Hachette, Jean Nicolas Pierre | Encyclopedia.com

(*b*. Mézières, Ardennes, France, 6 May 1769; *d*. Paris, France, 16 January 1834)

geometry, theory of machines, physics.

The son of Jean Pierre Hachette, a bookseller, and Marie Adrienne Gilson, Hachette studied first at the *collège* of Charleville. He also attended the elementary technical courses organized at the École Royale du Génie of Mézières, where he favorably impressed Monge, Clouet, and C. Ferry. Beginning in 1788, after having completed his education at the University of Rheims (1785–1787), he was draftsman and technician at the École Royale du Génie of Méziéres and assisted Ferry in teaching descriptive geometry, which Monge had introduced in this school. Following a competitive examination he was appointed professor of hydrography at Collioure and Port Vendres in 1792. The following year he returned to Mézières to teach mathematics, replacing Ferry, who had been elected a deputy to the Convention. A fervent revolutionary, Hachette was active in the political life of his native city, and at the École du. Génie he sought rapid training of officers qualified for the revolutionary army and to remove teachers and students whose patriotism seemed doubtful to him.

Summoned to Paris by the Committee of Public Safety in 1794, Hachette carried out various technological and industrial assignments (military applications of balloons, manufacture of weapons, and so on) with Guyton de Morveau and Monge. He participated at the same time in the discussions concerning the reorganization of higher scientific and technical education. At the time of the creation of the École Polytechnique in November 1794—under the name École Centrale des Travaux Publics—Hachette took an active part in preparing the future instructors and then in the teaching of descriptive geometry, as assistant professor (1794) and later as full professor (1799) until April 1816.

Besides this course at the École Polytechnique, Hachette taught descriptive geometry at the shortlived École Normale de l'An III (from January to May 1795, as Monge's assistant) and then, from 1810, as assistant professor, at the Paris Faculty of Sciences and at the newly reestablished École Normale. In addition he taught at various schools that prepared students for the École Polytechnique and at the École des Pages, created by Napoleon in 1805. Through these various posts Hachette became one of the chief popularizers of the new methods that Monge had introduced in the various branches of geometry. An intimate friend and devoted collaborator of Monge—and editor of several of his works—Hachette shared his faith in the great value of science and technology as an element of social progress and in the importance of the École Polytechnique's role in this regard.

Having dedicated himself to the organization and launching of the École Polytechnique in 1794 and 1795, Hachette continued for more than twenty years to take an active interest both in its general orientation—he was several times a member of its Conseil de Perfectionnement—and in the life, work, and future of its students. Many of them were grateful to him for having guided their first research projects and for having kept in touch with them after graduation. Through his influence and contact with former students Hachette helped to raise the prestige of the École Polytechnique, inculcating in its best students a passion for scientific research, both pure and applied. In order to join this effort to the diffusion of his views, he was an editor of the *Journal de l'École polytechnique* and, in addition, created and directed an extremely valuable organ for the presentation of information and for the exchange of ideas, *Correspondence sur l'École polytechnique* (1804–1816), which contained the first works of some of the leading French scientists of the first half of the nineteenth century: Poisson, Fresnel, Cauchy, Malus, Brianchon, Chasles, and Lamé, among others.

In view, of this great activity, Hachette was extremely pained when, in September 1816, the Restoration government excluded him from the École Polytechnique at the time of its reorganization. This political rancor manifested itself again in December 1823, when Louis XVIII refused to confirm his election to the mechanics section of the Académie des Sciences. (He was not elected to that body until October 1831, under the reign of Louis Philippe.) Yet, except at Mézières in 1793, Hachette does not seem to have played a notable role in politics, although he did remain faithful to the great ideas of the Revolution.

His exclusion from the École Polytechnique did not prevent Hachette from completing a series of pedagogical works for its students. In fact, it permitted him to concern himself more actively with the rise of new industrial and agricultural techniques. He was a member of the Société d'Encouragement à l'Industrie Nationale, of the Société Royale et Centrale d'Agriculture, and of the Comité Consultatif des Arts et Manufactures. This activity made concrete earlier preoccupations: his posts at the École Royale du Génie of Mézières and at the École Polytechnique, his work during 1794, and the influence of Monge had made him familiar with the problem of the relationships between technology and the mathematical and physical sciences.

By his marriage in 1810 to Jeanne Maugras, the daughter of a surgeon, Hachette had a son, Amédée Barthélémy, who became chief engineer of the Ministére des Ponts et Chaussées, and a daughter, who married the chemist J. J. Ebelmen, later director of the Sèvres porcelain factory.

Despite the internal unity of Hachette's scientific and technical work, the latter can be divided into three major parts: geometry, pure and applied mechanics (including the theory of machines), and physics (electricity, magnetism, optics, and the study of instruments).

Hachette collaborated with Monge in the writing of an exposition of three-dimensional analytic geometry that dealt especially with changes of coordinates and with the theory of second-degree surfaces (*Journal de l'École polytechnique*, **11** [1802], 143–169), a more complete version of which appeared in book form several years later as *Application de l'algèbre à la géométrie* (Paris, 1805). Hachette later drew from this work an analytic theory of second-degree surfaces (1813, 1817) enriched by the progress made in the meantime.

In pure and descriptive geometry Hachette disseminated and continued Monge's work, developing effective procedures for solving various problems and studying diverse properties of space curves and surfaces (tangents and tangent planes, elements of curvature, and so on) by the methods of synthetic geometry joined to perspective and projective geometry. The results he obtained heralded the development of projective geometry and modern geometry in the nineteenth century.

In physics Hachette was especially interested in optics, electricity, magnetism, and the theory of optical instruments. Several of his articles and his *Programme* of 1809 show the influence of Monge, Guyton de Morveau, and Oersted.

In the courses on the theory of machines that he gave at the École Polytechnique beginning in 1806, in the *Programme*, and in the *Traité* that he published in 1808 and 1811, Hachette developed Monge's ideas on the distinction between the motor, the mechanisms of transmission and their movements, and the classification of transmission mechanisms (or elementary machines) according to the nature of the transformations of movements that they produce. The *Traité*, which includes important advances in applied mechanics and detailed studies of many types of machines, exerted a great influence on the beginnings of the theory of machines. Hachette was also interested in applied hydrodynamics and in steam engines and their history.

Although not a scientist of the first rank, Hachette nevertheless contributed to the progress of French science at the beginning of the nineteenth century by his efforts to increase the prestige of the École Polytechnique and by making Monge's work widely known, especially in descriptive and analytic geometry and in the theory of machines.

BIBLIOGRAPHY

I. Original Works. Besides about 100 memoirs, articles, and notes—a list of which is given in *Correspondance sur l'École polytechnique*, III, 421, and in Royal Society, *Catalogue of Scientific Papers*, III, 106–109—Hachette edited the three vols. of the *Correspondance sur l'École polytechnique* (Paris, 1804–1816) and published the following works: (1) *Application de l'algèbre à la géométrie* (Paris, 1805; reiss. 1807), written with Gaspard Monge, reiss. as *Traité des surfaces du second degré* (1813) and as *Éléments de géométrie à trois dimensions. Partie algébrique* (1817).

(2) *Programme d'un cours élémentaire sur les machines* (Paris, 1808), pub. with P. L. Lanz and A. de Bétancourt, *Essai sur la composition des machines*, and developed in *Traité élémentaire des machines*... (Paris, 1811; 4th ed., 1828).

(3) *Programme d'un cours de physique*... (Paris, 1809).

(4) *Supplément à la Géométrie descriptive* (Paris, 1811), *Cours de géométrie descriptive* (Paris, 1817), a collection of diagrams, and *Second supplément à la Géométrie descriptive* (Paris, 1818); the various elements of these works reappeared either in *Éléments de géométrie à trois dimensions, Partie synthétique* (Paris, 1817) or in *Traité de géométrie descriptive* (Paris, 1822; 2nd ed., 1828).

(5) *Histoire des machines à vapeur*... (Paris, 1830).

In addition, Hachette edited the first separately printed ed. of Monge's *Géométrie descriptive* (Paris, 1799), the reissues of that work, and the new ed. of 1811, as well as the fifth and succeeding eds. of Monge's *Traité élémentaire de statique* (Paris, 1809 ff.), and the third and fourth eds. of his *Application de l'analyse à la géométrie* (1807, 1809). In addition Hachette edited Auguste Comte's French trans. of John Leslie, *Elements of Geometry, Geometrical Analysis, and Trigonometry*, 2nd ed. (London, 1811), as *Analyse géométrique* (Paris, 1818) and published the French trans. of Thomas Young, *A Course of Lectures on Natural Philosophy and the Mechanical Arts*, 2 vols. (London, 1807), as *Précis de mécanique et de la science des machines* (Paris, 1829).

II. Secondary Literature. Hachctte's life and works were the subject of the following accounts (in chronological order), some of which contain quite serious errors (e.g., date of birth, participation in the Egyptian expedition): F. Arago and S.-D. Poisson, *Funérailles de M. Hachette* (Paris, 1834); A.F. Silvestre, *Discours prononcé sur la tombe de M. Hachette* (Paris, 1834); C.

Dupin and A. Quételet, in *Annuaire de l'Académie royale de Bruxelles* for 1836 (1836), 71–77; V. Parisot, in Michaud, ed., *Biographie universelle*, LXVI (supp.), 339–341, also in new ed., XVIII (Paris, 1857), 314–315; L. Louvet, in F. Hoefer, ed., *Nouvelle biographie générale*, XXIII (Paris, 1861), cols. 26–29; Poggendorff, I, cols. 985–986; A. Hannedouche, *Les illustrations ardennaises...* (Sedan, 1880), pp. 81–82; L. Sagnet, in *Grande* encyclopédie, XIX (Paris, n.d.), 698–699; and N. Nielsen, *Géométres français sous la Révolution* (Copenhagen, 1929), pp. 121–125.

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