

AccessionIndex: TCD-SCSS-V.20121208.333

Accession Date: 8-Dec-2012

Accession By: Prof.J.G.Byrne

Object name: A compendium of algebra ...

Vintage: c.1724

Synopsis: Ward, J., Browne: London.

**Description:**

Short descriptive text ...

For the front and rear covers, title pages, table of contents, selected content, etc, see Figure 1 onwards below.

The homepage for this catalog is at: <https://www.scss.tcd.ie/SCSSTreasuresCatalog/>  
Click '*Accession Index*' (1st column listed) for related folder, or '*About*' for further guidance. Some of the items below may be more properly part of other categories of this catalog, but are listed here for convenience.

Accession Index	Object with Identification
<a href="#">TCD-SCSS-V.20121208.333.01</a>	A compendium of algebra ..., 1724, Ward, J., Browne: London.

**References:**

1. References if required ...



*Figure 1: Compendium of Algebra, Front Cover*





*Figure 2: Compendium of Algebra, Rear Cover*





Figure 3: *Compendium of Algebra*, Binding

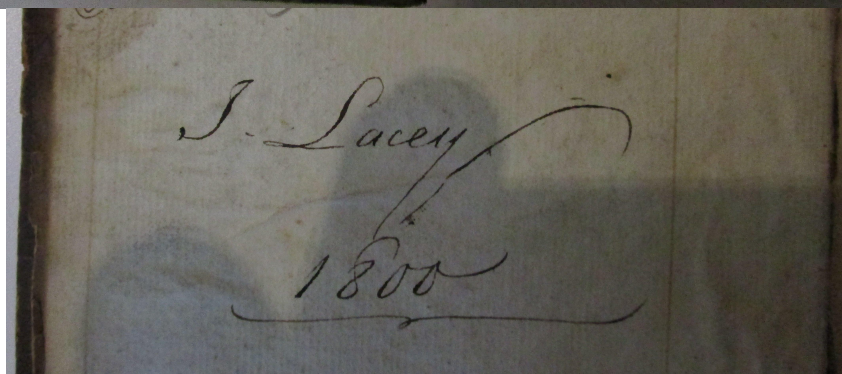
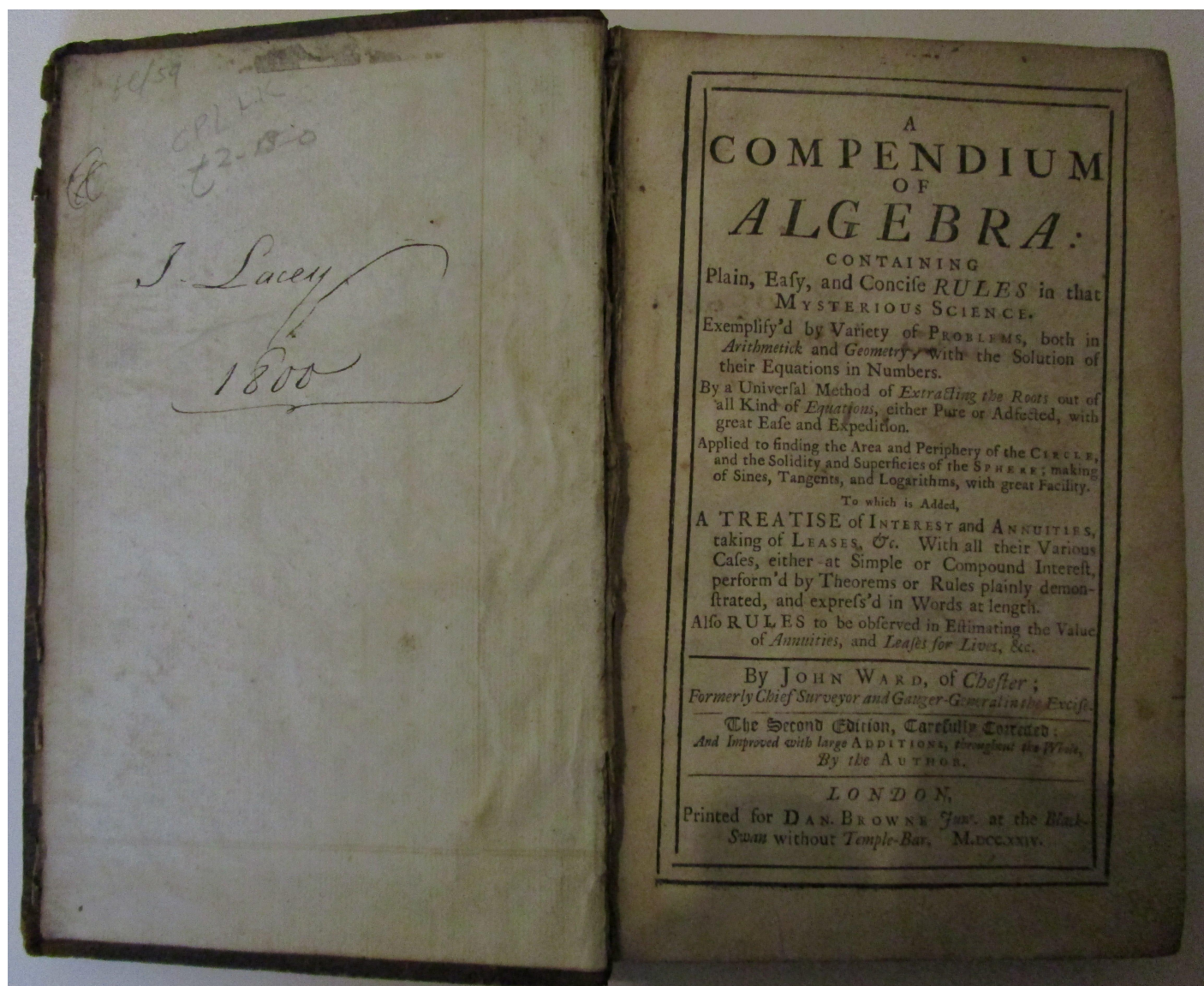


Figure 4: *Compendium of Algebra*, Title Page, with annotation inside front cover  
"J.Lacey 1800"





Figure 5: Compendium of Algebra, Preface Pages page ii and page iii



I concluded it might justly be called the Kernel or Seed (as it were) of those Studies: and therefore one may adventure to say, That whoever makes himself once Master of that Science, it will give him such a Habit of close Thinking, and true Reasoning in that sort of Learning, that he need not be afraid to venture upon any Branch thereof, because 'tis a Science by which the most Abstruse or Difficult Problems, either in Numbers, or Geometry, are not only resolved, but demonstrated: And therefore 'tis sometimes called Arithmetick in Specie, (as by Dr. Wallis;) and sometimes 'tis call'd Modern Geometry; particularly the Learned and Ingenious Mathematician Dr. Halley, the Royal Astronomer, writes thus of it:

'The Excellency of the Modern Geometry (meaning Algebra) is in nothing more evident (saith he) than in those full and adequate Solutions it gives to Problems; representing all the possible Cases at one View, and in one General Theorem many times comprehending whole Sciences; which being deduced into Propositions at length, and demonstrated after the manner of the Ancients, might very well become the Subjects of large Treatises: For whatsoever Theorem solves the most complicated Problem of the Kind, does with a due Reduction reach all the Subordinate Cases.

Here

Here you have the Opinion of one of the most Eminent Mathematicians in Europe concerning Algebra; and as a Confirmation thereof, he hath given an undeniable Instance in the Doctrine of Dioptricks, for finding the Foci of Optick Glasses universally. Vide Phil. Transf. Numb. 205.

These Truths have often caused me to wonder that so valuable a Science was not more taken notice of, especially amongst such Persons, as had both a Genius and Fancy that way. But when I consider'd that there were (in those days) but few Books in English which treated on that Subject; and those were either in large Volumes (as Kersey's Works in Folio;) or if otherwise, they were wrote in ambiguous Terms, hard to be understood, (as Mr. Oughtred's Key to the Mathematicks;) So that many who had a desire of gaining some knowledge in that Art, perhaps either wanted Time, or other Conveniencies suitable to the perusal of such Authors: And not only so, but I've heard several Ingenious Persons (pretty well vers'd both in Geometry and Astronomy) say they wholly declin'd meddling with Algebra, because of the Difficulty of Resolving Affected Equations above the Third Power into Numbers; there never having been any Method prescribed for performing that difficult Part, until Mr. Joseph Raphson publish'd a Treatise in Latin (1690)

by

Figure 6: Compendium of Algebra, Preface Pages page iv and page v



## The PREFACE.

by the Title of *Analysis Universalis*; which did in a great measure answer what was before wanting, but not without some Difficulties.

These Considerations prevailed with me to think, that if there were some small Treatise in English, which began with the first Rudiments of Algebra, and proceeded gradually on through the several parts of it, plainly shewing how to form, and bring any Problem to an Equation, and then to resolve that Equation into Numbers, tho' it were never so high or adfected, with Ease and Expedition; such a Treatise must needs be very acceptable to all those who had a desire of being acquainted with that Mysterious Science.

For these Reasons, join'd with a Willingness to promote Mathematical Learning, I did (according to the best of my Abilities) compose this Compendium; contracting it into as narrow a Compass as possibly I could, both for the Conveniency of Price, and that it might be a Pocket Companion. How well it hath answer'd my Intentions, doth fully appear from the Reception it hath already found in the World: For tho' there were above a Thousand of them printed off in the first Impression, yet in a few Years it became so scarce, that it was sold for more than double the first Price. The which, and the frequent

## The PREFACE vij

quent Demands for it, induced the Bookseller to desire it might be reprinted: And in order to that, he prevailed with me to revise and prepare it for a new Impression; which accordingly I have done, and not only so, but I have made several large Additions to it.

First, There is prefixed (by way of Introduction) that Useful Part of Numbers called Decimal Arithmetick, which was omitted and much wanted in the first Impression.

There is also added a whole Chapter of managing such Surd Quantities as may (and often do) arise in bringing Problems to an Equation.

I have added several pleasant Arithmetical Questions, &c. But above all,

There is added an Easy Method of finding the Circle's Periphery and Area; with the like for finding the Superficies and Solidity of any Sphere or Globe; all their Proportions being traced from the Original or first Principles of Geometry, proceed by a very plain and easy Demonstration.

There are likewise added two different Methods of making Natural Sines and Tangents, demonstrated with Examples of their Calculations at large.

These

Figure 7: Compendium of Algebra, Preface Pages page vi and page vij



These, with several other Improvements, the Reader will find in the Algebra Part of this Treatise.

To the first Impression of that Part, there was annexed a short Appendix concerning Interest and Annuities, to be perform'd by Algebraick Theorems only: which was rather to shew what might be done by the Pen, without the help of a great many Tables of several Rates, than for common Practice

And therefore I reduced those Theorems into Practical Rules express'd in Words at length, and printed them in a small Tract (Anno 1710) by the Title of *Clavis Usuræ*, or a Key to Interest, both Simple and Compound, &c.

That Tract the Bookseller desired might be join'd to the Algebra Part of this Treatise, instead of the above mention'd Appendix.

To this are added several Theorems with their Demonstrations; and in order to render the whole Business of Interest and Annuities plain and easy to be understood, 'tis all express'd in Words at length, with Variety of Examples in all their Cases, both as to different Rates of Interest, and Times of Payments, with all the Operations at large. For altho' Rules are never so well express'd in Words (according to the Author's Sense)

yet

yet there may (and often does) arise some seeming Difficulties in them, which Examples may help to explain and render easy.

Thus you have an Account of the ensuing Pages, which I hope will be found Useful, according as it is intended and desired

Chester,  
July 1723.

By J. W.



THE

Figure 8: Compendium of Algebra, Preface Pages page viii and page ix





THE  
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Figure 9: Compendium of Algebra, Contents Pages page x and page xi



Equated Time that *A* must pay the 750*l.* unto *B*, at one entire Payment; which is but 11 Days more than the Time found at Simple Interest.

And the Truth of the Equated Time thus found at Compound Interest, may be easily proved (by the help of Case 1. pag. 161, &c.) in the same manner as that of Simple Interest was in the last Page.

## P O S T S C R I P T.

**N**OTE, Just after Sect. 1. of Simple Interest, should follow this Scholium, which accidentally is left out of its proper place: However, rather than it should be wholly omitted, I have inserted it here, with a brief Application of it.

## S C H O L I U M.

Altho it be according to the *Laws and Custom of England* to compute Interest at the Proportion of 6 per Cent. per Ann. viz. 3*l.* per Cent. for 6 Months, and 30*s.* per Cent. for 3 Months, &c. yet he that takes up Money at that Rate of Interest for any Time less than a compleat Year, pays more Interest than seems reasonably due, according to the strict Rules of Art.

As for instance, If 100*l.* be forborn at Interest 12 Months, it amounts to 106*l.* which is just: But (I say) it should not amount to 103*l.* in six Months; nor to 101*l.* 10*s.* in 3 Months; as appears from this Proportion.

Let  $a$  = the Amount due at the end of 6 Months; then it will be, As 100 :  $a$  ::  $a$  : 106 the true Amount at the End of 12 Months: Ergo,  $aa = 10600$ , and  $a = \sqrt{10600} = 102.9563$  &c. which is less than 103; and if it be paid at the End of 3 Months, then it will be  $\sqrt{102.9563} = 101.4673$  &c. which is less than 101,5 So that the quicker the Payments are, the greater the Error must needs be, which in large Sums, and little Intervals of Time, will be very considerable; as is manifest from this following Example.

Suppose the Crown were indebted Ten Millions, viz. 10000000*l.* and were to pay after the Rate of 6 per Cent. per Ann. Simple Interest for it: Then the Interest of that 10000000*l.* would be 600000*l.* for 12 Months, which is really true: And according to the usual Proportion of Payments, the Interest would be 300000*l.* for 6 Months, and 150000*l.* for 3 Months; whereas in reality, the Interest of 10000000*l.* should be but 295630*l.* 2*s.* 9*d.* for 6 Months, and but 146738*l.* 9*s.* 3*d.* instead of 150000*l.* for 3 Months, which is 3261*l.* 10*s.* 9*d.* too much.

And this may suffice at this Time, as a Hint, to shew what vast Advantage the Money Merchants make in any Government that's forced to take up Money, and pay the Interest for it at short Intervals of Time, as Quarterly, or Monthly, &c.

F I N I S.

Figure 10: Compendium of Algebra, Last Page 220, including Postscript