

放眼世界的数学星空

Mathematicians Born
in France

法国

英文版

石雷 张宝义 / 编

数学家

(五)



远方出版社

敬請注意：本書為

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前 言

入世后,我国经济和社会发展与世界接轨的进程加快,需要大量的国际化的复合型人才。为迎接入世挑战,培养出更多的国际化的复合型人才,进一步深化素质教育,我国实施了新一轮的中小学课程改革。

在此改革中,“双语教学”已成为外语教学改革中一道亮丽的风景线。当前,我国大中城市的部分高校及中小学、一些境外来华办学机构以及有些民办学校已在实施“双语教学”。“双语教学”已成为教育界的热门话题,并呈现出良好的发展前景。

为顺应“双语教学”的新潮流和大趋势,我们出版了《放眼世界的数学星空》丛书,本丛书介绍了法国数学家、俄罗斯数学家、中国数学家、印度数学家,他们的伟大成就吸引着我們,激励着我們去学习、去拼搏。与此同时,还可以使您在英语字母点缀的星空里,轻松领略数学家

们的才华,并且使您真正提高阅读能力、巩固和扩大英语词汇量、增强使用英语的自信心。

本丛书在选编过程中由于涉及面广,时间仓促,有误之处,敬请广大读者朋友们热忱提出批评和建议,以便今后修订完善。

编者

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Jacques Ozanam


Born: 1640 in Bouligneux, Bresse, France

Died: 3 April 1717 in Paris, France

Jacques Ozanam's family had originally been Jewish but several generations earlier had become Christian converts and joined the Roman Catholic Church. It was a wealthy family, members having frequently served in the French provincial Parlements, with Jacques' father owning substantial lands. Jacques was the younger of his parents two sons, so would not have inherited the family estates, these would have gone to his elder brother. One of the expected routes for the younger son of the landed gentry would be to join the Church and indeed this is exactly what Jacques' father expected of him.

Although his education was aimed towards the study of theology, Jacques developed a liking for other topics, particularly science and mathematics. He had very little tuition in mathematics, however, so he made efforts to teach himself. At one

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At this stage he did receive a little help with his mathematics from a tutor, but basically he was self taught in mathematics. At the age of around fifteen he produced his first substantial piece of mathematics which he wrote up. The other subjects which interested him at this stage were chemistry and mechanics but, in order to continue to receive his father's financial support, he had little option but to follow his father's wishes and begin to study theology.

The thoughts of becoming a priest did not suit Ozanam who seems to have enjoyed socialising, enjoyed gambling, and enjoyed spending money. Schaaf writes in [1]:—

... *probably he was too tolerant to have made a good churchman of his day.*

After Ozanam had been studying theology for four years his father died and suddenly the pressure to join the priesthood was removed. He could now follow the path which he wanted, so he gave up theology and devoted himself to the study of mathematics and the sciences. Being from a wealthy family he had been able to live in style and he had studied mathematics out of love for the subject, never seeing it as a means to earn a living. He even seems to have felt that someone who truly loves their subject would lower themselves by charging to impart this knowl-

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edge to others, so when he began teaching mathematics in Lyon he made no charge for his services.

Having principles about not charging for teaching mathematics was one thing when Ozanam had plenty of money to live on, but after his father died and his elder brother inherited the family estates his income from his family stopped. Also he still had an extravagant lifestyle, spending much on gambling, so he began charging for the mathematics tuition he gave. As Riddle put it [4]:—

... the stern realities of distress would speedily dissipate all illusions about the dignity of teaching science for its own sake.


In 1670, while teaching in Lyon, he published *Table des sinus, tangentes, et sécantes* a work which contained trigonometric tables more accurate than those of Briggs, Vlacq and Pitiscus.

Ozanam was a generous man, despite always being short of money, and it was an act of great generosity which led to him moving from Lyon to Paris. One day Ozanam met two strangers who did not have sufficient money to allow them to return to Paris. He gave them a loan of money to fund their return trip to Paris without any real guarantee that it would be repaid. After



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the two returned to Paris they told a friend, M. Daguesseau, about Ozanam's generosity. M. Daguesseau was the father of the French Chancellor, and when he learnt of Ozanam's generosity towards his father's friends, he invited him to Paris.



Of course Paris was a place where someone like Ozanam would find it easy to spend money, and indeed he did. He brought in a good income from his teaching, but equally he found it easy to spend everything he had on frivolous amusement and gambling. He seems to have decided that marriage would bring a stability to his life which his nature made it hard for him to achieve as a single man. Indeed he did settle down after marrying [1]: —

... a modest, virtuous young woman without means. Although his financial problems remained unsolved, the marriage was happy and fruitful; there were twelve children, most of whom died young. After his marriage Ozanam's conduct was exemplary; always of a mild and cheerful disposition, he became sincerely pious...


He worked hard, teaching mathematics to many foreign pupils who came to Paris to be educated. He also wrote many works on mathematics, for example *Méthode générale pour*

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tracer les cadrans (1673), La géométrie pratique du sr Boulenger (1684), Traité de la construction des équations pour la solution des problèmes indéterminez (1687), Traité des lieux géométriques (1687), Traité des lignes du premier genre (1687), De l'usage du compas de proportion (1688),

All his books sold well and ran to many editions, especially his famous works Dictionnaire mathématique (1691), the five-volume work Cours de mathématiques (1693) and Récréations mathématiques et physiques (1694). It is certainly for this last work on recreational mathematics that Ozanam will be most remembered. The precursor of books to follow for the next 200 years, he published it in four volumes in 1694 and it later went through at least ten editions. Ozanam based his book on earlier works by Bachet, Mydorge, Leurechon, and Schwenter. It was later revised and enlarged by Montucla, then translated into English by Hutton (1803, 1814). Riddle edited a new edition, which was published in 1844, removing some old material and adding new material so that [4]:—

... the work might continue to be to the present generation a useful manual of scientific recreation, as its predecessors have been to the generation which has passed.



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Ozanam's original edition contained an early example of a problem about orthogonal Latin squares: —

Arrange the 16 court cards so that each row and each column contains one of each suit and one of each value.

Another topic from his books, which has been the subject of a relatively recent paper [5], is contained in chapters in two of his works headed About some curious sundials. The geometry of these sundials, which could be adjusted to work at any latitude, is studied in [5] particularly those types with hour — lines which were rectilinear, parabolic, elliptical, and hyperbolic.

Montucla, who enlarged and improved Ozanam's book on recreational mathematics, gave this assessment of him in his History of Mathematics: —

He promoted mathematics by his treatise on lines of second order; and had he pursued the same branch of research, he would have required a more solid reputation than by the publication of his Cours, Récréations, or Dictionnaire mathématique; but having to look to the support of himself and family, he wisely consulted the taste of his purchas-

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ers rather than his own.

In one sense Montucla is certainly correct, but had he pursued research level mathematics and never written his recreational works, I [EFR] doubt whether he would be in an archive such as this today for, as Schaaf writes in [1]:—


By almost any criterion Ozanam cannot be regarded as a first-rate mathematician ...

He did well in Paris after his marriage, having a high reputation as a teacher and as a popular writer of mathematical texts. His fortunes changed for the worse, however, in 1701. His wife died in this year and he never really recovered from this tragedy. In the same year political events worked against him with the start of the war of Spanish succession. The French army led by Louis XIV invaded the Spanish Netherlands which resulted in an anti-French alliance being formed on 7 September 1701 by England, and the Dutch Republic. Later by Portugal, Prussia, Hanover and others joined the alliance against France. The effect was that most foreign students, finding that their country was at war with France, left Paris. Ozanam's income from his tutoring, which was mainly to foreign students, dropped dramatically. He still continued to publish books, however, such as the two-volume text *Nouveaux*



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Éléments d'Algèbre published in Amsterdam in 1702, and other texts which we mention below.



The year 1701 was also not entirely bad for Ozanam for in that year he was admitted as an élève in the Académie Royale des Sciences. He received further distinction from the Academy over the last few years of his life being made an élève géomètre in 1707, and finally associé mécanicien in 1711.

As well as mathematics, Ozanam was also interested in cartography and military engineering. To illustrate the range of his interests let us look briefly at his claims on the best substance to use in an hour glass. Domenico Martinelli had claimed that marble dust, lead or tin made the best substances for such a use. However Ozanam argued against Martinelli's ideas, claiming that well-dried, pulverized eggshell made a better substance for use in an hour-glass since it is less affected by humidity than most other substances.

Ozanam wrote many works on science and applications of mathematics including Méthode de lever les plans et les cartes de terre et de mer (1691), Traité de la fortification régulière et irrégulière (1691), Méthode facile pour arpenter et mesurer toutes sortes de superficies (1699), La perspective théorique et pratique (1711) and La géographie et cosmographie qui traite

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de la sphere (1711).

Finally let us quote Riddle's description of Ozanam's character [4]:—

He was of a mild and cheerful temper, generous to the extent of his means, and of an inventive genius; and his conduct after marriage was irreproachable. He was devout, but averse to disputations about points of faith. On this subject he used to say, "It is the business of the Sorbonne to discuss, of the Pope to decide, and of a mathematician to go straight to heaven in a perpendicular line."

References for Jacques Ozanam

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