Adolphe QUETELET
b. 22 February 1796 - d. 17 February 1874

Summary. Active in many area of science, notably mathematics, astronomy and meteorology, Adolphe Quetelet owes his celebrity to the international blossoming under his impetus of the study of populations, emanating from sophisticated statistics organized systematically and treated probabilistically.

Lambert-Adolphe-Jacques Quetelet, who became known mainly under the first name of Adolphe, was the fifth in a large family of nine children, not all of whom survived to adulthood. He was born in Ghent, where his father François Quetelet, a Frenchman from Picardy, had established himself 10 years earlier, and in 1790 had married Anne-Françoise Van de Velde, a Walloon from the south of Brabant. He grew up close to his father, who was involved as a municipal officer in the political activities of the city of Ghent.

In the course of his studies at the Ghent Lycée, Adolphe appears to have adapted himself to the upheavals of the educational system without serious problems. This was the period of transition from the Austrian educational structure current under the Empress Maria Theresia, which prevailed in the Austrian Netherlands until 1790, to the French republican organization and its immediate imperial successor. His father's death in 1803, while not preventing him from completing his secondary studies brilliantly, placed his family in financial difficulties. To cope with these, on leaving the Lycee in 1813, he immediately took up teaching duties, and after the fall of Napoleon was appointed mathematics teacher at the Ghent municipal college, which had replaced the imperial Lycée. When the University of Ghent was founded in 1817, he took the opportunity of enrolling in the new institution's Faculty of Sciences. He was awarded his Doctorate of Science 2 years later for a thesis in Latin on a geometrical topic, through which his name became associated with the concept of a focal curve.

In an era marked by great changes in the political structures within Europe, Quetelet was on the look-out for any avenue which would allow him to progress in his career. In October 1819, he was appointed professor at a scholarly institution in Brussels, and elected to the Academy of this city. He had impressed its members not only by the value of the results in his doctoral thesis, but also by his human qualities: this young mathematician also exhibited a taste for art and poetry, literature and languages. He also

felt an immense urge to participate in the development of Brussels, the city in which he was to live until the end of his days.

His growing renown was to put him in touch with the then Minister for Public Education; this was in 1823, when Brussels had once again become a city of the southern Netherlands. The Minister had lent his support to a project which Quetelet championed vigorously: the creation of a city observatory, to develop scientific activities related to astronomy. Quetelet argued the case so convincingly that he was sent to Paris to learn the practice of astronomy, and prepare plans for the construction and equipment of the observatory.

His sojourn in the French capital proved to be most rewarding. Alexis Bouvard, the director of the Paris observatory, benevolently took him under his wing. Quetelet enthusiastically acquired all that he needed to carry out his project. He returned to Brussels with physics instruments but even more importantly, and beyond his astronomical mission, his meetings with Lacroix, Poisson (q.v.) and Fourier and his contacts with Laplace (q.v.) had convinced him of the essential role of probability theory.

In Brussels again, he immersed himself in the construction of the observatory . For almost 4 years, he travelled to various countries visiting the main observatories of the time, and acquiring instruments. But during this period, he also popularized in Belgium the knowledge he had gained during his stay in Paris. He organized public lectures in experimental physics and astronomy at the Brussels Museum, where they proved enormously successful. He wrote popular works on science, publishing *Astronomie élémentaire* in 1826, followed by *Astronomie populaire* and *Positions de physique* in 1827, and *Instructions populaires sur le calcul des probabilités* in 1828. In addition, he founded a periodical review *Correspondance mathématique et physique* together with Garnier, his thesis director; this was to enable him to communicate his mathematical papers to a wide audience, and so establish close collaboration with numerous foreign colleagues. He also ventured into the field of applied statistics with his paper on the laws of births and mortality in Brussels, published in 1826, and similar research led him to demand a complete population census, decreed in 1828. Eventually, as President of the Commission Centrale de Statistique of Belgium, he was to take an active part in the census of 1846.

The year 1828 was a turning point in Quetelet's life: he was appointed astronomer of the Brussels Observatory (which was to be inaugurated only 4 years later), and decided to redouble his efforts to complete its construction.

He gave up his professorial duties, and travelled to foreign observatories: he happened to be in Italy when he learned the news of the Belgian Revolution in September 1830. The government of the new state of Belgium rapidly confirmed him in the post of director of "his" observatory. He was to live with his new nationality during the next 25 years of splendid achievement, as much in his intellectual and scientific activities as in his involvement in the public life of his country.

In 1834, he was elected Perpetual Secretary of the Académie des Sciences et Belles-Lettres de Bruxelles, which was to become the Royal Academy of Belgium in 1845; he held this position until his death. Within this august institution he played an essential role as indefatigable organizer of its activities and publications. The yearbooks and bulletins of the Academy, in particular, were to prove important media for the diffusion of his works, as well as those of his colleagues.

In 1836, he had the opportunity of emphasizing once again his interest in the calculus of probabilities. The occasion was his tutoring of princes Ernest and Albert of Saxe-Coburg and Gotha, the latter to become the future consort of Queen Victoria of Great Britain. Albert was very impressed by Quetelet, and later played an important role in fostering his relations with British scientists. The lessons which Quetelet gave are the basis of an important work in his opus, published in 1846 under the title *Lettres à S.A.R. le Duc régnant de Saxe-Cobourg et Gotha, sur la théorie des probabilités appliquées aux sciences morales et politiques.* The epistolary form of this work highlights the pedagogical qualities of the author, but its specific importance lies in Quetelet's developing concern to apply the fundamental rules of probability theory in the study of human populations. This problem had interested Quetelet since 1825 and was to continue into the 1830's. In 1835, he decided to consolidate his oeuvre by publishing a book entitled *Sur l'homme et le développement de ses facultés,* adding the subtitle *Essai de physique sociale* which was to give rise to many controversies. Many of the reactions to the book concerned Quetelet's concept of *l'homme moyen*(the average man), and the question whether Quetelet's theories were deterministic or not. The literary rather than technical form of Quetelet's expository style was prone to many misunderstandings.

Quetelet's continuing activity in diverse areas of research is illustrated by two later works: *Du système social et des lois qui le régissent*, and *Sur le climat de la Belgique* published respectively in 1848 and 1849. In Brussels in 1853, he also organized and presided over the International Maritime

Conference, whose brief was to establish a uniform system for meteorological observations, as well as over the First International Congress of Statistics, which was to be followed periodically by similar meetings in other cities. The principle of such meetings was to be emulated when the International Statistical Institute was created.

His brilliant career was affected by a stroke in 1855. For nearly the next 20 years, he devoted himself mainly to the republication or issue of supplemented editions of his earlier works. He was able to indulge his interest in the history of science; this took the form of publishing, particularly in the yearbooks of the Belgian Academy, various biographical notices; and also producing two books on the history of mathematics and physics in Belgium (1864 and 1867). He continued to attend the International Congresses of Statistics, where he was always an prominent participant.

The diversity of his foci of interest may help to explain the occasionally superficial nature of his works. He was an enthusiast and polymath rather than a deep theoretician. A visit to England in the 1830's when he met Babbage and Malthus (q.v.) amongst others, had been influential in the eventual formation of the Statistical Society of London, later to become the Royal Statistical Society. His numerous contacts and warm personality led him on more than one occasion to defend or favour the career of an individual whose merits he had recognized. This was particularly the case for the mathematicians Dandelin and Pagani, and for his disciple and future biographer Mailly. One might aver that Quetelet in the smaller Belgium played a role in the recruitment of scientists similar to that of Alexander von Humboldt in Germany. The family archives have a letter in which Humboldt recommends a young German scholar to Quetelet; this was Theodore Schwann, the founder of cellular theory, who was to pursue a brilliant career in Belgium.

As a result of Quetelet's activities, a gigantic network of sources of his correspondence exists, of which there is still no complete inventory. It includes correspondence with many of various scientists of his day, such as the leading French statistician Bienaymé (q.v.), and the mathematician Catalan who eventually made a career in Belgium. Thus it was that Quetelet died on the night between the 16th to the 17th of February 1874, having continued his work in the interests of science till the very end.

References

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