

**The Ciphers of the Monks –  
A forgotten number notation of the Middle Ages  
Stuttgart: Steiner, 2001**

This book contains the first history of a remarkable number-notation from the Middle Ages that is unknown to most specialists in both Medieval Studies and the History of Mathematics.

The basic forms involve nine appendages to a vertical stem for the units, tens, hundreds and thousands. These are then combined on a single stem to form a cipher representing any number up to 9999:~

|      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|
| ┌    | ├    | ┤    | ┥    | ┦    | ┨    | ┩    | ┪    | ┫    |
| 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    |
| └    | ┘    | ┙    | ┚    | ┛    | ├    | ┝    | ┞    | ┟    |
| 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   |
| └    | ├    | ┤    | ┥    | ┦    | ┨    | ┩    | ┪    | ┫    |
| 100  | 200  | 300  | 400  | 500  | 600  | 700  | 800  | 900  |
| └    | ┘    | ┙    | ┚    | ┛    | ├    | ┝    | ┞    | ┟    |
| 1000 | 2000 | 3000 | 4000 | 5000 | 6000 | 7000 | 8000 | 9000 |
| └    | ├    | ┤    | ┥    | ┦    | ┨    | ┩    | ┪    | ┫    |
| 1993 | 4723 | 6859 | 7085 | 9433 |      |      |      |      |

This ‘forgotten’ number-notation was developed in the late 13<sup>th</sup> century by Cistercian monks in what is now the border region between France and Belgium (particularly Aulne-sur-Sambre in the diocese of Liège and Vaucelles in the diocese of Cambrai). It was used by the Cistercians – admittedly by only a few but nevertheless all over Europe – for at least two

centuries thereafter, as an alternative to the well-known Roman numerals and the less-well-known, ‘new’ Hindu-Arabic numerals (whose introduction into Europe took five centuries). The monks used it for numbering pages of manuscripts and items in lists, for writing for representing year-numbers in dates, and for numbering staves of music. The two dozen surviving manuscripts featuring ciphers are from localities between England and Normandy to Italy and between Spain and Sweden.

This numerical notation was also used outside the scriptoria of the monasteries, for we find it used on a remarkable medieval astronomical instrument – an astrolobe, that is, a two-dimensional model of the universe that one can hold in one’s hands – made in Picardy in the 14<sup>th</sup> century, in a treatise on arithmetic from Normandy *ca.* 1400, and in some astronomical tables compiled in Salamanca in the late 15<sup>th</sup> century. In Flanders from the 15<sup>th</sup> to the 18<sup>th</sup> century wine-gaugers used this notation for marking volumes on wine-barrels and divisions on the scales of their gauging-rods.

The Cistercian monks developed this notation from a simpler one in which any number up to 99 is represented by a single cipher. This simpler notation was brought by the monk John of Basingstoke to England from Athens in the early 13<sup>th</sup> century, and owes its inspiration to an ancient Greek shorthand, described in an inscription on a stone discovered in the late 19<sup>th</sup> century on the Acropolis.

The monastic ciphers in both their manifestations – numerical and alphabetical – were influential in the development of Renaissance shorthands and secret codes. From the 16<sup>th</sup> to the 19<sup>th</sup> century they were featured in various works on numerical notations. They were adopted by the Freemasons in Paris in 1780 and they are featured in 20<sup>th</sup>-century nationalistic writings on German folklore. However, it was not before the reappearance of the astrolabe with ciphers at Christie’s of London in 1991 that any attempt was made to ascertain their origin, to investigate the way in which they were used in the Middle Ages, and to document their eventual demise as a result of the difficulties associated with printing them.

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