Leonhard Euler's life
April 15, 1707 – September 18, 1783

Basel

Leonhard Euler (pronounced "Oiler") (Basel, Switzerland, April 15, 1707 - St. Petersburg, Russia, September 18, 1783) was a Swiss mathematician and physicist, considered to be the preeminent mathematician in history; he is also listed on the Guinness Book of Records as the most prolific, with collected works filling about 80 quarto volumes.

Euler developed important concepts and established mathematical theorems in fields as diverse as calculus, number theory, topology, etc. He introduced the fundamental notion of a mathematical function, and set much of the modern mathematical terminology and notation.

Located in north-west Switzerland, at the border with Germany and France, on the river Rhine, Basel functions as a major industrial centre for the chemical and pharmaceutical industry.

It is an international city, with the headquarters of worldwide Swiss producers e.g. Roche, Novartis, Ciba, etc, Swiss transport e.g. Panalpina, Danzas, etc. It is where the headquarters of the international Bank for International Settlements are.

It has the oldest university of the Swiss Confederation (1460), where the famous mathematicians Jacob I Bernoulli, Jacob II Bernoulli, Johann I Bernoulli, Johann II Bernoulli, Johann III Bernoulli, Daniel Bernoulli, Nicolaus I Bernoulli, Nicolaus II Bernoulli, Euler, Hermann, studied or taught.

In the 18th century, Basel was already one of the largest cities in Europe.

Childhood

Euler spent most of his childhood around Basel. His father was a pastor and a family friend of the Bernoullis. Johann Bernoulli, who was then regarded as Europe's foremost mathematician, would eventually be an important influence on Euler. At the age of 13, Euler matriculated at the University of Basel, and graduated two years later. At this time, he was receiving Saturday afternoon lessons from Johann Bernoulli who quickly discovered his new pupil's incredible talent for mathematics.

His father wanted him to become a pastor. Johann Bernoulli intervened, and convinced that Euler was destined to become a great mathematician. Euler, at the age of 20, entered the Paris Academy competition, where the problem that year was to find the best way to place the masts on a ship. He won second place but eventually won the coveted annual prize 12 times in his career.

St. Petersburg

Around this time Johann Bernoulli's two sons, Daniel and Nicolas were working at the Imperial Russian Academy of Sciences in St Petersburg. In 1726, Daniel recommended that the post in physiology be filled by Euler and he accepted the offer.

He was then immediately promoted to a position in the mathematics department. He lodged with Daniel Bernoulli with whom he often collaborated. Euler mastered Russian and settled into life in St Petersburg.

The Academy at St. Petersburg was established by Peter the Great and was intended to improve education and science in Russia. As a result, it was very attractive for foreign scholars like Euler, thanks to financial resources and a comprehensive library. Euler swiftly rose through the ranks and was made professor of physics in 1731. In 1733, Euler succeeded Daniel Bernoulli as the head of the mathematics department.

In 1734, Euler got married. The young couple bought a house by the River Neva, and had thirteen children, of whom only five survived childhood.

Berlin

Frederick the Great of Prussia offered him a post at the Berlin Academy, which he accepted. He left St. Petersburg in 1741 and lived 25 years in Berlin, where he wrote over 380 articles. In Berlin, he published the two works which he would be most renowned for: the Introductio in analysin infinitorum and the Institutiones calculi differentialis.

In addition, Euler was asked to tutor Frederick's niece. He wrote over 200 letters to her, which were later compiled into a best-selling volume, all across Europe and in America. This work contained Euler's research physics and mathematics, as well as a valuable insight of his personality and religious beliefs. The popularity of the Letters testifies to Euler's ability to communicate scientific matters effectively to a lay audience, a rare ability for a dedicated research scientist.

Return to Russia

At the age of 59, Euler accepted an invitation to return to the St. Petersburg Academy.

Euler had to overcome several tragedies in his second stay. A fire in St. Petersburg cost him his home and almost his life. In 1773, he lost his wife of 40 years, and remarried three years later.

In 1783, he suffered a brain hemorrhage and died. His eulogy was written for the French Academy by the Marquis de Condorcet, and an account of his life, with a list of his works, by Nikolaus Fuss, Euler's grandson-in-law and the secretary of the Imperial Academy of St. Petersburg. The mathematician and philosopher Marquis de Condorcet commented,

"...il cessa de calculer et de vivre," (he ceased to calculate and to live).

EPFL (Swiss Federal Institute of Technology, Lausanne)'s mathematics library

The Bernoulli's

MATHEMATICA
$\frac{1}{n}(x_1 + ... + x_n) \rightarrow E(X)$
HELVETIA 80
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Jacop I Bernoulli (above) was a Swiss mathematician and Professor at the University of Basel. He is remembered, amongst others, for his work in probability and his introduction of the law of large numbers. His brother, Johann Bernoulli, was also a famous mathematician; he identified Euler and gave him private lessons. His son Daniel Bernoulli and Euler were the first to put together a useful theory of elasticity.

A mezzotint based on the Johann George Brucker's portrait from 1735.

A 1753 portrait by Emanuel Handmann. This portrait suggests problems of the right eyelid and that Euler is perhaps suffering from strabismus. The left eye appears healthy, as it was a later cataract that destroyed it. He compensated for it with his mental calculation skills and photographic memory. Euler could repeat the Aeneid of Virgil from beginning to end without hesitation, and indicate the first and last line of every page in the book he used.
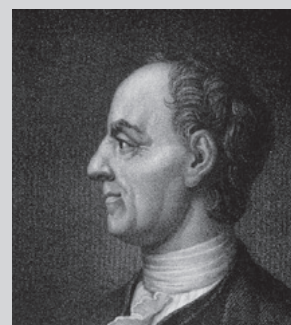
A 19th century engraving by Benjamin Holl after a portrait by Antonio Maria Lorgna.

$$e^{i\pi} + 1 = 0$$