Bachet De Méziriac, Claude-Gaspar | Encyclopedia.com

(*b*. Bourg-en-Bresse, France, 9 October 1581; *d*. Bourgen-Bresse, 26 February 1638)

mathematics.

One of the ablest men of the seventeenth century, Bachet came from an ancient and noble family. His grandfather, Pierre Bachet, seigneur de Meyzériat, was counselor to King Henry II. His father was the honorable Jean Bachet, appeals judge of Bresse and counselor to the duke of Savoy: his mother was the noblewoman Marie de Chavanes. Orphaned at the age of six, the precocious Claude-Gaspar received his early education in a house of the Jesuit order that belonged to the duchy of Savoy. Presumably he studied in Padua as a young man, and he may have taught in a Jesuit school in Milan or Como. Bachet also spent a few years in Paris and in Rome, where, with his friend Claude Vaugelas, he composed a great deal of Italian verse. He was a prolific reader of poetry, history, commentary, scholarship, and mathematics.

In his fortieth year Bachet married Philiberte de Chabeu, by whom he had seven children. He suffered greatly from rheumatism and gout; when the Académie Française was founded in 1634, he was too ill to attend the inaugural ceremony. He was made a member of the Académic in the following year. His early literary works, humanist in outlook, consisted of poems in Latin, French, and Italian. Between 1614 and 1628 he published a Latin epistle from the Virgin Mary to her Son, canticles, brief sacred and profane Latin poems, translations of psalms, and a metrical translation of seven of Ovid's *Epistulae heroïum*. He also published an anthology of French poetry, *Délices*, and the *Epistles of Ovid* (1626); the latter assured his reputation as a mythologist.

Bachet claims our attention today, however, chiefly for his contributions to the theory of numbers and to the field of mathematical recreations, in which he was one of the earliest pioneers. The two mathematical works for which he is remembered are his first edition of the Greek text of Diophantus of Alexandris's *Arithmetica*, accompained by prolix commentary in Latin (1621), and his *Problems plaisans et delectabless qui se font par les nombres* (1612).

Diophantus had anticipated the advent of algebra and the theory of numbers. His work, which was known to the Arabs, was not appreciated until it was rediscovered in Europe during the latter part of the sixteenth century. Prior to Bachet's translation, only a few scholars had written on the work of Diophantus; Maximus Planudes, who gave an incomplete commentary on the first two books of the *Arithmetica* (ca. 1300); Raphael Bombelli, who embodied all of the problems of the first four books in his *Algebra* wilhelm HOlzmann, better known as Xylander, who gave a complete Latin translation (1575); and Simon Stevin, who gave a French translation of the first four books (1585). Bachet's translation, *Diophanti Alexandrini Arithmeticorum libri sex*, was based largely on the writings of Bombeli and Xylander, particularly the latter, although he dmitted this with reluctance. Indeed, it is the opinion of T.L. Heath that although Bachet generally has been regarded as the only writer to interpret the contributions of Diophantus effectively, perhaps as much—if not more—of the credit is due to Xylander.

It is noteworthy that Bachet struggled with this work while suffering from a server fever. He asserted that he corrected many errors in Xylander's version; filled in numerous omissions, such as proofs of porisms and abstruse theorems that Diophantus merely mentioned; and clarified much of the exposition. He apparently added few original contributions to number theory or Diophantine analysis, however, except for a generalization of the solution of the system $ax + v = u^2$, $cx + d = w^2$. Yet despite its imperfections, Bachet's work is commendable for being the first and only edition of the Greek text Diophantus. It was subsequently reprinted, with the addition of Fermat's notes, in 1670; and while Fermat's notes are significant, the Greek text is inferior to that of the first edition.

Bachet's penchant for arithmetical rather than geometric problems is also obvious in the contents of his *Problemes plaisans et delectables*. These problems fall into several readily recognizable categories. The most elementary are those mildly amusing but mathematically unimportant parlor tricks of finding a number selected by someone, provided the results of certain operations performed on the number are revealed. Variations include problems involving two or three numbers, or two persons; problems depending upon the scale of notation; and tricks with a series of numbered objects, such as watch-dial puzzles and card tricks—many of these have appeared ever since in most collections of mathematical recreations. Somewhat more sophisticated is the famous problem of the Christians and the Turks, which had previously been solved by Tartaglia. (In a storm, a ship carrying fifteen Christians and fifteen Turks as passengers could be saved only by throwing half the passengers into the sea. The passengers were to be placed in a circle, and every ninth man, beginning at a certain point, was to be cast

overboard. How should they be arranged so that all the Christians would be saved? Answer: CCCCTTTTTCCTCCCTCTTCCTTTCTTCCT.)

Of greater mathematical significance was Bachet's problem of the weights: to determine the least number of weights that would make possible the weighing of any integral number of pounds from one pound to forty pounds, inclusive. Bachet gave two solutions: the series of weights 1, 2, 4, 8, 16, 32; and the series 1, 3, 9, 27—depending upon whether the weights may be placed in only one scale pan or in each of the two scale pans. Last, there is the celebrated prototype of ferrying problems or difficult crossings, the problem of the three jealous husbands and their wives who wish to cross a river in a boat that can hold no more than two persons, in such a manner as never to leave a woman in the company of a man unless her husband is also present. Eleven crossings are required, but Bachet gave a solution that asserts "II faut qu'ils passent en six fois en cette sorte." The analogous problem with four married couples cannot be solved; Bachet stated this fact without proof. It should also be noted that Bachet gave a method for constructing magic squares which is essentially that of Moschopulous (ca. 1300), although Bachet appears to have discovered it independently.

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