

JUERGEN HEINRICH MAAR, *Pequena História da Química. Uma História da Ciência da Matéria. Primeira Parte: Dos Primórdios a Lavoisier* [A Short History of Chemistry. A History of the Science of Matter. First Part: From its Beginnings to Lavoisier], Editora Papa-Livro, Florianópolis, 1999, 848 pp. (ISBN: 85-7291-049-2)

Juergen Heinrich Maar offers a “short” overview of the history of chemistry from its inception to Lavoisier. It is a book written in Portuguese by a Brazilian chemist. The author begins by looking at the non-Greek origins of chemistry, focusing on Hindu and Chinese contributions (Chapter 2). He pays particular attention to its practical components developed around the art of metallurgy, ceramics, pharmaceuticals, dyes, and food processing (Chapter 3). Alchemy is the next topic to be taken into consideration by contrasting the approaches to the subject of different cultures such as that of Alexandria, Islam, India, China, and Babylon, and then concentrating on the contributions of Medieval Europe (Chapters 4 and 5). Chapter 6 is dedicated to the 16<sup>th</sup> century, and specifically to the ways in which the practice of chemistry was reformulated by Paracelsus and the Paracelsians, at the same time it was criticized by their opponents. Chapter 7 deals with the 17<sup>th</sup> century, taken as the period of independence of chemistry as a science. Special emphasis is placed on van Helmont, Boyle, and Glauber. The 18<sup>th</sup> century, taken as the period in which chemistry as a rational subject intertwining theory and practice reaches maturity, is addressed in the last three chapters by looking at the problem of affinities, phlogiston theory, pneumatic chemistry, and finally the contributions of Lavoisier.

Two recent books on the history of chemistry come immediately to mind when reading Maar’s history of chemistry. They are William Brock’s *The Fontana History of Chemistry* (1992) and

Bernadette Bensaude-Vincent and Isabelle Stengers’ *Histoire de la Chimie* (1995). While they all present overviews of the history of chemistry (or part of it), and therefore share similar scopes, they are driven by very different aims. Brock takes advantage of the many in depth and sophisticated studies which appeared in the last two decades, to counteract the pressure of specialization and offer a new account of the history of chemistry, focusing on its theories and practices as viewed by the best modern scholarship. Bensaude-Vincent and Stengers take a more philosophically oriented approach to the subject to unveil the ways in which the identity of chemistry has been constructed, and the fight for a disciplinary space has taken place throughout the times. Maar presents a history of chemical theories, and facts, extensive but not in-depth, leaving to the reader the task of interpretation. The structure of the book is not innovative, and is definitely inspired by Partington’s histories of chemistry, having an almost encyclopedic character. It provides biographies of alchemists and chemists, discusses main theories and technical aspects of alchemy and chemistry, and reports on the ‘discovery’ and application of chemical substances that are represented in terms of modern notation.

In the preface, Maar outlines the methodology used. Attempting to circumvent a debate which seems to us quite outdated, the author claims to have avoided an entirely internalist perspective without, on the other hand, having succumbed to a strict externalist approach. This middle-ground approach is considered the most adequate because chemists, most of the audience aimed at by the book, are pleased by a narrative based on facts and chemical theories, but on the other hand, as chemistry is a humanist and cultural endeavor, a wider audience, not circumscribed to chemists, should profit from an acquaintance to the history of chemistry. Despite these assumptions, the book is inspired by a positivistic reading of the history of chemistry, and does not avoid a clearly whiggish

language and orientation (e.g. the author often builds his narrative around lasting contributions, the notion of 'precursors', or a schematization of what he considers to be the methodology of chemistry).

Maar's work is supported by bibliography other than French, British, and American and encompasses literature from Latin America, Portugal, Spain, Russia, Italy, and other 'peripheral' countries. By living in a peripheral country, one can offer a more neutral, uncompromising and open-minded account, so the author claims. The concern to include narrative details outside mainstream literature is certainly Maar's most original contribution, but this enterprise is particularly hard, dependent as it is on bibliographical accounts often opened to criticisms. Even taking into consideration language barriers preventing 'peripheral' literature to be widely disseminated, the production on history of science in peripheral countries is not yet up to international standards, and this is especially striking in the context of Brazil and Portugal. The reasons are manifold. Professionalization has not yet given way to a critical mass of scholars nor to a consistent and regular scholarly production. Often publications use the history of science to serve commemorative purposes as in centenaries, anniversaries, and other celebratory events. And often they do not take into account recent or relevant international bibliography, many times unavailable or available with dramatic delays. This state of affairs has to be acknowledged despite the pride one may feel of belonging to a minority in the international landscape of the history of science. (The author, in fact, acknowledges to his many friends and relatives who throughout the twenty years in which he prepared the book, brought back to Brazil many relevant books and papers).

Regarding this problem, and in view of the aims of this book, it is surprising that Maar refers only to Partington's abridged version, *A Short History of Chemistry* (1989), and ignores his comprehensive 4 volume *A History of Chemistry* (1962-

1970). Still in the realm of the general histories of chemistry, the author bypasses the recent contributions by Brock, and Bensaude-Vincent and Stengers. Concerning specific topics, and just to give a few examples: Marie Boas Hall, Steven Shapin and Simon Schaffer, William Newman, or Michael Hunter's contributions on Boyle are not referred to, nor Henry Guerlac, F. Holmes, and Bernadette Bensaude-Vincent's books on Lavoisier. Not even, despite being a work heavily dependent on short biographies, is there a reference to Gillispie's *Dictionary of Scientific Biographies*. In short, bibliographic references are not updated, occasionally going further than the late 1970s, and fundamental books and articles published in English and in French in the last decade, in subjects ranging from alchemy to Lavoisier, are omitted. The same criticisms can be extended to the bibliography from the 'peripheries'. For example there are no references to the extensive Spanish scholarship on the 18<sup>th</sup> century by scholars such as, to name only a few, António Lafuente, Victor Navarro-Brotos, António Ten, Agusti Nieto-Galan, José Ramon Bertomeu, and António Garcia-Belmar (of which the last three scholars have worked specifically on the history of chemistry).

Considering that there are not many textbooks on the history of science addressed to a Portuguese audience, it seems to us that two alternative ways can be taken out of this situation, which can complement each other rather than being opposed. One is to promote the translation into Portuguese of 'classics' of the discipline as well as recent scholarly contributions, the other the writing of new books and textbooks in Portuguese. In the latter case, one should always take into consideration recent contributions to the academic scholarship in the history of chemistry as well as debates and reflections on historiographical questions.

In view that Maar will address in the sequel to his book the period after Lavoisier, we suggest that he takes again into consideration the contributions to

chemistry from people and scientists from peripheral countries. Avoiding the mere enumeration of names and facts, he should profit from new historiographical considerations such as: How have new scientific ideas ‘migrated’ from centers to peripheral countries? What was the role of different external and internal factors in this ‘migratory’ process both in global and local scale? What were the specific characteristics of the process of their assimilation? What have been the particular forms of resistance in each country to the new developments? How was the particularity of their expression in each country related to its economic, social, and political life? What were the different profiles and social functions played by ‘scientists’ in the countries at the periphery? How were the different functions of the ‘scientists’ related to the different roles played by scientific and technological knowledge in the center and in the periphery? Answers to the former questions will help to characterize the mechanisms of birth and development of the new chemical ideas in the peripheries, and then to assess the similarities and differences of the perceptions of chemistry and chemical technology in different countries.

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*Determinants in the Evolution of the European Chemical Industry, 1900-1939. New Technologies, Political Frameworks, Markets and Companies*, ed. by A.S. TRAVIS, H.G. SCHRÖTER, E. HOMBURG & P.J.T. MORRIS, Kluwer Academic Publishers, Dordrecht-Boston-London 1998, xii + 393 pp. (ISBN: 0-7923-4890-7)

This book is the outcome of an international conference on the European chemical industry in the first four decades of the 20<sup>th</sup> century; it includes 16 articles, arranged in five different sections.

The first part deals with a new technology of the 20<sup>th</sup> century, high pressure industrial chemistry, which was, according to the editors, “nothing less than the ‘paradigm shift’ that thrust the chemical industry into the 20<sup>th</sup> century” (p. xii). The article by ANTHONY TRAVIS succinctly presents the development of the high-pressure ammonia synthesis and how high pressure chemistry became the “undisputed leitmotiv of the interwar chemical industry” (p. 21).

Part 2 is devoted to the impact of World War I. ROY MACLEOD describes in detail the “war of chemistry” on both the British and the German side. Scientists of both nations dedicated their knowledge to this deadly business, although their efforts, as MacLeod insists, were not decisive for the outcome of the war. However, their efforts transformed the image of science. LOTHAR MEINZER’s article examines the effects of the French occupation of BASF. Referring to the Haber-Bosch process, he convincingly shows that the confiscation of patents was of little use as long as the related contextual, tacit knowledge was lacking. The French had to find agreements with BASF, and the resulting contract between the two parties was, according to Meinzer, “the successful model” of a transnational technology transfer, setting “the pattern for similar activities during the remainder of the interwar period” (p. 63).