

The Origin of the “Term Base”

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Question

What is the origin of the term “base”?

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Answer

The term “base” appears to have been first used in 1717 by the French chemist, Louis Lémery (1672-1743), as a synonym for the older Paracelsian term “matrix” (1). In keeping with 16th-century animism, Paracelsus had postulated that naturally occurring salts grew within the earth as a result of a universal acid or seminal principle having impregnated an earthy matrix or womb (2). By the early 1730s the newer term had largely replaced the older Paracelsian terminology and was being used by such French chemists as Henri-Louis Duhamel du Monceau (1700-1782) (3, 4).

Its modern meaning and general introduction into the chemical vocabulary, however, is usually attributed to the French chemist, Guillaume-François Rouelle (figure 1), who used the term in a memoir on salts written in 1754 (6). In this paper, which was an extension of an earlier memoir on the same subject written in 1744 (5), Rouelle pointed out that the number of known salts had increased significantly during the 17th- and early 18th-centuries, due not only to the preparation of new salts, but also to an increasing ability to distinguish between sodium and potassium compounds, and to a generalization of the concept so as to include many substances, such as the alums and vitriols (i.e., sulfates), that had been previously excluded.

In order to incorporate this newly extended concept of salt formation, Rouelle explicitly defined a neutral salt as the product formed by the union of an acid with any substance, be it a water-soluble alkali, a volatile alkali, an absorbent earth, a metal, or an oil, capa-

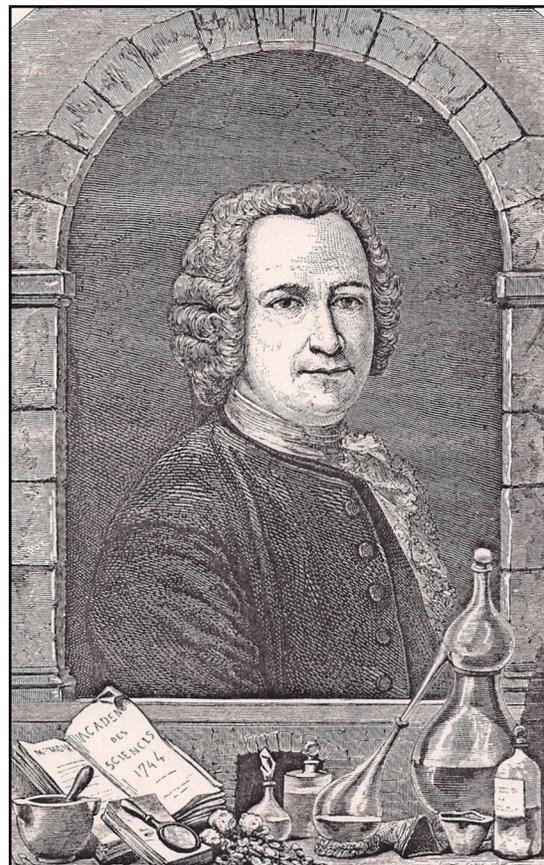


Figure 1. Guillaume-François Rouelle (1703-1770).

ble of serving as “a base” for the salt “by giving it a concrete or solid form.” Most acids known in the 18th century were volatile liquids or “spirits” capable of distillation, whereas salts, by their very nature, were crystalline solids. Hence it was the substance that neutralized the acid which supposedly destroyed the volatility or spirit of the acid and which imparted the property of solidity (i.e., gave a concrete base) to the resulting salt (7).

Literature Cited

1. N. Lémery, “Mémoires sur le nitre,” *Mém. Acad. R. Sci. (Paris)*, **1717**, 31-51, 122-146.

2. For a recent history of the relationship between matrix and base, see R. Siegfried, *From Elements to Atoms: A History of Chemical Composition*, American Philosophical Society: Philadelphia, PA, 2002, Chap. 4.

3. H. L. Duhamel du Monceau, "Sur le sal ammoniac," *Mém. Acad. R. Sci. (Paris)*, **1735**, 105-116, 414-434, 483-544.

4. H. L. Duhamel du Monceau, "Sur la base du sel marin," *Mém. Acad. R. Sci. (Paris)*, **1736**, 215-232.

5. G. F. Rouelle, "Memoire sur les sels neutres," *Mém. Acad. R. Sci. (Paris)*, **1744**, 353-364.

6. G. F. Rouelle, "Memoire sur les sels neutres," *Mém. Acad. R. Sci. (Paris)*, **1754**, 572-588. A partial English translation is available in H. Leicester, *Source Book in Chemistry*,

1400-1900, Harvard University Press: Cambridge, MA, 1952, pp. 75-79.

7. For further background on the history of acid-base chemistry and the origins of various terms, see W. B. Jensen, *The Lewis Acid-Base Concepts: An Overview*, Wiley-Interscience: New York, NY, 1980, Chapters 1-2.

Do you have a question about the historical origins of a symbol, name, concept or experimental procedure used in your teaching? Address them to Dr. William B. Jensen, Oesper Collections in the History of Chemistry, Department of Chemistry, University of Cincinnati, Cincinnati, OH 45221-0172 or e-mail them to jensenwb@ucmail.uc.edu