

Koenig (Kōnig), Johann Samuel | Encyclopedia.com

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(*b.* Büdinge, Germany, July 1712; *d.* Zuilenstein, near Amerongen, Netherlands, 21 August 1757)

mathematics, physics.

Koenig was the son of the theologian, philologist, and mathematician Samuel Koeing (1671–1750), who after a very active existence spent his last twenty years as a professor of oriental studies in his native city of Bern. Koenig received his first instruction in science from his father, whose enthusiasm he shared. After studying for a short time in Bern, in 1729 he attended the lectures of Frédéric de Treytorrens in Lausanne. In 1730 he left for Basel to study under Johann I Bernoulli and, beginning in 1733, under the latter's son Daniel as well—thus receiving the best mathematical training possible. During his stay of more than four years in Basel, Koenig, along with Clairaut and Maupertuis, studied the whole of mathematics, particularly Newton's *principia mathematica*. Koenig was introduced to Leibniz' philosophical system by Jakob Hermann, who returned from St. Petersburg in 1731. He was so impressed by it that in 1735 he went to Marburg" to further his knowledge of philosophy and law under the guidance of Leibniz' disciple [Christian von Wolff](#).

Koenig's first mathematical publications appeared in 1735. In 1737 he returned to Bern to compete for the chair at Lausanne left vacant by the death of Treytorrens (the position went to Crousaz). Koenig then began to practice law in Bern and was so successful that he seriously intended to give up mathematics, which he had found something less than lucrative. First, however, he wanted to write on dynamics; two articles appeared in 1738. Before the start of the new year Koenig was in Paris, where in March 1739 Maupertuis introduced him to the marquise du Châtelet, Voltaire's learned friend. During the following months Koenig instructed the marquise du Châtelet in mathematics and Leibnizian philosophy. He also went to Charenton with Voltaire and the marquise to visit Réaumur, who inspired Koenig to write his paper on the structure of honeycombs. On the basis of this work Koenig was named a corresponding member of the Paris Academy of Sciences. Following the break with the marquise—the result, according to René Taton, of a disagreement about money—Koenig remained in Paris for a year and a half and then settled in Bern. By this time, after repeated unsuccessful attempts, he had given up hope of obtaining a chair in Lausanne. Besides conducting his legal practice, he studied the works of Clairaut and Maupertuis, whose influence is evident in his book on the shape of the earth (1747, 1761).

In 1744 Koenig was exiled from Bern for ten years for having signed a political petition that was considered too liberal, although it was in fact very courteously written. Through the intervention of [Albrecht von Haller](#), Koenig finally obtained a suitable position as professor of philosophy and mathematics at the University of Franeker, in the Netherlands, and had considerable success there. Under the patronage of Prince [William IV](#) of Orange he moved to The Hague in 1749 as privy councillor and librarian. He became a member of the Prussian Academy on Maupertuis's nomination.

While still in Franeker, Koenig wrote the draft of his important essay on the principle of least action, which was directed against Maupertuis. The controversy touched off by this work, which was published in March 1751, resulted in perhaps the ugliest of all the famous scientific disputes.¹ Its principal figures were Koenig, Maupertuis, Euler, Frederick II, and Voltaire; and, as is well known, it left an unseemly stain on Euler's otherwise untarnished escutcheon. The quarrel occupied Koenig's last years almost completely; moreover, he had been ill for several years before it started. Koenig emerged the moral victor from this affair, in which all the great scientists of Europe—except Maupertuis and Euler—were on his side. The later finding of Kabitz² testifies to Koenig's irreproachable character.

Koenig never married. A candid and amiable man, he was distinguished by erudition of unusual breadth even for his time. He was a member of the Paris Academy of Sciences, the Royal Prussian Academy, the [Royal Society](#), and the Royal British Society of Sciences in Göttingen. The opinion is occasionally voiced that were it not for the controversy over the principle of least action, Koenig would be completely forgotten in the history of science. His formulation of the law (named for him) of the [kinetic energy](#) of the motion of a mass point system relative to its center of gravity³ is sufficient in itself to refute this view. According to Charles Hutton, Koenig "had the character of being one of the best mathematicians of the age". It is most regrettable that Koenig never accomplished his favorite project, publication of the correspondence between Leibniz and Johann Bernoulli.

NOTES

1. See *Dictionary of Scientific Biography*, IV, 471.

2. Willy Kabitz, “Ueber eine in Gotha aufgefondene Abschrift des von S. Koeing in *seinem Streite mit Maupertuis und der Akademie veröffentlichten, seiner Zeit für unecht erklärten Leibnizbriefes*”, in *Sitzungsberichte der K. Preussischen Akademie der Wissenschaften zu Berlin*,**2** (1913), 632-638.

3. The law states that the [kinetic energy](#) of a system of mass points is equal to the sum of the kinetic energy of the motion of the system relative to the center of gravity and of the kinetic energy of the total mass of the system considered as a whole, which moves as the center of gravity of the system; therefore

See A. Masotti, “Sul teorema di Koenig”, in *Atti dell' Accademia pontificia dei Nuovi Lincei*,**85** (1932), 37-42. Koenig's original formulation of the law can be found in “De universalis principio aequilibrii et motus....”

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I. Original Works. Koenig's writings include *Animadversinem rhetoriarum specimen subitum quod cessante Professoris rhetorices honore Academico d.* **17** . Nov. 1733 *propon. Ant Birrius respondente lectissimo juvene j. Sam. Koenigio, J. Sam. Bernate, philos. imprimisque mathesi sublimiori studioso* (Basel, 1733); “Epistola ad geometras”, in *Nova acta eruditorum* (Aug. 1735), 369-373; “De nova quadam facili delineatu trajectoria, et de methodis, hue spectantibus, dissertatiuncula”, *ibid.* (Sept. 1735), 400-411; “De centro inertiae atque gravitatis meditatiuncula prima”, *ibid.* (Jan. 1738), 34-48; “Demonstratio brevis theorematis Cartesiani”, *ibid.*, p. 33; “Lettre de Paris a Berne le 29 novembre 1739 sur la construction des alveoles des abeilles, avec quelques particularites littéraires”, in *Journal helvétique* (Apr. 1740), 353-363; and *Figur der Erden bestimmt durch die Beobachtungen des Herrn von maupertuis...* (Zurich, 1741; 2nd ed., 1761).

Subsequent works are *De optimis Wolfianae et Newtonianae philosophiae methodis earumque consensu* (Franeker, 1749; Zurich, 1752); the MS of the 2nd pt. of this history of philosophy must have been in existence at Koenig's death but appears to have been lost; “Mémoire sur la véritable raison du défaut de la règle de Cardan dans le cas irréductible des équations du troisième degré et de sa bonté dans les autres”, in *Histoire de l' Académie Royale de Berlin* (1749), pp. 180-192, on which see M. Cantor, *Geschichte der Mathematik*, 2nd ed. (Leipzig, 1901), III, 599ff.; “De universalis principio aequilibrii et motus, in vi viva reperto, deque nexu inter vim vivam et actionem, utriusque minimo dissipatio”, in *Nova acta eruditorum* (Mar. 1751), 125-135, 162-176; *Appel au public du jugement de l'Academie royale de Berlin sur un fragment de lettre de Monsieur de Leibnitz cité par Monsieur Koenig* (Leiden, 1752); Défense de l'Appel au public (Leiden, 1752); *Recueil d'écrits sur la question de la moindre action* (Leiden, 1752); *Maupertuisiana* (Hamburg, 1753), published anonymously (see *Mitteilungen der Naturforschenden Gesellschaft in Bern* [1850], 138); and *Éléments de géométrie contenant les six premiers livres d'Euclide mis dans un nouvel ordre et à la portée de la jeunesse sous les corrections de M. le prof. Koenig et revus par M. A. Kuypers* (The Hague, 1758).

Miscellaneous mathematical works can be found in *Feriis Groningianis*. Correspondence with Haller was published by R. Wolf in *Mitteilungen der Naturforschenden Gesellschaft in Bern*, nos. **14**, 20, 21, 23, 29, 34, and 44 (1842-1853). A portrait of Koenig by Robert Gardelle (1742) is in the possession of Dr. Emil Koenig, Reinach, Switzerland; it is reproduced in the works by E. Koenig and I. Szabó (see below). MSS and unpublished letters are scattered in the libraries of Basel, Bern, Franeker, The Hague, Leiden, Paris, and Zurich. Two unpublished MSS, “De moribus gysatoriis”, appear to have been lost.

II. Secondary Literature. See *Frieslands Hoogeschool und das Rijksathenaem zu Franeker*, II, 487-491; J. H. Graf, *Geschichte der Mathematik und der Naturwissenschaften-schaften in Bernischen landen*, no. 3, pt. **1** (Bern-Basel, 1889), pp. 23-62; E. Koenig, *400 Jahre Bernburgerfamilie Koenig* (Bern, 1968), pp. 31-35, and *Gestalten und Geschichten der Bernburger Koenig* (Bern, 1972), pp. 6-8; O. Spiess, [Leonhard Euler](#) (Frauenfeld-Leipzig, 1929), pp. 126 ff.; and R. Wolf, *Biographien zur Kulturgeschichte der Schweiz*, II (Zurich, 1858-1862), pp. 147-182.

On the principle of least action, see P. Brunet, *Étude historique sur le principe de la moindre action*, Actualités Scientifiques, no. 693 (Paris, 1938), with bibliography; *Leonhardi Euleri opera omnia*, J. O. Fleckenstein, ed., 2nd ser., V, intro. (Zurich, 1957), pp. vii-xlvi, including a bibliography by P. Brunet; and I. Szabó, “Prioritätsstreit um das Prinzip der kleinsten Aktion an der Berliner Akademie im XVIII. Jahrhundert,” in *Humanismus und Technik*,**12** no. 3 (Oct. 1968), 115-134.

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