New Blackfriars

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# Comment: *Reading Hero of Alexandria*

At the beginning of May 1274 the Rector and Procurators of the University of Paris "with all the Masters at present teaching in the Faculty of Arts" sent a formal collective letter of condolences on the recent death of Master Thomas of Aquino (7 March) to the Master and General Chapter of the Dominican Order which as it happens was about to open at Lyons (see The Life of Saint Thomas Aquinas: Biographical Documents translated and edited by Kenelm Foster O.P., London 1959: 153–7). They sound devastated: "For news has come to us which floods us with grief and amazement, bewilders our understanding, transfixes our very vitals, and well-nigh breaks our hearts". There is more in the same vein. The Faculty of Theology did not offer their condolences.

In a second eloquent paragraph the Arts men ask for "the bones of him whose youth was nourished, fostered, and educated here at Paris". No chance. It would not be until 1369, after his canonization and the revoking of the condemnation at Paris of some of his supposedly unorthodox teachings, that—by papal authority—his bones were transferred from Fossanova, the monastery in Italy where he died, to the church in Toulouse, where they still are.

Thirdly, the Arts Faculty professors take the opportunity to ask for philosophical writings of his own which Thomas had promised them (Aristotle commentaries presumably, unfinished when he left Paris, some never finished), as well as three books, Simplicius on Aristotle's De Coelo, Proclus on Plato's Timaeus, and De aquarum conductibus et ingeniis erigendis, just translated from Greek by the Flemish Dominican William of Moerbeke. This is acknowledged to be Pneumatica by the first-century AD mathematician and engineer Hero (or Heron) of Alexandria, famous in the ancient world for his ingenious contraptions and imaginative experiments.

Simplicius of Cilicia (flourishing c. 530) was one of the last of the Neoplatonists. Thomas cites him on several occasions. Proclus (412–485), one of the last major classical philosophers, set forth one of the most elaborate and fully developed systems of Neoplatonism. Thomas agreed, after a Moerbeke translation, that the supposedly Aristotelian De causis was effectively the work of Proclus.

We don't know what Thomas made of Hero's Pneumatica. Some might be surprised that he had any interest in engineering. The most interesting thing is surely that some Arts Faculty men—philosophers as we might say—were evidently not afraid to ask the supposedly

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absent-minded and quite aloof emeritus professor in sacra doctrina to wangle these absolutely non-theological books for them when he settled back in Italy. Many of them would have been young clergy, allegedly suspected of being attracted by a rationalistic form of Aristotelian hedonism, as Thomas would have known. Perhaps their request tells us something about Thomas's character and his relationship to philosophy. It doesn't show whether he ever read Hero of Alexandria's work himself.

Centuries later, some one who was undoubtedly interested in Hero's book, was the young Ludwig Wittgenstein. In 1908, aged eighteen, taking his father's advice, he moved from Berlin to Manchester to pursue his interest in aeronautical engineering. At a facility on the edge of the Derbyshire moors, he busied himself initially with kite-flying experiments. Soon, however, in the Department of Engineering at the University, he was working on the development of a 'motorless' aero-engine, that is, one not driven by a conventional piston engine, but which has the propeller itself as the motor, driven by repulsion jets on the propeller tips, initially from a variable combustion chamber arranged centrally on the propeller shaft, later with combustion chambers in the jets. A propulsion mechanism on these lines is sketched out, with diagrams, in Hero's work, which, as we know, young Wittgenstein read in an 18th century German translation in his father's library. There is plenty more evidence of Wittgenstein's practical skills and fascination with machines.

On 22 November 1910 Wittgenstein registered his invention at the patent office: 'Improvements to Propellers applicable for aerial machines'. Patent No. 27.087. AD 1910 GB—by which time, however, mathematical problems associated with the development of the propeller profile were absorbing him far more than further technical development of the motor itself Colleagues back then remembered his beginning to discuss questions of mathematical theory, especially about the foundations of mathematics.

In October 1911, instead of returning to Manchester after his usual family holiday in Austria, Wittgenstein went straight to Cambridge to attend Bertrand Russell's lectures. Typically, he had made no arrangements with the University or any college or even with Russell (at this stage). He eventually matriculated in February 1912, at the grandest college in the University. The rest is history, we may say.

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