La Condamine, Charles-Marie De | Encyclopedia.com

(*b*. Paris, France, 27 January 1701; *d*. Paris, 4 February 1774)

mathematics, natural history.

La Condamine came from an established, wealthy, and well-connected noble family. His father, district tax collector of the Bourbonnais, married in 1700, at the age of sixty. His mother, the former Marguerite-Louise de Chourses, daughter of a president of the Cours des Comptes of Montpellier, was about half his age. They had two children: Charles-Marie, the elder, and a daughter.

La Condamine completed his studies, with no marked enthusiasm, under the direction of the Jesuit fathers of the Collége Louis-le-Grand in Paris. There he had several remarkable teachers: the famous Pére Poree, for the humanities; Pére Brisson, in philosophy; and Pére Castel, in mathematics. Lacking a pronounced vocation, La Condamine took up a military career when he left the *collége*. War broke out against Spain, and he joined the army of Roussillon commanded by the Maréchal de Berwick. Present at the siege of Rosas (1719), he distinguished himself by his contempt for danger. He soon found life in the army unsuited to his taste, however. La Condamine therupon established contact with scientific circles in Paris, which were better able to satisfy his unquenchable curiosity, sometimes carried to the point of recklessness.

Through his new relations, La Condamine entered the Académie Royale des Sciences, as *adjoint-chimiste,* on 12 December 1730. But the Academy was no more able than the army to hold his interest for long, and in May 1731 he sailed on a naval ship for the commercial parts of the Levant, under the command of Duguay-Trouin. He thus came to Algiers, Alexandria, the coast of Palestine, Cyprus, and Smyrna, disembarking at Constantinople (October 1731), where he spent five months. After about a year, La Condamine returned to Paris and presented to the Academy, on 12 November 1732, his “Observations mathé-matiques et physiques faites dans un voyage de Levant en 1731 et 1732.” Although the memoir did not consist entirely of new results, it was sufficient to earn him the reputation of a competent mathematician, an observant traveler, and a good storyteller. It is thus not astonishing that, a few months later, the Academy chose him to participate in the mission known as the *Académiciens de Pérou*.

The expedition to Peru, encouraged by the minister Maurepas. had as its goal the verification of Newton’s hypothesis on the flattening of the terrestrial globe in the polar regions and, thereby, the resolution of the controversy regarding the form of the earth that was then dividing French scientists. Maupertuis, Clairaut, and Le Monnier went to Lapland to measure several degrees of meridian at the arctic circle, while Godin, Bougrer, and La Condamine were sent to Peru, territory belonging to Philip V of Spain, in order to make the same measurement in the vicinity of the equator. La Condamine left Paris on 14 April 1735 for La Rochelle, where he embarked with his two companions and the naturalist Joseph de Jussieu. They set sail for America on 16 May and made stops at Martinique (22 June to 1 July), Santo Domingo (11 July to 31 October), and Carthagena (16 November to 24 November). On 29 November they dropped anchor at Portobelo, Panama, arriving at the city of Panama a month later (29 December), after having traversed the isthmus. They set sail again on 22 February 1736; and on 10 March the mission finally disembarked at Manta, the port of the province of Quito. In order to reach the city of Quito, God in and Bouguer sailed to Guayaquil. La Condamine went overland and did not rejoin the others in Quito until 4 June.

The arc of meridian that had been selected passes through a high valley nearly perpendicular to the equator, extending from Quito in the north to Cuenca in the south. Work had scarcely begun when tension arose between Louis Godin, the head of the mission, and Pierre Bouguer. From 3 October to 3 November, however, the team conducted the measurements of the base for the triangulation operations in the Yaruqui plain. This task completed, the members returned to Quito at the beginning of December. In the meantime, the financial aid expected from Paris had not arrived, and money was beginning to run short. La Condamine, who upon leaving France had provided himself with letters of credit addressed to banks in Lima, offered his assistance. He left Quito on 19 January 1737, in the midst of the rainy season and traveled the long and difficult journey to Lima, which he reached on 28 February. He extended his journey in order to observe, near Loja, the cinchona tree, which was still not well-known to Europeans. Having concluded his business with some trouble, at the offices of the Lima bankers, he headed back to Quito, arriving on 20 June, just in time to observe the solstice there.

By this time, Godin was working alone and refused to communicate any of his results to his colleagues. Consequently, La Condamine began to collaborate with Bouguer; and after two years of work that was often interrupted, the geometric measurement of the arc of the meridian, undertaken in a mountainous and difficult country, was completed in August 1739. It remained to make the astronomical measurement of the same arc by determining exactly the latitude of its two extremities. In

the meantime, the misunderstanding between the scientists steadily worsened. Godin broke definitively with his colleagues and continued to work by himself. In December 1741, while verifying observations made jointly with La Condamine, Bouguer discovered a small error, which he corrected but which gave rise to long dispute. La Condamine wished to recheck the observations that they had made together, but Bouguer refused. Henceforth each man pursued his measurements and observations independently. The work was finally completed in 1743. Leaving behind them a commemorative plaque on the wall of the Jesuit church in Quito (preserved at Quito observatory) and two pyramids at the extremities of the base in the Yaruqui plain (son destroyed by the Spaniards but reconstructed in (1836), the three scientists left for home, traveling separately.

La Condamine chose the longest and most dangerous route, the Amazon. Heading south from Tarqui, near Cuenca, on 11 May 1743 he reached the village of Jaen, having passed through Loja, Valladolid, and Loyola. On 4 July he set off from Jaen in a canoe and, descending the Chuchungas River, reached its confluence with the Rio Maranon, which is a source of the Amazon. Traveling down the Amazon took him more than two months. Although concerned primarily with astronomical observations and topographical details, La Condamine also observed the use of rubber by several tribes. His remarks on this subject, however, are far less interesting than his observations concerning the cinchona. On 19 September 1743 he reached the Atlantic at Pará. He left that city on 29 December and sailed to Cayenne, French Guiana, where he landed on 25 February 1744.

Unable to find a ship leaving for France, La Condamine spent five months in Cayenne. There he repeated Richer's experiments on the variation of weight at different latitudes (see Jean Richer, "Observations astronomiques et physiques faites en l'isle de Caïenne" [1679]) and made many observations on physics, natural history, and ethnology. He met the physician and the royal engineer François Fresneau. Later he presented the results of Fresneau's research to the Académie des Sciences in his memoir "Sur une résine élastique… nouvellement découvert á Cayenne" (26 February 1751). La condamine finally left Cayenne on 22 August 1744, going first to Paramaribo, capital of Surinam. He embarked from there on 3 September for Amsterdam, where he arrived on 30 November. On 23 February 1745 he was back in Paris, after an absence of ten years, bringing with him copious notes and a collection of more than two hundred natural history specimens and various works of art, which he soon gave to Buffon for the royal Cabinet D'Histoire Naturelle. La Condamine's health had not been weakened to any serious degree, but he did suffer from a deafness that later degree, but he did suffer from a deafiness that later worsened and from a growing lack of sensitivity in the extremities, especially his feet, no doubt caused by the rigors of the Andean climate.

The scientific result a spheroid flattened at the poles, as Newton had maintained. Bouguer and La Condamine were unable, however, to agree on the joint publication of their works. Their long quarrel continued through a series of memoirs that were essentially mutual refutations of no scientific value; it ceased only with the death of Bouguer in 1758. (Godin dies in 1769.) The last survivor of the expedition, La Condamine, who was a less gifted astronomer than Godin and a less reliable mathematician than Bouguer, often received the major part of the credit, probably because of his amiable nature and his talent as a writer.

La Condamine returned from Peru with a project for a universal measurement of length, the unit of which would be the length of a pendulum beating once a second at the equator. Although Huygens had already suggested the idea in his *Horologium oscillatorium* (1673), La Condamine explained it more clearly in a memoir presented to the Academy in November 1747, which was read at a public meeting the following April. His proposal was not acted upon, but the idea remained under consideration and was taken up again by Turgot and, before the Constituent Assembly in 1790, by Talleyrand.

In his youth La Condamine had contracted smallpox, which perhaps led him to take such a resolute stand in the debate over inoculation. His role in this matter was that of a popularizer, and he played it with considerable taltent.The clarity and grace of his style served him well, as did his good nature. Even in his polemical writings, whether in prose or in verse (see, for example, *his Mémoire pour servir á l'histoire des révolutions du pain mollet* [1768]), his tone remained measured and courteous. His other works on inoculation include three memoirs read before the Academy (in 1754, 1758, and 1765), as well as his *Lettres…* á M.*le Dr Maty sur l'etat présent de l'inoculation en France*(1764) and a two-volume *Histoire de l'inoculation de la petite véerole*(1773). By the end of his life, the "Don Quixote of inoculation," as Louis Petit de Bachaumont called him, had seen the triumph of the ideas he had defended with such passion.

La Condamine's poems, although skillfully fashioned, do not merit special attention, nor does his *Lettre critique sur l'éducation*, published anonymously in 1751. The Lettre contains some valid ideas, such as the utility of modern foreign languages and of the exact sciences (in the front rank of which the author places geometry); but they are joined with reflections characteristic of the period and that prefigure Rousseau's *Entile* (1762). For example, he writes: "That the child becomes virtuous by becoming reasonable; that to the degree that his ideas develop, he learns that virtue is only the perfection of reason, while waiting to be shown that religion is the perfection of virtue."

A member of the Académic Royale des Sciences since 1730. as well as foreign member of the academies of London, Berlin, St. Petersburg, and Bologna, La Condamine was elected to the Acadèmic française on 29 November 1760. Piron greeted his election with a biting epigram:

La Condamine est aujourd'hui

reçu dans la troupe immortelle.

il est bien sourd, tant mieux pour lui:

mais non muet, tant pis pour elle.

The admission ceremony took place on 12 January 1761. The new member's speech was well regarded and the short reply by Buffon, who welcomed him in the name of the members, was magnificently eloquent.

To the end of his life La Condamine displayed the traits that had characterized him since his youth. He was inquisitive, restless, jealous of his reputation, gay, loyal, and at once malicious and credulous-in sum, very charming. A lively pastel portrait of him by Maurice Quentin de la Tour appeared in the Salon of 1753. During his trip to Italy. La Condamine obtained from Pope Benedict XIV a dispensation that allowed him to marry his niece, Charlotte Bouzier d'Estouilly, in August 1756. He was then fifty-five, and she twenty-five. Their marriage was a happy one. La Condamine had many friends, the closest of whom was certainly the impetuous and anxious Maupertuis, who bequeathed him all his papers. La Condamine died of the effects of a hazardous hernia operation, which, in a final bout of curiosity, he decided to undergo despite the risk involved.

BIBLIOGRAPHY

I. Original Works. La Condamine's principal books are *Relation abrégée dun voyage fait dans l'intérieur de l'Amérique méridiomde…* (Paris, 1745) –the text differs from that printed in the *Mémoires de l'Académic des sciences* in having a preface and many variations in wording… also published as *Nouvette édition augmentée de la Relation de l'émeute de Cuenca au Pérou et d'une lettre de M. Godin des Odonais contenant la relation du voyage de Madame Godin, son épouse…* (Maastricht. 1778); *Lettre á Mme*** sur l'éntente populaire excitée en la ville de Cuenca… contre les académiciens des sciences envoyés pour la mesure de la terre,* 2 pts. (Paris, 1745-1746), most of which is concerned with judicial proceedings following the death of the surgeon Seniergues; *journal du voyage fait par ordre du roi á l'équateur'eur; servant d'introduction historique á la mesure des trois premiers degrés du méridien* (Paris. 1751): *Lettre critique sur I"education* (Paris, 1751). published anonymously; and *Mesure des trois premiers degrés du meridien dans l'hémisphère austral…*(Paris, 1751).

Also see *Supplément au Journal historique ou Voyage à I'équateur et au livre de la mesure des trois premiers degrées du méridien. servant de réponse a quelques objections* (Paris, 1752), of which there was also à *.See conde partie…* (Paris. 1754); *Lettre de M.D.L C.* [dc La Condamine] *à M*** sur le sort des astronomes quiont eu part aux derniéres mesures de la terre, depuis 1735… 20 octobre 1773* (n.p., n.d.); *Lettres de M. de La Condamine à M. le Dr Maty sur l'état présent de rinoculation en France…* (Paris, 1764); and *Histoire de I'inoculation de la petite vérole…* (Amsterdam. 1773),

La Condamine published many articles in the "Mémoires" of the *Histoire de l'Académic royale des sciences*. Earlier ones include "Sur une nouvelle espéce de végétation métallique," 1731 (Paris, 1733). 466-482 and pis. 28-29; "Observations mathématiques et physiques faites dans un voyage de Levant… ," 1732 (Paris, 1735), 295-322 and pis. 16-18; "Description d'un instrument qui peul servir à déterminer, sur la surface de la terre, tous les points, d'un cercle paralléle à l'équateur" 1733 (Paris. 1735). 294-301 and pis. 22-23; "Nouvelle maniére d'observer en mer la décli-uison de l'aiguille aimaniée." *ibid*.. 446-456 and pl. 26; "Recherches sur le tour. Premier mémoire… . Description et usage d'une machine qui imite les mouvements du tour," 1734 (Paris. 1736), 216-258 and pls. 13-19; "Recherches sur le tour. Second mémoire.… Examen de la nature des courbes qui peuvenl se tracer par les mouvements du tour," *ibid*., 295-340 and pis. 20-25: and "Addition au memoire… 'Nouvelle maniére d'observer en mer la declinaison de l'aiguille aimantee," *ibid*.. 597-599.

Further articles are 'Maniére de déterminer astronomiquement la différence en longitude de deux lieux eu éioignés l'un de l'autre." 1735 (Paris. 1738), l-l1 "De la mesure du penduie à Saint-Domtngue." *ibid*., 529-544 and pi. 17; "Observations des degrés de hauteur du thermométre faites en 1736…" 1736 (Paris. 1739), 500-502; "Sur Parbre du quinquina," 1738 (Paris. 1740), 226-243 and pis. 5-6:–"Relation abrégée d'un voyage fait dans l'intérieur de l'Amériqiie méridio-nale…," 1745 (Paris, 1749), 391-492 and pl. 8; "Extrait des opérations trigonométriques, et des observations astronomiques, faites pour la mesure des degrés du méridien aux environs de l'équateur' 1746 (Paris, 1751). 618-688 and pis. 43-44; "Nouveau projet d'une mesure invariable propre à servir de mesure commune à toutes les nations' 1747 (Paris, 1752), 489-514; "Mémoire sur une résine elastique, nouvellement découverte à Cayenne par M. Fresneau; et sur d'usage de divers sues laiteux d'arbres de la Guiane ou France equinoctials" 1751 (Paris, 1755). 319-333 and pis. 18-20; "Mémoire sur l' inoculation de la petite véole," 1754 (Paris. 1759), 615-670; "Extrait d'un journal de voyage en Italic" 1757 (Paris, 1762), 336-410; "Second mémoire sur l'inoculation de la petite vérole…," 1758 (Paris, 1763), 439-482; and "Suite de l'histoire de ('inoculation de la petite verole. , . . Troisième mémoire," 1765 (Paris, 1768), 505-532.

La Condamine's papers and correspondence, formerly preserved at the chateau of Estouilly, near Ham (Somme), have been scattered. His dossier at the archives of the Academy of Sciences contains letters, notes concerning the mission to Peru (particularly on his quarrels with Bouguer), and statements favoring inoculation against smallpox. Many of the items are addressed to Grandjean de Fouchy, the perpetual secretary of the Academy since 1743. Other documents are at the Bibliothèque Nationale, MS department: Fr 11333; Fr 12222; Fr 22133; Fr 22135; NA Fr 3543, fol. 231; NA Fr 6197, fols. 9, 14, 22; NA Fr 3531, fol. 174; NA Fr 21015.

II. Secondary Literature. See "Bicentenaire de la découverte du caoutchouc par La Condamine, 1736-1936." *Revue générale du caoutchouc* 13, no. 125 (Oct. 1936); Pierre Bouguer, *La figure de la terre, déterminée par les observations des Messieurs*

Bouguer & de La Condamine , . . (Paris, 1749); M.J. Condoreel, "Eloge de M. de La Condamine." in *Histoire de I'Acaémic royale des sciences,* 1774 (Paris, 1778), 85-121; *Discours prononcés dans l'Académic françoise, le lutdi II juiilei 1774 à la réception de M. l'abbé Deiille* (Paris, 1774), a eulogy of La Condamine; Victor Wolfgang von Hagen, *South America Called Them*… (New York, 1945), 3-85, translated as *Le continent vert des naturalistes* (Paris, 1948); Abbé Achille Le Sueur, *La Condamine, d'aprés ses papiers inédits*… (Paris, 1911); and M. C. Wolf. "Recher-ches historiques sur les étalons de l'observatoire," in *Annates de chimie et de physique* 5th ser., 25 (1882), 5-112.

Yves Laissus