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The new Attractive.

Containing a Short Discourse of the *Magnes*
or Loadstone: and amongst other his vertues,
of a new discovered secret and subtile proper-
tie, concerning the declination of the
Needle, touched therewith
vnder the plaine of
the Horizon.

Now first founde out by *Robert Norman.*
Hydrographer.

HEEREVNTO ARE ANNEXED CER-
taine necessary rules for the Arte of Naviga-
tion: by the same R.N.

Newly corrected and amended by M.W.R.

Imprinted at London by E. Alde, for Hugh Astley. 1596.

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TO THE RIGHT WOR- SHIPFULL, M. WILLIAM BO-

rough Esquire, Comptroller of her

Maiesties Naue. *Robert Norman*

wisheth increase of wor-

shippe, in perfect

felicite.

Archimedes, after
long search made to finde
out the fraudulent myx-
ture of King Hierons gol-
den Crowne: could not by
any meanes attaine the se-
crete thereof, till at length
by chaunce as he was Ba-
thing himself, he obserued
that still as his body en-
tered into the water, it

forced the same to ryse and runne ouer the Vessell :
wherupon the matter of the Crowne comming to hys re-
membrance, and applying the manner of the water to his
present purpose, hee was forthwith moued with suche
exceeding ioy, that hee leapt sodainlye out of the water,
and forgetting him selfe to bee naked, came crying to the
King his Maister, I haue founde, I haue founde: So I (right
Worshipfull, although in other respectes & points of lear-
ning and knowledge, I will not presume to compare with
Archimedes, who is many waies incomparable, nor with
any other learned Mathematician, being my selfe an vn-
learned Mathematician) by occasion of my profession,
making sundry experimentes of the *Magnes* stone, founde
at length amongst many other effectes, this strange and
newe propertie of Declining of the Needle: which for-
getting or rather neglecting mine owne nakednesse and
want of furniture to set forth the matter, I haue heere in
simple sorte proposed and published to the viewe of the

The Epistle Dedicatorie.

world. Wherein I consider, though the occasions were diuers, our cases are not vnlike. *Pithagoras* lyke wyse that greate Philosopher, for the singular ioy conceiued of the invention of that excellent Theoreme of Rectangle Triangles, made a solempne sacrifice, offering therein an Oxe vnto the Muses, as testifieth *Vitruuius* the author also of the former example. So that wee see these men and sundry others that are mentioned in authors, being caried and ouercome wyth the incredible delight conceiued of their owne deuices and inuentions; though they followe partly the peculiar contentation of their priuat fancies, yet they seme chiefly to respect either the glorie of God or the furtheraunce of some publike commoditie. Whose good example in this behalfe I will indeuour to followe, when to reach their rare giftes otherwyse, is rather to bee wished, then hoped for. And seeing it hath pleased God to make mee the instrument to open thys Noble secret, that his name might be glorified, and the commoditie of my Country procured therby, I thought it my duty to aduventure my credite, and make my name the obiect of slaunders and carping tongues, rather then suche a secrete shoulde be concealed, and the vse thereof vnknown.

Howe beneficiall the Arte and exercise of Nauigation is to this Realme, there is no man so simple but sees, by meanes whereof wee beeing secluded and diuided from the rest of the worlde, are notwithstanding at it were Citizens of the worlde, walking through euerie corner, and rounde about the same, and enioying all the commodities of the worlde. How necessary the perfecte knowledge of the Needle or compasse is, to the perfection of the Art of Nauigation, your selfe who haue long time verie industriously trauailed therein and thereby in it, and other Sea causes excell others, can best iudge. To attaine vnto thys perfection, and to frame, as it were, a Theorike, wyth *Hypotheses*, and rules for the saluing of the apparant irregularitie of the Variation (if it bee a thing possible or within the compasse of mans capacitie) it must doubtlesse be done by due obseruation of this new declining propertie;

wyth

The Epistle Dedicatory.

with the Variation caused by the Admirable efficacy of the *Magnes* Stone. Wherefore to further the Noble studie of Nauigation and Hydrography, and to giue occasion to industrious & skilful traualers by sea and by land, to make diligēt obseruation of these effects in sundry places, whereby some generall conclusion may be inferred, I haue heere set downe whatsoeuer I coulde finde by exact tryall, and perfect experiments, & besides this new property, diuers other rare effectes that followe this Philosophicall stone. Wherein although I may seeme to haue discovered my nakednesse, and want of eloquence and orderly Methode to vtter my conceites withall, I trust the reader will either of his curtesie take all thinges for good that is well ment, or of his grauitie not regarding the wordes but the matter, dissemble my faultes, and accept of my paines. And whereas amongst diuers learned and expert men in the Mathematicall sciences, to whome I haue imparted thys secret, I haue first of all and chiefly from time to tyme shewed the manner of it oꝝ your Worshippe, which first gaue occasion that I fell into the consideration thereof, and through whose encouragement I entred into farther examination of the matter, which otherwise I had neglected. If my trauell heerein take such effecte, that others be benefited or pleased thereby, I haue my desire, and they are to be thankfull vnto you for the same, for I must needs ascribe the occasion to your good counsaile. To you therefore as to the most worthy and best acquainted wyth the cause, I present the first sight of this my rude and simple draught, which I trust, according to your accustomed curtesie and friendly affection towards me, you will take in as good parte, as it proceedes from a hartty good will to wards you, whom I pray God long to preserue with all increase of Worship to his good pleasure.

Your Worships most humble,
Robert Norman.

To the Reader.

Any and diuers ancient Authors,
Philosophers & others, haue writ-
ten of the Magnes or Loadstone,
as also of the substance, vertue and
operation, and thereupon setting
downe their opinions and iudge-
mentes, haue leste the same as in-
fallible trutthes for them that shall
succeede. And as I may not, nor
meane not herein willingly to condemne the learned or an-
cient wyriters, that haue with great diligence laboured to
discouer the secrets of Nature in sundrie things, with their
operations & causes: yet I meane God willing, without
derogating from them, or exalting my selfe, to set downe
a late experimented truth found in this Stone, contrarie to
the opinions of all them that haue heretofore witten ther-
of. Wherein I meane not to vse barely, tedious coniec-
tures or imaginations: but breely as I may, to passe it
ouer, grounding my Arguments onely bypon experience,
reason and demonstration, which are the grounds of Arts.
And albeit, it may be said by the learned in the Mathe-
maticalles, as hath beene already witten by some, that th
is no question or matter for a Mechanitian or Mariner
meddle with, no more then is the finding of the longitud
for that it must bee handled exquisitely by Geometrica^s
demonstration, and Arithmeticall Calculation: in whic
Artes, they would haue all Mechanitians and Sea-men
to be ignorant, or at leaste insufficientlie furnished to per-
forme such a matter, alleadging against them the Latine
Prouerbe

To the Reader.

Proverbe of Apelles, *Ne furor ultra crepidam*. But I doe verily thinke, that notwithstanding the learned in those Sciences, being in their studies amongst their bookes, can imagine greate matters, and sette downe their farre fetched conceites, in faire shewe, and with plausible wordes wishing that all Mechanicians were such as for want of patience, should be forced to deliuer unto them their knowledge and conceites, that they might flourish upon them, and apply them at their pleasures: yet there are in this land, dyuers Mechanicians, that in their severall faculties and professions, haue the vse of those Artes at their fingers endes, and can apply them to their severell purposes, as effectually and more readily then those that would most condemn them. For albeit they haue not the vse of the Græke and Latin tongues, to search the varietie of Authoꝝ in those Artes, yet they haue in English for Geometrie, Euclides Elementes, with absolute demonstrations: and for Arithmetick, Records woꝝkes, both his first and seconde parte: and diuers others, both in English, and in other vulgar languages, that haue also written of them, wherby bookes are sufficient to the industrious Mechanician, to make him perfect and ready in those sciences, but especially to apply the same to the Art and faculty which he chiefly professeth. And therefore I would with the learned to vse modestie in publishing their conceites, and not disdainfully to condemn men that will search out the secretes of theyꝝ artes and professions, and publishe the same to the behoofe and vse of others, no more then they would that others should indoe of them, for promising much and performing little or nothing at all. Aristotle saith, that euery man is best to be beloued in his owne professed Art and Science. Now (curteous reader) I am to request thee to accept of this my discourse, wherein I haue taken some paines (as the trauaile it selfe may testifie) and bene at some charge,

To the Reader.

for the more carefull and orderly handling of such matters
as are necessarily incident to this presente treatise : All
which I haue bene content to doe, that the worke (though
it bee not big, yet effectnall) by the common vse thereof,
may yeeld profit accordingly, to them specially that are of
capacitie to comprehend this new reuealed secret. To con-
clude, the chiefeft and onely marke whereat I lay leuell,
was the benefitting of my Country-men, in whom I wish
continuell increase of knowledge and cunning, as in all
other commendable professions, so chiefly in those that
are most necessarie and profitable. Thus bequeathing
my trauaile heerein to thy discret construction
and wishing thy furtherance in this most
necessarie and profitable knowledge,
I leaue thee to the direction
of Gods holy Spirit.

Fare-well,

Robert Norman.

The Magnes or Load- stones Challenge.

Ine place ye glittering sparkes,
ye glimmering Diamonds bright,
Ye Rubies red, and Saphires braue,
wherein ye most delight.
In breese yee stones enrich,

and burnisht all with gold,
Set forth in Lapidaries shops,
for Jewels to be solde.

Giue place, giue place I say,
your beautie, gleame, and glee,
Is all the vertue for the which,
accepted so you bee.

Magnes, the Loadstone I,
your painted sheaths desie,
Without my helpe, in Indian seas
the best of you might lye.

I guide the Pilats course,
his helping hand I am,

The Mariner delights in me,
so doth the Marchant man.

My vertue lies vnknowne,
my secretes hidden are,

By me the Court and Common weale,
are pleased verie farre.

No ship could sayle on seas,
her courle to runne aright,

Nor compasse shew the ready way,
were Magnes not of might.

Bluffe

The new Attractive

Blush then, and blemish all;
bequeath to mee thats due,
Your seates in golde, your price in plate,
which Jewellers doo reue.
Its I, its I alone,
whom you vsurpe vpon,
Magnes my name, the Loadstone cald,
the prince of stones alone.
If this you can denie,
then seeme to make reply,
And let the painefull sea-man iudge,
the which of vs dooth lye.

The Mariners iudgement.

THE Loadstone is the stone,
the onely stone alone,
Deseruing praise about the rest,
whose vertues are vknowne.

The Marchants verdict.

THe Diamonds bright, the Saphirs braue,
are stones that beare the name,
But flatter not, and tell the troath,
Magnes deserues the fame.

The new Attractive.

The first Chapter.

Of the Magnes or Loadstone, where they are found, and of their colours, weight, and vertue in drawing yron or Steele: and of other properties of the same Stone.

THE Magnes or Loadstone is found in diuers partes of the worlde, and most commonlie in Iron Pyres, and although it bee ponderous and weightie, yet it is not found to be of the Iron Ore, neither containeth in it any mettall of it selfe, but hath a certaine affinitie vnto Iron or Steele. It was called Maones, because the first finder thereof was so named, who (as Plinie writeth) was an Heresmartin East India.

This stone (as writeth Cardinal Cusan) hath substance, vertue, and operation. His vertue is conserued & nourished of his substance: & of this vertue proceedeth diuers strange effects and operations, seruing to many good purposes, as specially in the Arte of Nauigation, without whiche there could haue beene no discoueries by sea, nor the parts of the world made knowne & frequented, as now they are. And therefore the vertue of this stone of all others may bee accounted the most precious.

Of these are diuers sortes differing each from other, as well in goodnesse, as in colour, weight, and force, but not in propertie (although manie haue iudged the variation of the Steele, to bee according to the distance of the Mine where the stone was bred, to the place where hee is vsed.)

The

The best
Loadstone.

The first and best sort of these stones come out of the East India, from the coast of China, and Bengalia, and is of the colour of yron or sanguine colour: these stones are verie massiue & weightie, & will drawe or lift by the iust weight of it selfe in yron or Steele (if the stone exceede not a pound weight.) And these are of the finest sort, and are sold commonly for their proper weight in silver in the East India, where they growe, because the best & finest are verie rare to be found. For it is commonly a sole stone, lying by himselfe in the earth, and no shell or peece of another.

Next the best.

There is another sort of a reddish colour found in Arabia and the Red Sea, growing broad and flat, much like to a Tilestone or Slate: this is not so weightie as those of China, but it is verie neere as good, and the vertue continueth long on the Compass or Spindle that is touched with it.

There is likewise of these stones in Leuant, in the Ile of Elba, hard by a towne in the same Ilande called Porto Ferrato from whence our Mariners daylie bring of them, and are called there Calamita Preta, that is to say, The blacke Magnes, because there is another sort that is white and light, lyke vnto a peece of dry Fullers clay, and is called Calamita Blanca.

This Calamita Blanca is founde alwayes with the other, sticking fast in the out side thereof lyke claye. And this white is forbidden to be vsed in that Country, because euill women there, doe applye it to destroye conception, whereof this stone is a great enemy. Other thinges are noted of this white Calamita, for obtaining of wanton purposes, which I thinke not credible, and therefore will omit it. These blacke stones of Elba are mingled with white beynes, they are of no great force, nor their vertue of long continuance.

Also there are of these stones in high Almaine, that are full of holes like a huanie combe, & lighter then the other, but yet very good, and these are of yron colour.

Another

The new Attractive.

Another sorte there is in Norwaie, in the yron Mines, as in Longsounde, and other places; their colour is blacke, The worst. mixed or as it were interlarded with graie, these are of the smallest force of any that are found.

I haue scene also in the Mines of Carauaca in Spayne of a graie colour; but of no greate force: these are commonly brought by horse downe to Siuill and Callis to bee sold, and oftentimes to Valentia, Alicante, and Lisbon.

All these Stones are different one from another, as well in force as in colour and weight: yet all of one operation in the Steele, the wing one points Attractive, as I haue proued my selfe by three sundry sortes of them; which I haue; and all drawing yron to them. Yet the Philosopher Auerroes writeth that the Magnes draweth not yron vnto it, but the yron of his naturall inclination moueth to the Stone.

And though this position may seeme to carrye some trueth with it, by the bare view of the sight; when the yron is lighter then the Stone: yet contrarie wyse you shall finde, that the Stone will moue to the yron, if the Stone bee good, and the yron of greater weight then the Stone (so that the weight of the Stone excede not hys Attractive strength.)

Nevertheless wee may not thereby take away the vitall or liuely spirite from the Stone; and attribute it vnto the yron: for in so doing we shoulde doe Nature greate wrong. For it is apparant, that the yron hath no Attractive vertue, nor power of it selfe, vntill it haue receiued it of the Stone. But yron hauing a certaine affinitie, or naturall quallitie agreeable to the Stone, doth aptly and freely receiue his vertue, and as a subiecte, suffereth his vitall spirit of the Stone to impresse; and rest quietly in his massiue and solide bodie, which when it hath receiued by touching the Stone, it is indued with the very same propertie and operations in all respectes (though not in so great force) as the Stone it selfe.

The vital and
natural spirit
& operation
of the Load
stone.

The new Attractive.

For as the Stone hath power to shewe the Attractive point, so hath the touched Iron. As the Stone hath two principall pointes, so hath the Iron. And likewise, as the Stone hath power to drawe Iron to it, so will the Iron so touched, drawe another Iron to it, and impart all these vertues to another Iron in qualitie, though not in quantitie: and thus in all respectes it containeth in it, the verie proprietie of the Stone.

Paracelsus writing of the augmenting of the Strength of the Magnes Stone saith, that if this Stone bee laide in the fire, untill it bee almost redde hot, and then taken out and quenched in the Dyle of Crocus Martis, it will so augment and multiply his force, that it will pull a nayle out of a wall. But I suppose he meant not that the naille should be fast, for then it were a miraculous matter.

Others haue written, that in those partes, where the Magnes groweth in the Sea, it is of such force, that if anie Shippes that haue Iron in them passe by, or ouer them, that they are presently either staied, or drawen downe to the bottome by reason of the Iron. Not these onely, but many other fables haue bene written by those of auntyent time, that haue as it were set downe their owne imaginations for vndoubted truthe, and this most of all in Geographic and Hidrographic, or Nauigation. Therefore I wishe experience to be the leader of Writers in those Artes, and reason their rule in setting it downe, that the followers be not led by them into errours, as oftentimes haue bene scene.

True it is, that God is mightie and marvellous in all his woorkes: yet hee doeth not allowe vs to say more then truth of them. And truely, his power is as greatly shewed in the Magnes, as in any Stone that hee hath created: and who so shall goe about curiously to seeke out the efficient cause of his properties, I suppose the longer hee seeketh, the more he shall maruaile, and yet neuer the nicher his purpose.

The new Attractive.

The vertue of the Stone is distributive, as many other vertues are, much comparable vnto Muske, that hauing a sweet sauour or smell it selfe, imparteth the same to another thing, as to a paire of Gloues, and those Gloues glue out sauour, and perfume a whole chest of cloathes: Euen so the yron that hath receiued this vertue of the Stone will extend, and giue the same to another, and that yron to another, and so to many.

And in this point the Stone is maruellous, that notwithstanding you touch ten thousand yrons or nailes with him, euery one of them carrying away as much vertue as will lifte vp another his lyke (so they exceed not the weight of a sixe penny naile) yet the Stone it selfe will be nothing diminished of his strength, but continue of one force.

If I should say here, that by the Attractive strength of a small Magnes of two or thre pounde weight, I could lift vppe, or cause to hange by the vertue thereof, a thousande pounde of yron at one instant, peraduenture you would bee doubtfull of the successe. Nevertheless by experience in all thinges, wherein consisteth truth and reason, of necessitie reason must yeild, when truth is present. And therefore because you shall not remaine doubtfull herein, thus you may dooe it, and onely make prooe by two or thre nailes, if you will: for the same successe that you haue in them, you shall haue in all the rest.

Take a common boord naile, & touch the head of it with the North parte of the Magnes or Loadstone, then take the same naile and beate it with a piece of woodes lightly into some poste or timber vpwordes, so as the heade maye hange downe wardes, (but not with yron, because the yron will take away some parte of the vertue from the naile:) this done, take another like naile, and touch the head thereof with the South parte of the Stone, and then if you put the head of it to the head of the first naile, it wil hang fast by it a whole yeere or moze. And after this manner you may, if you wil take the paines, hang a hundred tun of iron with the

The new Attractive.

the vertue of this little stone, and yet the stone nothing diminished of his force. But it is necessarie in proofof this matter, that you haue a very good stone.

Irons to hang
one by ano-
ther by ver-
tue of this
stone.

Furthermoze, concerning the other properties of this stone, if you put it in a dry dish, and sette it to swimme in a tub of water, it will turne the dish about, and the North parte of the stone, after many swaruinges to and fro, will rest, and directly shewe the line of Variation, or imagined Attractive point.

Also, if you hang this stone by a thred, that it may easilie mooue, it will shew the like effects as on the water. And if you haue two stones, putting the two South partes of them together, the one will fly and turne away from the other, and likewise of the North pointes.

A speciall note

And further yee shall note as a speciall point, that the North point of the stone touching a Needle, or the wyers of a compasse, will make the same point touched to shewe the South: and contrariwise, beeing touched with the South point, will make the same to shew the North. So as alwaies that part of the stone that answereth to the North of the Needle, is properly the South part of the stone.

The second Chapter.

Of the diuers opinions of those that haue written of the Attractive point, and where they haue imagined it to be.

THE subtill properties and hid secretes of Nature in the Magnes, as also in dyuers other thinges, hath so troubled the wits of the searchers thereof, that alwayes when they came to the vpsshot, wanting experience, and thereby reasons finger to shew them a direct marke, they were constrained to seeke or imagine a marke, where in deede none at all was, and thus

Shooting

The newe Attractive.

shooting as it were in y^e aire, euerie man where he thought best, they haue all shot wide, and none touched the marke. The marke I meane heere, is the point Attractive, or rather, as shall bee saide heereafter moze at large, the point Respectiue.

This point, aunciently called the Attractive point, hath bene by some imagined to be in the moouing spheres distant from the poles of the woꝛlde: which opinion Martin Curtes in his Booke of Nauigation refuting, saith, that if it were so, then the same point beeing carried about the pole by their violent motion, would cause the Needle or Compass touched with the vertue of the Stone, to varie daily in euery place, according to the diurnall motion of the same sphere. But in confuting the erroneous opinion, he hath (as it appeareth) fallen into as greate an error himselfe: imagining the point Attractive to bee beyond the poles of the woꝛlde, without all the moueable heauens. Which point (saith he) hath power by Attraction to draw yron to it, that is touched with the Loadstone. This error I referre to be discussed in the first Chapter.

Others haue taught this point to be in the earth, nere the North pole, imagining in that part to bee some great rocks of the Loadstone, & that by their Attraction the compass or needle is caused to Respect or shew that part.

This opinion of all the rest is easiest to bee confuted by daily experience: for if the compass or needle were drawn towardes the North parte by any Attraction of the Magnes stones in those partes imagined, why then should not the Compass or Needle shewe the same effecte in moouing towardes the Iland of Elba in the Leuant seas, where are great quantitie of these stones? and yet Shippes sayling within a myle of this Iland, yea, and into Porto Ferato a Towne of the same Ile, within a quarter of a mile of a huge Rocke of these stones the Compass or Needle is not found any thing to be drawne or chaunged, nor the Attraction of this huge rocke to extend so farre as one
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The newv Attractive.

quarter of a mile. And as I haue said by this, so may I say by diuers other places where the Loadstone are founde in Cliftes and Mines nere to the Sea side, as in Norwaie and other places.

Pedro de Media in his booke of Nauigation is of the opiuion of Martin Cortes as touching the Attractive point, but he doth not allowe of the variation of the compasse oz needle, but saith, that if the compasse oz needle shew not the pole, the fault is in placing the wiers on the flie, & not in any propertie it hath to vary.

These opinions by diuers, but the chiefeft cause why they haue gone so farre wide from the Attractive poynt, as I haue aboue said, was because they wanted reasons fingers to shew them towarde the direct marke. By this reasons finger, I meane a certaine Declining propertie vnder the Horizon, lately founde in the Needle, which I will entreate off at large.

The third Chapter.

By what meanes the rare and straunge Declining of the Needle, from the plaine of the Horizon, was first found.

Having made many and diuers compasses, and vsing alwaies to finish and end them before I touched the Needle, I found continually that after I had touched the yrons with the Stone, that presently the North poynt thereof woulde bend oz Decline downwarde vnder the Horizon in some quantitie: in so much that to the flie of the Compasse, which before was made equall, I was still constrained to put some smal peece of ware in the South parte thereof, to counterpoise this Declining, and to make it equall againe.

Which effecte hauing many times passed my handes without

The newv Attractive.

without any greate regarde thereunto, as ignorant of any such propertie in the Stone, and not before hauing hearde no: read of any such matter: I chaunced at length that there came to my handes an Instrument to bee made, with a Needle of sixe inches long, which Needle after I had polished, cut of at Iust length, and made it to stand leuel vpon the pinne, so that nothing rested but onely the touching of it with the Stone: When I hadde touched the same, presently the North part thereof Declined downe, in such sort, that beeing constrained to cut away some of that parte, to make it equall againe, in the end I cut it too short, and so spoiled the Needle wherein I had taken so much paines.

Whereby beeing stroken into some cholar, I applyed my selfe to seeke further into this effecte, and making certaine learned and expert men, my friendes, acquainted in this matter, they aduise mee to frame some Instrument, to make some exact triall, how much the Needle touched with the Stone woulde Decline, or what greatest Angle it would make with the plaine of the Horizon. Wherevpon I made diligent proofes: the manner whereof is shewed in the Chapter following.

The fourth Chapter.

How to find the greatest Declining of the Needle vnder the Horizon.

Take a small Needle of Steele wiew off sixe or sixe inches long, the smaller and the finer mettall, the better and in the middle thereof (crosse the same) by the best meanes you can, fixe as it were a small Arcltree of Iron or Brasse, of an inch long, or thereabout, and make the ends thereof verie sharpe wherevpon the Needle may hang leuell, and play at his pleasure.

Then prouide a round plaine Instrument like an Astrolobe,

The newv Attractione.

Iobe, to be deuided exactly into 160. partes, whose diameter must be the length of the Needle, or thereabout, and the same instrument to bee placed vpon a foote of convenient height, wyth a plumme lyne to sette it perpendicular.

Then in the Center of the same Instrument, place a peece of Glasse hollowed, and against the same Center vpon some place of Brasse that may bee fixed vpon the foote of the Instrument, fit another peece of Glasse, in such sorte that the sharpe endes of the Areltree beeing bozne in these two Glasses, the Needle may play freely at hys pleasure, according to the standing of the Instrument.

And the Needle must be so perfected, that it may hang vpon his Areltree both endes leuell with the Horizon, or beeing turned, may stande and remaine at any place that it shall be sette: which being done, touch the saide Needle with the Magnes stone, and set the Instrument perpendicular by the plumme lyne, and turne the edge of the Instrument South and North, so as the Needle may stande duely according to the Variation of the place: which Variation the Needle of his owne proprietie woulde shewe, were it not that hee is constrained to the contrary by the Areltree.

Then shall you see the Declination of the North point of the touched Needle, which for this Citty of London, I finde by exact obseruations to be about 71. degrees 50. minutes. The forme of the Instrument here described, with the manner of the declination, I haue here placed that it may be the easier conceined.

The

The newv Attractue.

The fift Chapter.

That in the vertue of the Magnes or Loadstone, is no pondrous or weightie matter, to cause any such declining in the Needle.

BEcause the opinions of men are diuers, and the arguments of many against reason, peradventure there are some will say, that I am deceiued euen in the grounde & chiefeft point of this my purpose, alledging

The new Attractive.

(as some haue already done without reason) that this Declining of the needle, is caused by some pondzous substance that it receiueth from the Stone, and not (as I take it) to proceede of the simple vertue, & secret influence thereof, because the Stone it selfe wherein the vertue remaineth and is nourished, is weightie.

I iudge the learned will not allowe a Spirit to haue any corporall substance or weight, or that it may sensibly be felt: if any should, yet by two conclusions it is easily proved, that the vertue of this stone containeth in it no weightie matter: and thus sound.

Take three or foure small peeces of Iron or Steele wire, and putting them in a fine gold Ballance, counterpoise them iustly with Leade: Then take them out and touch them well with the Stone, that they may receiue the vertue thereof: And after weigh them againe in the same ballance, with the same Lead, and you shall finde them to weigh no more, then before they were touched, though euery one of them haue receiued vertue sufficient to lift vpp his fellowe.

Secondlie if the be North point of the Needle do Decline by any pondzous or weightie matter, in the vertue receiued by touching the Stone, why then shoulde not the South point of the Needle being touched with the contrary end of the Stone, haue the same declining Southwardes, beeing all one Stone, and one vertue? Or why doth not this supposed heauier end, fall perpendicularly to the Center, as by reason it shoulde, and not couet a certaine scituation beside it, ballancing it selfe vp and downe, till it haue found the same? These argumentes may aunswere thys matter. For touch the Needle with what part of the Stone you liste, that end of the needle that sheweth the North, will alwaies decline.

The sixt Chapter.

A confutation of the common receiued opinion of the point Attractive.

Being

The newv Attractive.

eing it is manifest that there is a Declining in the needle, and that the same is not caused by any ponderous waighie matter in the vertue received from the Stone: it may be demanded, by what means this declining or eleuating happeneth: in which

of the two pointes consisteth the action or cause thereof.

Peradventure you will say (as other haue imagined) that it is in the South point of the Needle, eleuated by the Attractive vertue of some point of the Heauen that way. Perchaunce you will yeeld it rather to be in the North point of the Needle, which by some Attractive point in the Earth, or in the Heauens, beyond the Earth that way, is drawen downe and caused to declync, and if Declining, of necessity the other South point opposite must needes be lifted by.

Your reason towards the earth carrieth some probabylitie, but I proue that there be no Attractive, or drawing propertie in neither of these two partes, then in the Attractive point lost, and falsely called the point Attractive, as shall be proued. But because there is a certaine point, that the needle alwayes respecteth or sheweth, being boode and without any Attractive propertie, in my iudgement this point ought rather to bee called the point Respectiue.

And further if it may be proued, that there is no Attractive or drawing propertie in that point, the power & action in that point condemned, then of necessitie the power and propertie, without any externall cause, remaineth enclie in the Stone, and after in the needle being touched with it, hauing the same power & propertie in it, that the Stone hath in euerie respect.

Now to proue no Attractive point neither beneath in the earth, nor Heauens Northwardes, nor aboue in the heauens Southwardes, you shall take a peece of Iron or

The new Attractive.

Steele wier of two inches long or more, and thrust it into a peece of close Cozke, as bigge as you thinke may sufficiently beare the wier on the water, so as the same Cozke rest in the middle of the wier.

Then you shall take a deepe Glasse bole, cuppe, or other vessell, and fill it with faire water, setting it in some place where it may rest quiet and out of the winde. Thys done cut the Cozke circumspectly by litle and litle, untill the wier with the Cozke bee so fitted, that it may remaine vnder the superficies of the water two or three inches, both endes of the wier lying leuill with the superficies of the water, wythout ascending or descending, lyke to the beame of a paire of ballance beeing equally poised at both endes.

Then take out of the same wier without moouing the Cozke, and touch it with the Stone, the one end with the South of the Stone, and the other end with the North, and then sette it againe in the water, and you shall see it presently turne it selfe vpon his owne Center, shewing the aforesaide Declining propertie, without descending to the bottome, as by reason it shoulde, if there were any Attraction downwarde, the lower part of the water being nearer that point, then the superficies thereof.

And as this may proue no Attraction or drawing downwarde in like maner the Cozke being so made, that it may sinke very slowly to the bottome, and then taken out and touched with the Stone, and put in againe downe to the bottome with your finger, if any Attractive drawing were vpwarde, it woulde ascend, and come vp to the superficies of the water, beeing nearer to that point than the bottome. But I finde by diligent and exact triall, that it hath no such effecte: as in the figure following is demonstrated.

Again,

The newv Attra^cine.

Againe, if you doe fit your wier with Corke, that after it is touched with the Stone, it will swim leuell in the superficies of the water, you shall see it turne to shew the true Variation, and leaning the same in the middle of the superficies of the water, so long as you list, you shall finde that it will not bee drawen from his place, neither to the
one

The newe Attractive.

one side, nor the other, whereas if there were any suche Attractive point as haue beene imagined, either in the earth by vertue of huge Rockes of the Magnes Stone neere the Pole, or otherwise in the heauen, or whersoever, by what meanes soeuer, beeing but the twentieth parte of the force that the Needle touched, hath to shewe to Respective point, it should of necessitie be drawen in time to some side.

So that vppon these experimentes I conclude, that the Attractive poynt before imagined, is no where, nor no such thing: and therefore, as most proper, I will call the point whereunto the Needle inclineth by vertue of the Stone, The point Respective, and attribute the whole power of shewing that poynt to be in the Stone, and in the needle, by the vertue receiued of the Stone, which vertue must bee imagined to be turned, bozne, and depending vpon his owne Center, as shall bee shewed in the next Chapter.

The seuenth Chapter.

Of the point Respective, where it may bee by greatest reason imagined.

lowing representeth.

This point Respective, is a certaine point, which the touched Needle doeth alwaies Respect or shew, and is found by the declyning of the needle, to bee a pizke in some one part of a straight lyne, declyning in this place or Latitude of London vnder the Horizon 71. degrees, and 50. Minutes, as this figure fol-

This

This streight lyne must bee imagined to proceede from the Center of the Needle, into the Globe of the earth, extending & going directly soorth both waies infinitely. But in what parte of this line the point Respectiue is, it is not by this bare lyne alone to be answered, no more then it is possible by one bare angle to measure or know the distance of any place assigned.

And

The new Attractive.

And for the finding or certaine assigning of y^e true place of this point Respectiue, we must leaue vntill the expert traualer haue made certaine obseruation of thys Declining of the Needle in other places. For seeing it is certaine that though in seuerall Horizons, the compass bath seuerall Variations: yet in any one Horizon, the needle Respecteth alwayes one onslie point without alteration, as by traualle is truelie prooued. So I iudge, that in his Declining, it keepeth the like order and certaintie in euery place.

And although the Needle of the Compass, by reason of the weight of the heauie flie, cannot Decline, as bys propertie is, but falselie sheweth the point Respectiue alwaies in the Horizon, as most necessarie so to doo for the Nauigation: yet by the meanes and conclusions, whiche before I haue shewed, the diligent traueler hauing with him a good Magnes or Loadstone, may by exact obseruation finde the increasing or decreasing of this Declining of the needle, as his traualle shall giue occasion.

For I am of this opinion, (and that by great reason) that this Declining of the Needle shall bee founde by trauell to be great or little, according as the distaunce of the point Respectiue, is from the place where the triall is made: whiche beeing diligentlie obserued in sundrie places, with the certaine Variation of the Needle from the Meridian, therby may bee demonstrated and found out the true place of this point Respectiue.

The eight Chapter.

Certeine proofes that the power and action is wholie and freelie in the stone, to shewe this point Respectiue: and in the Needle, by vertue & power receiued of the Stone: and not forced or constrained by anie Attraction in heauen or earth.

The new Attra ctive.

It is moſte manifeſt in all the workes of Nature, or creatures that God hath made, that whatſoever qualitie, properſie, or vertue is founde in them, by creation, that is to bee holden for their owne. And he that ſhall, by imagination or conjecture, goe about to take theſe their properties from them and attribute the ſame to any other ſubiects whereunto they appertaine not, I ſay that man offendeth God muche, for not believing his power to bee ſufficient in hys creatures.

I will not offer to diſpute with the Logicians in ſo many pointes as here they myght ſeeme to over reach me, in naturall cauſes. But that this ſtone hath wholly and fully in himſelfe power, action, property & vertue of his owne appetite, to ſhew and to cauſe the Needle to ſhewe the point Reſpectiue, without anie Attra ctive qualitie, or external cauſe of Rockes of the Magnes Stone, or by Attra ction in the heauens, or elſe where whatſoever, it is already ſufficiently proued.

Notwithſtanding, if theſe prooſes may not content, I will at any time required heerein, ſatiſſie the doubtfull by manifeſt experimentes. And therfore where no other cauſe can be probablie anered vnto this ſtone, the power and action of neceſſitie is proued in it ſelfe.

And by the Declining of the Needle, is alſo proued, that the point Reſpectiue is rather in the earth then in the heauens as ſome haue imagined: and the greateſt reaſon why they ſo thought, as I iudge, was becauſe they neuer were acquainted with this Declining in y^e Needle, which doubtleſſe if Martin Curtes had knowen, hee woulde not haue iudged the Attra ctive point to haue bene in the heauens, or without them, but rather in the earth.

Now peraduenture you will aſke me howe this Stone hath his power, and how it is ingendred: I am no more able to ſatiſſie you herein, then if you ſhould aſke me howe
and

The new Attractive.

and by what meanes the celestially spheres are mooued: but that God in his omnipotent prouidence hath appointed it so to be; which may serue for a generall answer, to all such curious searchers of the secret woordes of God in his creatures. As though his worde alone were not a sufficient decree and lawe to all his woordes; but binding them to second causes, as a thing of necessitie.

These curious searchers out of the secretes of nature, further then is requisite that man should knowe for his necessarie vse, I may compare to Esdras, and wishe them to read ouer his fourth booke, and there they shall see how he was answered at Gods handes by his Angell, for his curious questions asked and demaunded.

Nowe therefore, as I haue before declared, that dyuers haue whetted their wits, yea, and dulled them, as I haue mine, and yet in the end haue bene constrained to flie to the corner Stone, I meane God, who (to conclude) hath giuen vertue and power to this Stone, proper in it selfe, to shewe one certaine point, by his owne nature and appetite, and not subiecte to any other accident in heauen, nor in earth, but freely by his owne proper vertue receiued at his mightie handes in creation: and by the same vertue the Needle is turned vpon his owne Center, I meane the Center of his Circular and inuisible vertue, pearcing all thinges and staid by nothing, be it wall, board, glasse, or any thing whatsoeuer.

And surely I am of opinion, that if this vertue coulde by any meanes be made visible to the eye of man, it woulde be found in a Sphericall forme extending rounde about the Stone in great compasse, and the deade bodie of the Stone in the middelt thereof, whose Center is the Center of this aforesaid vertue. And this I haue partly proued and made visible to be seene in some manner, and God sparing mee life, I will herein make further experience, and that not curiously, but in the feare of God, as nere as he shall giue me grace, and meane to annexe the same vnto a booke of

Pauliga

The newv Attractive.

Navigation, which I haue had long in hand.

The nienth Chapter.

Of the Variation of the Needle, from the pole or Axeltree of the earth, and how it is to be vnderstood.

NOW, as the Needle hath this apparant proprietie in Declining vnder the Horizon, to shew the point Respective: So it is most manifest that as in Declining it hath a property in varying, or departing from the Poles, euen as the point Respective openeth, or sheweth a greater, or lesser distance betwixt the said point Respective, and the Pole or Axeltree of the earth. And this departing is called Variation of the Needle. This is also shewed in the Needle or wiew, in that conclusion of declyning in the water, as in the sixte Chapter, euen by the same proportion, that it sheweth in the Needle Horizontally.

This Variation is noother thing, then a certaine parte or portion of a circle, contained betwixt two straight lines proceeding both from one Center, which may be imagined to be the Center of the Needle, and from thence both extending and going directly forth, one to the Pole or Axeltree of the world, and the other to the point Respective, and this part of circle contained betwixt these two lines in the Horizon, is said to be Variation.

And further here is to be noted, that alwaies these two lines haue two right lynes, cutting them directly in the Center of the needle. The one of them crossing the Meridian at right angles in the Center of the needle, is the true East and West of the world. And the other crossing the line Respective at right angles, is the false East and West that the varying Needle or Compasse sheweth: all which is shewed by this present figure following.

This

This Variation is iudged by diuers traauilers to bee by equall proportion, but heerein they are much deceived, and therefore it appeareth that notwithstanding their traaille, they haue more followed their bookes then experience in that matter. True it is, that Martin Curtes doth allowe it to bee by proportion, but it is a mosse false and erroneous rule. For there is neither proportion nor vni-
formitie in it, but in some places swift and sudden, and in some places slowe.

The newv Attractue.

It is said to be proportionall or vniforme, when in the increasing or decreasing of a degree of Variation, is found one certaine number of leagues or miles, going, increasing or decreasing in one Paralell or Latitude, by like equall proportion, and that if the Variation be doubled, going by one paralel, so shall the leagues or miles also. But this is not found to be so.

For in going from Sillic to Newfound-land, which is not 600. Leagues, it is found that the Needle doeth varie more in 200. Leagues, when you come neere that Countrie, then it doth in 400. Leagues of your first way. And also going to Meta Incognita, it varieth more in parte of the last of the way, the in $\frac{1}{2}$ of the firste: and in those partes it is found to bee sodaine. Further it is found betwene the North Cape and Vaigatz verie strange, in recoyling and comming backe againe to the Westwardes of the Pole before it hath fullie accomplished two pointes of variation in the compasse. So that at Vaigatz it varieth to the Westwardes, as it doth at Newfound-land. And this comming backe againe, before it hath accomplished four pointes of the Compasse, is verie strange, and against the opinions of all that haue before written.

Because the line of the Needle that sheweth the Pole Artike, and point Respective, by vertue of the stone passeth betwene Silly and Newfound-land.

Pedro de Medina (as I haue said in the seconde Chapter) was doubtfull of the Variation, saying: that if the Compasse did varie, the faulte might bee in the making thereof, the wiers or Needle not being well placed. yet he was a learned man, and a great traueller to the West Indies. But it appeareth that he had no more regard to the Variation, then many Mariners in these daies.

For in 18, or 20. yeares that I haue traueiled, the seas beeing daily conuerfant with many of them, and diligent in enquiring of Variation of the places, where I haue not bene my selfe, I could neuer finde two of them in one trueth, except for the trauailes from hence Northwardes, and North Eastwardes. But I suppose the greatest occasion thereof is by lacke of exacte Instrumentes for

The new Attractive.

that purpose. Wherefore I haue deuised one verie necessarie.

And further because this variation is diuers, and is found sometimes to the Eastwards, and sometimes to the Westwardes of the Pole, I wil declare what the variation is heere in London, by mine owne obseruation, and in other places, as I haue grosslie gathered of some traouellers, reckoning, or beginning at the ancient bound or great Meridian that passeth by the Ile of Saynt Michael in the Azores, where it is said, that the Needle sheweth directly the Pole, and the Respective point both in one line. But this is not found to be so.

True it is, that the North point of the common Compass sheweth the Pole verie neere in that Meridian, but the bare Needle sheweth about 4. deg. 50. min. to the eastwards of the Pole. So that you must vnderstand alwaies, the difference betwene the common Compass & the Needle to be at the least; part of a point, and of some more: because the greatest part of the common sailing Compasses hath the Needle set in the Flye, halfe a point, or $\frac{1}{2}$ to the Eastwardes of the North, and some $\frac{3}{4}$ of a point, and others at a whole point, and some againe are set directlie vnder the Flowerde Luce, or North of the Compass, these are called Peridionall Compasses, because they shew directly the Pole in the great Meridian, as the bare Needle doth, which Meridian must needes be at the least 100. or 120. leagues to the Westwardes of the Ile of Saint Michael.

And therefore to write of the Variation of places by the common reportes of Mariners that haue trauelled Southwards and Westwards from hence, it shall bee as vncertaine, as are the diuers makinges of these common compasses, by which they haue made their obseruations. And therefore I will omit it, and speake onely of this place or Cittie of London, whose latitude I finde to bee 51. degrees. 32. min. and the Variation of the Needle from this Meridi-

The newv Attractue.

Meridian of the Pole to be 11. degrees. 15. minutes.

And although this Variation of the Needle, bee found in trauaile to be diuers and changeable, yet at anie Lande or fixed place assigned, it remaineth alwaies one, still permanent and abiding. And therefore I with the Margner to make diligent obseruation of thys Variation in diuers places, as hee shall trauaile, by some exact Instruments for the purpose. For it may be greatly for his aid, against hee come there another time, especially in such places where the variation is swift, as in these North partes. And because the common Compass is pertaker of this Variation and Declyning, as the Needle is, I will shew what shewe of the sundrie sorts and makings of them, with the inconueniences that may growe by them, and by yll plats made by these diuers sortes of Compasses.

The tenth Chapter.

Of the common Compasses, and of the diuers different sorts & makings of them with the inconueniences that may grow by them, and the plats made by them.

If these common sayling Compasses, I find heer in Europa five sundrie sorts or sets. The first is of Leuant made in Sycile, Genoua and Venice: and these are al for the most part made meridionally with the Wyers directlpe set vnder the South and North of the Compass and therefore duelye shewing the point Respective in all places, as the bare Needle, and by this compass are the Plats made, for the most part of all the Leuant Seas.

Secondly, there are made in Danske, in the Sound of

The new Attractive.

Denmarke, and in Flanders, that haue the wiers set at $\frac{1}{2}$ of a point to the Eastwards of the North of the Compasse, and also some at a whole point, and by these compasses they make both the plats, and Ruttters for the sound.

Thirdly, there hath beene made in this Countrey particularlie for Saint Nicholas and Russia, Compasses set at $\frac{3}{4}$ of a point, and the first plats of that discouerie were made by this Compasse.

Fourthly, the Compasse made at Seuill, Lisbon, Rochell, Bourdeaux, Roan, and heere in England, are moste commonly set at halfe a point, and by this Compasse are the plats of the East and West Indies made for their Py-lots, and also for our coastes neere heerby, as France, Spain, Portugall, and England: and therefore best of these Platons to bee vsed, because it is the most common sorte that is generally vsed in these coastes. And againe, it is said, that the middle hazard is best.

I speake thus, because there are so many sortes of these Compasses different each from other, as befoze I haue declared. And the Maister or Mariner sayling by these Compasses of sundry sortes, may thereby fall into great perill, and the reason is, because that of long tyme these compasses haue beene vsed, and by them the Marine Plats haue beene described of sundry sortes, euerie one according to the compasse of that countrey.

If then hee take not the Compasse of the same sette or making that the plat was made by, then his Card or plat will shewe him one course: and the compasse when hee thinketh hee goeth well, will carrie him another way. And thus, when hee thinketh to fall with the place that his Card sheweth him, he shall bee as farre wide, as the Compasse he hath sailed by, is different from that his plat was made by.

This is the ground and cause of many inconueniencies, which is now too late to bee generally reformed: therefore I wish the Marriner to haue a greates regarde vnto this,

The newv Attractive.

this, as a principall point in *Navigation*, and not to saile by a *Compassse* of one parish, & a plat of another: I meane that they haue a respect, as neere as they may, to saile by a *Compassse* of that countrie where his plat was made.

Yet manie there are that vse our *Compassse* with *Leuant* Plats: but I suppose, without good consideration therein, they shall make but wide reckonings. And this hath beene sufficientlie of late experimented, by our *Mariners*, that haue vsed *Leuant*.

Heraduenture there are some will say, that he knoweth a good *Compassse*, if he see it. I say the *Compassse* may be good, and yet not good for him, except his plat bee agreeable: As for example, a *Leuant* *Compassse* is a good *Compassse* to vse with a *Leuant* Plat, but it differeth from our *Compassse* halfe a point more *Easterlie*. And others there are of *Danske*, that differ from ours $\frac{1}{2}$ a point more *Westerlie*, and yet being vsed in their kind, are good *compasses*.

And therefore I conclude, that generally the best *Compassse* is this sorte set at $\frac{1}{2}$ a point, because the maior parte of *Compasses* and Plats, dooth not differ from this about $\frac{1}{2}$ of a point, except the two aboue named of *Leuant* and *Danske*.

I haue heard many say, that haue trauelled farre to the *Southwardes*, that the *Compassse* hath seemed to lose his force, and to waxe weake and dull. I iudge the cause is not by reason of the farre distance from the *North Pole*, but rather by beeing long absent from the *Stone*, for not beeing touched or refreshed therewith. And againe, the *Pinne* that beareth the *Flie*, may bee so dulled with long vsing, that the *Flie* is as it were staid, that it cannot play as it would, if it were sharpe.

Wherefore, if you make it sharpe with a *Whetstone*, you shall finde it remedied: and also when you finde it light, or too tyckle, you may dull the point of the *Pinne*, with the leafe of a paire of writing tables, vntill you may see the toppe thereof, and then the *Compassse* will bee

The newe Attractive.

better for a high Sea. And thus by Sharping and dulling
of the Pinne, you may make your compasse fit
for all Weathers.

HEERE AFTER FOL-
loweth a table of the Sunnes De-
clination, commonly called a Regi-
ment for the Sunne, axactly calculated vnto
the minute by the true place of the Sun, whose grea-
test declination for this age, is 23. Degrees 28 mi-
nutes, and may serue for 30. yeares
without great errour.

January.

Leap years.			First.	Second.	Thrd.
4			1	2	3
1596			1597	1598	1599
1600			1601	1602	1603
1604			1605	1606	1607
1608			1609	1610	1611
1612			1613	1614	1615
D C B			D C B	D C B	D C B
1 21 57			1 21 50	1 21 52	1 21 56
2 21 47			2 21 40	2 21 34	2 21 45
3 21 36			3 21 30	3 21 33	3 21 36
4 21 25			4 21 20	4 21 23	4 21 26
5 21 15			5 21 9	5 21 13	5 21 15
6 21 5			6 20 59	6 21 0	6 21 4
7 20 54			7 20 48	7 20 50	7 20 54
8 20 43			8 20 36	8 20 38	8 20 41
9 20 31			9 20 23	9 20 26	9 20 29
10 20 20			10 20 10	10 20 15	10 20 16
11 20 6			11 19 59	11 20 0	11 20 3
12 19 52	South declination.		12 19 43	12 19 47	12 19 53
13 19 35			13 19 30	13 19 33	13 19 39
14 19 23			14 19 14	14 19 19	14 19 25
15 19 7			15 19 0	15 19 4	15 19 12
16 18 54			16 18 45	16 18 49	16 18 56
17 18 39			17 18 29	17 18 34	17 18 41
18 18 23			18 18 14	18 18 10	18 18 26
19 18 8			19 17 58	19 18 2	19 18 11
20 17 52			20 17 42	20 17 46	20 17 54
21 17 36			21 17 25	21 17 31	21 17 38
22 17 19			22 17 8	22 17 12	22 17 21
23 17 4			23 16 51	23 16 56	23 17 4
24 16 45			24 16 32	24 16 38	24 16 47
25 16 28			25 16 16	25 16 21	25 16 29
26 16 10			26 15 57	26 16 3	26 16 12
27 15 53			27 15 39	27 15 45	27 15 49
28 15 33			28 15 21	28 15 26	28 15 30
29 15 15			29 15 2	29 15 7	29 15 12
30 14 56			30 14 43	30 14 48	30 14 53
31 14 35			31 14 24	31 14 29	31 14 34

february.

Leap year.	First.	Second.	third.
4	1	2	3
1596	1597	1598	1599
1600	1601	1602	1603
1604	1605	1606	1607
1608	1609	1610	1611
1612	1613	1614	1615
D G M	D G M	D G M	D G M
1 14 19	1 14 4	1 14 10	1 14 14
2 14 0	2 13 14	2 13 50	2 13 54
3 13 40	3 13 24	3 13 30	3 13 35
4 13 20	4 13 4	4 13 9	4 13 16
5 13 0	5 12 43	5 12 49	5 12 57
9 12 40	6 12 23	6 12 29	6 12 34
7 12 19	7 12 2	7 12 8	7 12 14
8 11 58	8 11 11	8 11 47	8 11 52
9 11 37	9 11 20	9 11 26	9 11 32
10 11 16	10 10 58	10 11 4	10 11 12
11 10 55	11 10 36	11 10 43	11 10 50
12 10 30	12 10 15	12 10 21	12 10 28
13 10 10	13 9 53	13 9 59	13 10 6
14 9 49	14 9 31	14 9 37	14 9 43
15 9 27	15 9 9	15 9 14	15 9 21
16 9 5	16 8 47	16 8 50	16 8 58
17 8 43	17 8 24	17 8 28	17 8 36
18 8 21	18 8 2	18 8 6	18 8 14
19 7 58	19 7 39	19 7 44	19 7 50
20 7 36	20 7 16	20 7 21	20 7 28
21 7 13	21 6 53	21 6 54	21 7 5
22 6 50	22 6 30	22 6 32	22 6 42
23 6 27	23 6 7	23 6 10	23 6 19
24 6 3	24 5 44	24 5 48	24 5 56
25 5 40	25 5 21	25 5 24	25 5 32
26 5 18	26 4 58	26 5 2	26 5 8
27 4 53	27 4 34	27 4 30	27 4 44
28 4 31	28 4 10	28 4 14	28 4 21
29 4 6			

South declination.

South declination.

South declination.

March.

Leap year.			First.			Second.			Third.		
4			1			2			3		
1596			1597			1598			1599		
1600			1601			1602			1603		
1604			1605			1606			1607		
1608			1609			1610			1611		
1612			1613			1614			1615		
D	G	M	D	G	M	D	G	M	D	G	M
1	3	43	1	3	47	1	3	53	1	3	59
2	3	19	2	3	24	2	3	29	2	3	35
3	2	56	3	3	0	3	3	6	3	3	12
4	2	32	4	2	36	4	2	42	4	2	48
5	2	9	5	2	13	5	2	18	5	2	25
6	1	45	6	1	49	6	1	55	6	1	1
7	1	22	7	1	25	7	1	31	7	1	37
8	0	59	8	1	2	8	1	11	8	1	14
9	0	34	9	0	39	9	0	47	9	0	50
10	0	11	10	0	15	10	0	20	10	0	26
11	0	12	11	0	8	11	0	3	11	0	3
12	0	36	12	0	32	12	0	27	12	0	21
13	0	59	13	0	56	13	0	51	13	0	44
14	1	23	14	1	19	14	1	14	14	1	8
15	1	46	15	1	43	15	1	37	15	1	31
16	2	10	16	2	6	16	2	1	16	1	55
17	2	33	17	2	30	17	2	24	17	2	18
18	2	56	18	2	54	18	2	48	18	2	41
19	3	20	19	3	17	19	3	11	19	3	5
20	3	43	20	3	41	20	3	34	20	3	28
21	4	6	21	4	3	21	3	57	21	3	52
22	4	29	22	4	27	22	4	21	22	4	15
23	4	52	23	4	50	23	4	44	23	4	38
24	5	15	24	5	13	24	5	7	24	5	1
25	5	38	25	5	36	25	5	30	25	5	24
26	6	1	26	5	59	26	5	53	26	5	47
27	6	23	27	6	21	27	6	15	27	6	10
28	6	46	28	6	44	28	6	38	28	6	33
29	7	8	29	7	6	29	7	1	29	6	56
30	7	30	30	7	29	30	7	23	30	7	19
31	7	52	31	7	51	31	7	46	31	7	42

South declination.

Equi

North declination.

South declination.

nocti

North declination.

South declination.

all

North declination.

April.

Leap year.		First.		Second.		Third.	
4		1		2		3	
1596		1597		1598		1599	
1600		1601		1602		1603	
1604		1605		1606		1607	
1608		1609		1610		1611	
1612		1613		1614		1615	
D O M		D O M		D O M		D O M	
1 8 15	North declination.	1 8 13	North declination.	1 8 8	North declination.	1 8 10	North declination.
2 8 37		2 8 35		2 8 30		2 8 25	
3 8 58		3 8 57		3 8 52		3 8 47	
4 9 19		4 9 19		4 9 14		4 9 9	
5 9 41		5 9 41		5 9 36		5 9 30	
6 10 2		6 10 2		6 9 57		6 9 52	
7 10 23		7 10 23		7 10 18		7 10 13	
8 10 44		8 10 44		8 10 40		8 10 34	
9 11 6		9 11 5		9 11 1		9 10 55	
10 11 25		10 11 25		10 11 21		10 11 16	
11 11 46		11 11 45		11 11 42		11 11 36	
12 12 6		12 12 6		12 12 2		12 11 56	
13 12 26		13 12 26		13 12 22		13 12 16	
14 12 46		14 12 46		14 12 45		14 12 36	
15 13 5		15 13 6		15 13 3		15 12 56	
16 13 25		16 13 25		16 13 23		16 13 16	
17 13 44		17 13 44		17 13 42		17 13 35	
18 14 3		18 14 4		18 14 1		18 13 55	
19 14 22		19 14 22		19 14 20		19 14 14	
20 14 40		20 14 41		20 14 38		20 14 32	
21 14 59		21 14 59		21 14 58		21 14 51	
22 15 17		22 15 17		22 15 15		22 15 9	
23 15 35		23 15 35		23 15 33		23 15 27	
24 15 52		24 15 53		24 15 50		24 15 45	
25 16 9		25 16 10		25 15 8		25 16 2	
26 16 27		26 16 27		26 16 25		26 16 19	
27 16 43		27 16 44		27 16 42		27 16 36	
28 17 0		28 17 1		28 16 58		28 16 53	
29 17 16		29 17 17		29 17 14		29 17 9	
30 17 32		30 17 33		30 17 30		30 17 26	

May.

Leap year. First. Second. third.

4

1

2

3

1596

1597

1598

1599

1600

1601

1602

1603

1604

1605

1606

1607

1608

1609

1610

1611

1612

1613

1614

1615

D G H

D G H

D G H

D G H

1 17 48

1 17 49

1 17 45

1 17 48

2 18 3

2 17 57

2 18 1

2 18 3

3 18 18

3 18 12

3 18 16

3 18 18

4 18 33

4 18 27

4 18 31

4 18 33

5 18 48

5 18 41

5 18 45

5 18 48

6 19 2

6 18 56

6 19 0

6 19 3

7 19 16

7 19 9

7 19 13

7 19 17

8 19 29

8 19 23

8 19 27

8 19 31

9 19 42

9 19 36

9 19 40

9 19 43

10 19 56

10 19 49

10 19 53

10 19 56

11 20 8

11 20 52

11 20 6

11 20 8

12 20 20

12 20 14

12 20 17

12 20 20

13 20 32

13 20 26

13 20 30

13 20 32

14 20 43

14 20 38

14 20 41

14 20 42

15 20 54

15 20 49

15 20 53

15 20 54

16 21 5

16 21 0

16 21 4

16 21 5

17 21 16

17 21 10

17 21 14

17 21 16

18 21 26

18 21 20

18 21 24

18 21 26

19 21 35

19 21 30

19 21 34

19 21 32

20 21 45

20 21 39

20 21 43

20 21 41

21 21 54

21 21 49

21 21 52

21 21 50

22 22 2

22 21 57

22 22 0

22 21 59

23 22 10

23 22 6

23 22 8

23 22 7

24 22 18

24 22 14

24 22 16

24 22 15

25 22 25

25 22 21

25 22 24

25 22 22

26 22 33

26 22 28

26 22 32

26 22 30

27 22 39

27 22 35

27 22 40

27 22 36

28 22 45

28 22 41

28 22 44

28 22 42

29 22 51

26 22 47

29 22 49

29 22 48

30 22 56

30 22 52

30 22 54

30 22 54

31 22 5

31 22 57

31 22 5

31 22 58

North declination.

North declination.

North declination.

June.

Leap years. First. Second. Third.

4	1	2	3
1596	1597	1598	1599
1600	1601	1602	1603
1604	1605	1606	1607
1608	1609	1610	1611
1612	1613	1614	1615
D G H	D G H	D G H	D G H
1 23 0	1 23 4	1 23 4	1 23 3
2 23 7	2 23 9	2 23 8	2 23 7
3 23 12	3 23 13	3 23 12	3 23 11
4 23 16	4 23 16	4 23 16	4 23 15
5 23 19	5 23 19	5 23 20	5 23 18
6 23 22	6 23 22	6 23 22	6 23 21
7 23 24	7 23 24	7 23 23	7 23 23
8 23 26	8 23 26	8 23 25	8 23 25
9 23 27	9 23 27	9 23 26	9 23 26
10 23 28	10 23 28	10 23 27	10 23 27
11 23 28	11 23 28	11 23 28	11 23 28
12 23 28	12 23 28	12 23 28	12 23 28
13 23 28	13 23 28	13 23 28	13 23 28
14 23 27	14 23 27	14 23 28	14 23 27
15 23 25	15 23 26	15 23 26	15 23 26
16 23 23	16 23 24	16 23 25	16 23 25
17 23 22	17 23 22	17 23 23	17 23 23
18 23 18	18 23 19	18 23 22	18 23 21
19 23 15	19 23 16	19 23 17	19 23 18
20 23 12	20 23 13	20 23 14	20 23 15
21 23 8	21 23 9	21 23 10	21 23 11
22 23 4	22 23 5	22 23 6	22 23 7
23 22 59	23 23 1	23 23 2	23 23 4
24 22 54	24 22 56	24 22 57	24 22 58
25 22 49	25 22 51	25 22 52	25 22 53
26 22 43	26 22 45	26 22 47	26 22 48
27 22 39	27 22 38	27 22 40	27 22 41
28 22 30	28 22 32	28 22 34	28 22 35
29 22 23	29 22 25	29 22 27	29 22 26
30 22 15	30 22 18	30 22 20	30 22 21

North

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declination.

North

tropick.

declination.

North

tropick.

declination.

July.

Leap yeare.	First.	Second.	Third.
4	1	2	3
1596	1597	1598	1599
1600	1601	1602	1603
1604	1605	1606	1607
1608	1609	1610	1611
1612	1613	1614	1615
D C B	D C B	D C B	D C B
1 22 12	1 22 10	1 22 14	1 22 21
2 22 4	2 22 2	2 22 4	2 22 6
3 21 56	3 21 54	3 21 56	3 21 58
4 21 47	4 21 45	4 21 47	4 21 49
5 21 33	5 21 35	5 21 38	5 21 40
6 21 28	6 21 26	6 21 28	6 21 30
7 21 15	7 21 16	7 21 19	7 21 21
8 21 2	8 21 6	8 21 6	8 21 11
9 20 52	9 20 55	9 20 58	9 21 0
10 20 47	10 20 44	10 20 47	10 20 49
11 20 35	11 20 33	11 20 36	11 20 38
12 20 17	12 20 21	12 20 24	12 20 26
13 20 5	13 20 5	13 20 12	13 20 14
14 19 52	14 19 57	14 20 0	14 20 6
15 19 41	15 19 44	15 19 47	15 19 49
16 19 27	16 19 31	16 19 34	16 19 36
17 19 13	17 19 17	17 19 20	17 19 23
18 18 55	18 19 4	18 19 7	18 19 10
19 18 45	19 18 42	19 18 53	19 18 56
20 18 31	20 18 35	20 18 38	20 18 43
21 18 16	21 18 21	21 18 24	21 18 28
22 18 1	22 18 6	22 18 9	22 18 13
23 17 47	23 17 51	23 17 54	23 17 58
24 17 30	24 17 35	24 17 38	24 17 42
25 17 14	25 17 19	25 17 23	25 17 26
26 16 58	26 17 3	26 17 6	26 17 11
27 16 42	27 16 47	27 16 50	27 16 55
28 16 25	28 16 30	28 16 33	28 16 38
29 15 8	29 16 13	29 16 17	29 16 21
30 15 51	30 15 56	30 16 0	30 16 4
31 15 33	31 15 39	31 15 41	31 15 47

North declination.

North declination.

North declination.

August.

Leap year.	First.	Second.	Third.
4	1	2	3
1596	1597	1598	1599
1600	1601	1602	1603
1604	1605	1606	1607
1608	1609	1610	1611
1612	1613	1614	1615
D C 99	D C 99	D C 99	D C 99
1 15 15	1 15 21	1 15 25	1 15 30
2 14 57	2 15 3	2 15 7	2 15 12
3 14 39	3 14 45	3 14 49	3 14 54
4 14 20	4 14 27	4 14 31	4 14 36
5 14 2	5 14 8	5 14 12	5 14 18
6 13 43	6 13 49	6 13 53	6 13 59
7 13 24	7 13 30	7 13 34	7 13 40
8 13 5	8 13 9	8 13 15	8 13 20
9 12 41	9 12 51	9 12 56	9 13 2
10 12 25	10 12 31	10 12 36	10 12 42
11 12 5	11 12 12	11 12 16	11 12 23
12 11 45	12 11 52	12 11 56	12 11 3
13 11 25	13 11 32	13 11 36	13 11 42
14 11 4	14 11 11	14 11 16	14 11 22
15 10 44	15 10 51	15 10 59	15 11 2
16 10 23	16 10 30	16 10 35	16 10 41
17 10 2	17 10 9	17 10 14	17 10 20
18 9 41	18 9 48	18 9 53	18 9 59
19 9 19	19 9 27	19 9 31	19 9 39
20 8 58	20 9 5	20 9 10	20 9 16
21 8 35	21 8 44	21 8 49	21 8 15
22 8 15	22 8 22	22 8 27	22 8 33
23 7 53	23 8 0	23 8 5	23 8 11
24 7 31	24 7 38	24 7 43	24 7 50
25 7 9	25 7 16	25 7 21	25 7 28
26 6 47	26 6 53	26 6 59	26 7 5
27 6 25	27 6 31	27 6 36	27 6 43
28 6 1	28 6 9	28 6 14	28 6 20
29 5 39	29 5 46	29 5 51	29 5 57
30 5 16	30 5 23	30 5 29	30 5 31
31 4 53	31 5 0	31 5 6	31 5 12

North declination.

North declination.

North declination.

September.

Leap year.				First.				Second.				Third.			
4				1				2				3			
1596				1597				1598				1599			
1600				1601				1602				1603			
1604				1605				1606				1607			
1608				1609				1610				1611			
1612				1613				1614				1615			
D	G	P		D	G	P		D	G	P		D	G	P	
1	4	43	North declination.	1	4	38	North declination.	1	4	42	North declination.	1	4	49	North declination.
2	4	20		2	4	14		2	4	20		2	4	26	
3	3	57		3	3	51		3	3	56		3	4	13	
4	3	34		4	3	28		4	3	33		4	3	39	
5	3	12		5	3	5		5	3	10		5	3	16	
6	2	47		6	2	37		6	2	47		6	2	53	
7	2	24		7	2	18		7	2	23		7	2	29	
8	2	1		8	1	55		8	2	0		8	2	6	
9	1	37		9	1	31		9	1	37		9	1	43	
10	1	14		10	1	8		10	1	13		10	1	19	
11	0	51	Equi South declination.	11	0	45	Equi South declination.	11	0	49	Equi South declination.	11	0	56	Equi South declination.
12	0	27		12	0	21		12	0	26		12	0	32	
13	0	3		13	0	21		13	0	3		13	0	9	
14	0	20		14	0	25		14	0	21		14	0	15	
15	0	43		15	0	48		15	0	44		15	0	38	
16	1	7		16	1	12		16	1	8		16	1	2	
17	1	30		17	1	35		17	1	31		17	1	25	
18	1	54		18	1	58		18	1	55		18	1	48	
19	2	17		19	2	22		19	2	18		19	2	12	
20	2	41		20	2	45		20	2	45		20	2	35	
21	3	4	Equi South declination.	21	3	9	Equi South declination.	21	3	5	Equi South declination.	21	3	59	Equi South declination.
22	3	27		22	3	32		22	3	28		22	3	32	
23	3	50		23	3	55		23	3	51		23	3	45	
24	4	14		24	4	18		24	4	15		24	4	9	
25	4	37		25	4	41		25	4	38		25	4	32	
26	5	0		26	5	4		26	5	1		26	4	55	
27	5	23		27	5	27		27	5	23		27	5	18	
28	5	46		28	5	51		28	5	46		28	5	41	
29	6	8		29	6	14		29	6	9		29	6	4	
30	6	31		30	6	36		30	6	32		30	6	26	

October

Leap year.			First.			Second.			Third.		
4			1			2			3		
1596			1597			1598			1599		
1600			1601			1602			1603		
1604			1605			1606			1607		
1608			1609			1610			1611		
1612			1613			1614			1615		
D	S	D	D	S	D	D	S	D	D	S	D
1	6	53	1	7	0	1	6	54	1	6	48
2	7	16	2	7	22	2	7	17	2	7	11
3	7	38	3	7	44	3	7	39	3	7	33
4	8	1	4	8	7	4	8	1	4	7	55
5	8	23	5	8	29	5	8	24	5	8	18
6	8	45	6	8	51	6	8	46	6	8	40
7	9	7	7	9	13	7	9	8	7	9	2
8	9	30	8	9	36	8	9	30	8	9	29
9	9	52	9	9	58	9	9	52	9	9	42
10	10	13	10	10	19	10	10	13	10	10	8
11	10	35	11	10	41	11	10	35	11	10	29
12	10	56	12	11	2	12	11	0	12	10	51
13	11	17	13	11	23	13	11	18	13	11	12
14	11	39	14	11	45	14	11	39	14	11	33
15	11	59	15	12	5	15	12	0	15	11	54
16	12	20	16	12	26	16	12	21	16	12	15
17	12	41	17	12	47	17	12	41	17	12	36
18	13	1	18	13	7	18	13	1	18	12	56
19	13	21	19	13	27	19	13	22	19	13	17
20	13	41	20	13	47	20	13	41	20	13	36
21	14	1	21	14	6	21	14	1	21	13	56
22	14	17	22	14	26	22	14	21	22	14	16
23	14	39	23	14	45	23	14	40	23	14	35
24	14	58	24	15	4	24	14	59	24	14	54
25	15	17	25	15	23	25	15	17	25	15	13
26	15	35	26	15	41	26	15	36	26	15	31
27	15	54	27	15	59	27	15	54	27	15	50
28	16	12	28	16	17	28	16	12	28	16	8
29	16	29	29	16	35	29	16	30	29	16	25
30	16	47	30	16	52	30	16	47	30	16	43
31	17	4	31	17	9	31	17	4	31	17	0

North declination.

South declination.

North declination.

South declination.

North declination.

South declination.

November.

Leap years.	First.	Second.	third.
4	1	2	3
1596	1597	1598	1599
1600	1601	1602	1603
1604	1605	1606	1607
1608	1609	1610	1611
1612	1613	1614	1615
D G M	D G M	D G M	D G M
1 17 30	1 17 26	1 17 21	1 17 17
2 17 53	2 17 42	2 17 38	2 17 33
3 18 15	3 17 58	3 17 54	3 17 49
4 18 25	4 18 14	4 18 9	4 18 6
5 18 41	5 18 29	5 18 25	5 18 22
6 18 55	6 18 44	6 18 40	6 18 37
7 19 10	7 18 59	7 18 55	7 18 52
8 19 24	8 19 14	8 19 10	8 19 6
9 19 38	9 19 26	9 19 24	9 19 21
10 19 52	10 19 42	10 19 36	10 19 33
11 20 5	11 19 45	11 19 42	11 19 38
12 20 18	12 20 8	12 20 5	12 20 4
13 20 30	13 20 21	13 20 18	13 20 14
14 20 43	14 20 34	14 20 30	14 20 27
15 20 54	15 20 46	15 20 42	15 20 39
16 21 6	16 20 57	16 20 54	16 20 51
17 21 17	17 21 8	17 21 5	17 21 3
18 21 37	18 21 19	18 21 16	18 21 14
19 21 37	19 21 29	19 21 27	19 21 24
20 21 47	20 21 32	20 21 37	20 21 33
21 21 56	21 21 49	21 21 47	21 21 44
22 22 5	22 21 58	22 21 56	22 21 54
23 22 14	23 22 7	23 22 5	23 22 3
24 22 21	24 22 15	24 22 14	24 22 11
25 22 29	25 22 23	25 22 24	25 22 19
26 22 36	26 22 31	26 22 29	26 22 27
27 22 43	27 22 38	27 22 37	27 22 34
28 22 49	28 22 44	28 22 43	28 22 41
29 22 55	26 22 50	29 22 49	29 22 47
30 23 0	30 22 56	30 22 54	30 22 53

South declination.

South declination.

South declination.

December.

Leap year.		First.		Second.		Third.	
4		1		2		3	
1596		1597		1598		1599	
1600		1601		1602		1603	
1604		1605		1606		1607	
1608		1609		1610		1611	
1612		1613		1614		1615	
D	G	D	G	D	G	D	G
1 23 1		1 23 1		1 23 0		1 23 1	
2 23 10		2 23 6		2 23 5		2 23 10	
3 23 14		3 23 10		3 23 9		3 23 14	
4 23 17		4 23 14		4 23 13		4 23 17	
5 23 20	South tropick. declination.	5 23 17	South tropick declination.	5 23 17	South tropick. declination.	5 23 19	
6 23 22		6 23 20		6 23 20		6 13 21	
7 23 25		7 23 23		7 23 22		7 23 24	
8 23 26		8 23 25		8 23 25		8 23 26	
9 23 27		9 23 26		9 23 26		9 23 27	
10 23 28		10 23 27		10 23 27		10 23 28	
11 23 28		11 23 28		11 23 28		11 23 28	
12 23 28		12 23 28		12 23 28		12 23 28	
13 23 27		13 23 28		13 23 28		13 23 27	
14 23 26		14 23 27		14 23 27		14 23 26	
15 23 24		15 23 26		15 23 26		15 23 24	
16 23 21		16 23 24		16 23 24		16 23 21	
17 23 18		17 23 21		17 23 22		17 23 18	
18 23 15		18 23 19		18 23 20		18 23 15	
19 23 12		19 23 16		19 23 17		19 23 12	
20 23 8		20 23 12		20 23 13		20 23 8	
21 23 6		21 23 8		21 23 7		21 23 5	
22 22 57		22 23 3		22 23 4		22 22 57	
23 22 52		23 22 58		23 22 59		23 22 53	
24 22 46		24 22 52		24 22 54		24 22 46	
25 22 40		25 22 47		25 22 48		25 22 40	
26 22 33		26 22 40		26 22 42		26 22 33	
27 22 25		27 22 36		27 22 35		27 22 25	
28 22 18		28 22 30		28 22 28		28 22 18	
29 22 9		29 22 24		29 22 20		29 22 9	
30 22 0		30 22 14		30 22 12		30 22 0	
31 21 52		31 22 6		31 22 4		31 21 52

Howe to vse the Suns Declination, for know- ing the elevation of the Pole.

First learne whether the Sunne haue South Declination, or North Declination. Then marke the shadowe hee giueth, whether it shewe towardes the Pole he is nearest, or to the contrary.

If the Sunne giue shadowe, the same way that he is from the Equinoctiall, hee shall bee betweene you and the Equinoctiall, then take the meridian altitude, and subtract it from 90. vnto the rest, adioyne your Declination for the day, the Sunne of both is the elevation of the Pole, or your distance from the Equinoctiall.

But if the Sun giue the shadowe to the contrarie side of the Equinoctiall that hee is in (that is to say) the Sun in North Declination giue the shadowe Southwardes, or in South Declinations giue the shadowe Northwardes, then either the Equinoctiall shall bee betweene you and the sun, or you in the Equinoctiall, or els you shall bee betweene the Equinoctiall and the sun, which you shall thus know.

Adde vnto your Meridian altitude of the sunne, the Declination for the day, if it amount to lesse then 90. d. so much as wanteth of 90. d. you shall be from the Equinoctiall that way that the shadowe goeth.

But if it amount iust to 90. d. you shall be vnder the Equinoctiall. If it amount to more then 90. d. so much as is ouer and aboue 90. d. you shall bee from the Equinoctiall towards the sun, betweene the Equinoctiall and the sun.

And if at any time you shall obserue the suns altitude in your Zenith, then looke what declination it hath, and so much shall you be from the Equinoctiall, on the same side the sunne is in, but if he haue no Declination, then you shall be vnder the Equinoctiall line.

Hereafter followeth three Tables, the first is
of the Coniunctions of the sunne and Moone : the
second of their oppositions, exactly drawn out of
Iohannes Stadius Ephemerides : and the third
of the Prime and moouable
Feastes.

In the two first Tables in euery square
of euery Cullum, you shall finde noted,
three numbers, which haue severall signi-
fications : the first number is for the date
of the Moneth, the second for houres, and
the third for minutes, of the middle instant
of time, for the coniunction or opposition of the Sunne and
Moone.

We are to note that the naturall day accounted in these
tables, beginneth alwaies at the instant of none, or mid-
day, and continueth till the next day none, which is the
iust time of 24. houres.

Therefore, when you finde the seconde number in anie
square of the two first Tables, to exceede 12. the same is
to be accounted with the minutes following, (which is the
thirde number) for so much after midnight, or of the mo-
ning, or soz enoone of the next day.

The vse of the Tables.

First seeke in the third Table the Prime, answerable
to the yeare of our Lozde. Then returne to the Ta-
ble of Coniunction, or apposition of the Moone, and in
the first cullum seeke the same number of the Prime.
Then in the head of the Table, you shall seek the Moneth,
for

for which you desire to knowe the coniunction or apposition: and descending downe the same Cullum, till you come against the Prime specified, in that square you shall finde three numbers noted, the first is for the day of the moneth, the second the houre, and the thirde the minutes to bee adioyned with the houre, for the middole instant of tyme of the coniunction or opposition.

Example.

This yeare 1581. I desire to knowe the day of the Mooones Coniunction or Change, in the Moneth of August, I seeke in the third Table (or Table of the moouable Feasts) for the Prime, and finde it to be 5. with which number I returne vnto the first Table, (which is the Table of the coniunction or change) and find the same in the first Cullum. Then I seeke in the head of the Table for August, and descending downe in the same Cullum, till I come to the square which answereth to the Prime 5. I finde therein noted 28—16—45. which signifie that the coniunction is the 28. day of the Moneth, at 16. H—45. M—and because the seconde number exceedeth 12. therefore I say that the coniunction shall bee the 29. day at 4. H—45—M. in the morning.

But if you find in any one square three numbers double noted, they doo signifie, that in the same Moneth there is two coniunctions or oppositions, and likewise doo the we the dayes, houres, and minutes thereof.

If in any square in the Cullum of any moneth in the Table of Coniunction, you finde noted this marke *. the same doth signifie the Eclipse of the Sunne at the instant of time noted for the coniunction in that moneth.

Likewise, if in any square in the Table of the oppositions or full Mooones, you finde this marke & the same dooth signifie the eclipse of the Moone, at the instant of tyme noted in the same square.

December.	November.	October.	September.	August.	July.	June.	May.	April.	March.	February.	January.	Prime.
9	13	3	20	40	30	0	22	14	6	0	22	1
23	18	20	20	40	30	0	22	14	6	0	22	1
28	28	30	40	30	40	30	5	6	7	5	7	2
2	15	4	30	40	30	40	17	3	12	23	11	3
30	49	30	30	40	30	40	50	11	50	28	10	4
17	18	19	19	21	22	23	24	24	26	24	26	5
17	5	14	23	7	15	0	10	22	10	23	12	6
30	3	50	12	24	48	40	50	5	19	10	53	7
7	7	8	9	10	11	12	13	14	16	14	16	8
4	11	0	0	17	5	10	10	9	0	14	5	9
6	30	50	16	10	48	20	30	1	50	0	0	10
15	25	26	28	29	30	21	2	3	4	5	5	11
1	7	12	17	1	12	16	8	1	16	6	18	12
40	14	8	50	51	30	4	4	6	40	50	20	13
14	14	15	17	18	19	21	22	23	22	23	23	14
2	6	12	21	23	15	9	11	17	7	17	17	15
21	47	41	25	14	38	1	50	50	30	10	50	16
3	3	4	5	6	8	9	11	11	13	11	12	17
2	11	19	8	23	16	9	1	17	5	15	21	18
16	25	12	5	23	8	20	50	0	30	0	30	19
21	22	23	24	26	27	28	30	30	2	1	13	20
83	7	19	0	8	16	9	14	1	10	10	21	21
13	54	3	40	9	25	30	20	40	50	30	20	22
10	20	10	13	14	16	18	18	18	19	20	26	23
8	20	10	1	1	7	9	9	19	16	16	16	24
10	29	24	25	42	41	30	40	50	50	30	30	29
29	29	31	2	4	5	6	7	7	7	7	8	10
9	22	12	16	4	16	3	12	20	4	12	21	10
48	50	38	4	29	50	10	30	40	40	40	30	11

June.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
11	27	29	27	26	26	24	24	23	21	21	19	19
1	21	10	23	13	4	19	10	0	14	2	14	1
	20	0	30	30	30	20	12	33	8	56	42	42
12	17	15	16	15	15	13	13	11	10	9	8	7
	15	23	22	10	23	17	8	21	10	21	9	20
	11	40	10	25	30	24	12	50	50	30	38	12
13	6	4	6	4	4	2	2	30	29	28	27	26
	6	16	3	15	3	18	8	15	6	21	9	21
	30	50	30	40	3	18	19	30	30	0	46	24
14	25	23	25	23	22	21	20	19	18	17	19	10
	8	18	5	13	23	11	23	15	8	23	18	9
	4	30	40	4	50	36	50	20	48	30	50	50
15	14	13	14	13	12	10	10	8	7	6	5	5
	22	10	20	2	12	21	6	18	9	23	20	14
	30	50	0	30	50	30	30	45	22	50	24	48
16	4	2	3	1	30	28	28	26	25	24	23	23
	9	23	11	21	12	20	4	14	4	20	14	10
	17	40	55	20	32	17	3	40	0	12	30	8
17	22	20	22	20	20	18	17	15	14	13	12	12
	5	21	10	21	5	13	20	23	10	23	13	8
	39	25	50	25	40	6	30	50	47	50	55	32
18	11	9	11	10	9	8	7	5	3	3	1	13
	5	23	18	2	20	5	12	20	23	10	20	10
	32	40	10	4	3	32	20	0	50	50	56	30
19	29	28	30	27	28	26	26	24	23	22	20	20
	23	18	11	23	15	23	12	20	4	12	22	10
	12	42	50	30	38	50	0	30	6	5	35	36

Drum.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1	5 10 14	3 11 32	3 22 40	2 27 8	13 15 38	29 7 18	28 18 0	27 16 2	25 21 2	25 14 30	24 9 50	24 5 9
2	22 22 48	21 13 1	23 1 10	21 10 12	20 17 30	19 0 20	18 7 30	16 20 4	15 20 50	14 16 50	13 9 40	13 4 48
3	12 0 24	10 18 50	12 10 32	10 23 20	10 9 20	8 17 30	8 0 43	6 7 50	4 15 50	4 1 50	2 14 30	2 6 12
4	130 190 46	130 190 46	131 135 030	29 19 30	29 7 3	27 16 30	27 0 42	25 8 40	23 16 40	23 2 42	21 14 22	21 4 17
5	19 20 15	18 30 20	19 6 30	17 22 30	17 30 30	16 2 30	15 14 1	14 0 13	12 9 36	11 18 50	10 4 40	9 15 40
6	8 30 50	6 17 30	8 8 20	6 23 40	6 15 0	5 6 10	4 20 30	3 9 50	1 22 23	130 920 5050	29 7 38	28 18 1
7	27 6 30	25 16 10	27 4 0	25 17 30	25 7 30	23 19 50	23 13 5	22 4 17	20 19 7	20 9 15	18 22 15	18 10 0
8	16 20 30	15 6 20	16 16 0	15 1 50	14 12 40	13 0 40	12 14 21	11 5 30	9 21 50	9 14 47	8 7 34	7 22 30
9	6 11 40	4 22 50	5 8 10	3 16 30	3 0 40	1 9 30	30 7 1	28 22 27	27 15 26	27 9 25	26 4 9	25 21 29
10	24 12 0	23 0 9	24 9 40	22 17 20	22 0 20	20 7 0	19 16 35	18 3 21	16 17 5	16 9 26	15 4 12	14 23 47

Prime.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
11	18	10	23	9	17	0	7	15	10	13	5	23
	20	30	30	40	50	40	30	21	0	26	0	10
	3	2	2	130	29	21	27	25	24	23	20	22
12	12	5	18	5	13	21	3	15	9	23	18	13
	25	40	40	20	50	19	18	40	50	36	20	30
	21	19	21	20	19	17	17	15	13	13	11	11
13	8	23	16	3	33	21	2	11	20	0	20	12
	50	0	30	30	10	40	30	25	12	50	30	50
	10	9	10	9	8	7	6	5	3	2	130	30
14	8	3	21	12	23	12	20	4	12	20	6	19
	6	20	5	40	50	13	20	11	9	50	35	50
	18	17	29	28	27	26	25	24	22	21	20	19
15	23	21	14	7	21	9	19	4	19	22	88	19
	30	22	37	0	7	25	12	30	30	30	7	34
	18	16	17	16	15	14	14	12	10	10	8	8
16	9	23	15	7	23	30	2	16	23	14	23	10
	36	36	27	35	25	36	30	8	50	30	30	30
	6	5	6	5	4	3	3	131	29	29	27	27
17	22	9	20	10	23	15	4	20	10	23	23	12
	12	17	11	38	50	25	35	48	30	30	50	12
	25	24	25	24	23	22	21	20	19	18	17	16
18	23	10	20	7	19	8	21	12	4	22	12	23
	50	12	13	13	25	11	30	30	8	16	16	50
	15	14	5	13	13	11	10	9	8	7	4	6
19	15	7	11	20	5	14	23	12	5	22	16	10
	6	34	30	12	9	53	30	50	30	30	30	0

Heere followeth an Almanacke, whereby may bee
 knowne the Prime, Epact & Dominicall letter : as also the
 moouable Feastes for 24. yeares to come.

Which Almanacke is to be referred
 to the Kalender in the begin-
 ning of the booke.

Anno Domini.	The prime.	The Epact.	The Sunday letter	Easter daies.	Rogation Sunday.	Ascension day.	Whitsunday.	Midsummer.	Betweene Whit- sonide and Midsummer.	week date
1596	1	11	D	11. April.	16. May.	20. May.	30. May.	3.	4	
1597	2	22	B	27. March.	1. May.	5. May.	15. May.	5.	5	
1598	3	3	A	16. April.	21. May.	25. May.	4. Iune.	2.	6	
1599	4	14	D	8. April.	13. May.	17. May.	27. May.	4.	0	
1600	5	25	F	23. March.	27. April.	1. May.	11. May.	6.	2	
1601	6	6	A	12. April.	17. May.	21. May.	31. May.	3.	3	
1602	7	17	D	4. Aprill.	9. May.	12. May.	23. May.	4.	4	
1603	8	28	B	24. Aprill.	29. May.	2. Iune.	12. Iune.	1.	5	
1604	9	9	A	8. April.	13. May.	17. May.	27. May.	4.	0	
1605	10	20	F	31. March.	5. May.	9. May.	19. May.	5.	1	
1606	11	1	D	20. April.	25. May.	29. May.	8. Iune.	2.	2	
1607	12	12	B	5. April.	10. May.	14. May.	24. May.	4.	3	
1608	13	23	A	27. March.	1. May.	5. May.	15. May.	5.	5	
1609	14	4	D	16. April.	21. May.	25. May.	4. Iune.	2.	6	
1610	15	15	B	1. April.	6. May.	10. May.	20. May.	5.	0	
1611	16	26	A	24. March.	28. April.	2. May.	12. May.	6.	1	
1612	17	7	D	12. Aprill.	17. May.	21. May.	31. May.	3.	3	
1613	18	18	B	4. Aprill.	9. May.	13. May.	23. May.	4.	4	
1614	19	29	A	7. April.	22. May.	26. May.	5. Iune.	2.	5	
1615	1	11	D	9. April.	14. May.	18. May.	28. May.	3.	6	
1616	2	22	B	31. March.	5. May.	9. May.	19. May.	5.	1	
1617	3	3	A	13. April.	18. May.	22. May.	1. Iune.	3.	2	
1618	4	14	D	5. April.	10. May.	14. May.	24. May.	4.	3	
1629	5	25	B	28. March.	2. May.	6. May.	15. May.	5.	4	

The contents of the Kalen-

der following.

In the first and second Cullum, vnder the title daies, are the daies of the moneth, & dominical letters, the third is of the feasts: the fourth cullum sheweth howe manie houres and minutes the day containeth from Sun rising to Sun setting, the Vale being eleuated 52. degrees. The fifth cullum of the 27. letters serueth with the help of a Table following, to know what signe the Moone is in at all times.

How by the length of the day is knowen the length of the night, with the houre and minute of the Sunnes rising and setting.

Deuide the length of the day, which you shall finde in the Kalender, into two partes equally, the one halfe sheweth the houres and minutes of the Sunnes setting, the houres and minutes of the setting, being subtracted from 12. the remaine sheweth the houres and minutes of the rising: the whole arke or length of the day, being subtracted from 24 the rest sheweth the length of the night (that is to say) from Sunne setting to Sunnes rising.

As for example.

The 15. of Ianuary, I finde in the Kalender the length of the day to be 8. houres 30 minutes, which being deuided the halfe thereof is 4. houres. 15. minutes, the Sunnes setting that day: this 4. houres, 15. minutes, subtracted from 12. resteth 7. houres, 45. minutes, which is the houre of the Sunnes rising: subtract 8. houres 30. minutes, the whole length of the day, out of 24. rest 15. houres, 30. minutes, which is the length of the night that day of the moneth.

The

Days.	January.	Length of the daies.	Days.	February.	Length of the day.
1	New yeres day	7 25 b	1	Fast.	9 28 e
2	Octa. Stephen.	7 55 a	2	Purif. of Mary	9 32 f
3	Octa. John.	7 58 c	3	Blase. Martyr	9 36 g
4	Octa. Innocet.	8 c d	4	Gilbert confel.	9 40 h
5	Depo. of Colw	8 3 e	5	Agathe virgin	9 44 i
6	Twelve day.	8 6 f	6	Dorothe Vir.	9 48 k
7	Felix & Janu.	8 8 g	7	Angalle.	9 52 l
8	Lucian Priest	8 11 h	8	Sallomon.	9 56 m
9	Joyce Virgin.	8 14 i	9	Sol in Pisces.	10 0 n
10		8 16 k	10	Scollastica.	10 4 o
11	Sol in Aquar.	8 18 l	11	Bother Bishop	10 8 p
12	Atlas.	8 20 m	12	Eufrase virgin	10 10 q
13	Billarie Bish	8 24 n	13		10 14 r
14	Felicia.	8 26 o	14	Valentine.	10 18 s
15	Barice.	8 30 p	15		10 22 t
16	Barcell.	8 33 q	16	Julian virgin.	10 26 u
17	Depo. of Anth.	8 36 r	17	Germaine.	10 30 v
18	Prisca Virgin	8 40 s	18	Hugh Bishop.	10 34 w
19	Wolstane bish	8 43 t	19	Simeon.	10 38 x
20	Fabian & Seb.	8 46 u	20	Bildred.	10 42 y
21	Agnes Virgin	8 50 v	21	Leir. Partirs	10 46 z
22	Vincent mart.	8 52 w	22	Peters chaires	10 50 a
23	Timothe.	8 56 x	23	Fast.	10 54 b
24	Emerice.	9 c y	24	Mathie Apost.	11 0 c
25	Conu. of Paule.	9 4 z	25	Inuent. Poule	11 2 d
26	Policarp. mar.	9 6 a	26	Pestor.	11 7 e
27	Chrisost. doct.	9 10 b	27	Alexander.	11 12 f
28	Theodor. priest	9 14 c	28	Augustine.	11 16 g
29	Halerie bishop	9 18 d			
30	Bateld queene	9 22 e			
31	Saturn & Wic	9 26 f			

The Kalender

Days.	March.	Length of the daies.	Days.	Aprill.	Length of the day.
1	d David.	11 24 f	1	g Gilbert.	13 30 k
2	e Chadde.	11 24 a	2	a Marie Egypt.	13 34 l
3	f Maurice.	11 30 d	3	j Richard Bish.	13 38 m
4	g Adrian.	11 36 e	4	c Ambrose.	13 42 n
5	a Focas & Euse.	11 40 f	5	d Vincent.	13 46 o
6	b Alet & Aemin.	11 44 g	6	e Sertus.	13 50 p
7	c Perpetue.	11 48 h	7	f Euphemy.	13 52 q
8	d Depo. of Felix	11 52 i	8	g Dionisies.	13 56 r
9	e Forty martirs	11 56 j	9	a Perpetuus.	14 00 s
10	f Agapit.	12 00 k	10	b Apolinia.	14 02 t
11	g Sol in Aries	12 04 l	11	c Sol in Taurus.	14 04 u
12	a Gregorie bish	12 08 m	12	d Sother.	14 08 v
13	b Theodoze.	12 12 n	13	e Marcus.	14 12 w
14	c Candide.	12 16 o	14	f Liburtie.	14 16 x
15	d Longine.	12 20 p	15	g Osmond.	14 20 y
16	e Vilia & Jonast	12 24 a	16	a Ildoxie.	14 24 z
17	f Bertude.	12 28 b	17	b Anisette.	14 28 A
18	g Edward king.	12 32 c	18	c Cluthertius.	14 32 B
19	a Iose. Pa hus.	12 36 d	19	d Alphege.	14 34 C
20	b Cutbart.	12 40 e	20	e Victor.	14 38 D
21	c Benedict.	12 44 f	21	f Dimion.	14 42 E
22	d Afrodose.	12 48 g	22	g Sother.	14 46 F
23	e Theodoze.	12 52 h	23	a George Part	14 50 G
24	f Fast.	12 56 i	24	b Milfride.	14 54 H
25	g Annū of Man	13 00 j	25	c Marke Euang	14 58 I
26	a Iakoz martin	13 04 k	26	d Clete.	15 02 J
27	b Perciany.	13 08 l	27	e Anassatius.	15 06 K
28	c Rupert.	13 12 m	28	f Tales.	15 10 L
29	d Ildoxine.	13 16 n	29	g Peter of Pa.	15 14 M
30	e Quirine.	13 20 o	30	a Dep. of Erken	15 18 N
31	f Adeline.	13 24 p			

The Kalender.

Dayes.	May.	Length of the daies.	Dayes.	Iune.	Length of the day.
1	b	Philip & Iacob.	15	18	1
2	c	Athanasius.	15	20	1
3	d	Iuu. of crosse.	15	24	1
4	e	Christopher.	15	28	1
5	f	Godarde.	15	30	1
6	g	John Port Lat.	15	32	5
7	A	John of Beuer.	15	34	1
8	b	Aper. of Richa.	15	36	1
9	c	Erans. of Pic.	15	40	1
10	d	Gordian.	15	42	3
11	e	Anthony.	15	44	1
12	f	Sol in Gemini.	15	46	2
13	g	Herastus.	15	49	3
14	A	Boniface mart.	15	52	7
15	b	Isidore.	15	54	18
16	c	Discoy. Mart.	15	57	a
17	d	Dunskane.	16	0	3
18	e	Bernardine.	16	2	3
19	f	Aquilla.	16	5	3
20	g	Dunstone.	16	8	2
21	A	Barnardine.	16	10	7
22	b	Helenaquene.	16	12	g
23	c	Delideri.	16	14	3
24	d	Herale.	16	15	1
25	e	Arbane.	16	16	k
26	f	Adeline: confess.	16	18	1
27	g	Wede Priest.	16	19	m
28	A	Germaine.	16	20	n
29	b	Cozone.	16	21	3
30	c	Felix.	16	22	p
31	d	Petronill.	16	23	1
1	e	Pichomede.	16	24	r
2	f	Barcell.	16	25	s
3	g	Crastinus.	16	26	s
4	A	Petrocz.	16	27	t
5	b	Boniface.	16	28	b
6	c	Gelon.	16	28	u
7	d	Paule Bishop	16	29	r
8	e	Tras. of Com.	16	30	y
9	f	Ianna. confess.	16	30	z
10	g	Tras of Wollf	16	30	z
11	A	Barnard Apo.	16	30	st
12	b	Sol in Cancer.	16	30	1
13	c	Anthonye.	16	30	b
14	d	Basilides.	16	30	c
15	e	Life and God:	16	29	a
16	f	Tran of Rich.	16	28	e
17	g	Witulphe.	16	28	f
18	A	Dir. & Parcel.	16	27	g
19	b	Geruastus.	16	27	h
20	c	Tran. of Edw.	16	26	i
21	d	Wilburge.	16	25	k
22	e	Albane.	16	24	l
23	f	Fast.	16	23	m
24	g	John Baptist.	16	22	n
25	A	Amudi.	16	20	o
26	b	John & Paule.	16	19	p
27	c	Trescence.	16	18	q
28	d	Fast.	16	16	r
29	e	Peter & Paule.	16	15	s
30	f	Conr. of Paule.	16	14	t

The Kalender.

Dates.	Iulie.	Length of the daie.	Days.	August.	Length of the daie.
1	g	16	1	c	14
2	a	16	2	d	14
3	b	16	3	e	14
4	c	16	4	f	14
5	d	16	5	g	14
6	e	16	6	a	14
7	f	16	7	b	14
8	g	15	8	c	14
9	a	15	9	d	14
10	b	15	10	e	14
11	c	15	11	f	14
12	d	15	12	g	14
13	e	15	13	a	14
14	f	15	14	b	14
15	g	15	15	c	13
16	a	15	16	d	13
17	b	15	17	e	13
18	c	15	18	f	13
19	d	15	19	g	13
20	e	15	20	a	13
21	f	15	21	b	13
22	g	15	22	c	13
23	a	15	23	d	13
24	b	15	24	e	13
25	c	15	25	f	13
26	d	15	26	g	13
27	e	15	27	a	13
28	f	14	28	b	13
29	g	14	29	c	13
30	a	14	30	d	12
31	b	15	31	e	12
				f	
				g	
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The Kalender.

Dates.	September.		Length of the daie.	Daye.	October.		Length of the daie.
1 st	Dues.	12	48	1	a Remigius.	10	40
2 ^d	Anthony mar.	12	44	2	b Leodegarie.	10	42
3 ^d	Lupus B. Shp.	12	40	3	c Candido.	10	38
4 th	Trans. Cuthb.	12	36	4	d Frances.	10	34
5 th	Bertine.	12	32	5	e Apoline.	10	30
6 th	Eugenius.	12	28	6	f Faith.	10	26
7 th	Nati. Eliz. Reg.	12	24	7	g Martine.	10	22
8 th	Natiu. of Mari.	12	20	8	a Delagius.	10	18
9 th	Gorgonie.	12	16	9	a Gercon & Nic.	10	14
10 th	Siluius Bish.	12	12	10	c Picasius.	10	10
11 th	Protec. & Dist.	12	8	11	d Edward King.	10	8
12 th	Partinian.	12	4	12	e Adoiant.	10	4
13 th	Sol in Libra.	12	0	13	f Calictes.	10	0
14 th	Holie Crosse.	11	56	14	g Sol in Scorpio.	9	56
15 th	Whilteus.	11	52	15	a Wolfran.	9	52
16 th	Edith.	11	48	16	b Rich of y mou.	9	48
17 th	Lambert.	11	44	17	c Etheloyed.	9	44
18 th	Rich. and Coz.	11	40	18	d Luke Euangel.	9	40
19 th	Januario mar	11	36	19	e Fredeswide	9	36
20 th	Faith.	11	32	20	f Austerbert.	9	32
21 st	Mathew Apo.	11	28	21	g S. D. Virgins	9	28
22 nd	Pricius.	11	24	22	a Day Salom.	9	26
23 rd	Tecla Virgin	11	20	23	b Romaine.	9	22
24 th	Andochius.	11	16	24	c Sigloie.	9	18
25 th	Ferminie.	11	12	25	d Cuspine.	9	14
26 th	Sipri. & Iust.	11	8	26	e Ariula.	9	10
27 th	Colar. & Di.	11	2	27	f Faith.	9	6
28 th	Creuperius.	10	58	28	g Simon & Iude.	9	4
29 th	Michael Arch	10	54	29	a Quasus.	9	0
30 th	Hierome priest	10	50	30	b Bernin.	8	56
				31	c F. E.	8	52

Days.	Nouember.	Length of the daies.	Days.	December.	Length of the day.
1 d	All Saines.	8 50 b	1 f	Elegius.	7 36 l
2 2	All Soule.	8 46 t	2 3	Libane.	7 35 m
3 f	Wenefride.	8 42 k	3 4	Dep. Dimond	7 34 n
4 g	Amantius.	8 40 l	4 1	Barbara.	7 33 o
5 a	Leto Priest.	8 36 m	5 c	Saua.	7 32 p
6 a	Leonard.	8 32 n	6 1	Nicholas bish	7 32 q
7 c	Milbode.	8 30 o	7 2	Ambrose.	7 21 r
8 d	Four crown.	8 26 p	8 f	Conc. of Mary	7 30 s
9 e	Theodoze.	8 24 q	9 1	Tippian.	7 30 t
10 f	Benet.	8 20 r	10 a	Eulalia.	7 30 u
11 g	Partine Bish	8 18 s	11 1	Damase.	7 30 v
12 a	Baterne.	8 16 t	12 c	Sun in Capric.	7 30 w
13 b	unne in Sagit	8 14 u	13 1	Luce virgin.	7 30 x
14 c	Tran Erken.	8 11 u	14 e	Nicasius bish	7 30 y
15 f	Pachute.	8 8 v	15 f	Galerius.	7 1 z
16 g	Dep. Edmond	8 6 e	16 g	Lazarus con.	7 32 e
17 f	Imr. Reg. Eliz.	8 5 d	17 a	Ofapientie.	7 32 f
18 g	Ota Marie.	8 c b	18 b	Gracian.	7 33 a
19 a	Eliza Partir.	7 58 t	19 c	Wenefia. Vir.	7 34 b
20 b	Edmond king.	7 55 t	20 d	Fast.	7 35 c
21 c	Present. Ma.	7 52 i	21 e	Thomas Apo.	7 36 d
22 d	Cecill virgin.	7 50 i	22 f	XXX. Partirs	7 37 e
23 e	Clement.	7 47 :	23 g	Aldoz.	7 38 f
24 f	Grifogon.	7 45 j	24 a	Fast.	7 40 g
25 g	Katherine.	7 44 :	25 d	Christmas day	7 41 h
26 a	Line.	7 42 f	26 c	Stephen mar.	7 42 i
27 b	Agricola.	7 41 j	27 d	John Euangel.	7 44 k
28 c	Rufus martir	7 40 j	28 e	Innocents day	7 45 l
29 d	Satu. & Fast	7 38 i	29 f	Trā of James	7 46 m
30 e	Andrew Apo.	7 37 i	30 g	Silvester.	7 48 n
			31 a		7 50 o

table wherein is shewed at all times, what signe the Moone shal be in
by the Prime & helpe of the letters, in the last
Colomne of the Kalender, as by ex-
ample is hereafter shewed.

The Prime.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Aries.	y	n	c	b	i	u	r	o	z	p	e	u	m	a	s	i	e	q	f
Aries.	z	o	d	u	m	a	s	i	e	q	f	r	n	c	t	k	ſ	r	g
Aries.	e	p	e	r	n	b	t	k	ſ	r	g	y	o	d	b	l	a	f	h
Taurus.	ſ	q	f	y	o	d	b	l	a	f	h	z	p	e	u	m	b	s	i
Taurus.	a	r	g	z	p	d	u	m	b	s	i	e	q	e	r	n	c	t	k
Gemini.	b	f	h	e	q	e	r	n	c	t	k	ſ	r	f	y	o	d	b	l
Gemini.	e	s	i	u	r	f	y	o	d	b	l	a	f	g	z	p	e	u	m
Cancer.	d	t	k	a	f	g	z	p	e	u	m	b	s	h	e	q	f	r	n
Cancer.	e	b	l	b	s	h	e	q	f	r	n	c	t	i	ſ	r	g	y	o
Leo.	f	u	m	c	t	i	u	r	g	y	o	d	b	k	a	f	h	z	p
Leo.	g	r	n	d	b	k	a	f	h	z	p	e	u	l	b	s	i	e	q
Leo.	h	y	o	e	u	l	b	s	i	e	q	f	r	m	c	t	k	ſ	r
Virgo.	i	z	p	f	r	m	c	t	k	ſ	r	g	y	n	d	b	l	a	f
Virgo.	k	e	q	g	y	n	d	b	l	a	f	h	z	o	e	u	m	b	s
Libra.	l	ſ	r	h	z	o	e	u	m	b	s	i	e	p	f	r	n	c	t
Libra.	m	a	f	i	e	p	f	r	n	c	t	k	ſ	q	g	y	o	d	b
Scorpio.	n	b	s	k	ſ	q	g	y	o	d	b	l	a	r	h	z	p	e	u
Scorpio.	o	c	t	l	a	r	h	z	p	e	u	m	b	f	i	e	q	f	r
Sagittarius.	p	d	b	m	b	f	i	e	q	f	r	n	c	s	k	ſ	r	g	y
Sagittarius.	q	e	u	n	c	s	k	ſ	r	g	y	o	d	t	l	a	f	h	z
Sagittarius.	r	f	r	o	d	t	l	a	f	h	z	p	e	b	m	b	s	i	e
Capricorne.	f	g	y	p	e	u	m	b	s	i	e	q	f	u	n	c	t	k	ſ
Capricorne.	g	h	z	q	f	u	n	c	t	k	ſ	r	g	r	o	d	b	l	a
Aquarius.	t	i	e	r	g	r	o	d	b	l	a	f	h	y	p	e	u	m	b
Aquarius.	b	k	ſ	h	y	p	e	u	m	b	s	i	z	q	f	r	n	c	t
Pisces.	u	l	a	s	i	z	q	f	r	n	c	t	k	e	r	g	y	o	d
Pisces.	r	m	b	t	k	e	r	g	y	o	d	b	l	ſ	f	h	z	p	e
Pisces.	y	n	c	b	l	ſ	f	h	z	p	e	u	m	a	s	i	e	q	f

The vse of the table.

First goe to the Kalender, to the daie of the month which ye desire to know what signe the Moone is in: And in the last cullum of that month vnder the Moone, in the head thereof, directly against the same day, you shall find one of the 24. letters, which you shall beare in memorie, and returne to the Prime of the present yeere, in the head of this Table, descending downe by the cullum of the same prime, vntill yee finde the letter yee beare in memorie, of the Kalender, and directly against this square, or letter in the first cullum yee shall finde named the signe that the Moone then occupieth.

As for example,

The yere 1581. the 12. of June, I desire to know what signe the Moone is in, I goe to the Kalender to that Moneth of June to the 12. day, against which, in the last cullum, vnder the Moone, in the head of the moneth I finde the letter a, which bearing in memorie, I returne to this Table, to the Prime of this yeare, which I seeke in the table of the moueable feasts, and find to be 5. where I enter the Table, in the head, and in the first cullum, descending downe, vntill I finde (a) against which to the left hand in the first cullum, I finde Scorpio, which the weth the moone to be in that signe.

THE CONTENTES

Of this booke.

The first chapter.

OF the Magnes or Loadstone, where they are found and of their colours, weight and vertue in drawing yron or Steele, and of other properties of the same Stone.

The second chapter.

Of the diuers opinions of those that haue written of the Attractive point, and where they haue imagined it to be.

The third chapter.

By what meanes the rare and straunge declining of the Needle, from the plaine of the Horizon was first found.

The fourth chapter.

How to finde the greatest declining of the Needle vnder the Horizon.

The fifth chapter.

That in the vertue of the Magnes or Loadstone, is no pondrous or waightie matter, to cause any such declining in the Needle.

The sixt chapter.

A confutation of the common receiued opinion of the point Attractive.

The seuenth chapter.

Of the point Repulsive, where it may bee by greatest reason imagined.

The

The eight chapter.

Certaine proofes of the power and action, wholie and free lie being in this Stone, to shewe this point Respective and in the Needle, by vertue & power receiued of the stone, and not forced, or constrained by any Attraction in Heauen or Earth.

The ninth chapter.

Of the Variation of the Needle, from the Pole or Axis of the Earth, and how it is to be vnderstood.

The tenth chapter.

Of the common Compasses, and of the diuers different sorts and makings of them, with the inconueniences that may grow by them, and the plats made by them.

A Table or Regiment of the sunnes declination, exactly calculated vnto the minute by the true place of the sunne, whose greatest Declination for this age is 23. Degrees 28. minutes, & may serue for 30. yeeres without great error.

How to vse the sunnes Declination, for knowing the eleuation of the pole.

Three Tables, the first sheweth the coniunctions of the sunne and Moone for 19. yeares, with the Eccleses of the sunne.

The second Table sheweth the houre and minute of the opposition or full Moones, with the Eccleses of the moone.

The third Table followeth the Kalender, by the which

is alwaies found what signethe Moone is in, with the help of the letters in the Kalender, also by the saide kalender is shewed the houre and minute of the length of the day, for euerie day of the yere, for the eleuation of the Pole. 52. degrees.

A Table to know what Planet rulesanie houre either by day or night.

A Table to know the length of the planetarie hour, frō the shortest day and longest night, till the longest day and shortest night.

A Chapter of the longitude and declination of 32. notable fixed starres very necessary for Nauigation, with tables of their shining, and at what point of your Compasse they doo both rise and set: and also Tables for euerie Moneth of the yere, declaring at what houre and minute they be South, running from the first day of the month, to the fifteenth, and from the fifteenth to the last day, and wyll continue these 100. yeeres without much error.

A Table to knowe the rising and setting of these stars, by what point of the Compasse, & how many houres they be aboute our Horizon, the pole being raised 51. or 52. degrees.

A table of the fixed Starres.

A Table of the true place of the Sunne.

The Table of the Equation of the Sunne.

The Chapter of the declination of the Sunne.

A

A Table to know what Planet rules anie houre, either of day or night for euer.

Rulers of the night.	Saturdaie.	Friday.	Thursday.	Wednesdaiy.	Tuesday.	Mundaie.	Sundaie.	Gouerners of the day.
Jupiter.	11	10	9	8	7	6	5	Sol.
Mars.	12	11	10	9	8	7	6	Venus.
Sol.	1	2	3	4	5	6	7	Mercurie.
Venus.	2	3	4	5	6	7	8	Luna.
Mercurie.	3	4	5	6	7	8	9	Saturne.
Luna.	4	5	6	7	8	9	10	Jupiter.
Saturne.	5	6	7	8	9	10	11	Mars.
Jupiter.	6	7	8	9	10	11	12	Sol.
Mars.	7	8	9	10	11	12	1	Venus.
Sol.	8	9	10	11	12	1	2	Mercurie.
Venus.	9	10	11	12	1	2	3	Luna.
Mercurie.	10	11	12	1	2	3	4	Saturne.
Luna.	11	12	1	2	3	4	5	Jupiter.
Saturne.	12	1	2	3	4	5	6	Mars.
Jupiter.	1	2	3	4	5	6	7	Sol.
Mars.	2	3	4	5	6	7	8	Venus.

The vse of this Table is thus.

Vnder the day of your request, seeke the houre that ye desire, the on the left side right there against that ye see the Planet that gouernes that houre by daie, & at the right side, the Planet that rules it by night, as thus. On Thursday the third houre of the daie rules ☉. and the 8. houre of the night gouernes ♀. and so of the rest, for it is plaine enough.

**A Table to know the length of the planetarie houre, from
the shortest day and longest night, till the longest day
& shortest night.**

M	0	12	24	36	48
H	H.M.	H.M.	H.M.	H.M.	H.M.
7	0. 35	0. 36	0. 37	0. 38	0. 39
8	0. 40	0. 41	0. 42	0. 43	0. 44
9	0. 45	0. 46	0. 47	0. 48	0. 49
10	0. 50	0. 51	0. 52	0. 53	0. 54
11	0. 55	0. 56	0. 57	0. 58	0. 59
12	1. 0	1. 1	1. 2	1. 3	1. 4
13	1. 50	1. 6	1. 7	1. 8	1. 9
14	1. 29	1. 11	1. 12	1. 13	1. 14
15	1. 25	1. 16	1. 17	1. 18	1. 19
16	1. 20	1. 21	1. 22	1. 23	1. 24
17	1. 20	1. 26	1. 27	1. 28	1. 29

The vse is this.

Know the length of the day or night, that ye require by the Table proceeding in houres & minutes, and therewith enter this Table, the houre at the side, and the nearest minute at the head, and then discend right against your houre and there in the common angle shall ye find the houre and minute, or minutes onely that the Planet raignes by the houres of the clocks.

As for Example.

The 12. of June the day is 16. houres, 20. minutes, wherewith I enter this Table as is shewed & in the angle I find 1 houre 22. minutes, which sheweth that a planet that day rules an houre & a quarter, and 7. min. of the clocks. Also for the same night I find it to be but 7. houres 40. minutes, wherewith I enter into this table with 7. at the side, 36. at the head (for that is nearest) and in the common angle I finde but onely 38. minutes, which shewe that a Planet in that night rules but halfe an houre and 8 minutes of the clockes, and so of the rest.

This Chapter is of the longitude, and the Declination of 32 . notable fixed Starres, verie necessarie for Nauigation wth Tables of their shining, and at what point of your Compass they do both rise and set: and also tables for euery moneth of the yeare, declaring at what houre and minute they be south, running from the first day of the moneth, to the fifteenth: & from the fifteenth to the last day, and will continue these 100. yeare without much error.

Doe thinke it conuenient for diuerse con-
 siderations, to shew the longitude and de-
 clination of certaine of the most notable
 fixed Starres that are neere vnto the
 Equinoctiall, to the number of 32. of them
 which are verie necessarie for Nauigaty,

If the pole be
 raised more
 the 50. or 60.
 degrees it is
 too high to be
 observed by
 the crosse
 staffe.

on in diuers respectes, as this: If you bee vnto the North
 passed, where the North Pole is raised more then 50. or
 60. degrees, then the North Starre is too high to be ob-
 serued or taken with the crosse Staffe (as Master Boorne
 hath declared in his first Chapter of his Regiment for the
 Sea) and it may chance so, that in the day the Sun is not
 to be sene at noone, and then these starres may serue your
 turne.

And further more, they be very good for them that haue
 occasion to traualle beyond the Equinoctiall, where the
 North Pole is vnder the Horizon, in vsing their declina-
 tion as they doe the Sunnes declination in all pointes (as
 dooeth appeare in the 7. 8. and 9. Chapter of M. Boornes
 Regiment.) And moreouer, they bee very necessarie for
 Sea-faring men to knowe the houres of the night, both
 by their being vpon the Meridian. and also by their rising
 and setting, you may knowe the true time of their rising
 and

These starres
 will serue
 beyond the
 Equinoctiall.

and setting, you may knowe the true time of their rising
and setting in euerie Latitude by their declination from
the Equinociall, whether they decline to the South parts
or North partes (as is declared by the declination of the
Sunne in the 11. Chapter of M. Boornes Regiment.

The order of
the Table fol-
lowing.

And furthermore, by any of these Starres you may
trie the Variation of your Compasse by nyght, &c. Nowe
shall followe the Table of all these Starres. The first
rowe of this Table, containeth the names of the Starres:
The second the signes, what they be in longitude: The
third, the degrees of the signes: The fourth, the minutes
belonging thereunto: The fifth, the degrees of declination:
The sixth, the odde minutes belonging thereunto. The se-
uenth the twelfth towarde, what place they decline, by let-
ters, of which S. signifieth the Septentrional, or north de-
clination M. signifieth Meridionall, or south declination,
as in the Table doth appeare. The eight doth shewe no-
thing but the bignesse of the Starres. Now followeth the
Table.

A Table of the fixed starres.

The names of the starres.	Signes.	Longit. deg. m.	Decl. deg. m.	to what part they decline.	Bignes of the starres.
Whales backe.	Aries.	6. 6	12. 11	M	second bignes.
Whales bellie.	Aries.	16. 2	12. 20	M	second bignes.
Wans harte.	Aries.	27. 42	17. 19	S	third bignes.
Wans head.	Taurus.	1. 46	21. 16	S	third bignes.
Bulles ele.	Gemini.	3. 42	15. 42	S	great starres.
Dions left foote.	Gemini.	10. 12	2. 14	M	a great starre.
Dions left shoulder.	Gemini.	11. 26	4. 37	S	a starre of the
first Dions girdle.	Gemini.	16. 22	1. 19	M	second light both.
Dions right shoulders.	Gemini.	23. 6	5. 18	S	a great starre.
Great dogge.	Cancer.	8. 40	15. 30	M	a very great star
Lesser dogge.	Cancer.	20. 10	5. 4	S	a great star.
Brightest in Hydra.	Leo.	21. 2	4. 47	M	second bignes.
Lions necke.	Leo.	23. 16	21. 59	S	second bignes.
Lions heart.	Leo.	23. 32	14. 3	S	a great star.
Lions backe.	Virgo.	5. 16	22. 30	S	second bignes;
Lions taile.	Virgo.	15. 32	16. 46	S	a great star.
Kauens head.	Libra.	5. 6	19. 53	M	of 3 third bignes.
Kauens wing.	Libra.	9. 36	17. 8	M	both those.
Virgins spike.	Libra.	17. 42	4. 54	M	a great star.
Twirt boots thighs.	Libra.	18. 6	22. 9	S	a great star,
South ballance.	Scorpio	9. 2	13. 44	M	second bignes.
North ballance.	Scorpio	13. 12	7. 33	M	second bignes.
Scorpions heart.	Sagit.	3. 42	24. 47	M	second bignes.
Hercules head.	Sagit.	8. 42	15. 20	S	third bignes.
Serpents head.	Sagit.	15. 52	14. 7	S	third bignes.
The Eagle.	Capric.	24. 51	7. 28	S	second bignes.
Dolphins taile.	Aquar.	8. 27	10. 1	S	third bignes.
Goates taile.	Aquar.	17. 22	14. 13	M	third bignes.
Water pourers leg	Pisces.	2. 20	15. 52	M	third bignes.
Pegasus shoulder.	Pisces.	17. 4	13. 1	S	second bignes.
Pegasus legge.	Pisces.	23. 10	26. 30	S	second bignes.
Whales taile.	Pisces.	26. 21	21. 47	M	third bignes.

How to vse
the stars de-
clination to
know the
height of the
Pole.

The vse of this Table is this: When you haue taken the height of any of these starres vpon the Meridian, then looke what declination the Starre hath from the Equinotiall: If the starre hath North declination, then subtract or take awaye the starres declination from the height: If it hath south declination, then adde or put vnto the height, the starres declination, and that will shewe vnto you the height of the Equinotiall, and then by the height of the Equinotiall, the height of the pole is knowen, as Master Boorne hath declared in the 7. Chapter of the Regiment for the sea. And now I thinke it conuenient to make a certaine Table, to shewe vnto you at what houre and time any of these stars bee vpon the Meridian, whereby they may the better knowe these starres. I will also shewe vnto you howe long any of these starres dooe shine or tarrie aboue the Horizon in this Latitude from the Equinotiall of London, that is at 51. or 52. degrees. And also at what point of the compasse any of these starres doe rise or set, which will serue this 100. yeares without much error.

A Table to know the rising and setting of these starres by what point of the compasse, & howe many houres they be aboue our Horizon, the pole being raised 51. or 52. degrees.

The Whales backe riseth East and by south, and vnto the southwardes; and shineth 10. houres & better

The Whales belly (in a manner) as the Whales backe.

The Ramis horne riseth East North-east, and setteth West North-west, and shineth 15. houres 16. minutes.

The Hammes head riseth East North-east, and setteth West North-west, and shineth 16. houres 4. minutes.

The Buls eye riseth nere the East North-east, and setteth nere the West North-west, and shineth 15. houres 2. minutes.

The Dragons left foote riseth ner ½ East and by south and setteth nere the West and by south, and shineth 10. houres

houres and 6.minutes.

The Oxions left shoulber riseth East and to the north, wards, and setteth West and to the Northwards, and shineth 11.houres 45.minutes.

The first in Oxions girdle dooth rise a little to the Southwards of the East, and setteth a little to the south, wards of the West, and shineth 11. houres 46.minutes.

Oxions right shoulber riseth East, and vnto the North, wards, and setteth West and vnto the Northwards: and shineth 13 houres 12.minutes.

The great dog riseth East southeast, and setteth west southwest, and shineth 9. houres.

The lesser dog riseth East and vnto the Northwardes, and setteth West and vnto Northwardes, and shineth 13. houres 10. minutes.

The brightest in Hydra riseth East and vnto the south, wards, and setteth West and vnto southwardes, and shineth 11.houres and 7.minutes.

The Lyons necke riseth East Northeast, and to the Northwards, and setteth west Northwest, and to the Northwards, and shineth 16.houres 16.minutes.

The Lyons hart riseth neere the East Northeast, and setteth neere the West Northwest, and shineth 14.houres 50.minutes.

The Lyons backe riseth neere the Northeast and by East, and setteth neere the Northwest and by west, and shineth 16.houres 26.minutes.

The Lyons taile riseth neere the East Northeast, and setteth neere the West Northwest, and shineth 15.houres 12.minutes.

The Hauens head riseth neere the East southeast, and setteth neere the West southwest, and shineth 8. houres 12.minutes.

The Hauens wing riseth neere the East southeast, and setteth neere the west southwest, and shineth 8. houres 50.minutes.

The

The virgins spike riseth East and to the southwards, and setteth West and to the southwards, and shineth 11. houres 4. minutes.

Between boots thighs, riseth neere the North-east and by East, and setteth neere the North-west, and by West, and shineth 16. houres 20. minutes.

The South ballance riseth neere the East southeast, and setteth neere the West south west: and shineth 9. houres 36. minutes.

The North ballance riseth neere the East and by south and setteth neere the West and by south, and shineth 10 houres 38. minutes.

The Scorpions heart riseth neere the southeast and by east, and setteth neere the south west and by West, and shineth 7. houres. 5. minutes.

Hercules head riseth neere the East North-east, and setteth neere the West North-west, and shineth 14. houres. 56. minutes.

The Serpents head riseth neere the East North-east, and setteth neere the West North-west, , and shineth 14. houres 40. minutes.

The Eagle riseth neere by East and by North, and setteth neere the West and by North, and shineth 13. houres 24. minutes.

The Dolphins taile riseth East and by North, and setteth West and by North, and shineth 15. houres 57. minutes.

The Goates taile riseth neere the East southeast, and setteth West south-west, and shineth 9. houres 20. minutes.

The Water powzers leg riseth neere the East southeast, and setteth West south-west, and shineth 8. houres, 54. minutes.

Pegasus shoulders riseth neere the East North-east, and setteth neere the West North-west, and shineth 14. houres 32. minutes.

Pegasus

The 11
Chapter of
M. Boordes
Regiment
for the Sea,
will shewe
howe long a-
ny of these
starres wil
shine in all
places.

Pegasus legge riseth néere Northeast, and setteth néere
Southwest, and shyneth 17. houres. 6 minutes.

The Whales taile riseth East Southeast, and set-
teth West Southwest, and shyneth 7. houres 48. mi-
nutes.

Furthermoze, if you desire to knowe the time of any of
these starres beeing aboue the Horizon in all Latitudes,
then repaire to the eleuenth Chapter of Paister Boornes
Regement for the sea, so you shall knowe it there by their
declination : euen by the same order that you knowe the
Sunnes beeing aboue the Horizon, by the Sunnes decli-
nation.

A Table of the fixed Starres,

These Starres being South from				Ianu. from the				rebru. fro the				rebru. fro the			
the first day of Ianu. vnto the 15				15 to the last				15 vnto the 15				15 to the last			
1	Whales backe.	5. 29	E	14. 20	DA	1	3. 20	DA	1	2. 20	DA	1	2. 20	DA	
2	Whales bellie.	5. 54	E	24. 54	DA	2	3. 54	DA	2	2. 54	DA	2	2. 54	DA	
3	Rammes horne.	6. 28	E	35. 28	E	3	4. 28	DA	3	3. 28	DA	3	3. 28	DA	
4	Rammes head.	6. 45	E	45. 45	E	4	4. 44	DA	4	3. 45	DA	4	3. 45	DA	
5	Buls eie.	8. 52	E	57. 52	E	5	5. 52	DA	5	5. 52	DA	5	5. 52	DA	
6	Orions left foote.	9. 23	E	68. 23	E	6	7. 23	E	6	6. 23	E	6	6. 23	E	
7	Orions left shulder.	9. 28	E	78. 28	E	7	7. 28	E	7	6. 28	E	7	6. 28	E	
8	Eight Orions girdle.	9. 50	E	88. 50	E	8	7. 50	E	8	6. 50	E	8	6. 50	E	
9	Orions right shulder.	10. 12	E	99. 12	E	9	8. 12	E	9	7. 12	E	9	7. 12	E	
10	Grea t dogge.	11. 4	E	10. 4	E	10	9. 4	E	10	8. 4	E	10	8. 4	E	
11	Lesser dogge.	12. 0		11. 11. 0	E	11	10. 0	E	11	9. 0	E	11	9. 0	E	
12	Brightest in hydry	12. 4	M	12. 11. 4	E	12	10. 4	E	12	9. 4	E	12	9. 4	E	
13	Lions necke.	2. 12	M	13. 1. 12	M	13	12. 12	M	13	11. 12	E	13	11. 12	E	
14	Lions heart.	2. 13	M	14. 1. 13	M	14	12. 13	M	14	11. 13	E	14	11. 13	E	
15	Lions backe.	3. 0	M	15. 2. 0	M	15	1. 0	M	15	12. 0		15	12. 0		
16	Lions tayle.	3. 42	M	16. 2. 42	M	16	1. 42	M	16	1. 42	M	16	1. 42	M	
17	Rauens head.	5. 2	M	17. 4. 2	M	17	3. 2	M	17	2. 2	M	17	2. 2	M	
18	Rauens wing.	5. 19	M	18. 4. 19	M	18	3. 19	M	18	2. 19	M	18	2. 19	M	
19	Virgins spiks.	5. 51	M	19. 4. 51	M	19	3. 51	M	19	2. 51	M	19	2. 51	M	
20	Twixt boot thighs.	5. 56	M	20. 4. 56	M	20	3. 56	M	20	2. 56	M	20	2. 56	M	
21	South Balance.	7. 16	M	21. 5. 16	M	21	5. 16	M	21	4. 56	M	21	4. 56	M	
22	North Balance.	7. 33	MD	22. 5. 33	M	22	5. 33	M	22	4. 33	M	22	4. 33	M	
23	Scorpions heart.	8. 54	MD	23. 7. 54	MD	23	6. 54	M	23	5. 54	M	23	5. 54	M	
24	Hercules head.	9. 14	MD	24. 8. 14	MD	24	7. 14	MD	24	6. 14	M	24	6. 14	M	
25	Serpentes head.	9. 41	MD	25. 8. 41	MD	25	7. 41	MD	25	6. 41	M	25	6. 41	M	
26	The Eagle.	12. 19	DA	26. 11. 19	MD	26	10. 19	MD	26	9. 19	MD	26	9. 19	MD	
27	Dolphins tayle.	1. 12	DA	27. 12. 12	DA	27	11. 12	MD	27	10. 12	MD	27	10. 12	MD	
28	Goates tayle.	1. 48	DA	28. 12. 48	DA	28	11. 48	MD	28	10. 48	MD	28	10. 48	MD	
29	Water pourses leg.	2. 48	DA	29. 1. 48	DA	29	12. 48	DA	29	11. 48	MD	29	11. 48	MD	
30	Pegasus shoulder.	3. 47	DA	30. 2. 47	DA	30	1. 47	DA	30	12. 47	DA	30	12. 47	DA	
31	Pegasus leg.	4. 12	DA	31. 3. 12	DA	31	2. 12	DA	31	1. 12	DA	31	1. 12	DA	
32	Whales tayle.	4. 24	DA	32. 3. 24	DA	32	2. 24	DA	32	1. 24	DA	32	1. 24	DA	

March

A Table of the fixed Starres,

March from the first to the 15.		March from the 15. to the last.		April from the first to the 15.		April from the 15 to the last.		May from the first to the 15.	
1	1. 20 DA	1	11.20 DA	1	11.20 MD	1	10.20 MD	1	9.20 MD
2	1. 54 DA	2	12.54 DA	2	11.54 MD	2	10.54 MD	2	9.54 MD
3	2. 28 DA	3	1.28 DA	3	12.28 DA	3	11.28 MD	3	10.28 MD
4	2. 45 DA	4	1.45 DA	4	12.45 DA	4	11.45 MD	4	10.45 MD
5	4. 52 DA	5	3.52 DA	5	2.52 DA	5	1.52 DA	5	12.52 DA
6	5. 23 DA	6	4.23 DA	6	3.23 DA	6	2.23 DA	6	1.23 DA
7	5. 28 DA	7	4.28 DA	7	3.28 DA	7	2.28 DA	7	1.28 DA
8	5. 50 DA	8	4.50 DA	8	3.50 DA	8	2.50 DA	8	1.50 DA
9	6. 12 E	9	5.12 DA	9	4.12 DA	9	3.12 DA	9	2.12 DA
10	7. 4 E	10	6. 4 DA	10	5. 4 DA	10	4. 4 DA	10	3. 4 DA
11	8. 0 E	11	7. 0 E	11	6. 0 DA	11	5. 0 DA	11	4. 0 DA
12	8. 4 E	12	7. 4 E	12	6. 4 DA	12	5. 4 DA	12	4. 4 DA
13	10.12 E	13	9.12 E	13	8.12 E	13	7.12 DA	13	6.12 DA
14	10.13 E	14	9.13 E	14	8.13 E	14	7.13 DA	14	6.13 DA
15	11. 0 E	15	10. 0 E	15	9. 0 E	15	8. 0 E	15	7. 0 DA
16	11.42 E	16	10.42 E	16	9.42 E	16	8.42 E	16	7.42 DA
17	1. 2 M	17	12. 2 M	17	11.2 E	17	10.2 E	17	9. 2 E
18	1. 19 M	18	12.19 M	18	11.19 E	18	10.19 E	18	9.19 E
19	1. 51 M	19	12.51 M	19	11.51 E	19	10.51 E	19	9.51 E
20	1. 56 M	20	12.56 M	20	11.56 E	20	10.56 E	20	9.56 E
21	3. 16 M	21	2.16 M	21	1.16 M	21	12.16 M	21	11.16 E
22	3. 33 M	22	2.33 M	22	1.33 M	22	12.33 M	22	11.33 E
23	4. 54 M	23	3.54 M	23	2.54 M	23	1.54 M	23	12.54 M
24	5. 14 M	24	4.14 M	24	3.14 M	24	2.14 M	24	1.14 M
25	5. 41 M	25	4.41 M	25	3.41 M	25	1.41 M	25	3.41 M
26	8. 19 DM	26	7.19 MD	26	6.19 MD	26	5.19 MD	26	4.19 M
27	9. 12 DM	27	8.12 MD	27	7.12 MD	27	6.12 MD	27	5.12 MD
28	9. 48 DM	28	8.48 MD	28	7.48 MD	28	6.48 MD	28	5.48 MD
29	10.48 DM	29	9.48 MD	29	8.48 MD	29	7.48 MD	29	6.48 MD
30	11.47 DM	30	10.47 MD	30	9.47 MD	30	8.47 MD	30	7.47 MD
31	12.12 DA	31	11.12 MD	31	10.12 MD	31	9.12 MD	31	8.12 MD
32	12.24 DA	32	11.24 MD	32	10.24 MD	32	9.24 MD	32	8.24 MD

A Table of the fixed Starres.

May from the 15. to the last.	June from the first to the 15.	June from the 15. to the last.	July from the first to the 15.	July from the 15. to the last.
1 8.20 MD	1 7.20 MD	1 5.20 MD	1 5.20 MD	1 4.20 M
2 8.54 MD	2 7.54 MD	2 5.54 MD	2 5.54 MD	2 4.54 MD
3 9.28 MD	3 8.28 MD	3 7.28 MD	3 6.28 MD	3 5.28 MD
4 9.45 MD	4 8.45 MD	4 7.45 MD	4 6.45 MD	4 5.45 MD
5 11.52 MD	5 10.52 MD	5 9.52 MD	5 8.52 MD	5 7.52 MD
6 12.23 DA	6 11.23 MD	6 10.23 MD	6 9.23 MD	6 8.23 MD
7 12.28 DA	7 11.28 MD	7 10.28 MD	7 9.28 MD	7 8.28 MD
8 12.50 DA	8 11.50 MD	8 10.50 MD	8 9.50 MD	8 8.50 MD
9 1.12 DA	9 12.12 DA	9 11.12 MD	9 10.12 MD	9 9.12 MD
10 2. 4 DA	10 1. 4 D	10 12.4 DA	10 11.4 MD	10 10.4 MD
11 3. 0 DA	11 2. 0 DA	11 1. 0 DA	11 12.0	11 11.0 MD
12 3. 4 DA	12 2. 4 DA	12 1. 4 DA	12 12.4 DA	12 11.4 MD
13 5.12 DA	13 4.12 DA	13 3.12 DA	13 2.12 DA	13 1.12 DA
14 5.13 DA	14 4.13 DA	14 3.13 DA	14 2.13 DA	14 1.13 DA
15 5. 0 DA	15 5. 0 DA	15 4. 0 DA	15 3. 0 DA	15 2. 0 DA
16 6.42 DA	16 5.42 DA	16 4.42 DA	16 3.42 DA	16 2.42 DA
17 8. 2 DA	17 7. 2 DA	17 6.2 DA	17 5. 2 DA	17 4. 2 DA
18 8.19 DA	18 7.19 DA	18 6.19 DA	18 5.19 DA	18 4.19 DA
19 8.51 DA	19 7.51 DA	19 6.51 DA	19 5.51 DA	19 4.51 DA
20 8.56 DA	20 7.56 DA	20 6.56 DA	20 5.56 DA	20 4.56 DA
21 10.16 E	21 9.16 DA	21 8.16 DA	21 7.16 DA	21 6.16 DA
22 10.33 E	22 9.33 DA	22 8.33 DA	22 7.33 DA	22 6.33 DA
23 11.54 E	23 10.54 E	23 9.54 DA	23 8.54 DA	23 7.54 DA
24 12.14 M	24 11.14 E	24 10.14 F	24 9.14 E	24 8.14 E
25 12.41 M	25 11.41 E	25 10.41 F	25 9.41 E	25 8.41 E
26 3.19 M	26 2.19 M	26 1.19 E	26 12.19 M	26 11.19 E
27 4.12 MD	27 3.12 M	27 2.12 M	27 1.12 M	27 12.12 E
28 4.48 MD	28 3.48 M	28 2.48 M	28 2.48 M	28 12.48 M
5.48 MD	29 4.48 MD	29 3.48 M	29 2.48 M	19 1.48 M
6.47 MD	30 5.47 MD	30 4. 7 MD	30 3.47 M	30 2.47 M
7.12 MD	31 5.12 MD	31 5.12 MD	31 4.12 MD	31 3.12 M
7.24 MD	32 6.24 MD	32 5.24 MD	32 2.24 MD	32 3.24 M

A Table of the fixed Starres.

Augult fro the first to the 15			Augu. fro the 15. to the last			Septem. fro the first to the 15.			Seprē. fro the 15. to the last			Decē fro the first to the 15		
1	3.20	M	1	2.20	M	1	1.20	M	1	12.20	M	1	11.20	E
2	3.54	M	2	2.54	M	2	1.54	M	2	12.54	M	2	11.54	E
3	4.28	M	3	3.28	M	3	2.28	M	3	1.28	M	3	12.28	M
4	3.45	MD	4	3.45	M	4	2.45	M	4	1.45	M	4	12.45	M
5	5.52	MD	5	5.52	ML	5	4.52	M	5	3.52	M	5	2.52	M
6	7.23	MD	6	6.23	ML	6	5.23	M	6	4.23	M	6	3.23	M
7	7.28	MD	7	6.28	MD	7	5.28	M	7	4.28	M	7	3.28	M
8	7.50	MD	8	6.50	MD	8	5.50	MD	8	4.50	M	8	3.50	M
9	8.12	MD	9	7.12	MD	9	6.12	MD	9	5.12	M	9	4.12	M
10	9.4	MD	10	8.4	MD	10	7.4	MD	10	6.4	MD	10	5.4	M
11	10.0	MD	11	9.0	MD	11	8.0	MD	11	7.0	MD	11	6.0	M
12	10.4	MD	12	9.4	MD	12	8.4	MD	12	7.4	MD	12	6.4	M
13	12.12	DA	13	11.12	MD	13	10.12	MD	13	9.12	MD	13	8.12	MD
14	12.13	DA	14	11.13	ML	14	10.13	MD	14	9.13	MD	14	8.13	MD
15	1.0	DA	15	12.0		15	11.0	MD	15	10.0	MD	15	9.0	MD
16	1.42	DA	16	12.42	DA	16	11.42	MD	16	10.42	MD	16	9.42	MD
17	3.2	DA	17	2.2	DA	17	1.2	DA	17	12.2	DA	17	11.2	MD
18	3.19	DA	18	2.19	DA	18	1.19	DA	18	12.19	DA	18	11.19	MD
19	3.51	DA	19	2.51	DA	19	1.51	DA	19	12.51	DA	19	11.51	MD
20	3.56	DA	20	2.56	DA	20	1.56	DA	20	12.56	DA	20	11.56	ML
21	5.16	DA	21	4.16	DA	21	3.16	DA	21	2.16	DA	21	1.16	DA
22	5.33	DA	22	4.33	DA	22	3.33	DA	22	2.33	DA	22	1.33	DA
23	6.54	DA	23	5.54	DA	23	4.54	DA	23	3.54	DA	23	2.54	DA
24	7.14	DA	24	6.14	DA	24	5.14	DA	24	4.14	DA	24	3.14	DA
25	7.41	DA	25	6.41	DA	25	5.41	DA	25	4.41	DA	25	3.41	DA
26	10.19	E	26	9.19	E	26	8.19	E	26	7.19	E	26	6.19	E
27	11.12	E	27	10.12	E	27	9.12	E	27	8.12	E	27	7.12	E
28	11.48	E	28	10.48	E	28	9.48	E	28	8.48	E	28	7.48	E
29	12.48	M	29	11.48	E	29	10.48	E	29	9.48	E	29	8.48	E
30	1.47	M	30	12.47	E	30	11.47	M	30	10.47	E	30	9.47	E
31	2.12	M	31	1.12	M	31	12.12	M	31	11.12	E	31	10.12	E
32	2.24	M	32	1.24	M	32	12.24	M	32	11.24	E	32	10.24	E

A Table of the fixed Starres.

Octo. fro the 15 to the last			Noue. fro the first to the 15			Noue. fro the 15 to the last			Decem. fro the first to the 15.			Decem. fro the 15 to the last		
1	10.20	E	1	9.20	E	1	8.20	E	1	7.20	E	1	6.20	E
2	14.54	E	2	9.54	E	2	8.54	E	2	7.54	E	2	6.54	E
3	11.28	E	3	10.28	E	3	9.28	E	3	8.28	E	3	7.28	E
4	11.45	E	4	10.45	E	4	9.45	E	4	8.45	E	4	7.45	E
5	1.52	M	5	12.52	M	5	11.52	E	5	10.52	E	5	9.52	E
6	2.23	M	6	1.23	M	6	12.23	M	6	11.23	E	6	10.23	E
7	2.28	M	7	1.28	M	7	12.28	M	7	11.28	E	7	10.28	E
8	2.50	M	8	1.50	M	8	12.50	M	8	11.50	E	8	10.50	E
9	3.12	M	9	2.12	M	9	1.12	M	9	12.12	M	9	11.12	E
10	4.4	M	10	3.4	M	10	2.4	M	10	1.4	M	10	12.4	M
11	5.0	M	11	4.0	M	11	3.0	M	11	2.0	M	11	1.0	M
12	5.4	M	12	4.4	M	12	3.4	M	12	2.4	M	12	1.4	M
13	7.12	MD	13	6.12	M	13	5.12	M	13	4.12	M	13	2.12	M
14	7.13	MD	14	6.13	M	14	5.13	M	14	4.13	M	14	2.13	M
15	8.0	MD	15	7.0	M	15	6.0	M	15	4.0	M	15	4.0	M
16	8.42	MD	16	7.42	MD	16	6.42	M	16	5.42	M	16	4.42	M
17	10.2	MD	17	9.2	MD	17	8.2	MD	17	7.2	M	17	6.2	M
18	10.19	MD	18	9.19	MD	18	8.19	MD	18	7.19	M	18	6.19	M
19	10.51	MD	19	9.51	MD	19	8.51	MD	19	7.51	MD	19	6.51	M
20	10.56	MD	20	9.56	MD	20	8.56	MD	20	7.56	MD	20	6.56	M
21	12.16	DA	21	11.16	MD	21	10.16	MD	21	9.16	MD	21	8.16	MD
22	12.33	DA	22	11.33	MD	22	10.33	MD	22	9.33	MD	22	8.33	MD
23	1.54	DA	23	12.54	DA	23	11.54	MD	23	10.54	MD	23	9.54	MD
24	2.14	DA	24	1.14	DA	24	12.14	DA	24	11.14	MD	24	10.14	MD
25	2.41	DA	25	1.41	DA	25	12.41	DA	25	11.41	MD	25	10.41	MD
26	5.19	DA	26	4.19	DA	26	3.19	DA	26	2.19	DA	26	10.19	DA
27	6.12	E	27	5.12	E	27	4.12	E	27	3.12	DA	27	2.12	DA
28	6.48	E	28	5.48	E	28	4.48	E	28	3.48	DA	28	2.48	DA
29	7.48	E	29	6.48	E	29	5.48	E	29	4.48	E	29	3.48	DA
30	8.47	E	30	7.47	E	30	6.47	E	30	5.47	E	30	4.47	E
31	9.12	E	31	8.12	E	31	7.12	E	31	6.12	E	31	5.12	E
32	9.24	E	32	8.24	E	32	7.24	M	32	6.24	E	32	5.24	E

Now

Now this Table serueth for euery moneth in the
 yeare (being exactly calculated) their time of their
 being South, or touching your Meridian, (or as some
 tearme it) Spoonstead, seruing very well the Seamen
 to take the height of them, with their Instruments by
 the sea, referring it vnto the Table of declination
 that goeth before: The first is the houres, the second the
 minutes, the third be the letters that shew you whether
 they be South by day or by night, in the euening or mo-
 rning, in the forenone or afternone, of the which the let-
 ter E. doth signifie euening, & letter M. signifie mo-
 rning, the letters DM. signifie day in the morning, &
 the letter DA. signifie day in the afternone (as I said
 before) the very hour and minute being South. Nowe
 you see that I haue put to their being South in the day,
 as well as in the night, to the intent to know the houre
 of the night, aswel by their setting, as also by our com-
 passe, by bringing your 32. points into 24. houres: And
 in like maner (as M. Boorne hath shewed in § 4. chap-
 ter of his Regiment for the Sea) by shining of § Dawn
 to deuide the shining into equal parts, then those parts
 being equally deuided with the houre and minutes, &
 the time before their being South put together § halfe
 that shineth that, sheweth the iust rising of the stars, &
 the other time of their shining after the height being
 South, sheweth their setting: Now you, seeing the table
 runneth from the first side of euery month, to the 15. from
 the 15. to the last day, must consider (if you will know §
 exact time betweene the 1. day and the 15. daie, and be-
 twixt the 25. day, and the last) to do this, looke how ma-
 ny daies of the month is past, either from the first daie
 or fifteenth day, and pul foure minutes from that num-
 ber: for so manie daies as is past, for euery day that
 shall shewe you the true time of their being South, that
 known, you shall do (as is aforesaid) for their rising and
 setting.

A Table of the true place of the Sunne.

Months	Janu.	February	March	April	Maie.	June.						
Signs	Capric.	Aquarius	Pisces.	Aries.	Taurus.	Gemini.						
Dates	G	M	G	M	G	M	G	M	G	M	G	M
1	20	22	21	53	20	55	21	24	20	21	19	55
2	21	24	22	54	21	55	22	22	21	18	20	52
3	22	25	23	54	22	54	23	21	22	16	21	49
4	23	26	24	55	23	54	24	19	23	11	22	46
5	24	27	25	55	24	53	25	17	24	13	23	43
6	25	28	26	56	25	53	26	16	25	8	24	40
7	26	30	27	56	26	52	27	14	26	5	25	37
8	27	31	28	56	27	52	28	12	27	3	26	34
9	28	32	29	57	28	51	29	10	28	0	27	31
10	29	33	☉	57	29	50	☿	8	28	58	28	28
11	☿	35	1	57	☿	49	1	5	29	55	29	25
12	1	36	2	58	1	48	2	4	☿	52	☿	22
13	2	37	3	58	2	47	3	2	1	50	1	19
14	3	38	4	58	3	46	4	0	2	47	2	16
15	4	39	5	58	4	45	5	58	3	44	3	13
16	5	40	6	58	5	44	6	56	4	41	4	10
17	6	41	7	58	6	43	7	54	5	38	5	7
18	7	42	8	58	7	42	8	52	5	36	6	4
19	8	43	9	58	8	41	9	49	7	33	7	1
20	9	44	10	58	9	39	10	47	8	30	8	58
21	10	55	11	58	10	38	11	45	9	27	9	55
22	11	46	12	58	11	37	12	43	10	24	10	52
23	12	47	13	57	12	36	13	40	11	21	11	49
24	13	48	14	47	13	34	14	38	13	18	12	46
25	14	48	15	57	14	33	15	36	14	15	13	43
26	15	49	16	56	15	32	16	33	15	12	14	40
27	16	50	17	56	16	30	17	31	16	10	25	37
28	17	51	18	56	17	29	18	28	17	7	16	34
29	18	51	19	56	18	28	19	26	18	4	17	31
30	19	52			19	27		23	18	1		29
31	20	52			20	25			17	58		

A Table of the true place of Sunne.

Months	Julie.	August.	Septēber	Octob.	Nouem.	Decem.						
Signes	Cancer	Leo.	Virgo.	Libra.	Scorpio.	Sagitta						
Dies	G	M	G	M	G	M	G	M	G	M	G	M
1	18	26	18	2	18	+	17	39	18	49	19	24
2	19	23	19	0	19	2	18	39	19	50	20	26
3	20	20	19	58	20	1	19	38	20	51	21	27
4	21	17	20	55	21	0	20	38	21	52	22	29
5	22	14	21	53	21	58	21	38	22	53	23	30
6	23	11	22	51	22	57	22	38	23	54	24	31
7	24	8	23	48	23	56	23	38	24	55	25	33
8	25	5	24	46	24	55	24	38	25	56	26	34
9	26	2	25	44	25	54	25	39	26	57	27	36
10	27	0	26	42	26	53	26	39	27	58	28	37
11	7	57	27	40	27	52	27	39	28	59	29	39
12	28	54	28	38	28	51	28	39	⊙↑	0	⊙ ₁₀	40
13	29	51	29	36	29	50	29	39	1	1	1	42
14	⊙ ₁₂	48	⊙ ₁₁	34	⊙ ₁₀	49	⊙ ₉	39	2	3	2	43
15	1	46	1	32	1	48	1	40	3	4	3	45
16	2	43	2	30	2	47	2	40	4	5	4	46
17	3	40	2	28	3	46	3	40	5	6	5	48
18	4	38	4	26	4	45	4	41	6	8	6	49
19	5	35	5	24	5	44	5	41	7	9	7	51
20	6	32	6	22	6	44	6	42	8	10	8	52
21	7	30	7	21	7	43	7	42	9	11	9	54
22	8	27	8	19	8	42	8	43	10	12	10	55
23	9	25	9	17	9	42	9	43	11	13	11	57
24	10	22	10	16	10	41	10	44	12	14	12	58
25	11	20	11	14	11	41	11	45	13	15	13	59
26	12	17	12	13	12	41	12	45	14	16	15	1
27	13	15	13	11	13	40	13	46	15	18	16	2
28	14	12	14	10	14	40	14	47	16	19	17	3
29	15	10	15	8	15	39	15	47	17	20	18	5
30	16	7	16	7	16		16	48	18	22	19	6
31	17	5	17	5			17	49		23	20	7

The table of the Equation of the Sunne.

the yeres of our Lord.		the equatiō the yere to be added. of, &c.		the equatiō the yeres to be added. of, &c.		the equatiō the yeres to be added. of, &c.		the equatiō the yeres to be added. of, &c.			
G	M	G	M	G	M	G	M	G	M		
1545	AI	0	1581	I	16	1617	I	32	1653	I	48
1546		45	1582	I	1	1618	I	17	1654	I	33
1547		30	1583		46	1619	I	2	1655	I	18
1548		15	1584		32	1620		47	1656	I	3
1549	I	2	1585	I	18	1621	I	33	1657	I	49
1550		47	1586	I	3	1622	I	18	1658	I	34
1551		32	1587		48	1623	I	3	1659	I	19
1552		18	1588		33	1624		49	1660	I	4
1553	I	4	1589	I	19	1625	I	35	1661	I	51
1554		49	1590	I	4	1626	I	20	1662	I	36
1555		34	1591		49	1627	I	25	1663	I	21
1556		19	1592		35	1628		51	1664	I	7
1557	I	5	1593	I	21	1629	I	37	1665	I	53
1558		50	1594	I	6	1630	I	22	1666	I	38
1559		35	1595		51	1631	I	7	1667	I	23
1560		21	1596		37	1632		53	1668	I	9
1561	I	7	1597	I	23	1633	I	38	1669	I	55
1562		52	1598	I	8	1634	I	23	1670	I	40
1563		37	1599		53	1635	I	8	1671	I	25
1564		23	1600		39	1636		54	1672	I	10
1565	I	9	1601	I	25	1637	I	40	1673	I	56
1566		54	1602	I	10	1638	I	5	1674	I	41
1567		39	1603		55	1639	I	10	1675	I	26
1568		25	1604		40	1640		56	1676	I	12
1569	I	11	1605	I	26	1641	I	42	1677	I	58
1570		56	1606	I	11	1642	I	27	1678	I	33
1571		41	1607		56	1643	I	12	1679	I	28
1572		26	1608		32	1644		8	1680	I	13
1573	I	12	1609	I	28	1645	I	44	1681	R2	⊙
1574		57	1610	I	13	1646	I	29	1682	I	45
1575		42	1611		58	1647	I	14	1683	I	30
1576		28	1612		44	1648	I	0	1684	I	15
1577	I	14	1613	I	30	1649	I	46	1685	I	2
1578		99	1614	I	15	1650	I	31	1686	I	4
1579		44	1615	I	10	1651	I	16	1687	I	32
1580		29	1616		46	1652	I	2	1688	I	8

This Table of the Equation of the Sunne, serueth
from the yeare 1545. where it hath his roote or begin-
ning, vntil 1680. and in the yeare of 1681. it shall re-
turne to the roote, adding therunto one degree more. As
for example: In the yeare of 1681. adde one degree vpon
the other degree that the roote hath, and so shall the yeare
of 1681. haue two degrees of equation, and the yeare
of 1682. shall haue one degree and 45'. Minutes,
which is to adde one degree vpon 45. minutes. that
had the yeare 1546. &c. And hauing passed ouer
136. yeares, you shall returne to the
roote, adding 2. degrees.

The

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Signes.	γ	♄	♅	♆	♇	♈	♉	Signes.
G	G	M	G	M	G	M	G	
0	0		11	30	20	12	30	
1	0	24	11	51	20	25	29	
2	0	48	12	12	20	37	28	
3	1	12	12	33	20	49	27	
4	1	46	12	53	21	0	26	
5	2	0	13	13	21	11	25	
6	2	23	13	33	21	22	24	
7	2	47	13	53	21	32	23	
8	3	11	14	13	21	42	22	
9	3	35	14	32	21	51	21	
10	3	58	14	51	22	0	20	
11	4	22	15	10	22	9	19	
12	4	45	15	28	22	17	18	
13	5	9	15	47	22	25	17	
14	5	32	16	5	22	32	16	
15	5	55	16	23	22	39	15	
16	6	19	16	40	22	46	14	
17	6	42	16	57	22	52	13	
18	7	5	17	14	23	57	12	
19	7	28	17	31	23	3	11	
20	7	50	17	47	23	8	10	
21	8	13	18	3	23	12	9	
22	8	35	18	19	23	15	8	
23	8	58	18	34	23	19	7	
24	9	20	18	49	23	22	6	
25	9	42	19	4	23	24	5	
25	10	4	19	18	23	26	4	
27	10	26	19	32	23	28	3	
28	10	47	19	46	23	29	2	
29	11	9	19	59	23	30	1	
30	11	30	20	12	23	30	0	
signes.	♈	♉	♊	♋	♌	♍	signes.	

The Chapter of the Declination of the Sunne.

The Declination of the Sunne, is the arke of the greater circle, which passeth by the poles of the world, included between the Equinotiall and the Zodiack. And heere is to bee noted, that whatsoeuer foure pointes or prickes which are equallie distant from the point of the Equinox (which are the beginning of Aries and Libra) shall haue equall Declinations.

Whereof it followeth, that the foure quarters of the Zodiacke haue equall declinations. And to auoide prolixity I haue added hereunto a table of the declinations of onely one quarter of the Zodiack, so that all hauing one selfe same maner of Declinations, it may serue for all, & the order of it is this. The signes whose Declination increaseth are in the head or front of the table, and y degrees of these signes descend by the left side thereof, & the signes whose declination decreaseth, are in y foot of the table: and the degrees of these signes, rise by the right side of the same. The disposition of the table being vnderstood, then to knowe what declination the sunne hath in euerie degree of y Zodiack, you ought to know the true place of the sunne, for the day of the declination which you desire to know, and the signe which the sun shall bee found in that day, shall you seeke in y front or foot of the table. And if it be in the front, you shall seeke the number of the degrees on y left side, and if it shall bee at the foot of the table, you shall seeke it on the right side. Then aboue or vnder the signe in the front of y degree of the said signe, you shall find two numbers, wherof y first is of degrees, & the second of minutes: and those degrees and minutes of declination, the Sunne hath that day. And this is vnderstood without hauing respect to y

22	02	01	0	11	odde
25	01	00	00	11	00

odde minuts aboue the degré, which the true place of the Sunne hath.

And if you desire to verifie this more p̄cise, note the Declination of that degré, and of the degré following: and take the lesse from the more, and that which remaineth, shalbe the difference of the declination from the one degré to the other: of which difference ye shal take a part p̄potionallie, as are the minutes of the place of the sun vnto 60. And this part of minutes muste bee added to the first declination of it, and be lesse then the second, or must be taken from it, if it shall be greater, and then that riseth thereof shal be the p̄cise declination for that signe, degré, and minute. As for example: In the yeare 1546. the tenth day of September, the Sun shall be in 26. G. 38. M. of Virgo, & the 25. G. p̄cise, shal correspond, 1. G. 36. M. of declination. And to verifie the declination that cometh to 38 minuts, which is more of the 26. G. you must marke the difference that is from the declination of 26. G. (which is one G. 36. M.) to the declination of the 27. G. which is one G. 12. M. The difference is 24. M. Of these you must take such part p̄potionally, as the 38. minuts beareth vnto 60. which are almost two terces of a degré: Then the two terces of 24. or 16. which must bee taken from one degré 36. minutes, which correspond to the 26. G. of Virgo, because the declinations goe decreasing, and remaineth 1. G. 20. M. and if the declinations increase, you must add thereunto, as you take away when they decrease.

Another example for this yeare of 1561.

Example for the yeare 1561. the 20. of Aprill, I find the true place of the Sunne at noon, in 9 degrees 54. minutes of Taurus, then in the table of the signes before, I seek for 9. degrés of Taurus, to which doth answer for the declination 14. degrés 32. minutes, and to the next degré following doth answer 14. degrés 51. minutes, then take the

the letter out of the moze, so resteth 19. minutes. Then
 foyme a rule of thre, and say: if 60. minutes giue 54. mi-
 nutes, (which 54. minutes doeth rest befoze of the 9. de-
 grees of Taurus) how many doth 19. minutes giue, which
 19. minutes are the diuersitie of the 9. and 10. degrees of
 Taurus. So I finde that 14. minutes giueth 17. minutes;
 and 6. seconds, which 17. minutes and 6. seconds, I adde
 to the 14. degrees. 23. minutes, which answereth to the 9
 degrees of Taurus. And it commeth to 14. degrees 49. mi-
 nutes and 6. seconds, which is the true declination of the
 20. day of Aprill, Anno. 1561.

It is also to be noted, that I adde these 17. minutes and
 6. seconds, because the declination doeth increase: for if it
 decreased, it were to bee taken out so much, and the rest
 is the declination. So is the declination for the
 twentie of Aprill, in the yeare 1561.

fourtene degrees, 49. mi-
 nutes, and sixe
 seconds.

FINIS

AT LONDON.

Printed by Edward Allde, and
are to bee solde by Hugh Astley,
dwelling at Saint Magnus corner.

Anno. 1596,

AT LONDON
Printed by Edward Wallis, and
are to be sold by Hugh Alley,
dwelling at Saint Martins corner.
Aug. 1796

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