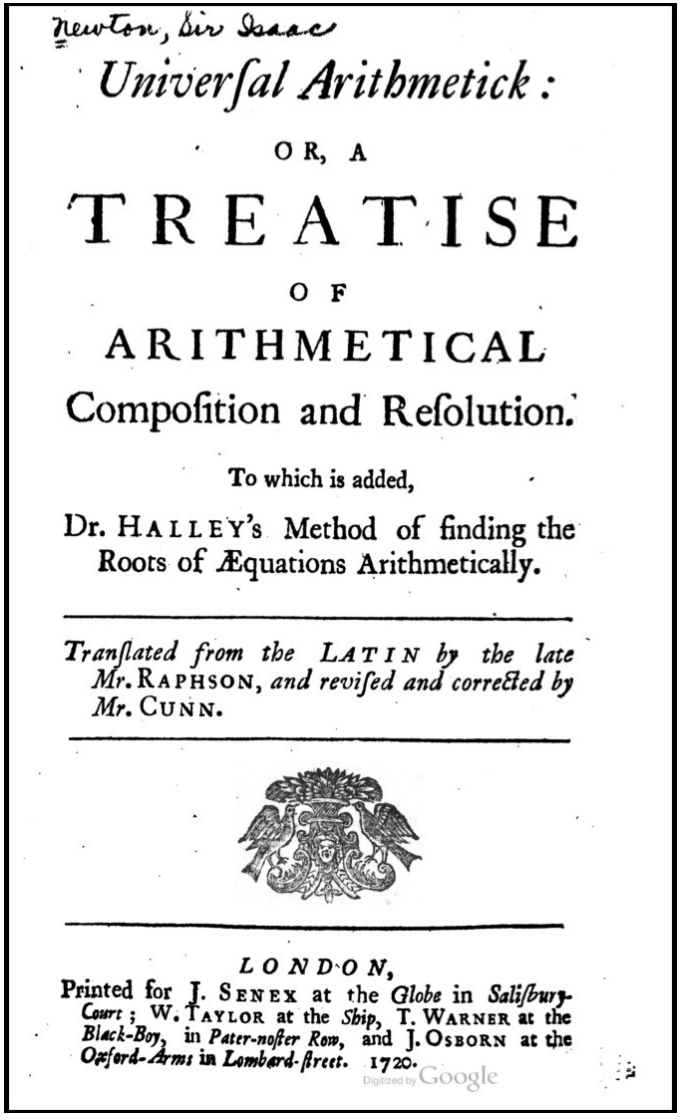
An 18th-century development: Newton's *Arithmetica universalis* (1707)



Newton, Sir Isaac

Universal Arithmetick:

OR, A

TREATISE

OF

ARITHMETICAL

Composition and Resolution.

To which is added,

Dr. HALLEY's Method of finding the Roots of Æquations Arithmetically.

Translated from the LATIN by the late Mr. RAPHSON, and revised and corrected by Mr. CUNN.

LONDON,

Printed for J. SENEX at the *Globe* in *Salisbury-Court*; W. TAYLOR at the *Ship*, T. WARNER at the *Black-Boy*, in *Pater-noster Row*, and J. OSBORN at the *Oxford-Arms* in *Lombard-street*. 1720.

Rules for sums of powers of roots of

$$x^n - px^{n-1} - qx^{n-2} - rx^{n-3} - sx^{n-4} - \cdots = 0$$

$$\begin{aligned}
\text{sum of roots} &= a = p \\
\text{sum of roots}^2 &= b = pa + 2q \\
\text{sum of roots}^3 &= c = pb + qa + 3r \\
\text{sum of roots}^4 &= d = pc + qb + ra \\
&\qquad\qquad\qquad\qquad\qquad\qquad + 4s
\end{aligned}$$