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Maronne, Sébastien (F-TOUL3-IM)
Dettonville et les données. (French. English, French summary) [[Dettonville and data]]
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Galileo's results on falling bodies from the 1630s are typically presented today using formulas such as $a = g$, $v = gt + b$, $d = \frac{1}{2}gt^2 + bt + c$ and so on. However, Galileo's original investigation was couched in a different mathematical idiom involving Euclidean proportion theory (Book 5 of the *Elements*) making no use of algebra or formulas as such. Similarly, Blaise Pascal's results from the 1650s about the areas of surfaces, volumes of solids and centers of gravity are given today in terms of formulas from integral calculus but were presented by Pascal in a different form. Pascal rejected Cartesian algebra and coordinate geometry. Starting with the method of indivisibles, he developed a cerebral theory that drew on another Euclidean work, *The Data*, and developed the analysis within this framework. Pascal's presentation is noteworthy because for him it was not simply the results that were important but also the methods and procedures that led to these results. Pascal's writings would be a stimulus for Leibniz's research later in the century that led to calculus in its modern algorithmic form.

Pascal published his work on areas and volumes under the pseudonym Dettonville in *Lettres de A. Dettonville* (1659). A curve that was of particular interest during this period was the cycloid. Another subject of concern was finding centers of gravity, a focus reflecting the interest during the period in Archimedean statics. Pascal took up the problem of finding the centers of gravity of solids obtained by revolving segments of an arch of a cycloid about an axis. (It is worth noting that such problems are not taken up in modern calculus textbooks.) Pascal's rejection of Cartesian algebra and his interest in more esoteric problems lend a somewhat exotic cast to his work.

Sébastien Maronne's article is an in-depth historical account of Pascal's research on quadrature and cubature problems associated with the cycloid. The author draws on the considerable historical literature over the past fifty years on Pascal's pre-calculus work. Notable here are writings of Pierre Costabel, Kokiti Hara, Dominique Descotes, Claude Merker, João Cortese, David Rabouin and Maronne himself as well as those of historians of the method of indivisibles.

Problems of centers of gravity are more complicated and less familiar today than simple areas or rectifications. Furthermore, there was an emphasis in the seventeenth century on what was called the "facit", the final result or solution, rather than the calculations that led to this solution. This point was noted by Pascal's contemporary Christian Huygens, who wrote (p. 232, reviewer's translation) "I would have liked him [Pascal] to have taken only the simplest case and given the whole calculation and not just the final facit".

Pascal turned to Euclid's *Data* as it was presented in the 1625 Latin edition of this work published by Claude Hardy. Maronne provides an account of the reception of Euclid's *Data* in the seventeenth century and describes how a "syntax" of givens based on this book was deployed by Pascal in his investigation of curves and surfaces. The article is addressed to historical specialists and may seem daunting for a reader to follow who is not immersed in the subject. Unfamiliar to the general reader will be the ideas underlying Euclid's *Data* as well as some of the technical vocabulary that is employed ("sinus" and "onglet" for example). It is nevertheless of real interest to follow Maronne as he explores the contours of Pascal's mathematical world. Overall, the article constitutes a substantial contribution to the history of seventeenth-century mathematics and will provide a valuable resource for the further study and appreciation of the emergence of calculus during the period. *Craig G. Fraser*