

PREFACE

THIS work was conceived by a descendant of John Napier to celebrate the quadcentenaries of the publication of Napier's invention of logarithms in 1614 and his death in 1617. The tercentenary of the publication of the *Descriptio* in 1614 was marked by an International Congress held in Edinburgh, but the quadcentenary was celebrated much more modestly. This was largely because by 2014 the everyday use of logarithms had been displaced by the electronic calculator, introduced in the 1970s. Whole generations have subsequently grown up without ever seeing log tables at school, so that interest in the subject is naturally confined to a much narrower audience. Yet logarithms played a pivotal role in the development of western science and they are still used to measure many natural phenomena. Napier's key part in their discovery should not be forgotten but, as one recent biographer wrote, Napier is "probably the greatest unknown Scot".¹

Clearly if Napier had not invented logarithms when he did, someone else would have done so shortly thereafter, because the development of mathematics had reached that particular stage throughout Europe. However, that does not diminish Napier's achievement, particularly when one considers that he was working alone, in a remote and periodically war-stricken country, and that he was devoid of the academic support he could have expected had he been based at Oxford, Cambridge, or any of the other major centres of learning in Europe.

However, logarithms are not Napier's only claim to fame. He published three works in his own lifetime; another was published two years after his death by one of his sons while the last was not published for another two centuries. In order of publication, Napier's five works are:

1. *A plaine discovery of the whole revelation of Saint Iohn*, Robert Waldegrave, 1593.
2. *Mirifici logarithmorum canonis descriptio*, Andreæ [Andro] Hart, 1614.
3. *Rabdologiae seu numerationis per vigulas libri duo*, Andreas [Andro] Hart, 1617.²

¹ Francis Shennan, *Flesh and bones, the life, passions and legacies of John Napier*, Napier Polytechnic, 1989, (p. xv).

² Napier died on 4th April 1617 while the *Rabdologiae* was entered for copyright protection at the Stationers' Company in London on 22nd May of the same year. However, there

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4. *Mirifici logarithmorum canonis constructio*, Andreas [Andro] Hart, 1619.

5. *De arte logistica Joannis Naperi, Merchistonii Baronis libri qui supersunt*, The Maitland Club, 1839.

As indicated by their titles, the latter four works were published in Latin, the common language for scholars within Europe at that time. However, for this work it was determined to publish them in English, so that all of Napier's titles would be available in one work and in English for the first time. The aim has also been to replicate the layout of all five of Napier's books as closely as practically possible.

For the sake of brevity these five works are referred to throughout this work as the *Plaine Discovery*, *Descriptio*, *Rabdologiae*, *Constructio* and *De Arte Logistica*.

The *Plaine Discovery* has been reprinted using Napier's original orthography and with the contemporary use of the long *s* (f, or *f* in italics). For easy reference the headlines to each page have been abbreviated to show the Proposition or Chapter numbers or other subsection name. The revised edition of 1611 has been reproduced since it includes an additional chapter in which Napier responded to some of the criticisms made of the first edition. The main text of the revised edition was almost identical to the original 1593 edition, except for the addition of extensive marginal notes and the omission of the original's Dedicatory Epistle to James VI (later James I of England), which is reproduced in Appendix 1. There were three reasons for Napier to increase the marginalia:

1. To further support his arguments by providing scriptural references to which he was either alluding or which he felt corroborated the point
2. To give credit to and recommend further reading to demonstrate that his arguments were in line with those of noted scholars
3. To provide the reader with a short summary of his argument or point for ease of reference

Thus this work makes available the full content of all editions of the *Plaine Discovery* printed in Napier's lifetime for the first time in a single volume.

For the mathematical works the authors have used the earliest available translations wherever possible. The *Descriptio* was translated by Edward Wright (1561–1615) with Napier's full approval and with a new introduction written by Napier specifically for the translation. This edition was published within Napier's lifetime and it has been used for the text in this work. However,

was no equivalent to the Stationers' Company in Scotland, so it is uncertain exactly when *Rabdologiae* was published in Edinburgh and whether Napier saw a copy before he died.

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Wright abbreviated the logarithmic values in the tables from a maximum of eight places to seven places, so that for this edition the original tables from the first Latin edition have been used. The values in these tables were entered into spreadsheets by two persons working independently and then compared to identify any differences, so it is believed that there are few (if any) errors. However, very occasionally a number is not legible in the original table and a judgement has had to be made regarding the value to be entered. Since these logarithms have no modern day use, such judgements and any possible errors are of no great significance.

The *Rabdologiae* was translated by the New Zealand classical scholar William Frank Richardson (1938–2004) and published by MIT Press in 1990. They have kindly agreed to his translation being reproduced here. However, a small number of corrections have been made by Enrique González-Velasco to improve the translation and the formatting of the text has been altered to more closely reflect that of Napier's original work.

The *Constructio* was translated and published in 1889 by William Rae Macdonald (1843–1923) and his translation has been used, with some changes to the formatting.

Finally, the *De Arte Logistica* was translated by the English mathematician William Francis Hawkins (1906–1990) as part of his PhD thesis submitted to the University of Auckland in 1982 during his retirement in New Zealand. Despite extensive searches it has not been possible to trace any relatives to obtain permission for its use. Should any of them identify themselves, the originator of this work would be delighted to hear from them. Again Enrique González-Velasco has amended the translation in parts and reformatted Hawkins' original typescript to more closely follow the original prepared for the press by Mark Napier and published in 1839.

This work also includes three introductory chapters covering Napier's life, his single religious work and his four mathematical works. Each of these chapters is complete in itself but this has inevitably resulted in the occasional repetition. However, it was felt that this was a necessary compromise to allow the full story on each of these major cross-disciplinary themes to be told without the use of distracting cross references.

However, a major difficulty when researching Napier's mathematical output is that almost all his manuscripts were lost in a fire in 1801.³ This limits any detailed analysis of Napier's method of working to a study of his published works.

The internet provides much general information on Napier, some of which is of an academic nature, occasionally with appropriate references. However,

³ See p. 50.

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much is of a more popular nature, often narrating how Napier was a “warlock”, “sorcerer” or “necromancer” but these latter claims are provided with few, if any, references.

The documentary evidence shows that this characterisation of Napier is based on events in his life that have been distorted or exaggerated over time by repetition. Napier was an alchemist, a normal interest for an educated person of his time, but this should not be confused with more outlandish claims, however diverting or amusing they may be.

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