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Euler, Leonhard: **Briefwechsel mit Daniel Bernoulli.** Herausgegeben von Emil A.
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The monumental edition of the writings of Leonhard Euler (1707–1783), the greatest
mathematician of the 18th century, is drawing to a close. When completed it will
comprise 29 volumes on mathematics, 31 on mechanics and astronomy, 12 on physics
and related topics, and 9 on the correspondence between Euler and a number of
contemporaries, mostly distinguished mathematicians and scientists. The general
director of the series on the Correspondence, Prof. Andrea Kleinert, and his col-
laborators are to be congratulated on mastering a difficult task and on ensuring
that osterity will continue to have access to the towering achievements of Euler.
    The present volume contains 191 letters. The most important epistolary exchange
is between Euler (19 letters) and Daniel Bernoulli (81 letters), his junior by six years

and the son of Johann Bernoulli, who had been Euler's teacher in Basel. All the letters, which were faithfully transcribed and annotated by the editors, are accompanied by a scholarly introduction (77 pages). The topics discussed include, among others, algebra, number theory, complex analysis, logarithms, differential and integral calculus, calculus of variations, mechanics, astronomy, astrophysics, geophysics, acoustics, music theory, heat, optics, and related subjects. The correspondence was carried out in Latin, French, German, and a form of Swiss German that was, and still is, used in Basel. The letters in Latin are rendered in German but the French letters are left untranslated. What is surprising is that the letters that were written in the German that Euler and Bernoulli favoured are also given in standard German. This makes for easier reading for those who are only acquainted with the modern form of German, but it entails a loss of the stylistic qualities of the two great Swiss writers. Readers interested in the evolution of language are encouraged to give the original texts a try. Some turns of phrase give us a clearer idea of how the two correspondents felt about issues that go beyond mathematical strategies.

The correspondence opens in 1726 with a letter from Daniel Bernoulli, who had just vacated his post of physiology at the Imperial Academy of Sciences in St. Petersburg to take up a more prestigious position in the department of mathematics and physics. Bernoulli successfully recommended that he be succeeded by Euler, who had failed to get an appointment at the University of Basel. Shortly after his arrival in 1727, Euler was promoted from a junior post in the medical section to a position in Bernoulli's new department. The two friends lodged together and worked in close collaboration. Euler's great talents were soon recognized and he was made a professor of physics in 1731. Two years later Daniel Bernoulli, who was unhappy with Russian bureaucracy, left Saint Petersburg for Basel, and Euler succeeded him as the head of the department of mathematics and physics.

Catherine I had provided generous support for the Academy but she died on the day Euler arrived in St. Petersburg. Foreign scientists were not popular with some members of the Establishment and funding became for them more difficult to obtain. Difficulties of this kind led Euler, in 1741, to accept a post at the Berlin Academy at the invitation of Frederick the Great, and he was to spend twenty-five years in Berlin. It is here that he published what are probably his two most famous works: *Introductio in analysin infinitorum* (1748) and *Institutiones calculi differentialis* (1755). Euler could not only tackle technical and mathematical problems with great sophistication, he was also a gifted expositor. The over two hundred *Letters à une Princesse d'Allemagne*, he wrote to Friederike Charlotte von Brandenburg-Schwedt, the niece of Frederick the Great, are both a pleasure to read and a remarkable summary of the key scientific and philosophical concepts of the 18th century. They also offer an insight into Euler's personality and his deeply held religious beliefs.

The Russians were anxious to welcome back to St. Petersburg the man who had become the greatest mathematician in Europe, and they made Euler a very handsome offer that he accepted in 1766. Although almost completely blind, he continued to write an impressive number of papers until his dying day in 1783.

Meanwhile Daniel Bernoulli had consolidated his reputation with the publication in 1738 of his *Hydrodynamica* in which he put forward what is now called Bernoulli's Principle, which states that the pressure in a fluid decreases as its velocity increases.

He also laid the basis for the kinetic theory of gases by demonstrating that the impact of molecules on a surface would explain pressure. His father, Johann Bernoulli, published shortly thereafter a work entitled *Hydraulica* in which he claimed priority for these discoveries. Both Daniel and Johann Bernoulli expected to receive the backing of Euler, who carefully avoided taking sides. This led to a cooling of the friendship between Daniel and Euler and a lessening of their epistolary exchange. Between 1754 and 1766 they did not write to each other. It is only after Euler returned to St. Petersburg that their rapport improved and in 1767–1768 they exchanged seven letters.

As is customary in the Euler edition, we find a comprehensive bibliography, and extensive indices of names and subjects.

These two tomes will be welcomed not only by historians of mathematics and physics but also by readers interested in the relationships between European scientists and the broader impact of new discoveries on the philosophy of the age.

William R. Shea, University of Padua (IT)

Euler, Leonhard: **Correspondence of Leonhard Euler with Christian Goldbach.** Edited by Franz Lemmermeyer and Martin Mattmüller. 2 vol. Basel, Birkhäuser, 2015. XII+1270 p. Ill. (Leonhard Euler, Opera Omnia, Commercium Epistolicum, 4a / 1). CHF 399.–. ISBN 978-3-0348-0879-8

This new volume of the Euler edition introduces a welcome change inasmuch as the introduction, the remarkably scholarly and useful notes, and all the letters (originally written in Latin, German, or French) are rendered in English in Part II. This means that the interesting correspondence between Euler and Goldbach can now be read by a wider audience. It consists of 196 extant letters, 102 written by Euler and 94 by Goldbach.

Christian Goldbach may not be a household name, but he was a brilliant polymath. In the summer of 1710, when he was 20 years old, he left his hometown of Königsberg in Eastern Prussia and embarked on a more than three-year European grand tour. After stopping at some of the principal German university towns including Halle, where he called on Christian Wolff, and Leipzig where he met Gottfried Wilhelm Leibniz, he went on to the Netherlands. He attended the University of Groningen and obtained a law degree. His next stop was England where he visited the Royal Society and encountered Newton, Halley, Flamsteed and de Moivre. At the Bodleian Library in Oxford he struck up an acquaintance with a scholar of his own generation, Nicolas Bernoulli from Basel. By way of Brussels he then proceeded to Paris before traveling extensively in Italy, visiting Turin, Florence, Rome, Naples (where he even climbed Mount Vesuvius), Bologna, Padua, and Venice. Everywhere, he visited museums, libraries and learned societies, and he introduced himself to all the well-known scientists, always looking for scholarly discussions on an ever-widening range. He returned to Königsberg in 1714, but in 1718 he set out on another long journey. He spent nine months in Sweden, and then travelled at a frenetic pace across Denmark and all of Germany. The purpose behind all these short stays and meetings is not obvious, but his friends