

# 18th Century Material Culture

## Engineering, Surveying, Drafting & Cartography I



Engineers  
&  
Surveyors



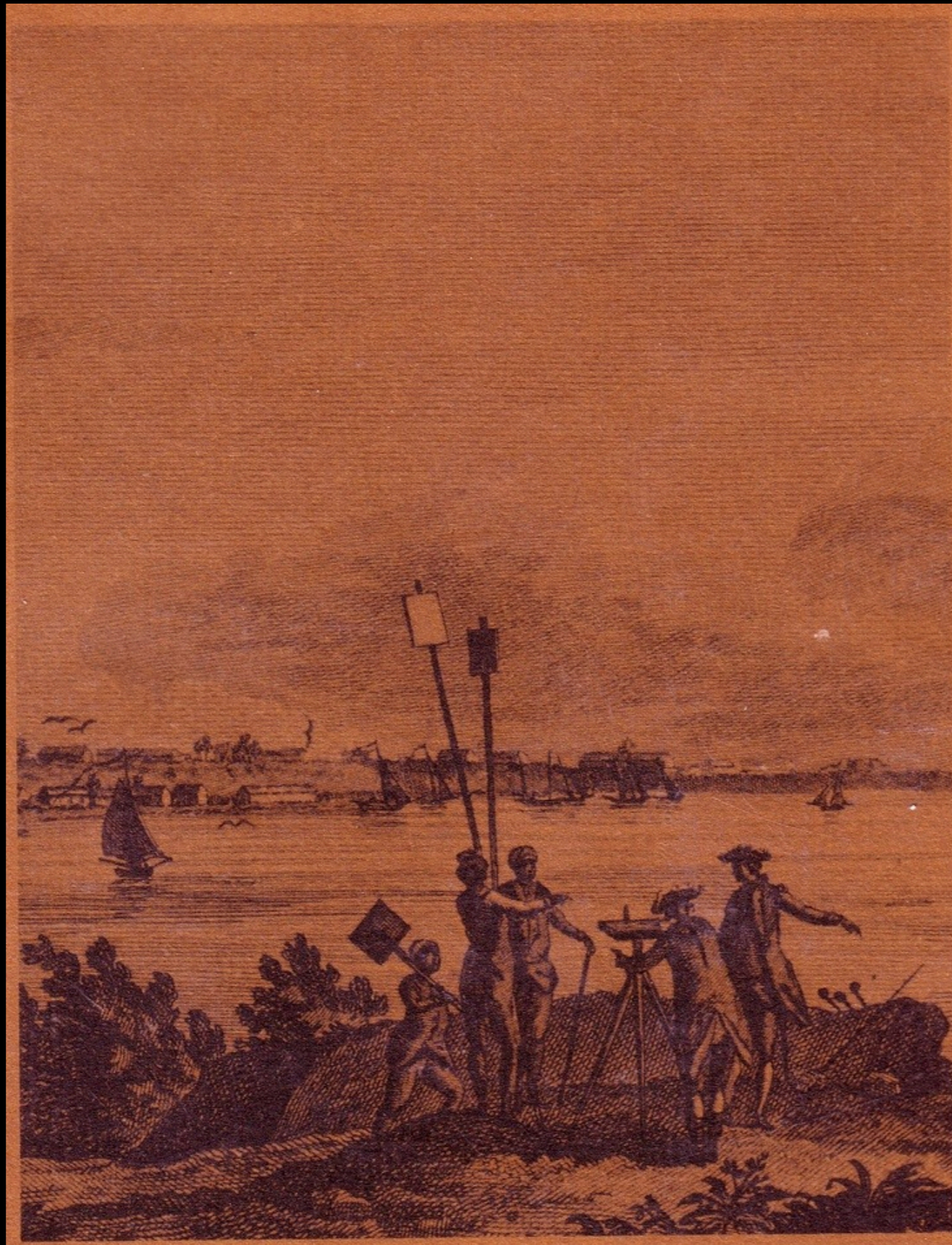
Highland Landscape  
by Paul Sandby c. 1750  
(Victoria & Albert)



James Brindley (1716 - 1804). British Engineer  
by Francis Parsons 1770  
(National Portrait Gallery)



Peter Dolland  
by John Hoppner c. 1775 - 1779  
(Yale Center for British Art)



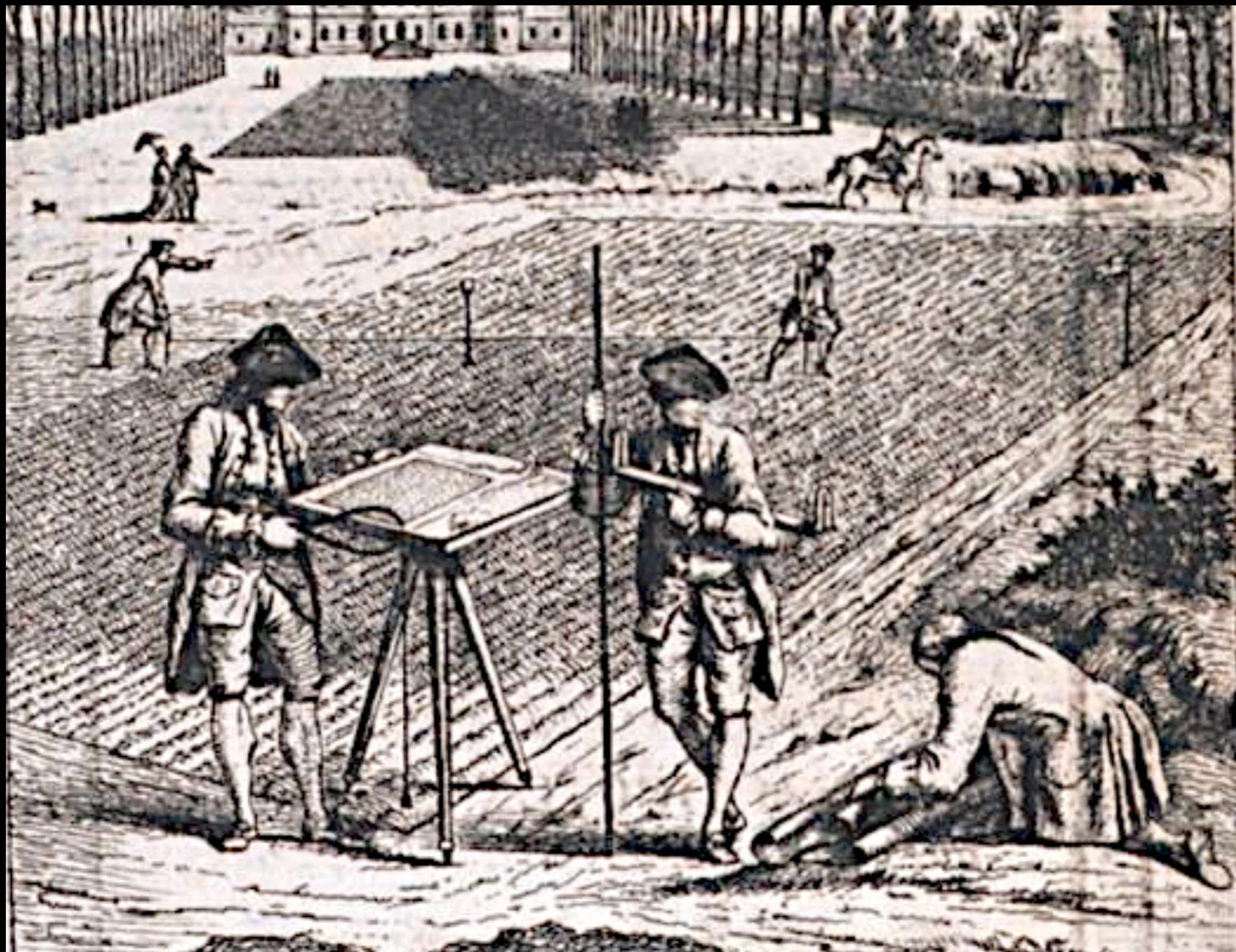
Frontispiece: The American Campaigns of Rochambeau's Army





La Science de l'arpenteur: dans toute son etendue  
by Dupain de Montesson

1775





View Near Loch Rannoch  
by Paul Sandby c. 1749  
(The British Library)



View Near Loch Rannoch  
by Paul Sandby c. 1749  
(The British Library)



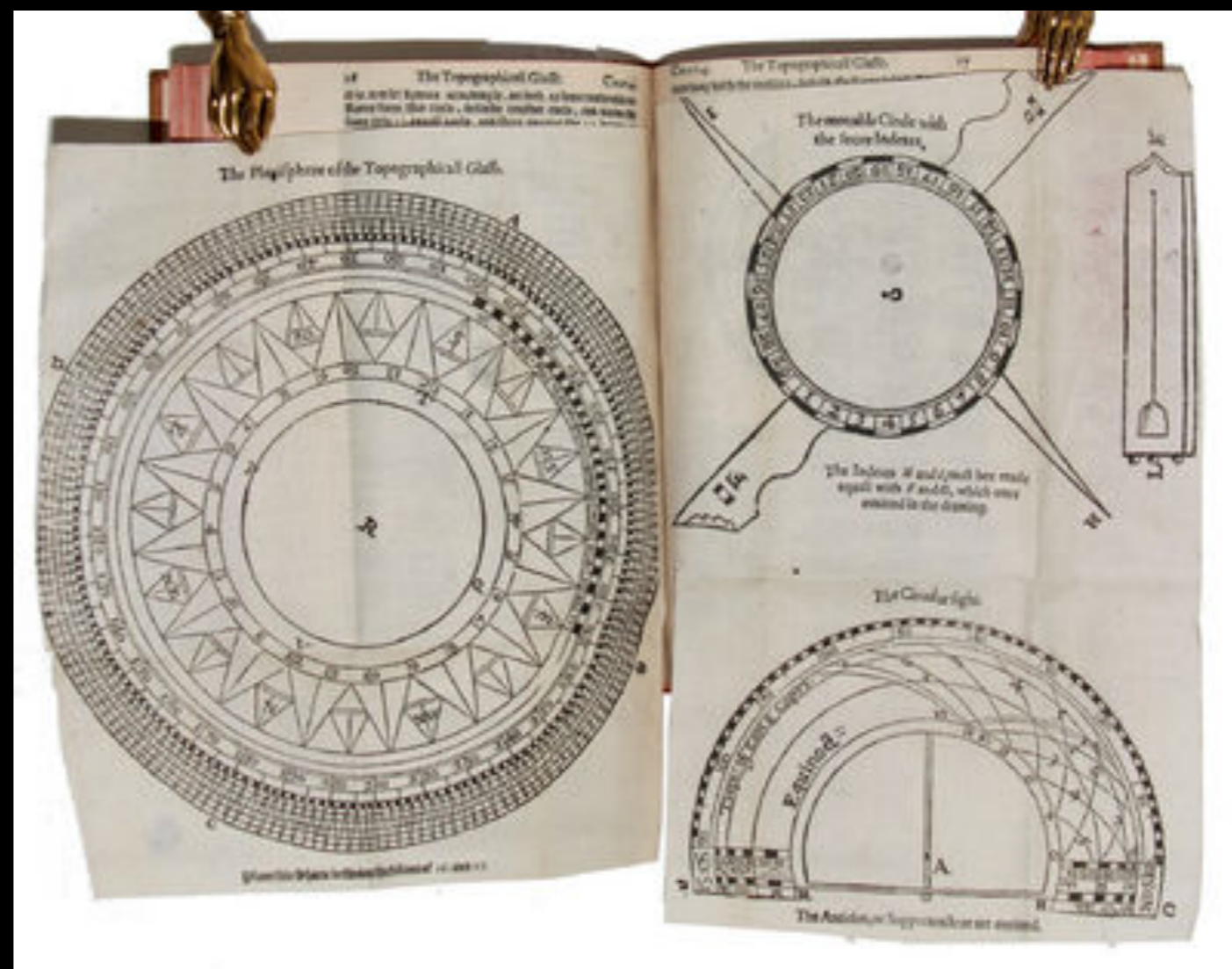
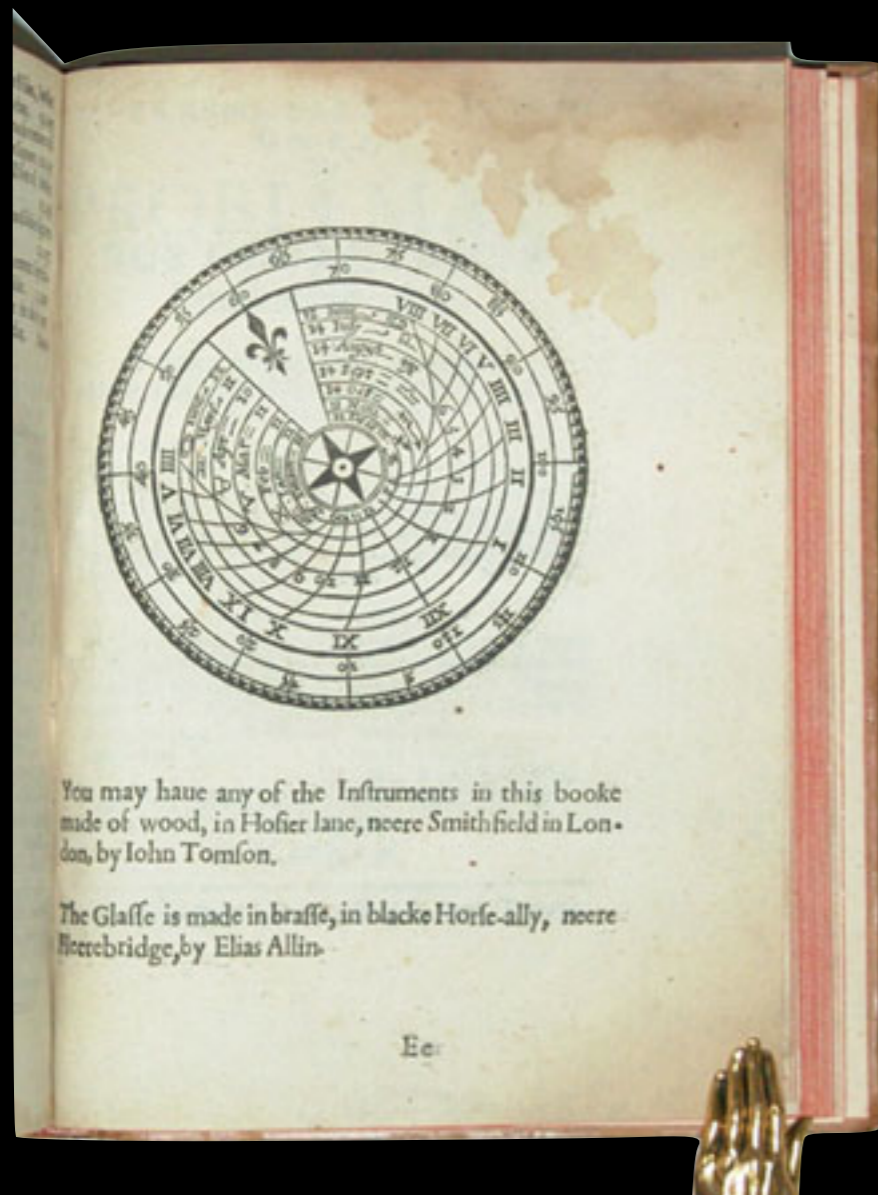
Humphry Repton Surveying with a Theodolite  
c. Late 18th - Early 19th Century  
(Stapleton Historical Society)

# Austrian Military Engineers

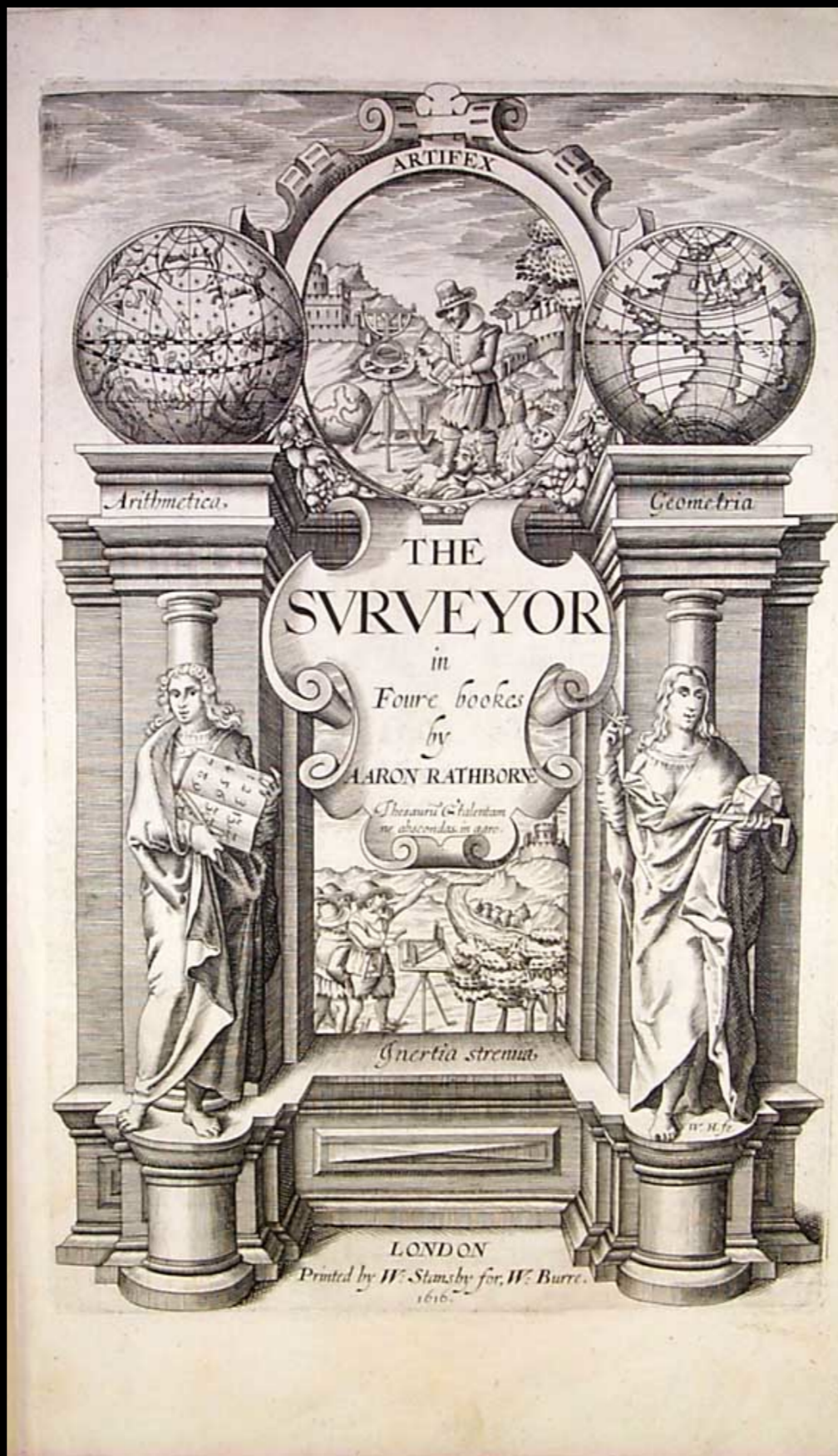


Johann Peter Krenner  
by the Circle of Martin van Meythens c. 1750 - 1760

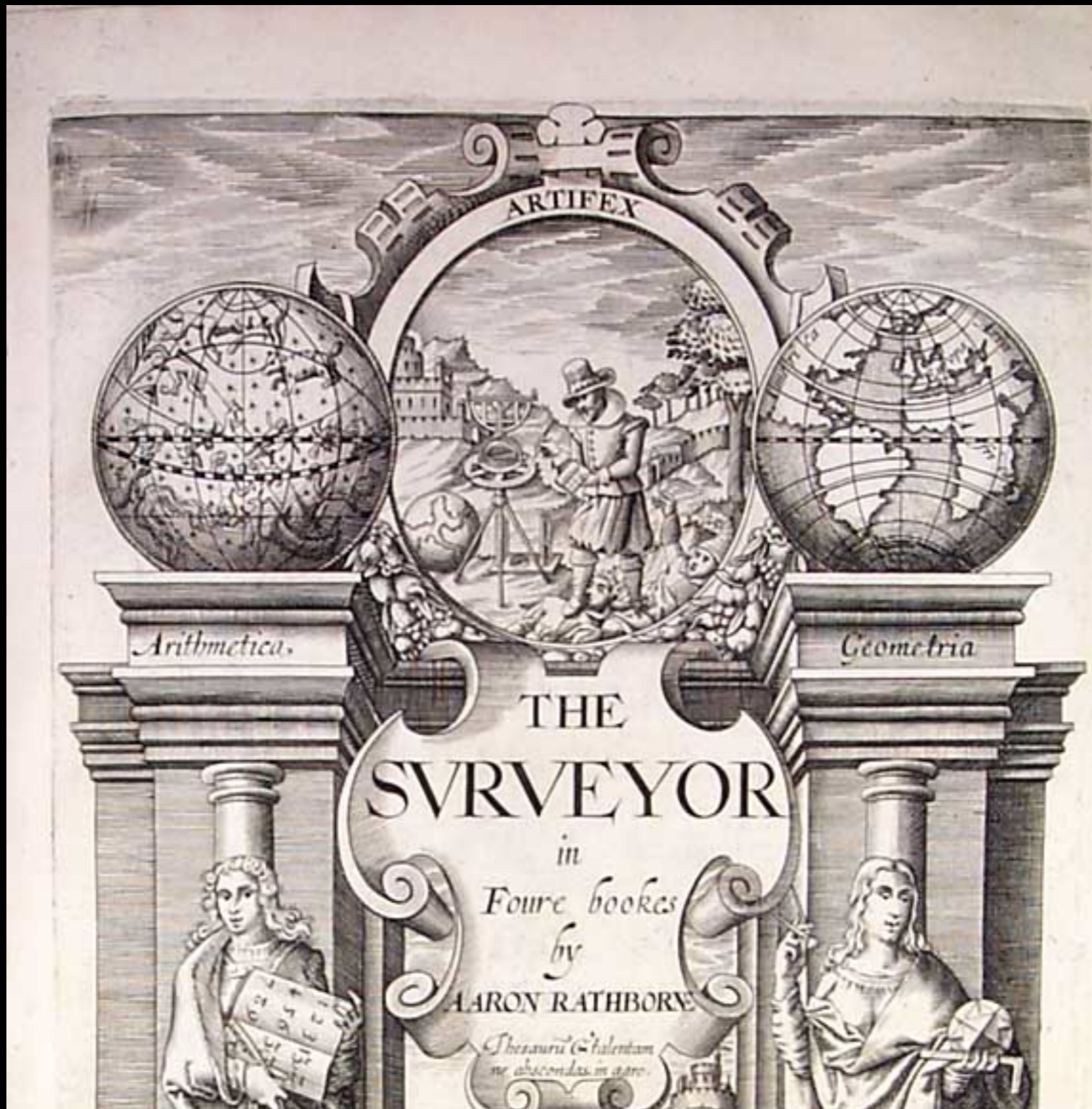
# Manuals & Books



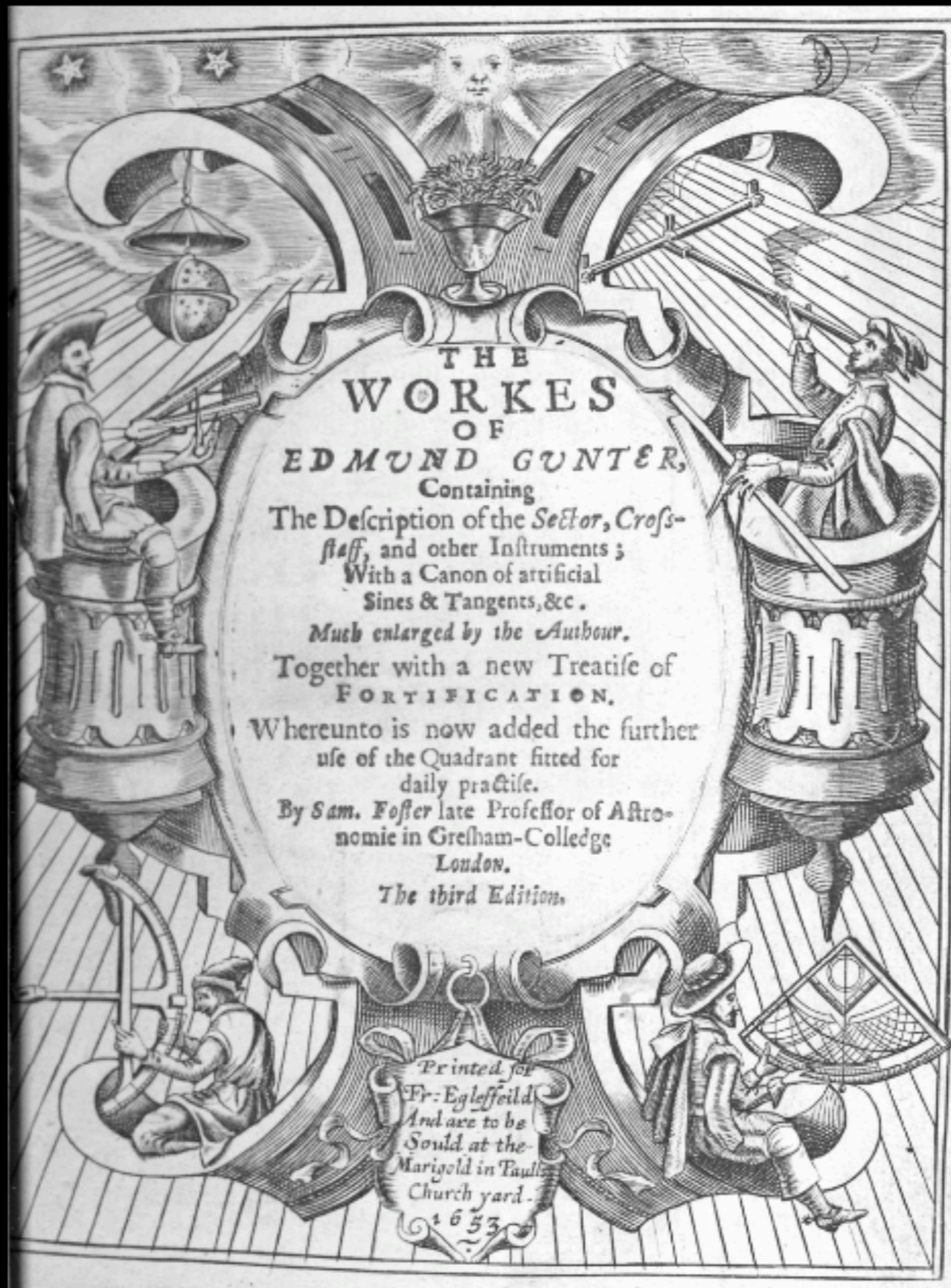
“Speculum Topographicum, or the Topographall Glasse”  
 by Arthur Hopton, London 1611  
 (Formerly of the Bud Uzes Collection)



“THE SURVEYOR in Foure bookes”  
by Aaron Rathborne, London 1616  
(Formerly of the Bud Uzes Collection)



“THE SURVEYOR in Foure bookes”  
by Aaron Rathborne, London 1616  
(Formerly of the Bud Uzes Collection)



“THE WORKES OF EDMUND GUNTER...”

1633

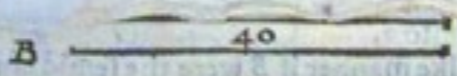
(Princeton University Library)

A Table for the use of the Chain:

	Inch.	Cent.	Foot.	Pace.	Perch.	Chain	Long: Acre	Mile.
Inch.	1	7, 92	12	60	198	792	7920	63360
Cent.	62.7264	1	1, 515	7, 575	25	100	1000	8000
Foot.	144	2, 295	1	5	26. 5	66	660	5280
Pace.	3600	57, 485	25	1	3. 3	13. 2	132	1056
Perch.	39204	625	272, 25	10, 89	1	4	40	320
Chain.	627264	10000	4356	17424	16	1	10	80
Acre.	6272640	100000	43560	1742, 4	160	0	1	8
Mile.	4014489600	64000000	27878400	1115136	10 400	6400	640	1

\* Centesmen of a Chain.

Square.  
Place this figure between Page 44. and 45. of the Cross-staffe.



Let *A* and *B*, be the sides of like *Superficies*, as the sides of two squares, or the diameters of two circles, first I take the side *A* and to it open the *Sector* in the points of 100, then keeping the *Sector* to this angle, I enter the lesser side *B*, parallel to the former, and find it to crosse the lines of *Superficies* in the points of 40, wherefore the proportion of the *Superficies* whose side is *A*, to that whose side is *B*, is as 100 unto 40, which is in lesser number, as 5 unto 2.

This proposition might have been wrought by 60, or any other number that admits several divisions. It may also be wrought without opening the *Sector*, for if the sides of the *Superficies* given, be applied to the lines of *Superficies* beginning alwayes at the center of the *Sector*, there will be such proportion found between them, as between the

E 3 number.

THE COMPLEAT  
SURVEYOR:

Containing  
The whole *ART* of  
Surveying of Land,

BY THE  
Plain Table, Theodolite, Circumferentor,  
AND  
*P E R A C T O R*:

After a more easie, exact and compendious  
manner, then hath been hitherto published by any: the  
*PLAIN TABLE* being so contrived, that it alone  
will conveniently perform whatsoever may be done by  
any of the fore-mentioned *Instruments*, or any  
other yet invented, with the same ease  
and exactnesse; and in many  
cases much better.

Together with the taking of all manner of  
Heights and Distances, either accessible or in-accessible, the Plotting  
and Protracting of all manner of Grounds, either small Inclosures,  
Champion plains, Wood-lands, or any other Mountainous and un-even  
grounds. Also, How to take the Plot of a whole Mannor, to  
cast up the content, and to make a perfect Chart or  
Map thereof. All which particulars are per-  
formed three severall wayes, and by  
three severall Instruments.

Hereunto is added, the manner how to know  
whether Water may be conveyed from a Spring head to any  
appointed place or not, and how to effect the same: With  
whatsoever else is necessary to the Art of  
*SURVEYING*.

By *WILLIAM LEYBOURN*.

L O N D O N :

Printed by *R. & W. LEYBOURN*, for *E. BREWSTER* and  
*G. SAWRIDGE*, and are to be sold at the signe of the Bible  
upon *Ludgate hill*, near *Fleet-bridge*. *MDC LIII*.

“THE COMPLEAT SURVEYOR: ...”  
by William Leybourn, London 1653  
(Formerly of the Bud Uzes Collection)



Portrait of William Leybourn in "THE COMPLEAT SURVEYOR: ..."  
by William Leybourn, London 1653  
(Formerly of the Bud Uzes Collection)

*James Collins Westminster July 1774*

*James Collins* THE  
COMPLEAT  
SURVEYOR:

CONTAINING  
*James* The whole ART of *Collins*  
Surveying of Land,

*2 April 1760* BY THE *at Westminster*  
Plain Table, } Theodolite,  
Circumferentor, } Peractor,  
And other

INSTRUMENTS.

With divers kinds of Mensurations, and Matters pertinent to a WORK of this nature.

The Third Edition, Corrected and Enlarged, with the Addition of Three entire BOOKS not before Printed.

The whole TREATISE being comprised In VII. Books.

An Account of the particulars in each of them contained, is given in the Preface to the Reader.

By WILLIAM LEYBOURN Philomathematicus.

LONDON,

Printed by *E. Flesher* for *George Sawbridge* at the Sign of the Bible upon Ludgate-bill. 1674.

*James Collins Westminster July 1774*

“THE COMPLEAT SURVEYOR: ...”  
by William Leybourn, London 1674  
(Formerly of the Bud Uzes Collection)

T H E  
Compleat Surveyor:  
Or, the WHOLE ART of  
S U R V E Y I N G  
O F  
L A N D,

B Y  
A New INSTRUMENT lately invented;  
As also by the  
Plain Table, Circumferentor, the Theodolite  
as now improv'd, or by the Chain only.

CONTAINING  
Plain and Easy DIRECTIONS in several Kinds of MENSURATIONS, and  
Other Things necessary to be known in a Work of this Nature.

---

By *WILLIAM LEYBOURN.*

---

The WHOLE Altered and Amended, and Two entire BOOKS added  
by the AUTHOR long before his DEATH.

---

The FIFTH EDITION, in IX BOOKS.

---

Every Operation both Geometrical & Arithmetical being examin'd,

A N D A N  
A P P E N D I X

Added to the WHOLE, Consisting of  
*Practical Observations in Land Surveying,*

---

By *SAMUEL CUNN.*

---

L O N D O N:

Printed for SAMUEL BALLARD at the *Blue Ball*, and AARON WARD  
at the *King's Arms* in *Little Britain*, and THO. WOODWARD at the  
*Half-Moon* against *St. Dunstan's Church* in *Fleetstreet*. 1722.

“THE COMPLEAT SURVEYOR: ...”  
by William Leybourn, London 1722  
(Formerly of the Bud Uzes Collection)

THE EXACT  
SURVEYOR:

OR,  
The whole ART of  
SURVEYING

*The* OF *Sea*  
LAND

Shewing how to Plot all manner  
of Grounds, whether small Inclosures,  
Champain plaine, Wood lands, or Moun-  
taines, by the *Plain Table*, *Theodolite*,  
and *Circumferentor*; And how exactly to  
prove the truth thereof.

And also how to finde the Area, or  
Content of any Land; To Protract, Reduce,  
and Divide the same, as required: To take the  
Plot of a whole Mannor, and to make a  
perfect Map or Chart thereof, and how  
to Advance and beautifie the same.

Usefull for all that either Sell or Purchase.

---

BY J: E Y R E,  
*Practitioner in the Mathematicks.*

---

L O N D O N,  
Printed for *Nath: Brook*, at the Angel  
in *Corne-Hill*, 1654.

“THE EXACT SURVEYOR: OR The whole ART of SURVEYING OF LAND”

by J. Eyre, London 1654

(Formerly of the Bud Uzes Collection)

Geodætes Practicus :

O R, T H E

A R T

O F

SURVEYING.

Surveyed and laid out in a more  
Accurate, Plain and Expeditious Plat,

then hath hitherto been

performed:

*Quæd* Being a *W O R K E* very usefull for

Surveyors, } Masons, } Brick-layers,  
Architects, } Carpenters, } Glasiers,  
Engineers, } Joyners, } Painters, &c.

And generally for all them that are  
Ingeniously affected with such  
kinde of Learning.

By V I N C E N T W I N G.

*Pro captu Lectoris habent sua fata Libelli.*

L O N D O N.

Printed by *Wil. Leybourn*, for *George  
Sawbridge*, at the Signe of the Bible  
upon *Ludgate-hill*: 1664.

“Geodætes Practicus: OR, THE ART OF SURVEYING...”

by Vincent Wing, London 1664

(Formerly of the Bud Uzes Collection)

*Geodætes Practicus:*

Or the Art of

# SURVEYING.

Surveyed and laid out in a more  
Accurate, Plain and Expeditious Plat,  
then hath hitherto been performed.

*Being a W O R K E* very usefull for

Surveyors, } Masons, } } Brick-layers,  
Architects, } } Carpenters, } } Glasiers,  
Engineers, } } Joyners, } } Painters, &c.

And generally for all them that are  
Ingeniously affected with such  
kinde of Learning.

The Second Edition Corrected and Enlarged:  
With the addition of a Treatise, entituled, *Examens  
Astronomiæ Carolinae*, being an Answer to  
*Mr. Tho. Streets* Treatise of *Astronomy*.

By V I N C E N T . W I N G .

*Pro captu Lectoris habent sua fata Libelli.*

L O N D O N,

Printed by *Wil. Leybourn*, for *George  
Sawbridge*, at the Signe of the Bible  
upon *Ludgate hill*; 1666.

“Geodaetes Practicus: OR, THE ART OF SURVEYING...”

by Vincent Wing, London 1666  
(Formerly of the Bud Uzes Collection)

*Geodætes Practicus Redivivus.*

THE  
ART  
OF  
SURVEYING:

Formerly Publish'd by *Vincent Wing*, Math.

NOW

Much Augmented and Improv'd; with an APPENDIX thereunto sub-join'd, shewing the whole ART of SURVEYING by a New Instrument,

CALLLED

The EMPIERIAL TABLE;

Performing exactly in all respects, and in all Cases that can possibly happen in the Practical Part of SURVEYING, the Work of the *Theodolite*, *Circumferentor*, *Semi-Circle*, *Chord* and *Needle*.

WITH THE

DESCRIPTION and USE

OF A

NEW QUADRANT.

To which is Added by way of Supplement,

*SCIENTIA STELLARUM:*

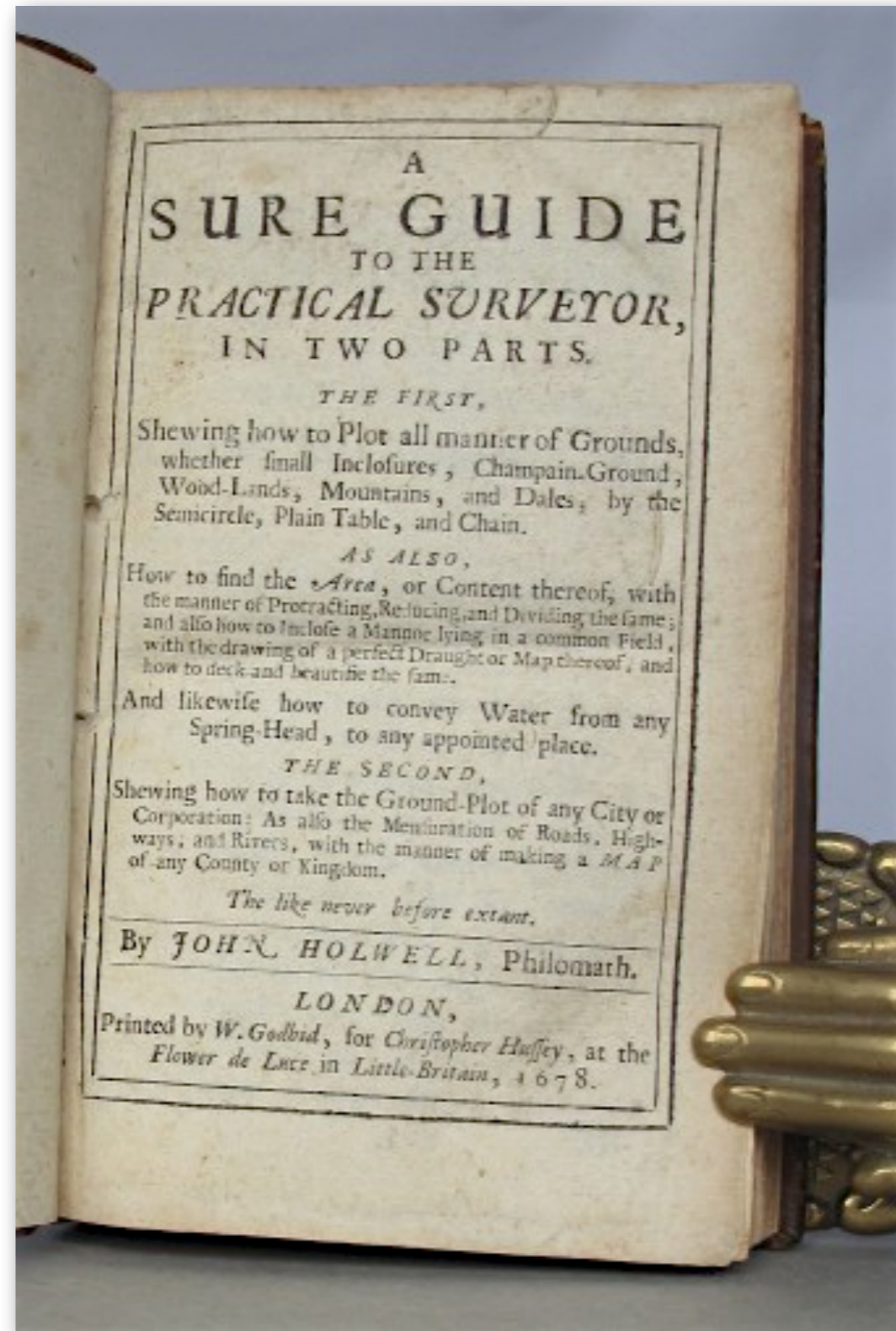
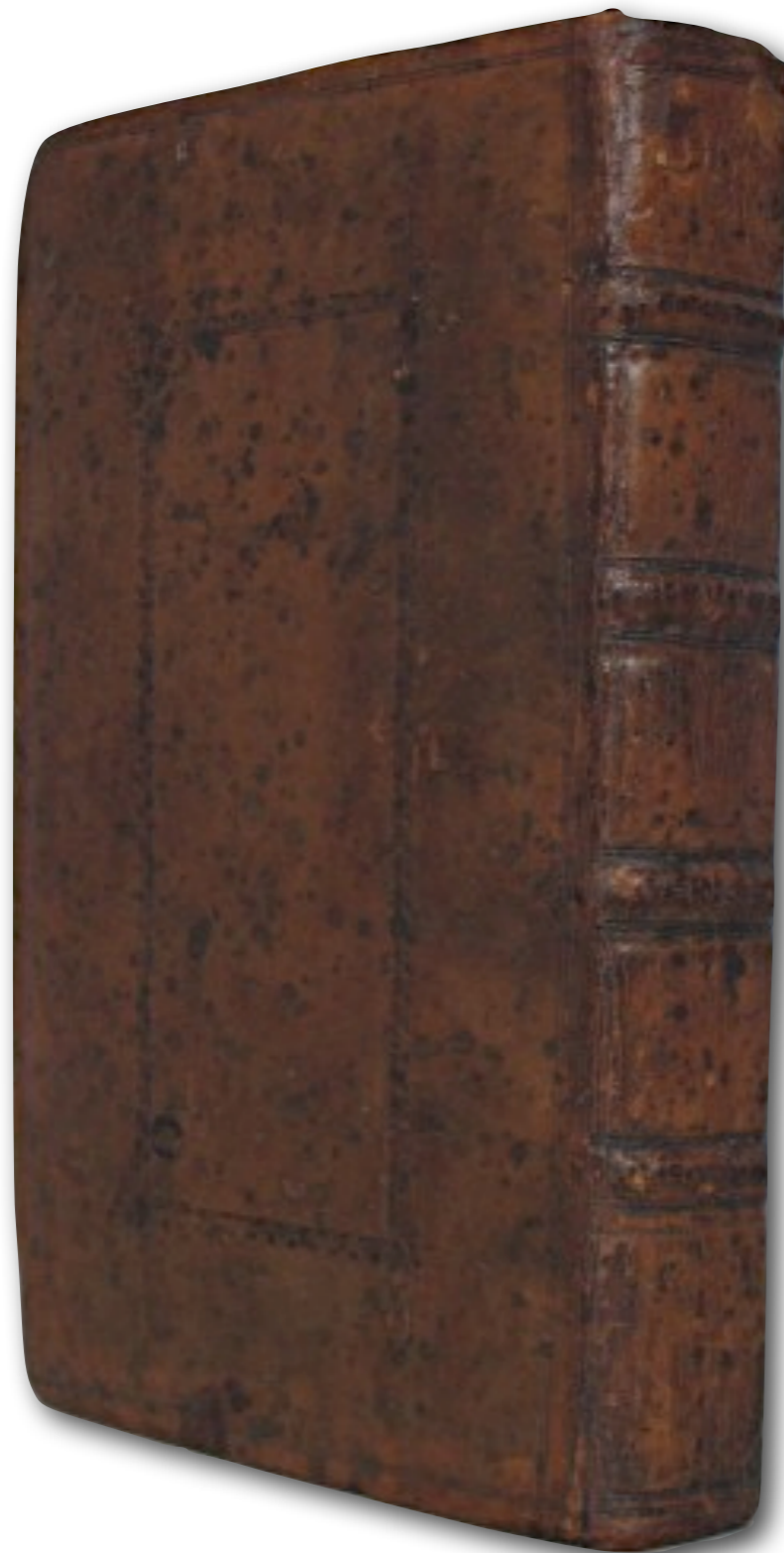
Containing New and Accurate Tables of the Planetary Motions, whereby the Planets Places both in Longitude and Latitude, The Places of the Fixed Stars, with the Eclipses of the Luminaries, are more easily attain'd, than by any yet Extant.

By JOHN WING, *Math.*

LONDON,

Printed by *J. Matthews*, for *Awnsham* and *John Churchill*, at the *Black Swan* in *Pater-Noster-Row*, MDCC.

“Geodætes Practicus: OR, THE ART OF SURVEYING...”  
by Vincent Wing, Published by His Nephew, John Wing, London 1700  
(Formerly of the Bud Uzes Collection)



“A SURE GUIDE TO THE PRACTICAL SURVEYOR, IN TWO PARTS”  
by John Holwell, London 1678  
(John Drury Rare Books)

THE  
*Country-Survey-Book;*  
OR,  
LAND-METERS  
VADE-MECUM.

WHEREIN

The PRINCIPLES and *Practical*  
RULES for *Surveying of Land*, are so plainly  
(though briefly) delivered, that any one of  
ordinary parts (understanding how to *add*,  
*subtract*, *multiply* and *divide*,) may by the help  
of this small *Treatise* alone, and a few cheap  
*Instruments* easy to be procured, *Measure* a par-  
cel of Land, and with judgment and expedi-  
tion *Plot* it, and give up the Content thereof.

WITH

An APPENDIX, containing *Twelve*  
*Problems* touching *Compound Interest* and *An-*  
*nuities*; and a *Method* to *Contract* the work  
of *Fellowship* and *Alligation Alternate*, very con-  
siderable in many Cases.

---

*Illustrated with Copper Plates.*

---

By ADAM MARTINDALE,  
A Friend to Mathematical Learning.

---

*Frustra fit per plura quod fieri potest per pauciora.*

---

London, Printed for R. Clavel, at the *Peacock* in  
St Paul's Church-yard, and G. Sawbridge, at the  
*Three Flower-de-luces* in *Little-Britain*, 1702.

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“The Country - Survey - Book: OR, LAND - METERS VADE - MECUM.”  
by Adam Martindale “A Friend to Mathematical Learning”, London 1702  
(Formerly of the Bud Uzes Collection)

The Whole  
**A R T**  
*Will. in Landers 1719*  
**SURVEYING**  
AND  
**Measuring of LAND**  
Made **EASIE**.

S H E W I N G,

By Plain and Practical Rules, how to Survey, Protract, Cast up, Reduce or Divide any Piece of Land whatsoever; with New Tables for the Ease of the Surveyor in Reducing the Measures of Land.

M O R E O V E R,

A more Easie and Sure Way of Surveying by the Chain, than has hitherto been Taught.

A S A L S O,

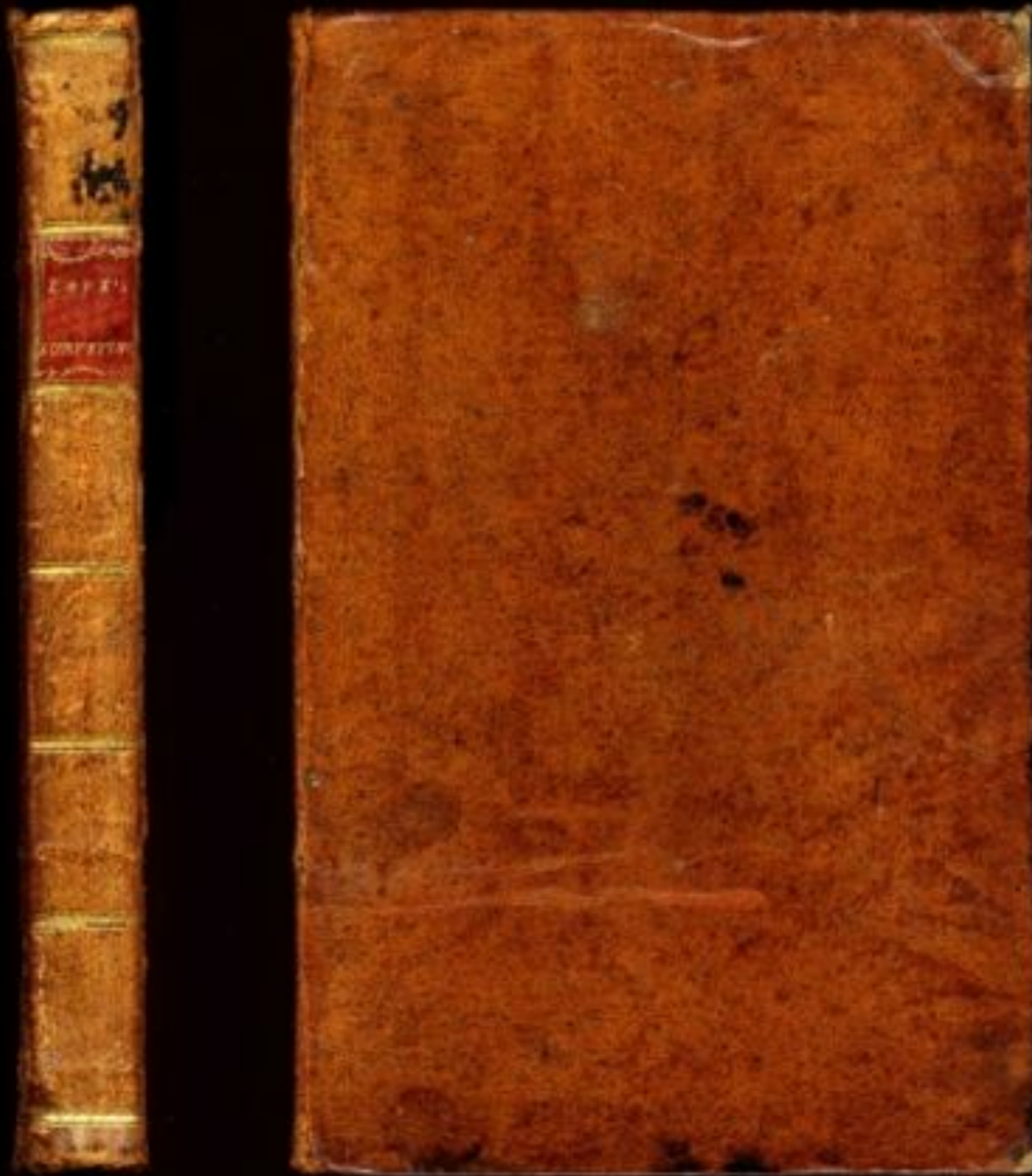
How to lay out New Lands in America, or elsewhere; to make a Perfect Map of a River's Mouth or Harbour; with several other Things never yet Publish'd in our Language.

By **J O H N L O V E**.

The Third Edition, with Additions.

London, Printed for *W. TAYLOR*, at the Ship in Pater-Noster-Row, **MDCCLXVI**.

“The Whole ART of SURVEYING and Measuring of LAND Made EASIE”  
by John Love 1716  
(Princeton University Library)



“Geodaesia: or the Art of Surveying and Measuring Land Made Easy”  
by John Love / J. Rivington, London 1771  
(Via Libri)

2

THE  
Practical Surveyor,  
OR, THE  
Art of *Land-Measuring*,  
Made EASY.

Shewing by plain and practical Rules, how to Survey any Piece of Land whatsoever, by the Plain-Table, Theodolite, or Circumferentor: Or, by the Chain only. And how to Protract, Cast up, Reduce, and Divide the same.

L I K E W I S E,

A New Method of Protracting Observations made with the Meridian; and how to cast up the Content of any Plot of Land, by Reducing any Multangular Figure to one Triangle: Being more exact and expeditious than heretofore used.

To which is added,

An A P P E N D I X,

Shewing how to Draw Buildings, &c. in Perspective, from Observations made by the New Theodolite, its Use in Levelling, in finding the exact Number of solid Feet, contained in any Timber Trees before they are cut down, by Inspection only; and also the Use of a new-invented *Spirit Level*. With several other Things never before made Publick.

---

By S A M U E L W Y L D, Gent.

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L O N D O N:

Printed for J. H O O K E, at the *Flower-de-luce* against St. Dunstan's Church in *Fleet-street*: And J. S I S S O N, Mathematical Instrument-maker, the Corner of *Beaufort Buildings* in the *Strand*. M.DCC.XXV.

(Price Three Shillings.)

“THE Practical Surveyor, OR, THE Art of Land - Measuring, Made EASY”  
by Samuel Wyld, London 1725  
(Formerly of the Bud Uzes Collection)

THE  
Practical SURVEYOR,  
OR THE  
ART of *Land-Measuring*  
Made E A S Y.

Shewing by plain and familiar Rules, how to Survey any Piece of LAND whatsoever, by the *Plain-Table, Theodolite, or Circumferentor* : or, by the Chain only.

And how to Protract, Cast up, Reduce and Divide the same.

LIKEWISE,

An easy method of Protracting Observations made with the Meridian; and how to cast up the Content of any Plot of Land, by Reducing any Multangular Figure to one Triangle.

To which is added,

AN APPENDIX.

Shewing how to Draw Buildings, &c. in Perspective: Of Levelling; and also how to Measure standing Timber.

---

By SAMUEL WYLD.

---

The FOURTH EDITION:  
Corrected and Enlarged by a Careful HAND;  
And Illustrated with several COPPER-PLATES.

---

L O N D O N:

Printed for W. JOHNSTON, in *Ludgate-Street*.  
MDCCLX.

“THE Practical Surveyor, OR, THE Art of Land - Measuring, Made EASY”  
by Samuel Wyld, London 1760  
(Formerly of the Bud Uzes Collection)

*Surveying Improv'd:*  
OR, THE  
Whole ART,  
BOTH IN  
THEORY and PRACTICE,  
Fully Demonstrated.

In Four PARTS.

- |  |   |
|--|---|
| I. Arithmetick, Vulgar and Decimal.  | IV. How to Measure, Cast up, Plot, or Divide any Parcel of Land; to take inaccessible Heights and Distances; with Surveying Counties, Roads, Rivers, &c. Also to reduce a Plan to a Prospect; and to correct any Survey by Astronomical Calculation; with Directions for making transparent Colours for Maps. |
| II. All Definitions, Theorems, and Problems; with Plain Trigonometry, and whatsoever else is necessary to the Theory of SURVEYING. |   |
| III. The Description and Use of Instruments proper to be used in PRACTICAL SURVEYING.  |   |

To which is added,  
An APPENDIX concerning LEVELLING  
and conveying WATER to any possible Place  
assign'd.

By HENRY WILSON.

LONDON

Printed for J. BATLEY, at the Dove in Patern-Noster-Row. MDCCXXVI.

“Surveying Improv'd: OR, THE Whole ART, BOTH IN Theory and Practice, Fully Demonstrated”  
by Henry Wilson, London 1726  
(Formerly of the Bud Uzes Collection)

SURVEYING IMPROVED:  
OR, THE  
WHOLE ART,  
BOTH IN  
THEORY and PRACTICE,  
FULLY DEMONSTRATED.

In FOUR PARTS.

- I. ARITHMETIC, Vulgar and Decimal.  
II. All DEFINITIONS, THEOREMS, and PROBLEMS; with Plain TRIGONOMETRY, and whatsoever else is useful in the THEORY of SURVEYING.  
III. The DESCRIPTION and USE of INSTRUMENTS, necessary in the Practice of SURVEYING; particularly *Gunter's Chain*, the *Surveying-Wheel*, the *Theodolite*, the *Sector*, the *Circumferentor*, the *Protractor*, the *Semicircle*, and the *Plain-Table*; which last, of all others, is esteemed universally useful in every Part of this Art.  
IV. How to Measure, Cast up, Plot, and Divide Parcels of LAND, of what Denomination, soever, *viz.* Meadows, Pastures, Fields, Forests, Woods, Commons, Lordships, Manors, &c. by any one or more of the abovesaid Instruments. Also, to take inaccessible Heights and Distances, with Surveying Counties, Roads, Rivers, &c. Likewise to reduce a Plan to a Prospect, and to correct any Survey by Astronomical Calculation: With DIRECTIONS for making transparent COLOURS for Maps, &c.

With an APPENDIX concerning LEVELLING and CONVEYING of WATER to any possible Place assigned.

The FIFTH EDITION, with ADDITIONS; embellished and illustrated with proper Cuts, &c. and also accurately revised, corrected, improved, and augmented.

By HENRY WILSON, Mathematician.

To which is now added,

GEODOSIA ACCURATA:  
OR,

SURVEYING made EASY by the CHAIN only.  
SHEWING,

How to Measure, Plot, Divide, and Delineate any Parcel of LAND, without the Trouble and Charge of any other Instrument but the CHAIN; with proper Directions for Reducing, Mapping, Colouring, and finding the Content, after an accurate and expeditious Manner.

ALSO,

A NEW ESSAY UPON SOLIDS.

Shewing how the Dimensions of Timber-Trees, &c. both standing and lying, may be exactly taken, and readily Measured various Ways, *viz.* Vulgarly, Decimally, Duodecimally, Instrumentally, and Tabularly.

By WILLIAM HUME, Philomath.

*Judicium populi nunquam contempseris unquam,  
Ne nulli placeas, dum vis contemnere multos.*

CATO.

LONDON:

Printed for T. LONGMAN, C. HITCH and L. HAWES, J. RIVINGTON, W. JOHNSON, S. CROWDER and Co. and B. L...

“Surveying Improv’d: OR, THE Whole ART, BOTH IN Theory and Practice, Fully Demonstrated”  
by Henry Wilson, London 1726  
(Formerly of the Bud Uzes Collection)

THE  
ART  
OF  
LAND-MEASURING  
EXPLAINED.  
IN FIVE PARTS.

V I Z.

I. TAKING DIMENSIONS.		IV. DIVIDING.
II. FINDING CONTENTS.		AND
III. LAYING OUT GROUND.		V. PLANNING.

WITH AN APPENDIX CONCERNING INSTRUMENTS.

BY JOHN GRAY,  
TEACHER OF MATHEMATICS IN GREENOCK,  
AND LAND-MEASURER.

GLASGOW:

PRINTED BY ROBERT AND ANDREW FOULIS FOR THE AUTHOR.  
SOLD BY D. WILSON AND J. DURHAM, IN THE STRAND, LONDON;  
G. HAMILTON AND J. BALFOUR, EDINBURGH;  
AND R. AND A. FOULIS, GLASGOW.  
M.DCC.LVII.

“THE ART OF LAND-MEASURING EXPLAINED. IN FIVE PARTS.”

by Vincent Gray, Glasgow 1757  
(Formerly of the Bud Uzes Collection)

*Guds*

T H E  
**Practical Surveyor:**

Shewing, Ready and Certain METHODS for  
Measuring, Mapping and Adorning  
All SORTS of  
**LANDS and WATERS,**  
By the Several  
INSTRUMENTS Now in Use:

PARTICULARLY, OF A  
**NEW THEODOLITE;**

Very convenient to be used by those who are resolved  
to be ACCURATE, as well as EXPEDITIOUS.

T O G E T H E R,  
With its Use in drawing the PERSPECTIVE APPEARANCE of a  
GENTLEMAN'S SEAT. Also, the Use thereof in LEVELLING,  
Measuring Timber Standing; and, by a Sliding Rule im-  
proved, all Timbers, Shrubs, &c.

Likewise, The Description and Use of an UNIVERSAL DIAL,  
whereby the Hour of the Day, SUN'S *Azimuth*, *Altitude*,  
&c. with the Variation of the COMPASS, is readily observ'd,  
to the greatest Exactness.

---

By J O H N H A M M O N D.

---

The S E C O N D E D I T I O N,

*Carefully Revised, Corrected and Enlarged;*

With the ADDITION of an APPENDIX, containing  
a New, Easy, and most Accurate Method of *Surveying*,  
*Plotting*, and *Casting up*, never till now made Public.

By S A M U E L W A R N E R.

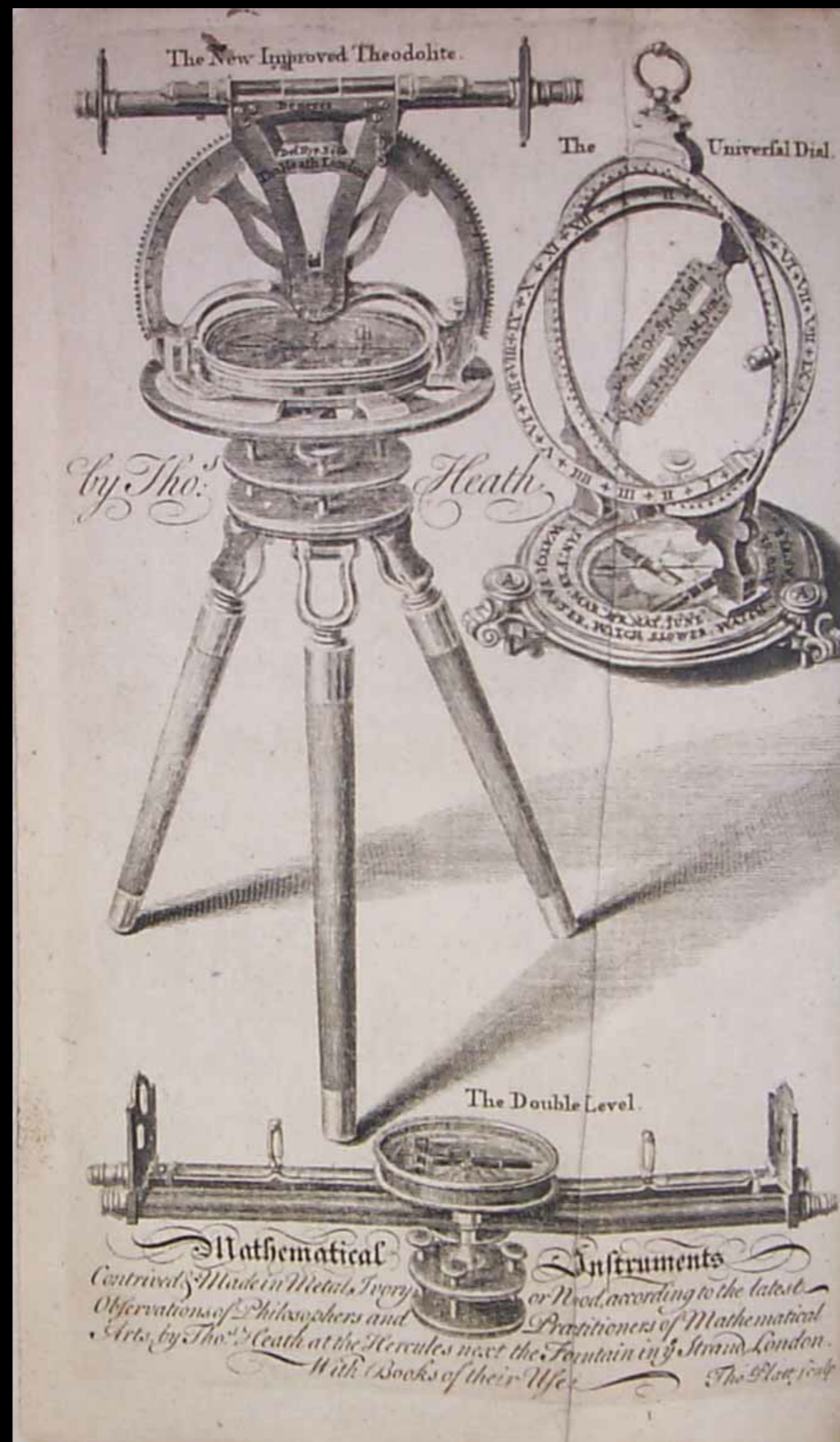
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L O N D O N :

Printed for T. HEATH, Mathematical-Instrument-Maker, at  
the *Hercules*, next the *Fountain-Tavern* in the *Strand*.

M.DCC.XXXI.

“The Practical Surveyor: ...”  
by John Hammond, London 1731  
(Formerly of the Bud Uzes Collection)



Frontspiece: "The Practical Surveyor: ..."  
 by John Hammond, London 1731  
 (Formerly of the Bud Uzes Collection)

THE  
Surveyor's Guide:

OR, A  
New INTRODUCTION  
TO THE

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Both by the CHAIN and all  
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*Now first Publish'd from an Original M. S.*

To which is Added,

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By EDWARD LAURENCE, Surveyor.

---

THE THIRD EDITION.

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L O N D O N,

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GEODÆSIA HIBERNICA:

OR AN

*William Sutton  
Breagh*

ESSAY *1768*

ON

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Which contains the following

USEFUL IMPROVEMENTS.

- |   |  |
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| I. PROTRACTION without<br>Parallels, &c.  | IV. A New Method and Plan<br>of Calculation, proposed to<br>Practitioners, to give in re-<br>turn with their Surveys.  |
| II. A Description of a new IN-<br>STRUMENT, by which any<br>Gentleman, tho' unskill'd<br>in Surveying, may measure<br>a Map, or Part of a Map,<br>almost in one View. | V. A new Set of TABLES, in<br>which may be found, by<br><i>Inspection only</i> , the DIFFER-<br>ENCE of LATITUDE, and<br>DEPARTURE, for a Station<br>of any Length and Bearing<br>that may happen in Practice. |
| III. Different METHODS for<br>correcting Surveys, and fit-<br>ting them for Calculation.  |  |

---

Ye shall do no Unrighteousness in Judgment, in Mete-yard, in Weight, or in  
Measure. *Levit. chap. xix. ver. 35.*

Curst be *he* that removeth his Neighbour's Land-Mark: And all the  
People shall say Amen. *Deut. chap. xxvii. ver. 17.*

---

By BENJAMIN NOBLE.

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D U B L I N:

Printed for the AUTHOR, by ALEX. M'CULLOH, in  
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Instrument-Maker, ISAAC JACKSON, in *Meath-street*,  
and the AUTHOR, in BALLINAKIL.

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by Benjamin Noble, Dublin 1768  
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A  
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SURVEYING and PLANNING by that INSTRUMENT.

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Numbers, from 1 to 10000; as also a TABLE of the LOGARITHMIC  
SINES and TANGENTS to every Degree and Minute of the QUADRANT;  
together with a TABLE of LOGISTICAL LOGARITHMS.

---

By THOMAS BREAKS.

---

*Ὀὐδὲν ἀγισμῆτρος εἰδίτω.*

---

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MDCCLXXI.

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Teacher of the Mathematics in TARPORLEY, Cheshire.

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THE THEORY AND PRACTICE  
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L A N D S U R V E Y I N G,  
D I V I D I N G, L E V E L I N G, D R A I N I N G, & C.  
T H E C O N S T R U C T I O N A N D U S E  
O f t h e I n s t r u m e n t s u s e d b y L a n d S u r v e y o r s,  
W i t h t h e N E W M E T H O D o f A p p l i c a t i o n i n t a k i n g  
t h e S u r v e y o f a M A N O R, o r o t h e r E S T A T E S.

T H E M E T H O D o f D I V I D I N G L A N D,  
I m p r o v e d a n d i l l u s t r a t e d b y v a r i o u s F i g u r e s, i n C o p p e r - P l a t e s.

T H E A R T o f L E V E L I N G,  
F o r t h e d r a i n i n g o f m a r s h y a n d l o w L a n d s, a n d f o r  
m a k i n g C u t s a n d C a n a l s, m o r e c l e a r l y s h e w n t h a n  
b e f o r e m a d e p u b l i c.

T O G E T H E R W I T H  
T h e E L E M E N T S o f V u l g a r a n d D e c i m a l F r a c t i o n s ;  
O F R A I S I N G P O W E R S a n d E X T R A C T I N G  
R O O T S, b y L O G A R I T H M S.

A L S O  
A g r e a t V a r i e t y o f E x a m p l e s i n M E N S U R A T I O N ;  
W i t h a l l r e q u i s i t e R U L E S f o r f i n d i n g t h e s u p e r f i c i a l a n d  
s o l i d C o n t e n t s o f B o d i e s.

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By R. WADDINGTON,  
LAND SURVEYOR, AND TEACHER OF MATHEMATICS,  
Surry-Side, Westminster Bridge.

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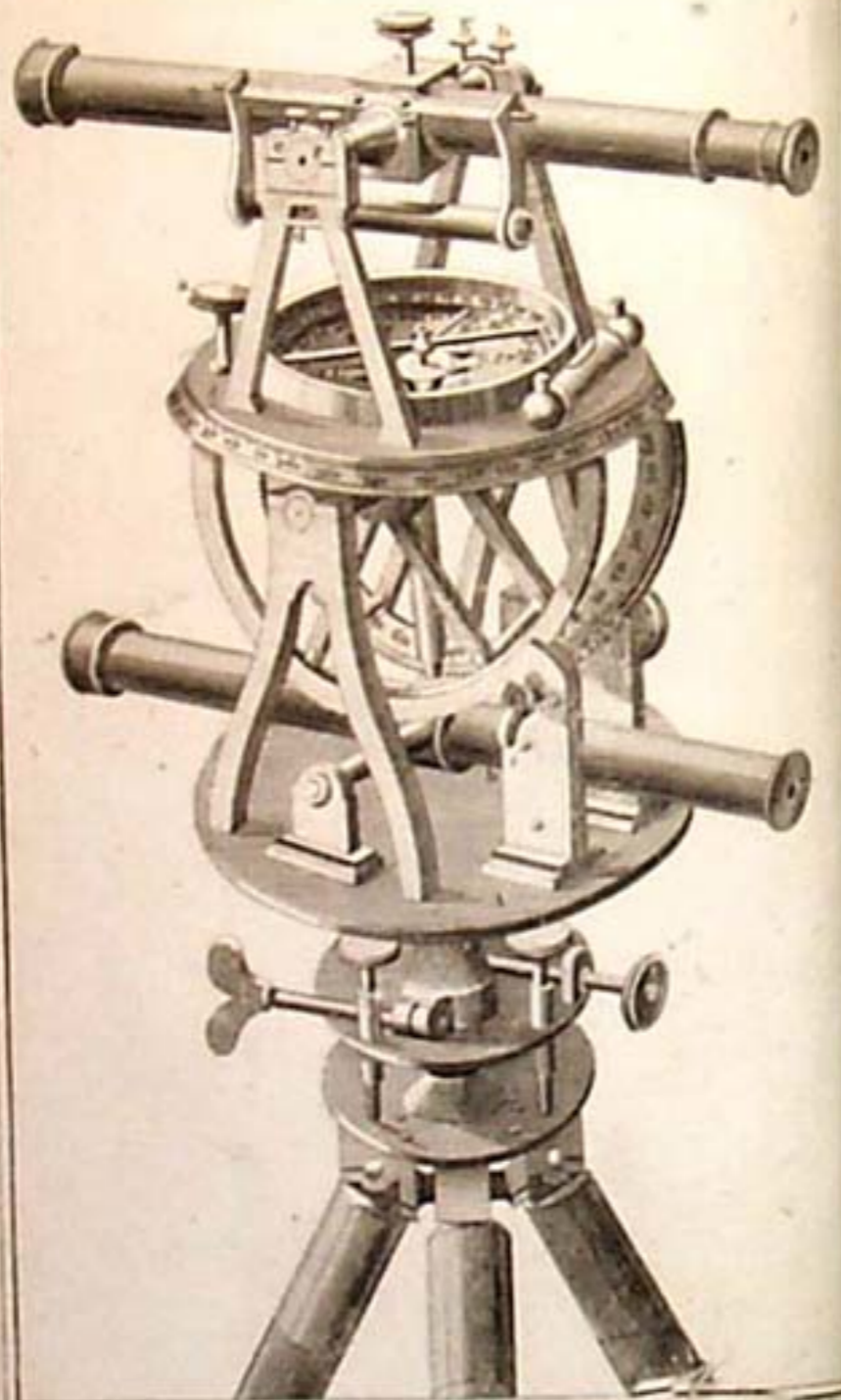
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ESSAYS,

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WITH MANY  
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