

class Amphibia (1758), as foreshadowed in the pioneering classification of the English parson, John Ray (1693, reprinted 1978).

• *References*: L. C. Miall, 1912 (pp. 28-32, 48-49); "Conrad Gessner . . . Leben und Werk," by H. Fischer, Komm. Leemann, Zürich, 152 pages, 1966; "Conrad Gessner 1516-1565," Orell Füssli Verlag, Zürich, 240 pages, 1967; "Konrad Gesner," by P. E. Pilet, *Dict. Sci. Biogr.*, 5: 378-379, 1972; "Conrad Gessner: a Bio-bibliography," by H. Wellisch, *Jour. Soc. Bibliogr. Nat. Hist.*, 7: 151-247, 1975. • *Portrait*: Bibliothèque Nationale, Paris. • *Signatures* (left, Latin form): From "Conrad Gessner 1516-1565," 1967; (right, German form, 1558): Zentralbibliothek Zürich, courtesy J. P. Bodmer. • *Note*: Gessner always spelled his name with *ss* when writing in German, but with a single *s* in Latin since it usually was considered improper to write a double consonant before another consonant in Latin (see H. Schinz and K. Ulrich, 1936, *Vierteljahrsschr. Naturf. Gesellsch. Zürich*, 81: 285-291, and Wellisch, 1975, p. 152). Unfortunately, many later authors have translated his name from the Latin incorrectly as "Gesner." The German form of his name reproduced above, although imperfect due to loss of edge of original document, clearly shows the double *ss*.

REDI, Francesco (1626-1697).

Although best known for his experiments on spontaneous generation, Redi also performed the first scientific study on viper bites. He was born in Arezzo, Tuscany, on 18 February 1626, son of the physician to the Grand Duke, Ferdinand II. Under the Medici family, Florence, whose citizens included Dante, Galileo, Leonardo da Vinci, and Michelangelo, was intellectually at its zenith. Redi attended Jesuit schools and, later, the University of Pisa where he first studied biology (doctor of medicine and philosophy, 1647); shortly thereafter he returned to Florence to practice medicine and, in 1666, succeeded to his father's royal position. He had begun his scientific work somewhat earlier—that on vipers in 1660, following a suggestion made by the Grand Duke—and later on he also studied insects and parasites. His master work, "Esperienze Intorno alla Generazione degl'Insetti," in which he showed experimentally that maggots do not arise from corpses by spontaneous generation but from fly eggs deposited there, was published in 1668. He died during the night of 28 February-1 March 1697 at Pisa.

The means by which the bite of a viper caused death had been of great interest since antiquity and the search for an antidote had involved much credulity and even knavery. It was Redi, using controlled experiments traceable to the methodology of Galileo, who first succeeded in separating fact from fiction. He showed that viper venom was the yellowish fluid that flowed from the teeth, that the venom had to be injected beneath the skin to cause death (it had no effect when introduced into the stomach with food), and that the venom was produced in sacs in the viper's head. Through similar experiments and observations he also dispelled many myths, although his experiments on animals were for a long time regarded as cruel.



Francesco Redi

Redi's experiments were often demonstrated before the Grand Duke himself and, in 1664, were published in book form as "Osservazioni Intorno alle Vipere" (English translation in 1988). His views were severely challenged by Moyse Charas, a Parisian apothecary, in a book published in 1669, and also by others who claimed that the viper's venom was harmless and that the true poison were the spirits driven into the victim by the mind of an enraged viper! As a result, Redi was led to conduct additional research which, together with logical refutations of criticisms of his work, he published as responses in 1670, 1685, and 1686, but he was unable to fully satisfy his critics. It remained for Redi's compatriot and successor, Felice Fontana, to demonstrate the mode of action of injected venom (1767 and 1781).

• *References*: L. C. Miall, 1912 (pp. 225-228); "Vita ed Opere Inedite di Francesco Redi [part I]," by U. Vivani, *Coll. Pubbl. Stor. Lett. Aretine*, 9: (xii), 1-117, 1924; "Francesco Redi (1626-1697). Physician, Naturalist, Poet," by R. Cole, *Ann. Med. Hist.*, 8: 347-329, 1926; "Francesco Redi," by L. Belloni, *Dict. Sci. Biogr.*, 11: 341-343, 1975; "Francesco Redi," p. 555-708. *In* M. L. Altieri Biagi and D. B. Basile (eds.), *Scienziati del Seicento*, R. Ricciardi Ed., Milan, 1980; "Francesco Redi on Vipers," by P. K. Knoefel, E. J. Brill, Leiden, xviii, 86 pages, 1988. • *Portrait*: From *Ann. Med. Hist.*, 8, opposite p. 331, 1926. • *Signature*: From Cole, 1926.