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(*b*. Mont-de-Laval, Doubs, France, 19 July 1767; *d*. Mont-de-Laval, 17 April 1847)

mathematics.

Servois was the son of Jacques-Ignace Servois, a merchant, and Jeanne-Marie Jolliet. He was ordained a priest at Besançon at the beginning of the Revolution, but in 1793 he gave up his ecclesiastical duties in order to join the army. In 1794, after a brief stay at the artilley school of Châlons-sur-Marne, he was made a lieutenant. While serving in several campaigns as staff officer, he devoted his leisure time to the study of mathematics. With the support of Legendre, he was appointed professor of mathematics at the artillery school of Besançon in July 1801. A few months later he transferred to the school at Châlons-sur-Marne; in 1802, to the artilley school at Metz: and in 1808, to the school at La Fère. After a brief return to Metz as professor at the artillery and engineering school, he was appointed curator of the artillery museum at Paris in 1816. He held the post until 1827, when he retired to his native village.

Like a number of his colleagues who taught at military schools, Servois closely followed developments in mathematics and sought, at times successfully, to make an original contribution. His first publication was a short work on pure and applied geometry: *Solutions peu connues de différents problèmes de géométrie pratique*… (1805). Drawing upon Mascheroni's *Geometric del compasso* and upon Lazare Carnot's *Géométrie de position* (1803), Servois formulated some notions of modern geometry and applied them to practical problems. The book was well received, and Poncelet considered it a "truly original work, notable for presenting the first applications of the theory of transversals to the geometry of the ruler or surveyor's staff, thus revealing the fruitfulness and utility of this theory" (*Traité des propriétés projectives* [Paris, 1822], xliv).

Servois presented three memoirs before the Académie des Sciences. The first was on the principles of differential calculus and the development of functions in series (1805: new version, 1810); the second, which was never published, was devoted to the elements of dynamics (1809: additions in 1811); the third, also never published, dealt with the "determination of cometaray and planetary orbits." In 1810 Servois published a study on the principle of virtual velocities in the *Mémoires* of the Turin Academy, but most of his subsequent papers appeared in Gergonne's *Annales de mathématiques pures et appliquées*. In his first contribution to the latter, he solved two construction problems by projective methods and introduced the term *pôle*. His ability in geometry was recognized by Poncelet, who consulted him on several occasions while writing his *Traité des propriétés projectives*.

In a letter to Gergonne of November 1813, Servois criticized, in the name of the primacy of algebraic language, the geometric representation of imaginary numbers that had recently been proposed by J. R. Argand and J. F. Français: "I confess that I do not yet see in this notation anything but a geometric mask applied to analytic forms the direct use of which seems to me simple and more expeditious" (*Annales de mathématiques*….**4** , no. 7 [January 1814], 230). This formalist conception of algebra made Servois one of the chief precursors of the English school of symbolic algebra. It can be seen still more clearly in his "Essai sur un nouveau mode d'exposition des principes du calcul différentiel." which contains the most important aspects of the memoir presented to the Academy in 1805 and 1810. Familiar with the work of Hindenburg's combinatorial school and with L. F. A. Arbogast's *Calcul des dérivations*, Servois sought in the "Essai" to provide differential calculus with a rigorous foundation. In the course of this effort the developed the first elements of what became the calculus of operations. Observing that this calculus is based on the conservation of certain properties of the operations to which it is applied, he introduced the fundamental notions of "commutative property" and "distributive property" (*Annales*, **5** , no. 5 [November 1814], 98). He did not, however, always distinguish between "function" and "operation." Servois's memoir, which or less directly inspired the work of

Robert Murphy and of George Boole, was followed by an interesting critique of the various presentations of the principles of differential calculus, particularly the theory of the infinitely small and the method of Wronski.

Although Servois did not produce a major body of work, he made a number of original contributions to various branches of mathematics and prepared the way for important later developments.

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mathématiques sur le Traité analytique des courbes et surfaces du second ordre (Paris, 1802). He also published "De principio velocitatum virtualium," in *Mémoires de l'Académie impériale des sciences de Turin*, **18** (1809–1810), pt. 2. 177–244.

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