Spharicum, seu Systema Cosmographicum compendiosum*. He wrote likewise, according to the Testimony of Simler in *Bibl. Gesner*, an Elegy upon two notable Eclipses of the Moon, which happened in the year 1538. Whereof the former was on the fourteenth of May, the latter on the sixth of November. His *Enchiridion Spharicum* was Printed at Oxford in the year 1664.

1538. MAURUS FLORENTINUS, first, a Monk, of the Order of the *Humiliati*, afterwards, of the Fraternity of the Servants of the Blessed Virgin, of whom Gerardus Vossius says, That he was most learned in the *Latine*, *Greek*, and *Hebrew* Tongues, and excellently well skilled in *Cosmography*, and other Sciences; Published in his own Language (the *Italian*) divers Pieces, as his *Annotations in Spharam Sacrobosci*; and (besides his *Sphæra Theologica & Christiana*) *Sphæra Platonica*, which he dedicated to *Cosmo de Medicis*. He wrote likewise *De Arte Navigatoria*; and an *Epitome of Musick*.

1539. GASPAR BORNERUS, Professor of Philosophy at *Leipsick*, among other Tractates, put forth a Book, *De Stellis*.

1540. JOHANNES PENA, a French-man, *Regius Professor* of Mathematicks in the University of *Paris*, translated *Euclid's Opticks* into *Latine*; to which he prefixed an *Encomium* of Opticks, wherein (to use *Gesner's* Words) there are *Jucundissima Disceptationes & imprimis arduæ*, touching the *Epicycles*, *Excentricks*, *Apfides*, *Apogæums*, and *Perigæums* of the Planets, as likewise of their *Parallaxes*; together with ingenious Arguments concerning the Earths Rest or Motion, drawn from the Principles of that Art. He first maintained the Heavens to consist of no other Substance than that diffused through the Aery Region, and discovered some Comets to have been above the Moon; as *Gassendus*, in the life of *Tycho*, observes.

1540. JOHANNES PIERIUS VALERIANUS, the noble Authour of *Hieroglyphicks*, wrote and dedicated to Cardinal *Alexander Farnese*, being but yet young and much addicted to Astronomical Studies, an elegant Compendium Of the *Sphere*.

1540. PETRUS CATENA a Venetian, Doctor in Theology and Professor of Mathematicks at *Padua*, about the same time with *Pierius*, wrote upon the same Subject of the *Sphere*; and other Mathematical Peeces.

1540. JULIANUS RISTORIUS DE PRATO, a Carmelite Fryar, Doctor in Theology, and an eminent Astronomer, Tutor to *Junctinus*, by whom, in his Preface to his *Tabula Resoluta*, he is reported to have observed the Planets for several years, viz. from the year 1536. to 1542.

1540. PAULUS CRUSIUS published a Treatise, wherein he sets forth the Doctrine of the Sun's Revolutions, and Tables of the mean Conversions of
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1540. ANGELUS FORTIUS Doctour of Physick, is by *Gesner*, in *Biblioth.* reckoned as an eminent Astrologer.

1540. ANTONIUS DE MONTULMO, Doctour of Arts and Physick, published a Book *De judiciis Nativitatum*, illustrated with the additions of *Jo. Monteregius*; Printed at *Norimberg*, 1540.

1540. JOHANNES MASSÆUS, put forth twenty Books of Chronology, from the beginning of the World to the year now mentioned, to which he prefixed a fourfold Calendar, to wit, the *Egyptian*, *Hebrew*, *Macedonick*, and *Roman*. *Voss. De Scient. Mathemat.*

1540. FRANCISCUS MAUROLYCUS, Abbot of *Messena* in *Sicily*, whom *Ricciolus* calls *Sicilia Lumen clarissimum*, wrote three Books of *Cosmography*, intended as a Comment upon *Ptolemy's Almagest*. To him we are beholding for *Theodosius's Sphærica*, and those of *Menelaus*, which he first of all published. He put forth a Piece, *De Lineis Horariis, Fabricam Astrolabii*, and divers other Works, mentioned in the beginning of his *Cosmography*. He was the first that wrote of *Secant Lines*, as *Blancanus* affirms. He left likewise behind him a Posthume Work, entituled, *De Lumine & Umbra*, and many Treatises unprinted, as appears at the End of his *Opuscula*, and though it be beside our Argument, yet in regard it is not well known, we think fit to mention that *Alphonsus Borellius* published in *Sicily* about 1656. the Comment of *Maurolycus* on the first four Books of *Apollonius* his Conicks, with two more of the said Authours, of which if there were Copies they would be grateful to Students, and more acceptable than that of *Commandinus*, in which the Text and Comment lie dispersed, which Inconvenience is avoyded in that of *Maurolycus*; the said *Borellius* is likewise now about publishing *Maurolycus* his *Archimedes* at *Rome*.

1540. JOHANNES ANTONIUS DELPHINUS, of *Casal*, Provincial of the *Franciscan Order*, wrote, and dedicated to *Camillus Palaottus*, a Senator of *Bologna*; a Book, *De Cælestibus Globis, & Motibus*, full of Erudition, as *Ricciolus* affirms.

1540. PHILIPPUS MELANCTHON, among other the numerous Volumes by him published, set forth *Tabula de Mensibus Græcorum, & Descriptiones Eclipsium Solis & Lunæ, annis jam aliquot visarum, usque ad Annum 1540.* and translated out of *Greek* into *Latine*, *Ptolemy's* four Books, *De Syderum effectibus. V. Simler.*

1540. AUGUSTINUS NIPHUS PHILOTHEUS SUESSANUS, who by his great Learning gained to himself the Title of *Philosophus Magnus*, among other the various Works by him published, writ (as to our purpose) a particular Treatise, *De figuris Stellarum Helionericis*, in two Books; Another, *De Diebus Criticis, seu Decretoriis*; a third, *De falsa Diluvii Prognosticatione quæ ex conventu omnium Planetarum (qui in Piscibus contingeret anno 1524.) divulgata est*, in three Books, addressed to the Emperour *Charles the Fifth*. He wrote likewise *Eruditiones in Apotelesmata Ptolemæi, & Annotationes in Librum secundum Ejusdem Quadripartiti*, mentioned, with the rest, by *Simler*, in *Bibl. Gesner.*

1540. JACOBUS PELETARIUS, a *French* man, besides his Geometrical Works, wrote *De Constitutione Horoscopi*. He published likewise *Astronomical Tables*,

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bles, and a Compendium of *Astronomical Fractions*; as also of the Sun's place, and that of the Moon, in the Zodiack.

1541. ERASMUS OSWALDUS SKREKENFUSIUS, of *Austria*, Disciple, according to *Ricciolus*, to *Henricus Glareanus*, according to *Vossius*, to *Sebastianus Munsterus*; Professor, at *Freiburg in Brisgaw*, of the *Hebrew Tongue* and *Mathematicks*, wrote a Comment in *Sphæram Sacrobosci*, Annotations on *Ptolemy's Almagest*, put forth a Book *De Primo Mobili*, and of the Theory of the Planets; Another *De Gentium Calendariis*, and translated, out of *Hebrew* into *Latine*; the Sphere of *Rabbi Abraham Cai*.

1541. JOACHINUS CAMERARIUS, of *Bamberg*, a Town in *Franconia*, put forth, at *Norimberg*, in the year 1532. several *Greek Astrological Authours*, by him translated into *Latine*, as *κύκλον ἡλιακόν*, *sive*, *Rationem Orbis Solaris*; likewise, *Excerpta ex Hephæstione Thebano, De Duodecim Signis & eorum effectis*; also *ὅσα οἱ πλανήται ἀστέρες ἐν ἑκάστῳ τῶν ζώδιων σημαίνουσι*, i. e. *Quid Stelle Erraticæ, sive Quinque Planete, in unoquoque Zodiaci Signo significant*. These Pieces he set forth in *Greek* and *Latine*. And in *Latine* only, he published a Fragment of the first Book of *Vettius Valens*, his *Florida*; and in *Greek* only *Mercurius Trismegistus* his *ἰατρικομαθηματικά*, i. e. *Medicationes rationibus Astrologicis convenientes*. In the year 1535. he set forth, at *Norimberg*, in Verse, *Tum Phenomena, sive Siderum ac Stellarum Historiolam, tum Prognostica*. And in the year 1541. he published the two first Books of *Ptolemy, De Judiciis Astrologicis*, by him translated into *Latine*, and illustrated with Annotations. We are obliged to him likewise, for the first publication of *Theon Alexandrinus*, his eleven Books of Commentaries upon *Ptolemy's Almagest*, which he caused to be Printed at *Basil*, by *Walderus*, from a MS. of *Cardinal Bessarion's*, brought into *Germany* by *Regiomontanus*. See more of this eminently learned Person, in *G. Vossius, L. de Scient. Mathemat.*

1542. RAINERUS GEMMA FRIZIUS, Physician and Professor of *Mathematicks* at *Lovaine*, put forth a Book of the use of the Globe, and the *Astronomical Ring*; *De Principiis Astronomiæ & Cosmographiæ*; *De Astrolabio Catholico, &c.* He left his Son *Cornelius Gemma*, his Successour in the Professor's Place.

1543. JOANNES GUIDO wrote, *De Observat. Temporis Astrorum*, Printed at *Paris* 1543.

1544. CLAUDIUS MARIUS ARETIUS a *Patrician* of *Syracuse*, and *Historiographer* to the King of *Spain*, wrote a Comment, by way of Dialogue, upon this Verse of *Virgil's*.

Defectus Lunæ varios, Solisque labores.

1544. BUCHARDUS MITHOBIUS, wrote a Piece entituled *Compositio Annuli Astronomici*, Printed together with the Treatise of *Johannes Driander, De Annulis Astronomicis*; as *Simler* affirms.

1544. MICHAEL ANGELUS BLONDUS, Doctor of *Physick*, wrote and dedicated to *Pope Paul III.* a Book *De Diebus Criticis*; and to *Rudolphus Cardinal* of *Carpegna* another, *De Anticipatione Stellarum fixarum cum suis significationibus*.

1544. COELIUS CALCAGNINUS, among the various Works by him published, set forth a *Paraphrase* on the three Books of *Aristotle's Meteors*; A *Commentation*,

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mentation, *Quod Cælum stet, Terra moveatur; De Mensibus, & De Re Nautica.* See more of him in *Simler. Bibl. Gesner.*

1544. GEORGIUS PILANDER published a Book *De Annulo Astronomico, aut Sphærico.*

1544. POMPILIUS AZALUS writ *De omnibus Rebus naturalibus quæ continentur in Mundo, viz. De Cælestibus, de Terrestribus, & Mathematicis,* Printed at Venice in Folio; as *Simler* in *Bibl. Gesner.* testifies.

1545. JOHANNES STADIUS, Professor of the Mathematicks and History, first, at Paris, afterwards at Lovaine; put forth among other his Mathematical Works, *Ephemerides*, which he entituled *Tabula Bergenses*, in honour of *Robertus à Bergis*, Bishop of Liege. He put forth likewise other *Ephemerides*, from the year 1654. to the year 1606. with an *Isagoge* in *Astronomiam & Astrologiam.* He left *Tabulas æquabilis & apparentis Motus Cælestium Corporum*, as *G. Vossius* styles them, and *Prognostica Stellarum fixarum, cum Tabulis*, in the beginning whereof he hath prefixed the History of Astronomy.

1548. NICHOLAUS SOPHIANUS CORGYRÆUS, wrote in Greek of the *Astrolabe*, and by *Gesner* is said to have flourished about this Time.

1548. VICTORINUS STRIGELIUS of Kaufbeurn, a Town in Suaben, published, at Wittemberg, an Epitome of the Doctrine of the *Primum Mobile*, illustrated with Demonstrations. He was Scholar to *Melancthon.*

1548. AUGERIUS FERRERIUS of Tholouse, Doctor of Physick, whom *Scaliger* the Father entirely loved and consulted in all his learned Designs, writ, as I find mentioned in *Gesner Castigationes Practicæ, & De Diebus Decretoriis secundum Pithagoricam Observationem.*

1548. JOHANNES MERCURIUS MORSHEIMERUS, put forth at Heidelberg, a Dissertation of the Name of Astronomy, it's Division and Causes; to which he adjoyned a Table of the Species of continued Quantity, serving only for the use of young Beginners. He professes himself to have been Scholar to *Melancthon.*

1548. JOACHIMUS HELLERUS corrected and published several Astrological Authors, before which he prefixed Prefaces of his own, at Norimberg.

1548. ANDREAS GERARDUS HYPERIUS, Professor of Divinity in the University of Marburg, writ, besides other various Tractates, *Geometrica, Optica, Cosmographica quædam*, as *Simler* affirms, in *Bibl. Gesner.*

1549. ERASMUS REYNOLDUS, Native of Salfeldt, a Town in Thuringe, a Province in the Upper Saxony, Son to *Johannes Reynoldus*, and Scholar to *Jacobus Milichius*, was Professor of Mathematicks in the University at Wittemberg, and wrote a most learned Commentary on *Purbacchius's* Theory of the Planets. He composed likewise, and dedicated to *Albert*, Marquess of Brandenburg, and Duke of Prussia, Astronomical Tables, according to the Hypothesis of *Copernicus*, which he called *Prutenick Tables*, in honour of the said Prince, as also Tables of Directions. He endeavoured likewise to illustrate and establish Chronology from the Eclipses of the Luminaries, and the great Conjunctions of the Planets; but his Death prevented the finishing of that Work. He had also a Son, called after his own Name, an eminent

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eminent Mathematician and Physician, who wrote upon the new Star in *Cassiopea*, as *Tycho Brahe* testifies; *Progymnasmi*. Tom. 1.

1549. **ARIEL BICHARDUS** put forth a Collection of Questions, *In Sphæram Johannis De Sacro Bosco*, which he dedicated to his Godfather, *Antonius Mullerus*, says *Ricciolus*, in Part. 2. *Chronic. Astronom.*
1550. **JOHANNES ROIAS** wrote, and dedicated to the Emperour *Charles* the Fifth, certain Commentaries upon the Astrolabe or Planisphere.
1550. **JOHANNES MARIA TOLOSAS**, of the Order of the Predicants, wrote something of the Sun's greatest Declination. He published likewise a short Correction of the *Roman Calendar*, touching the due celebration of *Easter*.
1550. **JOHANNES BAVARUS**, *Medicus & Mathematicus*, put forth *Ephemerides*, beginning in the year 1551. and ending in the year 1560. This *Bavarus*, is different from *Johannes Angelus Bavarus*, mentioned in the year 1494.
1550. **GEORGIUS JOACHIMUS RHETIGUS**, Disciple to *Copernicus*, and Professor of Mathematicks in the University of *Wittemberg*, where he interpreted and explained *Alfraganus*. But hearing of the new Hypothesis of *Copernicus*, he quitted his Professor's place, and went to *Copernicus*, whom he ceased not to exhort to perfect his Work, *De Revolutionibus*, which after his death he made publick, illustrating his Hypothesis by a particular narration, which he dedicated to *Johannes Schonerus*, published by *Mästlinus*, and annexed to *Kepler* his *Mysterium Cosmographicum*, in the year 1621. He likewise set forth *Ephemerides*, according to the Doctrine of *Copernicus*, until the year 1551. What other Astronomical or Astrological Works he had either perfected or designed, will appear by his Epistle written to *Petrus Ramus*.
1550. **LUCAS GAURICUS**, a *Neopolitan*, first, Professor of Mathematicks at *Ferrara*, afterwards Bishop of *Civita Reale*, corrected the *Alphonine Tables*, as also those of *Regiomontanus*, and *Blanchinus*, and published Tables of his own of the *Primum Mobile*, commonly called *Tables of Directions*, and *Laurentius Bonincontrinus* his Book, *De Rebus Cælestibus*, and *Zacutus* his Tables, together with *Astrological Precepts and Problems*. He illustrated with Annotations *Ptolemy's Almagest*, put forth a learned Dissertation touching the miraculous Defect of the Sun at the time of our Saviour's Passion, and composed a new Ecclesiastical Calendar, compiled out of the Sacred Scriptures, and Ancient Synods, which last was Printed at *Venice* 1552. at which time likewise he published at *Venice* a Book called *Tractatus Astrologicus*, wherein are many Astrological Judgments on the Nativities of the most eminent Persons of his Time. *V. Simler. Bibl. Gesner.*
1550. **TOBIAS MARMORARIUS**, a *Florentine*, and Monk of the *Cistercian* Order, *Vir Mathesios studiis egregiè excultus*, as *Vossius* says of him, wrote yearly Prognosticks, of the Seasons of the year, and future Events.
1550. **ANTONIUS MYZALDUS** writ *Phænomena, sive, Tempestatum Signa, quatuor Aphorismorum Sectiunculis Methodicè concinnata*; *Cometographia*; *Æsculapii & Uranie Conjugium*; *Planetologia*; Three Books of the Sphere, illustrated with Figures and Demonstrations; *Zodiacus, sive duodecim Signorum Cæli Hortulus*, *Libris tribus concinnatus*; *Planetarum Collegium*, and some other Tractates of like Argument, as *Simler. in Bibl. Gesner.*

JACOBUS

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1550.

JACOBUS HOMELIUS is, about this time, reckoned, by Ricciolus, in the Catalogue of Astronomers, but without any mention of his Works. There was also one *Jobannes Homelius*, who wrote concerning the New Star in *Cassiopea*, and is mentioned by *Ticho Brahe*, in *Progymn. Tom. 1.*

1550.

JOANNES STABIUS, of *Austria*, Poet Laureat, Cosmographer, and Historiographer, to the Emperour *Maximilian* the First, Professor of Mathematicks at *Vienna*, wrote a Piece entituled *Horoscopicum Universale*; and several other Works, mentioned by his Scholar *Georgius Collimitius*, in *Gesner's Bibliotheca, Tom. 1.*

1550.

PAULUS EBERUS KYTZINGENSIS, put forth *Calendarium Historicum*, in the Preface to which he treats, *De ejus Utilitate, & de Mensum apud diversas Gentes varietate.* See more of him in *Gesner's Bibliotheca.*

1551.

GASPAR PEUCERUS, Son-in-Law to *Philip Melancthon*, wrote of the Doctrine of the Celestial Circles, and the *Primum Mobile*, and *De præcipuis Divinationum generibus*, and among them, *De Prædictionibus Astronomicis*, as it is affirmed by *Vossius*, *De Scient. Mathemat.* He wrote also *Hypotheses Astronomicas, seu Theorias Planetarum, ex Ptolemai & aliorum Veterum Doctrinâ, ad Observationes Copernici, & Canones Motuum ab eo conditos, accommodatas*, Printed, as *Draudius* affirms, at *Wittemberg*, 1572.

1551.

JOHANNES SCHRÆTERUS VINARIENSIS, published, at *Vienna* in *Austria*, Astrological Tables, designing to gain himself, a repute by his predictions; of whom see *Gesner's Biblioth.*

1551.

HIEREMIAS BROTHEIEL, put forth various Prognosticks mentioned by *Simler.* in *Addit. Bibl. Gesner.*

1551.

ANDREAS PERLACHIUS of *Stiria*, Doctor of Physick and Professor of Mathematicks in the University at *Vienna*, set forth, as *Gesner* styles them, *Commentaria Ephemeridum, ita conscripta, ut quisque absque Præceptore, ex sola Lectione integram inde Artem consequi possit*, Printed by *Ægidius Aquila* at *Vienna* 1551.

1552.

FRANCISCUS RÄPALDUS, Doctor of Physick at *Bruges* in *Flanders*, wrote against Astrology as altogether useles to a Physician, to whom *Petrus Haschardus*, of *Lisle*, a Chirurgeon, replied in a Discourse by him entituled, *Clipeum Astrologicum.*

1552.

ROBERTUS RECORD, a Learned Doctor of Physick, and an excellent Mathematician, descended of a generous Family in *Wales*, illustrated by his learned Labours, in Cosmography, Geometry, Musick and Astronomy. He published *Cosmographiæ Isagogen*, wrote a Book, *De Arte faciendi Horologium*; and another, *De usu Globorum, & de statu Temporum.* All which with several others he writ in the *English Tongue.*

1552.

PETRUS NONIUS, a *Portuguez*, Professor of Mathematicks in the Colledge at *Conimbra*; wrote *De Crepusculis*; *De Erratis Orontii*; Astronomical Problems, and Rules for Observation, together with Annotations in *Theoricis Purbacchii*, commendable, says *Vossius*, not only for their Acumen and Perspicuity, but for discovering divers things omitted, and detecting several Errors committed by others.

1553.

HIERONYMUS CARDANUS, a Native of *Milan*, Professor of Physick

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1554. LEVINUS LEMNIUS, *Medicus Zirizæus*, writ three elegant Tractates, in the first whereof he treats of Astrology, shewing the verity or falsity of that Art, in which, sayes *Gesner*, *multæ amœnissimæque causæ explicantur*, and particularly the Original of the Proverb, *Quarta Luna nati*.

1555. MICHAEL NOSTRADAMUS, Physician to Henry II. Francis II. and Charles IX. Kings of France, is famous for the several Centuries of Prophetical Prognostications extant under his Name (lately Englished with large Annotations) which in his Epistle Dedicatory of some part of them to Henry II. he affirms to have calculated by Astronomical Doctrine. But whether he were a greater Trifler or Astronomer, is by some questioned; but especially by *Iodelle* an ingenious French Poet, who hath bestowed on him this Distich;

NOSTRA DAMVS cum falsa damus, nam fallere nostrum est,
Et cum falsa damus, nil nisi NOSTRA DAMVS.

1555. NICHOLAUS SIMUS, Professor of Mathematicks in the Universtiy of Bologna, set forth the Theories of the Planets, reduced to a *Compendium*, illustrated with divers Sculps and Figures. He put forth likewise *Ephemerides* for 15. years, calculated for the Meridian of Bologna, with Canons expounding the use of the said *Ephemerides*.

1555. MARCUS FRITSCHIUS LAUBANUS HEXAPOLENSIS, wrote a Book *De Meteoris*, with a Catalogue of Prodigies and Ostents; Printed at Norimberg, 1555. as *Gesner* attests.

1556. ANDREAS SCHONERUS, Son of *Johannes Schonerus* of Caroloſtadt, published Tables of the *Primum Mobile*, according to the Fundamentals of *Regiomontanus*.

1556. HADRIANUS JUNIUS HORNANUS, for his Learning merited to be stiled, *Alterum ab Erasmo Hollandiæ Lumen*. He published a Commentary, *De Anno & Mensibus*, likewise *Fastorum Liber sive ἡμερολόγιον, rerum Memorabilium qualibet Anni die usurarum apud Hebræos, Græcos, Romanos, gentesque exteras*, also *Calendarium Syllabicum*, so called, because the dayes of the year, *Vocabulorum Syllabis respondeant*; besides these he put forth *Fasti Cesariani & Calendarium*. These as he writ them were from hand to hand presented to Edward the Sixth King of England, afterwards being enlarged and corrected, dedicated to his Sister Queen Mary. See more of him in *Meyrfius* in *Athen. Batav.* and *G. Vossius de Scient. Mathemat.* p. 398.

1556. JOANNES GARCÆUS, a Brandeburger wrote a Piece entituled *Methodus Astrologie*, illustrated with 400. Genitures, as *Ritziolus* affirms. To which *Vossius* adds, that he put forth, at Wittemberg, a Commentary consisting of XXII. Propositions, in which he comprizes the Doctrine of erecting a Celestial Scheme, and computing the Motions of the Planets. *Drandius* sayes, he put forth a small Treatise, *De Tempore, sive De Ortu & Occasu Stellarum, & De usu Globi Cœlestis*; Printed at Wittemberg 1555. He was Scholar to *Gaspar Pencerus*.

JOSEPHUS

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1557.

JOSEPHUS ZARLINUS, a Native of *Fossa Clodia* (commonly called *da Chioggia*) an excellent Musician, who in his *Institutioni Harmoniche*, published in *Italian*, treats likewise of the Harmonick System of the Spheres.

1557.

RODOLPHUS BATTINGIUS, a *Friezlander*, published *Methodum Astrolabii*, according to *Vossius*, *De Scient. Math.*

1557.

CORNELIUS VALERIUS VETERAQUINAS, Successor to *Petrus Nonnius* at *Lovaine*, in *Collegio Trilingui*, put forth an *Encyclopædia*, in which he treats of the Sphere, and the Elements of Astronomy, and Geography, succinctly and elegantly.

1557.

JEAN PIERRE DE MESMES, a *French Gentleman*, writ in his own Language, *Astronomical Institutions*, Printed at *Paris*, in *folio*, 1557.

1557.

CONRADUS DASYPODIUS, Professor of Mathematicks at *Strasbourg*, put forth *Astronomical Precepts*, and wrote a brief Treatise of Comets and their Effects, famous for being Author of the Astronomical Horologe set up in the Great Church at *Strasbourg*, the Description whereof he published in the year 1578.

1558.

GULIELMUS XYLANDER, Successor to *Jacobus Mycillus* in the *Greek Professor's* place at *Heidelberg*, a Person of good repute for his Philosophical and Mathematical Studies, among other Treatises of the later kind, put forth a small Treatise, *De usu Globi & Planispherii*, Printed at *Heidelberg*.

1559.

DANIEL BARBARUS; a noble *Venetian*, and Patriarch of *Aquileia*, hath sufficiently manifested his excellent knowledge in all Parts of the Mathematicks, and particularly in Astronomy, by his learned Commentary upon *Vitruvius* his ninth and tenth Books.

1560.

JOHANNES TEMPORARIUS wrote an Astronomical Treatise, which he entituled *Organum Astronomicum*, grounded upon the *Prutenick* Tables, in which the whole Work of Astronomical Calculation is contracted to two Operations, to wit, only Addition and Subtraction. All Proportional Scruples are laid aside, in the search after which much time is fruitlessly spent. The true Precession of the Equinox, which by the *Alphonfine* Astronomers is called the Motion of the Auges of the fixed Stars, is exposed to view for some Ages to come. The places as well of the Planets as the fixed Stars are with little or no trouble found for any time given. The Conjunctions and Defects of the Luminaries, with their Quantities and Durations, are most exquisitely defined, not only in one Climate, but in any Parallel whatsoever. The Parallaxes, whose invention gives trouble to the most experienced Artists, are by a wonderful compendious way found out and cleared, as to Latitude and Longitude, without the trouble of Calculation. Whence any one may frame to himself *Ephemerides* without any pains or labour. The Original Manuscript of which Work is at present in the possession of my worthy Friend, *George Wharton* Esquire.

1560.

PHILIPPUS FANTONIUS, a *Florentine* Monk, afterwards Abbot of *Camaldolat*, published a Book in *Italian*, of the reason of reducing the Year, to its true Form and Measure; of whom *G. Vossius* says, that he was *Matheseos Scientiæ egregius*, which he publicly professed in the Academy at *Pisa*. See more of him in *Simler. Bibl. Gesner.*

1560.

CYPRIANUS LEOVITIUS, of the *Leonitian* Family in *Bohemia*, Mathematician

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Mathematician to Otho-Henry, Prince Palatine of the Rhine, put forth *Astronomical Observations*, with *Astrological Prognosticks*, upon the new Star in *Cassiopea*. He likewise accurately described (to render *Vossius's* words) several Eclipses from the year 1556. to the year 1606. and published *Ephemerides*, and several other Works, mentioned by *Simlerus*, in his *Bibliotheca Gesneriana*, among the rest, *Brevis & perspicua Ratio judicandi Genituras ex Physicis Causis & vera Experientia extracta, &c.* to which is prefixed *Admonitio de vero & licito Astrologiae usu per Hieronymum Wolphium*, Printed at London 1558. Of Him *Tycho Brahe* (in *Progymnasm.* l. 1.) writes at large, adding withall, that, *Pleraque ipsius Manuscripta opera, ad supputationes Astronomicas, praesertim primi Mobilis Tabulas copiosiores & faciliores reddendas facientia; Augustae in Fuggeorum Bibliotheca non sine harum Artium promovendarum Incommodo, detinentur.*

1560. JOHANNES DRIANDER, Doctor of Physick, and Professor of Mathematicks, which he illustrated by his learned Writings, particularly by his Book of the various Composition of Sun-Dyals; by his Description of a nocturnal Instrument, for taking the hour of the Night from the inspection of the Stars; Astrolabial Canons, and the Explication of the Quadrant; with several other Astronomical Inventions; as it is testified by the excellent *Thuanus*, and *Drandius* in *Bibl. Classica*.

1560. GEORGIUS BUCHANANUS, that learned Scotch-man, hath written Five Books of the Sphere, in a Latine Poem; to which *Johannes Pinciernus* hath added a Supplement of the fourth and fifth Books, and Arguments to them all.

1560. RABBI ORI, *filius Simeonis*, a Jew of *Palastine*, put forth *Calendarium Palestinorum, & omnium Judaorum*, computed for forty years, first Printed at *Venice*, in *Hebrew*, afterwards translated into *Latine*, and illustrated with Annotations by *Jacobus Christmannus*; and published at *Francfort*, 1594.

1560. FEDERICUS COMMANDINUS of *Urbino*, *optimè meritis, si quisquam alius, de Mathematicis*, says *Blancanus*. For besides the many other excellent Monuments of Greek Learning, which we owe to his happy Translation, we are beholding to him for *Aristarchus Samius, De Magnitudinibus & Distantiis Solis ac Lunae*, which he illustrated by a Comment of his own. He put forth likewise *Ptolemy's Analemma*, and wrote *De Lineis Horariis*.

1560. MICHAEL BEUTHERUS, Native of *Carolostadt* in *Westphalia*, not far distant from *Wurstburgh*, Scholar to *Erasmus Reinholdus*, afterwards Professor of Poetry, History, and Mathematicks, in the University of *Gripswaldt*, in the Dukedom of *Pomerania*, read at *Paris* publick Lectures, *De Annorum Supputatione*. He wrote *De Globo Astronomico*; *De Circulis*; Of the Correction of the Gregorian Calendar; Of the seventy weeks in *Daniel*; Of the time of the World's Creation, and the day of our Saviour's Passion. He was Library-Keeper to Otho-Henry, Prince Palatine of the Rhine, and of his Council in Ecclesiastical Affairs, and restored to the same Charges afterwards by *Frederick the Third*.

1560. ELIAS VINETUS, Professor at *Bordeaux*, besides his Notes on *Pomponius Mela, De situ Orbis*, wrote a Commentary in *Sphaeram Sacrobosci*; for which he justly merits a room in this Astronomical Catalogue.

1560. JOHANNES HONTERUS CORONENSIS, of *Cronstadt* (in *Transylvania*) anciently called *Zarmigethusa*, writ Four Books, in Verse, *De Rudimentis Cosmographiae*, which he adorned with several Land-Tables or Maps. To which

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which he adjoyned, in Prose, a Treatise of the Principles of Astronomy and Geography.

1560. P F T R U S R A M U S, first Disciple to *Orontius Finæus*, afterwards *Regius* Professor of Mathematicks in the University of *Paris*, besides his Two Books of Arithmetick, and XXVII. of Geometry, put forth XXXII. *Scholarum Mathematicarum*, in the first of which he treats of many things relating to the Rise and Advancement of Astronomy.
1561. M I C H A E L N E A N D E R, *è valle Joachimica*, put forth *Elementa Doctrinæ Sphæricæ*, & *Materiam Computi Astronomici*, as *Ricciolus* affirms in *Chronolog. Astron.*
1561. D A N I E L S A N T B E C H, of *Nimmeghen*, put forth, according to *Ricciolus*, *Præclara Problemata Astronomica & Geometrica*, in VII. *Sectiones distributa*: In the first whereof he treats of several Observations of the Phenomena of the Sun, Moon, and fixed Stars; In the second, he exhibits Canons of the *Primum Mobile*, extracted from the Tables of *Regiomontanus*; The third is of the Reasons of Gnomons and Shadows. The other Four are upon Geometrical Subjects.
1562. J O S E P H U S M O L E T I U S Professor of Mathematicks at *Padua*, besides his Comment upon *Ptolemy's Geography*, composed out of the *Prutenick* Tables, others, which he called *Tabula Gregoriana*; for which by the Senate of *Venice*, he was rewarded with 200. Ducats, and promised by Pope *Gregory XIII.* for the continuation of them 300. Crowns more. He published likewise *Introductio ad Ephemerides*, Printed together with the *Ephemerides* of *Josephus Scala*, of *Sicily*, in the year 1589.
1563. L U C I L L U S P H I L A L T H Æ U S, Doctor of Physick, wrote as *Ricciolus* terms them, *Luculentos Commentarios*, upon *Aristotle, De Cælo*.
1564. L E O N A R D U S D I G G E S, of a generous Family in *Kent*, besides his *Stratitices*, and his Mathematical Discourse of Geometrical Solids, wrote an *Astronomical Prognostication*, then Printed.
1565. A L E X A N D E R P I C O L O M I N Æ U S, of *Siena*, wrote Four Books, *De Sphæra Mundi*; as also a Treatise of the Fixed Stars in *Italian*, in which Language he likewise published another, of the Theory of the Planets, and dedicated the same to *Cosmus de Medicis*; and farther another, *De Magnitudine Terræ & Aquæ*; all rendred into *Latine* by *Nicholaus Stupanus*, and Printed at *Basil*, 1568.
1567. S A M U E L S Y D E R O C R A T E S wrote *De usu Partium Cæli*, in *Comendationem Astronomiæ*, Printed at *Strasbourg*, as *Drandius* affirms, 1567.
1568. T I T U S à P O P M A, a *Friezlander*, wrote *Tabellæ in Sphæram, & Elementa Astronomiæ*.
1568. E D O H I L D E R I C U S writ a small Treatise entituled *Logistice Astronomica*, Printed at *Wittenberg* 1568. mentioned by *Simler*, in *Bibl. Gesner*.
1568. C H R I S T I A N U S V U R S T I S I U S, of *Basil*, Professor of Mathematicks in the University of *Zurich*, wrote learned Questions in *Theoricæ Purbacchiæ*; whereto he prefixed an Introduction of his own, Printed at *Basil*, by *Henricus Petri*, 1586.

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1570. ABRAHAMUS ORTELIUS, of *Antwerp*, Geographer to *Philip II.* King of *Spain*, most deservedly challenges a place in this Catalogue, especially for that great Work of his, *Theatrum Orbis Terrarum*, with it's *Parergon*, and his *Thesaurus Geographicus*.
1570. GERARDUS MERCATOR, a Native of *Rupelmonde* in *Flanders*, made several Mathematical Instruments for the Emperour *Charles* the Fifth, particularly a Globe, in which was comprized the Constitution of the Planets, and the Celestial Signs and Constellations. He likewise made for the said Emperour two other Globes; the one Celestial of Chrystal, the other Terrestrial, of Wood. He put forth a Cronology from the beginning of the World to the year 1568. exactly composed and calculated, as well from Eclipses, and other Astronomical Observations of all Times, as from the Sacred Scriptures, and other Authentick Authors, highly commended by *Onuphrius Panvinus*. Not to mention his other Geographical Works.
1570. HUGO, *sive* HUO HELTILIUS, of *Groeningen*, in *Friezland*, wrote in *Spanish* of the Planisphere.
1570. HENRICUS BRUCÆUS of *Alost* in *Flanders*, Doctor of Physick and Professor of Mathematicks at *Rome* and *Rostoch*, put forth Three Books of the *Primum Mobile*, and the Institutions of the Sphere, of whom *Vossius*, *De Scient. Math.* gives an ample Account.
1570. FRANCISCUS BAROCCIUS, a Patrician of *Venice*, wrote (besides his other Works in Mechanicks and Geometry) Four Books of Cosmography, in the Preface to which he detects no less than LXXXIV. Errors of *Jo. de Sacrobosco*, and his Followers.
1571. JOANNES LALAMANTIUS, of *Autun* in *Burgundy*, a Physician published a Tractate entitled, *Collatio Rationis Anni exterarum ferè Omnium & Principuarum Gentium cum Romano Anno*, Printed at *Geneva* apud *Crispinum* 1571. 8°.
1572. ADAMUS URSINUS, of *Norimberg*, wrote Prognosticks upon the new Star in *Cassiopea*, touching which, see *Tycho*, *Progymn. Tom. 1.*
1572. ANDREAS NOLTHIUS, of *Embeck*, wrote concerning the Star in *Cassiopea* about the same time as the *Landtgrave* of *Hesse*, as is likewise noted by *Tycho*, *Progymnas. Tom. 1.*
1572. BARTHOLOMÆUS RASACHERUS, Professor of Mathematicks at *Vienna*, wrote also touching the Star in *Cassiopea*.
1572. CORNELIUS GEMMA, of *Lovaine*, wrote likewise upon the same Subject: So also did
1572. CORNELIUS FRANGIPANUS, whose Censure see in *Tycho Brabe*, *Progymnas. Tom. 1.*
1572. HIERONYMUS MUNOSIUS, Professor of the Hebrew Tongue and Mathematicks in the University of *Valentia*, and Physician to the Emperour *Maximilian* the Second, put forth his Observations upon the New Star in *Cassiopea*.
1572. ELIAS CAMERARIUS, Professor of Mathematicks at *Francfort*, upon *Oder*, wrote *De Nova Stella Cassiopea*.

GULIELMUS

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1572.

GULIELMUS POSTELLUS, Native of *Barenton*, a Town in *Normandy*, about this time put forth his *Cosmography*, *five*, *De Univerſitate*, and wrote, *De Nova Stella Caſſiopææ*.

1572.

JOHANNES DEE, Doctor of Phyſick and an excellent Mathematician (beſides other his learned Works, whereby he hath honoured our Nation, not pertinent to our preſent purpoſe) wrote, upon occaſion of the New Star in *Caſſiopææ*, a ſmall Treatiſe, by him entituled *Parallactica Commentationis & Praxeos nucleus*, highly commended by *Tycho Brahe*, in *Progymnaſm. Tom. 1.* He publiſhed in the year 1558. a Treatiſe entituled, *De Præſtantioribus quibuſdam Naturæ Virtutibus*, *περὶ τῶν ἀφελαιμῶν ἀποδείξεις*, containing ſeveral curious Aſtronomical and Aſtrological Aphoriſms; In the Preface to which Piece, he makes mention of the ſeveral Aſtronomical Tractates following, by him intended for the Publick, but whether ever yet Printed is uncertain; as firſt, *De Planetarum, inerrantium Stellarum, Nubiumque à Centro Terræ Diſtantiis, & Stellarum omnium veris inveniendis Magnitudinibus* in two Books, *De præcipua Perſpectivæ Parte, quæ de Radiorum Fractiōe tractat*, in three Books, *De Cæleſtis Globi ampliffimis Commoditatibus*, in two Books, *De Nova Navigationum Ratione*, in two Books, and one Book, *De Annuli Aſtronomici multiplici uſu*, divided into a hundred Chapters, beſides ſome other Mathematical Pieces, among which, his *Apology* for Fryar *Bacon*. A farther Account of the Works and Writings of this *Stupendious* Perſon the Reader may happily e're long meet with in his Life; intended to be written (if Providence ſecond his Deſign) by my worthy Friend *Elias Aſmole* Eſquire, whoſe ſingular Affection to *Aſtronomical* and *Aſtrological* Studies may juſtly entitle him to a Place in this Catalogue.

1572.

PAULUS HAINZELIUS, Conſul of *Ausbourg*, diligently obſerved, at *Gegginge*, near the City of *Ausbourg* aforeſaid, the motions of the Stars and Planets, uſing in his Obſervations a Quadrant of fourteen Cubits, as *Ricciolus*, in *Chronol. Aſtron.* affirms. His Prayſes and Commendations may be ſeen in *Tycho Brahe, Progymn. Tom. 1.*

1572.

PAULUS FABRITIUS, a Mathematician and Phyſician to the Emperour of *Germany*, wrote *De Nova Stella Caſſiopææ* 1572.

1572.

THEODORUS GRAMINEUS, Profeſſor of Mathematicks at *Colen*, publiſhed a Prolix and tedious *Commentary*, or (as *Tycho* more truly terms it) *Commentum*, upon the New Star in *Caſſiopææ*.

1572.

MICHAEL MÆSTLINUS GOEPINGENSIS, at firſt Pariſh-Prieſt, or Curate of a little Town called *Bachnang*, afterwards Profeſſor of Mathematicks in the Universities of *Heidelberg*, and *Tubinge*, and Maſter or Tutor to *Kepler*, wrote *De Stella Nova Caſſiopææ*, and of the Comet which appeared in the year 1576. as alſo *Ephemerides* according to the *Prutenick* Tables, and Additions to the firſt Narration of *Rheticus*, with an Appendix; *De Dimenſionibus Orbium Cæleſtium*, according to the Opinion of *Copernicus*. He publiſhed likewiſe *Theſes De Eclipſibus*, and an Epitome of Aſtronomy, and wrote againſt the *Gregorian* Calendar, in which he was oppoſed by *Clavius*; yet happy in this, that he was not only Maſter to the learned *Kepler*, but firſt Motor to the famous *Galilæo* (addicted before that time entirely to *Ariſtotle* and *Ptolemy*) of his embracing the *Copernican* Hypotheſis, perſwaded thereunto by the force of his Arguments, which in a Publick Lecture upon that Subject he uſed at the time of his being in *Italy*.

1572.

GELLIUS SASSERIDES, a *Dane*, of *Copenhagen*, was one of thoſe who aſſiſted the noble *Tycho Brahe* in his Celeſtial Obſervations; ſome of whoſe Epistles are extant in *Maginus, De Directionibus*.

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1572.

JOHANNES HECKIUS, of *Daventer*, Doctor of Physick, wrote a small Treatise upon the New Star in *Cassiopea*, termed by *Ricciolus*, *Opus non inelegans*.

1572.

TYCHO BRAHE, descended of an illustrious Family among the *Danes*, as being eldest Son to *Otto Brahe*, Lord of *Knudsthorp*, in the Island *Schonen*, not far from *Elzembourg*, who was Son of another *Tycho*, Son of *Axilius Brahe*, Lord of the said Place; the *Hipparchus* of his Age, who even from his Childhood being addicted to Astronomical Studies, though diverted from them by the Advice of his Friends and morose humour of his Tutor, grew by his own Ingenuity and Industry without any Instructor, so great a Proficient therein, that in the time of his Minority, and without the help of other Instruments, than a small Globe little bigger than a Man's Fist; and a large pair of Compasses, with which by applying his Eye to the Head of the Compasses, and opening the shanks thereof, he used by stealth to take the Distances of the Stars, he made a shift to detect divers considerable Errors, both in the *Alphonfine* and *Prutenick* Tables. At length by his Studies and Travels, having consummated his Knowledge in Astronomy. He was by *Frederick* the Second King of *Denmark* (at what time he resolved to make his Retreat into *Switzerland*, the better to apply himself entirely to the Contemplation of the Stars) invited to fix his Studies at Home, and to honour his own Country with his Learned Labours and Observations. To which end the King gave him the Island *Huena*, commonly called *Ween*, between *Scania* and *Zeland*, in the *Baltick Sound*, as a Place for his Retirement and Studies. Where causing to be built a Stately Pallace, to which he gave the Name of *Uranoburgum*, procuring most costly and exquisite Instruments for observing, and calling to his Assistance the most learned Astronomers of that Age, he happily began and made his glorious Progress in the Instauration of Astronomy. In which Work he is said to have expended no less than two hundred thousand Crowns. And as *Copernicus* had corrected many things in *Ptolemy*, so did *Tycho* no less in *Copernicus*. So that from thence the Learned World began to look upon only three chief Sects of Astronomers, whereof the *Tychonick* was the mean and middle between the *Pythagorean* or *Copernican*, and the *Aristolean* or *Ptolemaick*. Of his Works there are published *Astronomia Instauratae Progymnasmata*, in three Parts; whereof the first treats of the Restitution of the Sun's Motion, as also of the Moon's, and the fixed Stars; chiefly of the new Star which appeared in the Constellation of *Cassiopea*, 1572. The second of several new *Phænomena's* of the *Ætherial World*, more particularly of the Comet which appeared in the year 1577. The third and last contains his Astronomical Epistles to divers Persons. There is extant likewise a Book of his entituled *Astronomia Instauratae Mechanica*, dedicated by him to the Emperor *Rudolphus* the Second, describing the several stupendious and costly Instruments, by him used in his Astronomical Instauration. To these is to be added his *Historia Cœlestis*, being a Collection of twenty years Observations preserved in MS. by three mighty Emperors, *Rudolph* the Second, *Ferdinand* the Second, and *Ferdinand* the Third, and lately by Command of his Imperial Majesty *Leopold*, made publick at *Ausburg*. Which said Observations are ushered by a *Liber Prolegomenon*, compendiously representing the Observations made from the time of the Infancy of Astronomy unto that of its Restauration by the Illustrious *Tycho*, reduced into 7. *Class.* containing the *Babylonian* Observations, the *Grecian*, the *Alexandrian*, the *Syro-Persian*, the *Norimbergian*, the *Borussian*, and mixt Observations from the year 1529. to the year 1582. After which begin the *Tychonick* Observations in twenty Books, containing as many Annual Observations ending in the year 1601. which was the last of *Tycho's* life: A correct Copy of these Observations (transcribed from the Original, by *Erasmus Bartholinus*) being now likewise in the Press at *Paris*. See more of him, in his life, written by the excellent *Gassendus*, in six Books.

1573.

PETRUS BEAUSARDUS, Doctor of Physick, and *Regius Professor* of Mathematicks

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Mathematicks in the University of *Lovain*, wrote of the *Astronomical Ring*, or the *Armillæ*

1573. THADDÆUS HAGGECIUS of *Haic*, Disciple to *Joachimus Camerarius*, and Physician to the Emperour *Maximilian* the Second, put forth a Piece, entituled *Dialexis*, touching the New Star in *Cassiopea*, whose several Arguments see reported and examined by *Tycho*, *Progymn. Tom. 1.*
1573. JOHANNES RASEH, at *Munichen*, wrote *De Cometarum Significationibus*, about the year 1573. About the same time
1573. GEORGIUS BUSCHIUS, *Pictor & Astronomus Erfordienfis*, as *Ricciolus* files him, wrote of the Star which appeared in *Cassiopea*. And
1573. ANTONIUS SANTUTIUS, Professor of Mathematicks at *Pisa*, wrote *De Cometis*, in which he treats of the same Star.
1573. WOLFANGUS SCHULERUS, Professor of Mathematicks in the University of *Wittemberg*, wrote upon the same Subject, in answer to *Caspar Pencerus*, the Younger, his Proposals touching the said New Star.
1573. FRANCISCUS BORDINUS, of *Correggio*, Doctor of Arts and Physick, and Publick Professor of Mathematicks in the University of *Bologna*, published *Chilias Quæstionum & Responsorum Mathematicorum ad cognitionem Universi pertinentium*, divided into three Parts; the first treating of Geometry, the second of Geography, and the last in a more ample manner of Astronomy, Printed at *Bologna*.
1573. JACOBUS SCHOL, of *Strasbourg*, Doctor of Physick, set forth a Book, wherein he reduces *Theses aliquot rei Medicæ simplicioris, Integritati Astronomicæ*. He published likewise a Book, *De brevi applicatione Astrologiæ ad Medicinam*; with Canons of their conveniency and agreement; Extant in the King's Library at *St. James's*.
1574. JOHANNES FRANCISCUS OFFUSIUS, wrote *De Divina Astro- rum Facultate, in Larvata Astrologiam*, Printed at *Paris*, in the year 1574.
1574. HERMANNUS WITTEKINDUS, Professor of Mathematicks at *Heidelberg*, published a small Treatise, *De Sphæra Mundi, & Temporis Ratione apud Christianos*, Printed at *Newstadt*, in the year 1590. He put forth also a Piece entituled, *Conformatio Horologiorum in superficiebus planis utcunque sitis*; with a Horological Quadrant, Printed at *Heidelberg*.
1574. ADAMUS à BODENSTEIN, Son of *Andreas*, Doctor of Physick, at *Basil*, writ *De Herbis duodecim Zodiaci signis dicatis*, as *Simler* affirms, in *Bibl. Gesner*.
1574. LUDOVICUS LAVATERUS, of *Zurich*, besides his Book, *De Spe- Eris, Lemuribus, & magnis atque insolitis fragoribus, variisque Prasagitionibus, quæ plerunque Hominum magnas clades, mutationesque Imperiorum præcedunt*, wrote a large Catalogue of Comets, published at *Zurich*, by *Gesner*.
1574. ANDREAS ROSA SINGFURDENSIS MEDICUS, in his *Prognostick*, published 1574. made some Observations upon the Star in *Cassiopea*.

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1574.

JOSIAS SIMLERUS, Author of the Epitome of Gesner's Bibliotheca, put forth two Books, *De Principiis Astronomiæ*.

1574. FRANCISCUS JUNCTINUS, a Florentine, Doctor in Theology, Professor of Philosophy and Astronomy, put forth *Speculum Astrologicum, Tabulis Astronomicis, & multiplici eruditione refertum*, according to the Judgement of Ricciolus; and wrote accurate Commentaries in *Sphæram Sacrobosci*, as Vossius calls them. He left likewise two Treatises, *Ad judicandum De Revolutionibus Astrorum*; and a large Commentary upon Ptolemy's *Quadripartite*, with a Catalogue of the most famous Persons of his Time, and some Ages before him, Printed together in folio.

1576. GODESCALCUS EBERBACHIUS, wrote of the Eclipse of the Moon, which happened in December 1573. with a brief Prognostick thereupon according to the Doctrine of Ptolemy. He published likewise the Reason of another Eclipse of the Moon, which happened in the year 1576. demonstrated Geometrically, and Printed at Erford, as Drandius affirms.

1576. SIXTUS SENENSIS, of the Order of Preaching Fryars, put forth, by way of Comment, upon the Scripture, one Book of Geographical; another of Astronomical Questions.

1576. EGNATIUS DANTES, of Perugia, a Dominican, and publick Professor of Mathematicks in the University of Bologna, wrote of the use of the Astrolabe, and the making of Astronomical Instruments, and reduced Astronomy, with other Mathematical Sciences, into a *Compendium*. He erected a Gnomon, in the Church of St. Petronio at Bologna, for observing the Sun's Declination, and Equinoctial Armilla in the Church-wall of St. Maria Novella at Florence, for the observation of the Equinox. He first published the Optick Fragments of Heliodorus Larissæus in Italian, in which there is something Astronomical; of which, another Edition hath been published in Greek and Latine, at Paris in 1657. by Erasmus Bartholinus in 4°. and lately at Cambridge another in 8°. Greek and Latine, *ad Hetrusci Codicis fidem, ex Bibliotheca Fr. Lindenbrogii*, Printed at the end of the *Opuscula Mythologica Ethica & Physica*, set forth by Mr. Tho. Gale, 1670.

1576. THOMAS BLEBELIUS, wrote of the Sphere, and of the first Rudiments of Astronomy, Printed at Wittenberg in the year 1576.

1577. BARTHOLOMÆUS SCULTETUS GORLICIENSIS, wrote of the Comet which appeared in the year 1557. *Astronomicè & Astrologicè*; of which see Tycho's censure, lib. 2. p. 175.

1577. JOHANNES MARIA FIORNOVELLUS, of Ferrara, upon occasion of the Comet appearing in the year 1577. Published a small, but learned Treatise, *De Cometis*.

1577. GUID' UBALDUS, or GUIDUS UBALDUS, a Noble Italian Marquess, of the Family DE MONTE, besides other Signal Monuments of his great Skill in Mathematicks, especially in Mechanicks, set forth a Treatise of the Astrolabe and Perspective, and left behind him (being a Posthume Work) divers Astronomical Problems, as Ricciolus in Catalog. Astron. and Vossius, *De Scient. Mathemat.* testifie.

1577. NICHOLAUS WINKLERUS of Hall, or Hala, in Suabe, commonly called

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- called *Schwabishe Hall*, to distinguish it from a Town of the same Name in *Saxony*, wrote a small Piece, wherein he proposes to demonstrate the Parallax and distance of the former Comet from the Center of the Earth; but censured by *Tycho*, to be a work full of enormous absurdities.
1577. JOHANNES PRÆTORIUS JOACHIMICUS, wrote likewise upon the Comet appearing 1577. and occasionally upon the New Star in *Cassiopea* happening not long before; of which *Tycho*, in *Progymnas. Tom. 1.*
1578. HELIZÆUS ROESLINUS, Published a Treatise entituled *Theoria Cælestium* *μετεωρῶν*, in which (says *Drandius in Bibl. Classica*) from the *Phænomena* of divers Comets, *ἐπιλογιστικῶς*, *quædam afferuntur de Novis cujusdam Miraculi Tertia Sphæra Circulis, Polis, & Axi*; Printed at *Strasbourg* 1578. He assumed to himself, as *Raimarus Dithmarsus* had done, the Invention of the *Tychonick System*, to which he added the (exploded) Solidity of the Celestial Orbs, as *Gassendus*, in *vita Tychon.* testifies.
1578. PAULUS CRUSIUS COBURGENSIS, put forth a Treatise, *De Doctrina Revolutionum Solis, cum Tabulis Mediarum Conversionum Temporis, & Motuum Solis in Annis Tropicis & Sidereis*, Printed at *Jena* 1567. and another, *De Epochis seu Æris*, Printed at *Basil* in 8°. 1578.
1579. GEORGIUS CÆSIUS, put forth a Catalogue, according to the Series of Time, of all the Comets which appeared from the Flood, until the year 1579. Printed at *Norimberg* the same year.
1579. ANDREAS DUDITIUS, wrote a small Comment, *De Cometarum significationibus*; to which is adjoyned the Opinion of *Thomas Erastus*, Printed at *Basil* 1579.
1580. ALKAS CURIACUS, in the year of *Hegira* 950. and of *Christ* 1580. writ Tables, or *Computus Astronomicus*, now extant in the Publick Library at *Oxford*.
1580. VALENTINUS NAIBODA, Professor of Mathematicks at *Colen* and *Padua*, wrote Three Books of *Astronomical Institutions*, and put forth an enarration of the Elements of Astrology, collected out of *Alchabitius*, and other Authors. He was found dead in his House, at *Padua* transfixed with many wounds, having predicted that he should die by the Sword. *Vide Ricciol. in Append: ad Tom. prim. Almagest. Nov. & Campanellæ Astrolog.*
1580. MARCUS ALBERTUS LONICERUS, wrote of the Theory of the Celestial Motions, according to the *Hypothesis* of *Copernicus*, Printed at *Colen*, 1583.
1580. JOHANNES BAPTISTA CARELLUS, of *Piacenza*, wrote *Ephemerides*, together with a Treatise or Introduction to Astrology; as *Ricciol. in Astron. Chron.* affirms.
1581. MAURITIUS BRESSIUS, put forth Four Books, *Metrices Astronomicæ*, Printed at *Paris*, 1581.
1582. MATTHÆUS RICCIUS, Native of *Macerata*, a Town in *Italy*, a *Jesuit*, famous as well for his Travels into the *East-Indies* and *China*, as for his eminent Skill in the Mathematicks. To ingratiate himself with the *Chineses*, he is said to have

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have Composed a Cosmographical Map, of an Oval Form, in which he ordered the Kingdom of *China* to be placed at large in the midst, and the other Kingdoms and Territories about the skirts thereof in little, the better to humour that proud conceited Nation. He wrote likewise, in the *Chinese* Tongue, a Cosmographical Table, which he illustrated with a Comment, together with Cosmographical and Astrological Rules, and divers other things for the benefit of that Nation.

1582. ALOYSIUS LILIUS, of *Verona*, Doctor of Physick, by *Blancanus* styled, *Alter nostri ævi Sofigenes*, whose assistance *Gregory XIII.* made use of in correcting and reforming the *Julian Calendar*. He invented a perpetual Cycle of the Moon, and established the immutable and fixed seats of the *Æquinoxes*.
1583. THOMAS ERASTUS, an eminent Philosopher and Physician, writ something upon the Subject of *Astrology*, or rather against the *Judiciary Part*, *Quam validis Argumentis confutavit*, sayes the excellent *Thuanus*, in *Histor. ad Ann.* 1583.
1583. SIXTUS ab HEMINGA, called likewise by *Vossius*, *Simon ab Heminga*, a Native of *Friezland*, of a Noble Family, Doctor of Physick, and an excellent Astronomer, in his Youth much addicted to Judiciary Astrology, but afterwards having detected the falsity of that vain Study by his inspection into the Genitures of thirty most eminent Persons, he put forth a Book in confutation thereof; wherein he chiefly oppugns *Cyprianus Leovitius*, *Hieronymus Cardanus*, and *Lucas Gauricus*.
1583. JOHANNES PADUANUS, wrote of the various Composition and use of Sun-Dials, together with a Method, or Tables for supputation of the Hours, according to the several Regions of the World, and distinguishing the Places of the Stars; Printed at *Venice* and *Verona*, in the years 1582. and 1583. as *Drandius* affirms.
1583. ALBERTUS LEONINUS, *five* LEUWIUS, a *Groenwood*, Native of *Utrecht*, of a generous Family, Doctor of the Civil Law, and eminently learned in the Mathematicks, put forth the Theory of the Celestial Motions, according to the Doctrine of *Copernicus*. In which he likewise treats of the true Quantity of the Tropical year, and of the Reason of the Reformation, or Restitution of the Civil year. In the same Work likewise he gives an Introduction to Astronomy, Geography, and Horography. He wrote also against Judiciary Astrology.
1584. REMBERTUS DODONÆUS, Published a Cosmographical Institution of the Sphere, comprehending the Principles of Astronomy and Geography; Printed at *Antwerp*, 1584.
1585. JOANNES BAPTISTA BENEDICTUS, a Noble *Venetian*, invited from *Parma* to *Turin*, by the Duke of *Savoy*, in the year 1566. to answer several Questions proposed in Arithmetick, Geometry, Astronomy, Opticks, and Musick, to which he endeavoured to give satisfaction and solution, by his learned Epistles, published in the year 1585. He was an Excellent Geometer and Tutor to *Clavius*.
1586. NICHODEMUS FRISCHLINUS, wrote Five Books, *De Astronomice Artis cum Doctrinâ Cœlesti, & Naturali Philosophiâ congruentiâ*, Printed at *Frankfort*, in the year 1586.
1587. SALOMON PLEPIUS, wrote a new Explication of the Motion of the utmost Heaven, called the Prime Mover, Printed in the year 1587.

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1587. HENRICUS DECIMATOR, put forth a small Treatise, as well of the Fixed Stars as Planets, serving not only for the use of Astronomers, but also Poets; Printed at Magdeburg, 1587.
1589. JOSEPHUS SCALA, a *Sicilian*, composed *Ephemerides*, continuing from the year of Christ, 1589. to the year 1600.
1590. JOSEPHUS AURIA, a *Neapolitane*, whom *Blancanus* commends, as if he were another *Commandinus*, for his learned Labours, in translating divers of the Ancient Greek Mathematicians, in particular (and to our purpose) *Antolycus De Sphæra Mobili*, *Euclidis Phenomena*, & *Theodosius Tripolita, De Habitationibus*, & *De Diebus & Noctibus*.
1590. CHRISTOPHORUS ROTHMANNUS, was Mathematician to the Illustrious *William*, Landgrave of *Hesse*. He made his Celestial Observations at *Cassels*, at the same time, as *Tycho* did his at *Uranoburg*; and besides his accurate Piece upon the Comet which appeared in the year 1585. There are extant in the first Tome of *Tycho Brahe's Epistles*, divers Letters of his to *Tycho*, with *Tycho Brahe's* Answers to him, touching several Controversies in Astronomy.
1590. SIMON STEVINUS, of *Bruges*, Mathematician to *Maurice* Prince of *Aurange*, put forth, among other Works of his, Theories of the Planets, and Tables of the Celestial Motions, in Three Books.
1590. DAVID WOLKENSTEIN VRATISLAVIENSIS, a *Silesian*, writ an accurate Description of the Astronomical Horologe at *Strasbourg*, where he was Professor of Mathematicks, extant in Manuscript in the hands of my worthy Friend, Mr. *Thomas Gale*,
1590. JACOBUS CHRISTMANNUS, Publick Professor of Mathematicks, and the learned Languages at *Heidelberg*, translated into *Latine*, out of a Manuscript in the Elector *Palatine's* Library, *Alfraganus's* Chronological and Astronomical Elements, which he supplied and illustrated with various *Scholia*; to which he annexed a Comment, wherein he explained the *Roman*, *Egyptian*, *Arabian*, *Persian*, *Syriac*, and *Hebrew* Calendar. He put forth likewise divers Solar Observations, therein explicating the true Motion of the Sun in the Zodiack, accommodating the Doctrine of Triangles to the apparent motion of the Heavens. He wrote likewise of the Theory of the Moon, grounded upon a new *Hypothesis*, for finding out the Moon's true place in the Zodiack; and several other Pieces, as well in Astronomy and Chronology, as in Geometry.
1590. JOHANNES BAPTISTA PORTA, a Noble *Neapolitane*, published an Interpretation of the first Book of *Ptolemy's* *Almagest* with the Commentary of *Theon* thereupon; not to mention his twenty Books of Natural Magick, Printed in most of the *European* Languages. He writ also an Excellent Book of Opticks, and of Celestial Physiognomy.
1590. FRANCISCUS VIETA, a *French-man*, Native of *Fontenay*, whom *Ricciolus* entitles *Gallicanæ Matheseos insigne decus*, besides his many other excellent Works in Geometry, and other Parts of the Mathematicks. He exhibited to Pope *Clement VIII.* a new form of the *Gregorian* Calendar, to which he added perpetual Canons, and an Explication thereof against *Clavius*, whom he accused to have Deformed the true *Lilian* Reformation, by not rightly understanding the Reason of it; touching which Controversie *Thuanus*, in the 129th Book of his History, writes

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writes more particularly. But the Work of his chiefly pertinent to our Subject, and whose Loss cannot be sufficiently deplored, was his *Harmonicon Cœleste*, which being communicated to *Mersennus*, was, by some perfidious Acquaintance of that honest-minded Person, surreptitiously taken from him, and irrecoverably lost or suppressed, to the unspeakable detriment of the Letter'd World. *Vide Buliald. Prolegom. in Astron. Phil.* The learned *Golius* had it, and Sir *Alexander Hume* from hence imparted another Copy; both which, 'tis feared, are lost, there being no Impression made thereof, and *Golius* being since dead, his Collections (whereof he had many in *Arabick*) are said to be dispersed; and (which is to be pitied) carried back by a *Jew* into *Turkey*.

1590. JANUS DOUZA, the Learned Son of as Learned a Father, sometime Tutor to *Henry Frederick*, Prince of *Orange*, and the first Keeper of the *Publick Library* in the *University of Leyden*. Published among other his Writings, *Rerum Cœlestium Libri*, & *De Umbra, sive Umbrae Encomium*, Printed at *Leiden* apud *Raphelengium* 1590. 8°.
1590. JOHANNES BUSÆUS NOVIOMAGENSIS, of the Society of *Jesus*, wrote an *Apologetical Disputation* in behalf of the *Gregorian Calendar*, against *Jacobus Herbrandus*, a *Divine of Tubingne*; of whom more in *Ribadeneira*, *lib. De Scriptor. Soc. Jesu*.
1591. GULIELMUS ADOLPHUS SCRIBONIUS, wrote a *Spherical Institution*, published together with *Zacharias Parthenius* his Notes, at *Francfort*, 1591.
1591. PETRUS RYFF, wrote concerning the Sphere, as also touching the Principles of *Astronomy* and *Geography*, Published in the year 1591.
1591. THOMAS DIGGES, Son of *Leonard Digges*, before mentioned, of whom *Tycho Brahe* (*Progymnasm. l. 1.*) gives this Elogy, that he was *Generosi Stemmatis Vir*, & *Eximius Mathematicus*; wrote a Book entituled, *Alæ & Scalæ Mathematicæ*, being a Treatise about calculating *Parallaxes*, Printed 1573. He published likewise his *Pantometria*, and some other *Mathematical Treatates* in the year 1591.
1591. ANTONIUS LUPICINUS, an *Italian*, writ (in that Language) *Delle Verghe Astronomiche*, Printed at *Florence* 1591.
1592. GEORGIUS BACHMANNUS, put forth an *Epitome* of the Doctrine of the *Primum Mobile*; comprehending a brief exposition of all the *Celestial Circles* and *Appearances*; to which is added a small Treatise, *De Doctrina Sphærica*, Printed at *Wittenberg*, 1591.
1593. HENRICUS RANTZOVIVS, a Noble *Dane*, and *Viceroy* in the *Dutchy of Schleswick, Holsatia*, and *Ditmars*, put forth *Calendarium, Romanum, Oeconomicum, Ecclesiasticum, Astronomicum*, & *fere perpetuum*; and an *Astrological Treatise*, collected out of the most ancient and best Authors of *Judiciary Astrology*; Printed at *Francfort*, by *Wechelins*; also *Locorum Hylegialium ad quodvis Tempus datum Directiones*. He writ also a Catalogue of *Emperours*, *Princes*, and other *Illustrious Persons*, who had either affected, promoted, or studied *Astrology*; A Treatise, *De Veritate Astrologica*, and another, *De Annis Climactericis*, &c. Printed at *Leipsick* 1584.

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1593.

JOANNES PAULUS GALLUCIUS, Published *Theatrum Mundi & Temporis*, Printed at Venice 1589. Likewise *Speculum Uranicum*, there Printed in the year 1593. And *Della Fabrica & Uso di diversi Stromenti di Astronomia & Cosmographia*, Printed in the year 1597. Also, *De Figura Cœlesti erigenda*, with some other Tractates of like Nature.

1594.

FEDERICUS BONAVENTURA, wrote, *De Affectionibus Meteorologicis*; *De vero Ortu & Occasu Siderum*; *De Stellarum significationibus*, &c. Printed at Venice, 1594. He hath written also upon *Theophrastus De Ventis*, and upon *Ptolemy De Siderum Ortu & Occasu*, and in his Book, *De Octomestri Partu*, shews himself not ill affected to Astrology.

1594.

GULIELMUS HARTGILL, an English-man put forth *Tabula Astronomica Universalis*, Printed at London 1594 and Reprinted 16 with Additions by John Gadbury of London.

1595.

BERNARDINUS BALDUS, Disciple to *Federicus Commandinus*, of whom *Vossius* gives this Character, that he was *Vir non solum Mathesios universæ peritissimus, sed etiam, (ut Germanicam, Gallicam, & Slavonicam Linguam omittam) Latinè, Græcè, Hebraicè, Chaldaicè, & Arabicè Doctissimus*. Not to mention his many curious Works in other Parts of the Mathematicks, well known to the Learned; We shall only insist on what more nearly relates to our present Subject; as his five Books, *Novæ Gnomonices*, *Horologium universale*, & *de Firmamento*. He writ likewise upon the *Phænomena* of *Aratus*; and hath composed a History of the Lives of all the famous Mathematicians from *Thales Milesius* to *Commandinus*, with a *Chronology* of the Times wherein they flourished, and their several *Eulogies*. Of which, if we may judge (as of *Hercules* by his Foot) by that Life he hath written of *Hero*, already published with his *Belopoica*. We cannot but conclude them worthy of that Honour which they yet want, that is, a speedy Publication to the view of the Learned World. And if the Manuscript now in possession of some of his Family, or a Copy thereof may be obtained; we may have then hopes that ere long the Work will be communicated to the Curious of this Nation.

1595.

GERARDUS RUPELMUNDANUS, set forth a Book, which he entituled *Atlas, or Cosmographical Meditations, De fabrica Mundi, & fabricati figura*; Printed at Duisberg, in the year 1595. according to *Draudius*, whom I conceive to be the same with *Mercator*.

1597.

JOSEPHUS ACOSTA, in the year 1597. published the use of an Instrument, called a *Cylinder*, together with Astronomical Tables; Printed at Colen.

1597.

GULIELMUS, Landtgrave of *Hassia*, merits an *Elogium* beyond what can be here given, for his assiduous Observations for many years of the Celestial Bodies; to which end, at *Cassells*, he erected an Observatory, with excellent Instruments, calling to his assistance two eminent Artists, *Christophorus Rothmannus*, and *Justus Byrgius*. His Observations were published at *Leyden*, in the year 1618. by *Willebrodus Snellius*, and are in part mentioned by *Tycho*, as well in his Epistles, as in the second Tome of his *Progymnasm*. A signal example to all Princely and Heroick Minds, to undertake the promoting and advancing of this truly Noble and Celestial Science.

1597.

NICHOLAUS RAIMARUS DITHMARSUS URSUS, one of *Tycho Brahe's* Scholars, published a Piece under the Title of *Astronomical Hypotheses*, with a Defence thereof, Printed at *Prague*, 1597. In which he endeavours

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to prove himself Author, or at least first Reviver of the pretended *Brahean* Hypothesis, which he will have to be ancient, ascribing the same to *Apollonius Pergæus*, as its first Inventor, ingratefully seeking to deprive *Tycho* of the due honour thereof. But he is answered by *Tycho*, who hath vindicated and asserted his own right.

- 1598: JOSEPHUS SCALIGER, the Great Prince or Monarch of Universal Learning. As to what concerns our present Subject, his elaborate Work, *De Emendatione Temporum*, his exquisite Animadversions on *Ensebins*, with his *Canon Isagogicus Chronologia*, and his accurate Comment upon *Manilius's* Astronomicks, sufficiently evidence his admirable knowledge, as well in Astronomy, as in other the Mathematical Learning of the Ancients; whom, if we may trust the Judgment of the incomparable *Vieta*, he alone, above all others, perfectly understood, as the same is reported by the Learned *Casaubon*, *Epist.* 586. He wrote likewise *Cyclometrica*, *Et Diatriba De Æquinoctiorum Anticipatione*.
1599. FEDERICUS SAMINIATUS, published *Astronomical Tables*, at *Anwerp*, in the year 1599. 4°.
1599. CHRISTOPHORUS FEMILLUS, put forth Synoptical Tables, for finding out the true place of the Planets, derived from the *Prutenick* Tables; together with the Investigation of the Festival Dayes of either Calendar; Printed at *Wittemberg*, 1599.
1599. MELCHIOR JOESTELIUS, published Observations of an Eclipse of the Moon, happening in the year 1599. for his Skill in Astronomy well esteemed by *Tycho Brahe*, with whom he lived sometime a Domestick, and to whom he was an Assistant in his Astronomical Observations.
1599. SIBRANDUS à SICCAMA, wrote, *De Veteri Anno Romano Antitheses*, and *Fasti Calendar*.

Having Successfully deduced this Astronomical Catalogue thus far ; I hold it fit , before I proceed to the next Century, to insert in this Place the Names of divers Jewish, Persian, Arabian, and some other Astronomers, whose Times are Dubious , and uncertain (at least to me) of whom yet Mention is made in Simler ; Hottinger's Smegm. Orient. Abul-Pharagius his Dynasties ; James his Eclog. Oxon-Cant. Labbee, and the Catalogue of Golius his Manuscripts, &c.

DANIEL surnamed SAPIENS, wrote an Astronomical Treatise in Syriack, extant in the publick Library at Oxford.

RABBI JACOB BEN-MACHIR, wrote *De Quadrante Astrolabii, Vestimentum Lucis, & Iter Stellarum*.

R. JEHUDA BAR BARZILEI, wrote a Book, teaching the supputation of Times, according to the Celestial motions.

R. ISAAC BEN LATAPH, an eminent Philosopher, wrote of the Figure of the World.

R. ABRAZARTH, a learned Astrologer, mentioned by Gesner, from the authority of *Pastregicus, lib. De rerum Inventoribus*.

R. AB RUSAK, a great Astronomer, mentioned by Gesner.

R. ABRAHAM, an eminent Astronomer wrote a Treatise entituled, *Liber Intercalationis* ; as also another, called *Intercalatio Annorum* ; *De Solstitiis & Æquinoctiis* ; *De Lunæ motu, & Mensibus* , & *totius Calendarii ratione*. Quære whether the same with R. Abraham, who wrote *De Sphæra*, mentioned by Christmannus in *Alfraganum*, of whom already, *ad annum 1115*.

R. ISAASCHAR BEN SUSAN, writ a Treatise entituled, *Correctio vel Ordinatio Calendarii*.

R. ISAAC ALCHADEB, published a Work entituled, *Via Strata* , *De Calendario, De Festis, &c.*

R. SALOMON, writ a Treatise, entituled *Sex Alæ* ; as also another, under the title of *Talmid. Ephemerides* , comprehended in six Tables, as Hottinger, in *Smegm. Orient.* There is likewise a Treatise under his Name, called *Tabula Lunæ*, extant in MS. in the Library of Marcus Mantua Benavidius of Padua, mentioned by Thomasinus in *Bibl. Patav.*

ALGAZEL ABUHAMAD, a Jewish Philosopher and Astronomer, writ in Hebrew, a Book, *De Luminibus*, entituled *Haoroth*, as the same is cited by Ricciolus, in *Catalog. Astron.*

JOSEPHUS CHALDÆUS, wrote *De Planetis*, as testifies Habede-Jesu in his Catalogue of Chaldeæ Ecclesiastick Writers, Printed at Rome.

R. SIMCHA, Disciple to R. Solomon, put forth an *Astronomical Treatise*.

KUSIANUS

KUSIANUS or KEUXIAN GILÆUS, composed Universal Astronomical Tables, with Demonstrations of their Canons. He is cited by *Golius* in *Alferganum*.

ABU-SEHEL, published a Treatise touching the Demonstration of the Planisphere.

ABDORRACHMAN of *Damascus*, wrote *Tabulæ ægyptiæ, sive Resolutiones ex Tabulis Ulug Beigi*, brought by the learned *Golius* from *Constantinople*. He wrote likewise, *De Astrothesia, Imaginum formis variisque Nominibus*.

IBN-JAHIA ABBASIDES AFER, published a Treatise, of the Doubts and Errors of Astronomers, and of the *Astrolabe*.

IBN-OMAR SOPHY, wrote of Horology, or Dialling.

ABU-SHUKER AFRICANUS, wrote of the Theory of the Planets, demonstrated and amended, according to the newest and latest Observations.

MAHUMEDES CHARIKÆUS, put forth a System of the Doctrine of the Sphere.

GEORGIANUS, wrote a Treatise of the Orbe or Circle called *Æquans*, and of the Obliquity, Inclination, or Reflection of Epicycles.

ABI ZELTUS DANITA, an *Andaluzian*, put forth an Astrological Treatise.

ABU MESUD, wrote *De Corporum Cœlestium Contemplatione*, mentioned in *Golius* his Catalogue MS.

IB'N SINA, wrote touching the best Instruments, for making of Celestial Observations, perhaps the same with *Avicenna*.

ALKASRANUS; MAHMOUD IB'N MESAUD ASSIJTARI; IBRAHIM IB'N ALI ALABASHI ALGJMDE; OMMAR ALFARESKOURI; ALI IB'N ALHAZEN IB'N IBRAHIM IB'N MAHAMMED IB'N ALHUMAM; HAKIM ALMUGJAREITI; CHALIN ALFAKI; IB'N SARCALI; SJAHAB ADDIN; ALI ALHAZEN IB'N ALI IB'N MUHAMMED IB'N IBRAHIM ALMERWAZI; all *Arabian* and *Persian* Authors, wrote upon the Subject of *Astronomy*, and are mentioned in *Jacobus Golius* his Catalogue of Manuscripts, to which may be added HELVENOR *Astrologus*, and GERGIRO *De Significatione Planetarum*, mentioned by *Simler*.

ABI'L ASSAKER ABDOL AZIZ IB'N KOBERSI, wrote an *Astronomical Introduction*, mentioned in the fore said Catalogue of *Golius*.

OMAD EDDIN ALBOCHARI, an *Arabian*, wrote a Treatise of the Figure and Motion of the *Moon* and *Mercury*.

ABU'L ALI ALMARASKOSJI, wrote a most accurate Treatise of the use of the *Astrolabe*.

ALCAJIM put forth very exquisite Astronomical Tables.

MUHAMMED

MUHAMMED IB'N ALI CHAR ARMIOUNI, put forth an *Astronomical Institution*, touching the supputation of Time and the motion of the Sun.

There is also among the same Manuscripts of *Golius* an anonymous Treatise, in the *Persian* Language, Of the Figures and Motion of the Stars, together with a *Latine* Version thereof by JUSTUS RAPHELENGIUS.

ABEN MERGIOUR, wrote *Virtutes Oppositionum & Conjunctionum Saturni & Jovis juxta Sententias Antiquorum*, mentioned in the Catalogue of *Golius* his Manuscripts.

NEDAMENIN, wrote a Treatise, *De variis Annorum formis, & Rebus Cælestibus*.

TEILESANUS published Astronomical Canons.

SIDIN SHERIFFUS, wrote *Elementa Astronomica*, perhaps the same with *Ali Escheriff*, who put forth likewise *Tabula expeditæ Motuum Cælestium*, extant among *Golius* his MS.

JOHANNES LEBDEBENHAZER, writ *De Judiciis Astrorum*, said to be in his Majesties Library at St. James's.

JARDAGIRD ALEXANDRINUS, otherwise called CHILVENUZ, wrote *De Scientia Annorum Arabum*, the Manuscript whereof is extant in *Cains* Colledge at Cambridge.

THOMAS, *De Judiciis Astrorum*, a Manuscript extant in the Library of *Merton* Colledge at Oxford, and in that of *Gonvil* and *Cains* Colledge in Cambridge.

HELIODORUS LARISSÆUS, writ *Optica, & De Septem Planetis*, his Opticks lately Printed at Cambridge.

HERACLIDES his *Apotelesmata*, are by *Labbeé* said to be in *Bibliotheca Cardinal Carpens.* and that of the French King.

ÆGIDIUS ROMANUS, wrote a Treatise *De essentia, motu, & significatione Cometarum*; extant in MS. in the Publick Library, as also in that of *Pembroke-Hall*, at Cambridge.

PETRUS LEMONIENSIS, a Canon of the Cathedral of York, wrote a Piece entituled, *Judicium De Stella Cometa*, extant in MS. in the Publick Library at Cambridge.

CHRISTIANUS ROLIANUS, put forth *totius Orbis Generalis Descriptio, & Sphæra*, extant in the French King's Library.

BERNARDUS SYLVESTRIS, wrote a Treatise entituled *Megacosmus, seu De Majori Mundo*; as also of Cosmography, a MS. whereof is extant in *Benet* Colledge in Cambridge.

JACOBUS ZALESE, wrote *De Dierum Equationibus contra Propositiones Bartholomæi De Valentia*, extant in MS. in the Library of *Nicolaus Trevisanus* of Padua, and mentioned by *Thomasinus* in *Bibl. Patavin.*

JOANNES

JOHANNES DE INERIIS, a *Picard*, of the Diocese of *Amiens*, wrote a Treatise, entituled *Canones super magnum Almanach omnium Planetarum*, calculated for the Meridian of *Paris*, of which a Manuscript is in *Cains* and *Gonvil. Coll.*

ARCANDAM, or ARCANDUM, and ALCANDRINUS, (as some name him) writ a Book. *De Veritatibus & Predictionibus Astrologie*, Printed at *Paris* in the year 1542. 8°. Published by *Richard Roussat* Canon of *Lignon*.

HABASH MERWAZENSIS, wrote three Books of *Astronomical Tables*; the first composed according to the Rules *Send Hend*; the second called *Montahen*, i. e. *approved by experience*; the last, *Tabularum minorum*, entituled *Alfab*, as *Abulpharagius*, in *Histor. Dynast.*

ABDALLA EB'N SAHEL EB'N NUBACHT, wrote likewise upon the same Subject.

ALEXANDER, an *Astropomer*, wrote *De Influentia Planetarum in Herbas*, extant in MS. in the Library of *Jo. Rhodius* of *Padua*, of which *Thomasinus in Bibliothec. Patavin.*

MAHOMED ALBUZIANI, besides several Books, which he set forth in *Arithmetick*, composed a Treatise which he entituled *Almagestum, sive Systema Astronomicum*; as *Abulpharagius* attests.

MOSES EB'N MAIMON of *Corduba*, a *Jew*, together with *Tuseph Eb'n Yahya*, corrected the Astronomy of *Eb'n Aphla Hispanus*; as the same *Abulpharagius* affirms.

ANDALIUS DE NIGRIS, wrote *De Sphæra, in Theorias Planetarum, Planisphærium Ptolemei*, and *Astrolabium*, mentioned by *Thomasinus in Bibliothec. Patavin.* yet extant among the MS. of *Nicolaus Trivisanus*.

GHAMINÆUS, an *Arabian Astrologer*, wrote in *Arabick*, of *Astrology*, with a twofold *Prolix Commentary* in the *Moorish Character*, a Book commended by *Scaliger*, and remaining in the Library at *Leyden*, among the Manuscripts by him bequeathed to that University; as *Hottinger* affirms in *Append. Smegmat. Orient.*

ABENHAM writ *De Astronomia*, now extant in MS. in the *Cottonian Library*.

JOANNES LAURATIUS, or LAURENTIUS DE FUNDIS, wrote *De Sphæra, & Theorica Planetarum*, extant in MS. in the Library of *Jo. Rhodius* of *Padua*, of which *Thomasinus in Bibliothec. Patavin.*

AVIENUS, or as others, ABIENUS wrote a Tract, *De Cometis*, as *Simler* in *Bibl. Gesner.* affirms.

MICHAEL HAVEMAN put forth a Treatise entituled *Astræa; in qua de Hypothesibus Astrosophorum differitur.*

AMBROSIUS LACHER, according to the Testimony of *Gesner*, writ *quædam De Astronomia*, who makes no mention of the Time wherein he flourished; nor of the particular Subject he wrote upon.

T

HENRICUS

HENRICUS DOPELSTIN, or TOPELSTEIN, Doctor of Physick wrote a Book, *De Judiciis Astrorum*, mentioned by Simler in *Bibl. Gesner*.

JOHANNES ZINERIS, is mentioned by Gesner among the Astronomers, and he farther affirms, that his *Astronomical Tables* are extant, but assigns not the time wherein he flourished.

ALACENUS, a Mathematician, an ancient *English* Author, of whom *Bala-*
us writes, that he deserved *Astrologi Peritissimi nomen*, wrote *Of Perspective*, and *De Ascensione Nubium*. Of the time wherein he flourished no Author, we can meet withal, gives any account.

ARNOLDUS DE VILLA NOVA, wrote *Compendium Astrologie ad Utilitatem Medicorum*; extant in MS. in the Library of the Canons of St. Jo. Lateran of Padua. See *Thomasinus* in *Bibliothec. Patavin*.

ALDILAZITH ASTROLOGUS, writ a Book entituled *Archibia*, as Gesner, from the authority of *Gulielmus Pastregius* (L. *De Inventoribus rerum*) affirms; Printed at Venice, in the year 1547. by *Nicholaus Bascorinus*.

MASLEM, an Astronomer, translated *Ptolemy's Planisferium* out of the Greek, into the *Arabian* Tongue, as *Rudolphus Brugenfis* relates in the Preface of his *Latine* Translation of the same Work.

MORIENTES, a certain Greek Author, writ *De Zonis & Climatibus Mundi*, extant, as the Author *Luminis Anima* affirms, in his Preface, adding that it was by him translated out of Greek into *Latine*. See *Simler*. in *Bibl. Gesner*.

RAYMYRUS GADITANUS, wrote a Treatise, which he entituled, *Divinatio Sideralis*, mentioned by Gesner.

STANTONIUS, an expert *English* Mathematician, wrote *In Canones Tabularum Arzabelis*, as *Leland* and *Gesner* affirm.

TRECHINDUS, an Astronomer and Astrologer, is often mentioned by *Haly Aben-Ragel*, as *Simler* testifies in *Bibl. Gesner*.

ZAHEL, sive ZAEL, or ZEEL BEBIS, an *Arabian* Astrologer, writ *De Interrogationibus*; *De Electionibus*; *De Temporum Significationibus in Judiciis*; Printed at Venice 1493. together with *Ptolemy's Quadripartitum*; vid. *Gesner's Biblioth.* There is also under his name a Treatise, entituled *De Revolutionibus Annorum Mundi*, extant in Manuscript, in the Publick Library at Cambridge, and in that of *Pembroke-Hall*.

MAHUMED BEN MALUD, wrote learned Commentaries on the Book of *Tap Phatis Scibajah de Astronomia*, extant in the *Vatican* Library, of which mention is made by *Labbei* in *Bibliothec. MS.*

NECTARIUS, Bishop of *Hydrusa*, turned the Book called *Laxentèrion* (treating of *Astrological Predictions* according to the *Chaldaick* Doctrine) into Greek, now extant in the Library of *Trinity-Colledge* in Cambridge, and in that of the *French King*. *Scaliger* (L. 1. *Epist.* 67.) gives to that Piece likewise the Name of *Raboukion*, and the Publisher of the *Florentine* Library makes an Author of it; citing him by the Name of *Laxenterius Pythagoricus*, sive *Rabolius*.

GULIELMUS

GULIELMUS READ, sometime Fellow of Merton-Colledge in Oxford, (to the Library whereof he liberally contributed) afterwards Bishop of Chichester, writ Tables of the mean motions of the Planets, and Canons of those Tables, extant in the Publick Library at Oxford.

HALPERICUS, wrote a Treatise *De Arte calculatoria*, extant in Manuscript in Caius-Colledge in Cambridge.

JACOBUS ZALES, wrote *De Dierum Equationibus contra Propositiones Bartholomæi de Valentia*, as cited by Ja. Phil. Thomassinus, inter MS. Nicolai Trivisani, biblioth. Patav.

BERNARDUS DE TRYLLIA, a Dominican Fryar, and a Spaniard wrote *Quæstiones super Totam Astrologiam*; as cited by Simler in Bibl. Gesneri.

There is a Book entituled, *NOVEM JUDICUM IN ASTRONOMIA*, said to be sent by the Soldan of Babylon to Frederick the German Emperor; Printed in the year 1509. and extant in his Majesty's Library at St. James's, and in the Bodleian at Oxford.

Proceed

Proceed we now in our former Order and Method to the ASTRONOMERS flourishing in the Seventeenth Century, in which the first Author appearing is

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1600.

CHRISTOPHORUS CLAVIUS, of Bamberg, a Jesuit, Scholar to Jo. Baptista Benedictus, and Master to Blancanus, and Griembergerus, a most profound Mathematician and Astronomer. The Works whereby he hath signalized his Name upon the Subject of Astronomy, are these: His Commentary in *Sphæram Sacrobosci*, & in *Sphærica Theodosii*; *De Forma & Usu Astrolabii*; His Apology for the Gregorian Calendar, against the two Oppugners thereof, Michael Mæstlinus, and Joseph Scaliger, and his *Problemata Astronomica*, Printed at Rome 1599.

1600. HUGO GROTIUS, the great Ornament of Learning, and of his Country, put forth *Aratus* his *Phænomena*, & *Dioscorides*, in Greek, with Cicero, Germanicus Cæsar, and Avienus their Translations thereof, with Cuts of the several Constellations; to which he added his own learned Notes, and the names of the Stars, in Hebrew, Arabick, Greek, and Latine, Printed in the year 1600.

1600. THEODOSIUS RUBEUS Published *Diarum Universale perpetuum*, for finding out the Quantity of the Day or Night in any Part of the World, together with the Rising and Setting of the Sun, according to the Italick, Babylonian, and Astronomical Hours.

1600. CHERUBINUS SANDELINUS, is likewise numbred amongst the Astronomers of this Time, as having written something upon the same Subject with the former.

1600. HENRICUS SAMERIUS, of Luxemburg, a Jesuit, styled by Ricciolus, *Egregius Temporum Supputator*, Published a Chronology from the beginning of the World to the time of our Saviour's Nativity, and is by Ricciolus inserted in his Catalogue of Astronomers.

1601. JOHN CHAMBER, Prebendary of Windsor, and Fellow of Eaton-Colledge, put forth a Treatise against *Judicial Astrology*, together with the *Encomium* or Praise of *Astronomy*, made by him some years before, upon Occasion of his Publick Lectures on Ptolemy's *Almagest* in the University of Oxford, Printed in Latine and English 1601. 4°. London.

1602. ABRAHAMUS ROCHENBACKIUS, at Wittenberg, wrote *De Cometis*, of which he published a Catalogue.

1602. NATHANIEL TORPORLEY, an English man born in Shropshire, set forth a Treatise, entituled *Diodes Cælo-Metricæ, seu Valvæ Astronomicæ Universales*, in two Books, Printed at London. The first shewing the Composition of *Astronomical Tables*, with their Application, as to *Directions*; comprized in a new Universal and most easie Method. The second teaching to calculate the *Prosthaphæreses* of the Planets Motions, without the Subditious Aid of Proportional Scruples; and setting forth the Doctrine of Spherical Triangles most fully and easily; the whole Artifice being reduced to Six Words in a Tractable Order, represented in the Form or Figure of a Mitre. He was sometime *Amatruensis* to the famous Vieta, and merits commendation for the Legacy he bequeathed of many choice Books toward furnishing the Library at Sion-Colledge. London.

ANTONIUS

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1603.

ANTONIUS GREVENSTEIN put forth a Supputation of all the Eclipses which happened from the year of Christ 1593. to this year 1601. together with the Tract of *Proclus Diadochus*, touching the signification of Eclipses; Printed at Breme, by *Bernardus Petri*.

1603.

JOHANNES BAYERUS RHEINANUS, Doctor of the Civil Law, and an eminent Astronomer, exhibited elegant Schemes of all the Stars and Celestial Constellations, with their several Situations, according to the Descriptions of *Hipparchus*, *Ptolemy*, *Alphonsus*, and *Copernicus*, reduced to the Scale of Truth by *Tycho Brahe*, together with their distinct Denominations in *Latine*, *Greek*, *Arabick*, *Chaldee*, *Persian*.

1603.

Sir CHRISTOPHER HEYDON Knight, a Person of great Worth and Learning, wrote a *Defence of Judicial Astrology*, in Answer to the *Treatise of Chambers* published against it, a Work full of no common Reading, and carried on with no mean Arguments, Printed at Cambridge 1603. 4°.

1603.

THOMAS LYDYAT, an English man, in the year 1605. Published a Book entituled *Prælectio Astronomica, De Natura Cæli & Elementorum*; and the same year another Piece, *De variis Annorum formis, &c. cum refutatione Anni Novitii Gregoriani*. In the year 1607. he writ *Defensio Tractatus de variis Annorum Formis, præsertim Antiquissima & Optima, contra Josephi Scaligeri Obreftationem, Unâ cum Examine Ejus Canonum Chronologiae Isagogicorum*. Another Book called *Solis & Lunæ Periodus Erudite Antiquitati Appellatus ANNUS MAGNUS constans Octodescentis Annis vertentibus*, Printed at London 1620. *Epistola Astronomica ad D.H.Savilium Equit. Auratum de Anni Solaris Mensura pro Confirmatione Periodi Octodescentenariæ Solis & Lunæ*, 8°. Lond. 1621.

1606.

BALTHAZAR CAPRA Published at Padua, a Book entituled *Tyrocinia Astronomica*.

1606.

ADRIANUS ROMANUS Published in the year 1591. a Book entituled *Ouranographia, sive de Cælorum Numero & Ordine*, Printed at Antwerp. He set forth likewise in the year 1595. *Theoria Calendariorum* in five Parts, Printed at Wirteberg. 4°. And in the year 1602. *Universæ Mathesis Idea*, Printed Herbipol. In the year 1606. he published *Speculum Astronomicum*, wherein he represented the Motions of the *Primum Mobile*, Printed at Lovaine, 4°. See more of him in *Andreas Desselius* his *Bibliotheca Belgica*.

1607.

JOANNES RUDOLPHUS CAMÉRARIUS, a learned Physician, and descended from the Great *Joachimus*, a good Astronomer, though he chiefly applied himself to Astrological Studies, Published a *Century of Genitures*, wherein he spoke of the violent Death of *Henry the Fourth King of France*, and in 1610. published another *Century* with *Judgments* thereupon.

1608.

JOHANNES TALENTONIUS, besides his *Thesaurus Rerum Reconditarum*, published a Treatise, of which *Drandius* gives this Character, that it was, *De Supremæ Sphæræ loco Disceptatio gravissima*.

1608.

HENRICUS LINDOUGHT, of Brussels, Doctor of Physick, and Professor of Philosophy, set forth a Book which he called, *Speculum Astrologiæ*, being an Introduction in *Scientiam Genethliacam, sive Physicam Judiciariam*; in which he endeavours to distinguish between the vanity and the verity of Astrology; Printed at Francfort, with a Preface of *Gothardus Arthurnus* of Dantzick, *De Astrologiæ præstantia & utilitate*, in the year 1608.

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1608. BERNARDINUS SALINUS, a Jesuit, wrote among other things, *De variis Problematibus Astronomicis*; which with other his Works are preserved in the Jesuits Library at Genua.
1609. GEORGIUS HENISCHIUS, Doctor of Physick, and Professor of Mathematicks at *Ausbourg*, put forth *Proclus De Sphæra*, in Greek and Latine, which he illustrated, (to use Ricciolus's expression) with an egregious Commentary.
1609. JOHANNES BASSANTINUS, a Scotch-man, published a Treatise of Astronomy, in French, though he scarce understood that Language, much less Latine or Greek, and yet, *In Astronomia ita excelluit, ut inter primos Ætatis suæ habitus sit*, sayes Joannes Tornæsius, who translated that Work of his into Latine, and published the same at Geneva.
1609. DAVID ORIGANUS, born at Glatz, a Town in Silesia, Professor of Mathematicks at *Francfort upon Oder*, set forth New Ephemerides, in Three Tomes, continuing from the year 1595. to the year 1654. with a most ample Preliminary Introduction, in which are explained the Grounds or Principles of Chronology, Astronomy, and Astrology.
1610. JOANNES ANTONIUS MAGINUS, of Padua, Professor of Mathematicks in that University; as also at Bologna, was Author of the several Works hereafter mentioned: Ephemerides, according to the *Prtlenick* Tables for fifty years. *Tables Secundorum Mobilium Cælestium*. New Theories of the Planets, according to the Copernican Hypothesis. Tables of the *Primum Mobile*, or of Directions. *De Astrologica ratione & usu Diernum Criticorum*; as also (though he was a severe Impugner of the common Judiciary Astrology) *De legitimo Astrologiæ in Medicina usu*. He commented upon *Galen De Diebus Decretoriis*, in the Astrological Part, Printed at Venice 1607. He wrote likewise a Book against Scaliger's *Diatriba*, *De Æquinoctiorum Processione*, and several other Pieces in Cosmography, and Geography, being stiled by Ricciolus, *Insignis Astronomus & Cosmographus*.
1610. BARTHOLOMÆUS KECKERMANNUS wrote among other things *Systemata Astronomiæ*, and *Problemata Nautica*, Printed at *Hannov.* 1610.
1611. JOHANNES FABRICIUS put forth a Treatise entituled, *De Maculis in Sole, & Modo Eductionis Specierum Visibilium, Dubitatio*, Printed at Witteberg. 4°. 1611.
1611. NICHOLAUS MULLERUS, of Bruges, Doctor of Physick, and chief Moderator of the School at *Leoward*, afterwards Publick Professor of Mathematicks in the University at Groningen, put forth his *Tabula Frisicæ Lunæ-Solares Quadruplices*, Printed at *Alcmair*; which Title he gave them, because composed in *Friezland*, and fitted to the Meridian of *Leoward*, containing the Calculation of the Conjunctions and Eclipses of the Sun and Moon, in Four Parts, according to the Ptolemaick, Alphonsine, Copernican, and *Brabaan* Astronomy; together with an Introduction and Appendix thereunto; represented by Vossius to be *Opus omnino eruditum atque accuratum*. He published likewise *Solis totidem Tabule*, wherein he proves the Jewish year to be Luni-Solaris, that of the Turks *mèrè Lunaris*, Printed at Groning. 1630. He set forth also *Calendarium vetus Romanum cum Methodo Paschali emendatâ*.
1612. JOSEPHUS LANGIUS, Professor of the Greek Tongue and Mathematicks in the Arch-Duke's Academy at *Friburg in Brisgaw*, put forth a Work entituled,

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tuled *Elementale Mathematicum*, in which, besides Vulgar Arithmetick, Geometry and Geography, he treats *De Logistica-Astronomica, Astronomica Spherica, & Theorica Planetarum*. Which Work *Isaac Habrechtus* not only enlarged, but also explained with Annotations, and illustrated with Figures, causing the same to be Printed at *Strasbourg*.

1612. CHRISTOPHORUS GRIEMBERGERUS, a Jesuit, native of *Hale* in *Tiroll*, at first Scholar to *Clavius*, afterwards his Successor in the Mathematical Chair in the *Roman Colledge*, put forth a Catalogue of the Longitudes and Latitudes of the Fixed Stars according to the Ancients, compared with the Modern; together with a new Perspective of the Heavens. He wrote likewise a Book, *De Speculo Ustorio Elliptico*, and a new Invention of delineating all sorts of hours; as also a Treatise for the describing of all manner of Astrolabes, in which Argument *Clavius* acknowledged the assistance of this his Scholar. What is found Geometrical in *Villalpandus* of *Solomon's Temple*, *Claudianus Rickardus*, and others ascribe to *Griembergerus*, of whose worth and commendation *Bettinus*, in *Ærario*, hath made a Digression, *Philip Alegambe*, in his Catalogue of Jesuit-Writers affirming, that he left *Elementa Conica*, and other Geometrical Pieces, not proper for this place.
1612. JOANNES PAULUS RESENIUS put forth *Initia Geometrica, Arithmetica, Astronomica*, Printed at *Wittemberg* 1612. 8°.
1612. JULIUS CÆSAR LA GALLA Published a Discourse touching the New *Phænomena* discovered in the Moon by the help of the Telescope.
1613. OCTAVIUS PISANUS Published in a very large but thin folio, a Treatise entituled *Astrologia, seu Motus & Loca Syderum*. In which Astrology, or rather Astronomy is reduced to Method, and Ocular Demonstration by the Means of a Planisphere, and an Instrument which he calls *Sphæra Materialis & Instrumentalis*. Whose use is exprest by several Chartaceous Instruments exquisitely cut and printed; the whole grounded upon the Ptolemaick Hypotheses, the Industry, Labour and Pains of which costly Design (if you will take his own Word for it) he conceives may be reputed *Archimedis Laboribus non Dissimiles*. He dedicated his Works to *Cosmus* the Second Duke of *Florence*, being printed at *Antwerp ex Officina Roberti Bruneau*.
1614. JOHANNES NEPERUS, Lord of *Merkinstone* in *Scotland*, Inventor of Logarithms, or Artificial Numbers; which, by bare Subtraction or Addition, perform the Rule of Three, and by a wonderful facility of operation, resolve as well Plain, as Spherical Triangles, an incredible help to Astronomical Calculations, and for that respect alone, meriting a place in this Catalogue, and eternal Commendations.
1615. PETRUS LAURENBERGIUS is mentioned by *G. Vossius*; to have published at *Hamborough* a Book, entituled *Amphilychnus*, being a Dissertation of the Nature of *Twilights*.
1615. JOSEPHUS BLANCANUS, of *Bologna*, a Jesuit, Professor of Mathematicks at *Parma*, wrote (besides his Book, *In Loca Mathematica Aristotelis, & De Natura Mathematicarum*, and his Chronology of Mathematicians). a Book *De Sphæra Mundi*, according to the latest and most recent Observations, with an Introduction to Geography, and an *Apparatus ad Mathematicas Artes*. He wrote likewise *De Echometria*, and another Piece, entituled, *Instrumentum Horologiorum*, first published by *Ricciolus*, (his Scholar.)

GALILÆUS

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1615.

GALILÆUS GALILÆI, the most excellent Philosopher and Mathematician of his Time, was Son of *Vincentius Galileus*, a Gentleman of *Florence*, whose Ancestors for many Descents had the Honour to be reckoned among the *Patricii* of that City; to which Name of *Galileus* Authors usually add that of *Linceus*, from a famous Academy of Noble and Ingenuous Persons, calling themselves the *Lyncei* (instituted by the Illustrious Prince, and Generous *Mæcenæ Angelo Casti*, Duke of *Aqua Sparta*) of which he was a Member and singular Ornament. The Works and Writings, by which he hath eternized his Name are many, both in Philosophy and Mathematicks; of which, such as are Pertinent to our Purpose, we shall briefly enumerate. He first applied the *Belgick* Perspective Glass, by him meliorated, to Celestial Objects, by which he discovered that *Jupiter* was invironed with four smaller Stars or Planets, commonly called his Guards or *Satellites*; to whom in Honour of his Prince and Patron, the Grand Duke of *Tuscany*, he gave the Names of *Sidera Medicæ*. By that he likewise discovered the different Phases of *Saturn* appearing now round, now in an oblong form, with two Handles or *Anse*: That *Venus*, like the Moon, had her waining, and increasing; and that the Moon's Superficies was like that of the Earth rising with Mountains, and deprest into Vallies and Seas; that the Mountain of Light the Sun had its Spots, by which likewise he eyinced that the Sun had a Circular Motion about its own *Axis*. That the *Via Lactea* was a Congeries of numberless Lights or small Stars; and that the nebulous Stars, as that in the Head of *Orion*, and that in the *Præsepe*, or Manger of the *Aselli*, are composed of such. For which admirable Inventions, and many more, altogether unknown to the Ancients, he merits eternal Honour, especially for having communicated them to Posterity, and so excellently and clearly demonstrated them by his learned Writings; particularly by his *Nuncius Siderens*, and its Continuation, by his History and Demonstration of the Solar Spots, in three Letters to *Marcus Velserus*, by his Letters to Signore *Alfonso Antonini*, touching *La Titubatione Lunare*. To which is to be added his *Systema Cosmicum*, asserting the *Copernican* Hypothesis, with his Defence thereof in Answer to the Objections brought from Scriptures, Fathers, and School-men, written first in *Italian*, and addressed to *Katherine of Lorrain*, Grand Dutches of *Tuscany*, and since published in *Latin* and *Italian* together. Not to mention his many other exquisite Tractates in Philosophy, Geometry, and other the most abstruse Parts of Mathematicks, as not immediately relating to our Subject. A farther Account of his Inventions or Discoveries is to be had in his life, published, by his Scholar Signore *Viviani*, which we have not yet seen.

1615. **RUDOLPHUS GOELENIUS**, Doctor of Physick, and Professor in the University of *Marpurg*, published in the present year 1615. his *Urania*, with her two Daughters, *Astronomy* and *Astrology*. He likewise put forth a Cosmographical Treatise, *sen Sphæræ Mundi Descriptionis Rudimenta*, Printed at *Cologne* 1605.

1616. **JOHANNES MICRÆLLIUS** Published a Manuduction to the use of the Celestial and Terrestrial Globe, &c. as *Vossius* affirms.

1617. **DAVID FABRICIUS**, a *Friezlander*, Professor of Astronomy, wrote Prognosticks of the years 1615, 1616, and 1617. mentioned by *Kepler* in his *Ephemerides*.

1617. **DOMINIQUE JAQUINOT**, a *French-man*, writ in his own Language of the Use of the *Astrolabe*, together with a small Treatise of the Sphere, Printed at *Paris*.

FRANCISCUS

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1617.

FRANCISCUS AGUILONIUS, a Jesuit of Brussels, was Professor of Philosophy at Doway, and of Theology at Antwerp, and one of the first that introduced Mathematical Studies into Flanders. How far (though not directly & ex professo) he contributed to Astronomy, may appear by his six Books of Opticks, and his Excellent Treatise of Projections of the Sphere.

1617. REDEMPTUS BARANZANUS, of Serravalle, Professor, at Annèsi-um, in Savoy, of Natural Philosophy and Astronomy. He wrote a Book entituled, *Uranoscopia, sive Universa Cælorum Doctrina*.

1618. EMANUEL DIAZ, a Jesuit, at Cochine in India, observed the Comet, which appeared in the year 1618. and set forth a Treatise against the Opinion of those, who conceive Comets to be sublunary and elementary Bodies.

1618. JOHANNES LEUTECHOMIUS, a Lorrainer, of the Society of Jesus, wrote *Hilaria Mathematica, De Horologiis, & De Cometa*.

1618. CAROLUS PISO, a French man, wrote in his own Language; *Speculum Cometae, Anno 1618*.

1618. WILLEBRODUS SNELLIUS, a Royen, Son of Radolphus Snellius, published, besides divers other Mathematical Treatises, *Eratosthenes Batavus, sive De mensura Terræ*; and *Tiphys Batavus, sive Histiiodromice*. He wrote likewise of the Comet which appeared in the year 1618. and published the *Hessian* and *Bohemian* Observations, with his own Notes thereupon; together with the Observations of *Regiomontanus* and *Waltherus*.

1619. HORATIUS GRASSUS, a Jesuit, Native of Savona, sometime Professor of Mathematicks in the Jesuits Colledge at Rome, put forth an Astronomical Disputation, touching Three Comets in the year 1618. And a Book, entituled *Libra Astronomica & Philosophica*, wherein he undertakes to weigh and censure the Opinion of Galileo, concerning Comets.

1619. CAMILLUS GLORIOSUS, Professor of Mathematicks at Padua, wrote learnedly in a Treatise entituled *Dissertatio Astronomico-Physica de Cometis*, and in another Piece, entituled, *Responsio ad Controversias de Cometis Peripateticas*, and in some other things written against *Claramontius* and *Licetus*.

1619. BENJAMIN URSINUS, Mathematician to the Elector of Brandenburg, put forth a new Canon of Logarithms and Trigonometry; of which Work *Crugerus* gives this Character, that it is *Opus æstimationis immensæ*.

1619. JOANNES DEKERIUS, a Jesuit, Native of Haesbruch, in Flanders, Professor of Philosophy sometime at Doway, and of Divinity at Lovaine, and Chancellour of Gratz, wrote Theorems, touching the year of our Saviour's Birth and Passion; and Chronological Tables from the taking of Jerusalem by Pompey, to its final eversion by Titus; and several other Chronological Works not published.

1619. ALEXANDER DE ANGELIS, of Spoleto, a Jesuit, Professor of Theology, and Prefect. of the Schools in the Roman Colledge, wrote Five Books, *In Astrologos Conjectores*.

1619. LIBERTUS FROIDMONT, sive FROMONDUS, vindicated his Name from Oblivion, by his Dissertation upon the Comet which appeared in the
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year 1618. He writ likewise a Book entituled *Anti-Aristarchus, sive De Orbe Terræ immobili*, against *Philippus Lansbergius*; as also a Reply, entituled *Vesta, sive Anti-Aristarchi Vindex*, in answer to *Lansbergius*.

1619. DAVID HERLICIUS, lately Doctor of Physick at *Stetin* in *Pomerania*, hath published many things relating to *Astronomy* and *Astrology* in the *German* Tongue. In the *Latin* there is nothing of his come to my Notice more than his *Prognosticon Astrologicum* for the year 1619. which is done with so much Skill and Pains, that it shews he does not write like one of your Common Prognosticators.

1619. JOHANNES BAPTISTA CYSATUS, a Jesuit of *Lucerne* in *Switzerland*, and Professor of Mathematicks in the University of *Ingolstadt*, published *Mathematica Astronomica*, upon the occasion of the Comet which appeared in the year 1618.

1620. VINCISLAUS PANTALEO, a Jesuit of *Austria*, travelled into *China*, and put forth the several Observations made by those of that Society in the *East-Indies*, upon the Comets appearing in the year 1618.

1620. SIMON MARIUS wrote a Book, of the *Satellites* of *Jupiter*, to which he gave the title of *Mundus Jovialis*, as *Ricciolus* affirms, in *Chronic. Astronom.*

1620. JOHANNES TARDE, Canon of the Cathedral Church of *Sarlat*, in *Aquitaine*, wrote a Treatise, by him entituled *Bourbonia Sidera*, in which he endeavours to prove, that the Solar Spots are Planets, moving by a proper and regular Motion about the Sun, and not inherent in the Body thereof, as the Telescopes represent. To which Work are subjoyned *Optical Demonstrations* teaching the way of making those Instruments fit to discover Objects more distinctly at a great distance. He wrote another Treatise of the Use of the *Magnetical Quadrant*, by which he resolves divers *Astronomical Problems*.

1620. MICHAEL ZANARDUS put forth a Treatise containing *Universum Cœleste*; wherein he disputes and concludes, *De omnibus & singulis, quæ ad Naturam Cœlestium Sphærarum, ab Empyræonisque ad Sphæram Elementorum faciunt*, Printed at *Colen*.

1620. CHRISTOPHORUS LONGOMONTANUS, Son of *Severinus Longomontanus*, a *Dane*, Assistant to *Tycho Brahe* in his Celestial Observations, for the space of eight years together; afterwards Professor of Mathematicks in the University of *Copenhagen*. The Work, by which he signalized his Name, was his *Astrologia Danica*; the first part whereof treats, in Two Books, of the Doctrine of the Sphere; and the latter, in as many of the Theory of the Planets, according to the threefold Hypotheses of *Ptolemy*, *Copernicus*, and *Tycho Brahe*, together with an Appendix of *Adscititious Phenomena*, as New Stars, and Comets.

1620. JOANNES KEPLERUS WITTEMBERGICUS, Disciple to *Mæstlinus*, and Principal Mathematician to three Emperours, *Matthias*, *Rudolphus*, and *Ferdinand* the Second, stiled by *Ricciolus*, *Sagacissimi & ardentissimi Vir Ingenii, & Astronomicarum Subtilitatum scrutator acutissimus*. In the year 1596. he put forth his *Prodrömus Dissertationum Cosmographicarum, seu Mysterium Cosmographicum*: In the year 1604. *Paralipomena ad Vitellionem, seu Astronomia Pars Optica*. In which he gives Directions for using of Instruments in making of Observations. In the year 1605. *De Nova Stella Serpentarii*. In the year 1609. he published *Astronomica Nova, seu Physica Cœlestis, cum Commentariis Stellæ Martis*,

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ex *Observationibus Tychoonis*; in which, according to the Judgment of the knowing Mr. Flamsteed, he hath so well considered the Motions of that Star, and ordered his Numbers so well, that though his method of Calculation be troublesome, no Tables answer his Appearances and Transits by Fixed Stars half so well as his. In the year 1610. he set forth *Dissertatio cum Nuncio Sydere Galilei*. In the year 1616. he published *Ephemerides Nova, cum Fundamentis earum*, from the year 1617. to the year 1620. In the year 1618. he set forth the three first Books of his *Epitome Astronomiæ Copernicæ*; and in the year 1619. Five Books *De Harmonia Mundi*, and three Books *De Cometis*. In the year 1621. he reprinted his *Mysterium Cosmographicum*, illustrated with Annotations; and the year following, he published the IV. V. and VI. Books of his *Epitome Astronomiæ Copernicæ*. In the year 1625. he set forth, in vindication of Tycho Brahe, against Scipio Claramontius, a Treatise, entituled, *Hyperaspistes, cum Appendice ex Trutinatore Galilei*, and in the year 1627. *Tabula Rudolphina Tychoonis Observationibus superstructæ*. In which Work he had spent no less than 26. years study. The Appendix which is added to the first Tome of Tycho's *Progymnasmatum*, is likewise his. He writ also *Eclogæ Chronologica*, a Book, *De vero nati Christi Anno*, *Stereometria & Trigonometria Logarithmica*. The first in somethings censured by Guldinus in *Centrobaricis*. There is extant a Posthume Piece of his, called *Somnium, sive Lunaris Astronomia*, which whilst he endeavoured to publish at Zeigan in Silesia, he died, as did also his Son-in-Law Jacobus Barischius, prosecuting, at the same place, the same Design. But it was afterwards happily compassed, by his own Son Ludovicus Kepler, and we could have wished he had done the like by other the Learned Remains of his incomparable Parent. But 'tis hoped that Defect will be now supplied, and made good by the Care and Industry of the Learned Hevelius, into whose Hands all the Remains of that Admirable Person are at last happily fallen. And among them all his *Epistles* written (upon the Subject of *Astronomy*, and other *Mathematical Arguments*) to divers Eminent and Learned Persons, together with their *Answers*; more Particularly his Book entituled *Hipparchus*, containing (according to the Testimony of Hevelius, *Præfat. Machin. Cælest.*) plurimum *Laboris, ac Ingenii Acuminis*; though wanting in many Places the finishing Hand of the Author, upon which yet, in his other Works he seems to set a very valuable esteem. The Publication whereof, the studious in Astronomy earnestly expect.

1620. THOMAS CAMPANELLA, a Calabrian; of the Order of Preaching Fryars, put forth seven Books *Astrologicorum*, in which Astrology, separated from Jewish and Arabian Superstitions, is Physiologically handled. He set forth likewise four Books *De sensu Rerum, & Magia*, in the third of which he treats of the Heavens, and the Celestial Bodies.

1622. GEORGIUS SCHOMBERGERUS, Professor of Mathematicks in the University of Freiburg in Brisgaw, a Jesuit, put forth a Book, entituled *Sol illustratus*, wherein he treats of the several Accidents of the Sun, of the Solar Stars, and of the liquidity of the Heavens. He published likewise a Century of *Optical Problems*, and a new way of *Dialling*, as well by direct, refracted, as reflected Rayes.

1623. SIMEON PARTLICIUS put forth *Astronomici Apologetici Pars prior*, Printed in 8°. 1623. as I find in James his Appendix to the Catalogue of the Bodleian Library.

1624. JOHANNES ADAMUS, a German, of the Society of the Jesuits, travelled into China, and in the Language of that Country wrote a Table of all the Stars. He put forth likewise a Treatise, *De Calculo Eclipsis Lunæ*, in the year 1624.

HENRICUS

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1624.

HENRICUS BRIGGIUS, *Savilian* Professor of Geometry in the University of Oxford, pursuing what *Nepier* had invented and begun, put forth two Books of Logarithms, after a more commodious Method; the first, entituled *Arithmetica Logarithmetica*; the other *Trigonometria Britannica*; the former shewing the Construction of *Logarithmetical Tables*; the latter, the Construction of the *Tables of Sines, Tangents and Secants*, and the Doctrine of *Triangles*, to the great advantage of Astronomy, and Astronomical Operations.

1624.

Mr. EDWARD WRIGHT, Contemporary with Mr. Briggs before mentioned, having spent sometime in *Cambridge*, and being naturally addicted to *Mathematical* Studies, was perswaded to accompany, and went along with the *Right Honorable George Earle of Cumberland*, in his Expedition to the *Azores*, in the year 1589. on purpose to add the Practice of Navigation to the Theory; and in the year 1599. he published his Book called *the Errors in Navigation*. A most excellent Work for the true describing a Sea-Chart; which Invention of his, *Gerardus Mercator* published without owning the Author. Before the Publication of this Work, in the year 1594, 1595, and 1596. He, by a large Quadrant of six foot Radius, made Observation of the Sun's Meridian Altitude, and thereby not only left the best Theory of the Sun's Motion at that Time, but new made exquisite *Tables*, for the Sun's Declination. He held Intelligence with the most Able Artists abroad, and being chosen Tutor in the *Mathematicks* to *Prince Henry*, he, by the help of some German Workmen, caused to be made for that *hopeful Prince*, a large Sphere with curious Movements, which by the help of Spring-Work, not only represented the Motion of the whole *Celestial Sphere*, but shewed likewise the Particular Systems of the Sun and Moon, and their Circular Motions, together with their Places, and possibilities of eclipsing each other. There is in it a Work by Wheel and Pinion for a Motion of 17100 years, certainly effected, if the Sphere should be so long kept in Motion. This Sphere, though thus made at a great Expence of Money and ingenious Industry, was in the late Times of Devastation, cast aside among other Rubbidge, and had been utterly lost and destroyed, had it not in the year 1646. been found out by Sir *Jonas Moore* Knight, my worthy Friend, and at his great cost and charge restored to its Pristine Perfection, remaining now at his House in the Tower, among other Mathematical Instruments and Curiosities in his Possession. Besides the Book of the *Errors in Navigation* before mentioned, the said Mr. Wright writ a Book of the *Use of the Sphere*; a Piece of *Dialling*, and a Book of *Navigation*, called the *Haven finding Art*; in all which he hath shewn himself not only a Sedulous, but a Knowing Astronomer.

1624.

MARTINUS HORTENSIUS, of *Delft* in *Holland*, Professor of *Mathematicks* at *Amsterdam*, Companion and Adjutor to *Philippus Lansbergius*, in his Astronomical Studies, and no mean Observer of the Stars, undertook to answer something which *Kepler* had inserted in the Preface to his *Ephemerides*, and put forth a Dissertation, *De Mercurio sub Sole viso, & Venere invisâ*; which he addressed to *Gassendus*, who had written upon the same Subject.

1624.

ROBERTUS HUGHES Professor of *Mathematicks* in *Gresham-Colledge* *London*, set forth a Treatise of the Use of the *Celestial* and *Terrestrial Globes*, illustrated with Figures and Annotations, by *Johannes Isaac Pontanus*, Professor of Philosophy at *Harderwick* in *Gelderland*.

1625.

ANDREAS ZERGOL, Native of *Sancta Cruce* in *Carniola*, a Jesuit, Professor of *Mathematicks* and *Theology* at *Gratz* in *Styria*, put forth *Chronological Theorems*, of the year of our Saviour's Nativity and Passion.

CAROLUS

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1626.

CAROLUS ANTONIUS MANZINUS, Professor of Philosophy at Bologna, a learned Mathematician, put forth Tables of the *Primum Mobile*, cum *nova Arte dirigendi*, with a compendious Method of *Directions*. He writ likewise of the Theory of the Planets; and was, at the time Ricciolus published his *Almagest*, a diligent Observer of the Celestial Motions.

1626. D. HENRION, Professor of Mathematicks at Paris, put forth in French the Problems of Regiomontanus touching the Use and Practise of his *Tables of Directions*, to which he added large *Annotations* and *Explications* of his own, together with Regiomontanus his *Tables*, by him corrected and augmented. In the Preface to which Work he hath laid down the *Doctrine of Spherical Triangles*. He set forth in French Theodosius his Sphericks, published a Treatise of the Use of the Globes, and Compass of Proportion, of Cosmography, and a Canon *Manuel des Sinus*, &c. besides his *Mathematical Collections*, and *Euclid's Elements*.

1627. JULIUS SCHILLERIUS, of Ausburg, Dr. of the Laws, put forth *Cælum Stellatum Christianum*, reducing the fabulous *Morphoses* of the several Constellations, and changing their Profane Names into those of Christian Saints and Martyrs, Bayerus adding thereto a new and more accurate *Uranometria*.

1627. ALBERTUS GURTIUS, a Jesuit, Native of Munichen in Bavaria, proposed in the year 1627. a New System of Heaven to be disputed on at Dining; whose ingenuity in the Theory of the Moon, his Æmulator Kepler not only admired, but commended, in his *Rudolphine Tables*, c. 25.

1628. ADRIANUS ULACK, of Gouda, challenges a place in this Catalogue, for his *Chiliads of Logarithms*, resolving, by an admirable *Compendium*, *Astronomical*, *Geometrical*, and *Arithmetical Problems*.

1628. JACOBUS ROSIUS BIBERACENSIS put forth *Ephemerides*, or a *General Calendar Astronomical* and *Astrological*, in which the rising and setting of the Stars, with their several Effects for every Day of the Moneth are set forth; A Work collected out of Ancient and Modern Authors, with no mean Industry, as G. Vossius sayes of it. He styles himself Mathematician, and Publick Imperial Notary, which Office he executed at Bienna, or Biel, a Town in Switzerland.

1628. GULIELMUS JANSONSIUS CÆSIUS, alias BLAEU, of Amsterdam, an Excellent Artist, as well for his Geographical Tables, as his Celestial Globes and Spheres, whereof he was the first Composer, according to the Copernican System; of which G. Vossius affirms the World not to have seen the like since Archimedes's time. He likewise put forth a twofold *Astronomical Institution*, according to the Ptolemaick and Copernican Hypothesis, which being written in his own Language, was translated into Latin by Martinus Hortensius.

1629. JACOBUS BARTSCHIUS of Lauban, a City in the upper Lusatia or Lausnitz, a Province adjoyning to Bohemia; now under the Dominion of the Duke of Saxe, Doctor of Physick, and Son-in-Law to the famous Kepler, set forth *Uraniburgum Strasburgicum sive Motuum Cælestium Ephemeris*, Printed at Leipzick in the year 1629. He published likewise *Planisphaerium Stellatum seu vice-globus Cælestis in Plano Delineatus*. He wrote also another Treatise, *De Indice Astronomico cum septem Rotulis Planetarum aliisque figuris, imprimis Phases Lunares, Eclipses, & apparentes Planetarum Magnitudines adumbrantes*, Printed at Norimberg in 4°. 1661.

CAROLUS

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1630.

CAROLUS MALAPERTEUS, a Flemming of Montz, and a Jesuit, Professor of Mathematicks at Doway, among other his Mathematical Works, put forth a small Piece, *De Maculis Solaribus*, which he stiled *Sidera Austriaca*.

1630.

LE SIEUR BOULENGER, a French-man, Reader in Ordinary to the late King of France, hath written a Treatise, in his own Language, of the Sphere, in four Books, to which he hath added a fifth, touching the use thereof; the third Edition whereof was Printed at Paris, 1648.

1630.

CHRISTOPHORUS SCHEINERUS, of the Society of Jesus, a Native of Mundeilhen in Swaben, Professor, sometime of the Hebrew Tongue and Mathematicks at Fribourg and Ingolstadt, afterwards Rector of the Colledge of Nisse or Nissa in Silesia, observed, about the same time with Galilao, the Spots in the Sun. The most Eminent Pieces by which he hath signalized his Name, are these; *Oculus seu Fundamentum Opticum*; *Sol Ellipticus*, *Disquisitiones Mathematicæ*, *De Controversiis & Novitatibus Astronomicis*, *Apelles post Tabulam*; and lastly *Rosa Ursina*, in which he hath so excellently and learnedly written of the Solar Spots, that, according to the Judgment of Des Cartes and Hevelius, nothing can be expected in that kind more satisfactory.

1630.

DIONYSIUS PETAVIUS, Native of Orleans in France, of the Society of Jesus, the Varro of our Age, as Ricciolus stiles him, hath not only merited much by his Studies in Theology, but in Chronology likewise, and the Reason of Times, and particularly in Astronomy; as his two Volumes, the one, *De Doctrina Temporum*, the other *Rationarium Temporum*, and his *Uranologium* sufficiently evidence.

1630.

JOANNES BAPTISTA MORINUS, Regius Professor of Mathematicks at Paris, put forth several Astronomical Treatises; as first, *Nova Mundi Sublunaris Anatomia*; Another with this Title, *Famosi Problematis De Telluris Motu vel Quiete, hæcenus optata Solutio*. A third was entituled, *Aræ Telluris fractæ*, written in opposition to Gassendus's Book, *De Motu impresso à Motore Translato*. Three Books of the Doctrine of the Sphere. *Tabula Rudolphina ad accuratum & facile Compendium redactæ*, to which is annexed a *Compendium* of Trigonometry, Plain and Spherical: *Constructio Figuræ Cælestis*; *Nova Dirigendi Methodus*; *Et de Planetarum Revolutionibus tam Mundanis, quam Genethliacis*. He published a Book in French called *Remarques Astrologiques*, being a Commentary on Ptolemy's *Centiloquium*. He put forth likewise Nine Books of Longitude, under the title of *Astronomia à Fundamentis integrè & exactè restituta*. To which is to be added his long-studied Work, entituled, *Astrologia Gallica*, published after his death.

1630.

HENRICUS PHILIPPI, a Jesuit, Professor of Philosophy and Theology at Gratz, Vienna and Prague, of whom Ricciolus reports, that *Plurimis Operibus, Chronologiam Universam, præsertim sacram, illustravit*. The Works by him put forth are, first, *Chronological Questions*, for reconciling the Julian years of our Lord, and those of Nabonassar, with the Jewish Æra: Likewise *Chronological Questions*, touching the year of our Saviour's Birth and Passion; in the first of which is explained the Roman Calendar, with the Epacts, Calends, Ides, Nones, and Beginnings of the Moneths, as well of the Greeks, Syro-Chaldeans, and Egyptians; as also of the *Feriæ*, Cycles of the Sun and Moon, and of Indictions, &c. G. Voff.

1632.

ADAMUS TANNERUS, a Jesuit of Inspruck, Professor of Mathematicks at Munichen, Ingolstadt, and Vienna, wrote a most learned dissertation *De Cælo*; as also another Piece, entituled *Astrologia Sacra*.

PHILIPPUS

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1632.

PHILIPPUS LANSBERGIUS, of Gaunt, put forth at Middleburgh, Tables of the Celestial Motions, fitted to the Meridian of Goese; together with a *Thesaurus* of Observations, and the Theory of the Planets: He put forth also *Progymnasmatæ Astronomia restitutæ*, and three Books *Uranometriæ*. Whereto may be added his *Commentationes in Motum Diurnum & Annum*, grounded partly on his own, partly upon *Martinus Hortensius's* Observations.

1633. JACOBUS LANSBERGIUS, Doctor of Physick, wrote an Apology for *Philippus Lansbergius* his Commentary *In Motum Diurnum & Annum Terræ*, against *Fromondus*.

1633. MELCHIOR INCHOFER, a Jesuit, sometime Professor of Mathematicks, Philosophy, and Theology, at Messina in Sicily, wrote a Treatise entituled, *Tractatus Syllepticus De Statione Terræ, & Motu Solis, secundum Sacram Scripturam, & SS. Patres*: And an *Examen Thematum Cælestium variorum Astronomorum usque ad Tychohem*; the Reason of calculating Eclipses, and of the Theory of the Planets; these three last published not under his own Name, but that of *Academicus Vertumnus*.

1634. EVERARDUS WELPERUS, of Strasbourgh, put forth a *Compendium* of Astronomy, as well Spherical as Theorical, collected out of various Authors, from whom (says *G. Voss.*) much more might have been expected, had he not been oppressed by a low and necessitous Fortune.

1634. PETRUS CRUGERUS, Professor of Mathematicks at Dantzick, and Master to *Hevelius*, besides his *Logarithmical Tables*, undertook to write *Astronomia Dantiscana*, which yet he lived not to finish, as his Scholar *Hevelius* testifies. He wrote likewise another Piece, entituled *Uranodromus Cometicus*.

1634. ANDREAS ARZET, a Jesuit of Constance, put forth a *Mathematical Clavis*, and diligently observed the Stars, as *Ricciolus* affirms, as long as either his Occasions or the Gout would permit; many of whose Observations, especially about Eclipses, he freely communicated to *Ricciolus*.

1635. BONAVENTURA CAVALLERIUS, Jesuitus Mediolanensis, Disciple to the Excellent *Galilæo*, and Primary-Professor of Mathematicks in the University of Bologna, put forth *Directorium Generale Uranometricum, Practica Astrologia*, and a Century of Mathematical (and among them Astronomical) Problems; a Person of an acute Wit and Judgment, and by *Ricciolus* acknowledged to have been no mean Assistant and Promotor of his Astronomical Studies. He writ *De Trigonometria*, wherein are some Astronomical Problems more exquisitely demonstrated than are else where to be met with.

1635. PAULUS GULDINUS, Native of S. Gal, of the Society of Jesus, taught Philosophy and Mathematicks at Rome, Gratz and Vienna. He wrote in defence of the Roman Calendar, against *Sethus. Calvisius*; in which Work he also opposes *Scaliger's Diatriba, De Æquinoctiorum Præcessione*. He also published a *Geographical Problem*, touching the difference in numbring the dayes, between those that sail hence to the New World, and those that inhabit there. Not to mention his *Centrobarica*, and other Geometrical Pieces, of which *Ricciolus in Chronolog. Astronom.*

1635. HUGO SEMPILIUS, by Birth a Scotch-man, by Profession a Jesuit in the Colledge at Madrid, writ twelve Books *De Mathematicis Disciplinis*. In the three last

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last of which he treats distinctly, *De Astronomia*, *De Astrologia*, & *De Calendario*, Printed at *Antwerp* in folio in the year 1635. and dedicated to *Philip the Fourth King of Spain*. In the End of which Work he hath annexed several Catalogues of Mathematical Authors, and among them of Astronomers and Astrologers, but giving no more of them than their bare Names.

1635. NATHANIEL CARPENTER, sometimes Fellow of *Exeter-Colledge* in *Oxford*, put forth *Geography Delineated in two Books*, in the first of which (containing the *Spherical Part*) among other things, he treats of the *Magnetical Affections* and *Motion* of the Earth, of its *Site and Proportion* in respect of the *Heavens*; of the *Longitudes and Latitudes* of Places, and their several *Wayes of Invention*. In the second (containing the *Topical Part*) he treats likewise among other things of the *Adjuncts of Place* in relation to the *Heavens*, either *Northward*, *Southward*, *Eastward*, *Westward*, with the *Differences* of the respective *Hemispheres*; and several other things worthy the Knowledge of a young Student in *Astronomy*, Printed at *Oxford* 1635. 4°. Upon the same Accompt may be here inserted *Varinius* his *Geography*, being much after the same Method, and a very useful Piece, especially since lately reprinted at *Cambridge*, with the Addition of the several Schemes wanting in the former Edition.

1635. JOHANNES PHOCYLLIDES HOLWARDA wrote an Epitome *Astronomiæ Reformatae*, and a succinct Examen of *Lanbergius's* Astronomy.

1637. ABDIAS TREW, Professor of Mathematicks at *Nuremberg*, *Astronomiæ partem Sphæricam accuratâ ibidem Methodo consignabat*, says *G. Vossius*, *L. De Scient. Mathemat.* to which is to be added his *Nucleus Astrologiæ correctæ*; written in *High Dutch*, and Printed at *Norimberg* 1651. 4°. and his *Tota Mathesis* there likewise Printed in the year 1657. 4°.

1637. JACOBUS HUMIUS, a *Scotch-man*, Professor of Mathematicks at *Paris*, hath published, besides divers other Mathematical Pieces, a Treatise of the Sphere, according to the Hypotheses of *Ptolemy* and *Copernicus*; and another, of the Theory of the Planets, according to the Doctrine of *Ptolemy*, both written in *French*.

1638. ANDREAS ARGOLUS, Professor of Mathematicks in the University of *Padua*, put forth *Ephemerides*, continuing from the year 1630. to the year 1700. and another Work, entituled *Pandosium Sphæricum*. He writ likewise *De Diebus Criticis*, *De Decubitu Ægrorum*, with above a hundred Genitures of Popes, Cardinals and Princes. Also a Piece of Genethliacal Astrology called *Ptolemæus Parvus Arabibus junctus*. Tables of oblique Ascensions, and the whole Art of Direction, he calls it *Tabula Primi Mobilis*; some *Astrologick Aphorisms*, and others, under the Title of *Astrologia Aphoristica*.

1640. FORTUNIUS LICETUS, of *Genua*, an eminent Philosopher, among other his learned Works, put forth a Treatise *De Novis Astris & De Cometis*. Item, *Controversiæ De Cometis*, *De Motu & Parallaxi Cometarum*; of the Comet seen in the years 1642. and 1643. *De Lucidis in Sublimi*; *De Regulari Motu Planetarum*; *De Lunæ subobscurâ luce, prope Conjunctiones, & in Eclipsibus observatâ*; *De Terræ unico Centro Motûs, &c.*

1640. CAROLUS CONTRANUS, Doctor of *Sorbonne*, and General of the *Oratorian Order*, put forth a small Piece, *Pro Astrologia, sed sana*, as *Ricciol.* in *Chronol. Astron.* affirms.

BALTHAZAR

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1640.

BALTHAZAR CONRADUS, a *Jesuit*, born at *Nisse*, Professor of Philosophy and Mathematicks at *Olmütz*, the Metropolis of *Moravia*, published a New Reason of Cosmographical Tables, Described in a right Angled Cone, whose Basis is the *Æquator*; and made some Observations of Eclipses, which he communicated to *Ricciolus*.

1640. **HADRIANUS METIUS**, of *Alcmair*, wrote learnedly of the Use of the Globe, saies *Ricciolus*, and in the first Book of his Geometry resolves divers Astronomical Problems, Geometrically and Arithmetically. He published likewise his *Primum Mobile*, wherein he treats *De Sphæra*, *Planisphærio*, *sive Astrolabio*, &c. His Brother *Jacobus Metius* being one of the first Inventors of the Telescope. *G. Voss*.

1640. Doctor **JOHN WILKINS**, sometimes *Warden* of *Wadham Colledge* in *Oxford*, afterward *Bishop* of *Chester*, wrote about the year 1638. *Two Tractates*, in one endeavouring to prove the Moon a World, in the other the Earth a Planet, without putting his Name to either of them; yet they were so well known to be his, that *Langrenus* in his Map of the Moon (dedicated to the King of *Spain*) names one of the Spots of his *Selenographick Map* after his Name. He highly promoted the Study and Perfecting of Astronomy both at *Oxford*, whilst he was *Warden*, and at *London* whilst he was *Bishop*, and Fellow of the *Royal Society*; he died in November 1672.

1640. **NICOLAUS CABÆUS**, a Native of *Ferrara*, of the Society of *Jesus*, Professor of Philosophy at *Parma*, besides his *Magnetick Philosophy*, wrote a Comment *In Aristotelis Meteora*, and other Pieces of abstruse Learning, wherein he treats of many things well deserving the Knowledge of an Astronomer or Cosmographer, especially touching *Comets*, the *Galaxie*, &c. He died at *Genna*, where also with great applause he had publicly taught and professed Mathematicks.

1640. **NICHOLAUS CAUSSINUS**, a *Jesuit*, Native of *Troyes* in *France*, wrote a particular Treatise *De Domo Dei*, that is, of the Heavens, and the Celestial Bodies, wherein he learnedly and acutely argues against the Professors of Judiciary Astrology.

1640. **JOHANNES ANTONIUS ROFFENUS**, of *Bologna*, Disciple to *Maginus*, and an eminent Astronomer and Astrologer, whom *Ricciolus* affirms to have published many Astrological Discourses, but gives not the particulars thereof.

1640. **GULIELMUS SCHICKARDUS**, Professor of the Oriental Languages and Astronomy at *Tubinge*, put forth a little Piece, entituled *Astroscopium*, with a Synoptical Table, for the easier investigation of the Places of the Planets. He published likewise a Dissertation, addressed to *Gassendus*, *De Mercurio sub Sole viso*, with other Celestial Observations, and particularly touching Eclipses. His *Astroscopium* was published by *Johannes Ruffinus*, at *Nordling* in the year 1655.

1640. **WILLIAM MILBOURN** Master of Arts, Curate at *Brancepeth* near *Darham*, aged about forty years, was very knowing in Arithmetick, particularly in *Algebra* (having in the year 1628. extracted the Root of this Equation, $1,000 = aaaaa - aaaa - 4aaa + 3aa + 3a$. before he had seen *Harioti's Praxis*) and in Geometry. But his greatest Labours were in Astronomy, and in his Observation of the Stars, he used a good Cross Staff, and a Sextans of five foot Radius, he discovered the weakness of *Lansbergius*'s Astronomy, and verified *Kepler's* Tables, which he turned into Decimals, and made Tables after *Kepler's* subsidiary way

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(pag. 97. Tab. Rudolph.) which were sent to his Brother Mr. Milbourn a Stationer in London, to be Printed; but never passed the Press, being yet preserved in MS. in the hands of Sir Jonas Moore Knight. All his Observations and other Papers, &c. were most unhappily lost, by the coming in of the Scots, in the year 1639.

1640. **HIEREMIAS HORROX**, born at *Toxteth*, a small Village near *Liverpoole* in *Lancashire*, after some time of Study at *Emanuel Colledge* in *Cambridge*, about the year 1623. first applied himself to Astronomical Observations, having by his industry considerably advanced that Science; as first by his excellent Tractate of *Venus discovered in the Sun*, an Observation which never had been made by any before, published by the famous *Hevelius*, together with his own *Mercurius in Sole visus*, and illustrated with his accurate Annotations. His other Posthume Works, or rather his imperfect Papers were lately digested and published, by the great care and labour of that learned Mathematician, Doctor *John Wallis*, *Savilian* Professor of Geometry in the University of *Oxford*. Wherein he first asserts and promotes the *Keplerian* Astronomy, against the Hypotheses of *Lansbergius*, which he proves to be inconsistent among themselves; not agreeable with former Observations exactly made; nor the Precepts of them well demonstrated. He likewise disputes of the Celestial Bodies and their Motions, and answers the Cavils of *Hortensius* against *Tycho*; gives a new Theory of the Moon, to which are added the Lunar Numbers of Mr. *Flamsteed*. There are also Extracts of several Letters of his to his Friend and Associate in Study Mr. *Crabtree*, upon divers Astronomical Subjects, with a Catalogue of Astronomical Observations made by the said *Horrox*, without allowance of the Excentricity of the Eye, which he afterwards castigated by a correction fairly written with his own hand.

1640. **WILLIAM CRABTREE**, a Clothier of *Broughton* near *Manchester*, in *Lancashire*, was a diligent Observer of the Stars, as appears by his Observations printed by Doctor *Wallis* 1673. in the Edition of Mr *Horrox* his Works, which amount not to the tenth part of what he had made. He converted *Kepler's Rudolphine* Tables into Decimals, for his own use whereof there is now a MS. Copy remaining with the said Sir *Jonas Moore*. Mr. *Horrox* and this Mr. *Crabtree* died in the year 1641. having about a year before had the happy acquaintance of the most incomparable and ingenious Gentleman,

1640. **WILLIAM GASCOYNE** of *Middleton* in the County of *York* Esquire, who for some years before, had taken much pains in Astronomical Observations, and invented wayes to grind Glasses. He was the first that used two convex Glasses; had at that time a Tube that drew out fifteen foot in length, of his own working. The Object-glass was a *Meniscus*. He invented wayes to measure small Angles by the Prospect-Glass to a second; and had he lived, he had certainly brought great perfection to Telescopes. Mr. *Crabtree* taking a Journey into *Yorkshire* in the year 1639. writ thence to Mr. *Horrox*, as followeth. The first thing Mr. *Gascoygne* shewed me was a large Telescope amplified and adorned with new Inventions of his own, whereby he can take the Diameters of the Sun or Moon, or any small Angle in the Heavens, or upon the Earth most exactly through the Glass to a second. A device much desired, but little expected, &c. In the year 1641. Mr. *Gascoygne* writ to Mr. *Crabtree*, that he questioned not to provide an Instrument to take at once the Distances of three Points in the Periphery of the Earth's shade of the Moon, the Diameters of the Planets, &c. But he and all his excellent Inventions and Labours were lost by his Death, which was in his late Majesty's Service, in the Fight at *Marston Moore*.

These Four, were Lights of the first Magnitude, in the Northern Hemisphere, who were happily brought to the Acquaintance of one another by the means of
Christopher

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Christopher Townley of *Carr* in *Lancashire* Esquire, who stuck not for any cost or labour to promote as well Astronomical as other Mathematical Studies by a diligent Correspondence kept and maintained with the learned Professors in those Sciences, ; upon which Account he was very dear to All the Four ; and for which Reason, as for the Particular respect I owe him, he merits to be named in this Catalogue. The others that follow, though they were not so conspicuous as the former, were yet of considerable Lustre, and afforded no mean Influence towards carrying on the Work of Astronomy in those Parts.

1640.

In the first Place, Sir *JONAS MOORE* Knight, Surveyor General of His Majesty's Ordnance, my Worthy Friend and Colleague, born at *Whitebee*, in *Lancashire*, by his diligent endeavours, contributed not a little to the advancement of the Astronomical Design, so well begun and prosecuted by the much deserving Persons before mentioned. He turned *Bulialdus* his Tables into Decimals, after Mr. *Milbourn's* Method, and writ of *the Sphere*, and its several *Projections*; which Work he hath now by him, though it were to be wished, he would rather, by the publication thereof, afford the ingenious Lovers of these Studies an opportunity at once of witnessing, and receiving the benefit of his Labours.

1640.

GEORGE WHARTON Esquire, born at *Kirby-Kendal* in the County of *Westmerland*, my ancient kind Friend, and now Treasurer and Pay-master to the Office of His Majesty's Ordnance, complying with the incitements of the said Mr. *William Milbourn*, addicted himself very assiduously to the Calculation and Observation of the Celestial Motions; till the late Rebellious Times, deprived him of his Liberty; and since that, the frequent Accesses of the Gout, have taken from him, the opportunity of prosecuting those Studies with that Assiduity as formerly.

1640.

Mr. *JEREMIAH SHACKERLEY* a great Pains-taker in calculating and comparing several Observations, he writ *Tabula Britannica* grounded chiefly upon the Theories and Observations of Mr. *Horrox*, which were Printed in 8°. about the year 1647. he dyed in the *East-Indies*.

1640.

Mr. *NATHAN PIGHELLS*, a very diligent Observer, &c. to whom may be added some others, which for Brevities sake I here omit. All which Examples may serve as very inducive Arguments to perswade the learned Doctor *Wallis* to be of another Opinion than that, which (I presume through want of due Information) he declared in his Preface to Mr. *Horrox* his Works, where he saith; *Fatendum est paucissimos tunc Dierum in Anglia, partibus saltem Borealibus, Studiis illis Animum sedulo applicuisse*; when as it is more than probable, that if some of the Persons before mentioned had not been overtaken by too untimely Death, others of them by the fatal Calamities of the late horrid Rebellion, Astronomy had by their Labours been most considerably advanced. And I question whether so many Able Artists were to be met with again at the same time, in any one Province in *England*, beside.

1641.

FRANCISCUS MONTEBRUNUS, a Noble *Genovese*, and Doctor of the Civil and Canon Laws, composed out of *Lansbergius's* Tables, *Ephemerides*, calculated for the Meridian of *Bologna*, commencing in the year 1641. and ending in the year 1660.

1642.

JOHANNES GEORGIUS HERVARTUS, of *Howenburgh*; Doctor in the Laws, set forth a new kind of Chronology, grounded upon the Calculation of Eclipses; which yet both *Petavius* and *Ricciolus* have undertaken to refute,

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1643. EMANUEL PORTUS set forth a Treatise, entituled *Dipluranologia*, giving an account of the going back of the Sun in the time of *Hezekias*, and of the standing still of the Luminaries in the time of *Joshua*; Printed at *Padua* in the year 1642.
1643. ANTONIUS DEUSINGIUS writ a Dissertation *De vero Systemate Mundi*, Printed at *Amsterdam* in the year 1643. In which the *Copernican* System is reformed; and those numberless Orbs in that of *Ptolemy*, by which human Apprehension is so distracted, are quite taken away.
1643. GEORGIUS FOURNERIUS, a *Jesuit*, Professor of Mathematicks at *Paris*, published about this time his famed Piece of *Hydrography*; out of which saies *Ricciolus*, *Doctrina profundior hauritur, quàm Mare ipsum, quod Monimento adeo nobili illustravit*. Of his skill in observing the Celestial *Phænomena*, especially Eclipses, *Ricciolus* gives ample testimony.
1644. PETRUS HERIGONUS, Professor of Mathematicks at *Paris*, wrote a *Cursus Mathematicus*, in several Tomes; in the Fourth of which he treats *De Sphæra Mundi*, and *De usu Mappæ Geographicae*; and in the Fifth, of the *Theory of the Planets*.
1644. JOHANNES SELDENUS sometime the Great Dictator of Learning in this Nation, besides his other Works of admirable value, hath gained no mean Esteem by his *Dissertation De Anno Civili*, & *Calendario Veteris Ecclesiæ seu Reipublicæ Judaicæ*, Printed at *London* by *Richard Bishop* 1644. 4°.
1644. MICHAEL FLORENTIUS LANGRENUS, Cosmographer and Mathematician to *Philip IV.* King of *Spain*, wrote a Treatise of the Observation of the Longitude by Sea and Land, from the Obscuration, or Illumination of the Spots of the Moon. To which end he designed a New *Selenography*, under the Title of *Selenographia Langreniana, sive Lumina Austriaca Philippica*; of whom see more in *Ricciolus*, *Chron. Astronom.*
1644. JOHANNES GREGORY, Native of *Ameisbam* in *Buckinghamshire*, and sometime Chaplain of *Christ-Church* in *Oxford*, merits a place in this Catalogue, for his learned Tractates *De Æris & Epochis*, and his Description and Use of the *Terrestrial Globe*, and of Charts and Mapps, published in his Posthume Works, among other Pieces of exquisite erudition, and some Astronomical and Astrological Discourses in his Annotations upon the Scripture; in which he shews no Vulgar Learning.
1644. GEORGIUS POLACCUS, a *Venetian*, set forth *Anticopernicum Catholicum*, in which he maintains the Stability of the Earth, and the Sun's motion.
1644. ALBERTUS LINEMANUS of *Prussia*, Professor of Mathematicks in the Academy of *Konningsberg*, put forth a small Tract of *Astronomical Observations*, especially of Eclipses, to which he gave the Title of *Memoria Secularis*, as *Ricciolus* affirms.
1645. JACOBUS GRANDAMICUS, a *Jesuit*, put forth a Treatise, entituled *Nova Demonstratio Immobilitatis Terræ petita ex virtute Magnetica*, Printed at *La Fleche* in *France* 4°. He writ likewise a Treatise of the Nature, Motion, and Effects of the Comet, which appeared in the year 1665. mentioned in the *Journal des Savants*.

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1645.

EMANUEL MIGNANUS, a Fryar of the Order of St. Francis de Paula, put forth an excellent Picce, under the Title of *Perspectiva Horaria*; in the First and Fourth Book whereof, he treats of many things touching Refractions, *Scitu digna & Astronomis Utilia*, sayes Ricciolus.

1645.

LAURENTIUS EICHSTADIUS, Doctor of Physick, Native of *Stettin*, in *Pomerania*, and Professor of Mathematicks at *Danzick*, reckoned by *Bulialdus*, (in *Prologo Astro. Philol.*) among the most eminent Astronomers of his Time, put forth among other his Works *Pedia Astrologica*, and Ephemerides of thirty years, ending in the year 1665. to which he added a Compendious Canon of Logarithms and Mesologarithms; together with Tables of the *Primum Mobile*, Calculation of Eclipses, and the like. He likewise published *Tabula Harmonica Caelestium Motuum, tum Primi, tum Secundorum*, chiefly grounded upon the Observations and Hypotheses of *Tycho Brahe*. Likewise a Century of Astrologick Aphorisms.

1645.

MARINUS MERSENNUS, a French-man, a Minime Fryar, of the Order of St. Francis de Paula, hath, in his learned *Comment upon Genesis*, added many curious Astronomical Observations; and in his *Mathematical Synopsis*, not only by his own Industry, but also by the publication of others learned Labours, hath much contributed to the advancement of Astronomy.

1645.

PETRUS GASSENDUS, Dean of the Cathedral Church of *Digne* in *Provence*, and *Regius Professor* of Mathematicks in the University of *Paris*, the learned Restorer and Vindicator of the *Epicurean Philosophy*, among other the eternal Monuments of his Erudition, hath left divers Astronomical Tractates; as first, four Epistles, *De apparente Magnitudine Solis humilis & sublimis*; three, *De Motu impresso à Motore translato*, wherein he defends the *Copernican Hypothesis*, of the Earth's motion; another *De Parheliis, seu Solibus quatuor spuris Romæ circa verum visis*, Anno 1629. He put forth also, about the time of his admission into the Mathematical Chair at *Paris*, an Astronomical Institution, Printed lately at *London*, with the addition of *Kepler's Dioptricks*, and hath left, among other his Works, a Volume of *Celestial Observations*, which from the year 1621. to the year 1655. he made with assiduous care and accurate speculation. A Treatise also entitled, *Mercurius in Sole visus & Venus invisus*, Printed at *Paris* in the year 1631. His Judgment about nine pretended *Satellites* of *Jupiter*, in Answer to *Rheita. Solstitialis Altitudo Massiliensis, seu Proportio Gnomonis ad Solstitialem Umbram observata Massiliae*, 1636. in an Epistle to *Vendelinus*. The Lives of *Purbacchius* and *Regiomontanus*, as likewise those of *Copernicus* and *Tycho Brahe*, the most illustrious Astronomers of their Times; and a Compendious Exposition of the *Roman Calendar*. Besides the Life of the incomparable *Peirescius*; and his Epistles to divers eminent and learned Persons, wherein he frequently treats, upon occasion given, of Astronomical Subjects.

1645.

RENATUS DES CARTES, Native of *La Hay en Touraine*, a Town on the Confines of *Poitou* in *France*, of a Generous Extraction (his Father having been *President* of the *Parliament* at *Rennes* in *Britanny*) one of the most Signal Philosophers and Mathematicians; which this last, or (happily) former Ages have produced. Who having given new Life and Light to Philosophy; added likewise no mean Lustre to Mathematical Arts, and particularly to that of Astronomy. For in the third Part of his Principles of Philosophy, (the Subject whereof is *De Mundo Aspectabili*.) He treats of the Distances and Magnitudes of the *Sun*, *Moon*, and the other Planets; examines the several Hypotheses of *Ptolemy*, *Copernicus*, and *Tycho Brahe*, Discourses of the *Maculae* and *faculae Solares*, of *Comets*, and their several Phenomena, of the *Moon*, her various Phases, and different Motions, with divers

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Other

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other Particulars relating to *Astronomy*; to which likewise he contributed in his *Dioptricks* by his curious Inventions for the more exact *polishing of Glasses*, and bringing *Telescopes* to a greater Perfection, for the Contemplation and Observation of the Celestial Bodies. Of which Subject likewise he sometimes treats in his *Epistles*, particularly in the 67th *Epistle* of his Second Tome (to *Merfennus*) the Argument whereof is, *De Astrorum Observatione, & utilitate quæ inde capi potest*. See more of this Excellent Person in the brief Summary of his Life drawn by the accurate Pen of *Lipstorpins* in his *Specim. Philosoph. Cartes*; and in that written by *Petrus Borellius*, wherein he gives a particular Catalogue of all his Works and Writings.

1645. ANTONIUS MARIA SCHYRLÆUS DE REITHA, a *Capucine* Fryar, & *Astronomus non ignobilis*, according to *Ricciolus*, wrote an Astronomical Treatise, entituled *Oculus Enoch & Elia, seu Radius Sydereomyfticus*, Printed in the year 1645.

1645. ISMAEL BULIALDUS, Son of *Ismael Bulialdus*, and Native of *Londun*, a Town in the Province of *Poitou* in *France*, by *Ricciolus* stiled, *Astronomus profunda indaginis*, hath highly merited, as well by his publication of several ancient Mathematical and Astronomical Authors (some of whom we have already mentioned) as by his own most learned Labours, having first published his Dissertation, entituled *Philolaus, sive De vero Systemate Mundi*. Afterwards in the year 1645. he set forth his *Astronomia Philolaica*, grounded upon the Hypothesis of the Earth's motion, and the Elliptical Orbit described by the Planets motion about a Cone; illustrated with solid Demonstrations, to which he hath added Tables, by him entituled *Tabula Philolaica*, in which the motions of *Saturn*, *Jupiter*, and *Mercury* are more accurately represented than in the *Rudolphine* Tables, being for the most part much easier than those, a Work, sayes *Ricciolus*, *Omnibus Astronomia Studiosis, sed non sine attentione, legendum*. He likewise published about the year 1666. *Monita duo ad Astronomos*; the first, touching a New Star, in the Neck of the Whale, appearing at some times, at others, disappearing; the other, touching a cloudy Star in the Northern part of *Andromeda's* Girdle, not discovered by any of the Ancients, sometimes appearing, and sometimes not. Which *Phænomena* he recommends to the Observation of all curious Astronomers.

1645. FRANCISCO GENERINI set forth in *Italian* the Design of a Moving Globe, composed by him, to demonstrate the diurnal and annual motion of the Moon; together with the inequality of dayes; to which is annexed a Discourse of Natural and Artificial Houres, declaring the meaning of the said Author touching the said Invention, and an account of many other Operations to be wrought by the said Globe, besides those before mentioned, Printed at *Florence*, in 4°. 1645.

1645. JOHANNES BAINBRIDGE, sometime *Savilian* Professor of Astronomy in the University of *Oxford*, writ a Treatise, of the *Dog-Star*, and of the *Canicular dayes*, (published by Mr. *Graves*, together with a Demonstration of the *Heliacal Rising* of *Sirius*, or the *Dog-Star*, for the Parallel of the Lower *Egypt*) Printed at *Oxford* in the year, 1648. He writ likewise of the Comet in 1618. and published *Procli Sphæra*, with *Ptolemy's* Chronological Canon.

1645. ATHANASIUS KIRCHERUS, a *Jesuit*, Native of *Buchon*, within the Territories of the *Abbot* of *Fulda*, in *Germany*, sometime Professor of the Oriental Languages (in which, by *Ricciolus*, he is said to be *ad stuporem usque peritus*) as also of Mathematicks at *Wirtsberg*, and *Avignon*, afterwards Ordinary Professor of Mathematicks in the *Jesuits* Colledge at *Rome*, hath in most of his Works treated

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treated largely upon the Subject of Astronomy; as in his *Oedipus Ægyptiacus*, where he displays *Systematica Mundorum, sive de Mundo, Mundorumque varietate ex mente Ægyptiorum*; *De Astrologia Ægyptiorum & Chaldaeorum Hieroglyphica*; and more particularly in his *Musurgia*, where he treats *De Cælorum Symphonismo*; *De admiranda Mundanorum Corporum ad invicem proportionem*; *De particulari Symphonismo Planetarum*; *De Choro Joviali*; *De Choro Solari & Martio*; *De Harmonia Stellarum Fixarum*; In his Book *De Magnete*, where he fully handles the Subject of Magnetick Astronomy, under the several Heads of *Sphæra Magnetica*, *Uranographia Sciotherico-Magnetica*, and *Horologiographia Magnetica*; In his Book entituled *Arsmagna Lucis & Umbræ*; wherein besides his various Horography he treats *De Astrolabiographia*, & *Geographia Gnomonica*, *Gnomonica Physico-Astrologica*; *De Arte Anacamptica, sive Astronomia Reflexa*, *De Arte Anaclastica, sive Astronomia Refracta*, & *De Cosmometria Gnomonica, hoc est, De Mundi Lucumbris Dimensione*, &c. as also in his *Itinerarium Ecstaticum Cœlestē*, in which to express him in his own words, *Mundi Opificium, i. e. Cœlestis Expansi, Siderumque tam errantium quam fixorum natura, vires, proprietates, singulorumque compositio & structura, ab infimo Telluris Globo usque ad ultima Mundi confinia perfecti Raptus Integumentum explorata novâ Hypothesi exponitur ad veritatem*, Printed at Rome 1656.

1645. JOHANNES DE ÉPIERES, Doctor of Divinity and Grand Prior of the Monastery of *Aquicintinum*, put forth an *Universal Calendar*, wherein he proposes an easie Method for finding out the Golden Number, Epact, Dominical Letter, Moveable Feasts, and Indictions, for any year proposed, and promises a larger Work under the Title of *Astronomia Aquicinctina*, which whether ever published, does not yet appear to me.
1646. DIRK REMBRANTZ, in his *Netherlandish Astronomy*, treats of Planet-Wisers, and gives the Reader an *Eclipsigraphia*, shewing when an Eclipse of the Sun happens, what and how great a part of the Earth will be obscured thereby.
1646. ROBERTUS DUDLEY, an *English*-man, known abroad, especially in *Italy*, by the pretended Title of Duke of *Northumberland*, published three Volumes in folio, entituled *Arcano del Mare*, in which are Sea-Charts, Directions for the building of Gallies, and a Description of many Planetary Instruments.
1646. SAMUEL FOSTER, a learned Professor of Astronomy in *Gresham-Colledge*, contrived several ingenious Planetary Instruments, published afterwards in his *Posthumous Miscellanies*.
1646. SILVIO PHILOMANTIO, an *Italian*, under that feigned Name, and in that Language put forth *Quota Planetaria*, which *Ricciolus* ascribes to *Bonaventura Cavalierio*.
1647. PHILIPPUS LABBEE, a learned *French Jesuit*, Native of *Bourges en Berry*, put forth, in his own Language, *L'Abregé de la Sphere*, being a compendious Treatise of the Sphere, reduced by an easie and short Method into XII. Chapters, with some important Advertisements thereupon, Printed in the year 1647.
1648. JACOBUS USSERIUS, the late most learned and Reverend Archbishop of *Armagh*, published a Dissertation of the *Macedonian* and *Asiatick* Solar year, together with a *Paraepema* of *Greek Astronomers*, accommodated to the Reasons of the *Macedonian* and *Julian* years; *Vide Voss. L. De Scient. Mathemat.*
1648. GOTHOFREDUS WENDELINUS, Canon of the Collegiate Church

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Church of Conde in Flanders, published *Idea Atlanticarum Tabularum*, grounded upon the Observations of divers Eclipses. He set forth likewise *Lampas Arcanorum Cælestium*, and wrote upon several other Astronomical Subjects, as may appear by his Epistles to Gassendus, and those of Gassendus to him, published in his Works.

1648. ÆGIDIUS MATROPTUS composed something of the Sphere, & *Machinationem conversionibus Secundorum Mobilium representandis*, commended by Gassendus, in his Epistles.

1648. CLAUDIUS SALMASIUS having signalized his Name by divers learned Works, hath also endeavoured to give honour thereto by his *Diatribes De Annis Climactericis*, & *De Antiqua Astrologia*, Printed at Leiden 1648. He hath interspersed likewise in his *Plinian Exercitationes* sundry Astronomical Arguments, and some Critical Observations upon Manilius, but such as are now and then severely met with by Petavius in *Uranolog*.

1648. Mr. WILLIAM OUGHTRED, a learned Divine, and most eminent Mathematician; famous for his *Clavis Mathematicæ*; & the End whereof is a Treatise of Dialling, which is an Astronomical Subject. He was likewise the Author of the *Circles of Proportion*, where (not to mention the *Double Horizontal Dial*) there is a *Treatise of Navigation*, besides divers Astronomical Propositions. He likewise published a *Treatise of Trigonometry*, being the first Author that demonstrated two Proportions for finding both the Angles, at the Base of an oblique Spherical Triangle, at two Operations, when two Sides with the Angle are given.

1649. PHILIPPUS FINELLA wrote in *Italian Planetaria Physionomia*, Printed at Naples 1649. 4°.

1650. SCIPIO CLARAMONTIUS, of Casena, a Knight, and formerly Professor of Philosophy in the University of Pisa, a most expert Mathematician, put forth many learned Pieces, among which the chief are these; *Anti-Tycho*, in defence of the Sublunary Place of Comets, with its Apology, and Supplement; but answered by Kepler, in his *Hyperaspistes*. Of three New Stars, against the Opinion of Tycho Brahe, which is yet defended by Galilæo, in his *Mundane System*; And XVI. Books *De Universo Anno*, published in the year 1644. as also a particular Treatise, *De Phasibus Lunæ*, Geometrically demonstrated; and another entituled *Anti-Philolaus*. He wrote also against the truth of Telescopes, asserting that the Earth cannot reflect a Light to the Moon; but is answered by Zucchini, in his *Opticks*.

1650. MARIUS BETTINUS, a Native of Bologna, of the Society of Jesus, Professor of Moral Philosophy and Mathematicks at Parma, among other his Works, published *Aptarium, seu Paradoxa universæ Philosophiæ Mathematicæ*, in the Eighth Book whereof he treats chiefly touching matters Astronomical; which Subject he also handles in his *Ærarium Mathematicum*. He writ likewise in Vindication of himself, being accused by Ricciolus, of committing many Errors in Astronomy, a thin folio Book published in Latin.

1650. JOHANNES MARCUS MARCI, Counsellor and Physician to the Emperor Ferdinand the Third, and primary Professor of Physick in the University of Prague, wrote, among other Physico-Mathematical Treatises, a Particular Treatise, *De Longitudine, seu Differentia inter duos Meridianos, unâ cum Motu vero Lunæ inveniendâ ad tempus datæ Observationis*, Printed at Prague in the year 1650. 8°.

JOHANNES

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1650.

JOHANNES GRAVES sometime *Savilian Professor of Astronomy* in the University of Oxford; A Person who as well by his Forraign Travels, as his learned Labours, hath gained to himself an unperishing Reputation; as his *Pyramidographia*, & *de Pede & Denario Romano* sufficiently testifie, and as to our present Subject, his *Discourse or Demonstration of the Heliacal rising of Sirius, or the Dog-star for the Parallel of the Lower Egypt*, published together with Doctor *Bambridge his Canicularia* likewise evinces; to which is subjoynd out of *Uluh Beigh* the Longitudes and Latitudes of the chiefeft of the fixed Stars. He published likewise in *Arabick* and *Latin*, *Epochæ Celebriores Astronomiæ, Historiciæ, Chronologiæ Chataiorum, Syro-Græcorum, Arabum, Persarum, Chorasmiarum Usitatæ, ex Traditione Uluh Beigh*, together with *Abul Feda's Geographical Tables*, both which Pieces he illustrated with his learned Notes. In like manner he set forth *Astronomica Shab Cholgii Persæ unâ cum Hypothesibus Planetarum*, to which likewise he subjoynd the *Geographical Tables of Nassir Eddinus the Persian*, and of *Uluh Beigh*. And from whom the learned World might justly have expected yet greater things, had not Death by a too hasty End of his Life, put a stop to the Course of his Ingenious Studies.

1650.

LEO ALLATIUS, a *Græcian*, of the Isle of *Chios*, lately Keeper of the *Vatican Library at Rome*, a Person most eminently learned, hath published (among other his various Works of most profound and diffusive Reading) an *Exercitation*, proper to our present Subject, entituled, *Mensura Temporum Antiquorum, & præcipuè Græcorum*. He likewise designed another Treatise, under the Title of *Historia Astrologica*, and Three Books *De Magnete*, as I find in the Catalogue of his Works, as well already Printed, as to be Published, set forth by *Bartoldus Nihnsius*; but whether the two last have yet passed the Press, is to me uncertain. He translated the Paraphrase of *Proclus Diadochus* upon *Ptolemie's Quadripartite*, and caused it to be elegantly Printed.

1650.

JOHANNES BECHET put forth a new Theory of the Planets Geometrically demonstrated, by Concentrick and Excentrick Circles, Printed at *Paris*.

1650.

MARIA CUNITIA, Daughter to *Henritus Cunitius* Doctor of Physick, by Birth a *Silesian*, highly meriting for her excellent Skill in Languages, and History, more especially for her admirable Knowledge (like another *Hypatia*) in Mathematical Learning, particularly in *Astronomy* and *Astrology*; of which she hath given Signal Testimony by her Exquisite and curious Work, entituled *Urania Propitia*, wherein she hath set forth Astronomical Tables, of wonderful facility and exactness, grounded upon *Kepler's Hypotheses*, and satisfying the Celestial Phenomena by a most easie and Compendious way of Calculation; expressing and performing by *explicite* Numbers, what the *Rudolphine Tables* contain *implicitly* in *Logarithmical* Numbers, and thence require to be effected. Dedicated by her Self and Husband, *Elias à Leonibus*, to *Ferdinand* the Third Emperor of Germany, and Printed in fol. (*Bicini Silesiorum*) 1650. in *Latin* and *High Dutch*.

1650.

JOHANNES GARIBUS writ *De Phenomenis Ostentis*, from the year 1641. to the year 1650.

1651.

VINCENTIUS MUTUS, of *Majorca*, a most expert Astronomer, and sedulous Observer of the Stars, hath added honour to his Name by his signal Work, *De Sole Alphonfino*.

1651.

JOHANNES DRIENES, of *Dieppe*, a Jesuit, and Professor of Mathematicks at *Paris*, wrote *Tabulæ Canorienses, seu Doctrina Luminarium*.

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NICHOLAUS

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1651.

- NICOLAUS ZUCCHIUS**, Native of *Parma*, of the Society of *Jesuits*, was an eminent Philosopher and Divine. He, at *Rome*, assisted *Scheinerus* in his Observations of the Solar Spots; having published his *Philosophia Optica*, in which he treats of *Refractions*, and Celestial appearances by the Telescope.
1651. **JOANNES BAPTISTA RICCIOLUS**, of *Ferrara*, a Learned *Jesuit*, sometime Professor of Rhetorick and Poetry, then of Philosophy and School-Divinity, partly at *Parma*, partly at *Bologna*; but being chiefly addicted to Geographical, Chronological, and Astronomical Studies, hath ennobled his Name by his excellent Work, entituled *Almagestum Novum*, divided into three Tomes; in the first whereof he treats of the Sphere, of the Sun and Moon, and their Eclipses, of the fixed Stars, of the lesser Planets; of Comets and New Stars, of the several Mundane Systems, &c. In the second, he handles Trigonometry, or the Doctrine of Plain and Spherical Triangles, promises a Treatise of Astronomical Instruments, and the Optical part of Astronomy; (which yet he never published) of Latitude and Longitude, and Hydrography, the Reason of Times, with a Chronological Epitome confirmed by Astronomical Characters. In the third he comprehends Observations of the Sun, Moon, Eclipses, of the fixed Stars and lesser Planets, with Precepts and Tables, *Primi & Secundorum Mobilium*, and other Astronomical Tables. He put forth likewise another Work, entituled *Astronomia Reformata*; the design of which is (considering the various Hypotheses of several Astronomers, and the difficulty thence arising of concluding any thing certain) by comparing together all the best Observations, and examining what they have most certain in them, to reform upon that measure the Principles of Astronomy. Not to mention his Chronology, Published likewise by him, in folio.
1651. **FRANCISCUS MARIA GRIMALDI** of an Illustrious Family, a *Jesuit* of *Bologna*, partly by his joynt Indeavours and Observations with *Ricciolus*, partly by his own Inventions and Discoveries, hath greatly illustrated and improved Astronomy. The chiefest of his joynt Observations are these, *De Quantitate Crepusculi*, *De Dimensione Ambitus Terræ*, *De Solis Distantia per Dichotomiam Lunæ*, *De Solis Diametro apparenti*, *De Obliquitate Eclipticæ seu maxima Solis Declinatione*, *De Altitudine Lunarium Montium*, *De Parallaxibus Lunæ*, *De Diametro Apparenti Lunæ*, *De Fixarum Distantiis inter se*, *De earum Ascensione recta & Declinatione*, *De Venere falcata*, *De Jovis Fasciis ac earum Parallelismo cum Æquatore*, *De Diametris apparentibus Planetarum Minorum*; & *Fixarum*. Those of his proper Invention are these; his *Problema æmulum Aristarchi pro Distantia Solis*, *Opinio de Lunæ Maculis*; *Modus observandi Parallaxes*. His *Selenographia*, his Industrious and Select Observations of the Motions of the Moons Spots, and his Detection of *Hewelius* his double Error touching the Moon's Libration: All which with several others, are mentioned in the first Tome of *Ricciolus* his *Almagest*: He writ likewise a Treatise, *De Lumine*, *Coloribus & Iride*, mentioned in the *Journal des Scavans*, Tom. 3. p. 175.
1651. **JOHANNES WENDELINUS** writ *De Hora Passionis & Triduo Mortis Christi*, Printed at *Leipick* in the year 1651.
1652. **HONORATUS DE MEYNIER**, a French-man, besides his Paradoxes (wherein he maintains, that Experience ought to precede Science, and Theoretical Learning to be acquired by Practice) put forth a small Treatise of the Sphere.
1653. **PETRUS COURCIER**, a French *Jesuit*, put forth a Treatise, entituled *Astronomia Practica*, containing Practical Observations of the Celestial Motions by certain Astrolabes; by which the Places and Motions of any Star may easily, at any time be known.

DANIEL

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1653.

DANIEL LIPSTORPIUS, Professor of Philosophy, and the Liberal Sciences at *Lubeck*, put forth a Treatise, entituled *Copernicus Redivivus seu de vero Systemate Mundi*, wherein his Design is, not by new Astronomical Calculations, or Geometrical Demonstrations to confirm and establish the *Copernican Hypothesis*, but by rational, explanatory, and Physico-Astronomical Arguments to lead the Lovers of Truth to an easie and clear understanding of what is delivered by *Copernicus*, *Galileo*, *Longomontanus*, *Kepler*, *Bulialdus*, in their more diffusive Writings; answering all the Objections of the Adversary Party, and clearing what ever may seem difficult in the Doctrine proposed by the Assertors of that Hypothesis, and that chiefly to this End, (to use his own Words) *Ut Stabilita & supposita Nova hac Mundi Dispositione Copernicana, Verissima & Solidissima, Omnes promiscue ad veram Philosophandi Rationem & Nobilissima Cartesiana Monumenta legenda invitentur*. Of which he gives the *Specimina* in a particular Treatise explained *κατὰ τὴν Philosophandi Rationem*; whereunto is annexed an Appendix, in which there are divers Arguments relating to *Astronomical Hypotheses* of no vulgar strain.

1654.

MONSIEUR P. PETIT, Srintendant of the Fortifications of his most Christian Majesty *Lewis XIV.* published, in his own Language, a Dissertation touching Comets, and particular Observations of the Comets appearing in the year 1654. &c. And upon the Eclipse of the Sun, which happened in the same year, 1654. Of the Exact Method of taking the Diameters of the Planets in a Letter to Monsieur *Anzout* mentioned in the *Journal des Sçavants*.

1654.

The Reverend Doctor **SETH WARD**, sometime *Savilian* Professor of Astronomy in the University of *Oxford*, afterwards Bishop of *Excester*, and at present Lord Bishop of *Salisbury*, and Chancellour of the most noble Order of the *Garter*, hath honoured and illustrated Astronomy by his learned Labours; having published first, his Prelection *De Cometis*, wherein the Nature of Comets is discoursed of, a new Theory of them proposed, and the History of a late Comet, which appeared between the 19th. and the 30th. of *December*, 1652. declared. He put forth likewise a brief Inquisition into the Grounds of *Bulialdus* his *Philolaical Astronomy*, wherein is detected *Bulialdus*'s Error, in the Method of the Calculating the double Inequality of the Planets Motion, Geometrically evinced. But the Work, by which he hath chiefly (on this Subject) signalized his Name, is his *Astronomia Geometrica*, wherein a Method is proposed of Geometrically resolving the Astronomy of the Primary Planets, either Elliptical or Circular.

And having mentioned this learned Prelate, we cannot but here subjoyn his worthy Friend,

1654.

Sir **PAUL NEILE** Knight, one of the *Gentlemen Ushers* of His Majesty's *Privy Chamber*; who, by his *Liberal Expences*, great *Ingenuity*, *vigilant Observations*, *excellent Erudition*, and *Indefatigable Study* (for I cannot speak him better than by repeating this Signal Character already given him) hath exceedingly contributed toward the Advancement of *Astronomy*. To which may be added his exquisite Skill in fitting and ordering of Glasses for *Telescopes*, thereby discovering many new *Phænomena* hitherto unknown to others; his not contenting himself with the exact Knowledge of the ancient *Systems and Hypotheses*, but endeavouring a *Plus ultra* by moulding and framing *New Ones* of his own for the future Benefit (as is hoped) and Improvement of *Astronomy*; if at least he shall be pleased by the Publication of these and other his worthy Endeavours in this kind, to do himself that Honour, which cannot be given him by this Imperfect Commemoration.

1655.

LEONARDUS DU LIRIS, a *French-man*, and a *Recollet-Fryar*, put forth

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forth in the year 1655. in his own Language, a Treatise entituled *Ephemeride Maritima*, calculated for the Observation of the Latitude and Longitude at Sea, with a new Method of perpetuating the Ephemeris of the Sun, by which, at all times, his Declination may be exactly found. To which is added the Invention of an Instrument, termed *La Spire Solaire*, for finding out, at any hour of the day, by the Sun-beams, the Height of the Equator, and the Elevation of the Pole.

1655. Doctor JOHN PELL, sometime Professor of *Mathematicks* in the Colledge at Breda, and before that, in the Colledge at Amsterdam, where his learned Colleague Ger. Jo. Vossius (as he testifies, *De Scientiis Matth. c. 10.*) heard him with Admiration read his Publick Lectures upon *Diophantus*; by whom likewise he is stiled a Person of various Erudition, and a most acute Mathematician; published his *Refutation of Longomontanus his Quadratures of the Circle*, in which he hath a Digression or Exercise, showing the Errors or Failings of the greatest Part of Astronomers for want of better Knowledge in Geometry. He published likewise a little *Anonymous Exercitation concerning Easter*. And he would further extreamly oblige the Learned World, by making good what he propounds in his *Idea of Mathematicks*, viz. by laying down such a Method, as by that, in an orderly way to deduce not only all that ever is to be found in our Antecessors Writings, and whatsoever they may seem to have thought on, but also all the Mathematical Inventions, Theorems, Problems or Precepts, that it is possible for the working Wits of our Successors to light upon; and that in one certain unchanged Order from the first Seeds of Mathematicks to their highest and noblest Applications, as well as to the meanest and most Ordinary. See his *Idea of Mathematicks*, Printed at the end of Durie's and Hartlib's Reformed School, in 12°.

1655. JOHANNES CARAMUEL LOBKOWITZ, Bishop of *Campagna* and *Satrianum*, in the Kingdom of Naples, hath written largely through the whole course of the Mathematicks, particularly, as to our purpose, the several Treatises following; *Pandoxium Physico-Ethicum*, in three Tomes, in the second whereof, besides Philosophy, Physick, and the Law, he treats of Astronomy. *Solis & Artis Adulteria*, in which he treats of Dialling. *Cælestes Metamorphoses*, wherein he resolves the Circular Theories of the Planets into other Forms. *Mathesis Biceps, Vetus, & Nova*, in two Volumes, fol. wherein among other various Mathematical Subjects, he handles Astronomical Trigonometry, and gives a particular Treatise, which he entitles *Interim-Astronomicum*, comprizing the Theory of the Planets in three Parts; the first describing the same by *Circles*; the second, by *Perpendicular Oscillations*; the third, by right *Lines*. To which, by way of Appendix are added three Treatises; the first exhibiting most easie Tables of the Celestial Motions, as well of the Planets as of the fixed Stars; the next, teaching the composing of Ephemerides, and demonstrating that an Astronomer may attain to the exact knowledge of the Planets Places, both as to Longitude and Latitude, without Calculation; the last shewing to delineate upon a Plane, by a pair of Compasses only, the Eclipses of either the Sun or Moon; thereby (at least as pretended) freeing Astronomers from the tedious trouble of Supputation.

1656. GEORGIUS HILARIUS, a Dane, published *Præcepta Doctrinæ Sphæricæ*, Printed at Copenhagen, 1656.

1656. JOHANNES BAPTISTA HODIerna, a Sicilian, and Mathematician to the Duke of Palma, first of any, published Theories of the *Satellites of Jupiter*. He writ likewise *De admirandis Phasibus in Sole & Lunâ visis ponderationes Opticæ, Physicæ, & Astronomicæ*; *Protei Cælestis vertigines, seu Saturni Systema*; *Il Microcosmo del Sole*; *Rerum Cælestium peculiares Observationes*; *De Magnitudinibus Stellarum inerrantium Visis*; *Il Cælo Stellato distinto in cento Mappe*,

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O Tavole, done con facilità si insegna à conoscer tutte le Costellazioni stellificati nel Firmamento. He published some other pretty Tractates in *Italian*, among which something erroneous in a Treatise of his, wherein he makes the Earth bigger than all the other Planets, the Sun only excepted.

1657. JOHANNES NEWTON D. D. and at present one of His Majesty's Chaplains, set forth a Treatise entituled *Astronomia Britannica*, exhibiting the Doctrine of the Sphere, and Theory of the Planets decimally by Trigonometry, and by Tables according to the *Copernican* System, as it is illustrated by *Bullialdus*. He published likewise a *Mathematical Institution*, shewing the Construction and Use of the Natural and Artificial Sines, Tangents, and Secants, in Decimal Numbers, and also of the Table of Logarithms, in the general Solution of any Triangle, whether Plain or Spherical; with their particular Application in Astronomy, Dialling, and Navigation.

1657. BLASIUS FRANCISCUS COMES PAGANUS writ, among other Mathematical Tractates (as his Fortifications and Geometrical Theorems.) *Of the Theory of the Planets*, with very neat Tables upon the Foundation of the *Rudolphine*, in which all the Motions of the Celestial Bodies (to use his own terms) are ranged within the limits of pure Geometry; Printed at *Paris*, in the year 1657. He published likewise a Book of Spherical Triangles, as also *Astrologie Naturelle*; all in *French*; he writ likewise a little Discourse of the Longitude, and promises Geographical Tables.

1657. ERHARDUS WEIGELIUS Professor of Philosophy and Mathematicks in the University of *Jena*, put forth *Astronomia Spherica*, digested into the Method of *Euclid*, and Astronomical Exercitations, *De Motu & Tempore*. He wrote likewise *Cosmologia*, a Treatise succinctly handling the Principles of Astronomy, Geography, the Use of the Globe. And is Author of divers Mechanical Engines and Instruments, serving to the Use and Advancement of Astronomy, as his *Pancosmus*, being a large Engine or Machine, capable to receive a Man on Horse-back, representing the whole Mundane System, together with the Motions of the Celestial Spheres, Stars, and Planets; *Astrodicticum Majus*, being another great Machine, able to receive at once 200 Observers, and so fitted with Dioptrick Instruments, that the several Observers may at one instant take the view of one and the same Star. *Astrodicticum Minus*, a Rule to be applied to the Celestial Globe for the pointing out of any Star aimed at, as likewise *Goniometrum*, *Horographum*, *Topometrum*, *Globus Hydrostaticus*, and *Astrocosmus*, being the Names of several Engines and Instruments (among others) by him invented for Astronomical Uses, which for Brevities sake we forbear to explain, particular mention and description of them being made at the end of the third Volume of the *Miscellanea Medico-Physica Academia Naturæ Curiosorum* German. Printed 1673.

1658. GABRIEL DULLENDIUS put forth *Astronomical Tables*, to which he gave the title of *Tabulæ Ambianenses, seu, Theoriæ Planetarum, tam in forma Ty-chonica quàm Copernicana, per unicam cujusque Ellipsim ex proprio Centro Descriptam, Plano-Geometricæ Delineatio*; Printed at *Paris* in 4°. 1658.

1659. CHRISTIANUS HUGENIUS (Son of *Constantinus Hugenius* of *Zulichem*) a Gentleman of great Worth and Reputation for his singular Knowledge in all manner of polite Literature, especially in the Mathematicks, as not only his excellent *Book of Pendulums*, and some *Essayes in Dioptricks*, but what relates more nearly to our present Subject, his *Systema Saturnium sive de Causis mirandorum Saturni Phænomenon, & Comite ejus Planetæ novo*, sufficiently declare. In

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which Work are detected the various *Phases* of that *Celestial Proteus*, shewing that his *Brachia* or *Ansa* are no other than a *Luminous Annulus* or *Ring* about the Body of that Planet, every way alike distant from it, whose Plane keeps in a certain and constant inclination to the *Ecliptick*, appearing (according to its diversity of *Aspect*) now like a large *Ellipsis*, now like a more contracted one, at other times like a streight Line; discovering likewise a *Lunula* or small Planet to move about *Saturn*, and to finish its Course in sixteen dayes, and that *Saturn* in a less space of Time turns about his own *Axis*, carrying about with him the whole *Ætherial Body* or Matter interjected between him and the said *Satellite* or Planet, together with the said *Annulus*, in a Motion not much slower than his own. Printed by *Adrian Vlacq* at the *Hague* 1659. To which is to be added his *Brevis ejusdem Systematis Assertio*, Printed at the *Hague* 1660.

1660. Mr. VINCENT WING born at North Luffenham in the County of Rutland, a very Industrious Mathematician and Astronomer; as the several Works, by him published, declare, of which we shall mention only such as relate to our present Design, as his *Urania Practica*, or *Practical Astronomy*, published by Him, and Mr. William Leiburn, about the year 1649. wherein (contrary to his Later Sentiments) is asserted the *Earth's Stability*: Against which Mr. Jeremy Shakerley writ; to which Mr. Wing replied in a small Treatise entituled *Ens fictum Shakerlei*. About the year 1652. He published his *Harmonicon Cœleste*, therein asserting, contrary to his former Opinion, *The Earth's Mobility*. He put forth likewise *Astronomia Instaurata* in four Parts; and *Ephemerides* of the Celestial Motions, for twenty years, with an Introduction to the Knowledge of all Mundane Alterations; also *Examen Astronomiæ Carolinæ*. Having likewise left two Posthume Works, viz. *Astronomia Britannica*, Printed in fol. in Latin, and *Computatio Catholica*, published about a year after his Death, which was in September 1668. See more of him in the Remarks on his Life and Death, published by Mr. Gadbury.

1661. GASPAR SCHOTTUS REGISCURIANUS, a Jesuit, sometime Professor of Mathematicks in the Jesuits Colledge at Palermo, in Sicily, afterwards at Wirtsberg in Franconia, set forth *Cursus Mathematicus, sive absoluta omnium Mathematicarum Disciplinarum Encyclopædia*, in 28 Books. In the seventh, eighth and ninth of which Books he treats of *Astronomy*; the first comprizing *Astronomia Elementaris*, or the Description of the Sphere, the Celestial Circles, &c. the next handling *Astronomia Theorica*, the Theory of the Planets; the third *Astronomia Practica*, resolving divers Astronomical Problems, as well Organically as Geometrically. The whole Work Printed in folio, at Wirtsberg 1661. He published likewise *Kircher's Iter Ecstaticum Cœleste*, adorned and augmented with several Prelusions, Scholia's and Schemes, and promises the Edition of a greater Work by him entituled *Mundus Mirabilis*, which whether it were ever finished or published I know not.

1661. THOMAS STREET Student in Astronomy and Mathematicks, put forth a *New easie Geometrical and Harmonious Theory of the Celestial Motions*, under the Title of *ASTRONOMIA CAROLINA*, with *Astronomical Tables*, and their *Uses*, exhibiting most plain and easie Examples of finding the true Places, of the fixed Stars and Planets, and the Eclipses of the Luminaries at all times; the several Calculations therein being compared with all the best and most certain Observations both Ancient and Modern. In which likewise more particularly is asserted the Verity of the Equation of Time for the inequality of Natural Dayes, and the near Agreement of the Lunar Theory (therein proposed) to the Phenomenon, whence the Science of the Longitude, or Difference of Meridians as well at Sea as Land, may be far more truly obtained than formerly it hath been, Printed at London 1661.

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4°. To which he added an Appendix in the year 1664. and in 1667. put forth Memorial Verses on the Ecclesiastical and Civil Calendar, with an Epitome of the Heavenly Motions. He is now about publishing Planetary Instruments.

1661. **PLACIDUS DE TITIS** of *Perugio*, Professor of Astronomy in the University of *Pavy*, in *Italy*, put forth *Ephemerides* of the Celestial Motions, beginning in the year 1661. and continued to the end of the year 1675. calculated according to the *Lansbergian Hypotheses*, for the Longitude of 35° . together with a Treatise of the Efficient, Proximate, and Remote Causes of the Transmutation of the Elements, with a Method of erecting a Celestial Scheme or Figure, and some Observations upon Earth-Quakes, Printed at *Pavy* 1661.

1661. **Mr. LAURENCE ROOK**, first Astronomy and then Geometry Professor of *Gresham Colledge*, and Fellow of the Royal Society; had begun to make exact Observations of the Immersions and Emergions of the *Satellites* of *Jupiter*, besides many others of other Celestial Bodies, but was snatched away from his Studies and Labours in the year 1662. shortly after the Establishment of the Royal Society, whose Institution he had zealously promoted, and it was a Deplorable Accident in his Death (as is noted by the ingenious Authour of the History of the Royal Society) that he deceased the very Night, which he had for some years expected, wherein to finish his accurate Observations on the said *Satellites*. His Loss was regretted by all that knew his Extraordinary Worth both for Knowledge, and Probity; deservedly celebrated by that excellent Prelate the now Lord Bishop of *Sarum*, Doctor *Seib Ward*, (at the Time of Mr *Rook's* Decease Lord Bishop of *Exon*) by this Sepulchral Monument.

M. S.

*Hic subitus sive dormit, sive contemplatur,
Qui jamdiu Animo metitus est
Quicquid aut Vita aut Mors habet,
Vir Cl. LAURENTIUS ROOK à Cantio Oriundus,
In Collegio Greshamensi
Astronomia primò, dein Geometria Professor,
Utriusque Ornamentum, & Spes Maxima;
Quem altissima Indoles, Artesque Omnifaria,
Mores pellucidi, & ad amissim probi,
Consuetudo facilis & accommoda,
Bonis, Doctisque Omnibus fecere Commendatissimum.
Vir totus Teres, & sui Plenus,
Cui Virtus & Pietas, & summa Ratio
Desideria Metusque omnes sub pedibus dabant.
Ne se penitus seculo subducere mortuus possit
Qui iniquissima Modestia vixerat,
SETHUS WARD Episcopus Exoniensis
Sodalis, & Symmysta desideratissimi
Longas suavesque Amicitias,
Hoc Saxo profectus est.*

Obiit Junii 27°. A. D. MDCLXII.
Ætat. XL.

There is extant in the Philosophical Transactions N°. 22. p. 388. his Method for observing the Eclipses of the Moon free from the common Inconveniencies. His
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Astronomical Papers are (if I am not misinformed) in the Hands of the above mentioned Lord Bishop of *Sarum*, who will doubtless take care of seeing them digested and published.

1661. **ANDREAS CELLARIUS PALATINUS**, *Scholæ Hornanæ in Hollandia Boreali Rector*, set forth a large Work in folio with this Title, *Harmonia Macrocosmica, seu Atlas Universalis, & Novus, totius Universi Creati Cosmographiam Generalem exhibens. In qua Omnium totius Mundi Orbium Harmonica Constructio secundum diversas Diversorum Authorum Opiniones; Ut & Uranometria, seu totius Orbis Cœlestis, ac Planetarum Theoriæ, &c. ob oculos ponuntur*; Printed at *Amsterdam*, with curious Sculps, and dedicated to his present Majesty *Charles the Second*.
1662. **JOHANNES HECKERUS**, of *Dantzick*, set forth Ephemerides of the Celestial Motions, beginning in the year 1666. and continued to the year 1680. calculated for the Meridian of *Uranoburgum*, from the correct Observations of the Noble *Tycho Brahe*, the Physical Hypotheses of *Kepler*, and the *Rudolphine Tables*. To which he prefixed an Introduction, Printed at *Dantzick*, 1662. Having gained good Repute among the most nice and skilful Astronomers.
1662. **CORNELIUS MALVASIA**, Marquess of *Bismantua*, and General of the Artillery to the Duke of *Modena*, set forth Ephemerides of the Celestial Motions, by him stiled *Ephemerides Novissima*, calculated according to the Hypothesis of *Philippus Lansbergius*, for the Longitude of *Modena*, being $34^{\circ}.5'$. beginning in the year 1661. and ending with the year 1666. together with the Author's own Observations of *Saturn*, *Jupiter*, *Mars*, *Venus*, the *Sun* and *Moon* for the year 1662. reduced to Calculation, wherein he shews the Excess or Defects of the *Lansbergian Tables*. To which are added Ephemerides of the *Sun*, and Tables of Refractions, according to the latest Hypotheses of the famous *Cassini*, at present *Regius Professor* of Mathematicks at *Paris*.
1663. **JACOBUS GREGORY**, a *Scotch-man*, Professor of Mathematicks in the University of *St. Andrew's* in *Scotland*, put forth his *Optica Promota*, Printed at *London*, in the year 1663. in which Work there are divers difficult useful Problems relating to Astronomy. The same Author hath prepared a Treatise of *Dioptricks* and *Astronomy*, which may supply and doubtless much exceed a second Edition of the forementioned *Optica Promota*.
1663. **NICHOLAUS MERCATOR** published a Piece entitled *Hypothesis Astronomica nova*; Printed at *London*, in a thin folio, in the year 1664. And two *Diatribes De Emendatione Annua*; and hath prepared for the Press a Treatise of Astronomy, in which his design is to render Astronomy Geometrical. He hath likewise prepared for the Press, at *Cambridge*, an Astronomical Institution or Introduction resembling that of *Gassendus*, but much more to the Purpose, as not only discovering the several Theories of the Planets, but leading a *Tyro* to the Calculation of their Places, upon the Principal Hypotheses both Ancient and Modern.
1663. **FRANCISCUS LEVERA** a *Roman*, put forth *Prodromus Universæ Astronomiæ Restituta de Anni Solaris & Siderei ac Dierum Magnitudine in Omni Ævo, & de reliquis Periodis, Motibus & Circulationibus Solaribus admirandis adhuc incognitis, ac etiam Sideriis, ab Authore exploratis, & inventis, ac plenè dilucidatis, per Demonstrationes Arithmeticas, aliasque plures Probationes*; with the *Radixes*, and divers Tables of the said Motions, calculated for the Longitude of *Rome*, with a new Method of Supputation. He put forth likewise a Treatise, *De Inerrantium Stellarum Viribus & Excellentia*, with a Table of their Declinations and right

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right Ascensions; &c. Printed At Rome by Angelo Bernabo.

1664.. SAVINIUS MUTUS put forth a Treatise by way of Dialogue, in which he replies to two Letters, the one of Ricciolus, the other of Cassini, written against the aforesaid Prodrum of Levera; wherein the Doctrine and Use of the said Prodrum is asserted, Printed at Rome, Typis Angeli Bernabo 1664.

1664. PETRUS PALATIUS BRIXIENSIS published *Nova Ephemerides Motuum Solis ab Anno 1664. usque ad Annum 1670.* calculated for the Longitude of Rome according to Levera's Tables, Printed at Rome in fol. 1664. Typis Angeli Bernabo.

1657. SAMUEL DANTFORTH, Master of Arts, set forth an Astronomical Description of the Comet in 1664. as it appeared in New-England; Printed at Cambridge there.

1665. PIETRO MARIA MUTOLO, published at Pisa a small Treatise of the Motion and Place of the Comet which appeared in December 1664. shewing that the said Comet was above the Moon, it having been found without a sensible Parallax. For the observing of which he shews an easie way, which needs no Quadrants or Sextants curiously made; nor a precise taking of the Meridian Altitudes, nor the Situation of the Comet in the Zodiack; nor the noting of the Precise Time of the Observation; nor lastly, needs to fear to be prejudiced by the Consideration of the various refractions; for as much as he works not by the way of taking several Altitudes from the Horizon; but by observing the Position of the Comet among some neighbouring fixed Stars; for the doing of which, he employed only a Simple Thread stretched out by an Arch, to make it Evident whether this Comet had a sensible Parallax or no. See *Philos. Transact.* N°. 53. p. 1070.

1666. ANTONIUS FRANCISCUS PAYEN, an eminent Mathematician and Astronomer, hath published all or most of the several Treatises ensuing. *Paradoxon Astronomicum, De Tabularum Omnium à Cælo dissensu; Ænigma Astronomicum, Adulterium Solis & Lunæ; Emblema Astronomicum, Sol Larvatus; Monopolion Cæleste, Conjunctio Saturni & Jovis 1663. Et alia Conjunctio Saturni & Martis 1666. Tabulas omnes enormiter fallens; Selenelion, ou Apparition Luni Solaire observée en l'Isle de Gorgonne, le 16. Juin 1666. Eclipse du Soleil, observée à Paris, le 1. Juillet, 1666. Specula Parisiensis Astronomica; De Tabularum Motibus ad Observationum trutinam observandis; Nova Dissertatio adversus Astrologiam Gallicam, cum Mantissa Astronomica; De Plagio Morini circa Doctrinam Longitudinum Indicata unica Possibili Metodo Universalis.* He writ likewise these following Treatises, by him intended for the Press, viz. *Sportula Ecliptica Compendiaria, cum Appendice Præceptorum supputandi Selenelii Phases, Durationem & Digitos Lunæ deficientis in ortu visibili; Paradoxa Physico-Astronomica Spiralæ Systematis Prodruma circa naturam Atmosphæræ & causarum Physicarum Astronomica Phænomena alterantium; Catacrisis Cometica, Statuens Cometoïdas inter Meteora sublunaria, Cometas verò inter superlunaria, viamque non Linealem vel Circularem, aut Conicam, sed spiralem & flexuosam Meteoris Cælestibus propriam, variis Observationibus comprobata; Eclogæ Prostapharetica, De Quadruplicæ Equatione Astronomica temporis Meridianorum Centri & Orbis Planetarum, cum novis ad Calculum Locorum Planetarum & Eclipsium tabulis, exulatâ cruciformi parte proportionali.* Upon the occasion of an Eclipse of the Moon happening near Sun-set, in July 1666. both Luminaries appearing visibly above the Horizon, elevated by Refractions, the Author published his Treatise entitled *Selenelion*, from whence this account was taken, which being about six or seven years since, and divers of these Tractats then extant, as appears by the *Journal des*

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1666. The Right Honourable the Late EARL OF SANDWICH, even in the midst of his weighty *State Negotiations* was pleased sometime to imploy himself in making considerable *Observations* both *Astronomical* and *Physiological*, and to communicate the same to the *Royal Society*; as his *Observation of an Eclipse of the Sun*, June 22. 1666. at *Madrid*; the *Sun's Height in the Solstice*; also the *Latitude of Madrid*; esteeming by the *Sun's Altitude in the Solstice*, and by other *Meridian Altitudes*; the *Latitude of Madrid* to be 40 Degrees, 10 Minutes, which differs considerably from that assigned by others; the *General Chart of Europe*, giving to it 41°. 30'. the *General Map of Spain* 40°. 27'. A large *Provincial Map of Castile* 40°. 38'. He likewise made some *Observations of the Immersions of the Satellites of Jupiter*, and on *December 25th*. old stile 1666. observed at *Madrid* a great *Halo about the Moon*, the *Semidiameter* whereof was about 23°. 30'. *Aldebaran* being just in the North-East Part of the Circle, and the two Horns of *Aries* just enclosed by the South-West of the Circle, the *Moon* being in the *Center*: and about five or six years before, viz. Nov. 21. old stile 1661. an hour after Sun-set, he observed a great *Halo* about the *Moon*, of the same *Semidiameter*, at *Tangier*, the *Moon* being very near the same Place: See *Phil. Transact.* N°. 21. p. 390.

1666. ERASMIUS BARTHOLINUS, a Dane writ on the Comets which appeared in the years 1664. and 1665. He put forth likewise *Astronomical Considerations* of the great Conjunction of *Saturn* and *Jupiter*, happening in the year 1663. Printed at *Copenhagen*. He published likewise *Heliodorus Larissæus* his *Optical Fragments* in *Greek* and *Latin*, with his *Learned Animadversions* thereupon, Printed at *Paris* by *Cramoisy* 1657. 4°.

1666. JOHANNES ALPHONSUS BORELLIUS, published a *Treatise of the Satellites of Jupiter*, about fitting Theories to their Motions, and some *Contestations*, about the nature of that curve Line, that is described by the falling of a Stone from the Earth's surface to its Center, supposing the Earth's motion.

1668. PETRUS GALTRUCHIUS, of *Orleans*, a *Jesuit*, put forth (to use his own Terms) *Clara, Brevis, & Accurata Institutio Mathematicæ totius, in gratiam studiosæ Juventutis adornata*. In which among the rest he treats *De Sphæra Mundi*, *De Astronomia* & *De Principiis cognitionum Cælestium*, *De Chronologia*, & *Gnomonica*, Printed lately at *Cambridge*.

1668. HIERONYMUS VITALIS, of the Order of the *Regulars* commonly called *Theatins* of *Capua*, put forth *Lexicon Mathematicum, Astronomicum, Geometricum*, containing a *Collection*, and *Explication* of all Things relating to either of those Parts of the *Mathematicks*, more especially as to *Astronomy*, with a brief *Consideration*, and *Declaration* of divers new Theorems, and a *Dilucidation* of several *exotick Terms* therein used. Printed at *Paris* 1668.

1669. ANDREAS TACQUET, a *Jesuit*, sometime Professor of *Mathematicks* in the *Roman Colledge*, put forth, in his Works, entituled *Opera Mathematica*, Eight Books of *Astronomy*, in which he explains the whole Doctrine of that Science, in such a gradual Scientifick Order, that a Student, without the aid of a Master, may learn the whole by his own Study, not formerly attained by the best Instructions. He therein likewise argues against *Ricciolus* his Opinion, touching the Earth's rest, from the Descent of heavy Bodies; and shews that the Eclipses of the Sun may be calculated without the aid of *Parallax*, and that the Sun's *Parallax*, as to the determination of *Celestial Motions*, may be safely neglected. He rejects also the

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the sensible inequality of the Solar or Tropical Years, and the irregularity of the Obliquity of the Ecliptick, of the Procession of the Equinoxes and Excentricity. To the end of which Eight Books are annexed Propositions for twenty eight Cases of Spherical Trigonometry.

1669. PIETRO M. CAVINA of Fienza, in Italy, published in the Language of that Country, *Congiecture Physico-Astronomiche della Natura dell Universo*; Printed at Faenza 1669. in 4°. Which Conjectures were raised by the Author upon some Observations made about the fixed Stars at Faenza; the whole Tractate consisting of three Parts, *Considerations, Observations, and Reflections*. In the first, he considers the unreasonableness of the *Aristotelean* Opinion, touching the *Ingenerability, and Incorruptibility* of the *Celestial Bodies*; whence he proceeds to the second Part containing the *Observations* themselves; whereby he affirms to have found considerable Changes in divers of the fixed Stars, from what *Bayerus*, and others have remarked of them as to *Magnitude and Number*, instancing in *Ursa Major and Minor*, in the *Dragon, Cepheus, Bootes, Corona Septentrionalis, Hercules, Lyra, Cygnus, Cassiopæa, Persens*, and the *Via Lactea*. From which he deduceth these *Conjectures*; First, that the Heaven of the fixed Stars is liquid; Secondly, that it is generable and corruptible; Thirdly, that the Motion of the Earth is (as he fancies) improbable; Fourthly, that the Changes and Variations of the fixed Stars, are Effects of the Sun, from which (he conceives) they are but moderately distant; Fifthly, that those Stars are of a Matter easily Dissipable and like unto Lamps which for want of Aliment are extinguished, and by Accession of Aliment are magnified; Sixthly, that all the fixed Stars are in the Concave Superficies of their Heavens; with some other (such like) Conjectures: Of which see further in *Phil. Transact. N°. 65. p. 2112 and p. 2113.*
1669. FRANCISCUS TRAVAGINI, an eminent Venetian Philosopher put forth a Tractate entituled *Physica Disquisitio super Observationibus à Se factis Tempore ultimorum Terræ Motuum, seu Gyri Terræ Diurni Indicium*. In which (from the Observations by him made in some late Earthquakes, especially in the last about Ragusa) he affirms, that he noted, besides a *Subsulting Perpendicular Motion*, a *Concomitant Lateral Vibration* of the Earth from West to East, whence he conceives it may validly be inferred that the Earth hath a *progressive Motion from West to East*; See *Phil. Transactions N°. 6. p. 1084. and 1085.* The Tractate it self was Printed at Leyden in Holland 1669. in 4°.
1669. ÆGIDIUS STRAUCH, Publick Professor of History and Philosophy in the University of Wittemberg, besides his *Breviarium Chronologicum*, set forth a small Treatise entituled, *Astrognomia, Synopticè & Methodicè, in usum Academicum adornata*. To which are added Schemes of the several Asterisms cut in Brass, Printed at Wittemberg, in the year 1669.
1670. JOHANNES OTT, of Schafhuysen, an Helvetian, in a small Treatise of Vision, Printed at Heidelberg, in the year 1670. asserts this Thesis; *Motus Medius Siderum Astronomorum est figmentum, in rei natura non existens, neque in Hypothesi Elliptica super altero focorum peragitur; Quocirca computi Astronomica Geometrica accuratio, in Problemate adhuc nondum determinato sita est; viz. Datum Circulum ex Puncto extra Centrum dato, in data ratione secare; & quamvis ope Cycloidis construi suo modo possit, attamen cum Punctum, per quod Perpendicularis ad Axes ducitur, indeterminatum sit, etiam ipsa Sectio indeterminata manet, ejus tamen Problematis Solutionem ex supposito Tetragonismo tam accuratè D. Stephanus Spleissius Gymnasii Scaph Rectior, & Astronomus Subtilissimus expedit, quam certæ sunt Sinuum Tabule, quarum accuratio ad Astronomicum Calculum abundè sufficit.* But if Spleissius solve

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solve the *Problem* no otherwise than by tentative work, by ayd of a *Table* of *Sine's* (and *Arks*) he hath done no more than what was well known here. But however, without the use of any *Tables*, the *Problem* is solved by Mr. *James Gregory*, Professor of *Mathematicks* in the University of *St. Andrews* in *Scotland*; as I am informed by the Ingenious and Industrious Promoter of Mathematical Studies, Mr. *John Collins*.

1670. GABRIEL MOUTONUS published Observations of the apparent Diameters of the Sun and Moon, and of the Meridian Altitudes of the Sun, and some few of the fixed Stars; together with a Table of the Sun's Declinations, calculated to each prime scruple of a Degree. To which is annexed a brief Dissertation of the *Inequality of Natural Dayes*, and of the *Equation of Time*, with a new *Idea* of Geometrical Measures; and a new Method of communicating and preserving them, for the future, without any alteration.

1670. JOHANNES CHRISTOPHORUS STURMIUS, Professor of *Mathematicks* and Natural Philosophy in the University of *Altdorf* in *Franconia*, published a brief Treatise in folio, entituled, *Scientia Cosmica, sive Astronomia tam Theorica quam Sphærica, paucis Tabulis in usum Incipientium comprehensa*, Printed at *Altdorf* in the year 1670.

1670. JOHANNES HEVELIUS, Consul of *Dantzick*, an Excellent Mathematician and Astronomer, hath ennobled his Name by several curious and learned Works; as his *Selenographia*, or Description of the Moon, containing an accurate Delineation of the several Spots therein visible, and of the various Motions, Changes, and Appearances discovered by the Telescope, as well in that as in the Sun, and other Planets. His *Cometographia*, representing the whole Nature of Comets, their Situation, Parallaxes, Distances, diverse Appearances, and admirable Motions; with a History of all the Comets, from the beginning of the World to this present, either noted by Historians, or observed by Philosophers or Astronomers; both the said Works being enriched with exquisite Sculptures of his own Graving: To these is to be added his Treatise of *Mercury* discovered in the Sun at *Dantzick* in the year 1661. May 3. *Stilo novo*, with the History of a New Star appearing in the Neck of *Cetus*, and another in the Beak of *Cygnus*, and his Illustration of our Countryman *Horrox* his Treatise upon *Venus* seen in the Sun, in the year 1639. on the 24th of November, old style; being the Noblest, and since the beginning of the World till then, unpractised Observation; with a Discourse of some rare *Paraselenæ*, and *Parhelii*, by him discovered at *Dantzick*; as likewise two Epistles to *Ricciolus*, *De Lunæ motu Libratorio in certas Tabulas redactis*, and other Astronomical Pieces, whereof mention is made in the *Philosophical Transactions*. He put forth this present year 1673. The first Part of his *Machina Cœlestis*, containing an accurate Delineation and Description of all the Astronomical Instruments by him used in his Celestial Observations fairly cut in Brass; the Construction of Telescopes, and Direction for the most commodious Way of managing those of Extraordinary Length; with the Reason of grinding Glasses of an Hyperbolic Form. He promises likewise *Prodromus Astronomiæ cum Integro fixarum Catalago, atque Globis Cœlestibus reformatis*; As likewise the latter Part of his *Machina Cœlestis* (of which that published is but the first Book) containing the second, third, and fourth Books; the second comprising all his Celestial Observations, as well of Eclipses, as of the Occultations of the Planets and fixed Stars from the Year 1630. to this Present; the third shewing his Observations of the Meridian Altitudes of the Sun, and of the Equinoxes and Solstices from the year 1632. hitherto; as likewise special Observations of every Planet; the fourth and last exhibiting a Catalogue or Index of the Distances of the fixed Stars taken by his great Brass Sextants and Octants; together with those noted by

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by the Landt-Grave of Hesse, Tycho, Gassendus, and Ricciolus. All which are now in the Press, and will e're long ('tis hoped) come to Publick View.

1670. PIETRO MENGOLI an Italian; Prior of *Sancta Maddalena*, and Reader of *Mechanicks*, in the *Bolognan Academy*; published among other ingenious Pieces in the *Mathematicks*, a small *Quarto Treatise* in Italian, entituled *Refrattioni, & Parallaxe del Sole*. In which, besides his Observations and Tables of the said Refractions, Parallaxes, Declinations of the several Points of the *Ecliptick*, and right Ascensions; these several following Conclusions, are by him undertaken to be demonstrated, viz. First, *The Sun's Horizontal Refraction* to be $1'. 58''. 6'''$. Secondly, *The Estival Horizontal Parallax* thereof $38''. 49'''$. Thirdly, *It's Hibernial Horizontal Parallax* $40''. 4'''$. Fourthly, *The Height of the Pole at Santo Petronio in Bologna* in the beginning of the year 1656. to have been $44^\circ. 28'. 56''$. Fifthly, *The Height of the Pole at Uraniburgh* in the beginning of the year 1582: to have been $55^\circ. 53'. 27''$. Lastly, *The Obliquity of the Ecliptick, or the Sun's greatest Declination* to be $23^\circ. 28'. 24''$.
1671. LE PERE CHERUBIN a Capuchin Fryar in the Convent of that Order in Orleans, put forth a large and elegant Volume in French, entituled *La Dioptrique Oculaire*; the *Ocular Dioptrick*, concerning the Theory, Use, and Mechanism of Telescopes, divided into three Principal Parts; the first containing the Doctrine of Opticks, and Dioptricks, or of simple Vision Direct, and that which is made by Rays refracted; the second delivering the Theory of the Telescope in all its kinds, which is ushered in by a History of the Invention, and Antiquity of Telescopes, and by a Discourse concerning the Difference of the Antient Glasses from the Modern. The third and last Part, being doubly divided into the Positive and Mechanical: The Positive teaching the actual Construction of Telescopes, and their Uses in the Observations of Celestial Objects: The Mechanical shewing the way of polishing and forming all sorts of Glasses that serve for Telescopes; giving likewise an Account of many excellent Discoveries that by their means have been made by Modern Astronomers. The Work adorned with most curious and elegant Cuts, and Printed in an answerable Letter in folio at Paris 1671.
1672. OTTO DE GUERRICK, Councillor to the Elector of Brandenburg, and Consul of the City of Magdeburg, or Meydburg, put forth *Experimenta nova Magdeburgica, De vacuo spatio*, in which he occasionally treats of the several Mundane Systems, of the Planets, and of the Fixed Stars, their Magnitudes and Distances, Printed at Amsterdam in folio 1672.
1672. Doctor JOHN WALLIS Savilian Professor of Geometry in Oxford, Fellow of the Royal Society, and Chaplain to His Majesty, famous for his many learned Mathematical Works, as his two Volumes of Arithmetick, the latter whereof is entituled *Arithmetica Infinitorum*, his *Commercium Epistolicum*, his Tract *De Cycloide*, his Treatises of *Mechanicks*, & *De Calculo Centri Gravitatis*, at the latter end of *Arithmetica Infinitorum*, is a Scheme and a Narrative concerning an Eclipse of the Sun 2. August 1654 by him observed at Oxford; to whom likewise we are beholding for his Care in digesting and publishing Mr. Horrox and Crabtree's *Astronomical Remains*. He hath likewise a learned desirable Treatise of *Angular Sections* ready for the Press, a due Knowledge of which Doctrine cannot but conduce much to the facilitating of difficult Spherical Problems, and consequently to the Advancement of Astronomy.
1672. ÆGIDIUS DE GOTTIGNIES the Scholar of the eminent Geometer Gregory of St. Vincent; is the Author of a Treatise of *Dioptricks concerning the Foundations*

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Foundation, Construction, and Use of Telescopes in order to Astronomical Observations, as also of Microscopes. The Treatise (written in *Latin*) is common in *MS.* in *Italy*: whereof a *Copy* came over lately into *England*, and here meets with the Applause of the learned, which we hope will ere long be translated and published in *English*..

1673.

Sir CHRISTOPHER WRENN Knight, sometime Astronomy Professor in *Gresham Colledge*, afterwards *Savilian* Professor of Astronomy in the University of *Oxford*, and now *Surveyor General* of His Majesty's Works and Buildings, is here deservedly to be remembred; whose learned Labours, and curious Discoveries both in *Philosophy* and *Mathematicks*, being already recorded by the excellent Pen of the Ingenious Author of the *History of the Royal Society*, I shall from thence collect such Particulars as are pertinent to our present purpose, and whose mention may give Honour to this *Catologue*. He hath invented many Wayes to make *Astronomical Observations* more accurate and easie, hath fitted and hung *Quadrants*, *Sextants*, and *Radii* more commodiously than formerly, hath made two *Telescopes* to open with a joynt like a *Sector*, by which observers may infallibly take Distances to half a Minute, hath added many Sorts of *Retes skrews*, and other *Devices* to *Telescopes* for taking small Distances, and apparent *Diameters* to *Seconds*. He hath added much to the *Theory of Dioptricks*; much to the *Manufacture*, it self of grinding good *Glasses*: He hath made constant Observations on *Saturn*, and a *Theory* of that Planet truly answering all Observations, and that before the Printed *Discourse* of Mr. *Hugenius* on that Subject appeared. He hath essayed to make a true *Selenography* by Measure; the World having nothing yet but *Pictures*, rather than *Surveys* or *Maps* of the *Moon*. He hath stated the *Theory* of the *Moon's Libration* as far as Observations could carry him. Hath composed a *Lunar Globe*, representing not only the Spots and various degrees of Whiteness upon the Surface, but the Hills Eminencies and Cavities moulded in solid Work; the Globe thus fashioned into a true model of the *Moon*, as you turn it to the Light, represents all the menstrual *Phases* with the variety of Appearances that happen from the Shadows of the Mountains and Valleys. Hath made Maps of the *Pleiades* and other *Telescopical Stars*, and proposed Methods to determine the great Doubt of the Earth's motion or rest, by the small Stars about the Pole to be seen in large *Telescopes*; which few Instances may serve in part (at present) to shew his exquisite Skill and Indevours in *Astronomy*, until such Time as he shall please on that Score further to oblige the World by other excellent Productions of his great Industry and Learning.

1673.

Doctor ISAAC BARROW, formerly *Geometry Professor* in *Gresham Colledge*, afterwards *Lucasian* Professor of *Mathematicks* in the University of *Cambridge*, and now *Master of Trinity Colledge* there; hath lately published eighteen *Optick Lectures*; *Theodosius* his *Sphericks*, and hath other *Lectures concerning the Projections of the Sphere*, ready for the Press. All which conduce much to the Advancement of *Astronomy*, as his *Geometrical Lectures* already published, together with his *Apollonius*, and *Archimedes* ready to come forth, besides others which we hope may follow, do to the Advancement of *Geometry*; which not to mention (though somewhat beside our Purpose) were very Injurious to a Person that hath so much enriched the Commonwealth of Learning.

1673.

Mr. ROBERT HOOK the Learned and Ingenious Curator of the *Royal Society*, and Professor of *Geometry* in *Gresham Colledge*, exceedingly well versed, as in all Mathematical and Mechanical, so particularly in *Astronomical Knowledge*. He was the first that discovered in the year 1664. (May the ninth) a permanent Spot in the biggest of the three obscurer Belts of *Jupiter*, and by observing it for some Hours together, found that within two hours after, the said Spot had moved from East

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East to West, about half the length of the Diameter of *Jupiter*. See *Philosophical Transactions*, N^o. 1. p. 3. and N^o. 8. p. 143. which Discovery of a Permanent Spot in *Jupiter* was since confirmed by that famous Astronomer *Cassini*, of which see *Phil. Transf.* N^o. 8. p. 143. and N^o. 10. p. 171.

The same Mr. *Hook* discovered in the Month of *February* and *March*, Anno (1664) in the face of *Mars* several *Maculae* or spotted Parts changing their Place, and not returning to the same Position till the next ensuing Night, near about the same time: See *Ph. Transact.* N^o. 11. p. 198. and N^o. 14. p. 239.

He also made divers considerable Observations concerning the Planet *Jupiter*, his apparent Diameter, the various Degrees of Light in the Parts of his *Phasis*, his several Belts, &c. See *Phil. Transact.* N^o. 14. p. 245. 246. where also are to be found his Observations of the Body of *Saturn*, his Shape, Ring of a brighter Light than that of his Body, and some black Lines crossing the Ring and others crossing the Body.

The same was the Proposer of that Method (inserted in N^o. 9. p. 151. of the *Phil. Transactions*) directing how a Correspondency may be settled for the finding out the true Distance of the Sun and Moon from the Earth by the *Parallaxes* observed under or near the same *Meridian*.

Nor is to be passed by what contrivances he hath made of measuring the Diameters of the Planets to the exactness of a Second by the help of a *Telescope*, as also of taking the Position and Distance of the small fixed Stars one from another, or from any of the less bright Planets, if the Distance be not above two or three Degrees. See N^o. 25. of the *Phil. Transact.* p. 459.

He published his *Micrographia* in the year 1664. wherein amongst other *Astronomical* Matters, he hath explained the Reason of the *Redness*, *Oval Figure*, and *Undulation* of the Sun and Moon, and the twinkling of the Stars by a new Property of the Air called by him *Inflection*, differing from *Refraction* and *Reflection*. He hath mentioned several wayes of improving *Telescopes*; he hath given two *Specimina* of the Discovery of a fifteen Foot Glass among the smaller Stars; one, by a Description of the *Pleiades*, and the second by a *Declination* of one small spot in the Moon described by *Hewelins* and *Ricciolus*. He hath made many *Astronomical* Instruments, by which an Angle may be taken to the Exactness of $\frac{1}{2}$ part of a Minute. He in the year 1670. detected the *Parallax* of the Orb of the Earth amongst the fixed Stars by observing the Transits of several Stars near our *Zenith*, and comparing the Measures so found. He first observed the Stars with a *Telescope* at the same time that the Sun shone above the Horizon and into the Room where the Observation was made; of which see more in his Excellent Attempt to prove the Motion of the Earth lately published.

1673. Doctor WALTER POPE Professor of *Astronomy* in *Gresham Colledge*; the Successor of Sir *Christopher Wrenn* and Mr. *Rook*; with whom he hath spent much Time in observing the Motions and Appearances of the Heavens, the Result of which he hath delivered in his *Astronomical Lectures* there read, which 'tis hoped he may be prevailed with to make publick hereafter.

1673. Mr. JOHN GOAD, late of *St. John's in Oxford*, hath an *Elaborate Treatise* now in the Press, entituled *Astro-Meteorologica*, i. e. *Aphorisms Physical and Astrological in two Parts*: The first whereof inquires into the Natures of the Planets, Sun, Moon, &c. The second observes the Nature also of the fixed Stars in their several

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1673. RICHARD TOWNLEY of *Townley* in *Lancashire* Esquire (whom for Honours sake I here mention) Nephew to the before named *Christopher Townley*; hath, among other his much commendable Indeavours in the *Mathematicks*, perfected the Instrument of Mr. *Gascoyns* before-mentioned, now called a *Micrometer*, and fitted it that any small Angle may be taken by his Tube to a Second. Having for some years past been a diligent Observer of the *Satellites* about *Jupiter*, whose Motions he hath reduced to Exactness of Rule and Order. He is an Excellent *Arithmetician* and *Geometer*, and from whom great Things may justly be expected.

1673. MONSIEUR ADRIAN AUZOUT, a very ingenious and candid Philosopher and Astronomer of *Paris*, Fellow of the Royal Society of *London*, published his *Ephemerides* concerning the Motion of the two Comets which appeared *Anno 1664*) and of which he predicted the Places, through which they should pass, and where they should cease to appear, after he had seen them but four or five times.

The same Person entertains hopes that a Motion of Comets exactly observed may in time clear that grand Question, whether the Earth moves or not. He also hath taken Notice, by making Reflections upon former Comets, that more of them enter into our System by the Sign of *Libra*, and about the *Spica Virginis*, than by all the other Parts of the Heavens: See the *Phil. Transact.* N°. 1. p. 3. N°. 2. p. 18, 19. N°. 3. p. 36, 39. And being very well versed in Opticks and Dioptricks, he hath given us the Proportions of the Apertures of Telescopes, and reduced them to Tables *ibid.* N°. 4. p. 55. as he hath also delivered a Means to illuminate an Object in what Proportion one pleaseth *ibid.* N°. 4. p. 68. And we doubt not, but he will upon his Return out of *Italy* where he hath spent some years of late, impart to the World as well the Astronomical as other the learned Observations, he hath there made.

1673. SIGNOR GIOVANNI DOMINICO CASSINI a deservedly Famous Astronomer of *Italy*; now entertained by His most Christian Majesty in the Royal Observatory at *Paris*, and withall a Member of the Royal Society of *London*; doth continually oblige the learned World by his excellent and most important Astronomical Observations, of which there are recorded in the *Phil. Transact.* First, that of the permanent Spot in *Jupiter* arguing the Rotation of that Planet about it's *Axis*; Secondly, those of the Shadows cast by the *Satellites* of *Jupiter* upon his *Disque*, and *Ephemerides* of their Motions. Thirdly, those of the Spots in *Mars* arguing the Conversion of that Planet also about it's *Axis*. Fourthly, those of the Spots in *Venus* evincing the Revolution of that Body likewise about it's *Axis*, as well as that of *Jupiter* and *Mars*. Fifthly, those of the Spots in the Sun. Sixthly, those of the change of *Saturns* Figure. Seventhly, those of some new Stars discovered by him, and especially of the two new Planets about *Saturn*. Of all which, see the *Phil. Transact.* N°. 4. p. 75. N°. 8. p. 143. N°. 10. p. 171. N°. 12. p. 209. N°. 14. p. 242. N°. 32. p. 615. N°. 78. p. 2201. N°. 78. p. 2250. N°. 78. p. 3020, 3024. N°. 102. p. 4039. N°. 92. p. 5175. To which add his Calculations for the Eclipses of the *Satellites* of *Jupiter* for *Anno 1671*. in N°. 74. p. 2238. Neither ought we to pass by his three excellent Letters concerning the *Hypothesis* of the Sun's Motions and his Doctrine of Refraction, of which an Account is given in N°. 84. p. 5001. What other Observations and Discoveries he hath

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hath made concerning the Heavens, we hope he will in due time likewise publish.

1673.

SIGNOR GEMINIANO MONTANARI the learned Professor of Mathematicks at *Bologna* hath taken particular Care and Pains in acquainting us with the Total Disappearance of divers Stars that appeared formerly; and intends to write upon this Argument a Book to be entituled *Firmamentum Instabile*. See *Philosoph. Transact.* N°. 73. p. 2202. and N°. 89. p. 5125. Where 'tis intimated that this Author doubts not but to make it out to the Assertors of the Incorruptibility of the Visible Heavens, that even in the Stars anciently described there are observed such Changes as would be sufficient to make *Aristotle* himself, if alive, change his Opinion in this Point.

1673.

Mr. JO. FLAMSTED of *Derby*, an Industrious and accurate Astronomer, and Observer of the Heavens; hath of late endeavoured to advance Astronomy, by publishing yearly his Calculations of the more notable Celestial Appearances conspicuous in these Parts; of which see the *Phil. Transactions* N°. 55. p. 1099. N°. 66. p. 2029. N°. 77. p. 2297. N°. 79. p. 3061. N°. 89. p. 5118. To which may be added his Observations of the Transits of *Jupiter* and *Mars* near certain fixed Stars, N°. 82. p. 4036. N°. 86. p. 5034. As also those for determining the Inclination of *Jupiter* to the Ecliptick, N°. 94. p. 6033. together with those lately described in a Letter of his to *Signor Cassini*, that were made by Him after a New and exquisite Way, about the farthest Elongations of the *Medicean* Stars from the Centre of *Jupiter*, and others concerning the Diameters of the Planets and their Distances from the fixed Stars, as also the Parallax of *Mars*, N°. 96. p. 6094. which Communications were with much Applause received by the said *Signor Cassini*, Witness his Answer, which we hope will also be published ere long, together with the sequel of more Letters lately exchanged between these two eminent Astronomers.

1673.

Mr. EDWARD BERNARD Successor to Sir *Christopher Wrenn*, in the *Savilian* Professor's Place of Astronomy in the University of *Oxford*, merits here a due Remembrance; from whom, besides those future Improvements Astronomy is like to receive by his learned Lectures, and Observations; we are encouraged to expect the Publication of the *Μητρὸς Ἀστρονομίας*, or (as *Pappus* terms it) *Μητρὸς Ἀστρονομίας Πνεύματος*, of the *Alexandrian* School, restored to its Pristine Splendor, being a Book so called by way of Distinction from *Ptolemy's Almagest*, commonly by the *Alexandrians* call'd *Μέγας Ἀστρονόμος*, which two Books were the only or at least the chief Astronomical Pieces usually read in that University. The first whereof consists of nine Books, containing

Theodosii Spherica, (with *Euclid's Opticks* and *Phænomena*) in three Books.

Theodosius de Habitationibus, & *de Diebus* & *Noctibus* in two Books.

Autolycus de Sphæra Mota, & *de Ortu* & *Occasu siderum inerrantium* in two Books.

Aristarchus Samius de Magnitudinibus & *Distantiis Solis* & *Lunæ*, &

Hypsicles his *ἀναφοραὶ* sive *de Ascensionibus*.

Which nine Books collected into one Volume, and remaining in several Libraries in *Italy* and *France*, were by Sir *Henry Savile*, partly in Print, partly in MS. given to the University of *Oxford*, and now hope for New Life from this learned Persons Hand, who intends (as I am informed) further to oblige the learned World by publishing the three remaining Books of *Apollonius Pergæus* from the MS. Copies of *Beni Musa*, and *Aldelmelech*, with the Annotations of *Eutocius* upon one of them, whereas the Copy used in the Version of *Abrabam Ecchellensis*, and illustrated with the learned Annotations of *Alphonfus Borellius* seems to be a Stream

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from a more impure Fountain : and this Supplement is to be subjoyned to the first four Books put forth, or ready to be put forth by the most Learned and Reverend Doctor Isaac Barrow.

1673. Mr. ISAAC NEWTON *Lucasian Professor of Mathematicks in the University of Cambridge, and Fellow of Trinity Colledge*, hath lately published his reflecting Telescope; *New Theories of Light and Colours*; hath already for the Press a *Treatise of Dioptricks*, and *divers Astronomical Exercises*, which are to be subjoyned to Mr. Nicholas Mercator's *Epitome of Astronomy*, and to be Printed at Cambridge. From him besides is to be expected a *New General Analytical Method by infinite Series for the Quadrature of Curvilinear Figures, the finding of their Centers of Gravity, their Round Solids, and the Surfaces thereof, the straitning of curved Lines; so that giving an Ordinate in any Figure as well such as Des Cartes calls Geometrical, as others, to find, the Length of the Arch Line, and the Converse*; Such an Invention, to wit, but in one particular Figure the Circle, the Learned Snellius thinks transcendent to any thing yet published; and how much conducing to the Benefit of *Astronomy*, and the *Mathematical Sciences* in General, such an *Universal Method* is, I leave others, together with my self to admire, and earnestly expect.

1673. Mr. JOHN COLLINS Accomptant, and a Member of the Royal Society, published in the year 1658. his *Treatise entituled The Sector on a Quadrant*, in which there are very curious Prints of two great *Quadrants*, and of two small *Quadrants* with particular *Projections* on them, serving for the *Latitude of London*; Albeit by Aid of other Lines each of those *Quadrants* is rendred Universal for *Astronomical Use*, as, finding the Hour and *Azimuth*, and all other *Spherical Proportions*; The Author's chief Design in publishing such Prints, was to shew the World that the said Prints might be pasted on Copper or Brass, and so varnished, as to be rendred preservable from Dirt, or fulying, and sold at a cheap Rate, as now they are.

In 1659. he published his *Treatise of Navigation*, entituled the *Mariners Plain Scale new Plained*. In which, besides *Projections* of the Sphere, there are *Constructions* for many *Astronomical Problems*, and *Spherical Proportions*. The Book hath found good Acceptance, and is now like to become a Common Theme to the Scholars of *Christ's Hospital London*, whereof forty (by His Majesty's Bounty, and to His Immortal Renown in Establisshing a *Lecturer* to instruct them) are constantly to be taught *Navigation*, and e're long 'tis to be hoped the Author will reprint the same with considerable *Additions*.

The same year he published a *Treatise of Geometrical Dyalling*, of good Esteem, both for the Newness and easiness of Method in situating the *Requisites*, and drawing the *Hour-Lines*. In which there being *Spherical Proportions*, and some *Astronomical Problems*, it deserves to be remembred in this Catalogue.

In the year 1667. he published in the *Philosophical Transactions* the *Solution of a Problem concerning Time*, to wit, about the *Julian Period*, with divers *Perpetual Almanacks in single Verses*; a *Chronological Problem*, and divers other Things since, in the said *Transactions*, which we mention not, as being irrelative to the Sphere or *Astronomy* (*viz.* concerning *Merchants Accompts, compound Interest, and Annuities, &c.*)

We should be injurious to him, if we did not farther inlarge, by telling the World how much it is obliged for his Pains in exciting the Learned to publish their Works, and in acting the Part of an *Ingenious Obstetrix* at the Press, in correcting and in drawing of *Schemes*; So that he hath been Instrumental in furnishing the

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the World with the many learned *Mathematical Books* here lately published (for which, his chief Reward hitherto hath been to obtain from the Learned the Title of *Mersennus Anglicanus*) and many more may be expected, if moderate Encouragements towards Printing such Works, and Leisure for such an Affair be not impeded through the necessary Avocations for a livelyhood, and though it be besides my Design, yet I cannot but digress in giving *him* and *others like minded* (which are very rare to be found) their due commendations, in promoting the laudable Design of getting *Learned Men* to impart their *Labours* to be Printed; and exciting others to encourage the same, as being of singular Use and advantage to the *Republick* of Learning; through the want whereof many *Learned Mens* Works of much worth have been lost, suppressed or long delayed. As those of *Maurolycus*, Abbot of *Messina*, a large Catalogue whereof is to be seen at the End of his *Opuscula*, but by the Care of the learned Mathematician *Alphonsus Borellius* some of them have been published in this Age, ninety years after the Author's Death; as his *Apollonius* at *Messina* in 1656. containing the substance of the four first Books of the *Apollonius* of *Commandinus*, and two more Additional Books of *Maurolycus*, and all in less Room, and at a much cheaper price. And now by the like Diligence the said *Borellius* is publishing *Maurolycus* his *Archimedes* in *Latin*, reputed a *Good one*, after we have been long tired with the *Common Latin* bad one.

Through want of such care the many learned Works of *Vernalion* of *Naples*, Master to *Josephus Auria*, have not hitherto come to light, as his Commentaries upon all *Archimedes*, *Apollonius*, *Serenus*, *Euclid*, *Ptolemaus*, and divers others of the Ancients; which is much to be lamented; seeing he was, according to the Testimony of the said *Auria*, *Vir, Divinitate quadam Ingenii Ornatus*.

Nor those of the learned *Bernardinus Baldus*, Abbot of *Gnaftalla*, mentioned at the End of his Comment on *Aristotle's Mechanicks*, amongst which are two Volumes of the *Lives of Mathematicians*, whereof *Bartholinus* in his Preface to the Edition of the *Optick Fragments* of *Heliodorus Larissans*, Printed at *Paris* 1657, gives an honourable *Elogium*.

Varenius could find no Stationer or Printer in *Holland* to undertake his *Treatise of Conicks and curved Lines*. See the Preface to his *History of Japan*.

If Sir *Charles Cavendish* deceased, Brother to the present *Duke of Newcastle*, had not (as 'tis credibly reported) given liberally toward the Printing of *Mydorgius* his four first Books of *Conicks*, they had never come to publick view; the four last, as likewise those of *Paschal the Younger*, yet remaining unprinted upon the same Accompt, of whom *Mersennus* gives this Censure, *quod Unica Propositione Universalissima, quadringentis Corrolariis armata, totum Apollonium complexus est*. The Manuscript as yet remaining unprinted (as I am informed) in the Hands, or at the Disposal of *Monsieur Du Prez* a Bookseller in *Paris*; the want whereof is the most considerable in regard the Author (besides the ordinary method) treats of the *Conick Sections*, as projected from lesser Circles of the Sphere.

Erasmus Bartholinus well known by his Additions to the second Volume of *Des Cartes*, as it is commonly termed; could find none to undertake the Printing of *De Beunes Treatise De Angulo solido*, and other *Treatises* both of that Authors, and his own.

Jungius his *Phoronomicks*, and *Treatise De lotis Planis, &c.* and other *Algebraical Treatises*; have remained at *Hamborough* above ten years since the Author's Death unprinted, for want of due Encouragement: Albeit a *Jesuit*, who writes his

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his Life, makes him, although a *Physician*, equal in Mathematical Knowledge to *Des Cartes*.

On the like Reasons we may conceive we want the many learned *Algebraical Works* of our famous Countryman Mr. *Thomas Harriot*, (and of Mr. *Warner*, into whose Hands they fell) who is esteemed by some of the most knowing Persons alive to have been much Superiour to all that ever writ; and, that equivalent to what of his might have been forty or fifty years since known, is not readily to be expected.

For want of the like Encouragement, we have lost that most excellent Piece of the incomparable *Vieta*, his *Harmonicon Cœleste*; as likewise the Remains of *Alexander Anderson* the Scot, as his *Conicks*, *Stereometria Solidorum*, & *Triangul. Sphæric.* the want whereof *Guldinus* much bewails and excites the ingenious to enquire after them.

On the same Accompt the Remains of *Griembergerus*, as his *Conicks*, *Dialling*, and *Projections* of the Sphere have not come to light; and for the very same Reason the second Tome of *Galileus* in *English* doth, and is like to remain, unprinted.

With the like *Remora* in *France*, have met the Works of the Excellent *Monsieur Fermat*, viz. *Euclidis Porismata restituta*; his *Treatise De Locis Planis Solidis Linearibus* & *ad Superficiem*, and his *Treatise De Contactibus Sphæricis*.

As also the Remains of the much knowing *Lalovera*, as his *Geometrical Dictionary*, sive *Explicatio vocum Geometricarum*, four Books *Problematum Illustrum*, four Books *Problematum Physico-Mathematicorum*, and a *Collection* of *Letters* between him and the learned, containing the *Solution* of many *Problems* of great *Curiosity* and *Difficulty*, which seeing they are not like to get Printed there, they have written over to know if they would be undertaken here; promising to send the MS. Copies. And having hinted thus much at the Instance of this *Ingenious* and *Industrious Person*, to the *Curious*, and *Generously learned*; I come now again further to acquaint the Reader, that we have more particularly obtained from him an Accompt of two of his own *Designs*, relative to the *Sphere* and *Astronomy*.

The one of *Geometrical Dialling*, whereby *reflex Dyalling* is rendred *Geometrical*, and reduced to a *Method of Calculation*; so that if a *Glass* were placed at *Random*, and Lines drawn on the *Plain* by chance, by either Method, *Points* might be found in the said *Lines* which joyned should be the *Hour Lines*; and the like when the *Glass* is so placed, that the *Hour Lines* may be drawn in that Part of the Room which is most capable of them; and as a *Corollary* of this *Doctrine* a *Dial* for any *Latitude* may be suddainly divided from a Line of *Tangents* parallel to any Line proposed, and that without any *Calculation* for the *Horary Divisions*.

The other a *Treatise of Projections of the Sphere*, and concerning *Spherical Trigonometry*; in which many extraordinary Cases will be solved; those *Proportions* mentioned before in the *Narrative* concerning Mr. *William Oughtred*, several wayes more easily demonstrated, and all *Spherical Triangles* measured by a new Method (not by him formerly insisted on) after the manner of *Plain Triangles*; all which perchance may be handled in some little *Tractates* concerning the Use of *Prints* of several other *Instruments* designed to be cut, pasted, and varnished, as before mentioned; viz. the *Analemma*, the *double Horizontal Dial*, the *Logarithmical Serpentine Line*, *Prints of Logarithmical Rulers*; whereof if there be three, they may be so placed as to lie still all Day, and as fast as the Hight of the Sun is given, shall find either the *Hour* or *Azimuth* universally by bare *Inspection*.

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The hasty Collection, and uncorrect transcribing of the foregoing CATALOGUE; hath occasioned the omission of some considerable Persons, and Authors, which should therein have been inserted in their Proper Times, and Places. The Reader therefore is desired to take Notice of them as We have here set them down (according to Order of Time) in the following SUPPLEMENT.

Anni Ante
Christum se-
cundum vul-
garam Epe-
cham.

2952.

FOHIUS the first Emperor of China, was greatly addicted to the Study of Astronomy, and first (of all the *Chineses*) reduced the Motions of the Celestial Bodies into Tables, as *Martinus* in his *History of China* affirms.

2697.

TANAUS chief Minister of State to *Hoantius* the third Emperor of China; contemporary with *Methusalem* (as *Martinus* in his *History of China* reports) composed a Solar Cycle of sixty years, which the *Chineses* use at this Day.

2513.

YUMCHINIUS another chief Minister of State to the former Emperor about the 28th year of his Reign, first of all observed the Pole and the Stars about it, and composed a Sphere or Globe representing that of the Heavens.

2513.

CHUENHIOUS the Fifth Emperor of the *Chineses* was the first who published a Calendar for the common Use of his Subjects. He wrote likewise *Ephemerides* of the five Planets, which he saw at one time all in Conjunction, upon the same Day that he observed a Conjunction of the Sun and Moon (which Day he ordered to be observed as the first Day of the Year) in the Sign or Constellation *Xe*, which is now reckoned from the eighteenth Degree of *Pisces* to the fourth of *Aries*. This Admirable Conjunction of the Planets, is perhaps the same with that which the *European Chronologers* affirm to have hapned in the Time of *Noah* says *Martinus* in his *History of China*, p. 33.

2400.

ANDUBARIUS a certain *Indian* of the Race of *Arphaxad* is said to have flourished near the Time of the Building of the Tower of *Babel*, and to have been very knowing in *Astronomy*, and first of all to have taught the same to the *Indians*, as the *Chronicon Alexandrinum* attests.

2357.

J AUS the seventh Emperor of China, whom *Kepler* (in *Commentatiunc. in Epistolium R. Patr. Terrentii ex Sinar. Regn. Miss.*) supposes the same with *Jon*, or *Jawan*, or *Jaon* Son of *Japhet*, is reported to have been extremely addicted to *Astronomical* Observations, and to have corrected the *Chinese Calendar*; to have caused divers Instruments to be made for observing the Motions of the Celestial Bodies, and to have exactly noted the *Winter Solstice*, which the *Chinese* Writers affirm to have then been in the first Degree of the Sign or Constellation *Hin*, which at present is about the first Degree of *Aquarius*. *V. Martin. Hist. Sinic.* p. 25.

2258.

XUNUS the Eighth Emperour of China, caused to be made out of the Gold and Jewels of his Imperial Treasury a Sphere of Admirable Workmanship, shewing the Motion of the seven Planets, each of which were represented by a precious Stone resembling their respective Natures, in the midst of which was a large Jewel placed representing the Earth. See *Martinus Hist. Sinic.*

2158.

CHUMKANG the Fourth Emperor of China, of the Family of *Hia*, about a year after *Noah's* Death, observed a Memorable Eclipse of the Sun to have hapned in the Sign or Constellation called *Fang*, which now (says *Martinus*) is about the

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28th

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28th Degree of *Scorpio*; he put to Death the Astronomers of that Time for their Negligence in not observing the same.

1120. CHEUCUNGUS a great *Astronomer* and *Mathematician* among the *Chineses* caused to be made an *Ample Instrument* or *Rule* erected perpendicularly upon a large Plain of Brass, and divided into certain Parts, upon the *Superficies* of which Plain was likewise a Line drawn divided into several Parts, by which Instrument he used to take the *Meridian Altitude* of the Sun, as likewise the *Elevation* of the Pole, and made other such kind of *Observations*. The said Instrument being still preserved in the City *Tengfang*, where likewise is yet standing a Tower, on which he used to make his *Observations*, called *Quensing Tai*, or the *Starry Specula*, as *Martinus* in his *Atlas* attests.

By which several Instances it may appear, that the *Chineses* of all the *Asiaticks*, have seemingly the most Reason to claim Precedence and Priority in Point of Antiquity as to the Study of Astronomy and Celestial Observations, even before the *Egyptians* and *Chaldeans* themselves: If any Credit may be given to the Histories and Chronologies of that Nation.

1100. GERYON a famous *Trojan Augur*, Companion to *Brutus* or *Britus* at his first Entrance into this Island, as *Pitæus* (from the Authority of *Ponticus Virunnus*) affirms, wrote, among other things *De Astronomia*.

960. PERDIX a *Britain*, surnamed PRÆSAGUS, by *Pitæus* stiled *Mathematicus Insignis, atque Observatione Stellarum ac Cœlestium Corporum supra quam dici potest Curiosus*. Of his Writings I find no other mention than of one Book of Predictions.

760. HESIODUS ASCRÆUS a Poet supposed contemporary with *Homer*, by *Joseph Scaliger* stiled the most *Ancient Astrologer*, and *Theologue* of the *Greeks*. (A Specimen of his *Astrology*, yet remaining in his Poem entituled *ἔργα καὶ ἡμέτεροι*, of his *Theology*, in that entituled *Θεογονία*) merits a Place in this Catalogue; and therefore, being omitted by the oversight of the Transcriber in his due Place; we have inserted him in this Supplement.

470. DEMOCRITUS besides what we have already mentioned, is said to have written the several Works following relative to our present Subject, although no Remains of them be now left; as his *Magnus Diacosmus*, and *Parvus Diacosmus*, in which he not only treated of the Fabrick of this Visible World; but of other Worlds; which he held to be innumerable; *De Sideribus Vagis seu Planetis*, which he asserted to be more than the *Seven* commonly observed and taken notice of; which Assertion of his, Modern Experience hath since confirmed. *Phanæ Causæ*, i. e. *De Sole vel Apparentiis*, wherein he took Cognizance of the *Solar Macula*, or *Spots*, as *Magnenus* (in his life) affirms; for *Phana* or *Phanēs* is the same with the *Sun*, so called *quòd maximè appareat*; of which *Macrobius*. *Certamen Clepsydra*, which *Magnenus* stiles a most subtle Piece, because he thereby examined the Motion of the Heavens, and made as it were a commensuration, or Comparison of Motion and Time, *πολογεσφίν*, *sive Poli Descriptio, qua voce nihil aliud intelligitur*, says *Salmasius Exercit. Plin. p. 740.*) *quam πόλων καὶ ἀναλήμματα συνίασιν* *Descriptio*; for these Ancient Sorts of Dials, if we may rely upon *Salmasius* his Authority, were called *πόλοι*, à *rotunda Poli Forma, cujus Medio Gnomon infigebatur*.

430. ORONIUS a *Britain*, surnamed MODESTUS is by *Pitæus* from the Authority of *Ponticus Virunnus* about this time affirmed to have flourished; of whom

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whom he thus writes; *Dicunt eum in Astronomia & in Poesi Plenidium superasse.* (*Plenidius* was a learned *British Philosopher*, of the same time) He writ both in Greek and Latin several *Works*, among them divers *Poems*, not now extant.

224.

PROTAGORAS ASTROLOGUS (not the same with *Protagoras* the Philosopher of *Adbera*) is celebrated by *Euphorion Chalcidensis* (who was Keeper of the famous Library of *Antiochus Magnus* King of Syria, and a great Historian and Poet) in an *Epicedium* which he wrote upon his Death, mentioned by *Diogenes Laertius* in the Life of *Protagoras Abderiti*.

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140.

HYPsicLES of *Alexandria in Egypt*, Disciple to the great *Isidorus*, flourished in the Reign of *Ptolemaeus Physion*. He writ *De Dodecaedri & Icosaedri in eadem Sphaera Descriptorum comparatione atque inter se Proportionem*, as likewise a Treatise entituled *ΑΝΑΦΟΡΙΚΟΣ*, *sive de Ascensionibus*, or as some MS. entitle it, *ΩΣΤΙ ΑΣΕΓΟΜΕΝΟΣ*; this last published in Greek and Latin, by *Jacobus Mentelius*, Printed at *Paris* by *Cramoisy*, together with *Heliodorus Larissæus* his *Opticks*, 1657. in 4°.

930.

ATHELSTAN King of *England* was learned in *Astronomy*, and among other Writings, of which he was Author, wrote one Book *De Rebus Astrologicis*, as *Pitsæus* testifies.

1100.

MICHAEL PSELLUS of *Constantinople*, is by some conceived to be Author of those *Astronomical Pieces* ascribed to *Euthymius*, of whom before among the Authors of uncertain Times (who perhaps is the same with *Euthymius Zygabenus Monachus*, who was in a manner Contemporary with *Psellus*) viz. *Synopsis Astronomiae. De Sphaera; & Quod Rotunda sit Terra*.

1160.

AVERROES, besides what he wrote upon *Ptolemy's Almagest* already mentioned; writ likewise *Astrologica* translated into Hebrew by *R. Jacob Ben Samson* extant in the French King's Library. See *Labbæ Bibliothec. MS.*

1320.

NICHOLAS TREVET, already mentioned in the Catalogue at this year, wrote (besides what is there exprest) *Canones de Conjunctionibus, Oppositionibus & Eclipsibus Solis & Luna*; as they are cited by *Pitsæus*.

1346.

GEORGIUS MEDICUS CHRYSOCOCCA, is by us already mentioned in the year 1240. But *Scaliger* (l. 1. *Epist.* 80.) places him in the year 1346. at which time he published his *περὶ τῆς ἀστρονομίας*, *sive συντάξις περὶ αὐτῆς*, at *Tibena Chasaria, quæ Regio erat in finibus Imperii Trapezuntici* in the longitude of 72°. according to the said *Scaliger*, whose Authority we willingly submit to.

1350.

ROGERUS SWINSETTUS, or rather *Swineshead*, vulgarly (but erroneously) *Suisset*; surnamed for his Eminent Skill in *Algebra*, *Calculator*, Fellow of *Merton Colledge in Oxford*, afterwards, Monk of the *Cistercian Order*, a most subtle Mathematician; of whom the great Master of Subtlety, *Jul. Cesar Scaliger* (*Exercitat.* 324.) thus wrtes, *pene Modum excessit Ingenii humani*. And (*Exercitat.* 340.) gives this further Elogy of him, *Dignus profectò quem neque Senium Senem faceret, neque Naturæ Lex vitâ privaret, nisi meliorem Vitam apparasset*. He wrote two Books *De Cælo & Mundo*, one Book entituled *Descriptiones Motuum Cælestium*; said to be extant in MS. in the Library of *Caius and Gonville Colledge in Cambridge*. He put forth likewise *Ephemerides* and *Calculationes Astronomica*, this last said to have been Printed by *Johannes de Cypro* at *Padua*. Vide *Pitsæum*.

1390.

GUALTERUS BRITHUS, or **BRITTE**, an *English-man*, Fellow
of

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of Merton Colledge Oxon; of whom Leland sayes, *Celebre sibi Nomen acquisiuit maximè quod Astrorum Motus & Corporum Cœlestium Naturas, Proprietates, Affectiones, curiosissima Sedulitate scrutatus fuerit.* He writ *Theoremata Planetarum, & de Rebus Mathematicis, &c. Vide Pitsæum.*

1450. JOANNES DE SACRO FONTE; Anglicè HOLYBROOK, an English-man born in Surrey, reduced *Alphonsus* his *Astronomical Tables* into a clear and easie Method, and published *Tabula Novæ Mediorum Motuum & Æquationis Dierum*; according to the Testimony of Leland very accurately computed. He put forth likewise *Canones Astronomici*, said by Pitsæus to be extant in the Publick Library at Oxford.

1494. ALBERTUS DE PRUSA POLONUS writ a Book of *Commentaries* upon *Peurbachius* his Theory of the Planets, and another upon *Regiomontanus* his *Ephemerides*, and some other Pieces, as *Simler in Epitom. Gesner.* attests.

1558. JOANNES PENA, besides what is already mentioned of him, published *Theodosius* his *Sphærica* in Greek and Latin, with *Explanations* and *Notes*, Printed at Paris 1558. in 8°.

1583. FRANCISCUS SANCTIUS BROCENSIS, a Spaniard, Professor of *Rhetorick* and the *Learned Languages* in the University of *Salamanca*, put forth (among other Works) a Treatise *De Sphæra Mundi*, collected out of various Authors, of which mention is made by *Peregrinus* in his *Bibliotheca Hispania* p. 578.

JOANNES MENA CORDUBENSIS, a learned Spanish Poet is about this time (by the said Author *Bibliotheca Hispan.*) reported to have written in Latin, *De Planetis*, which *Ferdinandus Pintianus*, the worthy Commentator upon *Pliny*, in his younger dayes translated into Spanish.

1585. JOANNES BENEDICTUS, besides what we have already mentioned wrote *De Gnomonum, Umbrarumque Solarium Usu*, Printed *Augustæ Taurin.* 1574.

1590. SEBASTIANUS VERRO HELVETIUS wrote ten Books *Physicorum*, in the second whereof he treats particularly of *Astronomy*, Printed at London 1590. in 8°.

1590. JOSEPHUS AURIA over and above the Works by him published, and of which we have already spoken; promises the publication of the two Books of *Antolycus de Ortu & Occasu Siderum Inerrantium*, which, whether he ever performed I yet know not.

1598. To PETRUS RYFFE his *Elementa Sphære Mundi sive Cosmographiæ*, is added a Treatise *De Structura & Usu Planispherii*, by *Ludovicus Lucius* of Basile; and there Printed 1598. in 8°.

NICHOLAUS RAIMARUS published in the year 1588. before he put forth his *Astronomical Hypotheses* (already mentioned) a Treatise entituled *Fundamentum Astronomicum*, i. e. *Nova Doctrina Sinuum & Triangulorum*; to which among other things is adjoyned *Hypotheses Novæ ac Veræ Motuum Corporum Mundanorum.*

1600. ASCANIUS MARTINENGUS *Brixianus*, *Canonicorum Lateranensium Generalis Abbas*, is by *Ricciolus* about this Time inserted in the Catalogue of Astronomers;

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Astronomers; of whom he thus writes; *Præter Ea quæ in Glossa Magna de Cælo & Sideribus à Deo conditis, eruditissimè vulgavit Anno circiter 1600. scripsit etiam Geographiam Terræ Sanctæ, & Chronologiam insignem adornavit.*

Doct^r HOOD Publick Professor of *Astronomy* and *Mathematicks* in London, published two *Celestial Hemispheres* projected upon the Poles of the *Ecliptick*, and laid down in two large *Schemes*; together with a *Treatise* annexed of the *Uses* of the said *Hemispheres*, touching the *Longitude* and *Latitude* of the Stars; and a *Table* of their *right Ascensions*, *Declinations*, *Culminations*, coming to the *Meridian*, *Horary Distance*, &c. He writ likewise of the *Cross Staff*.

1603.

GUILLAUME DE NAUTONIER, a French-man, wrote a *Treatise* entituled *La Mecometrie de l'Aimant, ou la Maniere de mesurer les Longitudes par le Moyen de l'Aimant*, Printed at *Vence*. 1603.

1609.

ANTHONY LINTON, sometime *Parson* of *Worth* in *Sussex*, set forth a small *Treatise*, by him entituled, *News of the Complement of the Art of Navigation*, &c. In which among other things; he offers in 26 *Propositions*, by means of the *Magnet* to discover the secret of perfecting the said *Art of Navigation*; and particularly for finding out of *Longitudes*, which according to his *Project* depends upon the Poles of the *Magnetical Globe*, for the finding out the *Places* of which Poles he pretends to have devised a *Way*, how any *Man* having some *Knowledge* and *Practice* in the *Mathematicks*, may by his own *Observations* exactly find out the true *Longitude* and *Latitude* of the said Poles, and may also fit the same most *Commodiously* unto the *Art of Navigation*, and it unto them; as likewise (besides the *Magnetical Globe* and *Chard* by him proposed) how all other the *Instruments* commonly used in the *Art of Navigation*, as the *Compass*, the *Astrolabe*, the *Quadrant*, the *Cross Staff*, and the *Traverse Board* may be excellently well amended and perfected. But these his *Commendable Designs* dying with him left *Posterity* deprived of the *Benefit* intended by them, which yet in these *Dayes* seems to be revived, and is promised with advantage to be made good, by

HENRY BOND Senior, an Ancient and Industrious Professor of the *Mathematicks* in this City, who undertakes to shew the Cause of the *Variating* of the *Variation* of the *Magnetical Needle* or *Compass* by the Motion of two *Magnetical Poles*, how these Poles are found, and what their distance is from the Poles of the *Earth*.

What their *Annual Motion* is, and from whence it proceeds.

By *Calculation* he finds all the *Variations* that have been observed at or near *London* for above *Ninety* years past, and so by *Consequence* it may be found at *London* to the *End of the World*.

He hath calculated a *Table* to every five *Minutes* of the *Inclination* of the *Inclinary Needle*; so that by the *Needles Inclination*, that *Table*, and the *Latitude* of the *Place* he can find the *Longitude* of any *Place* in the *World*.

Also by that *Table* he finds Mr. Robert Normans *Inclination* that he found in the year 1576. And can shew what will be the greatest and least *Inclination* of the *Inclinary Needle* in any *Latitude* in the *World*.

He hath four *Examples* of finding the *Longitude* by the help of the *Inclinary Needle*; One at *Balsore*, in *East-India* in the year 1657. Another at *Cape Charles*, on the *Coast* of *Virginia*, before that Time; another at the *Cape of Good Hope*; another at the *Straits of Magellan*. This is the *Conclusion* of thirty eight years *Magnetick Study* spent with much Pains in *Supputations* grounded on the *Observations* of himself, and of others (not easily procured) and the Author is willing and ready (as we are credibly informed) to impart the *Result* of these his many years

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Thoughts

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1612. **SETHUS CALVISIUS** published *Elencbus Calendarii Gregoriani in quo Errores qui passim in Anni Quantitate & Epactis committuntur, manifestè demonstrantur*, Printed *Frankfurti Marchionum* 1612.
1623. **JOANNES TERRENTIUS** a Jesuit, wrote from the City of *Changtschen* in *China* in the year 1623. an Epistle to the Mathematicians of *Ingolstadt* in *Germany*, wherein he gives an Accompt of some *Astronomical Designs* of the *Chineses*, more particularly touching the *Emendation* of their *Calendar*, *Prediction* of *Eclipses*, and *Procession* of the *Equinoxes*, desiring the Assistance of the *European Astronomers* in promoting the Progress of that Science among those People. Which Epistle *Kepler* published in Print in the year 1630. with his own brief, but learned *Comment* thereupon, Printed at *Sagan* in *Silesia* in 4°.
1632. **SAMUEL PETIT** a learned *French-man*, among other Works by him published, set forth *Eclogæ Chronologicae, in quibus de variis Annorum Judeorum, Samaritanorum, Græcorum, Macedonum, Romanorum Typis, Cyclisque Veterum Christianorum Paschalibus, disputatur*, Printed at *Paris* 1632.
1633. **OCTAVIANUS MARINIUS** put forth a Treatise entituled *Statera Temporum, sive de Præstantia Kalendarii Gregoriani, & ejus facili Usu*, Printed at *Bologna*, 1633.
1634. **DAVID GOUBARD** put forth *Perpetual Tables of the Celestial Motions*, in *French*, Printed at *Middleburgh*, 1634.
1637. **NATALIS DURET** a *French-man*, published *New Ephemerides of the Celestial Motions*, to which he gave the Title of *Tabulae Richelianae*, Printed at *Paris*, 1637.
1648. **ERICUS OLAUS TORMIUS** Publick Professor of *Mathematicks* at *Copenhagen*, published a small Treatise with this Specious Title, *περὶ τῆς μηχανικῆς ἀνάγκης καὶ δυνατότητος ὅτι καὶ ποτὶς. Sive Disquisitio Mechanica*, wherein he *Disputes* of, and asserts the *Necessity*, and *Possibility* of *Instruments*, their *Number*, and *Amplitude*, requisite in *Astronomical Observations*, Printed *Hafniae*, 1643. in 4°.
1643. **JACOB RAVENSPERG** Professor of *Mathematicks* in the University of *Utrecht*, published about the years 1640. and 1643. divers small *Latin Astronomical and Meteorological Disputations* of the *Spots* of the *Sun*, *Moon*, and *Planets*, as likewise several *Theses* about *Light*, *Lightning*, *Thunder*, and some concerning *Optical Problems*, and *Telescopes*.
1643. **BENEDICTUS HEDRÆUS** a *Swede*, put forth *Nova & accurata Astrolabii Geometrici Structura, ubi Gradus horumque singula Minuta prima, nec non Quadrantis Astronomici Azimuthalis, quo non solum prima, sed & singula minuta secunda distinctè observari possunt*; together with a Treatise of the Use of the same illustrated with clear and perspicuous Examples, Printed at *Leyden*, 1643. in 8°.
1645. **GEORGIUS FROMMIUS** set forth a *Dissertation Astronomical De mediis quibusdam ad Astronomiam restituendam necessariis*, Printed at *Copenhagen*, 1645. in 4°. He published likewise an *Answer* to *Jo. Baptista Morinus* his Defence of his *Astronomia restituta*, Printed at the same Place 1645. in 4°.

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1650. **JOANNES BECHETT** Professor of Mathematicks in the University of Paris, to his Theory of the Planets before mentioned, hath added *Tables of the mean Motions*, and a *Parechasis* explaining the Doctrine of Directions according to the Rational Way; as also an *Appendix* for finding out and computing the Lunary Periods.
1653. **JOHANNES JACOBUS HAINLINIUS** Superintendant General of the Diocess of Aldeberg in Saxony; put forth a *Mathematical Synopsis*, wherein the chief Parts of the whole Mathematicks, both abstract and Concrete, that is to say, *Arithmetick*, *Geometry*, *Astronomy*, *Geography*, *Opticks*, &c. are methodically proposed by *Definitions*, *Axioms*, *Postulates*, *Theorems*, *Problems*, &c. very useful not only for young beginners, but for those also who have already made some Progress in those Sciences. In the *Astronomical Part* he treats particularly and distinctly *De Astronomia Sphærica*, *Theorica*, & *Chronologica*, adding withall the *Praxis* and Use of those Parts Problematically laid down, and briefly and clearly explained, Printed at Tubinge 1653. in 8°.
1653. **JACOBUS DU BOIS**, published by Way of Dialogue, a Theological-Astronomical Treatise, Printed at Leiden, 1653. in 4°. wherein he opposes Copernicus his Hypothesis, and Des Cartes his Philosophy. Against which
- AN ANONYMUS Author put forth a Reply under this following Title, *Demonstratio Mathematica Ineptiarum & Ignorantiae Jacobi du Bois Ecclesiastæ, Leidenfis, in Oppugnanda Hypothesi Copernicana, & Philosophia Cartesiana*, Printed at Rotterdam 1656. in 4°.
1655. **JOANNES HERBINIUS** a Silesian, Master of Arts, and Professor of Philosophy at Utrecht, undertook the like Controversie as Du Bois, and published a Treatise thereupon entituled, *Famosæ de Solis vel Telluris Motu Controversiæ Examen, Theologico-Philosophicum, ad S. Sanctam Normam institutum*, to which he hath annexed the Grounds of his said undertaking, in an Epistle addressed to the Excellently learned Maria Cunitia.
1656. **GEORGIUS HILARIUS**, besides what we have already mentioned, put forth *Enchiridion Progymnasmatum Mathematicorum*, containing, first, *Apospasmation Primi Elementi Euclidæi Gr. Lat.* Secondly, *Præcepta Sphærica*. Thirdly, *Globi Cœlestis & Terrestris Explicatio & Usus*. Fourthly, *Geographiæ Rudimenta*. Fifthly, *Computi Ecclesiastici Epitome*, Printed at Copenhagen 1656. in 12°.
1656. **PETRUS BORELLUS**, Councillour and Physician to the King of France, put forth a Treatise *De vero Telescopii Inventore*, wherein he treats of the History of Telescopes, and other Optick Glasses, their Matter, Fashion, Working, several Kinds or Species, and Uses; as also of several Discoveries made by the said Author, as well with Telescopes as Microscopes; (of the later of which, he gives a Century of Observations) and treats of what may yet be further found out by the means of Telescopes, where occasionally he speaks of the finding out of Longitudes, Printed at the Hague 1655. and 1656. in 4°.
1660. **EUSTACHIO DIVINI**, an Excellent Worker of Telescopical Glasses at Rome, put forth something against Monsieur Hugen's his *Systema Saturnium*, Printed at the Hague in Holland in 4°.
1669. The Reverend and Learned Mr. **WILLIAM BEVEREGE**, late of St. John's Colledge in Cambridge, is to be added to the number of those whose mention gives Honour to this Catalogue, for his excellent Piece of *Chronological Institutions*

ANNI POST
CHRISTUM.

in two Books. In the first whereof he treats of the Nature of Chronology, and its Parts, of Time, and its various Distributions into *Scruples, Hours, Dayes, Weeks, Months, Years*; in the second, of the *Syzygies*, and *Eclipses* of the Luminaries, of the *Equinoxes* and *Solstices*, *Cycles* of the Sun and Moon, *Indictions*, *Epaets*, and of the several *Periods, Æra's* and *Epocha's* of the Ancients, to which he hath likewise added two Books of *Chronological Arithmetick*; all which are of great Use and Advantage to the Students in *Astronomy*, Printed at London 1669. in 4°.

1671. AN ANONIMOUS French-man about this Time published in his own Language a Treatise entituled *Discours sur les Influences des Astres selon les Principes de Monsieur des Cartes*, Printed at Paris in 12°.

1671. GUARINUS GUARINUS, of the Order of Clerks regular (commonly called *Theatins*) of *Mutina*; Professor of *Philosophy* and *Divinity*, and Mathematician to the Duke of *Savoy*, published and Dedicated to the said Prince a large Mathematical Treatise in folio, entituled *Euclides adanctus, & Methodicus, Mathematica Universalis*: In which with great *Perspicuity*, and exactness of Method, he treats of all things falling under the Notion of *Quantity*, as well *Discrete, continuous*, as *abstracted*; divided into 35. *Traſlates*. In the 23th whereof he handles the *Doctrine of the Sphere*, in two Parts; the first, treating *De Sphæra Contactibus & Sectionibus in Genere*; the second, *De Sectionibus Maximorum Circulorum Invicem*, which being of great Use in Astronomical Operations, we have for that Reason in this Place made mention thereof.

1672. Mr. PATRICK MATHEWS Arch-Beadle to the University of St. *Andrews*, published a small Treatise in 12°. (lately come up from Scotland) under the Title of the *Great and New Art of weighing Vanity*, written against a Book intituled, *Ars Magna & Nova Gravitatis & Levitatis*. To which are annexed some *Tentamina de Motu Penduli & Projectorum*; In which there being some Ingenious Debates about *Astronomical Affairs*, and the *Theory of Pendulums* for the exact measuring of Time, and *Analytical Series's* or *Equations* of great Ingenuity suited to the Motion thereof, and of *Projects*; We thought the same worthy to be mentioned in this Catalogue, the said Treatise was Printed at *Glasco* 1670.

1673. JOHN GADBURY of London, Student in *Physick* and *Astronomy*, put forth *Ephemerides of the Celestial Motions* for ten years, beginning *Anno* 1672. and ending *Anno* 1681. compared with the most correct *Observations* of *Tycho*, *Kepler*, *Mr. Wright*, and other approved *Astronomers*, with an *Introduction to the Use thereof*, Printed 1673. in 4°.

By late Letters from *Paris* Information is given that the SIEURS AVOCATE and DE ROYER intend to write fully of *Astronomy*, and of the *Theories of the Planets*.

And here, for a Close, we cannot but acquaint the learned World with the most praise-worthy Design of the BISHOPS, NOBLEMEN, and GENTRY of *Scotland*, who have nobly and liberally contributed toward the erecting an Astronomical Observatory in the University of St. *Andrews*, and furnishing the same with Books and Instruments for Observation to the value of above 500 *l. Sterling*, which Heroick Example we hope may animate those of like Condition and Abilities in this Nation to encourage the promoting of the same Laudable Design amongst us.

And thus much of the Original and Progress of Astronomy, and of Astronomers.

THE

OF THE COSMICAL SYSTEM.



He next thing, according to the Method of our Author, to be considered, is the *Cosmical* or *Mundane System*, which is nothing else but the *Coordination of the Parts of the World*; whose Matter is the Number of the Elements and Heavenly Orbs; its Form, the Order and Disposition of them among themselves, and relatively, as to the Centre of the Universe. Of this *Manilius* gives but a short hint. For having told, how humane Reason had scaled Heaven, and contemplated the various Phenomena within the Elementary Region, and

Those to their proper Causes having brought;

He adds next,

*That on the whole Worlds Mass she cast her thought,
Of which the System in her self she fram'd.*

But not giving any particular Description thereof, either as to its *Matter* or *Form*, we conceive it requisite, for the Reader's greater satisfaction, to explain and illustrate this Subject, by representing the several Opinions, as well of the *Ancients* as *Moderns*, touching the same.

And seeing the *Matter* of this System, which is the Number of the Heavens, is variously and with much confusion discoursed of by the Learned; some diminishing, others increasing them; it will not be amiss, in the first place, to exhibit this short following Synopsis of the Number and Distribution of the Heavens, with the several Authors or Assertors thereof; as the same is represented by *Ricciolus*, *Almagest*. Nov. Lib. 9. Sect. 3.

A SYNOPSIS of the Number of the HEAVENS, according to several AUTHORS.

NUMBER
OF THE
HEAVENS.

1. { One Heaven, that is, one World, according to *Aristotle*.
- One Heaven, and that Sydereal and Fluid, according to *S. Chrysostom*, *Tertullian*, *S. Bonaventura*, *Tycho Brahe*, *Longomontanus*, *Kepler*, *Bulialdus*, and *Telles*.
- One Heaven, and that Sydereal, but Solid, according to *Ægidius*, *Hurtadus*, *Cisalpinus*, and *Averſa*.

NUMBER
OF THE
HEAVENS.

- Two Heavens, that is, the *Empyreum* created the first Day, and the Firmament created the second Day; according to *Clement, Acacius, Theodoret, Anastasius Synaita, Procopius, Suidas, S. Bruno, and Claudianus Mamertus*.
- II. { Two Heavens, that is the Sydereal and Aereal, according to *Justin Martyr*.
- Two Heavens, that is, one of the Fixed Stars, the other of the Planets, according to *S. Gregory Nyssene*.
- Two Heavens, that is, the *Primum Mobile*, and the Sydereal, according to *Mastrius, and Bellutus*.
- Three Heavens, to wit, the *Empyreum*, Sydereal, and Aereal, according to *S. Basil, S. Ambrose, Damascene, Cassiodorus, Genebrardus, Suarez, Tannerus, Hurtadus, Oviedus, Teller, Borrus*.
- III. { Three Heavens, that is, one of the Fixed Stars, one of the Planets, and the other Aereal, according to *S. Gregory Nyssene*.
- Three Heavens, the *Empyreum*, Watery, and Sydereal according to *Thomas Aquinas*.
- Three Heavens, that is, the Watery, Sydereal and Aereal, according to *Cajetan*.
- IV. { Four Heavens, that is, the *Empyreum*; that of the Fixed Stars; that of the Planets; and the Aereal, according to *S. Athanasius*.
- V. { Five Heavens, and all Sydereal and Solid, viz. of the Fixed Stars, of *Saturn, Jupiter*, and the *Sun* (with *Mars, Venus, and Mercury* included) and of the *Moon*, according to *Oviedus*.
- Five Heavens, that is, the *Empyreum*, the Watery, that of the Fixed Stars, that of the Planets, and the Aereal; according to *Ricciolus*.
- VII. { Seven Heavens, but confusedly reckoned by *Philastrius*.
- Seven Heavens, that is, the *Aer*, the *Æther*, *Olympus*, the fiery Heaven, the Firmament, the Angelical Heaven, and the Heaven of the Trinity, are reckoned by *Beda*.
- Seven Heavens, that is, the lower Region of the Air; the upper Region thereof; the lower Region of the Fire; the upper Region thereof; the Sydereal Heaven; the Chry-stalline; and *Empyreum*; according to *Rabanus*.
- VIII. { Eight Heavens, and all Sydereal, that is, the Heaven, or Sphere of the Fixed Stars, and the several Spheres of the Seven Planets, according to the *Babylonians, Egyptians, Eudoxus, Plato, Calippus, Aristotle, Cicero, Philo, S. Basil, S. Ambrose, Damascene, Bonaventure, Remigius, Thomas Aquinas, Aben-Ezra, Carthusianus, Lyrannus, Tostatus, Brugensis, Riccius, Orontius, Cremoninus, Philaltheus, Amicus, Ruvinus*.
- IX. { Nine Heavens, that is, the *Empyreum*, and eight Sydereal solid Heavens, according to *Arriaga*.
- Nine Heavens, that is, the *Primum Mobile*, the eight Sydereal Heavens, according to *Macrobius, Haly, Alpetragius, Rabbi Josue, Rabbi Moyse, Scotus, Abraham Zagutus, Sacroboscus, Claromontius*, and, as some (but falsely) conjecture *Hipparchus*, and *Ptolemy*.
- Ten Heavens, that is, the *Primum Mobile*; the Sphere for the Motion of the Fixed Stars; the Eighth Sphere, for the Motion of Trepidation in Longitude; and that of the Seven Planets; according to *Alphonfus* and his followers, *Fernelius, Purbachius Regiomontanus, Amicus, Appianus, Maurolycus, and Langius*.
- X. { Ten Heavens, that is, the *Primum Mobile*; the Sphere of the Motion of Trepidation in Longitude; that of the Fixed Stars; and the Spheres of the Seven Planets; according to *Arzabel, Thebit, and Isaac Israelita*.
- Ten Heavens, that is, the *Empyreum*; the *Primum Mobile*; and Eight Sydereal Heavens; according to *Gulielmus Parisiensis, and Johannes Antonius Delphinus*.

XI.

NUMBER
OF THE
HEAVENS.

Eleven Heavens, that is, the *Empyreum*, and the ten moveable Spheres of *Alphonsus* and his Followers, before mentioned, according to *Petrus Abiaccensis*, the Colledge of *Conimbra*, *Martinengus*, and (sometime) *Clavius*.

XI.

Eleven Heavens, to wit, the *Primum Mobile*; the Sphere of the first Libration in Latitude; the Sphere of the second Libration in Longitude; the Sphere of the Fixed Stars; and those of the Seven Planets; according to *Johannes Vernerus*, *Leopoldus de Austria*, *Johannes Antonius Muginus*, and (in his latter dayes) *Clavius*.

XII. { To these foregoing, if you add the *Empyreum*, there will be XII. Heavens.

XIV. { *Johannes Baptista Turrianus*, and *Fracastorius* make XIV Heavens, that is Seven Spheres, or Orbs, counting from the *Primum Mobile*, to the *Aplané*, or Sphere of the Fixed Stars; and Seven of the Planets.

Having, by the foregoing Synopsis, sufficiently explained the Number of the Heavens, which is the Matter of the *Mundane System*; we are in the next place to give an account of their Order and Disposition, which is the Form thereof.

According to it's Form, the *Mundane System* is considered under a double Hypothesis; either as having the Earth seated in the Centre of the Universe, immoveable, and the Sun and Heavens moving about it; or having the Sun in the Centre, exempt from any Motion of Lation, and the Earth moving about it in the Solar Orb.

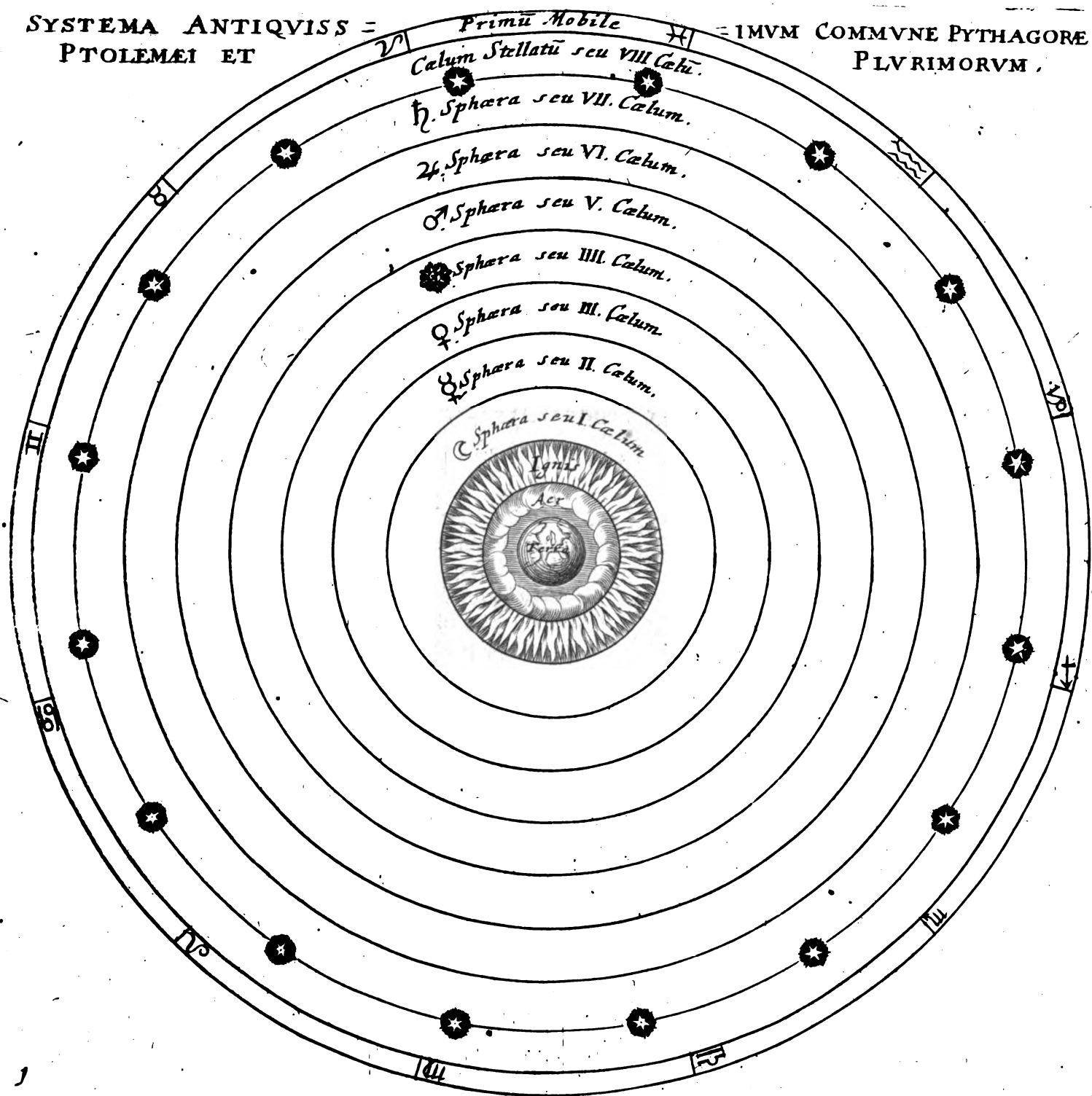
And it is worthy Observation (as *Ricciolus* notes) that the Two Sects of Philosophers and Mathematicians, the one maintaining the Earth's Mobility, the other, its Immobility, have had in the Schools, through several Ages, like *Castor* and *Pollux*, alternately their Rise and their Fall. For first, *Pythagoras*, with some others of his Sect, placing the Earth in the Centre of the World, making use of *Excentricks* and *Epicycles*, seated the Sun in the midst of the Planets. But others of the *Pythagoreans*, retaining *Epicycles* and *Excentricks*, placed the Sun in the Centre of the World, and the Earth in the midst of the Seven Planets.

Afterwards *Plato*, placing the Earth in the Centre of the World, seated the Sun in the midst of the Planets, yet so as for the most part he supposed *Venus* and *Mercury* to be carried above him; whom *Eudoxus*, *Calippus*, and *Aristotle* followed, endeavouring to explain the Motion of the Planets, by *Concentrick Circles*. So that they conceived neither *Venus* nor *Mercury* moved in *Epicycles*, above and beneath the Sun; but either always above, or always beneath the Sun.

After this, Others again, reducing *Excentricks* and *Epicycles*, placed the Earth in the midst of the World, as *Archimedes*, *Hipparchus*, *Sosigenes*, *Cicero*, *Vitruvius*, *Pliny*, *Macrobius*, and *Capella*; but differed among themselves, as to the various Order and Disposition of the Planets. Others again, as *Aristarchus*, *Philolaus*, and some *Pythagoreans*, removed the Earth out of its Central Position, and made it move about the Sun, by them placed in the midst of the World: But what their Opinion was touching *Excentricks* and *Epicycles*, they have not explained or delivered to Posterity.

In process of time, *Ptolemy*, reviving the first and ancient *Pythagorean System*, re-established *Excentricks* and *Epicycles*, placing the Earth in the midst of the World, and the Sun in the midst of the Planets. Which Opinion continued, and was embraced by the greatest part of Astronomers, until the XIV. Century after Christ; though the Order of the Planets were changed by *Alpetragius* and *Geber*. On the other side, *Turrianus* and *Fracastorius*, retaining the *Ptolemaick Order*, brought in again *Concentrick Circles*, and those more in number by many, than either *Aristotle* or *Eudoxus* had introduced. About which time, *Copernicus*, raising, as it were from the Grave, the Hypothesis of *Philolaus* and *Aristarchus*, touching the Earth's annual Motion about the Sun, in the Centre of the Universe, set forth and illustrated the same with such fair and probable Arguments, that it hath prevailed with most Astronomers at this Day. He made *Venus* and *Mercury*, with *Plato*, *Vitruvius*, *Macrobius*, *Capella*, and *Bede*, to move, now above, now beneath the Sun. Hence *Tycho Brahe*, and with him *Longomontanus*, took occasion of introducing another System; wherein not only *Venus* and *Mercury*, but also *Mars*, *Jupiter* and *Saturn* are supposed to move about the Sun; and the Sun and Moon, with the Fixed Stars about the Earth, immoveable in the Centre of the Universe, retaining the *Excentricks*, but rejecting the *Epicycles* of *Ptolemy*. At length *Argolar*, altering the *Tychonick System*, makes the three Superiour Planets to move about the Earth; *Venus* and *Mercury* about the Sun; seating the Earth in the midst of the World. From whom yet *Ricciolus* dissents, making *Saturn*, *Jupiter*, the Sun, Moon, and Fixed Stars, to move about the Earth, and *Venus*, *Mercury*, and *Mars* about the Sun. These various Sentiments of the Learned, touching the Order and Disposition of the several Parts of the *Mundane System*, (as they

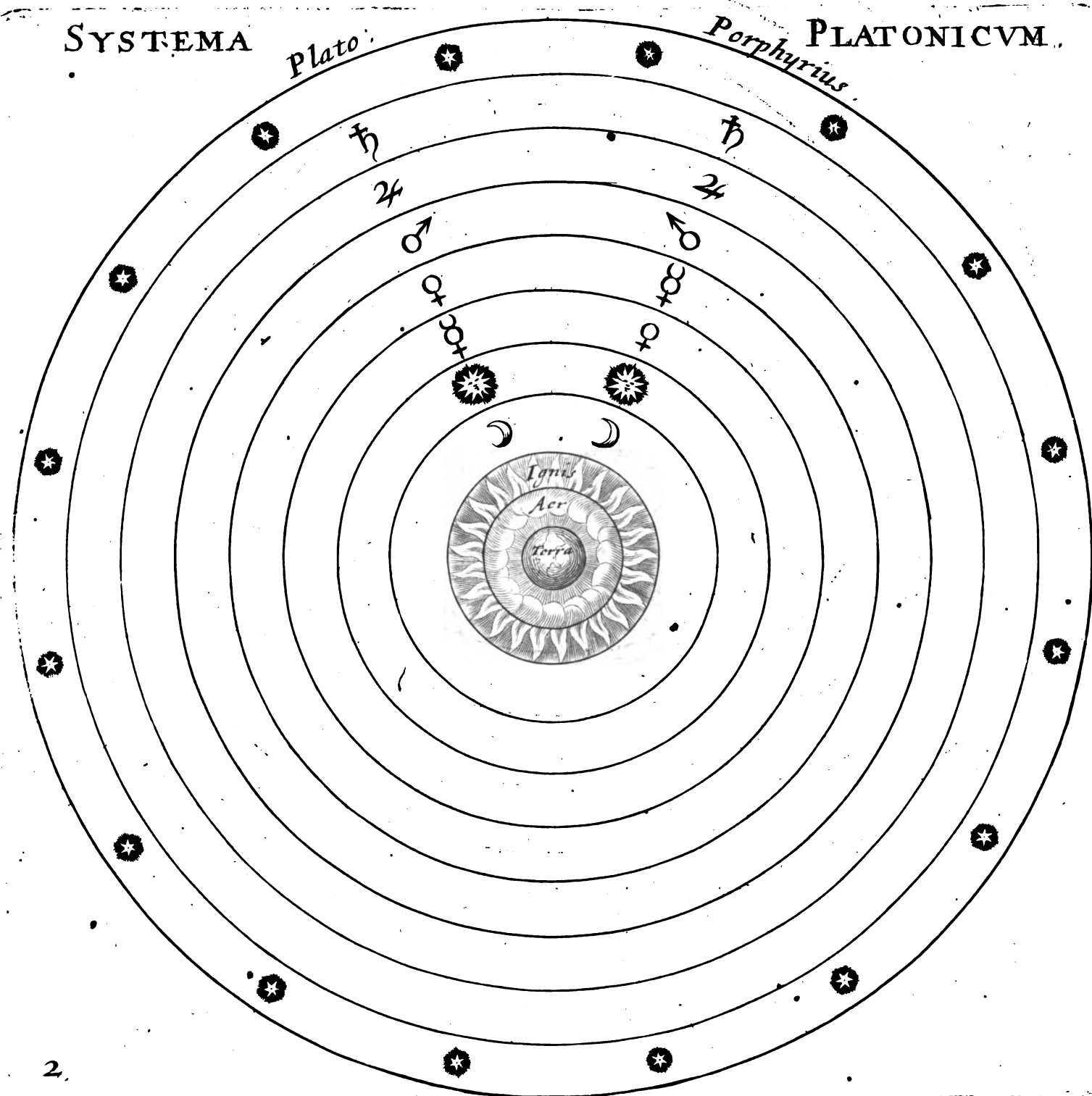
they have been in Divers Ages successively asserted) being thus briefly enumerated, we shall next give somewhat a more ample Description and Illustration of the several Hypotheses, and exhibit withall to the Reader's view the Schemes of each particular System; beginning with the most Ancient, that of *Pythagoras*, which is this.



In this System the Terraqueous Globe is seated in the midst or Centre; about it, the Elementary Region; next above that, the *Moon*; then *Mercury*; next above him, *Venus*; the Sun, as Moderator of all, being placed, as in a Throne in the midst of the Planets, environed not only by the three foregoing, called the Inferiour, but by *Mars* likewise, *Jupiter*, and *Saturn*, called the Superiour Planets. Above Saturn is the Sphere of the Fixed Stars, called *Ἀπλάνη*, i. e. *Aplane*, or Unerring; by some, the Firmament. The reason of this System is thus explained by *Pliny*, Lib. 2. c. 22. *Pythagoras ex Muscâ ratione appellat Tonum quantum absit à Terra Luna*, &c. i. e. *Pythagoras from Musical Reason, calls the space between the Earth and the Moon, a Tone; the space from the Moon to Mercury, he will have to be half a Tone; as much in a manner from him, to Venus; from Venus to the Sun, as much and half again; but from the Sun to Mars, as much as from the Earth to the Moon, that is a Tone; from him to Jupiter, half a Tone; from Jupiter to Saturn, another half Tone; and from thence to the fixed Stars, as much and a half again. Thus are composed Seven Tones, which Harmony they call Diapason, that is, the generality or whole state of Consent or Concord. Now a Tone is by some interpreted the same as an Unite or Integer, and contains in Measure according to the Opinion of Pythagoras 125000 Stadia; according to which Measure; not only the foregoing space, but extent of the whole System, may be computed. And this was the first Pythagorean System, embraced by Archimedes, the Chaldeans, Aristotle, Cicero, Livy, Ptolemy, Alphonsus, Purbachius, and the greatest part of Astronomers, until the time of Maginus and Clavius.*

The

The next System is that which is called the *Platonick*. Touching which, thus *Ricciolus*, Lib. 9. c. 3. As Discord oftentimes produces Concord; so on the other side Concord often begets Discord. For between Pythagoras and Plato, there was thus far a wonderful Concordancy, that they both conceived the Intervals and Order of the Planets ought to be constituted according to the Laws of Musick. But from their agreement sprung their dissent; by reason the Platonists and Pythagoreans differed in their Opinions about the Harmonical Diastem. And as Plato differed from Pythagoras, so some of his own followers differed from him, as (among others) *Porphyrus*, *Apuleius*, and *Marcilius Ficinus*. Whose difference will appear in the following Scheme.

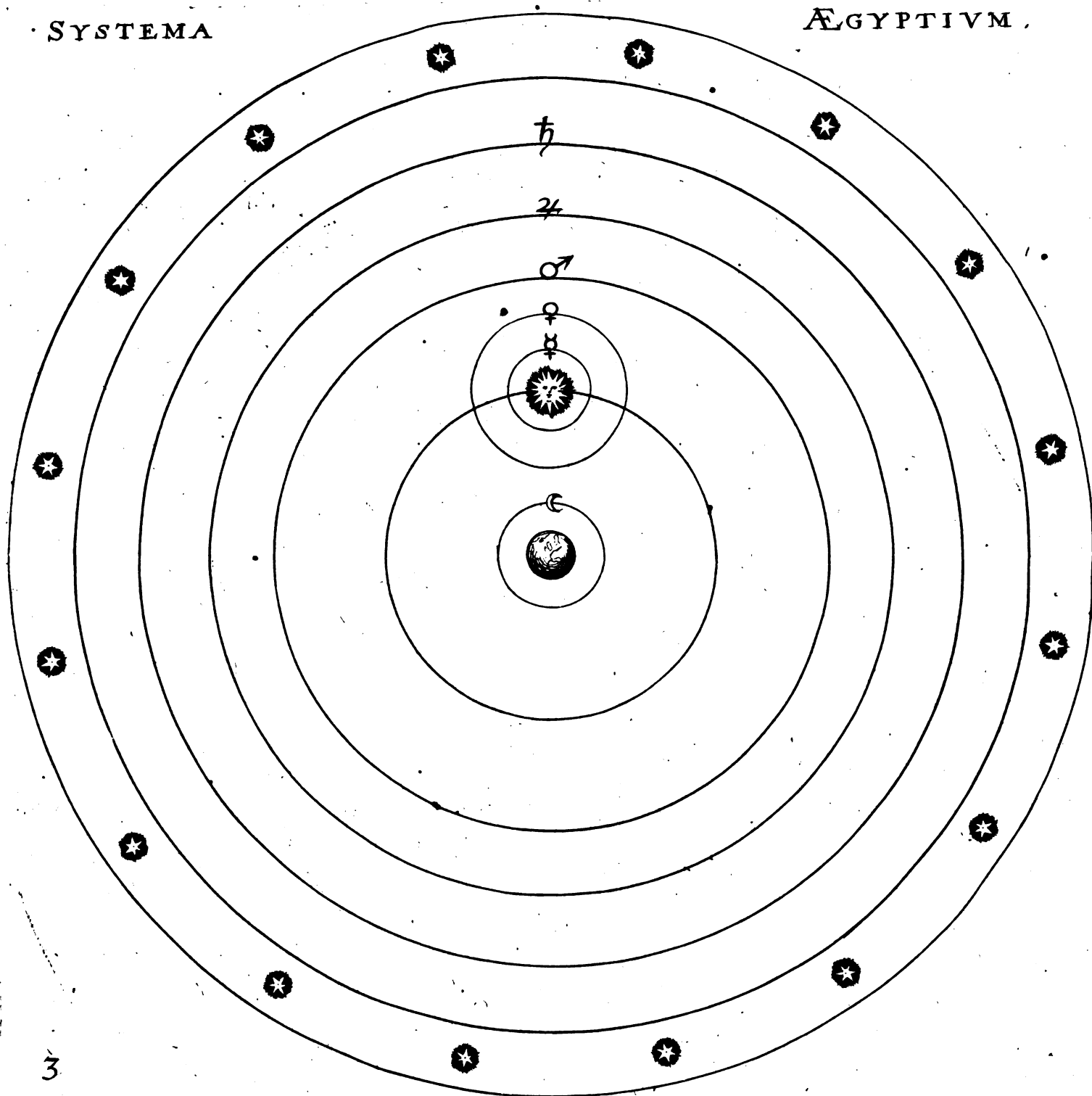


In which, in the first place, according to *Plato*, the *Earth* with the *Elementary Region* is placed; above that, the *Moon*, and immediately above that, the *Sun*; above him *Mercury*, then, *Venus*; above her, *Mars*; then *Jupiter*; lastly *Saturn*. In the second place is that of *Porphyrus*, and some other *Platonists* beforementioned, agreeing in all but this, That whereas *Plato* immediately above the *Sun*, placed *Mercury*, and then *Venus*, they immediately, above the *Sun*, placed *Venus*, and then *Mercury* above her. Of which last, *Macrobius* lib. 1. in *Somn. Scip.* c. 3. gives this account. The late *Platonists* (says he) repudiated the *Dimensions* of *Archimedes*, as not observing double and triple Intervals. For, they held, that what was the Distance, or Interval, from the *Earth* to the *Moon*, the same was double from the *Earth* to the *Sun*; and the Distance from the *Earth* to *Venus*, was triple to that from the *Earth* to the *Sun*; and from the *Earth* to *Mercury* four times that from the *Earth* to *Venus*; and how far the Distance was from the *Earth* to *Mercury*, nine times that was the Distance from the *Earth* to *Mars*; and the Distance from the *Earth* to *Jupiter*, eight times that from the *Earth* to *Mars*; and the Distance from the *Earth* to *Saturn*, seven and twenty times that from the *Earth* to *Jupiter*. The same Order is likewise asserted by the Author of the Book *De Mundo*. These three foregoing Systems are composed all of *Concentrick Orbs*. The next, which is the *Egyptian*, followed

lowed by *Vitruvius*, *Martianus Capella*, *Macrobius*, *Beda*, and *Argol*, is composed partly of Concentrick Orbs, partly of Excentrick, as may appear by the subsequent Scheme.

SYSTEMA

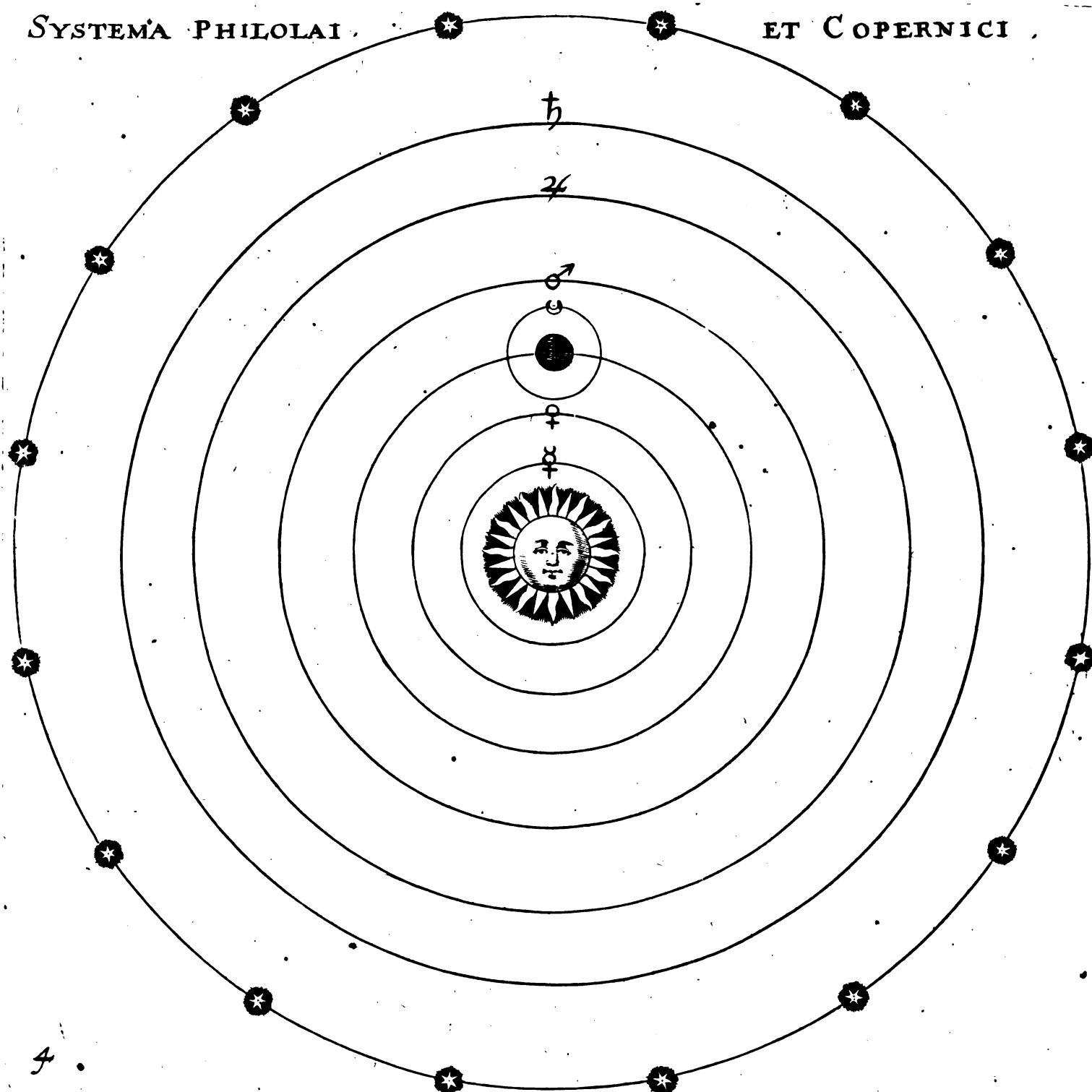
ÆGYPTIVM.



Wherein we may perceive the *Earth* seated in the midst of the World, with the Elements, and immediately above them the *Moon*, then the *Sun*, about whom, as their Centre, first *Mercury*, then *Venus* are supposed to move in *Epicycles*; above these *Mars*, next *Jupiter*, and then *Saturn*. Of this System, thus *Macrobius*, in *Somn. Scipion. l. i. c. 19*. The Egyptian subtlety is not without reason, which is this; the Circle wherein the *Sun* runs his course is surrounded with the Circle of *Mercury*, as Interior, and by that of *Venus* as Exterior. And hence it is that these two Stars, when they are in the upper part of their Circles, are understood to be above the *Sun*; but when they are in the inferior part of their Orbs, or Circles, the *Sun* is held to be above them. Those therefore who affirm the Spheres of these Planets to be under the *Sun*, are persuaded to believe it, from this Appearance of their Course, when they run in the Inferiour part of their Orbits; which is more remarkable and more clearly discernible, for when they are in the upper part of their Circles, they are more concealed. And therefore this persuasion of theirs hath prevailed, and accordingly the Order of those Planets hath been received almost by all Persons; but more perspicacious Observation discovered this better Order. And justly does he stile it a perspicacious Observation, which so many Ages since by the only Sagacity of Wit so clearly discovered, what we find now really detected by the help of the Telescope. And therefore *Ricciolus* says of this System, that it is *Pulcherrimum*, ac pro hac quidem parte, *Verissimum Systema*.

We come now to the most celebrated, and at this day most generally received Mundane System, from it's Reviver, called the *Copernican*, but owing it's original to the *Samian* and *Italic* School, as being proposed and asserted, in the one, by *Philolaus*, of *Crotona*, in the other, by *Aristarchus Samius*,

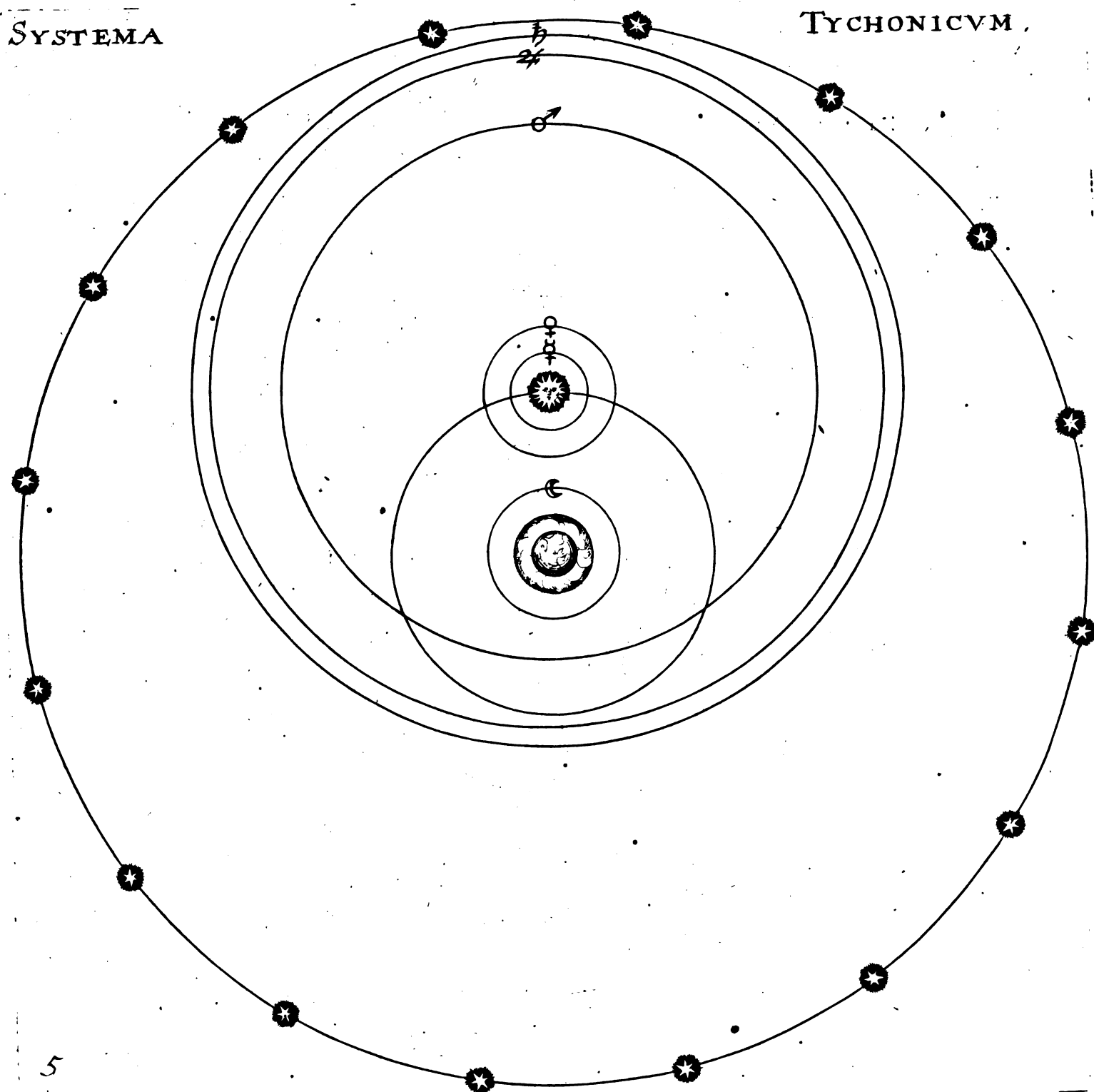
Samius, both *Pythagoreans*, whence it is called the second *Pythagorick* System, as differing from the former before described; That, fixing the Earth immoveable in the midst of the World; This, on the contrary giving to the Earth, not only a Diurnal Motion about its Axis, but also an Annual, about the Sun, as the Centre of the Universe. An Hypothesis not unknown to the *Romans*; and therefore *Seneca*, in his *Natural Questions* (*Lib. 7.*) proposes it as a thing necessary to be discussed; To know whether the Earth standing still, the Heavens be moved about it; or the Heavens standing still, the Earth be carried round. And again, It is a thing worthy contemplation to be assured, says he, in what condition We are; whether in a Seat of all others most slow; or the most swift? Whether God turns all things about us, or we our selves are turned about? This System, about two Ages since, was resuscitated from Oblivion and the Grave, by Cardinal *Cusanus*, but imperfectly, until *Copernicus* came and gave it a perfect consummation; followed by the greatest Wits of this and the foregoing Age, to wit, *Georgius Joachimus Reticus*, *Mästlinus*, *Rothmannus*, *Stevinus*, *Kepler*, *Galileo*, *Schickardus*, *Jordanus Brunus*, *Cælius Calcagninus*, *Didacus Astunica*, *Foscarinus*, *Herigonius*, *Renatus Des Cartes*, *Lansbergius*, *Bullialdus*, *Antonius Laurentius Politianus*, *Wendelinus* and *Gassendus*; *Lansbergius* and *Bullialdus*, only differing in this from *Copernicus*, that they allow to the Fixed Stars a proper Motion, which *Copernicus* denies. Take the same represented in the following Scheme.



In this System, we may perceive the sun placed in the Centre of the World; next above him, *Mercury*, finishing his Course in the space of eighty dayes, or thereabouts; then *Venus*, making her Revolution in nine Moneths time; above her, the *Earth*, with the Elementary Sphere, in the Annual Orb, which it runs through in 365. dayes and half, by a Motion from West to East; that is in the same Circle, wherein the *Egyptian* and *Ptolemaick* System place the Sun. Besides which Annual

Annual Motion, *Copernicus* assigns to the Earth a Diurnal Revolution, in which it turns about its own Centre and Axis, inclined in the Plane of the Ecliptick, in the space of 24. hours, from West to East: The *Moon* by a Menstrual Revolution being carryed about the *Earth*, as in an *Epicicle*; *Mars* running about the *Sun*, as the Centre of the Universe in two years; *Jupiter* above him in twelve; and *Saturn* in thirty. The Sphere of the Fixed Stars being distant by so vast an Interval from the Sphere of *Saturn*, that the Annual Orb, in which the Earth moves, appears, in respect to it, no other than a Point.

This System, though, in appearance, of all others, the most rationally grounded, could not yet give so general a satisfaction to the Curious, but that some of them conceived it might admit of Alteration, or Emendation. And thence the illustrious *Tycho* took occasion to introduce the following System of his, which is no other than a certain Transfiguration of the *Copernican*, after this manner.



First, the *Earth* is supposed fix'd without Motion in the Centre of the Universe, Concentrick to which is, first the Sphere or Circle of the *Moon's* Motion; next, that of the *Sun's* Annual Course; then the Sphere of the Fixed Stars. The *Sun* being placed as the Centre of the other Planets, in whose Orb (as it were two *Epicicles*) are drawn the Circles of *Mercury* and *Venus*. At a greater Distance is that of *Mars*, intersecting, when in Opposition to the *Sun*, part of the Solar Sphere, and therefore being Achronical is nearer to the *Earth* than the *Sun*. Above *Mars* is the Sphere of *Jupiter*; above *Jupiter*, that of *Saturn*; above that, the Fixed Stars. So that, in this System, the *Sun* is the Centre of five Planets; that is, not only of *Mercury* and *Venus*, according to the *Egyptian* System, but also of *Mars*, *Jupiter*, and *Saturn*, according to the *Copernican*; which likewise

likewise it resembles, as supposing fewer Conversions, and rejecting the Solidity of the *Ptolemaick* or *Purbachian* Orbs. But the *Copernican*, even in the Opinion of *Ricciolus*, seems to carry with it a greater simplicity and concinnity. *Nicholaus Raimarus Ursus* seemed to challenge this System, as first introduced by him, ascribing the Original of the Hypothesis, to *Apollonius Pergæus*. But *Tycho*, in his Epistles, hath vindicated and asserted his own Right, and hath gained for his Followers *Longomontanus* (who yet gives to the Earth a Motion about its Axis) *Scheinerus*, *Blancanus*, and generally the Astronomers of the *Jesuitical* School. And the Reason of their adherence to this System, rather than to the *Ptolemaick* or *Copernican*, is given by *Caramuel*, in his *Interim-Astronomicum*; which is, that *Demonstration condemns the Ptolemaick*, shewing it to be impossible and inconsistent with Modern Observations; and as for the *Copernican*, that it stands condemned by a congregation of Cardinals, who have (if you will believe them) defined the same to be repugnant to the Sacred Scriptures.

Among the several Systems either of the Ancients or Moderns which are grounded upon the Earth's Immobility, there are two (besides the *Tychonick*) which seem to *Ricciolus* the most probable; the One is *Semi-Ptolemaick*, the other *Semi-Tychonick*.

The Form of the first, admits the Centre of the Earth as the Term from whence the Excentricity of the several Orbs are measured, supposing *Venus* and *Mercury* to be carried about the Sun in *Epicycles* and the Excentricities of the other five Planets, as also their *Epicycles*, not to be always of the same Quantity, which may be apprehended by the Figure of the *Egyptian* System already described, supposing only that *Mars* in Opposition to the Sun, be made to approach nearer to the Earth, than the Sun does.

The Form of the second is represented in the following Scheme, and owes its Invention to *Ricciolus*, wherein the Sun is supposed to be the Centre of the Sphere of *Mercury*, *Venus* and *Mars*; And the Earth, the Centre of the Circle of the Moon's Motion, and of the Fixed Stars, as also of those of *Saturn* and *Jupiter*. The Reasons impelling him to embrace this Hypothesis, being these.

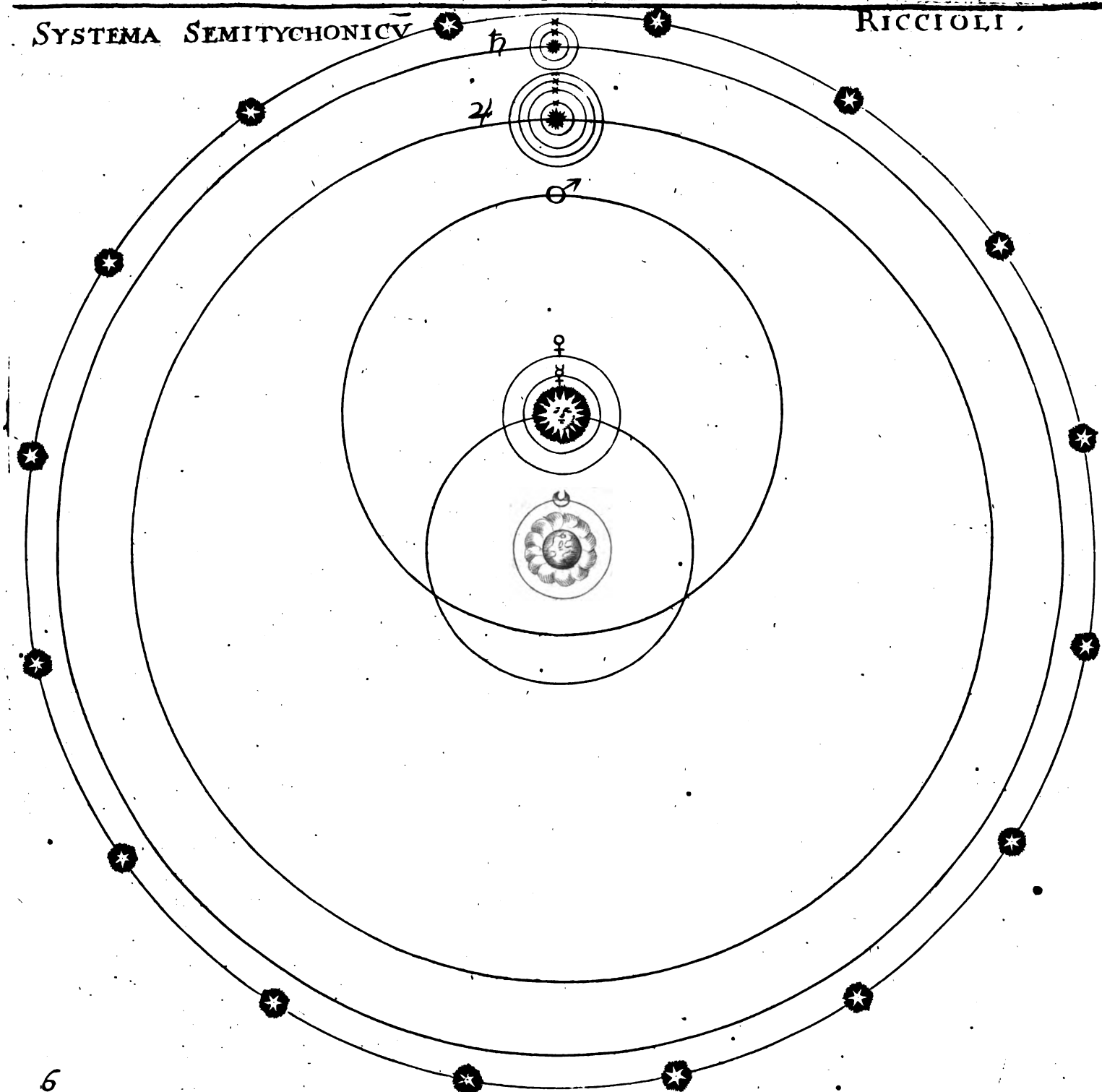
First, he observed that *Saturn* and *Jupiter* had Secondary Planets moving about them, but *Mars*, *Venus*, and *Mercury* none; whence he conceived it probable that *Saturn* and *Jupiter* exercised as it were their proper Monarchies in the Heavens; and were no Attendants or Satellites of the Sun; but moving about the Earth as their Centre. That *Mars* was one of the Sun's greatest or utmost Satellites, including within his Sphere that of the Earth; but *Venus* and *Mercury* his nearer and more interior Gaurds.

Secondly, Because in the Variation of the Excentricities of the Planets, he observed a greater Connexion of *Mars*, *Venus*, and *Mercury* with the Sun, then of *Saturn* and *Jupiter*.

Thirdly, Because he conceived *Saturn* and *Jupiter*, being more slow and ponderous Planets, to have a greater Affinity to the slow Sphere of the Fixed Stars; and to respect (as do the Fixed Stars) the Earth rather than the Sun as the Centre of their Motions.

Fourthly, Seeing that *Mars*, *Venus*, and *Mercury* in their Courses or Circumgyrations enter into the Solar Heaven, he conceived it more probable that those Planets should have the Sun for the Centre of their Motions, and not to have any Distinct *Æthereal* Regions assigned them, but to move All in one common Region. But *Saturn* and *Jupiter* to have their Distinct Dominions and Regions allotted them.

Fifthly, Because it seems very probable that among the Planets there should be one as it were a Mean or Middle, between the Superiour and the Inferiour, and which in his Motions should have some things common with *Saturn* and *Jupiter*, and some with *Venus* and *Mercury*; to wit *Mars*. But see the Scheme it self.



In which is to be noted that the Intervals of the several Orbs are so ordered, that the lowest of the Concave Heaven of *Saturn*, does not touch the upper part of the *Convex* of *Jupiter*, or the lowest of *Jupiter*, the uppermost of *Mars*, as in the *Ptolemaick*, but there is a voyd Interval between the Fixed Stars, and the uppermost *Convex* of *Saturn's* Orb, of 9824 *Semidiameters* of the Earth, and between the *Concave* of *Saturn* and the *Convex* of *Jupiter*, an Interval of 10045 of the like *Semidiameters*, and between the *Concave* of *Jupiter* and *Convex* of *Mars*, an Interval of 5310 such *Semidiameters*, and between the *Concave* of *Venus* and *Convex* of the *Moon's* Orb 1850 *Semidiameters*. Besides, the Thickness of the whole Heaven of *Saturn* computed together with his *Satellites* is supposed 32454 *Semidiameters*, and that of *Jupiter* with his *Satellites* 21361 *Semidiameters*; That of the *Sun*, *Mars*, *Venus* and *Mercury*; being but as one Heaven, is supposed to contain 19091 of the Earth's *Semidiameters*.

These three last Systems suppose the Heavens, or the *Ætherial* Region to be pervious, fluid, and of a thin, liquid, and transparent Substance like the Air, but more pure, and not consisting of Solid Orbs, as the *Peripateticks*, and those of the *Ptolemaick* School affirm. This Fluidity of the Heavens being manifested, by the *Macula Solares*, whether they be considered as Planets moving tumultuously about the Sun, or as Clouds, Vapours, and Fumosities issuing from the Solar Body; Likewise by the Librating Motion of the Firmament it self, in which the Sun moves, as also by the Libration of the Moon; and by the *Satellites* of *Jupiter*, not long since discovered to move about that Planet, as also those about *Saturn*, and the Extravagant Motion of *Mars*, as also that of *Venus* and *Mercury* running now above, now beneath the Sun. No less evidenced by the Production of Comets, and their divers Motions, which beginning in One, make their Progress through several *Ætherial* Regions; which they could not do if the Celestial Orbs through which they pass were

were solid; from which supposition several other Inconveniencies would likewise ensue by reason their *Convexities* and *Concavities*, as also those of so many *Epicycles* and *Excentricks* would necessarily produce a Multiplicity of various Refractions of the several Rayes of the Sun, of the other Planets, and of the Fixed Stars. Lastly, it seems as incongruous that the Stars and Planets should be carried about in such vast solid Orbs, (to which they bear no other proportion than a drop of Water to the Ocean) as it is for the Earth to be imagined to move only to carry about a Fly or a Pismire. Neither do those Celestial Bodies gravitate or need any Support, but move regularly within their several Sphericities, as having no Appetency of Motion beyond those Bounds. See *Tycho Brahe*, *Progymnas.* Tom. i. and *Ricciolus* repeating the several Arguments to this Purpose (of *Kepler*, *Lansbergius*, *Maginus*, *Galileo*, *Gassendus* and *Bullialdus*) *Almag.* Nov. Tom. 2. p. 242. and 243.

Of the Constellations, We have in our Notes treated so particularly and so fully, that We shall not need to add any thing (by way of further Illustration) thereunto. Only whereas *Manilius* hath omitted among the Northern Constellations *Coma Berenices*, *Ganymed* or *Antinous*, and *Equuleus* or the lesser Horse, and in the Southern Hemisphere, *Eridanus* or *Fluvius Orionis*, and *Corona Australis*, besides those, which having been but lately detected by Modern Discoveries, could not therefore be known to the Ancients. We are obliged, according to the References given in our Notes, to satisfy the Readers Curiosity, by making a Particular Description of them in the same manner as we have done of the others.

COMA BERENICES, is by *Bayerus* called *πλόαμος*, i. e. *Coma*, *Spicarum Manipulus*, and *τεῖχες* seu *Crines*, called likewise by the *Greeks* *συζωφὴ πλοκάμω*, and *ἡλακάτη*, i. e. *Colus*; as being fashioned like to a Distaff of Flax; by the *Arabs* it is called *Alband*, i. e. *Lacus* seu *Cisterna*, says Doctor *Hyde* in his Notes upon *Ulugh Beigh's* Table. It consists according to *Proclus* and *Stoefler* of seven Stars, according to *Kepler* of fifteen. The Original of this Constellation was from *Berenice* the Wife of *Ptolemaeus Energetes*, who vowed if her Husband returned Victorious from his *Asian* Expedition, she would shave her Head and offer her Hair (one of her most beautiful Ornaments) to *Venus* to be hung up in her Temple; which having accordingly performed, it was the next Day after the offering thereof found missing, whereupon *Conon* to flatter King *Ptolemy*, discovered to him that the Head of Hair was translated to Heaven, and made a Celestial Constellation, celebrated by *Callimachus* in a particular *Greek* Poem; turned into *Latine* Verse by *Catullus*. *Pliny* l. 2. c. 27. seems to make this a Southern Constellation, but *Ptolemy* places it to the North of the Sign *Leo*, not far from the Tail thereof, whose Situation likewise is thus represented by *Catullus* in the forementioned Poem.

—Sævi contingens namque Leonis
Lumina, Callisto juxta Lycaonida,
Vortor in Occasum tardum dux ante Booten;
Qui vix serò alto mergitur Oceano.

ANTINOUS and GANYMED are one and the same Constellation for the Asterism which by the *Greeks* is feigned to represent *Ganymed* rap'd by the Eagle and carried up to Heaven to serve *Jupiter* as a Cup-bearer; the *Romans* in Honour of *Antinous* (the beloved Favourite of *Hadrian* the Emperour) will have to be the Representation of that beautiful *Bithynian*, who dying a voluntary Death for the Welfare of the Emperour, was by him honoured with Statues, Temples, Priests, and a Place among the Celestial Constellations; between the *Eagle* and *Sagittary*. It consists according to *Kepler* of seven Stars, according to *Bayerus* of eleven, and comes to the Meridian at Midnight about the Middle of *July*.

EQUULEUS, or the Lesser Horse is by *Ptolemy* called *ἵππος πегτομῆς Ἀστερισμός*; by others

thers $\pi\mu\lambda\ \tau\epsilon\ \iota\pi\pi\alpha$, i. e. *Señio Equi*; in *Chrysococca's* Tables $\kappa\epsilon\phi\alpha\lambda\eta\ \iota\pi\pi\alpha$, i. e. *Caput Equi*. By *Ulugh Beigh Kit'a Al Pháras*, i. e. *Señio, Præcisio, vel Segmentum Equi*, by others of the *Arabs* called *Al Pharas al Anwal*, i. e. *Equus Primus*, consisting of four Stars in Form of a Horse's Head and Neck; it comes to the *Meridian* at Midnight about the Beginning of *August*.

To these Northern Constellations some late Astronomers have added several other Asterisms composed out of the Inform Stars or *Sporades*. As of those between the greater *Bear* and the *Sign Leo*, they have formed the *River Jordan*. Of those between the North Pole, *Perseus* and *Auriga* an Asterism called *Camelo Pardalis* and *Gyrassa*. Of the four Stars interposed between the *Triangle* and the Tail of the *Ram*, another called *Vespa*, by some *Apes*, i. e. the *Wasp* or the *Bees*. Of the Tract of Stars running between the *Swan* and the *Eagle*, as far as *Serpentarius*, they have formed the *River Tigris* or *Euphrates*, and to a single Star of the second Magnitude, placed in the midst between *Charles his Wain*, and *Coma Berenices* (from which if a right Line be drawn through the first Star in the Tail of *Ursa Major*, towards the Pole, it will point directly to the Pole Star) they have given, in Memory of the most Glorious Prince and Martyr, *Charles the First, King of England*, the Name of *Cor Caroli*. The Primary Invention and Denomination thereof being owing to the most Loyal and truly Learned, *Sir Charles Scarborough* Knight, Physician to His Majesty, and my Honoured Friend.

ERIDANUS or **PADUS** is a Southern Asterism, which some will have to be made a Constellation in Memory of *Phaeton*, who was drowned therein; the *Egyptians* challenge it for their *Nilus*. It is called by the *Greeks* $\pi\omicron\tau\alpha\mu\acute{o}\varsigma$, i. e. *Fluvius*, and $\pi\omicron\tau\alpha\mu\acute{o}\varsigma\ \omicron\epsilon\iota\omega\nu\theta$, i. e. *Fluvius Orionis*, because it springs from the left foot of *Orion*, and runs from thence in a flexuous Course Southward: *Lycophron* calls it *Actuse*. It is called likewise *Gybon*, and by those of *Fetz* (sayes *Ricciolus*) *Vardi*, i. e. *Fluvius*, by the *Moors* *Guad*, and by the *Arabs* *Nab'r* in the same sense. The *Thuscans* call it *Botignon*, the *Ligurians* *Botigum*, seu *Bodintum*, as *Bayerus* in *Uranometr. Schilleriana* affirms. It consists according to *Ptolemy* of 34 Stars, according to *Bayerus* of 43. *Kepler* reckons therein 39. In which the 34th Star (of the first Magnitude) is by the *Arabs* called *Al Dalim*, i. e. *Agger*, or as *Doctor Hyde* from the Authority of *Golius* interprets it. *Terra fossi primitus Putei*, or *Agger in Aquæ Extremitate*; Hence in *Chrysococca's Persian* Tables; it is called $\alpha\upsilon\lambda\alpha\chi$, i. e. *Sulcus Porca*. It is likewise called in *Arabick* *Acher Nab'r*, i. e. *Ultima Fluminis*, whence the common Name *Acarnar*. It passes by the *Meridian* at Midnight in *November*.

CORONA AUSTRALIS five *Notia*, called by the *Greeks* $\sigma\tau\epsilon\phi\acute{\alpha}\nu\varsigma\ \nu\omicron\tau\iota\varsigma\ \alpha\sigma\tau\epsilon\iota\sigma\mu\acute{o}\varsigma$, i. e. *Coronæ Australis Asterismus*; and $\delta\delta\tau\epsilon\sigma\sigma\ \sigma\tau\epsilon\phi\alpha\nu\theta$, i. e. *Corona Secunda*, likewise $\omicron\upsilon\epsilon\gamma\alpha\nu\iota\sigma\kappa\omicron\varsigma$, i. e. *Parvum Cælum*, and $\kappa\eta\rho\upsilon\kappa\epsilon\iota\omicron\nu$, i. e. *Caduceum*. It is called by the *Greek Poets*, $\iota\chi\iota\omicron\nu\omicron\varsigma\ \tau\epsilon\acute{\rho}\chi\eta\varsigma$, i. e. *Rota Ixionis*. The *Arabs* give it different Denominations, as *Al Kubba*, i. e. *Testitudo vel Tabernaculum*, propter circularem formam, and *Az'ha Al Naâm*, i. e. *Nidus Struthionis*, as being near two Stars in the Leg of *Sagittarius* called *Al Naâm*, whereof one is called *Al Naâm al Sadir*, i. e. *Struthio adiens aquam*, the other *Al Naâm Al Wârid*, i. e. *Struthio rediens ab Aqua*. *Ulugh Beigh* calls them in the Plural Number *Al Naâm*, which *Doctor Hyde* translates *Pecora*, because in *Tizinus* his Tables he finds them portrayed with a Shepherd near them, as reposing under the *Al Kubba* or *Testudo*. The Constellation consists, according to the joynt Computation of *Ptolemy*, *Bayerus* and *Kepler*, of thirteen Stars. It is fabled to have been made a Constellation by *Bacchus* in Honour and Remembrance of his Mother *Semele*. It comes to the *Meridian* at Mid-Night, (but not visible in our Hemisphere) in the beginning of *July*.

Besides these Southern Constellations omitted by our Poet, but known to the Ancients; there are several other Southern Asterisms lately invented by Modern Astronomers; whereof some were composed out of divers inform Stars heretofore known: Others out of such as have been newly discovered, and were never known in any former Ages: Of the first kind are the three following.

First, *Monoceros* or *Unicornus*, placed between *Orion* the greater Dog and *Hydra*.

Secondly, *Alecton*, i. e. *Gallus*, or the Cock, between the greater Dog and the Ship *Argo*; which Stars yet *Bayerus*, and others reckon as belonging *ad Scutulum Navis*.

Thirdly, *Columba*, or the Dove of *Noah*, with an Olive Branch in her Beak, not far from the greater Dog, which appears not above though it run near our Horizon.

Of the other kind are these twelve Constellations following, first found out and denominated by some eminent Navigators sailing beyond the Line, as particularly by *Americus Vespucius*, *Andreas Corsalius*, *Petrus Medina*, but principally by *Fredericus Houthman*, who during his Abode in the Island *Sumatra*, made exact Observation of them, being by *Petrus Theodorus*, and *Jacobus Bartschius* reduced into Order, and by *Jansonius*, *Hondius*, and *Jacobus Florentinus* inserted in the Celestial Globes by them made and published.

1. **GRUS**,

1. GRUS or the Crane consisting of thirteen Stars according to *Kepler* and *Bayerus*, whereof three of the Second Magnitude, one in the Head, one in the Tail or Train, and another in the Southern Wing. It is called likewise *Phœnicopterus* and *Geranos*, but (as *Schillerus* observes) *noviter, & affectatè cum notum sit Græcos, animalia hæc circa Polum Meridionalem nunquam somniasse*; it is seated under the Southern Fish.
2. PHOENIX on her Spicy Pyre, consisting of fifteen Stars, among which one of the Second Magnitude in the Neck thereof, and two Nebulous. It is placed between the Southern Fish, and *Eridanus*, *sub Cauda Ceti*.
3. TOUCAN or the American Goose called likewise, *Pica Braslica seu Indica*, and *Ramphestes*, consisting of eight Stars, whereof four of the Second Magnitude; according to *Bayerus*, though *Kepler* allow them to be but of the third. It is placed in the midst between the *Phoenix* and *Indus*.
4. INDUS, or the Indian, in the Figure of an Indian, holding in either Hand a Dart, and therefore likewise called *Sagittifer*, consisting of twelve Stars, seated between *Toucan*, and the Constellation called *Pavo*.
5. PAVO, or the Peacock, to which some have given the Greek Name *πὰς*, consisting according to *Bayerus* of sixteen Stars, as *Kepler* reckons of 23. Whereof one in the Head thereof is of the Second Magnitude, and two Nebulous. It is placed near to *Indus*, under *Sagittarius*.
6. APOUS, or *Apis seu Avis Indica, Avis Paradisi, & Mann codiata*, consisting of twelve Stars according to *Bayerus*, according to *Kepler* but of eleven, following after the Peacock with its Tail toward the *Antartick* Pole.
7. APIS, *Musca*, or *Muia*, called likewise *Crabro Indicus*, consisting of four Stars placed under the Feet of the *Centaur*.
8. TRIANGULUM AUSTRALE, *Trigonum Notius five Deltoton*, to whom some likewise have given the affected *Arabick* Name of *Almutabet Algenubi*, consisting of five Stars, in each Angle one of the Second Magnitude, and two others. It is seated *sub fera Centauri & Ara*, called by *Schillerus* *Signum Tau*, *five Imago crucis*, by the *Spaniards* *el Cruzicero*.
9. CHAMÆLEON placed directly in Opposition to the Lesser Bear, and whose Form, (according to the Disposition of the Stars that compose it) it represents; consisting according to *Kepler's* Account of ten Stars, according to *Bayerus* but of nine. It is placed directly under the Constellation *Musca* or the Fly, *in quam* (as *Bartschius* describes it) *Lingnam vibrat*.
10. PISCIS VOLANS, *Volucris, & Volatilis*, called likewise *Passer Marinus*, and *Hirundo Marina*, in which last sense it is noted by a new Greek Name, *Gbelidon Thalassia*, consisting of seven Stars, seated under the Ship *Argo*, next to *Dorado*, or the Sword Fish.
11. DORADO, (as the *Spaniards* call it) *Piscis auratus, Chrysophris*, or the Golden Fish, called likewise *Xiphias seu Gladius*, or the Sword Fish, consisting of six Stars, or as *Bartschius* reckons of five, with which it describes and circumscribes the Pole of the *Ecliptick*.
12. HYDRUS, by the *Dutch* called the *Wasser Schlange*, consisting of fifteen Stars according to *Bayerus*, *Kepler* yet reckoning twenty, the Last Star in the Tail whereof, was in the year 1600 distant two Degrees 30'. from the Southern Pole, but at present as *Ricciolus* notes at a nearer Distance.

To these are to be added the two NUBECULÆ; the Greater and the Lesser, and between them both,

RHOMBUS, which *Habrechtus* hath formed in his Globe out of four Stars constituting each Angle thereof.

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And

Aud thus much touching the several Constellations Ancient and Modern. But since some have endeavoured to abrogate, the Ancient Ethnick Names and Figures of the several Asterisms, and to introduce a new Uranography, by representing the Celestial Constellations under Sacred and Christian Figures and Denominations, as Schillerus in his Coelum Stellatum Christianum, and Bartschius in his Celestial Globe; We shall here for the Satisfaction of such as have not yet seen the same, add the following Synopsis of that Christian Astronomical Design, shewing first the new Morphoses of the Zodiacal Signs, next Those of the Northern Constellations, then of the Southern; Lastly of the Planets.

Zodiacal Signs.

Old Names.	New Names.
<i>Aries,</i>	Saint <i>Petre</i> , according to <i>Schillerus</i> ; according to <i>Schickardus</i> , <i>Abraham's</i> Ram offered in the Room of <i>Isaac</i> .
<i>Taurus,</i>	Saint <i>Andrew</i> , or according to <i>Hartsdorfius</i> , the offering or Burnt-Sacrifice commanded, <i>Leviticus</i> 1. 3.
<i>Gemini,</i>	Saint <i>James</i> the Elder, as <i>Schillerus</i> ; as <i>Schickardus</i> , <i>Jacob</i> and <i>Esaü</i> .
<i>Cancer,</i>	Saint <i>John</i> the Evangelist.
<i>Leo,</i>	Saint <i>Thomas</i> , or according to <i>Schickardus</i> , the Lion of the Tribe of <i>Juda</i> .
<i>Virgo,</i>	Saint <i>James</i> the Younger, according to <i>Schillerus</i> ; or as <i>Schickardus</i> will have it the Virgin <i>Mary</i> .
<i>Libra,</i>	Saint <i>Philip</i> , or according to <i>Hartsdorfius</i> , the Tekel or Ballance of <i>Belshezar</i> , <i>Daniel</i> 5. 27.
<i>Scorpius,</i>	Saint <i>Bartholomew</i> .
<i>Sagittarius,</i>	Saint <i>Matthew</i> ; or as some will, <i>Ismael</i> , <i>Genes.</i> 21. 20.
<i>Capricornus,</i>	Saint <i>Simon</i> .
<i>Aquarius,</i>	Saint <i>Jude</i> , or <i>Naaman</i> , <i>1 Kings</i> 25. 14.
<i>Pisces,</i>	Saint <i>Matthias</i> , or according to <i>Schickardus</i> the two Fishes in the Gospel, <i>John</i> 6. 9.

Northern Constellations.

<i>Ursa Minor,</i>	Saint <i>Michael</i> , or according to <i>Hartsdorfius</i> , one of <i>Elisa's</i> Bears, <i>2 Kings</i> 2. 24. or the Wagon of <i>Jacob</i> , or Chariot of <i>Joseph</i> , <i>Gen.</i> 45. 27. and 46. 29.
<i>Ursa Major,</i>	Saint <i>Petres</i> Fisher Boat, or according to <i>Hartsdorfius</i> , the other of <i>Elisa's</i> Bears, or the Chariot of <i>Elias</i> , <i>2 Kings</i> 2. 11.
<i>Draco,</i>	The <i>Innocents</i> , according to <i>Schillerus</i> , according to <i>Schickardus</i> <i>Draco Infernus</i> .
<i>Bootes,</i>	Saint <i>Sylvester</i> as <i>Schillerus</i> ; as <i>Schickardus</i> <i>Nimrod</i> .

Coma

Old Names.	New Names.
<i>Coma Berenices.</i>	The Scourge wherewith our Saviour was whipp'd, or according to <i>Harsdorsius</i> , <i>Abolon's</i> Head of Hair; or <i>Samson's</i> according to <i>Schickardus</i> .
<i>Corona Septentrionalis</i> sive <i>Ariadne</i> ,	Our Saviour's Crown of Thorns; or according to <i>Harsdorsius</i> , Queen <i>Hester's</i> Crown, <i>Hester</i> 2. 17.
<i>Hercules</i> seu <i>Engonast</i> ,	The three Kings or Wise men that came to worship, at our Saviour's Birth according to <i>Schillerus</i> , or according to <i>Schickardus</i> , <i>Samson</i> .
<i>Lyra</i> ,	The Manger wherein our Saviour was laid according to <i>Schillerus</i> ; or as <i>Harsdorsius</i> hath fancied it, <i>David's</i> Harp, 1 <i>Sam.</i> 16. 23.
<i>Cygnus</i> ,	The Cross of Christ according to <i>Schickardus</i> , to which <i>Schillerus</i> adds Saint <i>Helen</i> its Repertrix.
<i>Cassiopea</i> ,	Saint <i>Mary Magdalen</i> , as <i>Schillerus</i> , as <i>Harsdorsius</i> <i>Bathsheba</i> .
<i>Cepheus</i> ,	Saint <i>Stephen</i> , as fancied by <i>Schillerus</i> , or <i>Solomon</i> according to <i>Harsdorsius</i> ,
<i>Perseus</i> cum <i>Capite Medusæ</i> .	<i>David</i> with the head of <i>Goliath</i> , according to <i>Schickardus</i> , according to <i>Schillerus</i> Saint <i>Paul</i> .
<i>Andromeda</i> ,	The Sepulchre of Christ according to <i>Schillerus</i> ; <i>Harsdorsius</i> will have it to be <i>Abigail</i> , 1 <i>Sam.</i> 30. 5.
<i>Auriga</i> sive <i>Henrichus</i> .	<i>Jacob</i> the Patriarch according to <i>Harsdorsius</i> , <i>Schillerus</i> transforms it into Saint <i>Jerome</i> .
<i>Ophiuchus</i> sive <i>Serpentarius</i> .	<i>Sanctus Benedictus</i> inter <i>spinas</i> , according to <i>Schillerus</i> , or Saint <i>Paul</i> and the <i>Viper</i> , <i>Acts</i> 28. 7.
<i>Sagitta</i> ,	The Nails, and Lance that wounded our Saviour, according to <i>Schillerus</i> , <i>Schickardus</i> makes it the Arrow of <i>Jonathan</i> .
<i>Aquila</i> ,	Saint <i>Katherine Martyr</i> , or according to <i>Schickardus</i> , the Ensign or Standard of the <i>Roman</i> Empire.
<i>Ganimides</i> seu <i>Antinous</i> ,	Part of Saint <i>Katherine</i> .
<i>Delphinus</i> ,	The Pitcher of the <i>Canaanitish</i> Woman according to <i>Schillerus</i> ; <i>Harsdorsius</i> makes it the <i>Leviathan</i> mentioned, <i>Psalms</i> 104. 26.
<i>Equuleus</i> ,	<i>Mystica Rosa</i> ; <i>Schiller</i> .
<i>Pegasus</i> ,	Saint <i>Gabriel</i> according to <i>Schillerus</i> ; <i>Harsdorsius</i> makes of it the King of <i>Babylon</i> mentioned, <i>Jerem.</i> 4. 13.
<i>Triangulum</i> seu <i>Delta</i> ,	The Mitre of Saint <i>Peter</i> (<i>Schiller</i> .) or Emblem of the blessed <i>Trinity</i> (<i>Schickard</i> .)

Southern Constellations Ancient.

<i>Cetus</i> ,	Saint <i>Joachim</i> and <i>Anna</i> (<i>Schiller</i> .) or <i>Jonas</i> his Whale according to <i>Schickardus</i> .
<i>Eridanus</i> ,	The Passage of the <i>Israelites</i> through the Red Sea (<i>Schiller</i> .) or the Brook <i>Cedron</i> (<i>Schickard</i> .)

Orion;

Old Names.	New Names.
<i>Orion,</i>	Saint Joseph (<i>Schiller.</i>) or Joshua, (<i>Schickard.</i>)
<i>Lepus,</i>	Gideon's Fleece, <i>Schillerus.</i>
<i>Canis Major,</i>	Tobias his Dog (<i>Schickard.</i>) or Saint David (<i>Schiller.</i>)
<i>Canicula seu Canis Minor,</i>	The Paschal Lamb. (<i>Schiller.</i>)
<i>Argo Navis,</i>	Noah's Ark (<i>Schiller.</i>)
<i>Hydra,</i>	The River Jordan (<i>Schiller.</i>)
<i>Crater,</i>	The Ark of the Covenant according to <i>Schillerus</i> ; or Joseph's Cup, or that of Saul according to <i>Schickardus.</i>
<i>Corvus,</i>	Part of the Ark of the Covenant (<i>Schillerus</i>) or the Crow sent out by Noah, or that of Elias (<i>Schickard.</i>)
<i>Centaurus,</i>	Abraham and Isaac (<i>Schiller.</i>)
<i>Lupus five fera Centauri,</i>	Jacob the Patriark (<i>Schiller.</i>)
<i>Ara,</i>	The Altar of Incense.
<i>Corona Australis,</i>	David's Crown according to <i>Harsdorsius</i> , 2 Sam. 11. 30. or Solomon's Crown according to <i>Schillerus.</i>
<i>Piscis Notius.</i>	The Barrel of Meal of the Widdow of <i>Sarephtha</i> , or according to <i>Schickardus</i> the Fish taken by St. Peter with a Piece of Mony in its Mouth, <i>Matth.</i> 17. 27.

Southern Constellations lately discovered.

The Names first given them.	The New Names.
<i>Grus,</i> } <i>Phoenix,</i> }	Aaron the High Priest.
<i>Indus,</i> } <i>Pavo,</i> }	Job.
<i>Apus,</i> } <i>Camaleon, &</i> } <i>Piscis volans,</i> }	Eve. } <i>Schillerus.</i>
<i>Triangulum,</i>	Christ's Cross.
<i>Dorado cum Nube;</i> } <i>Toucan & Hy-</i> } <i>drus cum</i> } <i>Nube.</i> }	Saint Raphael.

The Planets.

Old Names.	New Names.
<i>Saturnus,</i>	Adam,
<i>Jupiter,</i>	Moses,
<i>Mars,</i>	Josua,
<i>Sol,</i>	Christ the Sun of Righteousness, } according to <i>Schillerus.</i>
<i>Venus,</i>	Saint John Baptist,
<i>Mercurius,</i>	Elias,
<i>Luna,</i>	The Virgin Mary,

We shall only add the Number of the Stars in the several Signs and Constellations observed by the bare Eye without the help of a Telescope, according to

	Order of the Signs and Constellations.	Ptolemy, Alphonsus, Copernicus, and Clavius.	Griembergerus from Clavius, Tycho and Pifferus.	Bayerus from divers others.	Keplerus and Bulialdus.
The Northern Signs of the Zodiac.	<i>Aries</i>	18	22	29	23
	<i>Taurus</i>	44	52	48	52
	<i>Gemini</i>	25	30	31	30
	<i>Cancer</i>	13	16	35	17
	<i>Leo</i>	35	40	43	40
	<i>Virgo</i>	32	41	42	43
The Southern Signs of the Zodiac.	<i>Libra</i>	17	20	15	20
	<i>Scorpius</i>	24	24	29	27
	<i>Sagittarius</i>	31	31	31	31
	<i>Capricornus</i>	28	28	29	28
	<i>Aquarius</i>	45	45	41	45
	<i>Pisces</i>	34	40	37	42
The Northern Constellations.	<i>Ursa Minor</i>	7	21	8	20
	<i>Ursa Major</i>	35	57	32	56
	<i>Draco</i>	31	30	33	32
	<i>Cepheus</i>	13	13	17	12
	<i>Bootes</i>	23	29	34	29
	<i>Corona</i>	8	8	20	8
	<i>Hercules</i>	28	31	48	31
	<i>Lyra</i>	10	11	13	11
	<i>Cygnus</i>	19	20	35	28
	<i>Cassiopea</i>	13	26	25	45
	<i>Perseus</i>	29	35	38	34
	<i>Auriga</i>	14	27	32	27
	<i>Ophiuchus</i>	29	24	30	56
	<i>Serpens</i>	18	13	37	26
	<i>Sagitta</i>	5	8	8	8
	<i>Aquila</i>	15	12	32	12
	<i>Antinous</i>	0	7	0	7
	<i>Delphin</i>	10	10	10	10
	<i>Equiculus</i>	4	4	4	4
	<i>Pegasus</i>	20	23	20	24
	<i>Andromeda</i>	23	26	26	26
	<i>Triangulum</i>	4	4	5	4
	<i>Coma Berenices</i>	0	14	0	15
The Southern Constellations.	<i>Cetus</i>	22	25	27	25
	<i>Orion</i>	38	62	49	62
	<i>Eridanus</i>	34	39	42	39
	<i>Lepus</i>	12	13	13	13
	<i>Canis Major</i>	29	29	19	29
	<i>Canis Minor</i>	2	5	8	5
	<i>Argo Navis</i>	45	50	63	53
	<i>Centaurus</i>	37	37	40	37
	<i>Lupus</i>	19	19	20	19
	<i>Hydra</i>	27	34	29	33
	<i>Crater</i>	7	8	11	8
	<i>Corvus</i>	7	7	7	7
	<i>Ara</i>	7	7	8	7
	<i>Corona Austr.</i>	13	13	13	13
	<i>Pisces Notius</i>	18	17	12	17

<i>Grus</i>	—	—	13	13
<i>Phoenix</i>	—	—	14	15
<i>Indus</i>	—	—	12	12
<i>Pavo</i>	—	—	16	23
<i>Apus</i>	—	—	12	11
<i>Apis</i>	—	—	4	4
<i>Camelion</i>	—	—	8	10
<i>Triangulum Austr.</i>	—	—	5	5
<i>Piscis volans</i>	—	—	7	7
<i>Dorado</i>	—	—	7	7
<i>Toucan</i>	—	—	8	8
<i>Hydrus</i>	—	—	15	21

Sum Total of the Number of the Fixed Stars of

Magnitude	Ptol.	Griemb.	Bayer.	Kepler.
1	15	15	17	15
2	45	55	63	58
3	208	201	196	218
4	474	456	415	494
5	217	304	348	354
6	49	186	341	240
Obscure and Nebulous	14	08	03	13
Inform or Spo- rades	In the Zodiac Northern Southern		45 200 81	
In All	1022	1225	1709	1392

See more of the Number of the Fixed Stars hereafter under that particular Head.

The Celestial Circles come next to be treated of; for the fuller Understanding whereof, besides what is already delivered in the Annotations, take the following Cosmographical-Astronomical Synopsis, for the most Part according to *Mersennus*.

A Cosmographical-Astronomical SYNOPSIS.

P R O P. I.



The Equinoctial Circle, parting both the Celestial and Terrestrial Globes, into two equal Portions is, divided into 360 Degrees, as every other Circle greater or lesser, by reason of the facile Division of this Number into a Moyety, a third, fourth, fifth, sixth, or eighth; its sixth part being sixty, which admits of many more Divisions, without any Fractions: *The Equinoctial Circle.*

II.

The Equinoctial, when the Sun is therein posited, makes the Dayes and Nights even, and divides the Sphere into the Northern and Southern Hemispheres, whose Poles are the Poles of the World; fifteen Degrees of this Circle hourly rise on one part, and as many on the other hourly set; so that one Degree thereof rises every four minutes of an Hour. Wherefore the Equinoctial is said to be the measure of the *Primum Mobile*.

III.

This Circle shows the Equinoctial Points, which happen twice in a year, at the Sun's entrance into *Aries* and *Libra*. It divides the Zodiack into two Moyeties, the Southern and the Northern; and thence the Signs are distinguished into Southern and Northern. It is the Measure of Time, and shows what Declination the Stars, or the Parts of the Ecliptick have, either Northern, or Southern. Moreover in this Circle are observed the Ascensions and Descensions of the Zodiacal Signs.

IV.

A Line perpendicular to the Meridian Line represents the *Equator*, and so on the contrary: Which yet may be described without the Meridian Line, if a Right Line be drawn from a Stile or *Gnomon* by the Points of the Shadows Extremity, on the Day of the Vernal or Autumnal Equinox. For the Altitude of the Pole being given, the Altitude of the Equinox is likewise given, as being the Complement of the Quadrant of a Circle. As for example; The Altitude of the Pole at *London*, is $51^{\circ} 32'$. Therefore the Altitude of the Equinoctial, and consequently of the Sun in the first degree of *Aries* or *Libra*, is, $38^{\circ} 28'$. And contrarywise, the Altitude of the Equinoctial being given, the Elevation of the Pole is likewise given. Moreover, the State of the whole Heaven and Earth, from the given Elevation of any one of these Circles may be known, provided the Longitude of the Place be known.

V.

The *Equator* in a right Sphere passes by the *Zenith* or Pole of the *Horizon*; in a Parallel Sphere it is coincident with the *Horizon*, and is the *Horizon* it self. In an oblique Sphere it makes acute or, considered Angles with the *Horizon*, and in a right Sphere it makes Rectangles; in which Position of the Sphere, all the Points of the Heaven daily rise and set, excepting the Poles of the World. Wherefore to the Inhabitants in a right Sphere, there is perpetual Equinox, a double Summer, and double Winter, and different Meridian Shadows, to wit, sometimes Northern, sometimes Southern. *The Equator as to the several Positions of the Sphere.*

Southern. Hence they are called *Amphiscii*, or *Amphiumbræ*; which happens likewise to those in an oblique Sphere, whose *Vertex* is between the *Equator*, and one of the *Tropicks*.

VI.

In an oblique Sphere, whose *Vertex* is in one of the *Tropicks*, the *Equator* is raised 66° . and $\frac{1}{2}$. and consequently the Pole 23° . and $\frac{1}{2}$. and the Polar Circles constitutes the greatest Circle of the alwayes-apparent, and the alwayes-latent. The Inhabitants of this Sphere have one Summer and one Winter, and one and the same Meridian Shadow, that is to say, alwayes to the North under the Northern, alwayes to the South under the Southern Tropick; thence called *Heteroscii*, or *Alteriumbræ*. These three Spheres, that is to say, the Right, and the two last Oblique, are in the torrid Zone, which is terminated by either Tropick, and which the *Equator* cuts in the middle, as the *Ecliptick* does the *Zodiack*.

VII.

In an Oblique Sphere, whose *Vertex* is in the midst, between the Tropick and the Polar Circle, the *Equator* and the Pole have both equal Elevations of 45° . Hence the heat of the Summer is as great as is the cold of the Winter; the higher the *Equator* is, the greater being the heat, and the cold more intense, by how much the Pole is more elevated. But in an Oblique Sphere, whose *Vertex* is in the Polar Circle, the *Equator* is elevated 23° . and $\frac{1}{2}$. and the Pole 66° . and $\frac{1}{2}$. and the length of the greatest Day there is 24 hours, by which the temperate Zone is terminated towards the Pole, as it is towards the *Equator* by the Tropick.

VIII.

The frigid Zone begins from the Polar Circle, in which the greatest Nights and Dayes are made so much greater, by how much the *Vertex* of the several Habitations therein approaches nearer to the Pole, until such time as it becomes a Parallel-Sphere. In which they in the Northern Parts have this privilege, that their longest day is seven dayes, and more, longer than the greatest day, which they in the South enjoy, by reason of the Sun's longer stay in the Septentrional Signs, wherein he moves more slowly to the place of his *Apogæum* in *Cancer*. To which if we add the Twilight (which is made by the Sun eighteen Degrees depressed beneath the Horizon) as also the Refractions, the Artificial Day with the Inhabitants of such a Parallel-Sphere will be nine Months and twelve Dayes. But on the contrary, they in the South have their Night seven dayes longer than they in the North. These are called *Periscii*, or *Circumumbræ*.

IX.

The *Zodiack*,

The *Zodiack* cuts the *Equator* in two opposite Points at right Angles, whose Latitude extends to near 20° . through the midst whereof runs the *Ecliptick*; so called because the two great Luminaries, the Sun and Moon, when in Conjunction, diametrically opposed to one another, directly under the said Line, are then eclipsed.

X.

The *Ecliptick*,

The *Ecliptick* indivisible as to Latitude, obliquely intersects the *Equator* in two Points; which two Points of Intersection are called the Equinoctial Points. Of which that (in the first Degree of *Aries*) which gives beginning to the Northern Semi-Circle of the *Ecliptick*, is called the Vernal; The other (in the first Degree of *Libra*) whence the Southern Semi-Circle of the *Ecliptick* begins, is called the Autumnal Equinoctial Point; The two Points of its greatest Declination from the *Equator* are called the Solstitial Points, whereof the Northern (in the first Degree of *Cancer*) is called the Summer Solstice; the Southern (in the first Degree of *Capricorn*) is called the Winter Solstice. In regard of which the Signs in the *Zodiack* are said to be Descendant from *Cancer* to *Capricorn*, and Ascendant from *Capricorn* to *Cancer*, because the Sun ascends in these, and descends in those Signs.

XI.

The twelve Natural Signs, into which the *Zodiack* is divided, begin from the common Section of the *Equator*, the Equinoctial Colure, and the *Ecliptick*, proceeding Eastward; the first of which is *Aries*, the second *Taurus*, &c. which order they call the Succession or Sequence of the Signs; as the contrary Order the Precedence of the Signs. The *Zodiack* and the *Ecliptick* measure the Secondary Motions of the Planets, as the *Equator* does the First. The Longitude of the Stars is numbred in the *Ecliptick*, from the beginning of *Aries*, according to the sequence of the Signs, unto a greater Circle, passing by the Poles of the *Ecliptick*, and place of the Star; as the Longitude of a Place on the Earth is reckoned in the *Equator*, from the first Western Meridian unto the Meridian passing by the Place proposed.

XII.

XII.

From the Ecliptick to the Poles are reckoned the Latitudes of the Stars. Which Latitude is an Arch of a great Circle passing by the Poles of the Ecliptick and Center of the Star, intercepted between the Ecliptick and the Star. Those Arches are called the Circles of Latitude. The Points between the *Equator* and the Ecliptick, in respect of the *Equator*, are Northern; in respect of the Ecliptick, Southern, or contrariwise.

XIII.

The Ecliptick contains the Place of all the Stars. For a Star is said to be in that Degree of the Ecliptick, through which the Circle of Latitude of the said Star passes: So the Stars being in the Solstitial Colures are said to be in the first Degree of *Cancer* or *Capricorn*. By which reason, all the Stars in the Firmament are referred to some one of the twelve Signs.

XIV.

The Colures, passing by the Poles of the World, and the four Cardinal Points of the Zodiac, intersect each other at Spherical right Angles in the Poles of the World. They are so called, because in an oblique Sphere they seem mutilate and defective, since one part of them is always depressed beneath, whilst the other is elevated above the Horizon. One of these is called the Equinoctial Colure, which, passing by the Points of the Intersection of the *Equator* and Ecliptick, constitutes the Equinoctial Points of *Aries* and *Libra*. The other being the Colure of the Solstices, dividing the *Equator* at right Angles in the Points wherein the Sun commences Winter and Summer, that is to say, in the first Degrees of *Cancer* and *Capricorn*, measures the Sun's greatest Declinations, hath in it the Poles of the Zodiac, and shows the Distance of those Poles from the Poles of the World. There may be likewise infinite Colures supposed, for the better demonstrating the particular Declinations of the Stars from the *Equator*.

XV.

The Meridian, in any Position of Sphere whatsoever, makes Mid-day and Mid-night, and hath in it the *Zenith* and *Nadir* Points, directly opposite to one another. The first Meridian is vulgarly placed in the Fortunate Islands, or the *Canaries*, by others in the Islands called the *Azores*. There are reckoned 36. Meridians, or rather 18. since the same Meridians of one Hemisphere, may serve the other Hemisphere likewise, each being distant ten Degrees from one another. But Geometrically speaking, there are as many Meridians as there are Vertical Points; as there are on Earth so many Horizons, as there are divers Points upon the Terrestrial Globe. They who assign a Meridian to every Degree, make of them 180.

XVI.

The Meridian to those that travel directly North and South is still the same, as to Latitude. It shews likewise the greatest Altitude of the Sun and Stars, their distance from the *Equator*, the Elevation of the Pole, and measures the Latitude of all Places upon Earth. Of which in the two following Propositions.

XVII.

The Latitude of a Place is numbred in the Meridian from the *Equator* towards either of the Poles, and shews how much every Point is distant from the *Equator*, one Pole being elevated the other depressed. The Latitude of any Place being the Arch of a Meridian, intercepted between the *Zenith* of the said Place and the *Equator*, equal to the Elevation of the Pole above the Horizon. Which Elevation is an Arch of a Meridian, drawn from the Horizon to the Pole of the World.

XVIII.

As the Latitude of the Earth is numbred in the prime Meridian, or any other more oriental, so the Declination of the Stars may be numbred in those Meridians, which are therefore called the Circles of Declination, because they shew how far the Fixed Stars, or Planets are distant from the *Equator*, or decline from it to either of the Poles. They are likewise called Vertical, inasmuch as passing by the *Vertex* of any Place, and descending perpendicularly by each Point of the Horizon, they measure the Altitude of the Stars above, or their Depression beneath the same; and in *Arabick* they are called *Azimuths*, because they shew in what part of the World any Star rises or sets. The beginning likewise of the Astronomical Day is computed from the Meridian Circle.

XIX.

The Horizon.

The Astronomical, or true Horizon divides the Sphere of the World into two equal Parts, that is to say, the upper, or the visible, and the lower or invisible Hemisphere, whose Centre is the same with the Centre of the World, and its Poles, the *Zenith* and *Nadir* Points. The Physical or sensible and visible Horizon, equidistant from the Astronomical, is that Part of the Earth as far as can be discerned by Sight, whose Semidiameter in an even Plane (the Eye being placed at six foot height above the Level) is about a League; but if the Eye be elevated a League high, then the Semidiameter of the sensible Horizon will be 51. Leagues.

XX.

The Horizon concurs to the stating of all the forenamed Spheres, that is to say, either Right, Oblique, or Parallel; whence it is denominated and distinguished into Right, Oblique and Parallel. It determines the rising and setting of the Stars, the Ortive and Occasive Amplitudes, beginning from the Eastern and Western Equinoctial Points, shews the Quantity of Day and Night, and the four Cardinal Points, *East*, *West*, *North* and *South*; as likewise the Quantity of the two Circles parallel to the *Equator* and *Tropicks*, described from the Poles of the World, touching the Horizon in a Point; of which that drawn from the Pole, to us conspicuous, is termed the greatest of the all-ways-apparent, the other, opposite to it, the greatest of the not-apparent, that is to say, the *Artick* and *Antartick* Circles.

XXI.

The Circles parallel to the Horizon, which shew the Altitudes and Depressions of the Stars, are in the *Astrolabe* called *Almicantarab*, or Circles of Progression; among which is numbred the Crepuscular Circle, or Circle of Twilight, which is Parallel to the Horizon, and depressed beneath it eighteen Degrees.

Thus much of the Great Circles; the Lesser follow.

XXII.

The Tropicks.

The Tropicks are lesser Circles Parallel to the *Equator*; from whence they are in this present Age distant 23. Degrees and $\frac{1}{2}$, which Distance, according to the diversity of Times is diversly computed; the variation hitherto being reckoned 24'. These two Tropicks shew the Sun's or the Ecliptick's greatest Declination from the *Equator*; the Tropick of *Cancer* it's Northern, the Tropick of *Capricorn* it's Southern; the former shewing the Sun's greatest, the latter it's least Meridional Altitude; this, the longest Day and shortest Night in the Summer Solstice; the other, the longest Night and shortest Day in the Winter Solstice. Which said Quantities of Day and Night are not shewn by the Tropicks in a Right, or an Oblique Sphere beyond 66°. and $\frac{1}{2}$. of the Pole's Elevation. For in the first the Diurnal and Nocturnal Arches are always equal; in the latter, the said Quantities are shown by the Ecliptick, and in the Altitude of 66°. and $\frac{1}{2}$. One of the Tropicks is raised wholly above the Horizon; the other is wholly depressed beneath it.

XXIII.

The Polar Circles.

Zones.

The Polar Circles are made by the Diurnal Conversion of the Poles of the Ecliptick about those of the *Equator*, from which they are distant 23°. and $\frac{1}{2}$. being the same with the distance of the Solstitial Points, or the Tropicks from the *Equator*. From which the five Zones may easily be apprehended, as being contained within four Circles, Parallel to the *Equator*. That which is called the Torrid Zone is between the two Tropicks; the two Temperate Zones are between the Tropicks and the Polar Circles; the two Frigid are comprehended within the two Polar Circles.

XXIV.

Parallels.

The Parallels are Circles on either side the *Equator*, Parallel thereto; being seated at such a Distance from One Another, that the greatest Day of one differs from the greatest Day of another Parallel by the Quantity of one Quarter of an Hour, they are reckoned on either side of the *Equator* to the Polar Circles, or the 66th Degree of the Poles Elevation 24. In All 48.

XXV.

Climates.

The Climates are Spaces Parallel to the *Equator*, containing three Parallels, the Middlemost dividing

viding the same into two Parts: The Latitude of each Climate from its Southern to its Northern Limit, is of that Extent, that the longest Day encreases half an Hour.

The Climates are denominated from the chief Cities and Places by or through which they pass, as the first by *Meroe*, the second by *Alexandria*, the third by *Rhodus* and *Babylon*, the fourth by *Rome*, *Corfica* and the *Hellepont*, the fifth by *Venice*, the sixth by *Podolia*, the seventh by *Witeberg*, the eighth by *Rostoch*, the ninth by *Ireland*, the tenth by *Bohus* in *Norway*, the eleventh by *Gothland*, the twelfth by *Wyburgh* in *Finland*, the thirteenth by *Arotia* in *Sweden*, the fourteenth by the Mouth or Outlet of the River *Darecally* in *Sweden*, and the rest by other places of *Norway*, *Sweden*, *Alba Russa*, and the Adjacent Islands. And these are the Northern Climates; the Southern are distinguished by the Title of *Anti*, as *Anti-Meroes*, *Anti-Alexandrias*, &c. in regard of their Opposite Position to the Northern Climates. But for the better understanding of the Climates, and what appertains to them see the following Tables divided into five Columns, the first shewing the Number of the Parallels, the second of the Climates, the third the longest Day in every Parallel, the fourth the Elevations of the Pole, or Latitudes of the respective Regions, the fifth the Amplitude of the Climates.

Parall.	Climates in each Par.	Longest Day Hor. Min.	Altitude of the Pole Degr. Min.	Amplitude of each Cli. Degr. Min.	Parall.	Climates	Longest Day Parallel. Hor. Min.	Altitude of the Pole Degr. Min.	Amplitude of each Cli. Degr. Min.
1	I	12 15	4 18	0 0	25	XIII	18 15	59 14	1 16
2		12 30	8 34		26		18 30	59 39	
3	II	12 45	12 43		27	XIV	18 45	60 40	1 13
4		13 00	16 43	7 50	28		19 0	61 18	
5	III	13 15	20 33		29	XV	19 15	61 53	1 1
6		13 30	23 11	7 3	30		19 30	62 25	
7	IV	13 45	27 36		31	XVI	19 45	62 54	0 52
8		14 0	30 47	6 9	32		20 0	63 22	
9	V	14 15	33 45		33	XVII	20 15	63 46	0 44
10		14 30	36 30	5 17	34		20 30	64 6	
11	VI	14 45	39 20		35	XVIII	20 45	64 30	0 36
12		15 00	41 12	4 30	36		21 0	64 49	
13	VII	15 15	43 32		37	XIX	21 15	65 9	0 29
14		15 30	44 29	3 48	38		21 30	65 21	
15	VIII	15 45	47 20		39	XX	21 45	65 35	0 23
16		16 0	49 1	3 13	40		22 0	65 47	
17	IX	16 15	50 53		41		22 15	65 57	0 16
18		16 30	51 58	2 44	42	XXI	22 30	66 6	
19	X	16 45	53 17		43		22 45	66 14	0 11
20		17 0	54 29	2 17	44	XXII	23 0	66 20	
21	XI	17 15	55 34		45		23 15	66 25	0 6
22		17 30	56 37	2 0	46		23 30	66 28	
23	XII	17 45	57 34		47	XXIII	23 45	66 30	0 0
24		18 00	58 26	1 40	48		24 0	66 31	

And here it is to be noted, that the Parallel Circles grow lesser and lesser, and the Climates narrower and more Contracted, by how much they recede from the *Equator* toward the Poles; for one Degree, which in the *Equator* contains 51 *German* miles, contains but 14 of those Miles in the Latitude of 21 Degrees, and but 13 in the Latitude of 30. 12. in 37. 11 in 48 and 4. and 6 in 66 Degrees of Latitude. Whence it is easie to compute how many *German* Miles is contained in every Parallel Circle; For the Number of Degrees in any Parallel, viz. 360. being multiplied by the Miles comprized in every Degree, will give the number of Miles sought.

It rests that something be said of the several Terrestrial Inhabitants, as they are differenced and distinguished by reason of their Situation and their Shadows. As to their Situation they are distinguished into *Periæci*, *Antæci* and *Antipodes*.

The *Periæci* are those which inhabit under one and the same Parallel and Meridian, but in Points directly opposite.

These have the same Elevation of the Pole; Equal Arches both Diurnal and Nocturnal; the same Appearance of the Stars and Constellations, the same Occultations rising, and setting, Night and Day, but at contrary times, have Winter and Summer alike; the same Meridian Shadows.

The

The *Antoeci* are those who inhabit under equal and opposite Parallels; that is equally distant from the *Equator* Southward and Northward under a Portion of the same Meridian, to these the Elevation of the different Poles is equal, as the opposite Diurnal and Nocturnal Arches; the same Appearance of the Stars and Signs, but opposite; the same Occultation, rising, and setting: When it is Summer to These, it is Winter to Those, and Spring to the one, when it is Autumn to the others; they have likewise equal Meridian Shadows, but diversly and oppositely projected.

The *Antipodes* are those who dwell not only under equal but opposite Parallels, and in places diametrically opposed the one to the other; the Feet of the one being directly against the Feet of the other. Infomuch that a right Line drawn from the one to the other must necessarily pass through the Centre of the Earth. therefore the same Accidents which happen to the *Antoeci*, happen likewise to the *Antipodes*. Only this is proper to the *Antipodes*, that they have one Common Horizon, and different Hemispheres; have likewise different and opposite *Zeniths*: What rises to the one sets to the other; what is apparent to these is hidden to those. The Noon of one is Midnight to the other.

As to their Shadows they are distinguished into Amphiscii, Periscii, and Heteroscii.

The *Amphiscii* are those who inhabit the Torrid Zone within the Tropicks, especially near or under the *Equator*.

These have their Meridian shadows at different times of the year diversly projected; now to the North, now to the South, according to the Course of the Sun on this, or that side of the *Equator*: when the Sun is in their *Zenith* they have no Noon Shadow at All. They have two Summers and two Winters.

The *Periscii* are they which inhabit the Frigid Zones, especially near the Poles of the World, whose Shadows are carried round about them upon the Plain of their Horizon.

The *Heteroscii* are they which inhabit the Temperate Zones; they in the Northern temperate Zone having their Meridian Shadows always projected toward the North Pole, those in the Southern, always to the South.

And this may suffice to compleat this Cosmographical-Astronomical Synopsis; to which yet for the further Satisfaction of the more Curious Reader, we have thought fit to add the Twelve Propositions of *Theodosius, de Habitationibus*, in English.

THEODOSIUS

THEODOSIUS

De Habitationibus.

PROPOS. I.



Those that inhabit under the North Pole, one and the same Hemisphere of the World is alwayes apparent, but the other Hemisphere is alwayes hidden: Nor do any Stars either rise or set to them; but those which are in the apparent Hemisphere are alwayes conspicuous, and contrarily those in that, which is hidden, never appear.

Prop. II.

To those that inhabit under the Equinoctial Circle, all the Stars both arise and set: And are moved in equal time [of twelve hours] above the Horizon, and beneath it.

Prop. III.

In every place within the middle Zone, the Zodiack Circle is at some certain time of the Day at right Angles to the Horizon of the place.

For the Circle parallel to the *Equator*, drawn through the *Vertex* or *Zenith* of the Place, cuts the Zodiack Circle in two Points. When therefore the Point of either Interfection is co-united with the *Zenith*, then the Zodiack Circle passes through the Poles of the Horizon, and therefore, by the XV of the first of *Theodosius Spherics*, cuts the Horizon at right Angles, and this is done twice in one Diurnal Revolution. But to those inhabiting under either Tropick, only once in a day, that is, when the Solstitial Points in which the Zodiack Circle touches both the Tropicks come to the *Zenith* of that Place.

Prop. IV.

To those whose *Zenith* is as far distant from the Pole, as the Tropick from the *Equator*, six Signs shall at once happen to rise and six to set, in one Diurnal Revolution.

That is, to those whose *Zenith* is in the *Arctick* or *Antartick* Circle. For whereas the Poles of the Zodiack are carried in the Peripheries of those Circles, therefore in one Diurnal Revolution the Pole is once co-united with the *Zenith*, that is, the Pole of the Zodiack with the Pole of the Horizon: And therefore the Zodiack also is co-united with the Horizon: Which Co-union is made in an instant, and after that instant the Zodiack is forthwith divided into two parts by the Horizon; so that in an instant one Semicircle of the Zodiack rises, and the other Semicircle sets.

Prop. V.

To those Inhabiting under the Equinoctial Circle, the Meridian shall cut above the Horizon the Semicircle of the Zodiack into two equal Parts, when the Points of Contact of the Tropicks and Zodiack come to be in the Horizon, and then also the Zodiack shall be at right Angles to the Horizon.

For, the Horizon passing then through the Poles of the Tropicks, and the Points of the Contact of the Tropicks and Zodiack shall (by the VI. of the Second of *Theodosius* his Sphericks) pass likewise through the Poles of the Zodiack, and therefore (by the XV. of the First) shall cut the same at right Angles. And so likewise the Zodiack shall pass by the Poles of the Horizon, by

P p

which

which the Meridian also passes. From whence the Arches as well of the Meridian as of the Zodiack, Intercepted between the Pole of the Horizon, and the Horizon, are Quadrants.

Prop. VI.

To those inhabiting under the Equinoctial, all Semicircles of the Zodiack arise in equal time, as likewise do their opposite Peripheries.

For there, every Semicircle of the Zodiack arises with the Diurnal Arch of its beginning; (but by the second of this Present) all the Diurnal Arches are Semicircles, by which is manifest the first part of this Proposition: the other part is clear, seeing not only the opposite Peripheries of the Zodiack, but those likewise equally distant from the Equinoctial Point ascend, with equal Arches of the Equinoctial.

Prop. VII.

To those whose Horizons differ by a more Easterly Position; the Stars neither arise together, nor set together, but by how much sooner they arise to those who live more Easterly, by so much sooner do they set.

For the Horizons of such Places, by reason of the equal Altitudes of the Pole, touch the same Parallels of the *Equator*, wherefore (by the XIII. of the Second of *Theodosius's* Sphericks) the Arch from any Parallel of the Semicircle of the Horizons intercepted, as well between the Places Eastward, as those Westward, are the same. Therefore every Star in a place Eastward by the same Arch, anticipates its rising, and thence its setting, and consequently in the same interval of time.

Prop. VIII.

To those inhabiting under the same Meridian, whatever Stars are between the greatest of the always apparent Parallels and the Equinoctial, appear longer above the Horizon to those inhabiting Northward, then they do to those inhabiting Southward. And how much sooner they arise to those inhabiting Northward, so much later they set. But those Stars which are between the greatest of the Parallels always latent, and the Equinoctial, appear longer above the Horizon, to those inhabiting Southward, then they do to those inhabiting Northward; And how much sooner they rise to those inhabiting Southward, so much later they set.

For to one travelling toward the apparent Pole, the Diurnal Arch of a Star declining that way from the *Equator*, increases; and to one going toward the Pole that is depressed and unapparent, the Diurnal Arch of a Star, declining thitherward increases likewise: But by collating the Arches increasing on either side, that is to say, towards the East, or towards the West, the rest of the Proposition is manifest.

Prop. IX.

But if the Horizon's be neither under one Parallel, nor under the same Meridian, there will follow only an Inequality of the Arches raised above the Horizon, after the manner as before expressed, but no Anticipation of risings or settings.

This, as the premised, is manifest, by reason of the greater or lesser inclination of the Horizon.

Prop. X.

To those inhabiting under either Pole, the Sun is carried constantly for six Moneths above the Horizon, and as long underneath it.

This appears by the first *Propos.* of this present Treatise. Since one half of the Zodiack is always apparent, and the other always latent, either of which by the Sun in near about six Months time is run through; neither does the difference of the Sun's Motion, occasioned by his Eccentricity, here come to be considered, for the Motion of the Sun is always supposed equal in reference to the Arks of his first Motion.

Prop. XI.

To those going from the Pole toward the *Artick* or *Antartick* Circles, this constant stay of the Sun either above or under the Horizon, for six Months, grows lesser and lesser, until it be reduced

duced to the space of twenty four hours either under the *Artick* or *Antartick* Circles.

For, the Horizon of those Habitations, touches two Parallels of the *Equator* greater than the Tropicks, which on either side cut from the Zodiack two equal Peripheries; And that Periphery which the Parallel alwayes apparent cuts off, never sets, and that which the alwayes latent absconds, never rises.

Prop. XII.

To those inhabiting under the *Artick* or *Antartick* Circles, the longest Day is 24 hours, and the Night but an instant; and on the contrary, the longest Night 24 hours, and the Day but an instant. The other Arks increase and decrease until they come to the equality of the Equinox.

The Order of the Poem, leads us in the next place, after having treated of the several Mundane Systems, the Additional Constellations, the Celestial Circles, and the Appendages thereunto (delivered, and explained in the former Discourses, and the foregoing Synopsis) to consider with our Manilius, what yet remains to compleat the Universe, and with Him,

—To shew what does dispense
Throughout the Whole, or Light, or Influence.

And these by our Poet are reckoned to be, besides the fixed Stars; the Luminaries, and the other Planets, fiery Meteors and Comets.

OF

OF THE Fixed STARS.



AVING already treated sufficiently both in our Notes, and in this Appendix of the Fixed Stars, as reduced into Signs and Constellations; We shall now consider them distinctly, and apart, as they are several Mundane Bodies disseminated and dispersed through the Immense Space of the Etherial Region, which We call Heaven.

They are said to be fixed, because they always keep (at least seemingly) the same invariable Distance from one another, and from the Ecliptick, as if they were so many Studs of Gold fixed in the Chrystal Firmament, as *Empedocles* and *Anaximenes* (according to the Testimony of *Plutarch De Placit. Philosoph. l. 2. c. 13.*) held. Hence the Sphere wherein they are conceived to be ranged, is called ἀπλανής, i. e. *inerrans* in regard of the unalterable Order observed in their Intervals or *Interstitia*. And for this Reason chiefly, *Ricciolus* conceives the Multitude of the Fixed Stars (as it were an Army drawn up in Battle Array) might be called the *Militia* of Heaven.

The Particulars to which We shall confine our Enquiries, touching these Glorious and splendid Bodies, shall be These following:

- First, *Their Substance.*
- Secondly, *Their Light, Colour, and Scintillation.*
- Thirdly, *Their Number.*
- Fourthly, *Their Figure.*
- Fifthly, *Their Magnitude.*
- Sixthly, *Their Place and Distance from the Earth, or rather the Sun.*

As to their *Substance*, the Opinions of the Ancients are various, *Zoroaster* maintained the Stars to be of a fiery Nature; *Thales* held them to be Earthly, yet withall fiery: *Empedocles* maintained them to be fiery, and to consist of that Fire which the *Æther* containing in it self, struck forth in its first Secretion. *Anaxagoras* affirmed (but very extravagantly) that the Ambient *Æther* being of a fiery Nature, by the Swiftnes of its Motion snatcheth up Stones from the Earth, which being set on Fire become Stars, and are carried from East to West. *Diogenes* conceived them to be of the Substance of Pumice Stones set on Fire, and to be the *spiracula* or breathing Holes of the World. *Plato* with more Reason held them to be for the most Part of a fiery Nature, yet to admit of the mixture of other Elements, as it were Cement, to knit and consolidate them. *Xenophanes* supposed them to be Clouds, set on Fire in the manner of Coals, quenched in the Day Time, and in the Night rekindled. *Heraclides* and the *Pythagoreans* held every Star, to be a World by it self, existing in the Infinite Etherial Space, and containing an Earth, an Air and a Sky; which Opinion is found in the Works of *Orpheus*, for his Followers affirmed the Stars to be so many Worlds. *Aristotle* and his Followers maintain them to be of the same Substance as the Heavens, but only more condensed; and to be simple Bodies without the Mixture of any Elements. The *Stoicks*, and with them our *Manilius*, make them to be of a fiery Substance. Others conceive them to be composed of the same Matter as Exhalations and Vapours, and consequently to consist of a Substance partly Aqueous, partly Aerial, of which see *Pliny l. 2. c. 9.* *Petrus Comestor*, *Hugo Victorinus*, and *Engubinus*.

Of all These the most celebrated, and most probable Opinion, is, that the Stars are fiery Bodies. An Opinion which wants not the Authority of the Ancient Christian Church to back it, which (in Hymn, *seria secunda ad Vesper.* of which Saint *Ambrose* is held to be the Composer) sings after this Manner.

*Immensæ Calis Conditor
Qui mixta ne confunderent*

Aqua

*Aquæ fluente dividens
Cælum dedisti Limitem
Firmans Locum Cælestibus
Simulque Terræ Rivulis
Ut unda flammæ temperet.
Terræ solum nec dissipet, &c.*

Where we find the Reason why the Waters are placed above the Heavens, viz. to restrain and temper the excessive fervor of the Sun and Stars. Again in *Hymn. fer. quarta ad Vesper.* the same Church thus sings.

*Cæli Deus sanctissime
Qui Lucidum Centrum Poli
Candore pingis igneo.*

Of the same Sentiment are most of the Fathers, not only of the *Latin*, but the *Greek Church*, as *Cyrillus Hierosolimitanus* and *Cæsarius*, who speaking of the Firmament, sayes, *recepturum erat Subjectorum Luminarium Splendorem, Solem inquam, (& Lunam) & reliquum Astrorum Cætum, ex Igne Naturam habentem.* *Theodoretus* likewise to the same Purpose; *Bisariam Deus Omnium divisit Aquarum Naturam, & quasdam sursum collocavit, quæ suo liquore, ac frigiditate non sinerent corrumpi Firmamentum ab Igne Luminarium.* *St. Chrysostom* is positive for the fiery Nature of the Stars, with whom concurr *Gregory Nissen*, *Procopius*, and *Anastasius Sinaita*; Conform to whose Opinions is that of *Tertullian*, *St. Ambrose*, *St. Augustin*, *Arnobius*, *Lactantius*, *Anselmus*, *Alcuinus*, *Beda*. Conclude we therefore, induced as well by the Authority of these Ancient Fathers, as perswaded by the concordant Sentiments of divers eminent Modern Philosophers, and Astronomers, that the Stars are compound, and not simple Bodies, made up of Elementary Matter, formed into fiery Globes, and consisting *ex Solido & liquido*, as this *Terraqueous* Globe of ours, and consequently Subject to *Corruption* and *Alteration*. See *Franciscus Patricius* l. 15. *Pancosmias*; *Ricciolus* *Almagest* Nov. l. 9. Sect. 1. *Scheinerus* in *Rosa Ursina* l. 4. Part. 2. c. 22, 23, & 24. *Kircherus* in *Itinerar. Extatic.* & *Schottus* upon Him. From whom the more Curious Reader may receive further Satisfaction in his Enquiry touching the Igneous Nature and Substance of

*Those tremulous Tapers of the Skies
Which burn at the Dayes Obsequies.
Resplendent Sparks of the first Fire!
In which the Beauty We admire
And Light of those eternal Rayes,
The uncreated Mind displays.
Visible Prints by which We trace
Time in it's Invisible Race!
Pure bright Idæa's that direct
To the first Cause our Intellect.
Jewels that deck with their rich Light
The Sable Garment of the Night,
Mirrors in whose clear polished Faces,
Nature sees hers: Th' World's Looking-Glasses.*

To express them in some of those Poetical Characters, which the Ingenious *Marino* hath given of them. The next thing We are to take Notice of is

Their Light.

As to their Light, that which is chiefly to be considered, is, whether it be *innate*, given them by God at their Creation, or *Mutnatitious*, borrowed from the Sun? The latter is maintained by *Metrodorus* in *Plutarch de Placit. Philosoph.* l. 2. c. 17. with whom concurr *Albategnius* and *Vitellio*, and divers others both Philosophers and Astronomers at this Day.

But the first Opinion seems to carry more of Truth in it, and is by *Macrobius* asserted in *Sonn. Scip.* l. 1. c. 17. where he affirms *Omnes Stellæ (i. e. fixæ) Lumine lucere suo, quod illæ supra Solem locatæ in ipso purissimo Æthere sunt; in quo Omne quicquid est, Lux Naturalis & sua est.* And this seems consequent to what hath already been declared touching their Igneous Nature; for Fire cannot be without Light; and indeed it appears altogether improbable that the Sun should illuminate the Fixed Stars, seeing as *Bulialdus* (in *Astronom. Philolaic.* l. 1. c. 11.) observes, the Sun's Diameter if beheld from *Saturn* would not appear greater than 3'. 24". and therefore must needs afford too weak and extenuated a Light sufficiently to illustrate even that Planet, much less is it able to give Light to the Fixed Stars removed to so great a Distance beyond *Saturn*. Wherefore

with *Aristarchus Samius de Systemate Mundi* (if at least that Piece revived by *Robertus*, and published by *Mersennus in Observat. Physico-Mathemat.* be genuine) We may reasonably imagine each of the Fixed Stars to be the Head and chief Part of a distinct Mundane System; as the Sun is the Head and chief Part of our Visible System, and as the Sun hath several Planets constituted and carried about him; so likewise every one of the Fixed Stars hath other Mundane Bodies like Planets disposed and moving about them, though not to be discerned by us by reason of their great Distance from our Earthly Habitation. And accordingly *Galileo* (*Dialog. 3. System. Cosmic.*) doubts not to assert that the fixed Stars are so many Suns, conform and like unto this Sun of ours; serving to illuminate the innumerable other Planetary and Lunary Bodies within their respective Systems; and therefore indued with innate and Original Light. Of the same Opinion is *Antonius Maria de Reitha* (*in suo Radio Sydereomystico* p. 177.) with whom *Ricciolus* (*Almagest Nov. l. 6. c. 2.*) concurs, where he says, *Mihi longe Probabilior horum Opinio videtur* (*Bruni Galilei Renati Des Cartes & Reithæ*) *quia magis congruit Opificis Numinis Majestati, ut non unicam Stellarum à se ipsa Lucentem, sed plures instar Solis accenderit; Nec alium sui Luminis fontem agnoscerent quam omnium Luminum Patrem, Deum.* See to this Effect more fully, *Gassendus Syntagmat. Physic. part. 2. l. 4. c. 4.* *Kircherus Itinerar. Extatica Dialog. I. c. 9.* *Hevelius in Cometograph. l. 7.* and *Otto de Guericke l. 7. De vacuo spatio*, where he treats, *De Stellis Fixis.* As to

Their Colour.

It is visibly various according to the Difference of their Light, attempered by the divers Constitution of their Matter or Substance; some appearing of a ruddy, others of a gold colour; some of a silver white, some pallid, others of a leaden hue; whence some have made an Estimate of their Natures, and ranged them under the several Planets, of whose qualities they conceived them to be participant, according to the proportion they carry of Resemblance in their Colours, as for Example; of the Nature of π , they reckon *Propus*, and that in the Belly of the Southern Fish, and in the Belly and Tail of *Cetus*; of the Nature partly of π , partly of ν , they reckon that in the right shoulder of *Cepheus*, and in his left Foot, and those in the Girdle of *Orion*. Of the Nature of π and δ , the first Star in *Aries*, that in the Beak of the Crow, and in the Head of *Ophiuchus*. Of π and η the Pole Star, those in the Head of the Dragon and *Medusa*, those in the Breast of *Cassiopea* and *Hydra*, in the Side of *Perseus*, that in the Wing of *Virgo*, called *Prævinde-miarix*, and in the Back and Tail of *Leo*. of π and η , those in the left shoulder of *Bootes*, in the Belly of the Hare, and in the Northern Scale of *Libra*. Of the Nature of ν , they count those in the Nodus or *Commisura Piscium*, of the Nature partly of ν , partly of δ . *Arcturus*, the Eagle and the Thigh of *Pegasus*, *Regulus* or *Cor Leonis*, *Syrinx* and *Cor Scorpii*. Of the Nature of ν and η , that in the Head of *Andromeda*, in the Thigh of *Aquarius*, and *Achar Nahr sive ultima fluminis Orionis*. Of the Nature of ν and η , that in the Mouth and Shoulder of *Pegasus*, and the Southern Scale of *Libra*. Of the Nature of δ , the three in the Tail, and the four in the side of the greater Bear, *Aldebaran*, the *Hyades*, and *Pollux* (one of the Twins.) Of the Nature of δ and ϵ , the *Aselli*, and *Oculus Sagittarii*. Of the Nature of δ and η , *Spica Virginis*. Of the Nature of δ and η , the Head of *Hercules*, the Goat with the Kid, and those in either Shoulder of *Orion*. Of δ and ϵ , the *Pleiades*, and those in the *Præsepe* or Manger. Of η , that in the Navel of *Andromeda*. Of η and η ; that in the shoulder Blade of *Andromeda*, those in the *Lyra*, in *Corona Guossia* in the Beak and Tail of the Swan, the Cup, and *Fomalhaut*. Of the Nature of η , *Procyon* or the lesser Dog, as by *Schickardus* (*in AstroscoPIO*) we find them ranged and distinguished.

Their Scintillation.

Is that *Pathos* by which they are particularly distinguished from the Planets, for the Planets have no such Vibration, twinkling or glimmering of Light; but generally all the Fixed Stars, more or less; and at sometimes more than at others, especially (*flante Euro*) while the wind blows easterly; as *Schickardus* (*in AstroscoPIO*) observes. The Cause of this their Scintillation is variously discoursed of, both by Philosophers and Astronomers. *Aristotle* among the Ancients (*l. 1. poster. c. 13.*) assigns the cause thereof to their Remoteness from our sight, by which they are weakly, and as it were by a trembling weariness reached, which Opinion *Pontanus* following, thus asserts the same in his *Urania* l. 2.

*Scilicet alta illis Regio, sedesque repositæ,
Quo postquam advenit de fesso Lumine Visus,
Defessus tremit ipse, tamen tremere ipsa videntur.*

But this Reason is not at all convincing, for then *Jupiter* and *Saturn*, by reason of their great Distance should in some Proportion affect our Sight with such a kind of Tremor or Scintillation; which yet we find they do not in their greatest Altitude. *Blancanus* (*in Sphæra Mundi*) ascribes the Cause thereof only to Refraction; and therefore (says he) *Syrinx* and *Procyon* twinkle or glimmer more than any of the rest, because they never ascend beyond 45°. above the Horizon: But then why

why does not *Jupiter* which is nearer to us, (especially when within the Limits of Refraction) do the like? *Schickardus* is much of the same Opinion, and conceives this *Phænomenon* to arise from the unequal Superficies of the fluctuating Air or *Medium*, as Stones in the Bottom of a River by the rapid Course of the Water, seem to have a kind of tremulous Motion, which is only in the crisped and uneven Undulation of the Stream. But if this Reason were true, not only the Fixed Stars, but the Planets, nay the Moon it self would be liable to the like Scintillation. *Gassendus* more probably conceives this Scintillation of the Fixed Stars to proceed from that Native and Primigenial Light they are indued with, like that of the Sun, sparkling, and casting forth such quick darted Rayes, as our Weaker Sight cannot behold without that trembling passion. To which likewise may be added the most swift and quick Motion of theirs about their own *Axes*, by that means making a more suddain and nimble variation in those radiant Objects than the Eye can pursue. From which Opinion yet the learned *Scheinerus* in his *Mathematical Disquisitions* clearly dissents. The Scintillation of the Stars (says he) is not their proper Revolution or Convolution, not any intern excelsuating Commotion: No tremulous revibrating of the Sun beams proceeding from their first or second Motions; no unquiet or unequal Ejaculation of their Proper Radii; no Tremor of the wearied Sight; not any of These, nor all of These; but the only and sole Intercision of their several Species falling upon the Eye, occasioned by the unquiet Intercursation of Vapours variously affected. But this Reason of his will not satisfie the more Curious *Hevelius*, who yet allows that of their Circumgyration about their proper Axes, instanced by *Gassendus*, yet only as an adjuvant not the sole Cause of their Scintillation, he imputing it rather to a constant Evibration of Lucid Matter, or a continual Expiration of fiery Vapours and *Effluvia* from those Celestial bodies, in the same manner as we perceive those fulgurations and Ebullitions in the Body of the Sun, which by how much the grosser, and in greater plenty they are ejaculated, by so much the greater and more signal Scintillation is caused by them. And with this Reason, and that of *Gassendus* we may reasonably rest satisfied, until further Observation and Inquisition shall produce one more convincing. As to

Their Number.

If we look to those only which are most notable and visible, as being reduced to the six Vulgar Degrees of Magnitude, we shall find them according to *Ptolemie's* Computation to amount to but 1022. *Pliny* yet (*l. 2. c. 4.*) reckons them to be 1600. But if we reflect upon the absolute Number of all the Stars in the Firmament, we may conclude them (though not with *Jordanus Brunnus* to be infinite yet) to be innumerable, at least by humane Calculation, either as looked upon by the bare Eye only, or by the Help of a Telescope; by the means of which last *Galilæo* (*in Nuncio Sidereo*) reports, that he discovered in the Cloudy Star in *Orion*, no less than 21. others; in the Nebulous Star in the *Præsepe*, or Manger 36. In the Asterism of the *Pleiades* above 40. In the space between the Girdle and Sword of *Orion*, no fewer than 80, and within little more than one Degrees Space in the Constellation of *Orion* above 500 Stars, by which numerous Discovery he was deterred from making out and describing that Constellation, which he had particularly intended to have done. *Reitha* likewise (*in suo Radio Sydereomyſtic. p. 197.*) affirms that he observed in the same Constellation above 2000. Stars. Whereupon *Ricciolus* thus argues, that if the Constellation of *Orion* take up in the Heavens the space of 500 square Degrees, as it is found to do, and that every square space whose side is but two Degrees, shall contain no less than 500 Stars, according to the observation of *Galilæo* before mentioned, there will be found in the whole Constellation of *Orion*, at least 62500 Stars, whereas look'd upon by the Bare Eye only there appear not therein above 63 Stars. According to which Proportion if the rest of the Constellations were examined and the Difference computed of the number of the Stars appearing by the Telescope over and above those discerned by the bare Eye; there might be reckoned above Ten hundred thousand Stars, besides those in the *Via Lactea*. Nay, if one should reckon them above twenty hundred thousand, *Mibi quidem nihil inopinabile finxerit* (says *Ricciol. Almageſt. Nov. Tom. 1. l. 6. p. 413.*)

Some of the Jewish Doctors reckon not above 12000 Stars in all, but those of the *Cabala*, no less than 29000 *Myriads*, which Number *Schickardus* conceives to be too transcendent; and believes that the whole Area of the Heavens would not receive above 26712 *Myriads*, though they were placed contiguous to one another, & but 1" of a minute allowed for the space that every one should take up. But as to this Particular conclude we rather with *Schottus in Prælus. in Firmament. Itiner. Exſtatic. Kircheri. in Schol. 1. Punctum eſt Terra quam incolimus, &c.* This Globe of the Earth which We inhabit, which We harraſſ with ſo many Armies, ſo many Warlike Fleets, and which We divide with ſuch Inſatiable Avarice, is but a Point, and yet We have not overran every Kingdom, nor penetrated every Region thereof, although enriched with the Acceſſion of America. There are greater Tracts from the Straits of Magellan to the Southern Pole which be yet undiscovered. What think We then remains undetected in the Vaſt Immensity of the Heavens, in that great Kingdom of the Almighty Creator hardly to be approached by our Weak Eyes: It is intolerable Arrogance therefore to Imagine that our Sight though newer ſo ſtrengthened by the help of Teſſeopes can diſcover all the Stars in the Celeſtial Expanſum, and extream folly to go about to range them within the Limits of any definit Number; That being the Work of God alone, who Numbers the Multitude of the Stars, and calls them by their Names.

Their

Their Figures.

As to their Figure, it is apparently Spherical or round; maintained to be such by the *Stoicks*, and with them by our *Manilius*. *Plutarch* yet (*De Placit. Philosph. l. 2. c. 14.*) gives us the different opinions of some of the Ancients, for *Cleanthes* held them to be Pyramidal or pointed; *Anaximenes* conceived them to be like Studs or Nails fixed in the Chrystalline Firmament; others imagined them to be fiery or lucid Plates or *Lamine*, like so many flat Pictures, not of any thickness or Profundity; *Scheinerus*, and *Antonius Maria de Reitha*, will have them to be of divers Figures or Faces, of a Poly-angular shape, and such the larger sort of Telescopes represent them, or as *Kepler* in *Epitom. Astron* (p. 498.) describes them, like so many Lucid Points or Sparks casting forth every way their Rayes, of Light; so that we are to apprehend their Figure to be only Physically Spherical, not Mathematically such; for in the first Acceptation they may be said to be round Bodies, however according to the later, their superficies may be found to be uneven, and to consist of many Angles and Sides.

Their Magnitudes

Before We undertake to say any thing as to the Magnitudes of the Stars, it will not be amiss in the first place, which *Schickardus* ingeniously to acknowledge, that *Veras illorum Magnitudines verè ignoramus*.

But that we may in some measure satisfy the Readers Expectation. We shall in the following Tables, give some Accompt thereof, according to the divers Calculations made by several Eminent Astronomers; the first of which Tables shews how many Minutes or Seconds their Apparent Diameters contain; the second how many Diameters of the Earth their true Diameters contain; the third, what is the Solidity of their Bodies to that of the Earth. In which Tables may be observed a great Diversity; arising partly, from the various Distances assigned to them by several Authors from the Earth, the supposed Mundane Center; partly, from the divers Estimate of their Apparent Diameters, made by the bare Eye, by *Tycho* and others more Ancient, and by Telescopes by Modern Astronomers.

I. Table of the Apparent Diameters of the Fixed Stars.

Their several Magnitudes.	1	2	3	4	5	6
According to <i>Magnus</i>	10' 0"	5' 30"	4' 0"	3' 0"	2' 0"	1' 0"
<i>Tycho, Longom. Blanc.</i>	2 0	1 30	1 5	0 45	0 30	0 20
<i>Lansbergius</i>	1 0	0 40	0 30	0 20	0 10	0 5
<i>Hortensius</i>	0 8	0 6	0 5	0 4	0 3	0 2
<i>Kepler</i>	3 0	2 0				

II. Table of the true Diameters of the Fixed Stars, and how many Diameters of the Earth each contains.

Their several Magnitudes	1	2	3	4	5	6
According to <i>Maurolicus</i> and <i>Clavius</i>	4 $\frac{1}{2}$	4 $\frac{20}{32}$	4 $\frac{1}{2}$	3 $\frac{4}{5}$	3 $\frac{11}{12}$	2 $\frac{1}{2}$
<i>Fernelius</i>	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{7}{8}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	2 $\frac{1}{2}$
<i>Tycho</i>	4 $\frac{1}{2}$	3 $\frac{1}{2}$	2 $\frac{1}{2}$	1 $\frac{19}{20}$	1 $\frac{1}{2}$	0 $\frac{1}{2}$
<i>Lansbergius</i>	40712	27132	20356	13580	6776	3388

III. Table of the Solidity of the Fixed Stars to that of the Earth.

Their several Magnitudes	1	2	3	4	5	6
According to <i>Alfraganus</i>	As to 100	As to 90	As to 72	As to 54	As to 36	As to 18
<i>Fernel..Maurolyc. Clav.</i>	107	90	72	55	36	18
<i>Tycho, Boyer. Blancan.</i>	68	28 $\frac{1}{2}$	11	4 $\frac{1}{2}$	1 $\frac{1}{2}$	0 $\frac{1}{2}$

To

To these we shall add.

IV. Table from the Observations of Ricciolus shewing as well their Apparent Magnitudes, as their true Magnitudes, deduced from their undermentioned supposed Distances from the Earth.

Degrees of Magnitude	Names of the Stars of the several Degrees of Magnitude	Apparent Diameter	The greatest Distance according to Ricciolus of 210000 Semidiameters of the Earth		The least Distance according to Ricciolus of 100000 Semidiameters of the Earth		The greatest Distance according to the Ptolemaick 40000 Semidiameters of the Earth		The greatest Distance according to Tycho 14000 Semidiameters	
			The true Diameter contains the Earths Diameter	The Body contains the Earths Body	The true Diameter contains the Earths Diameter	The Body contains the Earths Body	The true Diameter contains the Earths Diameter	The Body contains the Earths Body	The true Diameter contains the Earths Diameter	The Body contains the Earths Body
1	Sirius	18" 0"	17 $\frac{1}{16}$	5355	8 $\frac{7}{16}$	815	3 $\frac{1}{16}$	42	0 $\frac{61}{100}$	0 $\frac{1}{16}$
1	Arcturus	16 42	16 $\frac{1}{8}$	3932	8 0	512	3 $\frac{1}{8}$	32	0 $\frac{46}{100}$	0 $\frac{1}{8}$
1	Aldebaran	15 24	14 $\frac{1}{4}$	2810	7 $\frac{1}{4}$	402	3 0	27	0 $\frac{17}{100}$	0 $\frac{1}{4}$
1	Spica	15 5	13 $\frac{1}{2}$	2660	7 $\frac{1}{2}$	374	2 $\frac{1}{2}$	18	0 $\frac{47}{100}$	0 $\frac{1}{2}$
1	Regulus	14 5	13 $\frac{1}{4}$	2202	6 $\frac{1}{4}$	249	2 $\frac{1}{4}$	16	0 $\frac{11}{100}$	0 $\frac{1}{4}$
1	Rigel	13 40	13 0	2197	6 $\frac{1}{2}$	220	2 $\frac{1}{2}$	15 $\frac{1}{2}$	0 $\frac{41}{100}$	0 $\frac{1}{2}$
2	Procyon	12 20	12 0	1728	6 0	216	2 $\frac{1}{2}$	12	0 $\frac{112}{100}$	0 $\frac{1}{2}$
2	Aquila	11 0	10 $\frac{1}{4}$	1120	5 $\frac{1}{4}$	137	2 $\frac{1}{4}$	8 $\frac{1}{4}$	0 $\frac{111}{100}$	0 $\frac{1}{4}$
2	Polaris	7 53	7 $\frac{1}{4}$	402	3 $\frac{1}{4}$	62	1 $\frac{1}{4}$	3 $\frac{1}{4}$	0 $\frac{27}{100}$	0 $\frac{1}{4}$
3	Algol	7 3	6 $\frac{1}{4}$	260	3 $\frac{1}{4}$	34	1 $\frac{1}{4}$	2 $\frac{1}{4}$	0 $\frac{24}{100}$	0 $\frac{1}{4}$
4	Propus	6 10	6 0	216	2 $\frac{1}{4}$	26	1 $\frac{1}{4}$	1 $\frac{1}{4}$	0 $\frac{20}{100}$	0 $\frac{1}{4}$
5	Pleias	4 $\frac{1}{4}$	4 $\frac{1}{4}$	92	2 $\frac{1}{4}$	18	1 $\frac{1}{4}$	1 $\frac{1}{4}$	0 $\frac{18}{100}$	0 $\frac{1}{4}$
6	Alcor	4 0	4 0	64	2 $\frac{1}{4}$	9	0 $\frac{1}{4}$	0 $\frac{1}{4}$	0 $\frac{11}{100}$	0 $\frac{1}{4}$

But seeing the Astronomers of the Copernican Opinion, maintain the Magnitudes of the Fixed Stars to be far greater than the former Tables show them to be: It will not be amiss to annex the following One.

V. Table shewing the true Magnitude of the Fixed Stars, that is of One of the Greatest, and One of the Least, viz. Sirius and Alcor; supposing the Apparent Diameter of Sirius to be 18". of Alcor, 4". according to the Distance in the Copernican Hypothesis, maintaining the Parallax of the Fixed Stars made by the Earths Motion, not to exceed 10". and imagining the Diameter of the Annual Orb, to be such as upon those Principles it is stated to be.

According to	The Distances to be asserted in	The true Magnitude of Sirius		The true Magnitude of Alcor	
		The Diameter of Sirius contains Diameters of the Earth	The Body of Sirius contains the Earths Body	The Diameter of Alcor contains Diameters of the Earth	Its Body contains the Earths Body
Copernicus	47, 439, 800	4170	71, 6771, 713, 000	1992	4, 378, 454, 048
Herigonius	49, 502, 400	4350	82, 312, 875, 000	2068	8, 844, 058, 432
Galileus	49, 832, 416	4380	8, 427, 672, 000	2092	9, 155, 362, 688
Bulialdus	60, 227, 920	5300	148, 877, 000, 000	2530	15, 941, 277, 000
Lansbergius	61, 616, 122	5424	159, 371, 956, 024	2588	17, 333, 761, 472
Keplerus	142, 746, 428	12550	1, 967, 656, 371, 000	6000	216, 000, 000, 000
Vendelinus	604, 589, 312	53200	15, 056, 882, 800, 000	25380	1, 767, 384, 872, 000

These Magnitudes may to some (happily) seem Exorbitant; but in the Judgment of the Intelligent Schickardus, *Eorum Speculationes qui Cælum Stellatum longissimè à Nobis remotum, & consequenter Astra plurimum amplificanti, Veritati sunt propiores quoniam Minora neutiquam admittit concessa Orbis Anni Parallaxis.* (Astrocop. p. 14.)

Of their Place and Distance from the Earth (or rather the Sun.)

. This seems a Question of that Difficulty, that Pliny pronounced the Investigation thereof to be no less than a Piece of Madness. And therefore Ricciolus (*Almagest. Nov. l. 6. c. 7.*) treating upon this Subject, thought fit in the Front of his Discourse to prefix this Theorem, as a most certain Truth; that, *Parallaxis & Distantia fixarum non potest certè & evidenti Observatione humanitus comprehendi.*

R f

For

For we know not whether the Stars are all in the same Spherical Superficies equally distant from the Centre of the World, or whether they be placed at unequal Distances, some higher, some lower. This latter yet was the Sentiment of the Ancient Stoical Philosophers, who conceived the difference of their Lustre and Apparent Magnitudes, to proceed from their diversity of Situation, as more or less removed from our Sight. And this Opinion our *Manilius* long since declared, where speaking of some Stars in *Orion*, appearing more obscure than the rest, he gives the reason of that *Phænomenon* to be

Non quod clara minus, sed quod magis alta recedunt.

An *Hypothesis* so seemingly rational, that the Famous *Tycho*, *Galileo*, and *Kepler* have readily embraced the same; and therefore we may reasonably suppose, that their Distances are as divers as those of the Planets, how ever our weak sight unable to distinguish their divers Intervals, judges them to be all inherent in the same Concave Spherical Superficies. *Ricciolus* in *Almagest*. Nov. l. 6. r. 7. reckons up five manner of wayes of attaining in some Probability to the Knowledge of their Immense and hitherto incomprehensible Distances, which I shall only reckon up; referring the Reader to be further satisfied from the more Ample Discourse of that Author: The first is from the Supposition of their least sensible Parallax: The second is from the Proportion of the Periodical Motion, and Distance of some of the more certainly known Celestial Lights. The third, from the difference of Refractions of the Sun, Moon, or other of the Planets, and that of the Fixed Stars. The fourth, from the Computation of the bare Distance of *Saturn* from the Earth, without any regard to his shadow: The fifth, from the Distance of *Saturn* joyned with the length of its shadow, which Method *Ricciolus* supposes the most probable. As for example; The shadow of *Saturn* is supposed (according to *Ricciolus*) to extend to 118680 Semidiameters of the Earth, which joyned with the greatest Distance of *Saturn*, being according to the said Author 90155 Semidiameters of the Earth. The Distance of the Fixed Stars can be computed no less than 200000. of those Semidiameters, or rather 208835. that they may be clearly exempt from the Reach of *Saturn's* shadow, and although there is no fear of their being obscured by the same, in regard they are not illuminated by the Sun, but shine by their own innate Light; yet it is supposed they are seated beyond it, by the wise and great Architect of Nature; and (if you will take the Opinion of *Des Cartes*) for this Reason; that there might be a convenient space between the Planetary Heaven, and that of the Fixed Stars, for the Production and Ascent of Comets and New Stars. Wherefore (according to the computation of *Ricciolus*) the least Distance that may be assigned to the Fixed Stars, to raise them beyond the shadow of *Saturn* and its *Satellites*, will be found to amount to 210000 Semidiameters of the Earth. The greatest being altogether uncertain, by reason the Crassitude or Profundity of their Heaven is not to be determined; and that they are as well by their Extreme Parts, as by their Centers, unequally removed from us. But let the Reader for his more particular Satisfaction, look upon the following Tables.

Table of the Distance of the Fixed Stars from the Earth (or rather the Sun.)

According to the several Authors following.	Semidiameters of the Earth.		Horizontal Parallax of the Fixed Stars.
	Least Distance	Greatest Distance	
<i>Albategnius, Junctinus</i>	19000	Uncertain	10 58
<i>Alfraganus, Barocius</i>	20220	40440	10 14
<i>Maurolycus</i>	20077	20086	10 16
<i>Fernelius, Clavius</i>	22612	45225	9 08
<i>Maginus</i>	20110	40220	10 15
<i>Tycho</i>	13000	14000	15 6
<i>Marinus Bettinus</i>	2290		90 0
<i>Ant. Mar. Rheita.</i>	20000000		00 1
<i>Ricciolus</i> according to the fourth Method	100000	Uncertain	2 0
To the fifth Method	210000		1 ferè

The Parallaxes placed in the last Column answer to their least Distances, for according to their greatest Distances assigned by *Alfraganus*, *Maginus*, *Fernelius*, and *Clavius*, 5". or 6". would be sufficient.

DISTANCE

DISTANCE of the Fixed Stars asserted by the followers of Copernicus in

	Semidiameters of the Earth	The greatest Parallax of the Fixed Stars made from the Annual Motion of the Earth	
Authors		The Half from the Semidiamete- ter "	The whole from the Diameter of the An- nual Orb "
<i>Copernicus</i>	Indefinite	* *	* *
<i>Galileus</i>	13, 046, 400	0 20	0 40
<i>Kepler</i> formerly	34, 077, 067	0 9	0 17
<i>Kepler</i> afterward	60, 000, 000	0 12	0 24
<i>Lansbergius</i> formerly	10, 312, 227	0 30	1 00
<i>Lansbergius</i> later dayes	41, 958, 000	0 07	0 15
<i>Hortensius</i>	10, 312, 227	0 30	1 00
<i>Herigon</i>	144, 0000	3 0	6 00

Distance of the Fixed Stars, supposing the Earth's Annual Motion about the Sun, and the Copernican Distance of the Earth from the Sun.

According to the Cal- culation of	Semidiameters of the Earth	Total Parallax of the Fixed Stars "	
<i>Tycho</i> and <i>Maginus</i>	7850, 000	1 00	
<i>Longomontanus</i>	7906, 818	1 00	
<i>Scheinerus</i> §	13, 133, 376	0 40	
	10, 320, 000	0 48	

Distance of the Fixed Stars from the Earth, supposing the Earth's Motion, and the greatest Parallax of the Fixed Stars to be 10". and the Distances of the Sun and Earth, as underwritten.

According to the seve- ral Authors follow- ing.	Distance of * and Earth in Semidiameters of the Earth	Distance of the Fixed Stars in Semidiameters of the Earth	
<i>Copernicus</i>	1150	47, 439, 800	
<i>Mästlinus, Galileus</i>	1208	49, 832, 416	
<i>Keplerus</i>	3469	142, 746, 428	
<i>Lansbergius</i>	1498 ½	61, 616, 122	
<i>Bullialdus</i>	1460	60, 227, 920	
<i>Herigonius</i>	1200	49, 502, 400	
<i>Vendelinus</i>	14656	604, 589, 312	

It rests that something be said of the Proper Motion of the Fixed Stars, which is double.

The first is their Circumrotation about their own Centers, termed *Motus Vertiginis*; in which they are carried about with extraordinary Celerity; whence the Reason in part (as already hinted) of their Scintillation.

The second is their Motion of Revolution from West to East, *Secundum Duñum Eclipticæ*, in which they are observed to move, but very slowly. Touching this, it will not be amiss to insert the three following Conclusions of *Ricciolus* in his *Astronom. Reformat.* p. 259.

The first is, that the Motion of the Fixed Stars is equal and uniform.

Secondly, That their Annual Motion is not less than 49". nor greater than 51".

Third, That it seems most Probable that their Annual Motion is 50". 40". though the Opinion of those who compute it to be within 50". or 51". wants not fair Probability. From

From the Supposition of their Annual Motion of $50''.40'''$. It follows that they complete not one Degree in the Ecliptick sooner than in 71 years and $\frac{16}{7}$, or 19 days and 12 Houres in a manner; but the whole Circle of 360 Degrees they run not through save in 25579 years, which is the *Annus Magnus Platonius* (though by the Ancients computed to extend to no less than 36000 years) which 25579 Sidereal years, are equal to 25580 Equinoctial years. But this will be clearer manifested by the following Table.

Table of the Motion of the Fixed Stars in Longitude.

Years	'	"	'''		Years	'	"	'''		Years	Gr.	'	"	'''
1	0	50	40		43	36	18	40		83	1	10	5	20
2	1	41	20		44	37	9	20		84	1	10	56	0
3	2	22	00		45	38	0	0		85	1	11	46	40
4	3	22	40		46	38	50	40		86	1	12	37	20
5	4	13	20		47	39	41	20		87	1	13	28	0
6	5	4	0		48	40	32	0		88	1	14	18	40
7	5	54	40		49	41	22	40		89	1	15	09	20
8	6	45	20		50	42	13	20		90	1	16	0	0
9	7	36	00		51	43	04	0		91	1	16	50	40
10	8	26	40		52	43	54	40		92	1	17	41	20
11	9	17	20		53	44	45	20		93	1	18	32	0
12	10	8	0		54	45	36	0		94	1	19	22	40
13	10	58	40		55	46	26	40		95	1	20	13	20
14	11	49	20		56	47	17	20		96	1	21	4	0
15	12	40	0		57	48	8	0		97	1	21	54	40
16	13	30	40		58	48	58	40		98	1	22	45	20
17	14	21	20		59	49	49	20		99	1	23	36	0
18	15	12	0		60	50	40	0		100	1	24	26	40
19	16	2	40							200	2	48	53	20
20	16	53	20			Gr.	'	"	'''	300	4	13	20	0
21	17	44	0		61	0	51	30	40	400	5	37	46	40
22	18	34	40		62	0	52	21	20	500	7	2	13	20
23	19	25	20		63	0	53	12	0	600	8	26	40	0
24	20	16	0		64	0	54	2	40	700	9	51	6	40
25	21	6	40		65	0	54	53	20	800	11	15	33	20
26	21	57	20		66	0	55	44	0	900	12	40	0	0
27	22	48	0		67	0	56	34	40	1000	14	4	26	40
28	23	38	40		68	0	57	25	20	2000	28	8	53	20
29	24	29	20		69	0	58	16	0	3000	42	13	20	0
30	25	20	0		70	0	59	6	40	4000	56	17	46	40
31	26	10	40		71	0	59	57	20	5000	70	22	13	20
32	27	1	20		72	1	0	48	0	6000	84	26	40	0
33	27	52	0		73	1	1	38	40	7000	98	31	6	40
34	28	42	40		74	1	2	29	20	8000	112	35	33	20
35	29	33	20		75	1	3	20	0	9000	126	46	0	0
36	30	24	00		76	1	4	10	40	10000	140	44	26	40
37	31	14	40		77	1	5	01	20	20000	281	28	13	20
38	32	5	20		78	1	5	52	0	25579	360	0	0	0
39	32	56	0		79	1	6	42	40					
40	33	46	40		80	1	7	33	20					
41	34	37	20		81	1	8	24	0					
42	35	28	0		82	1	9	14	40					Table

Table of the Right Ascension and Declination of 100 of the Fixed Stars for the year of Christ 1700
completed : according to Ricciolus in Astronom. Reformat.

Names of the fixed Stars.	Right Ascension for the year 1700.			Declination for the year 1700.			Difference of	
	Gr.	'	"	Gr.	'	"	Ascension in 100 years	Declination in 100 years
Head of <i>Andromeda</i>	358	14	8	27	27	26 B	1	17.
Girdle of <i>Andromeda</i>	13	11	20	34	2	40	1	23
Southern Foot of <i>Andromeda</i>	26	21	51	40	52	30	1	29
Formalhaut of <i>♈</i>	340	11	0	31	8	10 A	1	25
Right Shoulder of <i>♈</i>	327	36	55	1	43	44	1	20
Left Shoulder of <i>♈</i>	318	55	54	6	48	46	1	21
Left Hand of <i>♈</i>	307	45	54	10	33	44	1	26
Bright one in the Eagle	294	2	47	8	6	32 B	1	27
First in <i>♊</i> Horn	24	17	2	17	48	24 B	1	23
Second in <i>♊</i> Horn	24	30	3	19	19	24	1	22
Bright one in <i>Aries</i>	27	35	58	22	1	30	1	25
Goat of <i>Auriga</i>	73	35	56	45	40	0	1	49
Right Shoulder of <i>Auriga</i>	84	29	42	44	51	30	1	58
<i>Arcturus</i> in <i>Bootes</i>	210	33	2	20	48	2 B	1	11
Left Shoulder of <i>Bootes</i>	215	2	33	39	35	12	1	2
<i>Præsepe</i> in <i>♌</i>	125	46	2	20	43	4 B	1	28
Northern <i>Asinego</i> in <i>♌</i>	126	26	0	22	3	0	1	30
Southern <i>Asinego</i> in <i>♌</i>	126	54	3	19	15	0	1	27
Great Dog, <i>Sirius</i>	97	57	6	16	18	6 A	1	7
Little Dog, <i>Procyon</i>	110	54	33	5	59	12 B	1	20
Upper Horn of <i>♍</i>	300	24	34	13	22	6 A	1	25
Lower Horn of <i>♍</i>	301	7	29	15	38	2	1	27
First in the Tail of <i>♍</i>	320	56	29	17	54	21	1	26
Second in the Tail of <i>♍</i>	322	43	30	17	22	22	1	25
Bright one in <i>Cassiopea's</i> Chair	358	14	33	57	32	16 B	1	15
<i>Scheder</i> or the Breast of <i>Cassiopea</i>	5	56	0	54	55	16	1	22
In the flexure of <i>Cassiopea</i>	9	45	58	59	7	36	1	27
In <i>Cassiopea's</i> Knee	16	36	0	58	40	22	1	35
<i>Cepheus</i> his Girdle	321	6	20	69	17	10	0	22
Bright one in the Whales Jaw	41	38	7	2	53	50 B	1	15
Northern Whales Belly	24	12	0	11	44	50 A	1	15
Southern in the Whales Tail	7	5	8	19	35	40	1	18
Northern in Whales Tail	1	4	12	10	24	54	1	17
Bright one in the Northern Crown	230	39	0	27	45	20 B	1	5
In the Beak of the Swan	289	39	48	27	22	40	1	1
In the Swans Breast	302	55	52	39	20	5	0	53 ½
In the Swans Tail	307	47	17	44	14	51	0	51 ½
Upper Wing of the Swan	293	56	2	44	26	21	0	48
Lower Wing of the Swan	308	29	10	32	51	24	0	0
Bright one of the <i>Dragon</i>	267	25	20	51	35	2	0	35
In the Head of <i>Castor</i>	108	50	46	32	30	26 B	1	44
In the Head of <i>Pollux</i>	111	43	36	28	43	2	1	34
Bright one Foot of the Twins	95	3	32	16	37	32	1	28
Head of <i>Hercules</i>	255	21	37	14	46	48 B	1	8
Right Shoulder <i>Hercules</i>	244	19	35	22	11	40	1	5
Left Shoulder <i>Hercules</i>	255	31	33	25	15	48	0	52
Heart of <i>Hydra</i>	138	12	22	7	21	30 A	1	15
Lions Heart <i>Regulus</i>	148	4	15	13	25	16 B	1	22 ½
Lions Tail	175	25	34	16	14	4	1	19
Bright one in <i>Juba Leonis</i>	150	48	47	21	21	0	1	25 ½
Bright one in <i>Lumbis Leonis</i>	164	22	20	22	7	44	1	27
Uppermost in the Neck	149	52		24	53	54	1	28
Lowest in the Neck	147	47	52	18	13	33	1	28
Thigh of the Hare	78	51	30	20	59	0 A	1	5
Northern Scale of <i>Libra</i>	225	15	26	8	14	46	1	21 ½

The rest of the Table of the Right Ascension, &c.

Names of the fixed Stars.	Right Ascension for the year 1700.			Declination for the year 1700.			Difference of	
	Gr.	'	"	Gr.	'	"	Ascension in 100 years	Declination in 100 years
Southern Scale of <i>Libra</i> Bright one in <i>Lyra</i>	218 276	38 39	12 32	14 38	45 32	18 16 B	I 25 O 50	27 A 4 A
Head of <i>Ophiuchus</i> Left Hand of <i>Ophiuchus</i> Right Knee of <i>Ophiuchus</i> Left Knee of <i>Ophiuchus</i> Right Shoulder of <i>Ophiuchus</i>	260 239 252 245 162	15 47 39 11 8	38 37 40 37 38	12 2 9 15 4	49 52 53 16 44	22 B 2 A 30 30 40 B	I 11 I 23 O 50 I 23 I 13	7 S 18 A 10 A 15 A 5 S
Uppermost in the Head of <i>Orion</i> Right Shoulder of <i>Orion</i> Left Shoulder of <i>Orion</i> Foot of <i>Orion Rigel</i> 1. } in the Belt of <i>Orion</i> 2. } 3. }	79 84 97 75 79 80 81	41 43 16 2 9 12 18	10 4 40 50 48 54 25	9 7 6 8 0 1 2	34 18 3 33 32 25 8	38 B 20 2 42 A 50 46 20	I 22 I 22 I 19 I 15½ I 17 I 17 I 16	7 A 4 A 8 A 9½ S 7 S 6 S 5 S
Mouth of <i>Pegasus</i> Star <i>Alpharus</i> in the Leg <i>Markab</i> in the joining of the Wing End of <i>Pegasus</i> Wing Bright one in the side of <i>Perseus</i> <i>Ras Al Gol</i> of <i>Perseus</i> The Hindermost in the Head of } the Southern Fish } In the Knot in the Line of ✕	322 342 342 359 45 42 345 26	27 20 28 27 32 12 24 38	36 36 10 25 18 42 5 5	8 26 13 13 48 39 1 1	32 28 35 32 44 46 40 19	14 B 38 58 56 54 30 2 0	I 18 I 12 I 15 I 16 I 28 I 37 I 17 I 18	26 A 32 A 32 A 34 A 12 A 25 A 33 A 30 A
Bright one in the Head of } <i>Antares</i> , Heart of <i>Scorpius</i> } Northern Front of <i>Scorpius</i> } Middlemost } Southern Front of <i>Scorpius</i> } Bright one in the Neck of the Serp.	283 242 236 236 235 232	1 47 58 14 18 24	5 28 15 34 0 0	21 25 18 21 25 7	22 39 53 41 9 24	48 A 54 36 40 54 36 B	I 31 I 32 I 28 I 30 I 37½ I 15	8 S 16 A 19 A 20 A 21 A 21 S
<i>Aldebaran</i> , or Southern Eye ✕ In the Northern Horn of ✕ Southern Horn of ✕ Northern Eye of ✕ Lowest of the <i>Hyades</i> ✕ Bright one of <i>Pleiades</i> ✕	64 76 79 62 60 52	41 51 55 43 39 27	35 18 20 36 35 35	15 28 20 18 14 23	52 19 55 30 55 9	10 B 2 58 28 38 24	I 26½ I 37 I 31 I 24 I 25 I 29	15 A 8 A 7 A 17 A 17 A 21 A
<i>Spica Virginis</i> Girdle of <i>Virgo</i> <i>Vindemiatrix</i> in <i>Virgo</i>	197 190 191	22 10 52	55 22 20	9 5 12	33 2 34	30 54 B 58	I 19½ I 18 I 17	32½ A 34 S 33 S
The bright one in the Shoulder } of the greater Bear } The bright one in its Side } The bright one in the hinder- } most Thigh } On the Back near the Tayl 1. } The 2. } in the Tayl } Last }	161 160 174 180 190 197 203	17 52 23 8 7 55 53	5 20 34 2 56 2 50	63 57 55 58 57 56 50	22 59 23 41 36 30 50	2 B 2 42 42 58 52 56	I 41 I 37 I 23 I 20 I 9 I 3 I 2	32 S 32 S 34 S 34 S 33 S 32 S 31 S
The last in the Tayl of the lesser } Bear now the Pole-Star } The bright one in the Shoulder } heretofore called <i>Cynosura</i> } The right Ascension of this still } decreases.	9 222	52 39	10 20	8 75	42 37	51 30	3 10 I 15	34½ A 2½ A

To

To what we have already said of the Fixed Stars, it will not be amiss to add something touching those, which in regard they are now and then visible at other times disappear, are called New Stars, as that in *Cassiopea* observed by *Tycho*; and three others in the same Constellation lately discovered by *Signeur Cassini*, that in *Serpentarius* by *Kepler* and others; two more in the beginning of the Constellation *Eridanus* detected by *Cassini*. That in the Whale's Neck, and in the Northern Part of *Andromeda's* Girdle, by *Bullialdus*; that in the Swan's Breast, and another near its Beak, by *Hevelius* and *Don Anthelm* a *Carthusian* of *Dijon*; and four others near the Arctick Pole lately taken Notice of by *Cassini*. The Nature, Substance and Generation of which Stars are diversly discoursed of both by Philosophers and Astronomers. Some conceiving them to be generated of Sublunary Matter, and to be Comets wanting their Bush or Train; others conceive them to be generated of Celestial Matter by Condensation, as the other of the Fixed Stars at the first Creation; but not so compact and solid as those other Fixed Stars are, and therefore by degrees come to lose their Consistence, and with the Dissipation of their Substance, their Light. Some imagine them to be of the same Nature, Substance, and of equal continuance with other of the Fixed Stars, but assign to them a different Motion; by which Motion of theirs they sometime approach nearer to, sometimes recede further from the Earth; by means of their first Motion becoming visible and solving the different Appearances of their Light and Magnitude; by the latter, shewing the Reason of their Disappearance. But this Motion is by others denied; but because they find even in the Fixed Stars themselves, the like Alteration of their Lights and Magnitudes, which sometimes appear so small, as if they were Stars of the last, at other Times so bright, as if they were of the first Degree; they allow of some Alteration to be made in the very Bodies of these Stars; and as the Sun appears sometimes over-cast with Spots; so they conceive these Stars to be sometimes ore-clouded with such kind of Spots at what time they disappear; at other times to recover their Light, and become visible; others are of Opinion, that the Globes of these kind of Stars are so made, that but one side of them, shines, the other being altogether obscure (the first Authour of which Opinion seems to be *Ricciolus*, as he affirms of himself, *Almagest. Nov. Tom. 2. l. 8. c. 17.*) and that they move and have a Circumrotation about their own proper Axes, now turning their bright sides to us, at another time their dark; And for this Reason they are by *Le Pere Cherubin* termed *Stella Versatiles*. The Periods of their several Motions not being yet clearly determined; but by the Observations hitherto made, it appears, that, that in the Whales Neck makes its Revolution in Eleven Moneths; that in the Swans Breast is supposed not to finish the Period of its Revolution sooner than in fourteen Years, that near the Beak of the Swan completing hers in about ten Months Time; the Periods of the others Revolutions not being yet certainly known.

Of the SUN.

What seemed requisite to be added touching the Fixed Stars being dispatched; Something is to be said concerning those which are commonly termed Erratick or Planets; and among them in the first Place of the most glorious Luminary the Sun.

Whose Nature or Substance, with *Anaxagoras*, *Democritus*, *Metrodorus*, *Epicurus*, *Pythagoras* Its Nature and *Plato* of old, and with *Kepler*, *Scheinerus*, *Rheita*, *Bullialdus*, *Kircher*, *Ricciolus*, and others of and Sublate, We cannot with fairer probability conjecture to be other than a formal fiery Body, consisting of true proper Elementary Fire, partly liquid, partly solid. The liquid, being an Ocean of Light, and moving with fiery Billows, and flaming Ebullitions, as is manifest to those that look upon it through a Telescope. The solid Parts, being like the Land in our Terraqueous Globe, divided into Continents, Islands, Mountains, Rocks, that thereby the Vehement Motion of the exultuating Solar Ocean, might be restrained, and by frequent Allisions, repulsed, dissipated, and broken, to the end it might more efficaciously communicate its Panpermatick Virtue to all those Bodies, to which it is to afford Light and Influence. We may likewise probably conceive, that the Solar Globe, is, as this Earth of ours, hollowed with vast Subterraneous Caverns and Receptacles of Fire, which break forth out of the Solar Ignivomous Mountains, in the same manner as we find our Subterranean Fires to break out of *Etna*, *Hecla*, and *Vesuvius*. And it is in all Appearance as probable, that the solid Parts of the Sun within which the fluid and liquid Fire is contained, as Mettal in a Furnace, are thoroughly ignified in the same manner as we find the Bricks in the Roofs and sides of Furnaces, are made red hot, and look of the same colour as the fiery Mass of melted matter within them. We may further probably infer, that the earthly or solid Parts of the Sun are of an Asbestinous and incombustible Nature, and far better able to resist the Voracity of the Fire than this Earth of ours; And though it should be supposed that some Parts here and there should be consumed, and perhaps whole Mountains be levelled and wasted; yet it follows not that the Globe of the Sun should therefore be totally destroyed, more than this Earth of ours is, by the frequent Accidents of such kind of partial Ruines and Decayes. It is also evident that the Splendor as well of the fluid, as the solid Fire of the Solar Globe, is far more bright than our Earthly Fire or Flame. The End for which it was made necessarily requiring the same, as being intended for the Fountain of Light, and Lamp, if not of the whole World, at least, of the Planetary System.

This

This fire, as well the Liquid, or Solar Sea, as that which breaks out of the Caverns and Mountains, exhales constantly fuliginous Vapours, not black and sooty, like the Smoak of our Fire; but bright and pure, which collected together and condensed in the Circumambient *Æther*, do in a manner overcast the Sun, as Clouds overshadow the Earth. But all this will be clearer represented in the annexed Scheme, taken from the joynt Observations of *Scheinerus* and *Kirchnerus*.

From what hath been said, and the Evidence of frequent Observations lately made by help of the Telescope, it is manifest, that the Sun is not (as *Aristotle* and his Followers fancy it to be) of an unalterable Substance, but Subject to divers Changes and Alterations, as not only the Generation and Production, but the Dissolution and Corruption of several strange *Phænomena*, in the Body thereof (altogether unknown to the Ancients) clearly demonstrate. Among which the most Eminent are those by later Astronomers termed the

Macule, & Facule Solares.

Maculæ, or Spots. The *Macule* or Spots, are certain Cloudy Obscurities appearing upon the Disque of the Sun; supposed by some Astronomers, to be a fuliginous obscure Matter or Vapour, sometime closely compacted into one; sometimes dispersed and dissipated into several Parcels issuing from its fervent fiery Body, by force of its extream Heat. And though it cannot be certainly determined (by reason of the Want of *Parallax*) whether they be in the Sun it self, or distant from it some space; yet if one consider, their first Appearance or Birth, their Decay or Disappearance, their Shape or Figure, Increase, Diminution, Separation, Conjunction, Motion, and other like Accidents; It is credible, and (by what Observation makes out) most probable, that they are in the very Body of the Sun, at least not far from the Superficies thereof; in regard that when they are observed near the Border or Edge of the Sun's Disque going off from its visible Hemisphere, and turning about to the other (at what time they begin to disappear) they cannot be perceived to be raised above the Superficies of the Sun, or to shew any apparent Space or Distance between them and the Edge of the Sun's Globe, as in reason they would, and indeed (if it were so) they ought to do.

Their Shapes and Figures. Their Shapes and Figures, are of unequal Form and Grandeur, and most irregular, which argues them not to be Stars or Planets moving about the Body of the Sun, as *Tarde* and *Malapertius* have supposed; the one entitling them *Sidera Borbonia*, the other *Sidera Austriaca*. Some of these are more durable and lasting than others, and those are conceived to be the solid Parts of the Sun, shewing themselves variously figured, and of different Magnitudes, by reason of the vertiginous Motion of the Sun about its own *Axis* representing them to our Sight diversly situated, which diversity of their Appearance arises likewise from the Manner of the Sun's Circumgyration, which is such, that its *Axis* does not always keep the same Inclination to the Plane of the Ecliptick.

Their Motion. They have a Motion from the Oriental Part of the Sun's Disque, to the Occidental, which Course they ordinarily finish within the space of thirteen Dayes more or less, according to their greater or lesser Latitude, for they make by their Motion as it were a Zodiack of about sixty Degrees broad, that is, about thirty Degrees on each side of the Sun's Ecliptick.

The *Facule Solares*

Are conceived to be partly Massie fiery Globes bursting forth out of the Ignivomous Solar Mountains; and by reason of their Brightness shining amidst the Fuliginous Cloudy Vapours, or *Macule*, at sometimes suddenly disappearing, at others, making a long continuance or Duration. Partly Effervescencies of the exesuating Solar Ocean: Which by reason of the excessive innate Fervour of the Sun's Globe, boyls up into mighty Waves like Mountains of Light, scattering and dispersing the darker *Macule*, and discovering as it were a fiery Ocean fluctuating and agitated with Flaming Billows and unusual Splendour; or as *Scheinerus* (in *Disquisit. Mathem.*) defines them. *Faculæ, sunt Areolæ in Sole Lucidiores reliquo ejusdem Corpore, i. e.* they are certain small Plats or Spaces in the Sun, brighter than the rest of its Body, thus described by *Galileo* (in *Letter. 3. Delle Macchie Solar.*) *In the face of the Sun their appear certain Marks, brighter than the rest, in which is observed the same Motion as in the Maculæ, which that they are inherent in the very Body of the Sun, cannot be doubted, in regard it is not credible there can be any other Substance beside brighter than that of the Sun; In which few Words he hath comprized much.*

Of the Sun's Vertiginous Motion

The Observation of the Motion of the Sun's Spots and Lights, hath given Ocaasion to Astronomers to remark that the Sun hath a Motion about its own *Axis*, from East to West, which Conversion is finished in the space of twenty seven Dayes, or thereabouts, though there be some who will have it to move much faster,* making its Period of Circumrotation to be compleated in twenty four Hours. Others assigning to it a much more wonderful Celerity, and affirming its Vertiginous

* Kepler.

nous Course to be finished in a * Moments space. Of its Motion of Revolution Diurnal and Annual according to the *Hypothesis* of the Earth's Immobility, We shall here say nothing. Leaving likewise the Reader to be further satisfied as to what We have already briefly indicated touching this glorious Luminary from the larger Arguments of *Galileo*, *Scheinerus in Rosa Ursina*, *Kepler*, *Gassendus*, *Hevelius*, *Bullialdus*. *Kircherus* in his *Iter Extatic.* and *Schottus* upon him *Ricciol. Almagest. Nov. l. 3. Hodierna in Ponderation. De Admirandis Phasibus in Sole & Luna Visi, &c.* *Otto de Guericke in Experiment. Magdeburg.* and *Le Pere Chérubin* in his *Dioptricks*. Only adding something touching

The Sun's Magnitude, and Distance from the Earth.

The true Magnitude of the Sun (sayes *Ricciolus Almagest. l. 3. c. 11.*) is to be had from its true Semidiameter; for that being doubled gives its true Diameter, whence its other *Species* of Magnitudes are derived, according to the Rule of Proportion. Of which take the following Table.

The true Magnitude of the Sun compared with the Earth.

The Sun's	True Diameter contains	Its Circumference contains	The Area of its greatest Circle contains	Its convex superficies contains	Its solidity contains
According to the following Authors	Simple Diameter of the Earth	Simple Diameter of the Earth	Square Diameter of the Earth	Square Diameter of the Earth	The Solidity of the Earth
<i>Ptolemy, Maurolycus Clavius and Barocius</i>	5 $\frac{1}{2}$	17 $\frac{2}{7}$	24 0	134 0	166 $\frac{1}{2}$
<i>Aristarchus</i> $\left\{ \begin{array}{l} \text{more than} \\ \text{less than} \end{array} \right.$	6 $\frac{1}{2}$	20 $\frac{1}{2}$	30 $\frac{2}{3}$	127 0	254 $\frac{1}{2}$
	7 $\frac{1}{2}$	22 $\frac{1}{2}$	38 0	155 0	368 $\frac{1}{2}$
<i>Albategnius</i>	5 $\frac{7}{16}$	18 $\frac{1}{2}$	26 0	108 0	186 0
<i>Copernicus</i>	5 $\frac{27}{32}$	16 $\frac{1}{2}$	22 0	91 0	161 $\frac{1}{2}$
<i>Tycho and Blancanus</i>	5 $\frac{14}{17}$	16 $\frac{2}{7}$	22 0	85 0	140 0
<i>Longomontanus</i>	5 $\frac{807}{1000}$	18 $\frac{1}{15}$	26 0	95 0	196 0
<i>Keplerus</i>	15 0	47 $\frac{1}{2}$	176 0	706 0	3375 0
<i>Lansbergius</i>	7 $\frac{17}{32}$	24 0	46 0	176 0	434 0
<i>Bullialdus</i>	7 0	22 $\frac{2}{7}$	39 0	156 0	343 0
<i>Wendelinus</i>	64 0	200 $\frac{26}{100}$	3216 0	12864 0	262144 0
<i>Kircherus</i>	5 $\frac{1}{2}$	16 0	21 0	83 0	140 0
<i>Rbeita</i>	10 0	31 $\frac{1}{2}$	78 0	314 0	1060 0
<i>Ricciolus</i>	33 $\frac{1}{2}$	106 $\frac{1}{10}$	885 0	30056 0	38600 0

The Distance of the Sun from the Earth is such, that, if you will believe *Pliny*, to search after it, *penè dementis otii est.* *Ricciolus* likewise acknowledging its *Sublimity* to exceed the *Subtlety* of all *Astronomers* hitherto. Who yet proposes three several Methods or Wayes of finding it out. The first by means of the Horizontal or any other Parallax of the Sun; the second by the Eclipses of the Sun and Moon; the third by the Moon's Dichotomy, and its Distance from the Earth. But however the Investigation thereof be made, this is to be considered, that the Sun is sometimes in *Apogeo*, or its furthest Distance from the Earth, sometimes in *Perigeo*, or its nearest Proximity to the Earth; by the half of the Difference of which two Distances, the mean Distance of the Sun is determined. But it will be worth the while to represent to the Readers view in the following Table, the several Opinions as well of the Ancient as Modern Astronomers touching this matter.

T t

Table

Table of the Sun's Distance from the Center of the Earth in Semi-diameters of the same.

AUTHORS	Greatest Distance of the Sun in <i>Apogeo</i>	Mean Distance	Least Distance in <i>Perigæo</i>
According to <i>Hipparchus</i> his Data	1586	1472	1357
Or	1429	1379	1231
<i>Posidonius</i>	13141	✠	✠
<i>Ptolemaeus</i> and <i>Manrolycus</i>	1210	1168	1126
<i>Clavius</i> and <i>Barocius</i>	1216	1168	1126
<i>Albategnius</i> and <i>Alphonsus</i>	1146	1107	1068
From the Data of <i>Albategnius</i> as <i>Lansberg.</i>	7936	✠	✠
<i>Alfraganus</i>	1220	1215	1210
<i>Fernelius</i>	1309	1256	1204
<i>Copernicus</i> and <i>Maginus</i>	1179	1142	1105
From the Data of <i>Copernicus</i> <i>Lansberg.</i>	0942	✠	✠
<i>Michael Neander</i>	1197	1160	1122
<i>Mæstlinus</i> in $\begin{cases} \text{Max. Excentr.} \\ \text{Min. Excentr.} \end{cases}$	$\begin{matrix} 1208 \frac{1}{2} \\ 1197 \frac{1}{2} \end{matrix}$	$\begin{matrix} 1160 \\ 1160 \end{matrix}$	$\begin{matrix} 1111 \frac{1}{2} \\ 1122 \frac{1}{2} \end{matrix}$
<i>Joh. Officius</i>	✠	1152	✠
<i>Tycho</i> and <i>Blancanus</i>	1182	1150	1117
<i>Longomontanus</i>	1334	1288	1242
$\begin{cases} \text{in Ephemer.} \\ \text{in Coment. Martis} \end{cases}$	1800	1768	1736
<i>Kepler</i> $\begin{cases} \text{in Stella Nova.} \\ \text{in Epitome Astronom.} \\ \text{ex Parallax. in Tabul. Rudolphin.} \end{cases}$	$\begin{matrix} \text{---} \\ 3469 \\ 3438 \end{matrix}$	$\begin{matrix} \text{---} \\ 1432 \\ \text{---} \end{matrix}$	$\begin{matrix} \text{---} \\ \text{---} \\ \text{---} \end{matrix}$
<i>Lansberg.</i> in <i>Min. Excentr.</i>	1550 $\frac{22}{100}$	1498 $\frac{22}{100}$	1446 $\frac{16}{100}$
<i>Ismael Bullialdus</i>	1485 $\frac{16}{100}$	1460	1433 $\frac{12}{100}$
<i>Athanas. Kircherus</i>	1940 $\frac{1}{2}$	1906 $\frac{1}{2}$	1872 $\frac{1}{2}$
<i>Anton. Maria de Rheita</i>	2073	2000	1927
<i>Godefridus Vendelinus</i>	14905	14656	14407
<i>Galileus</i>	✠	1208	✠
<i>Marius Bettinus</i>	✠	1145	✠
<i>Langrenus</i>	✠	3420	✠
<i>Ricciolus</i>	7580	7327	7074
Or	7600	7300	7000

Of the MOON.

THE MOON the nearest Neighbour of all the Planets to this our Elementary Sphere comes next to be considered; whose Nature, Composition, and Constitution, may best be judged of by its Opacity, Asperity, and Heterogeneity of Parts.

The first shews it to be altogether deprived of any innate or proper Light, evidenced in its Total Eclipses, wherein She altogether loses her Lustre, which contrarily (if She had any of her own) would rather in the greatest darkness become more conspicuous. Hence it may be inferred the Light She hath is from the Sun, and that the Moon as She is an opacous, so She is a dense Body, apt to receive and reflect the Sun's Light.

The second argues the Globe of the Moon to be full of Eminencies, and Depressions, like our Hills and Valleys, estimated to be such by the Conjectures of the Ancients, (mentioned by *Plutarch l. de facie in Orbe Lune*) but at present manifest to sight by help of the Telescope, and ascertained to reason by those lesser Spots, which are called New ones, varying their Scituation and Magnitude, according to the divers Access and Recess of the Sun, to which their Site is always opposite, thence evidencing them to be the Shadows of the more eminent Parts of the Moons Globe, emulating our Alps, Hills, and Mountains, and here and there surpassing them for Height.

The third, viz. The Heterogeneity of its Parts was long since believed by the Ancients, as may appear by *Plutarch (l. 2. De Placit. Philosoph. c. 25.)* but at this day certainly demonstrated by the various

various Reflections of its Light ; whence We may conclude the brighter and more splendid Parts of the Moon , to be those which are more dense, solid, and opacous, like our Earth, in regard they reflect a greater Portion of Light ; but the obscurer Parts commonly called the Ancient Spots, for as much as they reflect a less, and absorb a greater Quantity of Light , to be therefore Pellucid and Diaphanous, and Analogous to our Ocean, Seas, Lakes, and Rivers.

From what hath been already said, We may probably infer that the Moon is composed of Solid and Liquid Parts , as this our Terraqueous Globe which we inhabit ; above which it is placed in such a fitting Degree of Neighbourhood , that thereby the Light and Influence of the Celestial Bodies, especially of the Sun's fervent Rayes, might by the Celerity of its Motion be so tempered, and by the Asperity and Inequality of its Superficies so received, and thence reflected, that they might be transmitted to us with less Incommodity than otherwise they would, if they were directly projected without that temperating Medium.

We are not yet to imagine, though most Astronomers as well Ancient as Modern conceive the Moon to be as it were another Earth , that it is composed of the same Sand , Clay , Stones, as this Terrestrial Globe, or that the Lunary Seas, Lakes, Pools, &c. are of the same Water with our Seas, Lakes, or Pools ; but happily of a quite different Matter , and to us incomprehensible. And therefore as to its Nature and Substance, We shall forbear with *Anaximander* to determine that its Concave Orb is full of Fire, breathing out at one Part as out of a Tunnel ; or with *Xenophanes*, that it is a Constipated Cloud, or with *Pythagoras*, that it is a stony Body, or with the *Stoicks*, that it is composed of Fire and Air, or as *Plato* will of a terrene Composition, or as *Anaxagoras* pretends of a mixture cold and earthy, darkness being mixed with her fiery Nature, whence She is called a Star of false Light ; or with *Heraclitus* that it is another Earth enveloped within a misty dim Cloud ; or with *Pliny* and some of the Moderns , that it is of a Watery Substance , or as * *Otto de Guericke* conjectures, that it is a Globe of Ice. But shall leave these Opinions as being * *Experiments. Magdeburg. l. 4. c. 1. & 6.* dubious and uncertain to the further Disquisition of the learned, and give the Reader a view of its Figure and several Phases in the Annexed Scheme, according to the Observations of *Ricciolus* and *Grimaldus*.

And seeing mention hath been made of the *Macule*, or Spots appearing in the Face or Body of the Moon ; as well those obvious to the Bare Eye , as the others discernable by help of the Telescope ; We hold it necessary to make a more particular Description of them.

They are distinguished into the ANCIENT and the NEW.

The Ancient Spots , are those greater and larger Spots at all Times discernable without the Help of a Telescope, resembling, large Seas, Lakes and Bayes ; Heretofore known and taken Notice of by the Ancients , of which *Plutarch* hath written a Particular Treatise under the Title, *τὰ ἐμφαινόμενα πρὸς ὅπτις*, &c. i. e. *De facie in Orbe Luna*, translated and commented upon by *Kepler*, and annexed to his *Somnium Lunare*.

The New Ones , are those Lesser Spots , which are not discernable but by the help of a Telescope, which are various ; differing in Magnitude, Figure, Scituation, Colour, &c. observed and with exactness described by sundry eminent Modern Astronomers : Some of whom have imposed, as well upon the Old as New, distinct Names and Appellations for the better Knowledge of them. Among whom *Langrenus* in his *Selenographia* , hath noted them by the Names of several Persons eminent either for their Skill in the Mathematicks, or their Dignity and Honours, or their Particular Friendship and Favour to him and his Studies. *Hevelius*, as if the Moon were another Earth, hath described and distinguished them by Geographical Marks and Denominations, transferring to them the Names proper to our Terrestrial Continents, Promontories, Mountains, Islands, Seas, Lakes, &c. *Grimaldus* hath signalized them by the Names (for the most Part) of Persons peculiarly addicted to, and eminent in the Study of Astronomy. The Scheme and Tables of the two last (that of *Langrenus* not yet come to my hand) the Reader may here take notice of, as being of great Use and Advantage to all Students in Astronomy , and very Necessary not only for making their own, but better Understanding others Observations.

The first Scheme is that of *Hevelius*, whereof the Alphabetical Table follows.

The

The Names of HEVELIUS his Selenographical TABLE.

A.

A *Barim*, a Mountain, called likewise *Nebo* and *Phasga* where *Moses* died.
Acabe, a Mountain of *Egypt*, near the *Arabian Gulf*.
Aconitus, a Hill, where likewise is the *Acherusian Cave*.
Adriaticum Mare, at this day called *Golfo di Venetia*, by *Vitruvius Gallica Paludes*; the Inmost Recept of the *Adriatick Sea*, where *Venice* is seated, at this Day called *Lagune di Venetia*.
Aea, an Island, at this day called *Satabelia*.
Egyptus a famous Region of *Africa*, heretofore known by the Names of *Aeria*, *Ætia*, *Ogygia*, *Hephæstia* and *Chemia*, according to *Herodotus*, by the *Jews* called *Chus*, by the *Turks* *Elchebitz*, in the *Egyptian Tongue Cam*.
Egyptiacum Mare, the *Egyptian Sea*.
Africa Pars, Part of *Africa*.
Æmus or *Hæmus*, a Mountain of *Thrace* called by some *Catena Mundi*, by the *Italians* *Monte Argentario*, by the *Turks* *Balkan*.
Ærii Montes, Mountains of *Sicily* anciently so called.
Ætna, a Mountain of *Sicily*, called by *Pindar* the *Celestial Pillar*, by *Silius Italicus* the *Tiphean Mountain*; at present *Mongibello*, anciently called *Inesia*.
Æthusa, an Island not far from *Sicily* otherwise called *Ægusa*, *Limoza*, *Ægates*.
Ajax, a Mountain of *Egypt*.
Agarum, a Promontory of *Sarmatia Europæa*.
Alabastrinus Mons, a Mountain of *Africa*.
Alani Montes, sive *Roxolani*, Mountains near the River *Tanaïs*, and the Lake *Maotis*.
Alopechia, an Island in the Lake *Maotis*; called likewise *Tanaïs*, and *Calarus*, at present *L' Isle des Renards*.
Alaunus, a Mountain of *Sarmatia*.
Alpes, a long Tract of Mountains dividing *Italy* from *Germany* and *France*.
Amaræ Paludes, about *Arsinoe* not far from the *Arabian Gulf*.
Amari Fontes, in *Egypt*.
Amadoca, Palus, in *Sarmatia Europæa*.
Amanus Mons, a Mountain of *Syria*, which it divides from *Cilicia*, called likewise *Cedrenus* and *Monte Nero*, and *Monte di Scanderona*, from the City *Scanderoon* seated at the Foot of the said Mountain.
Ambenus Mons, a Mountain near the Outlet of *Ister* in *Sarmatia Europæa*, otherwise called *Ambolus* and *Embolus*.
Animusa, an Island lying between *Leopadusa* and *Æthusa*, which in the *African Tables* are called the *Pelagian* and *Taricinian Islands*.
Anna, a Mountain in *Arabia Deserta*.
Antilibanus, a Mountain in *Syria*, or *Phœnicia*, between which and *Libanus* stretches along and fertile Valley well peopled and called by the Inhabitants *Abellinas*.

Antitaurus, a Mountain in the Lesser *Armenia*, called according to *Thevet*, *Roham Thoura*.
Apenninus Mons, a Ridge of mighty Hills, running through the midst of *Italy* from the Maritime Alps as far as the *Bruttii*.
Apollinis Promontorium, a Promontory of *Mauritania Cæsariensis*, called at this Day *Cabo de Tennes*, or *Cabo de tres Forcas*.
Apollonia, an Island called likewise *Thynias*.
Apollonia Minor, an Island in the *Euxine Sea*.
Arabia, at this Day called *Aden*, by some *Aiman*, by the *Saracens* *Mamotta*.
Arabie Paludes, the Moors or Fens of *Arabia*.
Archerusia Palus, or *Anthemois* is not far from the *Euxine Sea*.
Archerusia Promontorium, a Promontory not far from *Apollo's Island* in the *Euxine Sea*.
Areesa Palus, or *Arsina*, or *Arethusa* in *Armenia Major*.
Argentarius Mons, a Peninsula or Promontory of *Thuscany*; at this day called *Monte Argentaro*, where once was the Town or Harbour, called *Portus Herculis*.
Arietis frons seu Promontorium, a Promontory in the *Taurick Chersonesus*, of old called *Brixaba*, or *Acroma*, now *Fanar*, or *Famar*.
Armenie Montes, the *Armenian*, or *Gordiean Mountains*.
Arrhentias, an Island about the *Cappadocian Sea*.
Asia Pars, Part of *Asia*, by Sacred Writers called *Semia*, by the *Asiaticks* *Siana*.
Atheniensis Sinus, the Bay of *Athens* in *Cappadocia*, not that of *Greece*; called otherwise *Themis*, and *Syrium*, at this Day *Cacari*.
Athos Mons, a Mountain of *Greece*; now called *Monte Santo*; by the *Turks* *Monaştir*.
Atlas Minor, a Mountain of *Africa*, Part of *Atlas Major*.
Atlas Major, one of the greatest Mountains of *Africa*.
Audus Mons, a Mountain of *Africa*, upon the Confines of *Mauritania Cæsariensis*, by the *Moors* called *Aurais*.
Aureus Mons, a Mountain in *Mæsia*; of which Name are several others in divers Regions.

B.

B *Aronisus*, a Mountain within the Kingdom of *Fesse* and *Marocco* in *Africa*.
Besbicus, an Island in the *Propontick Sea*, at this Day called *Calomio*, or *Calolino*, and *Izola del Principe*.
Berosus, a Mountain of *Scythia*, where *Pliny* writes there were three Fountains, which if drunk of, killed without Pain or Remedy.
Bontas Mons, or *Tabas*, seated about the *Serrian Mountains*.
Borysthenes, a Lake near the *Euxine Sea*, into which the River *Borysthenes* discharges it self.
Byces Palus, a Lake and River flowing into the Lake *Maotis*, which is Part of the *Euxine Sea*, otherwise called *Buges*, and *Suza Morfi*.
Byzantium, or *Constantinople*.

Cadmus,

C.

Cadmus, a Mountain of *Lydia*, not far from *Laodicea*, whence the River *Lycus* springs.
Calabraría, or rather *Colubraría*, at this day called *Mont Colibre*, and as some will, *Dragonera*, an Island in the Mediterranean Sea, under the Spanish Dominion, not far from *Majorca*.
Calatbe, an Island in the *African Sea*; by some conceived to be the same with *Goletta* not far from *Tunis*.
Calchistan, anciently *Paropamisus*, a Mountain of *Persia*.
Capraria, an Island in the *Tyrrhen Sea*, now called *Cabraia*.
Carpates, a mighty Mountain, or Ridge of Hills, dividing *Moravia*, *Polonia*, and *Russia* from *Hungary* and *Transylvania*, at this day called *Crapack*.
Carpathus, an Island between *Creet* and *Rhodes*, one of the *Sporades*, known likewise by the Names of *Porphyris* and *Tetropolis*, at present by that of *Scarpanto*.
Caput de Tornese, a Promontory of *Peloponesus*, happily *Promontorium Tenaria*, or *Tenarus*, at present called *Capo Matapan*, and *Capo Maina*.
Carcinites Sinus, a Bay between the Outlet of *Borysthenes*, and the *Bosphorus Cimmerius*; known likewise by the Name of *Tamyraces*, at this day called *Golfo di Nigropoli*.
Cassiotis, a Region in *Egypt* or *Syria*.
Casius Mons, a Mountain on the Coast of *Egypt*, at this day *Larissa*; where was the Sepulchre or Monument of *Pompey the Great*.
Caspium Mare, the *Caspian Sea*; called likewise the *Hyrceanian*, *Albanian*, and *Tartarian Sea*, at present *Abachn*, *Sala*, *Cunsar*.
Cataractes, a Mountain of *Egypt*; not far from *Nilus*.
Caucasus Sinus, a Bay of the *Euxine Sea*.
Caucasus, or *Caucasi Montes*; Part of Mount *Taurus*, between the *Euxine* and the *Caspian Sea*, otherwise called *Marpefia Cantes*, at this day *Cochias*.
Celenorum Tumulus, Mountains of *Pamphilia*, not far from *Apamia*.
Cercinna, an Island in the *African Sea*, at this Day called *Gamelaria*, and *Querquenes*, by the *Italians* *Chercara*.
Chadisia Promontorium, a Promontory otherwise called *Phadisana* on the Coast of the *Euxine Sea*.
Chalcidici Montes, Mountains of *Sicily*, at this day vulgarly called *S. Riti*, or *S. Rici*, Part of the *Neptunian Mountain* or *Pelorus*.
Cilicum, an Island in the *Euxine Sea*.
Cimmerius Mons, a Mountain or Promontory of the *Taurick Chersonesus*.
Cimmerie Paludes, the Moors or Fens of the *Cimmerii*.
Cimeus, a Mountain of *Asia*, near *Troas*.
Circæum Promontorium, a Promontory of *Campania* in *Italy*, now called *Monte Circello*.
Cirna, a Mountain of *Africa*.
Elimax, a Mountain on the South of the Lower *Egypt*, as also of *Phenicia*, not far from the City

Biblus, called *Passo di Cane*; there is another of the same Name in *Arabia Felix*.
Coibacarani Montes, Mountains of *Persia*; known likewise by the name of *Bagous Mons*, seated in the Region *Aria*, now *Chorazan*.
Colchis, a Region of *Asia*, bordering on the *Euxine Sea*, now called *Mengrelia*, and by the *Turks* *Caracomulu*.
Corax, a Mountain of *Sarmatia Asiatica*.
Corocondamētis Lacus, a Lake so called from the City *Corocondame*, situate near the *Euxine Sea*, into which the said Lake falls.
Corfica, an Island in the *Tyrrhene Sea*, anciently called *Cyrnus*, *Corfis* and *Cerneatis*, lying against *Italy*, not far from *Sardinia*; at present by the *Italians* called *Corfica*, by the *French* *La Corse*.
Cossyra, or *Cossura*, an Island in the Mediterranean, reckoned among the *African Islands*, called likewise *Pantalerea*.
Cratas Mons, or *Craton*, a Mountain of *Sicily*, called likewise *Nebrodes*, at present *Madonia*.
Crathis, or *Chelidoreus Mons*, a Mountain of *Peloponesus*, whence springs a River of the same Name.
Cragus, a Mountain of *Cilicia*, or as others will of *Lycia*, now called *Monte di Gorante*, and *Li Sette Cavi*.
Creta Insula, the Island of *Creet* or *Candy*, heretofore *Aeria*, *Curetis*, *Macaros*, and *Macaronesus*.
Creticum Mare, the *Cretan Sea*; that Part of the *Ægean* and *Ionian Seas* which surrounds *Creet*.
Cydifes, a Mountain about *Armenia*.
Cyprus, an Island in the Mediterranean Sea; heretofore known by the divers Names of *Acamantis*, *Ceraſtis*, *Aspelia*, *Macaria*, *Cryptus*, *Colinia*, *Spechia*, *Mejonis*, *Eroſa*, *Paphus*, *Chetima*, *Citica*, &c.
Cyanea Europæa, an Island near the *Thracian Bosphorus*.

D.

Delanguer, a Mountain of *Scythia*, rising from the Foot of *Taurus*, by *Ptolomy* called *Chemantini Montes*, anciently *Imaus*, running as far as *India*, which it divides from *Scythia*, called by several Names; In *Tartary*, *Moreghar*, *Belgian* and *Althai*; by the *Indians* *Dalanguer*, and *Naugracut*.
Didymæ, small Islands in the Mediterranean Sea so called.
Didymus, or *Dindimus*, a Mountain of the lesser *Asia*, of which Name likewise there are several others.

E.

Ebissus, an Island in the *Balearick Sea*, now *Ivica*.
Echinades, Islands in the *Ionian Sea*, at present called *Cozzulari*.
Eos, a Mountain of *Egypt*.
Eoum Mare, the Eastern or *Indian Sea*.
Erichtini Scopuli, Rocks in the *Euxine Sea*.

U u

Etrotte

Erroris Insula, an Island in the Mediterranean Sea, called likewise *Albusama*, and at this Day *Alboran*.

Eryx Mons, a Mountain in *Sicily*, at this Day *Monte S. Juliano*.

Evila, a Desert in *Palestina*.

F.

F*icaria*, an Island not far from *Sardinia*, at this Day *Serpentaria*.

Fontes Amari, Fountains so called near *Nilus* in *Egypt*, already mentioned.

Fretum Ponticum, the *Pontick Straits*, the same with the *Bosphorus Cimmerius*.

Fortis Mons.

G.

G*allicus Sinus*, the *Gallick Bay*; that Part of the Mediterranean Sea into which *Rhodanus* or the *Rhosne* discharges it self; called likewise *Angulus Gallicus & Salsus*.

Germanicianus, a Mountain of *Africa*, otherwise called *Mons Jovis*.

H.

H*ajalon*, a Vally in *Palestine*, otherwise called *Vallis Luna*, at present *Val di Luna*.

Herculeus Lacus, a Lake in *Sicily* not far from *Etna*, in the *Leontine Region*, at this Day *Lago di Leontini*.

Herculis Mons, a Mountain near the *Heraclean Promontory*.

Herens Mons, a Mountain of *Sicily*, otherwise called *Artisino* and *Tavis*.

Herculeum Promontorium, stretching into the *Palus Maotis*.

Heracleum Promontorium, a Promontory of the *Euxine Sea*.

Hermo Mons, the Hill *Hermon* in *Palestina*, called likewise *Galaad*.

Hiera, an Island near *Sicily*, called likewise *Maritima*, at this Day *Maretamo*, not far from the *Lylibæan Promontory*.

Hippici Montes, Mountains of *Asia*, near *Tartary*, at this Day *Mazarisci*.

Hippolai Promontorium, in *European Scythia*, near *Borysthenes*.

Hipponiates Sinus, a Bay on the *Calabrian Coast*, at this Day *Golfo di Taranto*.

Hor, a Mountain in *Palestine* on the Borders of *Edom*, where *Aaron* dyed and was buried.

Horminius Mons, or *Ormenius*, a Mountain in *Asia* near *Pontus*.

Horeb, a Mountain in the Desert of *Madian*, and contiguous to Mount *Sinai*.

Hiblai Montes, Mountains of *Sicily*, of which Name *Stephanus* reckons three.

Hyperboreum Mare, the Northern Frozen Sea.

Hyperborei Montes, the *Riphaean Mountains* to the North of *Russia Alba*, or *Muscovia*, called at this Day *Camenopoias*, whose Summit or Top is called *Stolp*, they are known likewise by the Names of *Doffrini*, and *Doffrasiel*.

Hyperboreus Lacus Superior, the upper *Hyperborean Fenns*.

Hyperboreus Lacus Inferior, the lower *Hyperborean Fenns*.

Hyperborei Scopuli, the *Hyperborean Rocks*.

Hyperborea Regio, the *Hyperborean Region*.

I.

I*da Mons*, a Mountain of *Phrygia* in the lesser *Asia*.

Insula Orientalior, the Eastern Island in the *Carpathian Sea*.

Insula Occidentalior, the Western Island in the same Sea.

Insula, an Island near the Promontory of *Aries* in the *Pontick Sea*.

Insula Major, the greater Island in the *Caspian Sea*.

Insula Minor, the lesser Island in the *Caspian Sea*.

Italia, heretofore called *Ansonia*, *Hesperia*, *Oenotria*, *Saturnia*, &c.

L.

L*acus Major Occidentalis*, the greater Western Lake near the *Palus Maotis*; known more particularly by the Name of *Odojum*, and *Iwanow*.

Lacus Minor Occidentalis, the lesser Western Lake; more particularly called *Ploto*.

Lacus Meridionalis, the Southern Lake.

Lacus Niger Major, the greater black Lake.

Lacus Niger Minor, the lesser black Lake.

Lathmus Mons, a Mountain of *Caria*, famous for the Loves of *Luna* and *Endymion*, at this Day called *Monte di Palatia*.

Lea, an Island on the Coast of *Barbary*.

Lemnos, an Island in the *Ægean Sea*, at this Day *Stalimene*.

Lesbos, an Island in the *Ægean Sea*, at this Day *Metellino*.

Letoa, an Island in the Mediterranean not far from *Creet*, otherwise called *Christiana*.

Lencopetra Promontorium, a Promontory of *Italy* on the Southern Coast of *Calabria*, called *Capo Dell' Armi*, which yet *Brieti* conceives to be that called *Punta Della Saetta*.

Libanus Mons, a Mountain of *Syria*, at this Day *Libano*.

Lignstinus Mons, a Mountain of *Italy*, perhaps the *Lignstick Alps* called *Montagna di Tenda*.

Lion sive Leonum Mons, a Mountain of *Africa* so called, near the Sea Coast of *Guinne*, heretofore by the *Greeks* called *Σκῶν ὄχημα*, i. e. the Chariot of the Gods, by the *Portugals* *Sierra Liona*, from the continual Noise of Thunder there heard, resembling the roaring of Lions; by the Natives it is called *Boulombel*.

Lipulus Mons.

Loca Paludosa, the *Moors* or *Fenns* in the Island *Cercinna*, in whose midst is an eminent Hill.

Luna

Lunæ Promontorium, a Promontory on the Coast of *Thuscany* so called.

Lybicum Mare, the *Libian* or *Egyptian* Sea.

Lychnitis, a Moore or Fenn in *Armenia Major*, called *Exsechia*.

Lybie Pars, Part of *Africa* heretofore known by the Names of *Olympia*, *Oceania*, *Hesperia*, and *Cephenia*.

M.

M *Acra Insula*, called likewise *Achillis*, and *Lence*, seated in the Bay of *Carcinites*.

Macroceronii Montes, Mountains so called, in *Sarmatia Europæa*, not far from the Rivers *Ister* and *Tyras*.

Malta, or *Melita*, an Island in the *African* Sea between *Sicily* and *Africa*, famous for the Order of Knights of St. *Johns* of *Jerusalem* there residing.

Majorca, an Island in the *Balearick* Sea.

Mampsaros, a Mountain of *Africa* so called.

Mantiana Palus, a large Meere or Pool, in *Media* on the Confines of *Armenia*, called by some *Astamar*, *Van*, and *Vastan*, by others *Abaunias*, and as *Paulus Venetus* affirms, *Geluchalat*.

Marinus Lacus, a Lake in *Thuscany*, not far from *Porto Ercole*, at this Day called *Lago d' Orbitello*.

Masicytus, a Mountain of the lesser *Asia*, by *Strabo* called *Clymax*.

Mauritania, a Region of *Africa*, in *Hebrew* *Phut*; at this Day called *Regno d' Alger*, and *Regno di Tremessin*, and by a more peculiar Name *Barbary*.

Mediterraneum Mare, the *Mediterranean* Sea; by the *Italians* and *Spaniards* called *Mare di Levante*, by the *Turks* *Azenitz*, i. e. the *White* Sea, by the *Arabs*, *Bohar Rumi*, i. e. the *Grecian* Sea.

Melos Insula, an Island in the *Aegean* Sea, now *Milo*.

Menyx Insula, an Island in the *African* Sea, known likewise heretofore by the Names of *Lotophagitis*, and *Cyra*.

Mercurii Promontorium, a Promontory on the *African* Coast, over against *Sicily*, now called *Capo Bon*.

Mesogys, a Mountain of *Lydia*.

Mycale, a Mountain of *Ionis*.

Mimas, a Mountain and Promontory of *Ionis*; now *Capo Stillari*.

Mingui, the same with *Carmania Deserta*, a Region of *Asia*.

Minorca, an Island in the *Balearick* Sea.

Miris, vel *Maris*, a great Lake in *Egypt*, famous for King *Maris* his Sepulcher.

Mons Meridionalis.

Montana Pharan, in *Palestina*.

Montana Seir, in *Palestina*, or *Idumæa*, now *Sardinay*.

Montuniates, a Mountain of *Thuscany*.

Mortuum Mare, the dead Sea in *Palestina*, called by the *Greek* and *Latine* Writers *Asphaltites Lacus*.

Myconius Mons, a Mountain of *Sicily*, not far

from *Messana*.

Moesia, a Region of *Europe*, otherwise called, *Servia*, *Bosnia*, and *Moldavia*.

Mysus Mons, a Mountain of *Asia*, heretofore called *Collis Saturni*; by the *Turks* at this Day *Geschisdage*.

N.

N *Neptunius Mons*, a Mountain of *Sicily* not far from *Messana*; now *Monte di Namari*; heretofore *Pelorus*.

Nerosus, a Mountain of *Tartary*.

Nilus, or the River *Triton*.

Nitria, a Mountain of *Egypt*.

O.

O *Lymus*, here taken for a Mountain of *Asia* in the Province of *Mysia*; known to the *Turks* at present by the several Names of *Anatolaidag*, *Emerdag*, or *Emiodag*, and *Keschisdag*.

Ophiusa, an Island in the *Balearick* Sea, under the Dominion of *Spain*, now *Formentera*.

P.

P *Paludes circa Mare Mortuum*, the Moors or Fenns about the Dead Sea.

Paludes Palestine, the Moors or Fenns of *Palestina*.

Paludes Superiores Ponti Euxini, the upper Moors or Fenns of the *Euxine* Sea.

Paludes Inferiores Ponti Euxini, the lower Moors or Fenns of the *Euxine* Sea.

Palus Maræotis, the Lake, Moor, or Fenn *Maræotis* in *Egypt*, now *Lago di Buchiara*.

Palus Maotis, the Lake, Moor, or Fenn *Meotis*, at this Day called *Mar Della Sabacche*, *Mar Della Tana*, and *Mar Bianco*.

Pamphylium Mare seu Phaselicum, the *Pamphylian* Sea, at this Day *Mar di Carmania*.

Pangæus Mons, a Mountain of *Thrace*, now called *Malacca*, and *Castagna*.

Pastanus Sinus, sive *Posidoniates*, a Bay of the *Mediterranean*, at this Day *Golfo Agropolitano*, and *Golfo di Salerno*.

Paropamisus Mons, Part of Mount *Taurus*, where it rises to the greatest Height; by *Aristotle* called *Parnassus*, at present *Pamer*, by some *Calchistan*.

Paribenijs Mons, a Mountain of *Peloponesus* in *Arcadia*.

Poloponesus, a *Grecian* Peninsula, at this Day *Morea*.

Pentadaetylus, a Mountain of *Egypt*, near the Red Sea.

Peronticus Sinus, a Bay of the *Euxine* Sea, now *Cabo de Manço*.

Persia a Region of *Asia*, at this Day *Fars*, *Azamia*, and *Curazan*.

S. Petro, an Island near *Sardinia*, heretofore called *Herculis Insula*.

Petra

Petra Pyramidalis, seu *Pyramis*, five *Mons Faronianus*, perhaps the same with *Petra Santa* in *Tuscany*, heretofore *Fanum Feroniae*.

Petra Sogdiana, near the *Hyrcean Sea*.

Peuce, a Mountain in *Sarmatia Europæa*.

Phasianus Sinus, a Bay so called in the *Euxine Sea*.

Pherme, a Mountain of *Egypt*.

Philyra, an Island of the *Euxine Sea*.

Phenix, a Mountain of *Caria* on the Coast over against *Rhodes*.

Pontia, an Island of the *Mediterranean Sea*; under the Dominion of *Naples*, at this Day *Ponza*.

Pontus Euxinus, the *Euxine Sea*; at this Day *Mar de Marmora*, *Mar Majore*, *Caradenis*, and *Mauro-thalassa*.

Porphyrites Mons, a Mountain so called from its Colour, which tincture according to *Agatharchides* it receives from the *Minium* with which it abounds, of which Colour likewise is this of the Moon.

Promontorium freti Pontici, a Promontory of the *Pantick Straits*.

Propontis Sinus, a Bay between the *Hellepont* and the *Euxine Sea*; heretofore known by the Names of *Mare Bebricum*, and *Mare Thracium*.

Prophetarum Mons, a Mountain so called in *Palestine*.

R.

Raphidim, a Desert in *Palestine*, not far from Mount *Horeb*.

Rhodus, an Island in the *Carpathian Sea*, famous heretofore for the *Colossus* of the Sun.

Riphei Montes.

Rupes in Sinu Atheniensi.

S.

Sacer Mons, a Mountain of *Egypt* so called.

Sagaricus Sinus, a Bay of *Scythia Europæa*, into which the Rivers *Sagaris* and *Tyras* discharge themselves.

Salmideffus Sinus, a Bay of the *Euxine Sea*, so called from the Town *Salmideffus*, at this Day *Stagnara*; others make it *Philia*, a Promontory of *Thrace*, at the Mouth of the *Pontick Sea*.

Sanctus Mons, a Mountain near the *Palus Maotis*.

Sardinia Insula, an Island in the *Tyrrhene Sea*, under the Dominion of *Spain*, by the *Italians* called *Sardegna*, by the *Spaniards* *Zerdeгна*.

Sarmatiæ Europææ Pars, Part of *Sarmatia Europæa*.

Sarmatici Montes, Mountains of *Sarmatia Europæa*, at this Day called *Montes Scepusenses*.

Sarmatiæ Asiaticæ Pars, Part of *Sarmatia Asiatica*.

Scithiæ Pars, Part of *Scythia* at this Day *Tartary*.

Sepher Mons, a Mountain of *Palestine*; but there is another so called in *India*, of an exceeding Height, as this likewise of the Moon is.

Serrorum Mons, a Mountain of *Sarmatia Europæa*.

Sicilia, the greatest Island in all the *Mediterranean*; heretofore called *Sicania*, *Trinacria*, *Triquetra*.

Sinai Mons, Mount *Sinai* in *Arabia Petraea*, at this Day called *S. Catharina*, by the *Turks* *Turla*, and *Gibel Thor*, and *Gibel Mousa*; that is, the Mountain of *Moses*.

Sinopium Mons, a Mountain of *Egypt*, otherwise called *Memphidis Mons*, or the Mountain of *Memphis*.

Sinus Orientalis Maris Hyperborei, the Eastern Bay of the *Hyperborean Sea*.

Sinus Inferior Maris Caspii, the Inferior Bay of the *Caspian Sea*, in which there is seen a signal Rock.

Sinus extremus Ponti Euxini, the utmost Bay of the *Euxine Sea*.

Sinus ad Bosphorum Thracium Propontidis, the Bay of *Propontis* at the *Thracian Bosphorus*.

Sinus ad Hellespontum Propontidis, the Bay of *Propontis* at the *Hellespont*.

Sipylus, a Mountain of the lesser *Asia*; of which Name likewise there are divers others.

Sirbonidis Eruptio, the *Sirbonick Straits*.

Sirbonis Sinus, a great Lake in *Palestina*, upon the Confines of *Egypt*; called at this Day by the several Names of *Stagnone*, *Golfo di Tenesse*, *Golfo di Damata*, *Camet Esturnel*, and *Baranguerlis*.

Sogdiani Montes, the *Sogdian Mountains*, the Boundaries of *Media*, and *Assyria*, at this Day *Cabusco*.

Strobilus Mons, a Mountain so called, Part of *Caucasus*.

Strophades, two small Islands in the *Ionian Sea*, at this Day *Strivali*.

Strimonis Sinus, the Bay of *Strymon* in the *Ægean Sea*, or *Archipelago*, now *Golfo di Contessa*, from an adjacent Town of that Name.

Syrtecus Sinus Minor, the Bay of the lesser *Syrtis* in the *Mediterranean*, upon the Coast of *Africa*, at this Day *Golfo de Capes*.

Syrtecum Mare, the Bay of the great *Syrtis* in the *Mediterranean* extended between the Regions of *Cyrene*, and *Tripolis*, now by the *French* called *Les Seiches de Barbarie*, by the *Spaniards* *Baxos de Barbaria*, by the *Italians*, *Golfo di Sidra*.

T.

Tabor Mons, Mount *Tabor* in *Judea*, famous for the Transfiguration of our Saviour, at this day retaining its old Name.

Taygetus, a Mountain of *Laconia* near *Sparta*; now *Portes*.

Tancon Mons, a Mountain so called near the *Caspian Sea*.

Tarantinus Sinus, a Bay in the *Mediterranean Sea*, at this day *Golfo di Taranto*.

Taurus Mons; Mount *Taurus* the greatest of the whole Earth, as this of the Moon.

Taurica Chersonesus, the *Taurick Chersonesus*; at this Day *Chrimski*, *Precopska*, and *Gazaria*.

Taraciniæ Insula.

Techisandum Mons, a Mountain of *Persia*.

Thambes Mons, a Mountain of *Africa*.

Tenarium

Tenarium Promontorium, the Promontory of *Tenarus* in *Peloponesus*, now *Capo Matapan*.

Thospitis Lacus, a great Lake or Meer in *Armenia* on the Borders of *Mesopotamia*, now *Gabacu*.

Timolus Mons, or *Timolus*, a Mountain of *Phrygia*, at this Day *Tomalitze*.

Trapezus Mons, a Mountain in the *Taurick Chersonesus*, at this Day called *Lustra*, and *Trebizonde*, by the *Turks Taraboffan*.

Trasimennus Lacus, a famous Lake of *Italy*, at this Day *Lago di Perugia*.

Troicus Mons, a Mountain whence the *Egyptian* Pyramids were hewn.

U.

V *Ulcania Insula*, an Island in the Mediterranean Sea, near *Lipara*, on the right hand of *Sicily* not far from *Italy*; now *Vulcano*.

Uxii Montes, Mountains so called in *Armenia Major*, whence *Tygris* hath its Source.

Z.

Z *Acynthus*, an Island near *Peloponesus*, at this Day *Zante*.

And thus much as to the Explanation of the several Names of the Lunar Spots, according to the Design of *HEVELIUS* in his *Selenographick Scheme or Mapp*.

To the Scheme of *Hevelius*, We shall add that of *Grimaldi*, as the same is represented by *Riccio-lus* in his *Almagest*. l. 4. p. 204. divided into Eight Parts or Octants, and describing the several Parts, or Spots of the Moon, not according to the Geographical Design of *Hevelius*; but by the Names of the most Eminent Philosophers, and Astronomers, as well Ancient as Modern, as may appear by the following Nomenclature, wherein the Synonyma of such Spots, or Parts as are added from the *Selenography* of *Langrenus*, and *Hevelius*, are respectively marked with the first Letters of their Names, L. and H.

Nomenclature of the Parts of the Moon for the Selenography of P. Maria Grimaldi.

I. OCTANS.

Anaximander
Aristarchus
 L. *Balthassar*
Cleostratus
Ecphantus
Eratothenes
 L. *Gassendus*
 L. *Haro*
Harpalus
Helicon Cyzicenus
Heraclides Ponticus
Oenopides
Pitheas Massil.
 E. *Pythagoras*
Timocharis
Xenophanes.

2. OCTANS.

Anaxagoras
Aratus
Archimedes
 L. *Roma*
 H. *Corfica*
Archytas
Aristillus
Aristoteles
 L. *Brahe*
Autolycus
Calippus
Conon
Democritus

Epigenes
Eudemon
Endoxus

L. *Pozzo*
Meton
 L. *Amalfi*
Philolaus
Plato
 L. *Panciroli Lacus*
 H. *Lacus Niger*
Thales
 L. *Xenophanes*
Theætetus
Timæus.

3. OCTANS.

Atlas
Berosus
Cepheus
Endymion
Geminus
Hercules
Hermes
Hyginus
Manilius
 L. *Isabella R. Hisp.*
 H. *Insula Belsbicus*
Menelaus
 L. *Maria Imperatrix*
Mercurius
Messala Arabs
Osymandiaz
Posidonius
 L. *Lafailli*

Sulpicius Gallus
Zoroaster

4. OCTANS.

Agrippa
Alcuius
Ariadens
Beda
Cleomedes
Dionysius Exiguus
Firmicus
Goclenius
Jul. Cesar
Langrenus
Macrobinus
Plinius
Plutarchus
Proclus
 L. *Putcanus*
Seneca
Sosigenes
Taruntius
Vitruvius.

5. OCTANS.

Aben Ezra
Abulfeda
Alfraganus
Almageon
Azophi
S. Catharina
 L. *Picolomini*
S. Cyrillus Alex.
 S. *Dionysius*

S. Dionysius Areop.
Fabricius
Fraccastorius
Fournerius S. J.
Geber
Hypparchus
Hypatia
S. Isidorus Hisp.
Rab. Levi
Mart. Capella
Metius
Mulerius
Neander
Petavius S. J.
Pontanus
Picolominius
Reitba
Riccio
Sacroboscus
Santbeckius
Snellius
Stevinus
Stiborius
Tatius Achill.
Theon Sen.
Theon. Jun.
S. Theophilus Alex.
Vendelinus
Zagutus

6. OCTANS.

Albategnius
 L. *Ferdinandus Imp.*
Aliacensis
Alpetragius
Alfonsus Rex
 L. *Ludovicus 14.*
Apianus
Arzachel
Arzet S. J.
Barocius
Bettinus S. J.
Blancanus S. J.
Blanchinus
Cabens S. J.
Clavius S. J.
 L. *Maximilianus*
Curtius S. J.
Cysatus S. J.
Daniel Bartolus S. J.

Fernelius
Gauricus
Gemma Frisius
Griembergerus S. J.
Gulielm. Hassia Princ.
Hagecius
Homelius
Kircherus S. J.
Licetus
Lilii Fratres
Longomontanus
Maginus
 L. *Vilili*
Manzinus
Malapertius S. J.
Maurolycus
 H. *Estensis Dux*
Moretus S. J.
Mutus
Nonius
Orontius
Pitatus
Pitiscus
Ptolemaus
 L. *Innocentius X.*
 H. *Mons Syphilus*
Purbachius
Regiomontanus
Safferides
Schneiderus S. J.
Schomberger S. J.
Simpelius S. J.
Stoeflerus
Tannerus
Waltherus
Vernerus
Zuccius S. J.

7. OCTANS.

Bayerus
Bullialdus
 L. *Medicæi*
Byrgius
Campanus
Capuanus
Cichus Asculanus
Crugerus
Dersennus S. J.
Eichstadius
Fontana

Gassendus
 L. *Annullus Neptuni*
Hainzelius
Herigonius
Juntinus
Kristmannus
Mersennus
Morinus
Munofius
Origanus
Phocylides
Profacius
Rothmannus
Schikardus
Schillerus
Vieta
Zapus S. J.

8. OCTANS.

Anton. Rocca
Besserion
Billy S. J.
Gardanus
Cavallerius
Copernicus
 L. *Philippus 4.*
 H. *Mons Aetna*
Casanus
Dominicus Maria
Egnatius Dantes
Eustachius
Galileus
Grimaldus S. J.
 L. *Lacus Posidonii*
 H. *Lacus Mæotis*
Hortensius
Hevelius
Keplerus
Lansbergius
Linemannus
Milichius
Moletius
Reinerus
Reinholdus
Rheticus
Ricciolus S. J.
Selencus
Simon Marinus
Sirsalis S. J.
Stadius.

Nomenclature of the Lunary Regions, whereto is added the Number of the respective Octants to which they appertain.

Insula Ventorum, 8.
Lacus Mortis, 3.
Lacus Somniorum, 3.
 L. *Lacus Scientiæ*
 H. *Palus Hyperborea*
Littus Eclipticum, 1, & 8.
 L. *Littus Philippicum*
Mare Crisum, 4.
 L. *Mare Caspium*
 H. *Palus Mæotis*
Mare fecunditatis, 4, 5.

L. *Mare Langreni*
Mare Frigoris, 2.
 L. *Mare Astronomicum*
Mare Humorum, 7.
 L. *Mare Venetum*
Mare Imbrium, 1, 2.
 L. *Mare Austriacum*
Mare Nubium, 7.
 L. *Mare Borbonicum*
Mare Neæaris, 5.
 L. *Sinus Batavicus*

Mare Serenitatis, 3.
 L. *Mare Eugeanum*
 H. *Mare Euxinum*
Mare Tranquillitatis, 4.
 L. *Mare Belgicum*
 H. *Euxinus*
Mare Vaporum, 3.
Oceanus Procellarum, 1, 8.
 L. *Oceanus Philippicus*
 H. *Mare Eoum*
Palus Nebularum, 2.

L. *Terra*

L. Terra Virtutis	H. Sinus Apollinis	H. Ital. Apenninus
Palus Nimborum, 7.	Sinus Roris, 1.	Terra Ruinae, 1.
Palus Putredinis, 2.	L. Sinus Principis	L. Terra Laboris
Palus Somni, 4.	Stagnum Glaciei, 2.	H. Mauritania
L. Æstuarium Bamelr.	Terra Caloris, 7.	Terra Sanitatis, 5.
Peninsula Deliriorum, 7.	Terra Justitiæ	L. Terra Dignitatis
Peninsula Fulgurum, 7.	Terra Fertilitatis, 5, 6.	H. Asiæ Pars
Peninsula fulminum, 7.	L. Terra Dignitatis	Terra Siccitatis, 1, 2.
Sinus Æstuum, 7.	H. Asia	L. Terra Honoris
L. Sinus Medius	Terra Grandinis, 2.	Terra Sterilitatis, 7.
H. Mare Hadriaticum	Terra Manna, 4, 5.	Terra Vitæ, 3, 4.
Sinus Epidemiarum, 7.	L. Terra Temperantiæ.	L. Terra Sapientiæ
L. Mare Populorum	H. Chelchis	H. Sarmatia
Sinus Iridum, 1.	Terra Nivium, 2.	Terra Vigoris, 4, 5.
L. Sinus Geometricus	L. Montes Austriaci	L. Terra Pacis.

Of its motion either of Revolution or Libration, We shall not here say any thing, it being beside our present Design. But as to its *Distance*, *Apparent Diameter* and *Magnitude*, We have thought fit to add the following Tables.

Table of the Moons Distance from the Center of the Earth in Semidiameters of the same, and its Horizontal Parallax.

According to the following Authors	In Opposition, or Distance from the Center of the Earth			Conjunction Horizontal Parallax		
	Apog. Semid.	Med. Semid.	Perig. Semid.	Apog. "	Med. "	Perig. "
Ptolemaeus	64 10	59 0	53 50	53 34	58 16	63 51
Copernicus	65 30	60 19	55 8	52 56	57 0	62 54
Tycho	58 8	56 30	54 52	59 9	60 51	62 39
Longomontanus	57 38	56 0	54 23	59 37	61 26	63 14
Lansbergius	64 10	59 5	54 0	53 34	58 8	63 39
Bulialdus	61 40	59 5	56 30	55 56	58 16	60 52
Ricciolus	64 15	59 0	53 45	53 30	58 16	63 55
in Ephemerid.	62 52	59 0	55 8	54 41	58 16	62 20
Kepler. in Epit. Astr. & Tab. Rudolph.	59 0	56 28	54 0	58 22	60 53	63 41
Hipparchus for sometime	83 0	77 0	71 0	41 30	45 0	48 30
Afterwards	72 30	67 30	62 30	47 30	51 30	55 30
Alphonse	61 8	57 45	54 23	53 19	59 21	63 17
Argolus	60 4	56 0	51 57	56 45	61 17	65 36
Vendelinus	63 56	60 0	56 4	53 46	57 18	61 18
Kircherus.	67 50	62 37	57 24	—	—	—

In its Quadratures:

Authors	Distance from the Center of the Earth			Horizontal Parallax		
	Apog. Semid.	Med. Semid.	Perig. Semid.	Apog. "	Med. "	Perig. "
Ptolemaeus	42 53	38 43	33 33	60 19	89 0	103 0
Copernicus	68 21	60 19	52 17	50 19	57 0	65 48
Tycho	60 36	56 30	52 24	56 44	60 51	65 36
Longomontanus	60 4	56 0	51 57	57 15	61 26	66 9
Lansbergius	66 58	56 5	51 12	51 20	58 8	67 6
Bulialdus	64 15	59 5	53 53	53 30	58 8	63 43
Ricciolus	66 42	59 0	51 20	51 32	58 16	66 56
in Ephemerid.	61 36	59 0	56 24	55 26	58 16	60 38
Kepler. in Epit. Astr. & Tab. Rudolph.	59 0	56 28	54 0	58 22	60 53	63 41

As to the Apparent Diameter of the Moon (not saying any thing of the several Methods of attaining the same from the Observation of Eclipses, of which *Ricciolus* l. 4. *Almagest*. N. c. 16.) the following Table (taken from the said *Ricciolus*) will shew the several Opinions of the Ancient and Modern Astronomers.

Synopsis of the Apparent Diameters of the Moon	In Opposition, Conjunction, and square Aspects	Apparent Diameter of the Moon	
		Apog.	Perig.
Authors		' "	' "
<i>Ptolemaeus</i> }	in δ and ϕ in \square •	31 20 42 8	35 20 55 0
<i>Albategnius</i> <i>Alphonfus</i> and <i>Purbacchius</i> }	in δ and ϕ in δ and ϕ	29 30 29 0	35 20 36 8
<i>Copernicus</i> , <i>Reinholdus</i> , and some-time <i>Maginus</i> }	in δ and ϕ in \square	30 0 28° 45	35 38 36 44
<i>Maginus</i> in <i>Suppl. Ephemer.</i> }	in δ and ϕ	30 30	34 40
<i>Clavius</i> and <i>Hergonius</i> }	in δ and ϕ	30 0	36 8
<i>Tycho</i> , <i>Origamus</i> , and <i>Mulerius</i> }	in δ in ϕ in \square •	25 36 32 0 32 32	28 48 36 0 36 0
<i>Longomontanus</i> <i>Physice</i> }	in δ and ϕ	32 0	34 0
<i>Keplerus</i> in <i>Ephemer.</i>	in δ and ϕ	30 0	34 10
In <i>Epit.</i> and <i>Tab. Rudolph</i> }	in δ and ϕ	30 0	32 44
<i>Lansbergius</i> <i>Petr. Gassendus</i>	in δ and ϕ in δ and ϕ	30 0 26 36	35 38 31 06
<i>Isma. Bulialdus</i> }	in δ and ϕ in \square	31 10 29 56	34 0 36 4
<i>Got. Vendelinus</i> <i>Sed in Vertice</i>	in δ and ϕ in δ and ϕ	28 40 29 10	32 42 33 18
<i>Kircherus</i> <i>Ricciolus</i> }	in δ and ϕ in δ and ϕ in \square	29 22 28 0 27 0	34 40 33 30 35 6

From the Distances of the Moon, and apparent Diameters already given, the true Magnitude thereof may methodically be deduced; which (without the trouble of calculating) the Reader may see plainly exhibited, in the following Table, according to the Opinions of the several Authors therein mentioned.

The true Magnitude of the Moon compared with that of the Earth
and Sun.

According to	The true Diameters of the Moon and Sun unto that of the Earth supposed to be 100.			The Solidity of the Moon to the			
	Moon	Earth	Sun	Earth as to	Sun as to		
<i>Aristarchus</i> { more than } { less than }	31 $\frac{1}{2}$	100	633	1	16	1	5832
<i>Ptolemaeus</i>	39 $\frac{1}{4}$	100	716	1	32	1	8000
<i>Copernicus</i>	29 $\frac{1}{2}$	100	550	1	40	1	6648
<i>Mæstlinus</i>	28 $\frac{1}{4}$	100	545	1	42 $\frac{1}{2}$	1	6999 $\frac{1}{2}$
<i>Tycho</i>	28 $\frac{1}{2}$	100	546	1	44 $\frac{1}{2}$	1	7300
<i>Longomontanus</i>	29 $\frac{1}{2}$	100	520	1	41 $\frac{1}{2}$	1	5848
<i>Keplerus</i>	26 $\frac{1}{2}$	100	580	1	51 $\frac{1}{2}$	1	10000
<i>Lansbergius</i>	25 $\frac{1}{2}$	100	1500	1	59	1	204671
<i>Bullialdus</i>	28	100	757	1	45 $\frac{1}{2}$	1	19770
<i>Vendelinus</i>	27 $\frac{1}{2}$	100	700	1	45 $\frac{1}{2}$	1	15765 $\frac{1}{2}$
<i>Kircherus</i>	26 $\frac{1}{2}$	100	6400	1	53	1	13833632
<i>Schyrlens</i>	29 $\frac{1}{2}$	100	520	1	40	1	5600
<i>Ricciolus</i> { in Alm. } { Afr. Ref. }	28 $\frac{1}{2}$	100	1000	1	42 $\frac{1}{2}$	1	42875
	26 $\frac{1}{2}$	100	3383	1	55	1	2123000
	27 $\frac{1}{2}$						

Whether the MOON be Habitable.

That the Moon is inhabited, is by divers as well Philosophers as Astronomers at this Day maintained and asserted; from the Appearance of Mountains, Vallies, Woods, Lakes, Seas and Rivers discovered therein by help of the Telescope, which Opinion was long since embraced by the Ancients, as *Cicero* testifies, (*Academ. Quæst. l. 4.*) where he cites the Authority of *Xenophanes*. *Habitari ait Xenophanes in Luna, Eamque esse Terram multarum Urbium & Montium.* *Plutarch* likewise *De Placit. Philosophicis l. 2. c. 30.* reports that the *Pythagoreans* affirm, the Moon to be an other Earth, and that she is inhabited round about like this Earth of ours, and peopled with Living Creatures fifteen times larger than those with us. These Inhabitants were by the Ancients called *Antichtones*, in regard they dwelt in an Earth opposite to ours. And in that noted Piece of his, *De facie in Orbe Lune.* He says that there are Caverns in the Moon which are called *Penetralia Hecates*, and that the Upper Parts of the Moon which alwayes respect the Heavens are the *Elysian Fields*; that it is likewise inhabited by *Genii*, which dwell not alwayes there, but sometime descend to the Earth to the Assistance or Punishment of Mankind, &c. *Macrobius* likewise in *Somn. Scipionis l. 1.* and *Achilles Tatius* in *Isagog.* report the like of the Moon's being habitable. The Words of *Macrobius* are these; *Lunam, Ætheræam Terram Physici vocaverunt, & Habitatores Ejus Lunares populos nuncuparunt; quod ita esse plurimis Argumentis, quæ nunc longum est enumerare, docuerunt.* See to this Purpose more in *Kepler* in his *Astronomia Optica*, and particularly in that marvellously ingenious Posthume Piece of his called *Somnium, sive de Lunari Astronomia*, and in his Learned Annotations thereupon, and on *Plutarch* his Book, *De facie in Orbe Lune*, thereto annexed: Nor will this seem an extravagant Opinion to those who shall upon due consideration, be perswaded to admit that the Moon enjoys as favourable an Aspect from the Sun as this Earth of ours; though their Dayes and Nights be answerable to our half Months, in regard it is skreened with Hills and Mountains, under which lie deep and shady Vallies, with Hollow Caves and Recesses, equally advantageous against the Extremities of Heat and Cold, watered likewise with great Lakes and Rivers, and consequently by Nature furnished with all things requisite for sustentation of life, and therefore it cannot reasonably be thought, that these Advantages and Benefits should be conferred by Nature for no Use or End; or that the Moon should only be made to reflect the Sun's Light to us. See the Learned Dr. *Isaac Vossius* in his Treatise *De Natura & Propriet. Lucis. c. 19.*

But what kind of Creatures these Lunary Inhabitants are, is not agreed upon, though *Kepler* be something Positive, *Concludendum videtur* (says he, in *Not. ad Appendic. Selénograph.*) *in Luna Creaturas esse Viventes, Rationis, ad Ordinata faciendæ, Capaces.* The like is affirmed by him as to the other Planets, nay the Sun it self, touching which last, in the Epilogue to his Fifth Book, *De Mundi Harmonia*, he breaks out into this Expression, *Vel Sensus ipsi exclamant, ignea hic habitare corpora, Mentium Simplicium Capacia, Verèque Solem esse regem vocem, Si non Regem, at saltem Regiam.*

Y y

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This cannot perhaps seem more strange to some, than the following Assertion to Others, which maintains the Moon to be the Paradise wherein Our first Parents were created, and from whence for their Transgression they were thrust down to this Earth of ours; and yet this from Reason and the Authority of Fathers and Schoolmen, is endeavoured to be proved by Hieronymus Vitalis in Lexic. Mathematic. in Voce Paradisus; where he says, fateor id novum, Singulare & hactenus inauditum; at non per hoc temerarium, atque intolerabile dixeris; for, as he urges, modò partà tantà rerum Notitià, Luna facie Telescopio penitissimè observatà, Veterum di&is Expensis, Locis (super hanc Terram) investigatis, Paradisum in Luna superficie collocare, Ratio ipsa compellit. To whose large Discourse upon that Subject we refer the Reader.

MERCURY.

The next Planet in order is Mercury; of whose Place, Figure, Nature, and Substance something, according to our Method is briefly to be added.

It is carried in an Epicycle about the Sun, as the Center of its Motion and Orb: Now running above, now beneath the Sun; Sometimes higher than Venus, sometimes lower: For when these two Planets (Venus and Mercury) are in their Apogea, and above the Sun, then Mercury is beneath Venus; when in their Perigea and beneath the Sun, then Mercury is above Venus: So when Venus is in her Apogæum, and Mercury in his Perigæum, then is he beneath Venus; when Venus is in her Perigæum, and Mercury in his Apogæum, then is he above Venus, as may appear by the Egyptian and Tychonick Systems.

Its Figure is orbicular or round, not Mathematically but Physically such, rising here and there with extuberating Hills and Mountains, in the same manner as this Earthly Globe of ours; being, like that, an opacous Body, and receiving its Illumination from the Sun; whence at several times it is seen under several Phases or Appearances; for in it's greatest Digression from the Sun, (which is never above 28°.) it appears Dichotomous; but when he is retrograde, and approaching to an Opposition with the Sun, he appears in a Figure like that of the New Moon, when distant about 60°. Degrees from the Sun; though this Phase be very rarely discerned by reason of his small Digression from the Sun, and the quick Vibration of his Rayes, (whence by the Greeks he is called *αλεων*,) the Vivacity of his Light exceeding that of Venus and Jupiter, and thence impeding the Sight from rightly beholding that Phenomenon, unless fortified by an excellent Telescope, as likewise in regard of the great Refractions made by Vapours near the Horizon, especially in Climates more obliquely posited, as is noted by Regiomontanus and Copernicus, who for that Reason could never be so happy as duly to observe these Mercurial Phases. Ricciolus (in Astr. Reform. l. 10.) reports that he, together with Franciscus Maria Grimaldi in the year 1643. the fifth of March, when Mercury was in the Upper Part of his Epicycle, and Vespertine at 15°. of Elongation from the Sun, beheld him in a Gibbous Figure, like the Moon when more than half full; the like in the year 1656. December 16th. In the year 1643. August 25th, the same Persons, beheld him being Matutine, and 19°. distant from the Sun, in a Figure like that of a Sickle or Sythe; so likewise in the year 1644. August the 6th. being distant from the Sun 20°. But in the year 1647. April 30th. being Vespertine, and distant from the Sun 20°. they beheld him in a like Sythe-like Figure, but more approaching toward a Dichotomy, in the same Figure likewise they beheld him in the year 1650. when Vespertine and distant 18°. from the Sun. There are observed in him likewise several Spots successively following one another, some light, some dusky; which light Spots are by Kircherus (in Itiner. Exstatic. Dial. 1. c. 4.) conceived to be the said Terrestrial and Mountainous Parts of the Mercurial Globe illuminated by the Sun, the dusky ones to be the liquid or watery Parts thereof, which by their Successive Motion likewise evince that he hath a Vertiginous Rotation about its own Axis, determined within the space of six Hours, or thereabouts, as Rheita affirms.

As to its Distance from the Earth, the same is by Tycho computed to be in its greatest Distance 1660. Semidiameters of the Earth, in its mean Distance 1130. in its least 630. but according to the Calculation of Ricciolus, in its greatest Distance 10868. Semidiameters, in its mean 8057. in its least 5246.

Its Apparent Diameter in its mean Distance is by Tycho computed to be 2'. 10". by Ricciolus in its greatest Distance to be only 9" in its least Distance 25".

Its true Magnitude, according to Ricciolus (supposing its mean Distance to be as before expressed, and its Diameter to contain $\frac{1}{4}$ part of the Earth's Diameter) is concluded to be less than the Earth's Body by $\frac{1}{178}$ part. Which being reduced to the Measures of Kepler, its Diameter may be reckoned to contain 377 Italian Miles, the Solidity of its Body 21253933 Cubical Italian Miles, or thereabout.

VENUS.

VENUS.

The most illustrious of all the lesser Planets, hath been observed by the curious from all Antiquity: The chief Remarks made by the Ancients are these: First, they observed her sometime to precede the Sun, rising in the Morning before him, sometime to follow the Sun, setting in the Evening after him, now to be in Conjunction with the Sun, that is in the same right Line drawn from the Observers Eye to the Center of the Sun, at other times receding from him, to the Distance of 48 Degrees, and this was the first and most obvious *Phænomenon*.

They observed her likewise to differ in Magnitude, appearing sometimes greater, sometimes less, sometime of a mean or middle Size, whence they concluded her to approach sometime nearer to the Earth, and to be in *Perigæo*, at other times to recede further from it, and to be in *Apogæo*, and this was the second *Phænomenon*; but not commonly observed or obvious to All.

As to her rising and setting they observed that she was never so remote from the Sun, as that she ever set *Cosmically*, or rose *Acronychally*; that is, that she (the Sun rising in the Eastern Horizon) never set at the same time in the West, or (the Sun setting in the West) never rose at the same time in the East; for *Venus* cannot be opposed Diametrically to the Sun, in regard she never digresses from him above 48°. or thereabout: Whence, *Venus* rising in the Morning Heliacally, that is emerging out of the Sun's Beams, under which she lay hid, digresses more and more from him, and (he rising) appears higher and higher above the Horizon, until she comes to the Terms of her greatest Digression aforesaid; thence reapproaching the Sun, is hidden in the Morning Heliacally, that is, is obscured under the Sun's Beams, until such time as emerging Heliacally in the Evening, she rises (the Sun setting) higher and higher above the Horizon, until she comes to the aforesaid Terms of her greatest Elongation; which past, she again approaches toward the Sun until such time as in the Evening she sets Heliacally. And this is the third *Phænomenon*, observable by All, but noted only by the curious, says *Schottus* (*in Præf. in Vener. in Itiner. Exstat. Kircheri.*)

Besides these Observations of the Ancients, Modern Astronomers by the help of the Telescope have noted several other signal *Phænomena*, as that she is lyable to the same variety of Changes as the Moon, sometimes almost full, at other Times gibbous, and now and then horned, as well when she is Vespertine as Matutine, manifested by the various Observations of *Galilæo*, *Scheinerus*, *Fontana*, *Hortensius*, *Keplerus*, *Rheita*, *Gassendus*, and *Hevelius*. She is sometime likewise seen by Day, at which time according to *Galilæus* and *Hevelius*, her true Figure is best to be discerned in regard she is despoiled of those Adventitious Rayes, with which in the Night time she is invested. *Ricciolus* and *Grimaldus* in the year 1649. on the first of April beheld her of a Gibbous Figure; and on the twentieth of the same Moneth bisected or dichotomised; and on the first of May, and first of September the same year, horned, and so continued until the fourth Day, two Hours after Noon, and so to the eighth Day of the same Moneth from the Sun's rising 'till Noon. On the eighteenth she was exactly Bisected or Dichotomised; on the twenty sixth growing toward a Gibbous Figure. But the rarest and most Signal *Phænomenon* of *Venus* (says *Ricciolus*) is when she hath greatest Latitude, near her Lowest Conjunction with the Sun: For being then seen by a good Telescope she appears horned, as big as the New Moon to the bare Eye.

Of the Structure, Nature and Substance of this Planet from the *Phænomena* already recited, it may be concluded that it is an opacous Body, and hath its Light from the Sun; that it is spherical, because it is spherically illuminated; that it is of a solid and consistent Substance in regard, though carried in a rapid Course through the liquid *Æther* it is not dissolved or dissipated: It is of a rough and uneven *Superficies*, in regard it is represented to be such by the Telescope, and otherwise, could not in such abundance reflect the Sun's Light upon the Earth, which it is observed sometimes to do to such an eminent Degree, that Bodies objected to its Rayes are seen to cast a shadow, it is made up of solid and liquid Matter, as our Terraqueous Globe, and is found to have a Vertiginous Motion about its own *Axis* and Center, which it compleats within the space of fourteen Hours, according to *Rheita*.

As to its *Apparent* and *true Diameter*, its *Solidity* and *Proportion* to the Body of the Earth, as likewise its *Distance* from thence, Authours extreamly vary. *Ricciolus* in the Seventh Book of his *Almagest*, Sect. Sixth, hath collected their several Opinions into one Table, to which for Brevities sake We refer the Reader; contenting our selves only to note that according to the said *Ricciolus*.

The Apparent Diameter of *Venus* in its greatest Distance from the Earth, is, 0'. 33". 30'''. in its mean Distance 1'. 44''. 12'''. in its least 4'. 8''. 0'''.

Its true Diameter contains of the Earth's Diameters 1. $\frac{1}{10}$. Its Circumference three Diameters of

of the Earth and $\frac{1}{2}$ the Area of its greatest Circle, square Diameters of the Earth $1\frac{1}{2}$. Its convex Superficies square Diameters $4\frac{1}{2}$. The Body of *Venus* that of the Earth $1\frac{1}{2}$.

Its Distance from the Earth he makes to be when greatest 12919 Semidiameters of the Earth; Its mean Distance 7580, its least 2241 of the same Semidiameters.

MARS.

Though of all the rest the most inobservable Planet (as both *Pliny* and *Kepler* affirm) hath not yet been able to lie hid from the subtle Discoveries of Astronomical Spies; who have observed that he moves in a large Orbit about the Sun, as the Center of its Motion, in which Circle or Orbit he includes the Earth with the Moon, *Mercury* and *Venus*, and takes up a great Part of the Solar Region, and when in his *Perigeum*, becomes nearer to the Earth than the Sun, as may appear by his Parallax, at that time greater than the Sun; and the notable increase of his Light, by reason of which he is sometimes taken for a Comet or New Star.

As to his Figure, it is without doubt (as the other Planets) Spherical; and is observed by *Kepler* (*l. 6. Epit. Astr.*) when in \square with the Sun, to be almost bisected or Dichotomous, at other times between \square and \wp to the Sun to be gibbous, and rarely perfectly round as *Rheita* affirms. *Hevelius* denies that it can ever be seen horned. *Fontana* in his Observations represents it, as by him viewed in the year 1636. in a round Figure with a black Spot in the Middle, which he conceives to be a Cavity, and not a rising or swelling. *Nicholaus Zucchi*, as *Ricciolus* (*in Astronom. Reform.*) reports, beheld him in the year 1640. between Δ and \square with the Sun to be gibbous or bossed without any such Spot, perhaps by reason of his vertiginous Motion or Libration about his own Center changing its Position. *Daniel Bartolus* in the year 1644. (as he writes to *Ricciolus*) affirms, that Father *Sirfalis* the Jesuite at *Naples* beheld him with an excellent Telescope to be almost round with two Spots a little beneath the Middle of his Globe. *Ricciolus* likewise together with *Grimaldus* in the year 1651. on the fourth, fifth, and sixth of *April* beheld that black spot in him; which appeared to them as if composed of divers smaller ones; the same Phenomenon being by them afterwards often observed in the years 1653, 1655, and 1657. which black or ruddy Macula or Spot *Kircherus* (*in Itiner. Exstat.*) conceives to be a great Vorago or Gulf, of no less Extent than all *Africa*; the ingenious Mounfieur *Hugens* in the year 1656. observed a broad obscure Zone or Belt, to shadow or obfuscate half the Disque of the said Planet. From the several Phases before mentioned of his Dichotomy and Gibbosity, Astronomers argue his light to be derived from the Sun, as that of the Moon; and *Ricciolus* is of opinion that if he could be seen in δ with the Sun, We might discern him to be horned.

As to the Structure and Nature of his Globe, it is as the rest of the Planets, composed *ex Solido & Liquido*. The Solid Parts by *Kircherus* (*in Itiner. Exstatic.*) supposed to consist of a fuliginous Substance like that of Sulphur, Arsenick or Orpiment, hard, and incombustible, evaporating malignant and destructive Qualities, and sweating out in great plenty a kind of bituminous Matter, not unlike to *Naphtha*. Its liquid Parts he imagines to consist of a soft and clammy Substance, like to our melted Pitch mixt with Sulphur. He hath a Vertiginous Motion about its own Center, which is completed according to *Rheita* in the space of forty five Hours, six Minutes.

Its apparent Diameter according to *Ricciolus*, being in its greatest Distance from the Earth $10''.6'''$. in its mean Distance $22''$. in its least $1'.32''$.

Its true Diameter contains of the Earth's Diameter $0. \frac{1}{2}$. Parts, the solidity of his Body, the Earth's Body $0. \frac{1}{4}$.

Its greatest Distance from the Center of the Earth, being by the said *Ricciolus* computed to be 21005 Semidiameters of the Earth, its Mean Distance 11000, and its least 2373 of the said Semidiameters.

JUPITER.

One of the most noted and Beneficent Planets, is carried in an Orbit above *Mars*, as is manifest in the mutual Conjunctions of those Planets, at which time he is obscured and hidden from our Sight by the Interposition of *Mars*, as the Sun is by that of the Moon's Body.

Rheita affirms that he observed *Jupiter* to be invested round with a vapid Atmosphere. And *Leander Bandtius* Abbot of *Duisburgh* (as *Ricciolus* in *Astron. Reform.*) reports in the year 1643. observed the Edges or Margins of his Globe to be very rough and uneven, rising with Tumours like Hills and Mountains, and discovered in his Body by the help of an excellent Telescope, two small

small *Macule* or Spots, and two great Ones, like hollow Caverns, one Round, the other Oval, equalling in Longitude the seventh Part of his Diameter, as the Scheme thereof transmitted by the said *Bandtius* from *Flanders* to *Ricciolus* is said to have represented the same. *Hevelius* likewise in his *Selenography* (p.44) affirms, that the Face of *Jupiter* is variegated with Spots in a manner like that of the Moon, and rugged with uneven Swellings and Asperities as that is. But leaving these to further Discovery; We shall only take Notice of the more Ordinary *Phænomena*, manifested by frequent Observations. And those are:

First, *Certain Fasciæ*, or Belts, girdling as it were the Disque of *Jupiter*, whether eminent Parts of his Body like Ridges, or rather hollow Furrows or Trenches, is uncertain. But they are said first to have been discovered at *Naples* by *Jo. Baptista Zuppus*, and *Daniel Bartolus* Jesuits; since by *Fontana*, *Grimaldi*, *Ricciolus*, and others frequently discerned and distinguished. They appear sometimes three, sometimes two, at other times single, and bordered with two other smaller Welts like a Bend Cottize (as the Heralds term it) sometimes only with one of those small Welts. They are now and then beheld in the Middle of its Disque, now above it, at other Times below it, not alwayes strait, but sometimes crooked and bending; their Convexities appearing turned sometimes upward, sometimes downward; Evident Marks of the Vertiginous Motion or Rotation of that Planet about its Center. These sometimes cease to appear, and therefore being at such times observed by *Gassendus*, no marvel if in his *Astronomical Institutions* (l. 3.) he seems to suspect those *Phænomena*, as denying that they ever could be discerned by him, though he made use of a very good Telescope, and one of *Galileo's* making.

Secondly, His *Satellites*, being four Stars so called moving about the Body of *Jupiter*, as his Guards; discovered first in *Italy* by *Galileo* in the year 1610. In *Germany* by *Simon Marius* by means of the Telescope; without which by Reason of *Jupiter's* Splendor, and their small Distance from him (None of them receding above twelve Degrees from the Body of *Jupiter*) they are not to be discerned; and therefore altogether unknown to the Ancients. The Number of these have by some Astronomers been questioned, *Rheita* maintaining them to be no less than nine. *Jo. Baptista Zuppus* affirming he observed in the year 1644. no less than twelve smaller Stars moving about *Jupiter*, whereof he verily believed eight to be Jovial Guards. But the Number of four only is by *Gassendus*, *Hevelius*, and *Vincentius Reinerus*, who for ten years together most diligently observed them, as also by *Vendelinus*, *Jo. Phocylides Olwarda*, *Ricciolus*, and *Grimaldus* upon surer Grounds defended and asserted. These by *Galileus* their first discoverer were called *Sidera Mediceæ*. The first or inmost next to *Jupiter* he called *Cosmus Minor*; the next or Penintimous *Cosmus Major*; the third or Penextimus *Maria Mediceæ*; the fourth or outermost *Katherina Mediceæ*; *Simon Marius* giving yet to the Inmost the Name of *Jovial Mercury*, to the next *Venus*; to the Third *Jupiter*; to the Fourth *Saturn*: But *Jo. Baptista Hodierna*, who lately first of all published *Ephemerides* of the Motions of the said Stars, names the first or inmost (from the Young Prince of *Tuscany*) *Principharus*; the Second (from *Victoria* Dutches to the Grand Duke) *Victripharus*; the Third (from *Cosmus* the first Duke of *Florence*) *Cosmipharus*; the Last (from *Ferdinand* the late Duke) *Fernandipharus*.

Of these the greatest Digressions from the Body of *Jupiter* computed in Semidiameters of the same, are as followeth.

Satellites	1	2	3	4
Authours	Sem.	Sem.	Sem.	Sem.
<i>Galileus</i>	3 0	5 0	8 0	12 0
<i>Sim. Marius</i>	3 0	5 0	8 0	13 0
<i>Rheita</i>	3 0	4 0	6 0	10 0
<i>Vendelinus</i>	3 0	5 0	8 0	14 0
<i>Hodierna</i>	3 30	5 30	9 0	14 30

Z z

Their

Their Periodical Revolutions in their several Orbits.

Of the	According to	Dayes	Hours	'	"
1	<i>Galileus</i>	1	18	30	<i>fere</i>
	<i>Marius</i>	1	18	28	30
	<i>Rheita</i>	1	18	30	0
	<i>Hevelius</i>	1	18	28	0
	<i>Hodierna</i>	1	18	28	44
	<i>Vendelinus</i>	1	18	28	—
2	<i>Galileus</i>	3	13	20	<i>circiter</i>
	<i>Marius</i>	3	13	18	0
	<i>Rheita</i>	3	13	20	0
	<i>Hevelius</i>	3	13	18	0
	<i>Hodierna</i>	3	13	18	15
	<i>Vendelinus</i>	3	13	18	—
3	<i>Galileus</i>	7	4	0	<i>fere</i>
	<i>Marius</i>	7	3	56	34
	<i>Rheita</i>	7	4	0	0
	<i>Hevelius</i>	7	3	57	0
	<i>Hodierna</i>	7	4	1	26
	<i>Vendelinus</i>	7	4	1	—
4	<i>Galileus</i>	16	18	0	<i>fere</i>
	<i>Marius</i>	16	18	9	15
	<i>Rheita</i>	16	18	0	0
	<i>Hevelius</i>	16	18	9	0
	<i>Hodierna</i>	16	18	14	33
	<i>Vendelinus</i>	16	18	14	—

*Their Diurnal and Horary Motion in their respective Orbits
each divided into 360°.*

Of the	According to	Diurnal			Horary		
		Gr.	'	"	Gr.	'	"
1	<i>Galileus</i>	—	—	—	8	29	<i>circiter</i>
	<i>Marius</i>	203	25	0	8	28	30
	<i>Hodierna</i>	203	23	44	8	28	29 ½
2	<i>Galileus</i>	—	—	—	4	13	<i>fere</i>
	<i>Marius</i>	101	17	22	4	13	0
	<i>Hodierna</i>	101	17	21	4	13	13
3	<i>Galileus</i>	—	—	—	2	6	<i>circiter</i>
	<i>Marius</i>	50	14	57	2	6	30
	<i>Hodierna</i>	50	13	82	2	5	34
4	<i>Galileus</i>	—	—	—	0	54	30
	<i>Marius</i>	21	29	3 ½	0	53	30
	<i>Hodierna</i>	21	28	48	0	53	42

As to *Jupiter's* Distance from the Center of the Earth, the same is computed by *Ricciolus*, in its greatest Distance to be removed from thence 47552 Terrestrial Semidiameters; in its Mean Distance 36500, and in its least 26441 of the said Semidiameters.

Its

Its Apparent Diameter according to the said *Ricciolus*, being when least, in *Apogæo*, $0'. 38''. 18'''$. when mean, in its mean Distance from the Earth, $0'. 49''. 46'''$. when greatest, in his *Perigæum*, $1'. 08''. 46'''$.

Its true Diameter contains of the Earth's Diameters Eight and $\frac{1}{2}$. Its Circumference 27, $\frac{1}{2}$ of the said Diameters. The Area of his greatest Circle 64 square Diameters of the Earth: Its *Convex Superficies* 242 of the said square Diameters. The Solidity of its Body, contains that of the Earths 68 $\frac{1}{2}$ Times.

As to the structure of its Globe, We may conclude it with the rest of the Planets, to be composed of Solid and Liquid Parts, and by what hath been already said, that it is of a Body though Physically Round, full of uneven Asperities, invested with a vapid Atmosphere, carried about its own Center by a Vertiginous Motion, finished according to *Rheita* in 11 Dayes, 20 Hours, 1 Minute 15". and that its Zones or Belts are solid Parts less capable of Light than the rest of its solid or liquid Parts are.

SATURN.

The Highest, and of all the Primary Planets (hitherto known) the most remote from the Earth, runs his Course above all the rest, and beneath the Fixed Stars; as is collected from his Parallax, (of all the Planets) the least, and in a manner none at all. Nor are there any either of the Fixed or Erratick Stars that afford to the observing Eye, by means of the Telescope such strange and admirable *Phænomena*.

The chiefest and most worthy of Note are Three.

First, That he appears girdled about, with a certain *Fascia* or Zone, or rather encompassed about with an *Armilla* or Ring of Light.

Second, That he hath several *Lunulæ*, or lesser Planets, like the Jovial Satellites moving about his Body.

Third, That his Figure appears variously and incredibly diversified, being sometimes beheld solitary in a round Form, at other Times represented with two Rundles adhering to each side, which again alter their Figure, and appear like certain *Anse* or Handles.

As to the first *Phænomenon*, the ingenious Mounſieur *Hugens* (in his *System. Saturn. p. 46.*) hath noted that the said Ring about the Body of *Saturn* is every way alike distant from it, the Plane whereof alwayes keeps in a certain and constant Inclination to the Ecliptick, appearing (according to its diversity of Aspect) now like a large *Ellipsis*, now like a more contracted one; at other times like a strait Line, and now and then like two *Brachia* or *Anse*, as it were on each side the Body of the said Planet. This *Hypothesis* of his he laid down in the following Proposition by him published in the year 1656.

Annulo cingitur, tenui, plano, nusquam coherente, ad Eclipticam inclinato. But *Ricciolus* conceives the said *Saturnian Phænomena* may be as well salved, if instead of Monsieur *Hugens* his *Annulus* or Ring distant from the Body of *Saturn*, there were an Elliptical *Armilla* supposed coherent to it at the Extremities of the Lesser Diameter of the *Ellipsis*, which his *Hypothesis* he delivers in this Proposition.

Armilla cingitur tenui, plana, Elliptica, duobus locis coherente; sive Parallela Equatori; sive in se circumvolvibili, aut Librâtili, Versus Mundi Polos. But of this let the learned Judge.

As to the second *Phænomenon*; the forementioned Monsieur *Hugens* in the year 1655. on the 25th of March, discovered a small Star or Planet moving about the Body of *Saturn*; which Star *Hevelius* likewise observed at *Danzick*, and Sir *Paul Neal*, together with Sir *Christopher Wrenn* here in *England*, much about the same time; but took it not to be a Planet, 'till ascertained of its being such by the Information of the said Monsieur *Hugens*.

This *Saturnian* Companion, after several Moneths Observation, he found to finish his Periodical Revolution in its Orbit about the Body of *Saturn*, in the space of sixteen dayes.

Since which the excellent Signiour *Cassini* hath lately made in the Royal *Parisian* Observatory, a Discovery of two other Planets moving about *Saturn*, the one nearer to the Body thereof than the *Hugenian*, the other farther removed from him than that. The Revolution of which interior Planet he found to be compleated in four Dayes and an half, or rather four Dayes thirteen Hours. The Exterior in something more than eighty Dayes. Touching

Touching the last and various *Phenomenon* ; *Hevelius* in a Particular Treatise, *De Nativâ Saturni facie*, hath endeavoured to give the Reason. He conceiving that diversity of Appearance to proceed from the Diversity of Aspect, as he is more directly or more obliquely beheld by Us : For seeing according to the Rules of Opticks, a *Cylinder* and an *Ellipsis* being beheld at a Distance or obliquely, seem to be circular ; Hence he inferrs, that *Saturn* as well when in the *Apogæum* as *Perigæum* of his Excentrick appears, as he terms it, *Elliptico Ansatus*, but in his mean Distance either from the Earth or Sun, he appears *Mono-sphericus*, solitary and round, in other positions he appears *Sphærico-Ansatus*, but diversly figured according to his divers Latitude and Situation in his *Epicycle*. And seeing at this Time *Saturn's Apogæum* is in the 27th Degree of γ his *Perigæum* in the 27th of π , and his Mean Distance in 27th Degrees of π and κ , he hath accordingly distributed the various *Phases*, and different Appearances of that Planet quite through his Excentrick. Of which see the following Table taken from *Ricciolus in Paralip. Astronom. Reformat.* something differing from that of *Hevelius* inserted in his forementioned Treatise.

Table of the divers Phases of Saturn according to the Opinion
of HEVELIUS.

	Sign. Gr.	Denominations of the Figures
Apog. Decreasing.	γ — 27	<i>Elliptico-ansatus plenus</i>
	ν — 12	
	ν — 27	
	π — 12	<i>Sphærico-cuspidatus Major</i>
	π — 27	<i>Sphærico-cuspidatus Minor</i>
	κ — 12	<i>Trisphericus</i>
Mean Distance Increasing.	κ — 27	<i>Mono-sphericus</i>
	ν — 12	<i>Trisphericus</i>
	ν — 27	<i>Sphærico-cuspidatus Minor</i>
	π — 12	<i>Sphærico-cuspidatus Major</i>
	π — 27	<i>Sphærico-ansatus</i>
	γ — 12	<i>Elliptico-ansatus Diminutus</i>
Perig. Decreasing.	γ — 27	<i>Elliptico-ansatus Plenus</i>
	π — 12	<i>Elliptico-ansatus Diminutus</i>
	π — 27	<i>Sphærico-ansatus</i>
	κ — 12	<i>Sphærico-cuspidatus Major</i>
	κ — 27	<i>Sphærico-cuspidatus Minor</i>
	ν — 12	<i>Trisphericus</i>
Mean Distance Phases increasing.	ν — 27	<i>Mono-sphericus</i>
	π — 12	<i>Trisphericus</i>
	π — 27	<i>Sphærico-cuspidatus Minor</i>
	π — 12	<i>Sphærico-cuspidatus Major</i>
	κ — 27	<i>Sphærico-ansatus</i>
	γ — 12	<i>Elliptico-ansatus Diminutus</i>

By the help of the foregoing Table and Ephemerides, the true Place of *Saturn* being given, it may be known (says *Hevelius*) what the *Phases* of *Saturn* will be for any Year to come, of which, for the greater Ease of such as would avoyd the trouble of Calculation, he hath composed the following *Ephemerid* ending in the Year 1701.

EPHEMERIS

EPHEMERIS PHASIVM SATURNI.

Year	Moneth	Phases of Saturn
1674		Tricorpor
1677 1678 1679 1680		Anfatus
1682 1683 1684	From November to July	Tricorpor
1685 1686	From September To October	Rotundus perfecte
1687 1688		Tricorpor
1690 1691 1692 1693 1694 1695 1696		Anfatus
1699 1700		Tricorpor
1701		Rotundus.

But whether these *Phases* may exactly answer the *Hypothesis*, We leave to the Discovery of the Curious, and shall only add what we find reported by *Ricciolus* (*in Paralipom. ad Astronom. Reformat.*) touching some Mechanical Trials, made by Signior *Campani* for the better discovering the various Face of this Celestial *Proteus*, being as follows. He caused a round white Ball or Globe to be inserted within an *Armilla* of the same colour, a Wire being made to pass through the *Armilla*, and the said Globe as a Diameter, so that the *Armilla* could be raised or deprest at Pleasure. This being placed in a convenient Light, and at a fitting Distance looked upon through a small Telescope, gave to him according to the divers Elevation or Depression of the said *Armilla*, all the *Phases* that were not only then (*viz.* 1664.) by him really observed in *Saturn*, but what likewise for the future might hereafter be observable. The same Tryal is also affirmed to have been made by *Ricciolus* by inserting a Globe as aforesaid, within an *Armilla* of an Elliptical Form.

Touching the *Structure*, *Nature*, and *Substance* of this Planet, it may be probably concluded: First, That it is composed *ex solido & liquido*, of a plumbeous or leaden temper and colour; that it is Spherical, but withall full of uneven Asperities. Secondly, That it is an Opacous Body, and illuminated *ab extra*, and although the Sun's Light may approach it, yet it is not sufficient to give a requisite Lustre to so great and so distant a Body, and therefore must needs receive its Light from some other Fountain. Thirdly, That his Companions or Satellites, have their proper light, and thereby administer Supplies to that of their Prince: Fourthly, that he hath a gyration about its own Center and *Axis*, compleated according to *Rheita* in 29 Dayes, 10 Hours, 1'. 16".

His *Distance* from the Earth is by divers Astronomers diversly computed, but according to *Ricciolus*, in his greatest Distance he is found to be distant from the Center of the Earth 90155 Semidiameters thereof, in his Mean Distance 73000, in his least 57743 of the said Semidiameters.

His apparent Diameter, according to *Ricciolus*, when least in his *Apogæo cum Comitib.* is reckoned to be 46". when in his Mean Distance from the Earth 57". when greatest in his *Perigæo* 1'. 12".

His true Diameter *cum Comitibus*, contains of the Earth's Diameters 20. $\frac{1}{2}$. His Body that of the Earth 891 Times.

We are now come to the Conclusion of the Poem, wherein Manilius for the more perfect Consummation of this Work, by way of Corollary, hath inserted a brief but not unelegant Description

Of Fiery Meteors and Comets.

*The several
Sorts of fiery
Meteors.*

Touching the first of These, it will be needless to say much; We shall only reckon them up. Those whose Place and Generation is in the Lower Region of the Aire, are *Draco volans*, *Ignis Fatuus*, *Ignis Lambens*, *Sidus Helena*, *Castor & Pollux*: Those whose Birth is in the middle Region, are, *Stella cadens*, *Lancea ardens*, *Fulmen*, &c. In the Upper Region of the Air are reckoned, *Fax*, *Ignis Perpendicularis*, *Bolis*, *Capra Saltans*, *Scintilla Volantes*, *Trabs* &c. All which arise from Vapours and Exhalations which the Earth continually exhales, and diffuses round about through its ambient Atmosphere.

Of the second Sort something more is to be said; but with that Brevity as may suit with our Method; it being not our Design to amass together what ever might be collected upon this Subject, but only to hint so much as may serve either to explain what our Author hath written thereon, or to supply in some measure what he hath omitted, referring the more Inquisitive Reader to what among the Ancients, *Aristotle*, *Seneca*, *Pliny*, *Plutarch* and *Ptolemy* have written; among the Modern, to what *Tycho*, *Blancanus*, *Cabens*, *Fortunius Licetus*, *Camillus Gloriosus*, *Longomontanus*, *Keplerus*, *Galileo*, *Fromondus*, and divers others have largely and learnedly discoursed of; more especially to what the Learned and Reverend Prelate, *Seth Lord Bishop of Sarum*, hath published in his Dissertation *De Cometis*, to what *Monsieur Petit* hath discoursed in his Piece of the Nature of Comets, as likewise *Lubienecius* in his *Theatrum Cometicum*; *Hevelius* in his accurate *Cometographia*, and *Ricciolus* in *Almagest. Nov. Tom. 2. de Cometis*.

*Of the Matter,
Place,
and efficient
Cause of Comets.*

Touching the Matter, Place, and efficient Cause of Comets, both the Ancient and Modern Philosophers and Astronomers differ much; We shall here give the Reader their several Opinions, collected from divers of the forementioned Authours, which may be reduced to Twelve distinct Heads.

The first will have Comets not to be any thing real, or distinct from other pre-existent Celestial Bodies, but rather a *meer Emphasis or Appearance* made by the Reflexion or Refraction of the Sun's Beams, or those of the Moon, in the same manner almost as is the *Halo*, *Parelii*, *Paraselene* and *Rainbow*. Of this Opinion was *Panetius*, and some others mentioned by *Seneca* (*Natural. Quest.*) and *Plutarch* (*De Placit. Philosoph.*)

The second likewise denies Comets to be any thing *De Novo*, existing in the Heavens; but to be a *meer Symphasis or Coappearance* of divers Stars already known, joyned together in corporal Conjunction, as Astrologers use to speak, and so making a kind of a long Star, as if it were (as *Seneca* expresses it) *duarum (vel plurimum) Stellarum Ignis extensus*, which Opinion is by some ascribed to *Democritus*, *Anaxagoras* and *Zeno*; this is touched at by *Manilius*, where he says,

*Nature did those fading Lights design
As subunit Stars in Heaven to shine.*

Which see already explained in our Notes.

The third Opinion makes Comets to be some New and extraordinary Planets differing from the seven commonly known, being seldom seen, by reason either of their nearness to the Sun, or their too great Distance from the Earth, which after some space of time, emerging out of the Sun's Beams under which they lay hid, or approaching nearer to the Earth, become visible. This was the Opinion of the *Pythagorean* Italic Philosophers, *Hippocrates*, *Diogenes*, and generally of the *Chaldean* Astronomers, and is likewise taken notice of by our *Manilius*.

The fourth Opinion maintains Comets to be an Aggregate of many small but ancient Stars composed into one Body, which afterwards parting asunder vanish and disappear; which Opinion *Ricciolus* conceives ought more properly to be ascribed to *Democritus*, *Anaxagoras* and *Zeno*, than that already under the second Head attributed to them.

The

The fifth Opinion is that of *Aristotle*, and divers of his Interpreters, asserting Comets to be Fiery Meteors, generated anew of copious Exhalations from the Earth and Sea, and elevated to the supream Region of the Aire; which being closely compacted together, and hurried about by the swift Motion of the *primum Mobile*, take fire, and last as long, as the Sulphury, Unctuous, Fat, Oleaginous, or Nitrous Matter of which they consist, affords them Fuel to burn and shine; nor is this omitted by our Authour.

The sixth Opinion allows Comets to be formed of Sublunary Vapours and Exhalations, but not to be set on fire; only to be illustrated by the Sun, by reason of the Diaphaneity of their Matter, like Phials of Glas full of Water of a red or yellow Colour; or as *Scaliger* (*Exercit. 79.*) Opines: That Comets are composed of a subtle Vapour raised by its own Levity, or attracted by the Stars, into the Upper Region of the Aire, and so attenuated, that it not only receives but transmits the Sun Beams, like those thin Clouds which in the time of twilight are discerned not far above the Horizon; which Opinion seems to be derived from *Heracledes Ponticus* and *Metrodorus*.

The seventh maintains Comets to be formed of Elementary Matter, that is to say of thin and subtle Exhalations, mounting by their Levity above the Orb of the Moon, and by reason of their Diaphaneity drinking up the Rayes of the Planets, chiefly of the Sun; and afterwards transmitting them into a long Train, Bush, or Beard. Authours of this Opinion among the Moderns, are *Guiduccius*, *Galileus*, and *Rothmannus*.

The eighth Opinion, affirms Comets to be made anew of Celestial Matter; not by Generation of a new substantial Form, but by Condensation, with a Mixture of Darknes and Diaphaneity, aptly receiving the Light of the Sun, and transmitting it again, of which Opinion are *Libavius*, *Licetus*, *Camillus gloriosus*, *Tannerus* and *Refta*.

The ninth Opinion conceives Comets to be generated a new of Celestial Matter, which after a Time corrupts and is dissolved. Of this Opinion are most of the Eminent Astronomers from *Tycho* to this present: Differing yet among themselves as to the Manner of this Generation; Some conceiving the Generation of Comets to be made of that Celestial Matter, which is in the *Via Lactea*; as being of all the other Parts of the Heavens more nearly prepared and disposed for such Productions. And that Comets are not Flagrant, but rather perspicuous, and tralucet Bodies. *Kepler* yet and with him *Hevelius*, and some others will have the Ætherial Region to be full of gross Fumes or Fuliginous *Effluvia* from the Bodies of the Stars, and Planets (and more particularly of the Sun congregated as it were into one Apothem) and that their Origine and Matter is in a manner the same with that of the Solar *Macule* and *Facule*.

The tenth Opinion is (as *Ricciolus* notes) peculiar only to *Kepler*; which asserts Comets to be formed anew of Celestial Matter, but that some of them are abased and thrust down below the Orb of the Moon; as on the contrary, the seventh Opinion (before mentioned) maintained them to be formed of Elementary Matter, yet notwithstanding to be carried up above the Orb of the Moon; and certainly (says the same *Ricciolus*) I see no reason why Comets, being composed of the *Effluvia* of the Planets in their *Perigæa*'s, may not sometimes be carried beneath the Moon.

The eleventh Opinion supposes that Comets, if not All, yet the most Part, are created by God of Nothing, or at least formed of such Matter as best pleases him, whether Celestial or Elementary, and of such Shape and Figure, as may serve to terrifie, or admonish mankind and presignifie Calamities to ensue, which Opinion is likewise delivered by *Manilius* in these Verses

Or God in pitty to our humane state,
Sends these as Nuncios of ensuing Fate.

Touching which enough is already said in our Notes.

The twelfth Opinion is not distinct from all the former, but rather distinctive of the Matter and Place of Comets. Of which it admits some to be composed of Terrestrial Exhalations beneath the Orb of the Moon, whether inflamed or set on fire, or only enlightened. Others to be generated of Celestial Matter after the manner already delivered in the tenth Opinion,

And seeing mention hath been made in the ninth Head or Opinion, that the Origine and Matter of Comets is in a manner the same with the Solar *Macule*. It will not be amiss here to add the Particulars in which they agree; as by *Hevelius* in the seventh Book of his *Cometographia*, they are compendiously exhibited in the following Aphorisms;

1. Comets (as the *Macule*) have both a Physicall and Astronomical Rising; but few of them have both Astronomical rising and setting, in regard they last not long, but are dissolved before they

they attain the Western Horizon. Others have neither Astronomical rising nor setting, but Physical only, as being produced and dissipated above the Horizon.

2. As the *Maculae* are composed, of the grosser Solar Matter, or more dense *Effluvia*, so Comets are formed of the Evaporations of divers Planetary Bodies.

3. Comets have a threefold Age; their green and growing Age, their full grown or ripe Age, and their declining or decaying Age; that is to say their time of Augmentation, Duration, and Decay.

4. Comets have their Augmentation and Decrement, as well Physical as Optical, not in a certain Part of the Heavens, but in any Part thereof; and that without Intermission, successively, sensibly, and unequally. Hence it happens sometimes, that a Comet increasing slowly and more durably, is on a sudden extinguished, and on the contrary, another that suddenly shews it self, lasts a long time, and is slowly dissolved.

5. Comets (as the *Maculae*) are generated, and increase by the Accession of similar Matter, through Condensation, Adgeneration, substantial Generation, and Aggregation of Minute Bodies, and by contrary Means are dissipated, and decay.

6. Comets (as the *Maculae*) are by no means spherical Bodies, but Plane, and of different thickness; sometimes represented to our view like round or regular Figures, at other times appearing in irregular Forms, and differ in Magnitude, Crassitude, Colour, Obscurity, Density, and Rarity, and have their *Nuclei* (Kernels or Knots of Light) of divers Magnitudes, Crassitudes, Density and Colour.

7. The *Nuclei*, Kernels, or Knots of Comets sensibly increase and decrease. And those which suddenly increase are of shortest Duration, and are soonest dissolved; Those which by Degrees augment, are of longest Continuance.

8. These *Nuclei* are composed of Dense and rare Parts; That is, are generated of the most dilute Planetary Vapours and Exhalations, and of certain smallest Particles; and sometimes grow together from many into one; and not seldom from one are divided into two or three, or more.

9. Comets as they seldom and very rarely consist of one single *Nucleus*; so the greater of these *Nuclei* is seldom seen, precisely placed in the middle of the Cometical Body, but declines toward the sides, drawing along with it the thinner Mass.

10. The *Nuclei*, as their rarer Parts by a Flux of Matter and Condensation, increase and become more splendid; so by diffux of Matter and rarefaction they become more pale, wan, and dull.

11. Every Comet, as each Solar *Macula*, is circumvested with an other kind of Body, less obscure and more rare, as it were a peculiar Atmosphere, in which the Sun's Rayes are lodged, whence its Tail or Bush is produced.

12. It seems likewise consonant to Reason, that the rarer Parts are procreated before the *Nuclei* or Kernels, and that in the Dissolution of a Comet, the *Nuclei* sensibly first decay; so that the solid and more Dense Parts are sooner dissolved than the more rare.

13. The *Nuclei* of Comets (as of the Solar *Maculae*) have not their Generation or Corruption in one Part of the Heavens only, but every where indifferently. And of these some are more lasting than others, by reason of their more Unctuous and Dense Matter; some of them likewise are formed about the beginning or Birth of the Comet; others about the middle, and some toward the End. Yet sometime the same *Nucleus* lasts from the beginning to the End of the Comet now increasing, at other times decreasing. But in this, both Comets and their *Nuclei* altogether differ from the Solar *Maculae*, for that Comets, by reason of their Proper Motion in their Orbits never return again, and a second time ascend above our Horizon, that is to say rise again Astronomically (except in their Diurnal Motion, which is not here considered) insomuch as a Comet being once extinguished, cannot be again produced or continued.

14. Oftentimes divers Comets which seem at the same time to begin, and to be almost equal as to their Density and Magnitude; have not yet the same Dissolution, but differ both as to the Time and Place; the same is to be understood of their *Nuclei*.

15. Every Comet, as each Solar *Macula*, consists of an opacous, dense, and (of it self) obscure Matter, drawing all its Light wholly from the Sun.

16. Comets

16. Comets are always greater than they seem to be; be their Apparent Diameter greater or less than the Apparent Diameter of the Sun, which is the Body that illuminates them.

17. No Comet whatsoever either as to its Whole or Parts, or *Nuclei*, hath a Gyration about its *Axis*; but always turns the same face to the Earth and Sun, unless happily it may be carried in an equal librating or reciprocal Motion, according as it is more or less distant from the Earth.

18. The *Nuclei* of Comets (as of the Solar *Macula*) have a peculiar Motion, but always Irregular or Anomalous. Hence those *Corpuscula* or *Nuclei*, of which the Comet is composed, have Motions among themselves, as to their Accession, Conjunction, or separation, quite different from that proper Motion of the Comet in its Orbit, and thence proceed the suddain Coalitions, Digressions, and inordinate Deviations, as also the various Transformations of the Figures of the said *Nuclei*.

19. Comets: although sometime, as to their Diameter or Disque, or the *Area* of their greater Circle, they exceed in Magnitude the Moon and Earth; yet do they not for all that exhaust the Planets, nor do those Bodies suffer any Detriment or Diminution, no more than the Sun does by Generation of his *Macula*: for every Celestial Body calls back unto it self that Matter which by Dissolution or Attenuation issues from it.

20. Comets are never at one and the same equal Distance removed from the Earth or Sun; but are sometimes higher, sometimes lower, as is evident; in regard they are sometimes found to have a sensible Parallax, at other times to have none at All.

21. As the Sun does not constantly, but at certain times produce his *Macula*; So neither does the *Æther* at all times by reason of the defect of Matter, produce Comets. Since that tenuous Matter of which they are composed, being diffused beyond the Atmosphere of the several Planetary Bodies, whence it flows through the vast *Æther*, and most distant Parts of the Heavens; it is not likely that those thin Exspirations can find so easie a Congress; but that they concurr and are aggregated as it were by chance; whence it comes to pass that Comets are so seldom seen.

Of the Tayl, Train, or Bush of Comets, and the Causes thereof something is likewise to be said, touching which there are as many different Opinions produced by *Ricciolus* and *Hevelius*, as those already mentioned touching Comets.

Of the Tayl,
Train, or
Bush of Co-
mets.

The first is that of *Aristotle* and his followers, asserting the Bush or Train of a Comet to be an Exhalation set on fire, in a more rare and less constipated Matter than that of its Head, and diversified, according to the divers Disposition of the Matter that feeds its Flame.

The second is that of *Seneca*; who conceives the *Cauda* or Bush to be no part of the Comet; nor a Flame, but the Rayes or Light which the Comet by its Native Vigour sends forth.

The third is that of *Gemma Frisius*, who will have it to be a Fire of a simple Celestial Body, kindled by the Sun in the Head of the Comet, and by the Violent Action thereof thrust forth and expelled into the Opposite Part.

The fourth is that of *Petrus Apianus*, who makes the Bush of a Comet to be nothing else, but the Rayes of the Sun, transmitted through the semidiaphanous Head thereof, as it were through a Globe of Glasse.

The fifth is *Tycho Brahe's*, who conceives it to be nothing else but the Beams of the Sun penetrating the Head of the Comet, and terminated in some Matter not altogether Perspicuous, and reflected towards us; for he supposes the Substance of the *Æther* not to be thoroughly Diaphanous.

The sixth is that of *Kepler*; who endeavours to give a double reason of this *Phænomenon*; for he supposes, First, that the Tayl or Bush may be enlightned by the Sun-Beams passing through the Body of the Comet, which he imagines to be purely pellucid, yet withall Dense, in such manner as the Sun's Beams are thereby conduplicated and coloured. In the second he makes the Comet to expire a certain Lucid Matter from its Head, toward that Part where the Sun's Beams break forth. With him in a manner *Gassendus* consents, who conceives the Tayl or Bush to be of the same Matter with the Head, only to differ in rarity, which rare and tenuous matter is by the force of the Sun's Beams expelled into the Part directly turned from the Sun; and this Opinion is likewise embraced by *Camillus Gloriosus*, and *Franciscus Reita*.

The seventh is that of *Galileo*; viz. that the Tayl of a Comet is of its own Nature straight; as
B b b being

being produced by the Sun-Beams, but appears to us to be crooked when near the Horizon, and inclined thereunto by reason of the Refraction of the *Species*, or of the Visual Rayes, made in the Spherical *Superficies* of the Aire, which near the Earth is filled with gross Vapours. This he illustrates by the Example of an Oar, which though straight, seems in the Water by the force of Refraction to be crooked.

The eighth is that of *Jo. Baptista Cysatus*, who conceives the Tail of a Comet not to be a Flame, but a radious Cone or Pyramid, made by the Sun's Beams, transmitted through the Head of the Comet, in the same manner as the Sun's Light passing through a Hole, or Convex Glass, illustrates a Room or Chamber, which he says is done partly by Refraction, partly by Reflexion from the Polyangular Sides of the *Corpuscula*, that forme the Head of the Comet.

The ninth is of *Nichol. Cabens*, who makes the Tail of the Comet to be the Sun-Beams shining through the Head of the Comet and refracted; but since all Beams however refracted are propagated by right Lines, he affirms the Tail of a Comet cannot possibly be really crooked, but only apparently such; and the Cause of this apparent Crookedness he refers to the divers Site or Plane of the Eye, and of the Tail or Bush of the Comet.

The tenth is that of *Fromondus Meteor. l. 3. c. 4.* where he affirms the Tail of a Comet to be the Sun-Beams transverberated *per Cerebrum Capitis Cometae*, as he terms it; and at the beginning not to be of any Length, nor directly to tend toward the Part turned from the Sun, in regard of the various Diversion it meets with, by reason of the Profundity and Opacity of the Head of the Comet; but after that Opacity is a little cleared, and the Matter better digested, then the Sun-Beams issue forth directly, and stream into a long Bush or Train.

The eleventh is that of *Fortunius Licetus*, who conceives that to the Body of the Comet there is a certain Matter that adheres, by some Extrinsic Appulse, and hath its coagmentation and generation near the Body of the Comet, from the same Cause that formed the Comet; and either by the innate or proper Light of its Head, or by the Sun Beams is illuminated, and becomes visible in the shadow of the Comet, that is in that part of it which is directly turned from the Sun.

The twelfth is that of *Ricciolus*, who first conceives it not improbable, that the Tail or Train of a Comet is of the same Substance with the Comet, and to shine by its own Light propagated from its Head. The Face of which is alwayes converted to the Sun like a *Heliotrope*, or as a *Magnet* to the Pole; and by a slow Vertiginous Motion about the Center of its Head to be so moved, that the more perfect part of the Comet alwayes respects the Sun, the other part to be turned from the Sun; and to have divers Shapes and Figures, according to the several *Species* of Comets, and the diversity of its Matter and Configuration. Secondly, he holds it very probable, that the Train or Bush of a Comet, is a Multitude of most subtle *Corpuscula* in the Air or *Æther*, flying about the Head of the Comet, not such as We see through a Chink dancing in the Sun-Beams, nor like those Exhalations which make the *Crepusculum* or Twilight, but much more subtle and higher, nor apt by reason of their smallness, their little opacity and great distance from the Sun, to be discerned by us through the Reflexion of the Sun's Beams, unless very strongly illuminated; that, that strong Illumination is made by the Collection of the Sun's Beams by the Power of Refraction into one, though not precisely after the same Manner as they unite after their trajection through a Sphere of Glass. He likewise conceives the Head of the Comet to consist of divers minute Bodies Homogenial, partly Polyangular, partly Spherical, partly Spheroidal. Hence by the Benefit of these various *Superficies*, the Sun-Beams passing after a divers Manner through the Head of the Comet, according to the Rules as well of Refraction as Reflexion, come forth much more multiplied and collected together than otherwise they would do, if they passed not through the Head of the Comet, or were not refracted.

To these We might add the different Opinions of the Excellent *Des Cartes*, and the much knowing Doctor *Isaac Vossius*, but that We are obliged to keep within the Bounds of our prescribed Brevity, and therefore shall refer the curious Reader to receive further satisfaction in this particular from their own better Pens; as delivered by the first in *Princip. Philosoph. Part. 3.* by the other in his Learned Treatise *De Natura & Propriet. Lucis. c. 32.* and in his Appendix thereunto, c. 8.

Of the several Kinds of Comets. From the divers Figures and Appearances of these Trains or Bushes, Comets are distinguished into several Kinds or *Species*; reducible to two chief Heads, that is to say, *Criniti seu Comati*, and *Barbati*; to the first Head or *Classis*, relate these following, viz. *δισκος*, *πίστις*, *ιππεύς*, *ἀργεῖον*, and *τεράς*, *seu Hircus*; to the latter *λαμπάδας*, *κρητίδας*, *ακροῖας*, *ζιφίας*, *λοβχίτης*, *Vern*, *seu Pertica*, and *τελεγωνία*.

1. *Discens*, *seu Disci-formis Cometa*, is a Comet resembling in Shape or Form a round Dish or Platter,

Platter, among these kind the chief is that which is called *Rosa*, *five Chryseus*; bright shining, and of a Silver Colour, mixed with Gold or Amber Colour. Those of this sort which are not absolutely round, resemble the Figure of a Shield, and are accordingly called *Clypei-Formes*.

2. *Pitheus five Doli-formis*, resembles the Form or Shape of a Tun, of which there are divers Kinds; some of an Oval Figure; some like a Tun or Barrel erect or set on End; some like one inclining, and cut short off; others have a Bush or Train annexed.

3. *Hippus seu Equinus*, resembles a Horse's Main, not alwayes of the same Shape or Figure; for now it spreads its *Syrma* or Train from the Fore-part or Front; now from the hinder Part; now of an Oval Figure; now like a *Rhomboides*, and therefore it is distinguished into *Equinus Barbatus*, *Equinus Angularis*, *five Quadrangularis*, and *Equinus Ellipticus*. Of this *Pliny* says, it is very swift in Motion, and turneth round about it self.

4. *Argyrocomus*, *five Argenticomus*, is not much different from that which is called *Solaris five Rosa*, but that it is of a whiter Colour, and shines with such a dazzling silver haired Light, as it can scarce be looked upon.

5. *Hircus*, or the Goat is environed with a kind of Main, seemingly rough and hairy by the slender *Fibra* of its Beams or Rayes; it is sometimes of a round Figure without any Train or Bush.

6. *Lampadius*, *five Lampadi-formis*, is a Comet resembling burning Lamps or Torches, and is of several Shapes, for sometimes it hath its Flame or Blaze carried upward like a Sword, sometimes double and treble pointed; which *Phænomenon* is yet very rare.

7. *Ceratia*, or the horned Comet, sometimes appears Bearded, sometimes with a Tayl or Train. Some have the Figure of a New Moon; those that are tailed have sometimes a crooked Tayl bending upward, sometimes downward; others have the Tayl of an unequal Breadth and thickness every Way; some have their Hare or Bush pointed, others like a Horn or Trumpet.

8. *Acontia*, are Comets formed like a Dart, or Javelin, with an oblong and close compressed Head, and prolix extenuated Tayl or Train.

9. *Xiphias*, *five Ensi-formis*, is a Comet resembling a Sword; the Head being fashioned like to a Hilt, the Tayl being long, straight, and pointed; yet sometimes bending like a Cimitar; when it is of a lesser and more contracted Form, it resembles a Dagger or Knife.

10. *Lonchites seu hasti-formis*, is a Comet resembling a Lance, its Head being of an Elliptical Figure, its stream of Light, or Tayl, being very long, thin and pointed.

11. *Vern seu Pertica*, is almost of the same *Species* with the Former, save that its Head is rounder, and its Train of Light longer and sharper pointed.

12. *Tetragonias*, *seu Quadratus*, is a Comet whose Head is for the most Part Quadrangular. It hath a long Train very thick and uniform, and is not unlike that *Meteor* called *Trabs*, or a fiery Beam. But all these will better appear by the several Schemes hereunto annexed, to which We refer the Reader, and shall forbear to add those Distinctions which some have given them in reference to the Planets; making some *solar*, others *Lunar*, *Mercurial*, *Venerial*, *Martial*, *Jovial*, and *Saturnine*, nor of their Magnitudes, Duration, Motion, Prognosticks, or final Causes, of which Authours are full; but give the Reader an Historical Abstract of the Times of the several Appearances of THESE SPLENDID ÆNIGMA'S, PROPOSED BY GOD, BUT NEVER TO BE RESOLVED BY HUMANE WIT; as *Ricciolus* ingeniously says of them.

Table

Table exhibiting (according to the Series of Time) the several Comets that have appeared, together with their Principal Phænomena; Collected for the most from Hevelius and Lubieniecus.

Anni ante Christ.	The time of first Appearing	The time of Duration and Disappearance	The time of Day or Night	The Place or Region of the World	The Motion, Direct or Retrograde, swift or slow	The Nature, Magnitude, Figure & colour of the Head	The length, shape, and situation of the Bush or Tail
2292	About three dayes before the Death of <i>Alcibisalem</i> a Comet appeared	Visible by the space of one Month, and disappearing the sixteenth of <i>April</i> <i>Rothenboch</i>		In <i>Pisces</i> under <i>Jupiter</i>	Passed through the twelve Signs of the Zodiac	<i>Jovial</i>	
2191	A little before the Confusion of Tongues at <i>Babel</i>	Lasted sixty five Dayes		In <i>Capricorn</i> visible in <i>Egypt</i>	Passed three Signs in the Zodiac	<i>Saturnine</i>	
1920	In the 80. year of <i>Abraham's</i> life 5 years after his Departure from <i>Haran</i>	Shined for the space of twenty two days		In <i>Aries</i> visible in <i>Chaldaa</i>		<i>Martial</i>	
1820	In the fifth year after <i>Abraham's</i> Death	Lasted nine dayes		Under <i>Leo</i> in <i>Egypt</i>		The Head like an Imperfect Circle or Globe very fiery	
1718	According to <i>Hevelius</i> (though <i>Lubieniecus</i> will have it to be in the year 1732.) not long before the seven years scarcity in the time of <i>Joseph</i>			In <i>Sagittary</i> under <i>Jupiter</i> visible all over <i>Arabia</i>		Of a dreadful Aspect, called <i>Typhon</i> , by an <i>Egyptian</i> King then reigning, and resembling a Wheel.	
1495	A little before the Children of <i>Israel</i> departed out of <i>Egypt</i> for the Land of Promise			Under <i>Capricorn</i> seen in <i>Syria</i> , <i>Babylonia</i> , and <i>India</i>		Like a Wheel	
1200	In the Moneth of <i>August</i> , not long after which followed the Death of the famous <i>Amenemur</i> King of <i>Egypt</i> , the <i>Trojan</i> War, and a great Sedition among the <i>Israelites</i> wherein 42000 of the Tribe of <i>Ephtaim</i> were destroyed			In <i>Gemini</i> visible in <i>Affria</i>		Of a dreadful Aspect	
1100	In the Reign of <i>Teutamus</i> King of <i>Affria</i> , contemporary with <i>Sampson</i>	Lasted forty three Nights		Under <i>Aries</i> visible all over <i>Greece</i>			
479	At which time according to <i>Calvisius</i> there hapned an extraordinary Eclipse of the Sun, and <i>Xerxes</i> marched from <i>Sardis</i> against the <i>Greeks</i> , or rather (according to <i>Pliny</i>) incoun-tered them in the Sea-fight at <i>Salamis</i>	Lasted twenty two dayes					Like that called <i>Cerastias</i> , being crooked like a Horn
430		Seventy five dayes	After Sun-set			Fiery, and Martial, of a great and unusual Splendor, like a huge Beam	

<i>Auxi- ante Christ.</i>	<i>The time of first Appearing</i>	<i>The time of Du- ration and Dis- appearance.</i>	<i>The time of Day or Night</i>	<i>The Place or Re- gion of the World or</i>	<i>The Motion, direct or Retrograde, swift or slow</i>	<i>The Nature, Mag- nitude, Figure & colour of the Head</i>	<i>The length, shape, and situation of the Bush or Tail</i>
411	In the Month of <i>January</i>			Towards the North			
371	In the Winter a- bout the Time of the great Earth- quake, and Inun- dation in <i>Achaia</i> , <i>Aristaeus</i> being Archon at <i>Athens</i>		In the Evening af- ter Sun-set		It ascended as high as the Girdle of <i>Orion</i> , and there va- nished, and conse- quently its Motion was direct	At the beginning it was like a Beam, and extended its Rayes to the third Part of the Hea- vens, and was there- fore, as <i>Aristotle</i> (1. 1. Met. c. 6.) affirms, called the Way: in the End it parted into two Stars	At the first Day of its Appearance, its Tail was seen and not the Head
354	About the time of <i>Alexander</i> the Great his Birth, and the burning of the Temple of <i>Di- ana</i> at <i>Ephesus</i>			In <i>Leo</i>			At first Bushy, or as some affirm, re- presenting a kind of Beard, afterwards turned into the Fi- gure of a Spear
339	About the begin- ning of <i>Alexan- der's</i> Reign, <i>Nicho- machus</i> being Ar- chon at <i>Athens</i>	Lasted 19 days	Never rose in the Evening	Appeared near the Equinoctial Circle about the 19° of <i>Sagittary</i>			
220		Lasted twenty two days		In <i>Aries</i>			
196	Two Comets; first The second	Lasted but few days nineteen days		In <i>Capricorn</i> In <i>Cancer</i>		Of a stupendious Magnitude	
194	About the Birth of <i>Mithridates</i> King of <i>Pontus</i>	Lasted eighty days				Of an extraordi- nary Bigness	
183	A little before the Death of <i>Scipio</i> , <i>Africanus</i>	Lasted eighty eight days		In <i>Pisces</i>		Exceeding the Sun in Brightness	Taking up near the fourth part of the Heavens
174		Lasted thirty two Nights		In <i>Aries</i>			
172		Lasted fifty five Weeks					
166	<i>September</i> fourth			In <i>Taurus</i>		Of the Nature of that called <i>Hircus</i>	
154		Lasted nine days					
144		Lasted twenty two days		In <i>Capricorn</i>		Not less in appear- ance than the Sun, fiery red, bright shining, and dis- pelling the dark- ness of the Night; but by degrees di- minishing	
134		Lasted eighty three days		In <i>Gemini</i> seen at <i>Frangie</i> in <i>Italy</i>		At first small, but in few days spread so, as to reach the Equinoctial Circle, and to be equal to that Part of the Heavens called the <i>Via Lactea</i>	
122		Lasted eighty days				It was so bright, that the Heavens seemed to be on Fire, and of that Magnitude as to take up the fourth Part of the Hea- vens, was more conspicuous than the Sun, and four Hours in rising and setting	
111		Lasted fifteen days	Appeared in the Evening	In <i>Cancer</i>			Shedding a very conspicuous Train of Light.

Anni ante Christi.	The time of first Appearing	The time of Du- ration and Dis- appearance	The time of Day or Night	The Place, or Re- gion of the World,	The Motion, Di- rect or Retrograde, swift or slow	The Nature, Mag- nitude, Figure & colour of the Head	The length, shape and situation of the Bush or Tayle
65		Lasted ninety five dayes		In <i>Virgo</i>		A terrible and mighty Comet	
60		Lasted nine dayes		The Sun totally losing its Light, it was seen; whereas before it lay hid under its Beams			
41		Lasted seven dayes	Rising before Sun- set	In <i>Scorpio</i> toward the North		Of a dreadful Magnitude	<i>Xiphias</i> , with a long and sharp pointed Blade
29		Lasted ninety five dayes		In <i>Libra</i>			
27		Lasted seven dayes	Appeared about 11 of the Clock	In the North		Clear and most Conspicuous	
23		Lasted a few dayes		In <i>Taurus</i>			
Anni post N. Christi.							
1		Lasted three Nights		In <i>Leo</i>			Like to a flaming Torch or Firebrand
10		Lasted 32 Nights		In <i>Aries</i>			
14		Lasted twenty dayes		In <i>Aries</i>			
40				In <i>Gemini</i>			
54		Lasted four Months		In <i>Cancer</i>	Rose from the North towards the Hea- ven Eastward	Every Day obscu- rer and obscurer	
60		Lasted six Months		In the North	Tending from the North, Westward, inclining toward the South; and run through half the Heavens	Growing every day more obscure	
64						A hairy Comet	
66				In <i>Gemini</i>			
71	On Easter Day the eighth of April	Lasted a whole year		In <i>Virgo</i> over the City of Jerusalem			<i>Xiphias</i> , or En- fermis
76				In <i>Taurus</i> toward the East Rocken- bach			<i>Acontias</i> , five Fa- culi-formis, of which the Emperour Trajan wrote an excellent Poem, it is mentio- ned by Sextus Au- relius Victor in Ve- spas.
79		Lasted 186 dayes		In <i>Scorpio</i>			
128		Lasted 39 Nights		In <i>Aquarius</i> and <i>Capricorn</i>			
145		Lasted six Nights		In <i>Aquarius</i>			
188							Of the Nature of that which from its Figure is termed <i>Pogonias</i> , or a Beard
204		Lasted many dayes		Seen at Rome			
218		Lasted 18 dayes		In <i>Pisces</i>	Moving from West to East, as <i>Lycofthe- mes</i> and <i>Eichstorni- us</i> out of <i>Xiphilinus</i> affirm		
323				In <i>Virgo</i>			
335		Lasted six Months three dayes		In <i>Aries</i>			Of an Immense and terrible Grandeur

Anni post N. Christi.	The time of first Appearing	The time of Du- ration and Dis- appearance	The time of Day or Night	The Place or Re- gion of the World	The Motion, Di- rect or Retrograde, swift or slow	The Nature, Mag- nitude, Figure & colour of the Head	The length, shape, and situation of the Bush or Tail
367		Of many dayes con- tinuance seen in the day time					
370		Lasted 11 Weeks		In <i>Aries</i>			
380	Appeared in the beginning of <i>May</i>	Lasted four Months		In <i>Libra</i>		Of a round Figure bigger than the Planet <i>Venus</i> , and illuminating the whole Horizon	
384						Like that which ap- peared over <i>Hieru- salem</i>	
389		Lasted twenty days	Rose about Cock- crowing	In <i>Gemini</i> toward the North		Shining like <i>Luci- fer</i> , or the Morning- Star	
390		Lasted thirty dayes				Hanging like a Pigeon or Dove of Light hovering in the Sky	
392		Lasted forty dayes	Rose about Mid- night	Near <i>Venus</i> , about the Zodiac	Ascending sensibly from the Place of <i>Venus</i> towards <i>Ur- sa Major</i> , in the midst of which it disappeared	Large and shining as bright as <i>Venus</i> , unto which divers other Stars assem- bling, composed the Form or Figure of a Sword, whose Hilt was made of the former bright Star	
396						The Figure not de- scribed by <i>Aretius</i> who affirms its Ap- pearance	
409 or 402							A Sword Comet, of extraordinary brightness, and of that Grandeur that it reached from Heaven down to the Earth
408	A little before the Death of <i>Arcadi- us, Lubieneci</i> .	Lasted from Mid- summer to the end of <i>Autumn</i>		In <i>Capricorn</i> , <i>Rock- endoch</i>			
409 or 413	About the time when the Sun was totally Eclipsed	Lasted four Months and more		In <i>Virgo</i>	Moved from the <i>Eastern Equinocti- al Point</i> by the Tail of <i>Urfa Ma- jor</i> toward the West	Its Light seemed to present the Figure of a Cone, not like a Star, but rather like a great Lant- horn, or Lamp, the Top of its Flame running into a great length, and point- ed; so that some- times it varied from the proportion of a Cone, at other times again con- tracted it self into a Conick Figure	
418	<i>August</i> the four- teenth	Lasted till <i>Septem- ber</i>		In <i>Libra</i>			
423						A horrible Comet	Of the Nature of those called <i>Cri- misi</i>
442		Lasted many dayes	At Night the Moon being eclipsed				

Anni post N. Christ.	The time of first Appearing	The time of Du- ration and Dis- appearance	The time of Day or Night	The Place or Re- gion of the World	The Motion, Di- rect or Retrograde, swift or slow	The Nature, Mag- nitude, Figure & colour of the Head	The length, shape, and situation of the Bush or Tail
448		Lasted many dayes		In the East in Leo			
454 or 457						Of a wonderful Magnitude, to whose Beam or Train of Light, ad- hered a Fiery Dra- gon, from whose Mouth issued two Rayes, the one extending beyond France, the other stretch'd toward Ire- land, ending in se- ven other lesser Rayes	
459 or 488						Of an unusual Fi- gure and Magni- tude surrounded with a dark cloud, but casting forth a bright Ray	
504		Lasted many Nights					The Tail very long crowned with the Figure of a fiery Dragon
519		Lasted twenty nine dayes		In the East			Of the Figure of a Beard, or Paganias, the Rayes stream- ing Westward
531		Lasted twenty dayes					Its Beams ascend- ing upward like that called Lamp- ades
539	In December			In Sagittary	Running against the Course of the Moon		
541 555 or 556	Upon Easter Day			Seen at Constanti- nople	Moving from North to South	A dreadful Comet	In Form of a Lance
570						The Figure is not described by Ricci- olus, who makes mention of it	
589		Lasted a Moneth		Seen at Constanti- nople		Surrounded with a Dusky Cloud, and casting forth a sin- gle Ray	
594 or 597	In January	Lasted a Moneth	Seen Morning and Evening			Of a Terrible As- pect	
599						Its Figure not de- scribed either by Simonius or Cal- visius who mention its Appearance	
601	In September	Lasted many dayes				Of an extraordina- ry Magnitude	Like a bright Sword without any Rayes
604	April and May, November and De- cember	Lasted many dayes				Very bright, its Fi- gure not described	
613		Lasted a Moneth				Martial	

<i>Annus post N. Christ.</i>	<i>The time of first Appearing</i>	<i>The time of Duration and Disappearance</i>	<i>The time of Day or Night</i>	<i>The Place, or Region of the World</i>	<i>The Motion, Direct or Retrograde, swift or slow</i>	<i>The Nature, Magnitude, Figure & colour of the Head</i>	<i>The length, shape and situation of the Bush or Tail</i>
633		Lasted thirty dayes		Toward the South			Xiphias, or Eagle form
676	In August	Lasted 3 Moneths	Seen from Cock-crowing to Sun-rising	In the East			Casting forth great Flame like fiery Trabs or Pillar
684	Between Christmas Day and Twelftide	Lasted 3 Moneths	Seen as well by Day as Night	In the East near the Pleiades	Moved from South to North	Of a Duskyish Colour like the Moon appearing through a Cloud	
729	In January.	Lasted 14 dayes	Seen in the Morning before Sun-rising, and in the Evening after Sun-set				Like to a flaming Torch, or Firebrand streaming Northward
745	About the End of the Year			Seen in Syria			
761		Appeared 10 dayes And 21 dayes		In the East In the West			
763				In the East		Terrible to behold	Like to a Beam
800	A little before the time, the Empire of Rome was transferred to Charlemain					The Figure not described	
814	In November immediately before the Death of Charlemain					A singular and terrible Comet, of a wonderful Figure, resembling two half Moons, now sensibly joyned together, anon parting asunder, and between them both exhibiting the Figure of a Man without a Head	
830				In Aries			
837	At Easter	Lasted twenty five dayes		In Virgo, in that Part where her feet Cancer, and Gemini touch the Tail of the Serpent and the Crow	In a Retrograde Motion, and in the Head of Taurus vanished		
838	In Autumne		Seen in the Morning before Sun-rising	In Libra		Dreadful to behold	
839	In the Spring	Lasted but a few dayes	In the Evening after Sun-setting	In Aries			
842				In Aquarius			
844				Above Venus, as observed by Almazan			
868						Its Figure not described by Lavaterus and Rockinbach	
874	In the beginning of April	Lasted a Moneth			Preceding the Moon	Dreadfully red and fiery, and projecting a long Train of Light	
875	On the sixth of June	Lasted a few nightes	Shining by Day as well as Night	Preceding the Moon		Extraordinary sparkling, and more than usually red, and flaring with long hairy Beams	

Anni post N. Christ.	The time of first Appearing	The time of Du- ration and Dis- appearance	The time of Day or Night	The Place or Re- gion of the World	The Motion, Di- rect or Retrograde, swift or slow	The Nature, Mag- nitude, Figure & colour of the Head	The length, shape, and situation of the Bush or Tayl
882	In the eighteenth of January						Its Bush or Tayl of a great length
902		Lasted forty dayes					Its Tayl projected toward the East
904	In the Moneth of May	Its Duration not mentioned				Nor its Figure de- scribed by any	
908						More than ordinary bright and glistering	
930				In Cancer			
942	On the seventeenth of November	Lasted 14 Nights		Seen about Con- stance a City in up- per Germany			
945						Of a wonderful Magnitude and Pro- perity, scattering a- bout fiery Rayes or Beams	
962				In Italy		Of an unusual Grandeur	
975	In August	Lasted 8 Moneths					
979				In Vargo			
983		Its Duration not mentioned				Nor Figure descri- bed	
999 or 1000	In the beginning of December		Seen about nine of the Clock in the Evening			Of a most stupen- dious Magnitude	
1005 or 1009	About the end of May			In the South		Of a terrible As- pect	
1017		Lasted four Moneths		In Leo		More strange than usual	Like a mighty Beam
1027 1031 1038		Their Duration not mentioned				Nor Figures de- scribed	
1042	On the sixth of October	Lasted a Moneth	Seen in the Morn- ing		Moving retrograde from East to West		With long flaming Hairs
1058	In Easter Week	Lasted the whole Week		Seen in Polonia			Casting forth a long Train of Fire
1066	In Easter Week	Lasted forty dayes		Following the set- ting Sun		At first equal in ap- pearance to the Moon, afterward as its Tayl or Bush in- creased it diminish- ed	
1067 or 1068						Extreamly fiery	
1071		Lasted twenty five dayes	Seen in the Morn- ing	In the East			Its hair long and flaming
1096 or 1097	About the begin- ning of October	Lasted a Week		In the West in Ca- pricorn		Duskyish	Casting forth a sin- gle Ray or Beam

Annus Christi.	The time of first Appearing	The time of Du- ration and Dis- appearance.	The time of Day or Night	The Place or Re- gion of the World or	The Motion, direct or Retrograde, swift or slow	The Nature, Mag- nitude, Figure & colour of the Head	The length, shape, and situation of the Bush or Tail
1098 or 1099	About the Nones of October	Lasted 15 Days		In the Southern Part of the Hea- vens.			Like a Sword, but obliquely waved, casting forth long Haires toward the East, and shorter toward the South
1101			Soon after Sun- setting	In the West		Of a wonderful greatness	
1102 or 1103	February the twenty second			In the East	Changing its Place by Leaps, and long Interstitia's		Broad spread and bright flaming
1104							Like burning Tor- ches or fiery Darts
1106	In the first Week of Lent	Lasted until Good- Friday after, being twenty five days	Seen in the Eve- ning first Afterward in the Morning	South west Eastward		Great and horrible to sight	A Splendor issuing from it very clear, like a great Beam
1109		Lasted some few days					
1110	On the sixth of June, as Calvisius, or of July, as My- xaldus	Lasted six Moneths			Its Motion Retro- grade		Its Rayes directed to the South
1113	In the Moneth of May					A huge Comet	
1132 or 1133 1141	On the eighth of the Ides of October					Of a stupendious Greatness	
1145	In the Moneth of May						
1146		Lasted a whole Moneth		In the West			Illuminating with its bright Rayes the circumambient Air
1165 Two Co- mets at the same time			Seen before Sun- rising	In Libra, One in the South, the other in the North		Two together, or one with two long projected Rayes	
1168 Two Co- mets to- gether	On the twenty fourth of December	Disappeared after being seperated at a great Distance.		Seen in the West		One great, the o- ther small, of a fiery colour	
1180		Lasted only the re- mainder of the day of its first appear- ance, and the Night following					
1200				In the fifteenth of Scorpio	Moving contrary to the Course of the Celestial Signs	Appearing thrice bigger than Venus, of a round Figure, Casting as great a Light, as the Moon in her Quarter	
1211	In the Moneth of May	Lasted eighteen days		Near the North Pole			Its Tail or Train directed in the Eve- ning to the East, in the Morning to the West
1214 Two Co- mets	In March		One appearing be- fore Sun-rising; the other after Sun- setting			Of a terrible As- pect	
1217	In Autumn			In the South a little declining toward the West over against Ariadne's Crown			A Ray issuing from it like a Beam, which seemed to ascend up to the Mid-heaven

Anni post N. Christ.	The time of first Appearing	The time of Du- ration and Dis- appearance	The time of Day or Night	The Place or Re- gion of the World	The Motion, Di- rect or Retrograde, swift or slow	The Nature, Mag- nitude, Figure & colour of the Head	The length, shape, and situation of the Bush or Tail
1219				Seen in England		Of a vast Gran- deur	
1223				Conspicuous all o- ver France		Of a dreadful Ap- pearance, and of a bloody Colour	
1238		Lasted some dayes	Seen before Sun- rising			Of a vast Magni- tude	Sending forth Fire before it, and smoke behind it
1240	In February observ- ed by Albertus Magnus	Lasted six Moneths the last of any Co- met, as noted by Lubiciccius, which had so long a dura- tion	Seen in the Eve- ning	Westward near the North Pole		Duskyish	A long Train cast- ing its Rayes be- tween East and South
1241	In January	Lasted thirty dayes				Terrible to behold	
1245	About the Feast of the Ascension, which according to Calis- tus was the twenty fifth of May			In Capricorn toward the South		Of a great Magni- tude, clear but red- dish like Mars, without a Tail, per- haps mistaken (as Hevelius supposes) for that Planet	
1254 or 1255		Lasted for some Moneths		Seen in Germany and in England		Of an Immense Grandeur	
1264	In July, much a- bout the time of Pope Urban the fourth, his Decum- biture: observed by Palaeologus	Lasted 3 Moneths and disappeared the very Night that Pope Urban the fourth dyed	Rose in the Morn- ing	In Taurus behind Venus, or the Morn- ing-Star	Moving from East to West, and at length preceding the Morning Star	Of a most signal Magnitude	Its Tail long and broad appeared be- fore the Head, and extended its Rayes from the East unto the Mid-heaven
1267	On the eighteenth of July	Lasted not long	A little before Sun- rising	Near the Moon	Running from the Moon by a swift Course Eastward to the Mid-heavens	Of great bright- ness	Leaving a white and fiery hairiness behind it
1268		Lasted many dayes	Seen about Noon			Of a wonderful greatness	
1284						Of a signal Magni- tude	Projecting its hairy Blaze to the West
1298	In Summer						
1300						A dreadful Comet	
1301	In the Kalends of December, or as some will at Micha- elmas	Lasted 15 Nights	Rose after Sun-set, and set after Mid- night	In Aquarius and Pisces	Moved from the East Northward		Its Blaze directed toward the East
1304		Lasted 3 Moneths		Toward the North			
1305	About the Holy Week as some, as others about Easter						
1307	Its Appearance	Duration				Or Figure not de- scribed	
1312		Lasted 14 dayes			Running its Course from North to South	Of a stupendous greatness	
1313					Moving from North to South, according to the Motion of Mars		

Ann post N. Cbrist	The time of first Appearing	The time of Du- ration and Dis- appearance.	The time of Day and Night	The Place or Re- gion of the World or	The Motion, direct or Retrograde, swift or slow	The Nature, Mag- nitude, Figure & colour of the Head	The length, shape, and situation of the Bush or Tayl
1314	In <i>Autumne</i> in the Moneth of <i>October</i>	Lasted as some will three Moneths, as others but six Weeks		Toward the North, in the last degrees of <i>Virgo</i>		Of a terrible Ap- pect	Its Flaming Train directed to the North
1315	In <i>December</i> .	Lasted 'till <i>Februa- ry</i>		In <i>Cancer</i>	Taking its Course about the Pole	Terrible to Sight	Casting forth Rayes resembling a Broom one while <i>East- ward</i> , another <i>West- ward</i> , and sometime <i>Northward</i> .
1318				In <i>Cancer</i> , as <i>Lu- bimicus</i> from the Authority of <i>Herli- cius</i>			
1337 <small>Two Co- mets</small>	The first in <i>April</i> , The second in <i>May</i>	Together with the first continuing, <i>May</i> , <i>June</i> , and <i>July</i>		The first seen in <i>Taurus</i>			
1338	In <i>June</i>		In the Evening	About the Feet of <i>Pegasus</i>	Moving toward the North, and ascend- ing every day three degrees, by the les- ser Bear, right Foot of <i>Hercules</i> , and left Hand of <i>Opbiu- chus</i>	Barbed	After the Figure of a Sword, extended <i>Eastward</i>
1339 or 1340 or 1341	In <i>March</i>			Near <i>Spica Virg.</i>	Moving every Day a degree, and com- ing to the Sign <i>Leo</i> disappeared		<i>Xiphius</i> or <i>Enfi- formis</i>
1347	In <i>August</i>	Lasted 2 Moneths		In <i>Taurus</i> toward the North			
1351 or 1352	In <i>December</i> say some In <i>September</i> others			Far North			Like a fiery Beam
1353						Mentioned, but not described by <i>Prato- rius</i> , and out of him by <i>Alfredus</i> and <i>Ricciolus</i>	
1362	On the eleventh of <i>March</i>	Lasted five Weeks	Seen all Night	In the End of <i>A- quarius</i> , with signal North Latitude			Its Tayl spread in the Evening toward the East
1375				In <i>Aquarius</i>		Of the Nature of those Comets call- ed <i>Crimis</i>	
1380		Lasted 3 Moneths					
1382	In <i>August</i>	Lasted 14 days					
1394			Seen in the Eve- ning	In the West	Passing toward the North		Having the Resem- blance of that call- ed <i>Venus</i> or <i>Pertica</i> , very remarkable with its Rayes standing upwards, and the Head hang- ing down below them
1399 <small>Three Co- mets as once</small>						The Heads not vi- sible	But three great fi- ery Tayls appearing
1400	In the time of <i>Levi</i>			Seen toward the North in the Ori- ental Angle	Moving with great swiftness toward the East	A most fiery and dreadful Comet	Its Tayl long and projected toward the West

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1401

<i>Annus post N. Christ.</i>	<i>The time of first Appearing</i>	<i>The time of Du- ration and Dis- appearance</i>	<i>The time of Day and Night</i>	<i>The Place or Re- gion of the World</i>	<i>The Motion, Di- rect or Retrograde, swift or slow</i>	<i>The Nature, Mag- nitude, Figure & colour of the Head</i>	<i>The length, shape, and situation of the Bush or Tail</i>
1401	In the End of Fe- bruary			In the West		A great, terrible, and most splendid Comet.	Its Tayl expanded and stretched out like that of a Pea- cock, casting its Rayes like a Dart or Javelin from West to East, and after Sun-set shin- ing so bright, that hardly any Part of the World was not enlightened by its Beams; which were of that brightness as hindered the Stars from shining, and quite expelled the darkness of the Night
1402	A little before Car- nival Time	Lasted many dayes	Seen after Sun-set	Towards the North- west			Its Tayl erected like a Lance, about the thickness of three feet, some- times more, some- times less
1403	About the latter end of March, or beginning of A- pril			Seen North-east			Its Tayl pointing toward the North
1407 or 1408	In June					Several Comets, of which we have no particular descripti- on	
1426	On the ninth of June	Continued near a Week		Seen directly over the City of Leige			Its Tayl pointing toward the Market- Place, as if it threatened that City
1432	In February, about the beginning of the Moneth					A very small one	Its Tayl or Train projected to the North
1433		Lasted 3 Moneths	Seen from Evening till Morning			glistering bright and very great	
1435	In Autumn						
1439 or 1444	In the Summer Sol- stice			In the West in Leo			Its Tayl extended toward the South
1450	In the Summer time		Seen immediately after Sun-setting		Moved from West to East, and passing under the Moon e- clipsed the same		Like a two-handed Sword
1456 Two Co- mets	In June	Lasted a Moneth		In Cancer and Leo, one toward the West, the other to- ward the East			Their Tayls extend- ing beyond sixty de- grees
1457	In June	Lasted 30 dayes		In the twentieth degree of Pisces		Black and dusky	
1458	In July			In Taurus			
1460						A most bright, shin- ing and dreadful Comet	
1463	The day before the Death of James the Second King of Scotland					Very clear and bright	

Annus post N. Christ.	The time of first Appearing	The time of Du- ration and Dis- appearance	The time of Day and Night	The Place, or Re- gion of the World	The Motion, Di- rect or Retrograde, swift or slow	The Nature, Mag- nitude, Figure & colour of the Head	The length, shape and situation of the Tail or Tayle
1467	After Michaelmas		Seldom seen by reason of rainy Weather	In Pisces or Cancer perhaps, instead of Cancer should be put Capricorn			It cast its Rayes to- ward the East, the Sun being in the midst of Libra
1468 <small>Two Co- mets</small>		Lasted fifteen dayes each				The latter brighter than the first	
1472	About the End of December, or be- ginning of Janua- ry, observed by Re- giomontanus	Lasted eighty dayes	At the beginning it appeared in the Morning, about the End in the Eve- ning, at the middle shining all Night	It past from Virgo, by Bootes, the Dra- gon, Ursa Major, feet of Cepheus, Breast of Cassiopea, Belly of Andro- meda, the Northern Fish, and came to the Whale; where setting heliacally it disappeared: At first, and at its End moving slowly, in the middle ex- tremely swift, in so much as it ran through in one day forty Degrees of the Circle it moved in		At the beginning its Head was small and thin, afterwards grew to a wonder- ful greatness, and then less and less; sometime pale and white, sometime of a flame colour	Its Tayl at the be- ginning short, a- bout the middle stretching about fifty degrees in length resembling a Perti- ca, or Javelin, and directed at divers times to divers Quarters of the World
1473	January the seven- teenth	Lasted till the eigh- teenth of February following		Toward the South in Cancer			
1475				In Libra, as Her- licius, Roekenbach and Alstedius			Its Tayl alwayes directed towards Gemini, as Lubie- necius, citing Gas- sendus
1476	In June, as Lubie- necius from Schuler- us in Disquis. Phi- losoph. De Comet.						
1477						Of a pale Carule- an Colour inclin- ing to Black.	
1479				Seen in Arabia			In Form of a sharp Beam or Pillar, wherein divers Points might be ob- served
1491	About the Feast of the Epiphany		Seen in the Eve- ning.	In the third Face or Decanate of Piste- or beginning of Aries with South Latitude		Its Head not great	Its Tayl long but thin, casting but a small Light direct- ed to the East
1492	In December	Lasted two Months	Seen after Sun-set				
1500 <small>Two Co- mets</small>	One in April The other in Janu- ary	Lasted four Months Lasted ten Dayes	Seen as well by Day as Night	In the North in Pis- ces, as also in Sagit- tarius & Aquarius			
1503	About the Feast of St. Michael	Lasted until Shrove- tide following	Seen from four in the Morning until eight before Sun- rising, or from four before Sun-rising until eight after Sun-set		Moving from the South toward the West	Very large and shining, almost as bright as the Moon	
1506 <small>Two Co- mets</small>	One on the twelfth of April The other in the beginning of Au- gust	The first lasted twenty five dayes. Continued till the fifteenth of Au- gust	The latter seen at first near the Pole above Ursa Major, the next day among the Stars of the Wain, till at length it came to touch the Horizon and disappeared		The first passed from West to East. The other ran through the Signs Cancer, Leo and Virgo	Of a hideous dark colour	Its Tayl bright and splendid, and spread like that of a Pea- cock, whence it was so called

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1510						From it fell certain small Sulphurous Stones of an ill Scent, as Cardan relates, says Labi- erius citing He- cherman. System. Phys. l. 6. c. 5.	
1511 OR 1512	May the eleventh March and April	Lasted till the third of July		In Leo		Of a sanguine Co- lour	
1513	In December	Lasted from the End of December, to the nineteenth of February following	Shined all Night		Moved from the End of Cancer to the End of Virgo	Variously coloured	Its Tayl long
1515 OR 1516				Seen in Italy, Roch- and Myzald.	Ran in a short space through the twelve Signs	Of the Nature of the Moon	
1521	In April			In the End of Can- cer		Cleer, and like the Moon in its Dicbo- tomy	Having short Rayes or Hair
1522				Toward the West		Of the Nature of Saturn.	
1523	In November			Seen in the King- dom of Naples			
1526	August the twenty third	Lasted until the twenty third of Sep- tember					Like to a flaming Sword
1528	January the eigh- teenth			In Pisces in Opposi- tion with Saturn			
1529 Four Co- mets at once				Mutually opposed to each other		Herclius doubts whether they were genuine Comets	Their Tayls point- ed directly toward the four Quarters of the World
1530	In June						
1531	August the sixth observed by P. Apianus	Lasted till the third of September	At first seen in the Morning, before Sun-rising, at last in the Evening after Sun-set	Seen all over Ger- many, Italy, and France	Ran from the be- ginning of Leo, to the beginning of Libra in North La- titude	Of a ruddy or ra- ther yellow Colour	
1532	September the twen- ty fifth observed by P. Apianus	Lasted 'till the twentieth of No- vember	Seen in the Morn- ing before Sun- rising		Ran from the be- ginning of Virgo to the beginning of Scorpio, at first in South, at last in North Latitude.	Thrice bigger than Jupiter, but of a pale obscure colour	Its Tayl very long and radiant, stretch- ing South-west
1533	In the beginning of June observed by P. Apianus			It appeared first in Gemini near Perscus	Thence moved re- trograde unto Tau- rus encreasing day- ly	Bigger than Jupiter	Its Tayl extending fifteen Degrees in length, like to a Military Spear; by others resembled to a two-handed Sword
1538	In January observ- ed by P. Apianus	Lasted three Weeks	Seen in the Eve- ning	In the West in the beginning of Pisces in seventeen De- grees of Northern Latitude		Of a fiery Colour, some yet make it obscure and pale	Its Tayl extending thirty Degrees in length toward the East
1539	On May the sixth	Lasted till May the seventeenth		In Leo in North La- titude at first, at last in South Lati- tude	Moved according to the Course of the Signs direct; but from North to South	Its Head small and obscure	Its Tayl short

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1541	August the twenty first					Resembling the shape of a Dragon	With a fiery Tayl
1542		Lasted forty days		Seen over <i>Constantinople</i>		Dreadful to behold	
1545		Lasted a few days		In the <i>West</i>		Of a sanguine Co- lour	
1554		Lasted some few days				Of the colour of Fire	Its Tayl pointing to the <i>West</i>
1556	The fifth of <i>March</i>			From the left Wing of <i>Virgo</i> it passed by <i>Bootes</i> , and ascended to the Northern Pole of the <i>Eclip- tick</i> , thence by <i>An- dromeda</i> it came to the Northern Pole, where it was extinguished. In its middle Course most swift; running through fifteen De- grees dayly; at first its Motion was retrograde, at last direct.		Its Rayes and Co- lour changed It seemed like a bright Globe of Flame, equal to the Half Moon	Its Tayl rare and thin, casting forth rather a pale than ruddy Light, strait- er near the Head, and extending <i>West- ward</i>
1557	In the Moneth of <i>October</i>			Seen in the <i>West</i> in <i>Sagittarie</i>			In the Form of a Dagger, of a pale Colour, and its light thin and weak
1558	In <i>August</i>	Lasted till the Nones of <i>September</i>	Seen in the Eve- ning	Under <i>Coma Ber- nices</i> , above <i>Leo</i> in the <i>East</i>	Moved <i>Eastward</i>	Of a pallid Co- lour	
1559	About the End of <i>May</i>	Lasted to the se- cond of <i>June</i>					
1560	<i>December</i> the twen- ty eight	Lasted twenty eight days		Seen over most Parts of <i>France</i>			
1564	On the twenty fifth of <i>July</i>	Its Duration not mentioned				Its Figure not de- scribed	
1569	About the begin- ning of <i>November</i>	Lasted to the End of the Moneth	Seen in the Eve- ning	In 5° of <i>Capricorn</i> near the bright Star of <i>Sagittary</i> ; but <i>Ricciolus</i> affirms it appeared in <i>Serpén- tarius</i> , and in the Signs <i>Sagittarie</i> and <i>Capricorn</i>	It passed from <i>Can- cer</i> , and declining from its right Course, went aside to the 4° of <i>Virgo</i> , where it became <i>Stationary</i>	Of a very bright Colour	Streaming with fie- ry Rayes, directed to the <i>East</i>
1577	On the ninth of <i>November</i> says <i>He- velius</i> , on the twelfth <i>Rockenbach</i> , on the tenth <i>Ec- stroph.</i>	Lasted 3 Moneths	Appearing about five of the Clock in the Evening	About the begin- ning of <i>Capricorn</i> , in the highest Hea- vens; for its <i>Pa- rallax</i> at the begin- ning was 19'. 12". at the End 2'. So that its Distance from the Earth at first was 173. at last 1733. <i>Semidia- meters</i> of the Earth	It moved from the beginning of <i>Ca- pricorn</i> by the Con- tact of the <i>Equa- tor</i> , and the <i>Meridi- an</i> Line, passing the Pole of the <i>Zodi- ack</i> between <i>Equi- culus</i> and the <i>Dol- phin</i> , unto the Breast of <i>Pegasus</i> , its Mo- tion continually de- creasing. It ran through <i>Capricorn</i> and <i>Aquarius</i> to the middle of <i>Pis- ces</i>	Its Colour was like the purest Silver, a little glittering, its apparent Magnitude exceeding that of <i>Venus</i> or <i>Jupiter</i>	Its Tayl was of the colour of Blood, projected to a great length toward that part of the Hea- vens opposite to the Sun, in the middle crooked, the con- vexity thereof respecting the <i>Ze- nith</i> . Its concavity the <i>Horizon</i> ; its length extended to thirty Degrees, its Breadth to five
1578	On the sixteenth of <i>May</i>		Appeared about nine heures after Sun-set, at which time <i>Jupiter</i> and the <i>Moon</i> were in Conjunction in <i>Li- bra</i>	Toward <i>Southwest</i>			Its Tayl long and directed to the <i>North</i>

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1580	October the second sayes Hevel. eighth at Norimberg. tenth at Gorlic. sayes Bu- colcerus	Lasted above three Moneths	In the Evening a- bout seven of the Clock, until the fourteenth of No- vember, and then matutine till the sixth of December, whence only seen in the Morning	Between the Zodi- ack and the Equa- tor, about the fifth degree of Pisces, distant from the Earth 157 S. D. thereof: So that (as Hevelius notes,) it was in the Orbe of Mercury or Con- fines of that of Ve- nus	At first moving in a slow and retrograde Motion, afterwards in a swifter Course it ran through A- quarius, Capricorn, and Sagittary. At the End its Motion was more remis- and almost Statio- nary, at length di- rect, creeping for- ward from Aries, by the Equator behind the Stars in the left hand of A- quarius to the Head of Pegasus, by Equi- culus and the Dol- phin, 'till in the Constellation of Serpentarius it dis- appeared	Its looks sad, mournful, obscure, wan, and dull, ex- ceeding in Magni- tude (as to appear- ance) the Stars of the first Magnitude for its apparent Di- ameter on the fif- teenth of October was found to be 16'. 30".	At first it wanted a Tayl, but afterward about the ninth of October it acquired a Tayl, but rare and thin, and al- ways extending precisely against that part of the Heaven opposed to the Sun
1582	On May the four- teenth	Lasted to May the eighteenth	In the Evening af- ter Sun-set	Between West and North	Its Motion retro- grade and swift, af- cending toward the North	Of a vast Magni- tude, and dreadful to behold	Its Tayl extended between the right and left shoulder of Auriga, ascending toward the Sun
1585	October the eighth	Lasted 'till the fifth of November	In the Evening a- bout nine of the Clock	In the 23°. 9'. of Pisces, and in 13°. 52' of Southern La- titude	It moved continu- ally in direct Moti- on, but something flow from Pisces to Aries, 'till toward the middle of Tau- rus, where about the eighteenth de- gree of that Sign it disappeared	Its light obscure, rare, and cloudy, formed like a Crab; Its apparent Magni- tude, equalling that of Jupiter's. In the middle part of its Body shone a more compact Light, about the extremities thereof thin, and less ap- pearing	It had no Tayl or Beard, unless about the twentieth and twenty second of October, at which time there appeared some slight Marks thereof
1590	February the twenty third	Lasted 'till the sixth of March	Seen in the Evening	Between the Con- stellations of An- dromeda, and the Ram, near the Northern Fish. Its Place being in the highest Heavens, and not nearer to the Earth than the Sun	It described by its Motion an Arch of a greater Circle, and measured in its Course a fourth part of the Hemis- phere	Its head small, shining with a pale and obscure light; at the first biggest, but then not exceed- ing 3'. in Diami- ter, and successively diminishing both in Magnitude and Light	It cast forth some small Rayes, but thin and rare, and extended toward that part of the Heavens, opposite to the Sun
1593	July the tenth	Lasted 'till the twenty first of Au- gust	Conspicuous before Sun-rising	In the Cardinal Solstitial Signs	By its Motion, it went from the Tre- pick of Cancer, to the Artick Circle, contrary to the Se- ries of the Signs, that is from Cancer through Gemini and Taurus, and in Ce- pheus disappeared		
1596	On the ninth of Ju- ly		In the Evening a- bout the Prime of Night	In the North among the Stars of Ursa Major	By its Motion going forward a little to- ward the hinder Parts of the greater Bear, so that it ran through Cancer, Leo and Virgo, and at last became Statio- nary as to longi- tude, declining its course to the fourth Degree of Virgo	Of the Colour of Saturn	Its Tayl stretching to the Part opposed to the Sun toward the Pole of the E- cliptick, yet with some little deviati- on
1597	About the sixteenth of July	Lasted 'till the ninth of August					

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1607	On the twenty fifth or twenty sixth of September	Lasted 'till the fifth of November	Seen in the Eve- ning about seven of the Clock, and from thence all Night	Under the great- er Bear a little higher than that Star which is to- ward the Square, in the 30°. of <i>Leo</i> , and 36°. of <i>North- ern</i> Latitude; its <i>Parallax</i> being found, not to ex- ceed 3'. and conse- quently its Place in the Highest Heaven or <i>Aether</i> .	It moved in direct Motion from the formost foot of the greater Bear under its Belly, passing by the midst of <i>Bootes</i> , and strook through the Serpent, com- ing under the Hand of <i>Ophiuchus</i> arrived at his formost foot and stayed in his Leg. The <i>Orbit</i> in which it was carri- ed seemed to be a greater Circle; at last extremely bent or bowed toward the <i>Ecliptick</i> . On the thirtieth of <i>Sep- tember</i> , its Diurnal Motion was thir- teen Degrees; but both before and after, its Motion was slower; at length Retrograde and Stationary, at to longitude	Its Head was not of an even or equal roundness, but here and there extubera- ting. Its apparent Magnitude greater than any of the Fixed Stars; or than that of <i>Jupiter</i> . Its Light weak, pale and waterish, like that of the Moon when near the sha- dow of the Earth, towards its End diminishing more and more	Its Tail was some- thing long and thick, projected with some little De- viation against that part of the Hea- vens opposite to the Sun. <i>Vendelinus</i> saw it like a flame- ing Lance or Sword, seven De- grees in length
1618 <i>The first Comet</i>	August the twenty fifth	Lasted 'till the twenty fifth of <i>Sep- tember</i>	Appearing about three of the Clock before Sun-rising	A little beneath the left fore-foot of <i>Ursa Major</i> inclin- ing toward the Head of <i>Leo</i> , in the tenth Degree of the said Sign, and in the twenty se- cond Degree of <i>Northern</i> Latitude	The second of <i>Sep- tember</i> it proceeded in Motion retro- grade in Antece- dence of the Signs. one Degree after- wards in its Course more remiss	It appeared (as ob- served by a Tele- scope) to be hairy; its Light not clear, shining, but cloudy and duskyish	Its Tail short and broad, spreading toward the West
1618 <i>The se- cond Co- met</i>	On the tenth of <i>November</i>	Lasted to the eight- eenth or twenty third of the same Month	Appearing two hours before Sun- rising	Between the Au- tumnal Section, and the eighteenth De- gree of <i>Libra</i>	Declining from the <i>Ecliptick</i> South- ward 15°. Its Mo- tion retrograde	Its Head was not distinctly observed that of an Estridge by the <i>Europeans</i> , bowed; In length by reason of its vi- cinity to the Sun. In <i>Persia</i> it was ob- served to be like a lour was found to Cymitar, or rather be like the Va- pour of Flower of tree whole top Brimstone set on Bowes bend but a fire little	Its Tail was like that of an Estridge by the <i>Europeans</i> , bowed; In length by reason of its vi- cinity to the Sun. In <i>Persia</i> it was ob- served to be like a lour was found to Cymitar, or rather be like the Va- pour of Flower of tree whole top Brimstone set on Bowes bend but a fire little
1618 <i>The third Comet</i>	<i>November</i> the twen- ty-second or twenty third	Lasted to the thir- teenth of <i>December</i>	Seen in the Morn- ing	It took its Rise from the Equinocti- al Eastern Point	Its Motion was Northward	Its Colour was like that of <i>Venus</i> , whose Magnitude it equal- led if not exceeded	It had a long Mai- or Tresses
1618 <i>The 4th, and last Comet</i>	On the twenty fourth of <i>Novem- ber</i>	Lasted sixty dayes, viz. until the twen- ty fourth of <i>Janu- ary</i> next following	Seen in the Morn- ing before Sun- rising	On the twenty ninth of <i>November</i> it was seen between the Scales of <i>Libra</i> , more Eastward than a Line drawn di- rectly between the said Scales, and more approaching to the <i>Northern</i> Scale. Its true place being in the <i>Scor- pio</i> , for at first it was distant from the Earth, seventy one of its Semidia- meters. At last it was higher than the Sun & self, it ran for its <i>Parallax</i> was found to be less than that of the Sun	Its Motion was to the North, with some Inclination Westward; for it passed by the mid- dle of <i>Libra</i> and by <i>Bootes</i> , and when it had advanced as far as his Head, it thence proceeded above his Wrist, and over <i>Ursa Ma- jor</i> . Its Motion be- came every day slower, and length into three times, it ran the Sun & self, it ran for its <i>Parallax</i> was found to be less than that of the Sun	Its colour was pa- liss, the lower part of its Head was perfectly round; large; it was extended the upper part with some incurvation, whence the Tail now to the South, now to the North, but not issued was uneven, and as it were in- dented; Its light languid, whitish and cloudy, yet sometimes a little twinkling. In the midst of the Head at first was one sin- gle Kernel or Nucle- us, afterwards se- parated into three or more, and at length parting into more lesser and les- ser, was dissolved. Its apparent as well as true Magnitude being various, and unconstant	Its Tail toward the Head was very narrow, about the Middle, and its Extremity, pretty perfectly round; large; it was extended the upper part with some incurvation, whence the Tail now to the South, now to the North, but not issued was uneven, and as it were in- dented; Its light languid, whitish and cloudy, yet sometimes a little twinkling. In the midst of the Head at first was one sin- gle Kernel or Nucle- us, afterwards se- parated into three or more, and at length parting into more lesser and les- ser, was dissolved. Its apparent as well as true Magnitude being various, and unconstant

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1647	On the twenty ninth of November	Lasted but two dayes	Seen in the Eve- ning at half an hour past Eight	In the Constellati- on of <i>Berenice's</i> hair, not so far as five Degrees from the left Leg of <i>Bootes</i> , about 10° from <i>Arcturus</i> , in the eighth degree of <i>Libra</i> , and in the twenty sixth De- gree of Northern Latitude	Its Motion was con- trary to the Series of the Signs, viz. from the Head of <i>Bootes</i> towards the <i>Ecliptick</i> , and <i>Spica</i> <i>Virginis</i>	It was something less in Appearance than <i>Arcturus</i> , but sufficiently bright and splendid	Its Tail was ere- cted upwards to- ward the Zenith, in length twelve Degrees, like to a Broom, conspicu- ous and splendid e- nough where it issu- ed from the Head, towards its Extre- mity, more thin and dilute
1652	On the twentieth of December	Lasted 'till <i>Janua- ry</i> the tenth	Appearing about six of the Clock in the Evening	In 9° of <i>Gemini</i> , and 31° of Southern La- titude, not far from <i>Rigel</i> , in the left foot of <i>Orion</i> . So that by its Situati- on with the said Star, and another above the foot of <i>Orion</i> in <i>Eridanus</i> , it made in a manner an equilateral Tri- angle. Its true place was in the <i>Aether</i> or highest Heaven: for when it was nearest the Earth, its Distance thence was 110 Se- midiameters; there- of. Its <i>Parallax</i> at first being found to be 31'. 15". but about the twelfth of <i>January</i> , it was distant from the Earth 22509 of the Earth's Semidiam- eters; its <i>Parallax</i> not above 9". and consequently it was as high as the Orb of <i>Jupiter</i> .	Its Motion was constantly retro- grade, from South to North, by the Hare, Foot of <i>Ori- on</i> , <i>Taurus</i> , to the <i>Pleiades</i> , and from thence as far as <i>Perseus</i> ; not di- rectly but oblique- ly from East South East to North North- west, in a great Circle inclined to the <i>Ecliptick</i> , and <i>Aequator</i> : At first by its Diurnal Mo- tion completing 11°. 16'. at last 30°. it ran through the Time of its Duration 65°. 51'. passing beyond and beside the Course of the Annual Orb. At first, distant from the Earth, ninety four S. D. thereof, at last seventy two of the said Semi- diameters	Its Head was round, and little less than the Moon at full. Its Light pale and dull, like that of the Moon, or recast by a thin cloud. In it were observed by the Telescope several Nuclei or Kernels every day varying their Situation. Its apparent Magni- tude was not al- ways the same, being found at first to be 30'. after- wards but 3'. 30'.	Its Tail at the be- ginning extended <i>Eastward</i> toward the Part of Heaven opposed to the Sun; (yet with some small Deviation) as far as to the handle of <i>Orion's</i> Sword, like to a sharp pointed Cone, in length 7°. of a whitish, but some- thing obscure Co- lour, casting forth thin small Hairs or Rayes, which a- bout the seventh of <i>January</i> it quite lost. Its Tail still increased in Length, being at first only 3440. at last 165000 German Miles
1661	On the third of Fe- bruary	Lasted fifty three dayes	Seen in the Morn- ing 47'. after five of the Clock	<i>Eastward</i> , beneath the <i>Dolphin</i> , be- tween the <i>Eagles</i> Head, and that of the lesser Horse in 10°. of <i>Aquarius</i> , and 22°. of North- ern Latitude. In the very <i>Aether</i> or highest Heaven; at first two thou- sand, at last nine thousand Semidia- meters of the Earth distant from it, and consequently (ac- cording to the O- pinion of <i>Hecelius</i>) higher than the Sun itself	Its Course was from the East <i>Westward</i> , by the Head, Neck, and beather Wing of <i>Aquila</i> , in a line almost parallel to the <i>Ecliptick</i> and <i>Aequator</i> but re- trograde, and not in a greater Circle	Its Head was round, and of a yellowish Colour, clear and conspieu- ous, in the middle whereof at first was a ruddy Nucleus or Kernel, equal al- most to <i>Jupiter</i> , en- compassed with a certain thin, and more dilute Matter	Its Tail extended above six Degrees in Length toward the <i>Dolphin</i> , nar- rower where it joyned to the Head, than in its Extre- mity, and pointing to that part of the Heaven, opposite to the Sun, but with some kind of De- flection.

Of Fiery Meteors and Comets.

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Anni post N. Christ.	The time of first Appearing	The time of Du- ration and Dis- appearance.	The time of Day and Night	The Place or Re- gion of the World	The Motion, direct or Retrograde, swift or slow	The Nature, Mag- nitude, Figure & colour of the Head	The length, shape, and situation of the Bush or Tayl
1664	On the fourteenth of December	Lasted almost three Months	Seen at first in the Morning about five of the Clock after- wards in the Eve- ning	Near the Beak of the Crow, in 8° of <i>Libra</i> and 22° of <i>Southern</i> Lati- tude, in the highest <i>Siber</i> . Its Pa- radax at the begin- ning 59". in the Middle 4". and in the End 16". So that at first it was three thousand five hundred, then a thousand, and last- ly one hundred twenty thousand five Signs of the Semidiameters of the Earth distant from the terrestrial Globe, and higher than <i>Mars</i>	Its Motion was Re- trograde from <i>Cor- vus</i> by <i>Hydra</i> , <i>Ar- gus</i> , the great Dog, the Hare, <i>Erida- nus</i> , and <i>Whale</i> . Head, unto <i>Aries</i> . yet was not the Line of its Course carried altogether under that of a great Circle, it de- flecting notably Northward. It ran through more than five Signs of the Zodiack, viz. <i>Li- bra</i> , <i>Virgo</i> , <i>Leo</i> , <i>Cancer</i> , <i>Gemini</i> , <i>Taurus</i> even unto <i>Aries</i> ; and in re- spect of its <i>Orbit</i> made a Progress of one hundred fifty four Degrees	Its Head was very conspicuous: Its Colour somewhat yellow: In the midst whereof was discerned a clear Light, surrounded with another more obscure, composed of sundry corpuscu- la interspersed with other more subtle Matter of a divers Density, mixing at first with the Nu- clei, after separa- ting and dividing As to its apparent Magnitude, it ex- ceeded six times the Diameter of the Earth	Its Tayl extended fourteen Degrees in length <i>Southwest</i> ; sometimes longer, sometimes shorter: On the eighth of December, it spread its Rayes upward in manner of a Peacocks Tayl; from which time after it was direct- ed toward the <i>East</i> . All the time of its Duration extending it as far as the Sign <i>Gemini</i> , toward that Part of the Hea- vens opposed to the Sun, yet with some Deviation now <i>Northward</i> ; now <i>Southward</i> ; to- wards its End it was sometimes quite lost, and then again recovered
1665	April the sixth	Lasted fourteen Dayes	Seen in the Morn- ing half an hour after one	In the Breast of <i>Pegasus</i> , in fifteen Degrees of <i>Pisces</i> , and 27° of <i>North- ern</i> Latitude. Its Parallax at the be- ginning having been found to be 69", which decrea- sed successively to 41". whence its Distance from the Earth at first could not be less than three thousand Se- midiameters of the Earth, toward the End five thousand of the said <i>S. D.</i> distant from it and consequently sixty times higher than the Moon at first, and at last equal in height with the Sun it self	Its Progress was by <i>Pegasus</i> under the Head of <i>Andro- meda</i> , by the <i>North- ern</i> Fish, as far as unto <i>Aries</i> ; in a Motion continually direct, at the be- ginning it ran through in one Day four Degrees and six Minutes, at last two Degrees twen- ty three Minutes	Its Head was round of a yellowish Co- lour. Its Light quick and bright. In the very middle whereof was a sin- gle Nucleus of a conspicuous Mag- nitude, of a Gold Colour encompass- ed equally about with another thin- ner kind of Matter. the apparent Dia- meter of the Head was six Minutes	Its Tayl at the be- ginning extended almost 17° in length projected between the Mouth and the foremost Foot of <i>Pega- sus Westward</i> ; where it issued from the Head, it was thick and lu- cid, and of the same dense Matter with that of the Head; but toward the End or <i>Cuspis</i> , it was more thin and dilute. It stretched sometimes in length to 25°. streaming toward the Part opposed to the Sun, yet with some little Devia- tion <i>Southward</i>
1668	Fifth and tenth of March observed by Signior Cassini at Bologna		About the first hour of the Night after the Italian way of counting			The Head or Body was not seen, being hid under the Ho- rizon	The Tayl was of a stupendious length, being extended (as it appeared at <i>Lis- bon</i> in <i>Portugal</i>) over almost the fourth Part of the visible Heaven, from <i>West</i> to <i>East</i> , from the <i>Whale</i> through <i>Eridanus</i> to the Star which precedes the Ear- le of <i>Lepus</i> , as ob- served at <i>Bologna</i> in <i>Italy</i> by Signior Cassini

G g g

1672

<i>Anni post N. Christ.</i>	<i>The time of first Appearing</i>	<i>The time of Dis- cussion and Dis- appearance</i>	<i>The time of Day and Night</i>	<i>The Place or Re- gion of the World</i>	<i>The Motion, Di- rect or Retrograde, swift or slow</i>	<i>The Nature, Mag- nitude, Figure, & colour of the Head</i>	<i>The length, shape & situation of the Body or Tail</i>
1672	Second of March	Lasted till about the End of April, as Signior Cassini hath computed	Seen both Mornings and Evenings	At first between the Head of Me- dusa and the Plei- ades, afterwards hav- ing continued his Course towards the Root of the South- ern Horn of Taurus, and having passed the Ecliptick, went on above the Top of Orion's Head, to the Milky Way	Its Motion falling into a Line little differing from an Arch of a great Circle, cutting the Ecliptick in the tenth Degree 45', of Gemini, its greatest Latitude in the tenth Degree 45' of Pisces that is between 39° and 40°. Northward, the same Circle cut the Equator at 101° of the Vernal Se- ction Eastward, and its greatest Declin- ation from the Equator North- ward was 38°. $\frac{1}{2}$. He made about 2° 32', a day in the great Circle of his apparent Motion	His Head seen with a Telescope of se- venteen foot ap- peared almost round, but well di- stinguished from the Sun, and ap- peared of the length formed a kind of Chevelure where- with it was encom- passed; and even the Middle was a little confused, and seemed to have in- equalities, as are seen in Clouds	The Tail was al- most imperceptible; yet by the Tele- scope it was seen turned opposite to the Sun, and ap- peared of the length of two Diameters of the Head, or thereabout; for it was not easie to measure it precise- ly, because being thinner according as it was farther from the Head, its Extremity was in- sensibly lost, and so the whole Comet Tail, and Cheve- lure taken toge- ther, took up no more than three or four Minutes of a Degree

ADDITIONS

ADDITIONS and AMENDMENTS to be inserted, as followeth;

VIZ.

Page 11. In the *Annotat.* Line 36. after *Capricorn*, add. But as to the Aspects as well the Antient, as those added by later Astronomers. See *Bartschius* his *Usus Astronomicus Indicis Aspectuum*, &c. Printed at Norimberg, 1661.

Ibidem Line 43. after now lost; add. except what is preserved in the *Excerpta* mentioned in *Labbe's Bibliotheca*; and what *Joannes Camaterus* hath left on the same Subject, collected out of the Babylonian Writers.

Page 12. Line 4. *Annot.* after *Mochus* the *Sidonian*, add. as *Iamblicus* in the Life of *Pythagoras*, and *Damascius* out of *Endemus* call him.

Ibidem Line 39. after resolve, add. *Damascius* allotted three Principles, πῦρ, ἄρ, πνεῦμα, ἕ, ὕδωρ, i. e. *Ignis, Aer, & Aqua*.

Page 15. *Annot.* Line 13. after *idem nasceris*, add. And for this Reason the Sun is called φαίης; ἀπὸ τοῦ φαίνεσθαι, and φαλαῖον ἐπὶ δὴ φαίνεσθαι νέει, quia Sol quotidie renovat sese. Hence that of *Virgil* (*Georg.* l. 3.) *Mane Novum, vide Macrobius Saturnal.* l. 1. & *Festum in Voce Manare*.

Page 17. *Annot.* Line 41. add, the *Chineses* hold it Piacular not to relieve the Sun and Moon when eclipsed, (at which time they believe them to be ready to be devoured by some Dog or Dragon) by offering Solemn Sacrifices, and making a great Noise. See *Martinus Histor. Sinic.* p. 58.

Page 18. Line ultim. add, The *Chineses* divide the Zodiack into 28 Constellations, according to the *Arabs*, who call them the *Mansions of the Moon*; which Number *Kepler* (*in Commentatiuncula in P. Terrentii S. I. Epistolium*) conceives to arise from the Periodical Motion of the Moon; which is completed in so many Days.

Page 24. Line 36. *Annot.* after North Star; add. By the *Chineses* it is called REX, or the *Kingly Star*, quia olim (according to their Imagination and Belief) erat prope polum immobilis, quam Reliquae Omnes Stelle venerabantur, as *Terrentius* the Jesuit in his Epistle from China, anno 1623. affirms.

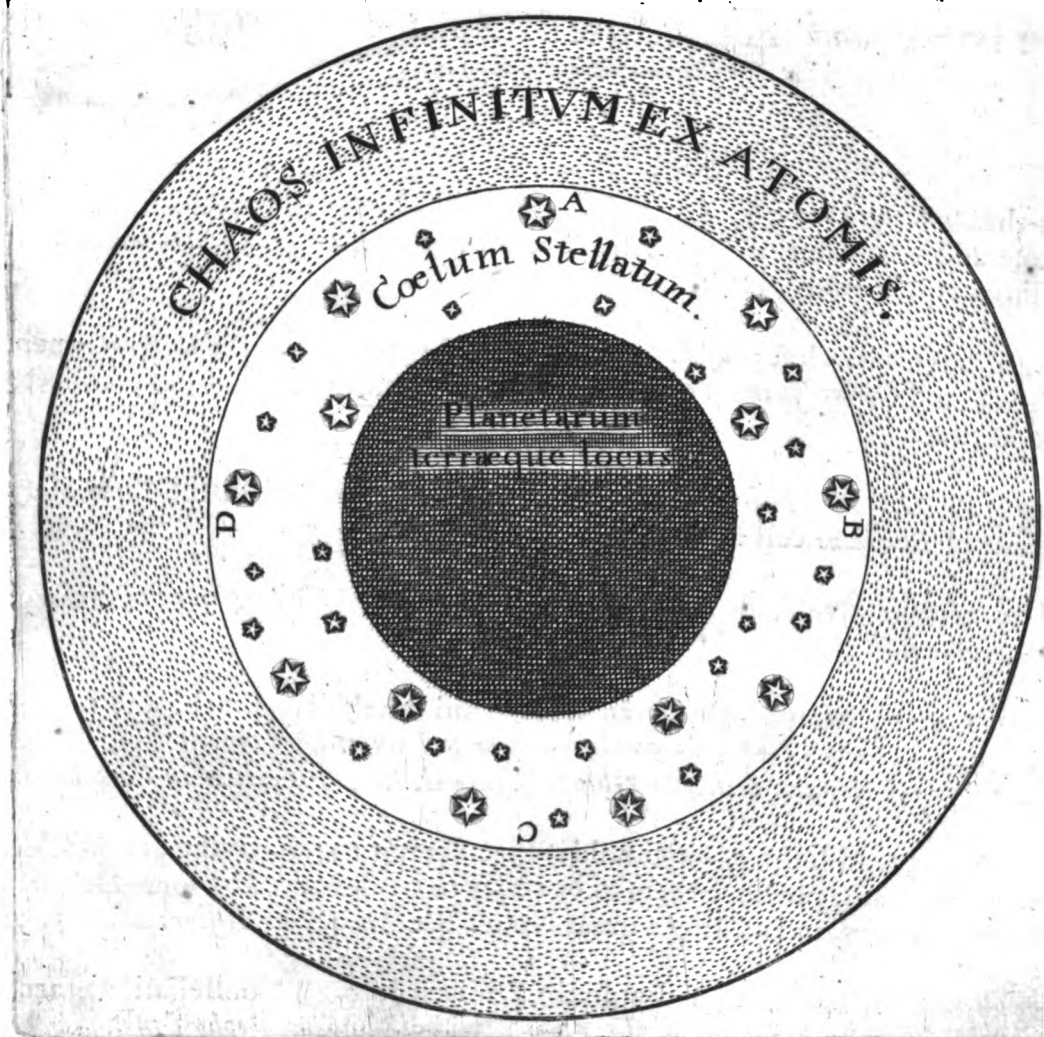
Ibidem Line ultim. add. See likewise *Jo. Francisc. Grandis*, in *Dissertat. Philosoph. & Critic.* p. 112. where he cites this Maxim from the Authority of *Ramban*, in *More Nevuchim*.

Page 31. Line 42. *Annot.* after *Oculus Tauri*, add, by *Theon* in his Treatise *De Geodesia*, called *Lambayras*, i. e. fax ardens, as *Barocius* renders it in the Translation of that Piece.

Page 33. Line 39. *Annot.* after *Ulugh Beighs Table*, add, and in Doctor *Pacock's* Notes in *Specim. Histor. Arab.* p. 132.

Page 39. post Line 32. *Annot.* after derived, add. But it will be requisite further to explain this Place. The Antient Philosophers, especially those of *Democritus* his School, and most of the Mathematicians of those Times, asserted the Universe to be Infinite, and to be divided into two chief Portions; whereof the One they held to be the World, or rather Worlds, finite as to Bulk and Dimension, but infinite as to Number. The other Part or Portion, they extended beyond the Worlds, which they fancied to be a Congeries of infinite Atoms. Out of which not only the Worlds already made received their Sustenance, but new Ones also were produced. And therefore the Cosmical System according to them was, or may be imagined to be as followeth. First, the Place of the Planets and the Earth; then the Starry Firmament marked A. B. C. D. embracing within its Circumference the Planetary and Elementary System; beyond which, a certain infinite Chaos of Atoms, in which this World of ours is supposed to float, and of which it was composed, and into which in time it is to be resolved. But see the Scheme as taken from *Scheinerus* his *Disquisit. Mathemat.* p. 17.

SYSTEMA ANTIQVORVM.



Page 43. Line 29. Annot. after Antients, add. See *Hippicles* his ἀναφορ. seu *De Ascension.* who lived in the Time of *Ptolemaeus Physcon.* Propos. 4. where he divides the Zodiack into 360 Parts.

Page 50. Line 17. Annot. after *Juno.* add. But see this in *Eratosthenes* at the End of *Aratus*, lately Printed at Oxford.

Page 54. Line 68. Annot. after *Sword of Rome*, add. The Honour of which Title is still preserved in an Antient Marble erected to his Memory at *Nola*, at this Day affixed to the Outer Wall of the House of *Signior Marco Mastrilli*, having therein this following Inscription transcribed by *Gualterus* in his *Tabul. Antiqu.*

M. CL. MARCELLO
ROMANORUM ENSI
FUGATO HANNIBALE
V. CONS.
S. P. Q. NOLANUS.

Page 55. Line 35. Annot. After the Chair, add, AS OFTEN QUESTOR.

Page 59. Line 15. Annot. after *Quies*, add, by *Proclus* (in his *Paraphrase* on *Ptolemies Tetrabibl.*) said to be called *Μηδωνίλιος*.

Ibidem Line 30. Annot. after powerful, add. See the Notes upon *Cornutus*, lately Printed at Cambridge p. 59.

Ibidem Line 44. Annot. after Names; add. See Doctor *Pocock's* Notes in *Specim. Hist. Arab.* p. 103.

Ibidem Line 48. after *Negotiator*, add. In which Sence by the *Arabs* he is called *Otared* (*monente Almakrizio* says Doctor *Pocock.*)

Ibidem Line 55. after cited, add. He is also called *Στίλβων* from the bright and quick Vibration of his Rayes.

Ibidem

Ibidem Line 58. after *videt*, add; for which Reason by the *Arabian Astrologers* he is called *Me-napheck*, i. e. *Hypocrita*, vel *Simulator*; teste *Alkaswini. vid. D. Pocock: ut supra.*

Page 62. Line 40. Annot. after Motion, add; the Learned Doctor *Isaac Vossius* in his Book *De Natura Lucis*, reduces them to the only means of *Constipation* and *Attrition* of solid Matter, for that of *Propagation* or kindling Fire by Fire, or by contraction of *Radii* in Burning-Glasses, is not properly generating of Fire, but multiplying and propagating it already actually existing.

In the APPENDIX.

Page 10. Line 3. after *Astronomy*, add. In which he was more particularly instructed by *Son-ches*, chief Prophet of the *Egyptians*, as *Clem. Alex. (Stromat. l. 1.)* testifies.

Page 11. Line 7. after *Priests*, add, especially *Senchnouphis* the *Heliopolitan*.

Ibidem Line 38. after there; add; particularly of *Konouphis*, as *Clem. Alexandr. (Stromat. l. 1.)* attests.

Page 12. Line 42. after *Aratus*, add, and found that *Spica Virginis* then preceded the Autumnal Equinoctial Point eight Degrees.

Page 23. Line 8. after *Explications*, add. In *Theodosii Spherica*, &c.

Page 29. Line 4. after *Avicenna*, add: whom some will have to be a *Spaniard*, descended of the Race of the *Moors*; but others make him to be a Native of *Bucara*, a Town in *Persia*, upon the Confines of *Tartary*, and Son of a *Chinefe*, as his Name imports. *vide Perronian. p. 23.*

Page 29. Line 20. after *into*, add, very good *Latine*, as appears from the *Astronomical Pieces* extant in the *Bodleian Library* under his Name.

Page 30. Line 15. after in *France*; add, and at *Oxford*. *Erasmius Bartholinus* in his Learned *Animadversions* upon *Heliodorus Larissæus* his *Opticks*, reports that he saw in *Bulialdus* his Library a MS. of *Alkindus De Aspectibus*; which I conceive to be the same with that *De Radiis Stellarum*.

Ibidem Line 17. after *Alfraganum*; add; and of the Disposition of the Celestial Orbs, and Motion of the Stars, conceived to be the same with *Aben Ezra*, of whom hereafter

Page 31. Line 11. after *Astronomia*, add; which is likewise to be found in *Latine* in the *Bodleian Library*.

Page 33. Line 7. after that Age, add, many of his Works are preserved in the *Bodleian* and other the *Oxonian Libraries*, and also (as I am informed) in that of Mr. *Theyer* of *Gloucestershire*.

Page 34. Line 4. after *Manuscripts*, add. As also an Institution of *Astronomy* extant in the *Oxonian Libraries* both in *Persian* and *Arabick*.

Page 35. Line 1. after *De Astronomia*, add, and *Canones de Conjunctionibus, Oppositionibus & Eclipfibus Solis & Lune*, as they are cited by *Pitæus*.

Ibidem Line 10. after *Geographer*, add, a Specimen of &c.

Ibidem Line 11. after *Latine*, add. The whole Work hath been essayed, or promised by many Learned Men, as, *Schikardus*, *Erpinnius*, *Hornius*, the learned Mr. *Clerk* of *Oxford*, and the ingenious Monsieur *Thevenote*.

Ibidem Line 29. after *Astronomicis*, add. His Tables and *Astronomical Pieces* are yet preserved in the Libraries of *Oxford*.

Ibidem Line 35. after *Defensionem Dei*, add. In the fifth Tractate of which Book, he affirms the Stars *Spica Virginis* and *Regulus*, to have been in the same Places in the Heavens in his Time, as they ought to have been in, according to *Albategnius*, as *Riccins* reports in his Treatise *De Octava Sphæra*.

Page 36. Line 28. after *Diligentia*, add. His Observations of the change of the Weather at *Oxford* for several years together, are in MS. in the *Bodleian Library*.

H h h

Page 37.

Page 37. Line 40. after *Judiciaria*, add. Part whereof are in Print, and &c.

Page 39. Line 29. and 33. for *Arabick*, read *Persian*.

Page 46. after Line 42. add. 1520. NICHOLAUS KRATZERUS Native of *Munichen* in *Bavaria*, and Fellow of *Corpus Christi* Colledge in *Oxford*, read there by Command of *Henry* the Eighth, Lectures upon the Sphere of *Jo. Sacroboscus*; and wrote *De Compositione Astrolabii*, & in *Geograph. Ptolemai*, likewise *Canones horopti*.

Page 48. Line 29. after *Robinus*, add, sometime Fellow of *All-Souls* Colledge in *Oxford*, add likewise *ibidem*, Line 32. he wrote likewise *De Culminatione fixarum Stellarum*, and *De Ortū & Occasu fixarum Stellarum*, as also *Annotationes Astrologicae* in three Books; All which are yet extant in MS. in the *Bodleian Library*, as I find in the *Oxford Antiquities*, l. 2. p. 178.

Page 50. Line 38. after 1568. add; He writ also a Treatise, *De Anno & Die Passionis Christi*, as *Onuphrius Panvinus* l. 6. *Antiq. Veronenf.* affirms.

Page 51. Line 32. after observes, add; He put forth likewise *Theodosius* his *Spherica* in *Greek* and *Latine*, with Explanations and Notes, Printed at *Paris* 1558. 4°.

Page 56. Line 34. after *Wales*, add, and sometimes Fellow of *All-Souls* Colledge in *Oxford*.

Ibidem Line 39. after *Portuguez*, add, an Eminent Professor, and Line 40. after *Conimbra*, add, who besides his *Algebra*.

Page 57. post Line ult. add. 1556. JOANNES MARTINUS POBLACION, put forth a small Treatise entituled *Compendium de Usu Astrolabii Schematibus commodissimis illustratum*, Printed at *Paris* in the year 1556. 8°.

Page 60. Line 27. after *Astronomical*, add; perpetual; and after Printed, add, afterwards corrected and augmented, with an accurate Description of the *Copernican System*, and reprinted in the Year, 1592.

Page 66. Line 28. after Authors, add; he wrote a very large Comment upon *Ptolemie's* *Quadripartite* in *Latine*, which remains in a fair MS. in *St. John's Library Oxford*; together with the Scheme of his Nativity, and a remarkable Narration concerning his Death.

Page 74. Line 23. after *Cambridge*; add: and published at *Paris* in *Greek* and *Latine* by *Erasmius Bartholinus*, with his Learned Animadversions thereon, 1657. 4°.

Page 76. Line 18. after *Work*; add, and also *Commandinus* in his Excellent Edition of the *Ptolemaick Planisphere*.

Page 77. Line 4. after *Oxford*, add: He died in the year 1385. as I since find in the Author of the *Oxford Antiquities*, l. 2. p. 87.

Page 78. add. 1600. THOMAS ALLEN sometime of *Trinity* Colledge in *Oxford*, afterward of *Glocester Hall* in the same University, a Learned Antiquary, Philosopher, Mythologist and Mathematician; In which last Concern he was by some conceived to be Equal to the Famous *Roger Bacon*, being stiled not only *Princeps & Corypheus*, sed ipsa Anima, & Sol, omnium sui Aevi Mathematicorum, as *Burton*, sometimes his Fellow-Collegiate, in his Funeral Sermon sayes of him. Whose Learned Collections, and Observations Astronomical (besides his other Mathematical and Philosophical Labours) at this Day enrich the private Libraries of several Curious Persons; The greatest Part falling to the share of the Noble Sir *Kenelm Digby*: His Exposition on the second and third Book of *Ptolemy*, *De Astrorum Judiciis*, being at this Day preserved in MS. in the Hands of my worthy Friend, *Elias Ashmole Esquire*: See more in the Author of the *Oxford Antiquities*, l. 2. p. 382.

Page 78. Line 19. after *Hours*; add; he wrote likewise, *De Anni Correctione, ejusque Necessitate, de Calendario Gregoriano*, which is commonly Printed at the End of the Breviary set forth by the Authority of *Urban* the Eighth: Also *De Novo Quadrante, ejusque Usu, nec non de Horologiis Solaribus peregrinis in Cylindro stabili concavo, & in Globo Descripto cum stilo fixo ad Solis Motum mobilis. Horologii etiam Hydraulici Fabricam, in quo per Tabulam Refractionis Universalem ab ipso nunc primum laboriose supputatam, Horariae Lineae, artificio in Depressiori parte Hemispherii concavi Descriptae Aquae Beneficio elevatae, à Solis Radio refractio per Gnomonem indicantur*, as *Leo Allatius* describes the same in his *Apes Urban.* p. 240.

Ibidem Line 30. after *Oxford*, add, many of which are yet preserved in MS.

Page 79.

Page 79. Line 24. after 1621. add, and a Treatise published at Geneva, 1613. *De Annis Nativitatis, Baptismi, & Passionis Christi, contra Scaligerum, Baronium, Deckerum, Sußigam, & Keplerum.* He wrote also divers other Pieces Astronomical and Chronological, which (as I am informed by my Learned Friend Mr. Bernard Savilian, Professor of Astronomy in Oxford) are yet preserved in several Volumes in the Hands of Doctor Camphire, History Professor in the said University; and do well merit the Publick view. He was a Person that deserved the Esteem which the Famous Peirese bare him, and the Character which his good Colleagues of New Colledge have bestowed on Him in a fair Monument.

Page 81. After Line 21. add. FRANCISCUS SITIUS a Florentine, published a Tractate entituled *Dianoia Astronomica, Optica, Physica*; wherein he endeavours to refute the *Nuncius Sidereus* of Galileo; touching the four Satellites of Jupiter, Printed at Venice, 4°. 1611.

[Page 82. Line 35. after Scholar, add the Excellent.

Ibidem Line 44. after mentioned, add, and taxed.

Page 83. Line 26. after Padua, add, besides his Geometrical, and Algebraical Exercitations.

Page 85. Line 38. after Celestial Bodies, add; His Works are divided by some into ten Tomes: In the seventh whereof he treats *De Astronomia, cum Examine Tychois, Copernici, & Ptolemai*; there is likewise attributed to Him among other his *Opuscula*, a small Treatise entituled *Apologia pro Galileo de Motu Terræ*, Printed at Franckfort apud Tambachium in 4°. the year I find not. Vide Leon. Allatii *Apes Urban.* p. 242.

Page 90. Line 19. after Holwarda, add, a very acute and Learned Person.

Ibidem Line 37. after *Aphoristica*, add: besides these he put forth *Astronomicorum Libri Tres*, Printed at Rome 1629. and before that *Problemata Astronomica*; likewise *Catholica & Probata Astronomia Epitome*, treating of the Sphere, and Theory of the Planets, according to the Observations and Hypotheses of Tycho Brahe and *Ephemerides Coperniceæ & Tyconiceæ* from the year 1640. to 1660. also *Commentaries in Tetrabibl. Ptolemai*, with the Greek Text, and Latine Version, a Treatise *De Novis Stellis nostro Ævo genitis, aliisque Phenomenis*: Of which, with others, particular mention is made by Leo Allatius in his *Apes Urban.*

Page 89. after Line 34. add. OSWALDUS KRUGER, by Birth a Prussian, by Profession a Jesuit, Doctor of Theology, and Reader of the Hebrew Tongue and Mathematicks at Vilna, put forth *Theoremata & Problemata Mathematica ex Opticis, Geometria, Astronomia, Sphæra Elementari, Computo Ecclesiastico*, Printed 1633. likewise *Calendarium Romanum*, published 1637. also *Centuria Astronomica*, and *Horographia Practica*; with some other Mathematical Pieces mentioned by Alegambe in his Catalogue.

Page 91. Line 35. after Tübinge, add: a most learned and ingenious Person, as by his Epistles to Gassendus, and his Celestial Observations, Printed by Curtius to supply Tycho's in the late Volume published in Germany, sufficiently appears: not to mention his Version of *Abulfeda*, and other Pieces yet preserved at Tübinge, nor his excellent Oriental Tractates.

Page 92. Line 28. after made, add: He was a Person very expert and accurate at Calculations;

Ibidem Line 37. after *Meniscus*, add: He made several good Observations to be found in his Letters now in the Hands of Richard Townley of Townley in Lancashire Esquire, or in their extracts by Mr. Jo. Flamsteed; and was questionless the first that ever exactly observed the Moon's Diameter in a Telescope by the help of Skrews, which were not before thought of.

Page 93. Line 30. after omit, add, only I think fit to add, that among the Letters of the Lancashire Correspondents, there are found some of one Tillison to this Mr. Pigbels, and mention of some others, who seeme to have been very able Astronomers by their Papers.

Page 96. Line 45. after Ptolemy, add: his *Hypothesis* of the Planets. And after Canon, add: in Greek and Latine.

Page 99. Line 17. after Studies, add: His Pyramidography and Roman Foot, will shortly be Printed at Oxford in Latine, together with his Life.

Page 100. Line 41. after 175. add: and Printed in a large 4°. at Bologna, ex Typograph. Heredi. Viſtor. Benatii.

Page 106.

Page 106. Line 16. after Astronomers, add. He published likewise in the Year 1672. *Admonitio ad Astronomos, Geographos, rerumque celestium curiosos, de Incurfu Mercurii in Discum solis observando, Anno Christi, 1674. sexto Maii. Stil. Nov.*

Ibidem Line 34. after *Annua*, add; In which the Cycles of the Sun and Moon from the hitherto best known Principles of Astronomy are most accurately demonstrated.

Page 115. Line 22. after *Mars*, add, by Observations of the Distances of *Mars* from three contiguous fixed Stars in the Water of *Aquarius* taken within his Tube September 1672. he discovered the *Parallax* of *Mars* at that Time; and thence the Sun's *Parallax* $9\frac{1}{2}''$. which gives his Distance 22 thousand S. D. T.

Page 123. Line 9. after Cross-Staff, add: and the making and Use of the Geometrical Instrument called a *Sector*, Printed in the year 1598. in 4°. London.

Page 124. Line 18. after *Marinius*, add: Native of *Terni* in *Italy*; and after Line 20. add; *penes se habet Globum sine Globo, in quo fere omnes Operationes Mathematica facillimè perficiuntur, tam Geometrice auxilio Circini, quam per Supputationem Linearum medio Sinuum Tangentium ac Secantium. Sphæricorum Triangulorum Dimensionem ex paucis Regulis facillimè Memoria retinendis ita ut Operationibus non sint requirenda tot Formæ. De Ephemeridum facili usu absque Auxilio aliarum Tabularum. Vide Leonem Allatium in Apibus Urban. p. 206.*

CHRISTOPHORUS BORRUS of *Millan* at first a Jesuit, after a Monk of the *Cistercian* Order; Published a Piece entituled, *Doctrina de tribus Cælis, Aereo, Sydereo, Empyræo*; which *Leo Allatius* in *Apes Urban.* describes to be *Opus Astronomis, Philosophis & Theologis favens*, Printed at *Lisbon* by *Alvarus Ferrera* his Scholar in 4°. 1632.

DIDACUS PERESIIUS MENSA, a *Spaniard*, published among divers other Works a Book *De Cosmographia, seu Sphæra Mundi cum Omnibus suis Conclusionibus, & Demonstrationibus ex primis veris & immediatis.* Also *Ars Navigandi cum omnibus Demonstrationibus Geometricis*: Likewise a Tractate *De Incertitudine Judiciorum Astrolog.* See *Leo Allatius* his *Apes Urban.*

FEDERICUS CÆSIUS Duke of *Aqua Sparta*, and the Noble Founder of the *Lyncean* Academy; wrote among other Curious and Learned Pieces, a Treatise *De Cælo*; wherein he proves the Heavens to be fluid and not solid, published at the End of *Scheinerus* his *Rosa Ursina*. He likewise writ another Piece entituled *Cælestis Natura exposita*, in several Books; whereof *Leo Allatius* in *Ap. Urban.*

FLAMINIUS FIGLIUCCIUS the Familiar Friend of Cardinal *Pietro Aldobrandini*, published in *Italian Stanzè sopra le Stelle, & Macchie Solari scoverte co'l Nuovo Occhiale*, Printed at *Rome* in 4°. 1615.

Dr. WASMUTH Professor of the Oriental Languages at *Kiel* in *Holsace*; promises (as Mr. *Hevelius* intimates in his Letter to the Ingenious Author of the Philosophical Transactions published N°. 104. p. 74.) to give the Learned World a new *Astronomico-Chronological* Work now by him preparing for the Press under the following Title, viz. *Annales Cæli & Temporum Perpetui, sive Mystèria Astronomo-Chronologica, à Seculo abscondita, nunc per Dei Gratiâ detecta, & evidentèr Asserta, libris tribus.* Of which the Learned *Hevelius* gives this Censure. *Num res ipsa Promissis responsura sit, est quod valdè dubitem. Profectò si præstare ea posset, Omnes Astronomos maximâ curâ & Molestiâ, multoque labore qui nos diu Nocturne torquet liberaret; nec foret opus impostèrum Cælos tanto studio contemplari.* But see the whole Design particularized in the Accompt before mentioned.

Page 139. Line 27. after *Signum Crucis*, add; not that by the *Spaniards* called *Elcruziero*; for that is placed near the hinder Feet of *Centaurus*, the Stars that compose it being not unknown to *Ptolemy*, as our Countryman Mr. *Hues* (who had seen and observed them) in his Book *De Globis* affirms: However *Corsalius* make of it a wonderful and late discovered Phenomenon.

*The Fable of ANDROMEDA and PERSEUS, Paraphrased;
to be referred to the Annotations, Page 28. after Line 45.*

MANILIUS L. 5.

WHen the swoln Sea did with a Deluge Sack
Phœnicia's Coast, and the Land fear'd a Wrack;
Andromeda t' appease th' incens'd Flood
To a Sea Monster destin'd was for Food.
These were her Nuptials; and for Children, She
Is only grac'd by Punishment to be
A Weeping Victim for the publick Woes;
Deck'd in a Vest, prepar'd for other Vows.
Hal'd to her Death's sad Pomp, e're her Lives Fall,
A *Funeral* without a * *Funeral*.

Soon as the angry Seas rough Shore they reach,
Against the Rocks, her tender Arms they stretch,
And her soft Feet with galling Fetters tie;
So leave the crucifix'd Maid to die.

Amid'st her Pains yet, her sweet Looks still shin'd,
Her Sufferings more became her; She inclin'd
Gently her Snowy Neck, as if 't had been
To keep a Guard on what she could not skreen.
Her Mantle from her Sides and Shoulders fled,
And 'gainst the Rocks were her loose Tresses spread.
The pitying *Halcyons* hovering near the Shore,
Did in sad Notes thy wretched Fate deplore,
And with joyn'd Wings a plum'd *Umbrella* made;
At Sight of Thee, his Waves the Ocean stay'd,
And ceas'd his wonted Banks to overflow.
The Sea Nymphs rising from their Beds below,
Their Faces and the Waves with Tears bedew.
The Wind which to refresh thee gently blew,

I i i

Her

* *Optimis
lingue La-
tie Conditio-
ribus, funus
non sepius
ipsam Se-
pulturam
aut ejus
Pompam
significat,
quam Cada-
ver, sic acci-
pitur à Vir-
gilio, & a-
narratur à
Servio, in 3.
Æneid. Fu-
nus propriè
est incen-
sum Cada-
ver. vide,
Barthii Ad-
versar. l. 6,
t. 9.*

In mournful murmurs made the Rocks complain.
 But loe! from Conquest of the *Gorgon* slain
 That Day returning *Perseus* brought to Land.

Seeing the Virgin fetter'd on the Strand,
 Pale grew He, whom no Foe could e're affright,
 His Hand scarce held his Spoil; and at first Sight,
Medusa's Victor by *Andromeda*

Is vanquish'd; now the Rocks he envies; They,
 They and her Fetters, happy are, he cries,
 That hold such Limbs; then of her Miseries
 Hearing from her the Cause; he vows to gain
 Her Bed by Combat, nor to quit the Main,
 Though thence another *Gorgon* should arise.
 Gliding through Air to her sad Friends he flies,
 And cheers them with the Promise of her Life,
 On terms, when sav'd, to have her for his Wife.
 Then to the Shore returns; where now he spies
 The Sea, by the huge Monster prest, to rise.
 The frighted Waves in heaps before him run,
 And strive, the Weight of what they bear, to shun.
 Above the Waters his fear'd Head appears,
 As he to Shore through foming Billows steers.
 Dash'd 'gainst his rocky Teeth, the Waves resound,
 And in his Gulphy Jaws the Sea is drown'd.
 In mighty Rolles he coils his Lengthful Train,
 Whilst his Back swells above the scanty Main.
 The Sea turns Whirle-pool, roars on every side,
 The Mountains dread his coming to abide,
 Rocks as he rushes by, shrink as afraid.

Ah then what Heart hadst Thou distressed Maid!
 Though such a Champion by thee; how then fled
 Thy frightened Blood, and left thy Limbs half dead?

When

When from the hollow Cliffs, thy Destiny,
And floating Death, thou saw'st through Seas draw nigh,
For the vast Ocean ('las!) how small a Prey?

But Nimble *Perseus* without longer stay
Mounts up into the Skies on soaring Wings,
Whence, dipt in *Gorgon's* blood, his Darts he flings.

The Monster struck, raises his Head, and raves,
And lifting his vast Body 'bove the Waves,
Rests on his Sterns wreath'd Folds; but the more still
He rises up, the more with Nimble Skill

Perseus gives back, and round about him plays,
Whilst cleaving Blows on his hard Skull he lays:
Yet yields he not, but the Air, raging, snapps,
And makes vain wounds with his deluded chapps.
Seas high as Heaven he spouts, which falling poure
Upon his winged Foe a blood-stain'd shower:
The Fight, the Cause of it, the Virgin views,
And now her self forgetting, only rues
Her Champions Fate, for him alone now fears;
And more in Mind than Body rack'd appears.

Transfix'd with Shafts, at length, the Monster slain,
Sinks down, and through his Wounds drinks in the Main;
Then rising up, floats on the Waves quite dead,
Whose stretch'd-out Bulk does the wide Seas o'respread;
Ev'n then t' *Andromeda* too fear'd a Sight.

His Limbs the conquering *Hero* soyl'd in Fight,
In the Seas liquid Chrystal plunging, Laves;
Straight re-ascending greater from the Waves,
Flies to his Mistress; looses her rude Bands,
And then, in those of *Hymen*, links her Hands.

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Preface. Page 2, line 17. for have read hath.

Annotations:

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Appendix:

Page 9. line 28. for *Arfaph* r. *Arfaph*. p.23.l.2. for *Obliq* r. *Obliq*. p.38.l.10. *Leo* Emperor of *Confiantinople* is misplaced; to be inserted before in p.27. at No.879. (which ought rather to be 886.) under the Title of *Leo Philosophus*. p.39.l.29.33. for *Arabic* r. *Perfian*. p.55.l.26. for *Civita Reale* r. *Civita Castellana*. p.56.l.35. deleatur in. p.77.l.7. deleatur *Jacobus Zakis*. &c. p.93.l.10. for *White Bee* r. *White Lee*. p.104.l.3. for *Planet r. Plane*. p.116.l.6. Oblique Angles. p.158.l.16. for which r. with. p.193.l.38. for nor r. or.

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