Sigrist, René: **La Nature à l'épreuve**. Les débuts de l'expérimentation à Genève (1670–1790). Paris, Classiques Garnier, 2011. (L'Europe des Lumières, 8). 706 p. Ill. 76.–. ISBN 978-2-8124-0248-7

Enlightenment Geneva could hardly compare with London, Paris, or Amsterdam in population, wealth, trade, publishing houses, or support for learning, whether by institutions or private patrons. Moreover, Calvinist theologians and conservative patricians exerted tight controls over the teaching and discussion of new ideas in philosophy, including natural philosophy. It is all the more remarkable that Geneva should have become a center for a certain style of natural inquiry by the mid-eighteenth century. Charles Bonnet, Jean-André De Luc, Gabriel Cramer, Horace-Bénédict de Saussure, and Abraham Trembley, figures well-known to historians of Enlightenment science, were only the most visible of a growing group of Genevans who took a serious interest in the investigation of nature during this period. René Sigrist's deeply researched and thoughtful survey of empirical inquiry in Enlightenment Geneva provides a panoramic view of the people, institutions, instruments, and methods responsible for this improbable efflorescence.

As Sigrist notes, a seventeenth-century Swiss citizen of the Republic of Letters would probably have preferred Zurich or Basel, with their universities and distinguished humanist publishers, to Geneva as a base of operations. Geneva had no university, only an Academy under the strict control of the theologians. Not only was the Academy's curriculum closely monitored for any signs of alarming novelties (e.g. Copernicanism or Cartesianism); nepotism was rife among the professorial appointments. Insofar as innovations did filter into Geneva, it was through Genevans who had studied and worked abroad, especially doctors, who were driven to the universities of Basel, Montpellier, and elsewhere by the lack of an indigenous medical faculty. They brought back the new-fangled practices of public anatomical dissections and collections of medical *observationes*, forerunners of the refined forms of empiricism cultivated by Genevan naturalists in the eighteenth century. By the 1720s, a small but influential elite of Genevan intellectuals were traveling to the centers of the new experimental natural philosophy. Cramer for example journeyed first to Basel to study with the Bernoullis, then to England, where he hobnobbed with Royal Society Fellows Edmond Halley and James Jurin; on to Leyden to attend the lectures and experimental demonstrations of Willem Jacob's Gravesande as well as those of Pieter van Musschenbroek in Utrecht; and finally to Paris, where he met René-Antoine Ferchault de Réaumur, Bernard de Fontenelle, and other members of the *Académie Royale des Sciences*. Trembley spent most of his career abroad as a tutor to the sons of aristocratic families in Germany, France, the Low Countries, and England. Cramer returned to Geneva after two years and became a professor at the Academy; Trembley came back only after almost twenty-five years. But, as Sigrist shows, networks of Huguenots, family, and teachers and students operated in both cases to magnify the influence of the venturesome travelers back home in Geneva.

Sigrist's approach is both prosopographical and philosophical, a rare and welcome combination. On the one hand, he provides information about all the Genevans who had interests in natural philosophy and natural history during this period, not just those prominent enough to merit entries in the *Dictionary of Scientific Biography*. He includes an appendix of Genevan savants active between 1700 and 1825, keyed

according to affiliation with a major eighteenth-century academy of sciences and later renown among historians of science, as well as an impressively long list of “amateurs” who took serious interest in natural inquiry. Graphs show the steadily increasing numbers in all categories, especially the last. Equally revealing are the genealogies of Genevan families from which some of the most eminent savants issued: the Saussures, Bonnets, and Trembleys were, for example, all related by blood or marriage. Although historians of science have long been aware of dynasties like the Bernoullis and the Cassinis, we are just beginning to understand how families served as a means of transmitting scientific interests, skills, and capital (e.g. books and instruments) and how households became sites of inquiry (as the charming plates of some of Trembley’s and Bonnet’s experiments reproduced in this book testify). Sigrist does not exploit his data to these ends except for a few passing remarks, but it is clear that he is aware of its potential.

On the other hand, Sigrist offers careful, perceptive analyses of the methods of inquiry pursued by Trembley, De Luc, Saussure, and, especially, Bonnet. He weaves together the methodological pronouncements of the historical actors themselves (as well as those of some of their contemporaries, such as Jean Senebier and the Comte de Buffon) with his own reading of their actual practice. He points out the ways in which Trembley and Bonnet performed series of observations and experiments in order to stabilize the phenomena, eliminate artifacts, and test hypotheses. Although he attempts to reconstruct a coeval definition of the distinction between “observation” and “experiment” in these investigations of polyps, aphids, and leaves, his own fine-grained accounts show how very blurry that boundary was for eighteenth-century naturalists (doctors of the vitalist school were more likely to insist upon the distinction). Sigrist also offers an excellent account of Genevan attempts to standardize the thermometer and the painstaking efforts of De Luc and others to achieve maximum precision under trying conditions – to the point of refusing to draw a curve among successive barometer and thermometer measurements because the intermediate points were merely speculative.

Sigrist situates the Genevan savants against the backdrop of the great philosophical backdrops of the day: Newtonians and Cartesians; Leibnizians and Wolfians; pre-formationists and epigeneticists. Certainly for some of his figures these debates were indeed formative (once again, Bonnet is the best example). But what emerges most strongly for almost all of the savants profiled here is a certain Genevan style of empiricism: exacting and exact, patient, painstaking, repetitive, probative, and implicitly guided (as Sigrist beautifully shows in case after case) by an internal logic of elimination of false causes and conflating variables. Above all, the Genevans were alert to the endless variability of nature – and therefore suspicious of rules, laws, and any other premature attempt to impose regularity on the phenomena. This book will be a valuable reference not only for historians of Enlightenment science but for all readers interested in the history and philosophy of scientific experience.

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