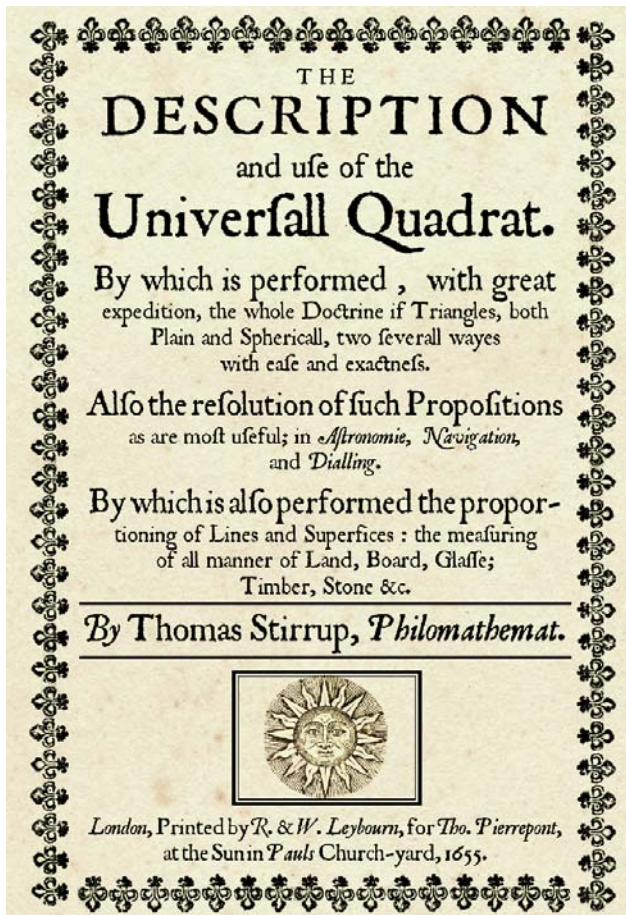


# THOMAS STIRRUP, THE UNIVERSALL QUADRAT

London 1655



“THE DESCRIPTION and use of the Universall Quadrat” is a small format publication with the subjects divided into three separate books. The third book is generally about Dialling techniques.

## The First Book.

Shewing the description and generall use of the *Universall Quadrat* and how thereby to resolve all such Propositions as may be applyed unto right lines; as the proportioning of Lines and Superfices, the measuring of all manner of Land, Board, Glass, Timber, Stone, and such like.

## The Second Book.

Shewing the most plentifull, easie, and speedy use of the *Universal Quadrat*, in the Resolution of the whole Doctrine Trigonometrical, as well plain as sphericall, and that two severall wayes upon the Instrument, with surpassing facility, and with the least intricacie that may be.

## The Third Book.

Shewing how by the Vniversal Quadrat, to resolve all such Astronomical propositions, as are of ordinary use, as well in the art of Navigation, as in the

art of Dialling, with the resolution of such nautical propositions, as are of ordinary use amongst Sea-men, concerning Longitude, Latitude, Rumb, and distance.

This Book contains the following Chapters:

### CHAP. I.

*To finde the Suns altitude, by the shadow of a Gnomon set perpendicular to the Horizon.*

### CHAP. II.

*The height of the Sun being given, to finde the length of the right shadow.*

### CHAP. III.

*To finde the Altitude of the Sun by the shadow of a Gnomon, standing at right angles with any perpendicular wall, in such manner that it may lie parallel to the Horizon.*

### CHAP. IV.

*The Height of the Sun being given, to finde the length of the contrary shadow.*

### CHAP. V.

*Having the distance of the Sun from the next Equinoctial point, to finde his declination.*

### CHAP. VI.

*How to finde the latitude of a place, or the Poles elevation above the Horizon, the declination of the Sun being given.*

### CHAP. VII.

*How to get the Declination of the Sun, or any Star, Planet, or Comet by observation in a known latitude.*

### CHAP. VIII.

*The Declination of the Sun, and the quarter of the Ecliptique which he possesseeth being given, to finde his true place.*

### CHAP. IX.

*Having the latitude of the place, and the distance of the Sun from the next Equinoctial point, to finde his Amplitude.*

### CHAP. X.

*Having the Latitude of the place, and the declination of the Sun or Star to finde his Amplitude.*

### CHAP. XI.

*Having the amplitude and declination of the Sun, to finde the elevation of the Pole above the Horizon.*

### CHAP. XII.

*The elevation of the Pole, and the amplitude of the Sun being given, to finde his declination.*

### CHAP. XIII.

*Having the Latitude of the place, and the declination of the Sun, to finde his height in the vertical circle, or when he shall come to be due East or West.*

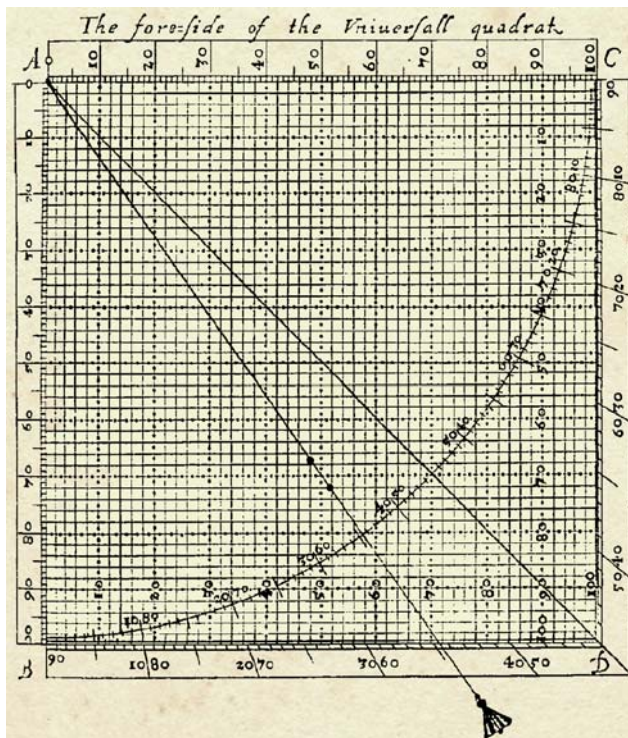
### CHAP. XIV.

*Having the latitude of the place, and the distance of the Sun from the Equinoctial point, to finde his height in the vertical circle.*

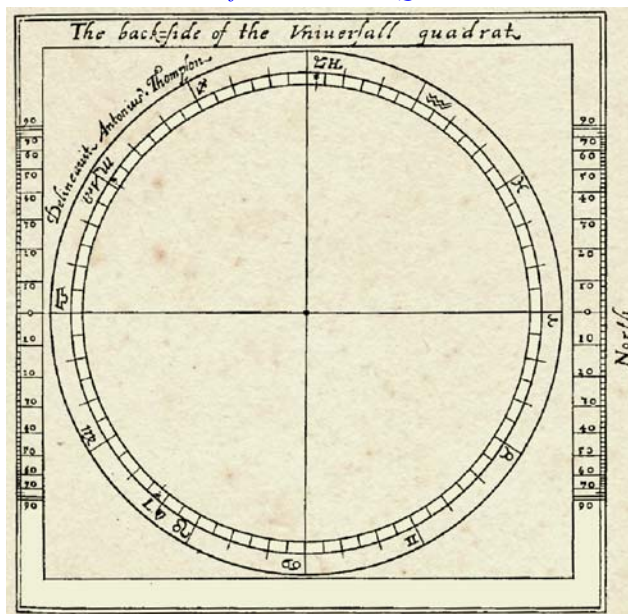
### CHAP. XV.

*Having the Latitude of the place, and the declination of the Sun, to finde the time when the Sun commeth to be due East or West.*





Front of the Universal Quadrat



Back of the Universal Quadrat

#### CHAP. XVI.

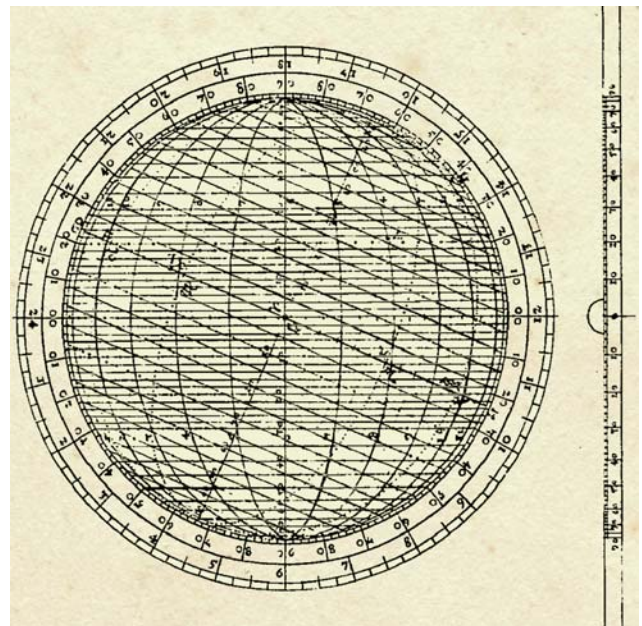
Having the Latitude of the place, and the declination of the Sun, to finde what altitude the Sun shall have at the houre of six.

#### CHAP. XVII.

Having the latitude of the place, and the declination of the Sun, to finde what Azimuth the Sun shall have at the houre of six.

#### CHAP. XVIII.

Having the Latitude of the place, and the declination of the Sun, to finde the Ascensional difference, and thereby the Time of Sun-rising and setting, with the diurnal and nocturnal arches.



Rotating Disc and Rule

#### CHAP. XIX.

Having the latitude of the place, & the declination of the Sun, to finde the time of the beginning or ending of twilight.

#### CHAP. XX.

Having the distance of the Sun from the next Equinoctial point, to finde his right ascension.

#### CHAP. XXI.

Having the right ascension of the Sun or Star, together with the difference of their Ascensions, to finde the oblique Ascension and descension.

#### CHAP. XXII.

Having the Azimuth, the Suns Altitude, and the declination, to finde the hour of the day.

#### CHAP. XXIII.

Having the houre of the day, the Suns Altitude, and the declination, to finde the Azimuth.

#### CHAP. XXIV.

The Latitude of the place, the Altitude and the declination of the Sun being given, to finde the houre of the day.

#### CHAP. XXV.

The Latitude of the place, the Declination and Altitude of the Sun being given, to finde the Azimuth.

#### CHAP. XXVI.

The place of the Sun being given, to finde his declination.

#### CHAP. XXVII.

The declination of the Sun being given, to finde his place in the Ecliptique.

#### CHAP. XXVIII.

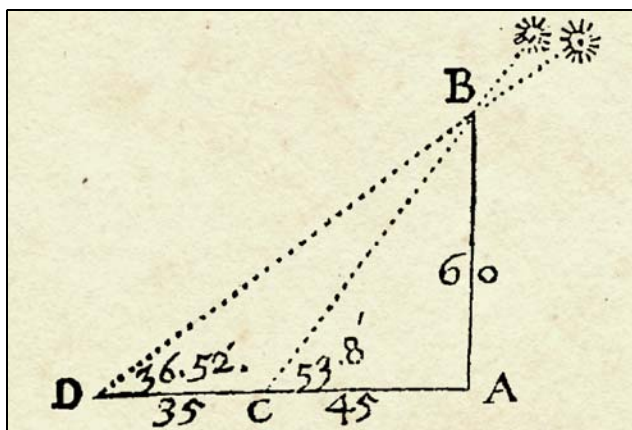
The place of the Sun being given, to finde his Right Ascension.

#### CHAP. XXIX.

Having the latitude of the place, with the place of the Sun in the Ecliptick, to finde his Amplitude.

#### CHAP. XXX.

Having the latitude of the place, with the declination of any Star, to finde his Amplitude.



*Measuring Shadow Lengths*

CHAP. XXXII.

*Having the Declination and Amplitude of the Sun, to finde the latitude of the place.*

CHAP. XXXII.

*The latitude of the place, and the amplitude of the Sun being given, to finde his declination.*

CHAP. XXXIII.

*Having the latitude of the place, and the Declination of the Sun, to find his height in the vertical Circle.*

CHAP. XXXIV.

*Having the latitude of the place, and the Declination of the Sun, to finde the time of his coming to the East and West Points.*

CHAP. XXXV.

*Having the latitude of the place, and the Declination of the Sun, to finde his height at the hour of six.*

CHAP. XXXVI.

*Having the latitude of the place, and the Declination of the Sun, to finde his Azimuth at the hour of six.*

CHAP. XXXVII.

*Having the latitude of the place, and the Declination of the Sun, to finde the Ascensional difference, and consequently the time of Sun-rising and setting, with the Diurnal and Nocturnal arches.*

CHAP. XXXVIII.

*Having the latitude of the place, and the declination of the Sun, to finde the time of the beginning and ending of twilight.*

CHAP. XXXIX.

*The latitude of the place, the altitude and declination of the Sun being given, to finde the houre of the day.*

CHAP. XL.

*The latitude of the place, the Suns altitude and Declination being given, to finde his Azimuth.*

CHAP. XLI.

*The longitude and latitude of any planet or fixed star being given, to finde his Declination and right Ascension.*

CHAP. XLII.

*Having the declination and right ascension of any fixed Star, to finde his longitude and latitude.*

CHAP. XLIII.

*To finde the culmination, or southing, of any of the fixed Stars, as also of the Moon and other Planets. First, for the fixed Stars.*

CHAP. XLIV.

*To finde the time of the rising or setting, of any of the fixed Stars, and also of the moon or other planets.*

CHAP. XLV.

*To finde the exact hour of the night speedily by the Stars.*

CHAP. XLVI.

*To finde how many minutes or miles, answer to one degree of longitude, in any latitude required.*

CHAP. XLVII.

*To finde what difference of longitude belongeth to one degree or 20 leagues of distance, upon any parallel of latitude.*

CHAP. XLVIII.

*To finde how many leagues do answer to one degree of latitude, upon any Romb required.*

CHAP. XLIX.

*To find how much any ship hath raised or depressed the Pole, knowing the course she hath made, and the leagues shee hath sailed.*

CHAP. L.

*By the Rumb and both latitudes to find the distance upon the Rumb.*

CHAP. LI.

*By the distance and both latitudes, to find the rumb.*

CHAP. LII.

*By the Rumb and difference of latitudes, to finde the difference of longitude.*

CHAP. LIII.

*By the distance of latitude and leagues sailed, to finde the difference of longitude.*

CHAP. LIV.

*By the difference of latitude, and difference of longitude, to finde the Rumb leading from one to the other.*

CHAP. LV.

*By one latitude, Rumb, and distance, to finde the difference of latitude, and also of longitude.*

CHAP. LVI.

*By the longitude and latitude of two places, to finde their distance upon the Rumb.*

CHAP. LVII.

*By the way of the Ship, and two angles of position to finde the distance between the ship and the land.*

CHAP. LVIII.

*To finde the distance of any Ship from you, your selfe standing upon some high cliffs or platform by the Sea coast, the height of the said platform above the water being known.*

CHAP. LIX.

*How by this Instrument, from a high Platform, to measure the distance of any two ships on the sea, or other marks on the land, howsoever they be situated, and that right speedily.*

FINIS.