

for his poetry but is discussed here for his scathing remarks on medicine. He criticizes medical men's attention to the physical when they should be more involved with the metaphysical. In contrast, Michael McVaugh deciphers medical training at the University of Montpellier around 1300. He locates it as an emerging discipline with certain ethical traits. The next essay, by Matthias Rotck, looks at relations with patients from the patient's point of view. Medical ethics is caught in the dilemma of relying on the doctor's expertise while also recognizing that the patient's own opinions of medication, means, and the like are valid too. This also takes into account wider worries such as those of the ill person's friends.

This book on ethics mixes that focus with the scholar's need to explain the ins and outs of the very specific culture of a certain time and address the writings of the period. It also relates the reception of—for example—older treatises and their use in later times. This is not a simple task and can only be accomplished through a good knowledge of the relevant authors. Good scholarship is needed to discuss the place of medicine in centuries past and to assess how medicine meets the difficult requirements of being a profession: requiring discipline and specialist knowledge, giving prognostic advice that is credible, and asking for payment appropriate to the patient and the circumstances. It is worth reading about medieval times to learn more about the present.

Joseph Ziegler and Kay Peter Jankrift both treat Gabriele Zerbis, the latter focusing on the historically fraught period of the Spanish Inquisition and how to balance secretive associations. Cecilia Muratori focuses on ethical aspects of vegetarianism. Roberto Poma brings Luigi Luisini to the fore. The investigations are very detailed, and each includes an ethical variant. Winfried Schleiner records humor in medicine, including jokes told against the practitioner. In a different vein, Theodoro Katinis writes about the Neoplatonist Ficino and the soul. Klara Vanek tells of the ideal goodness of the surgeon—but this is not always the same as engaging with patients.

The last two essays are by Vivian Nutton and Mariacarla Bondio. Nutton discusses the value of advice during times of plague, a situation where the magistrate of a city had to formulate general measures for the citizens. Here the personalized doctor–patient relationship is no longer at the forefront; instead, the medical man is advisor to the magistrate. Bondio discusses the role of the doctor in telling the naked truth in hopeless cases or avoiding “bad news” in the interest of possible improvement. The ins and outs are discussed, with each individual doctor ultimately bearing the responsibility. All in all, this volume is a timely reminder that medical ethics should be the subject of serious thought. It makes the point strongly that philosophical principles count.

Joanna Geyer-Kordesch

Ursula Klein; Carsten Reinhardt (Editors). *Objects of Chemical Inquiry*. xvii + 382 pp., figs., index. Sagamore Beach, Mass.: Science History Publications, 2014. \$52 (paper).

This is a sumptuous volume containing a number of excellent contributions from some of the best historians of chemistry today, including not only the most senior and established figures but also promising junior scholars. The main challenge for the reviewer is choosing what to highlight among all of the fascinating topics and historiographical themes showcased here. It is not easy to articulate what holds the collection together, though the editors' introduction is indeed helpful in this regard. One might ask: Any work in the history of chemistry discusses the “objects of chemical inquiry,” so what is the historiographical purchase in talking about “objects”? The editors say that there is a “shared perspective” or “a fixed point of reference” in chemistry—namely, “the realm of concrete material substances and their reactions” (p. x). However, they also emphasize that there are other kinds of “objects,” stemming from materiality but not reducible to it.

There is no shame in making a collection that simply showcases the best recent work in a field, so we may not need to keep asking what “objects” really are. Still, it is useful to ask what kinds of objects chemistry has dealt with and how inquiry has been framed by object types. The rubric of “objects” serves

as an intentionally blurry focus, forcing us to think hard about the nature of knowledge. In that sense, this collection also makes a deep contribution to the philosophy of chemistry.

In what follows I will group the chapters together in terms of the kind of objects they treat. The individual chapters are self-contained, and readers may pick and choose according to their particular interests, though I would highly recommend making the time needed for reading the entire collection.

Some chapters deal with materials proper. Marco Beretta discusses glass, crucial in chemistry as both tool and object, in a narrative centered on Pierre Loysel, French artisan-chemist of the late eighteenth century. Ursula Klein gives a multidimensional account of the discovery of uranium from pitchblende (a material just as interesting as uranium) that also presents an instructive biography of Martin Klaproth and a good example of the phlogiston theory in action. Two other chapters focus on the making of substances. Seymour Mausekopf gives an intricate account of the development of explosives, culminating with the work of Alfred Nobel as a “creative bricoleur.” Catherine Jackson discusses the synthesis of coniine, the poisonous alkaloid in hemlock, making a subtle differentiation between the methodologies of Alfred Ladenburg and August Hofmann.

Some chapters focus on the material and symbolic representations of chemical objects. Alan Rocke builds on his masterly previous work to highlight the benefits of the operational and pluralistic approach to molecular structures taken by August Kekulé and other nineteenth-century organic chemists. Charlotte Bigg tells a vivid story about the techniques and technologies that Jean Perrin and others crafted in order to make the atomic world visible. Thomas Steinhauser provides a fascinating glimpse into the development of nuclear magnetic resonance (NMR) techniques, showing the intertwined development of measurement methods and their theoretical backgrounds.

A few intricate, fascinating, and challenging chapters focus on theoretical concepts, certainly objects of chemical research. Peter Ramberg recounts in illuminating detail how stereochemists around 1900 tried to make the whole chemical theory of valence and reactivity coherent. Stephen Weininger follows reactivity through to the late twentieth century, focusing on the attempts to quantify it and to define it independently of reaction contexts. Jeremiah James’s complex and insightful chapter follows modern chemists’ attempts to introduce the sizes and shapes of atoms into molecular models.

Finally, some chapters focus on how chemists have often succeeded in making theoretical notions materially real. Mary Jo Nye masterfully traces the long history of hypothetical intermediate states, down to the detection of very short-lived transition states using laser pulses. Carsten Reinhardt uses the case of olfaction, the most elusive of sensory processes, to illustrate how experiential classifications and pre-conceived molecular-mechanical notions developed uncomfortably together. Mathias Grote discusses rhodopsins (in retinas and in bacterial membranes) to show how the metaphor of molecular machines was turned into a reality in the lab, transforming the life sciences decisively.

This collection is a must for anyone wanting to get a sense of the cutting-edge scholarship in the history of chemistry and related sciences. The quality is almost invariably high. All chapters are well researched, highly informative in factual content, insightful in analysis, and mostly clear and accessible, though quite technical in places. The book is handsomely produced, though more thorough copyediting and proofreading would have been helpful. The editors have put together the volume very carefully, but an overall bibliography and an index of topics would have helped the reader appreciate the interconnections within it more clearly. However, the riches of *Objects of Chemical Inquiry* are fully matched by its potential to stimulate valuable new work.

Hasok Chang

Stefaan Blancke; Hans Henrik Hjermitsev; Peter C. Kjærgaard (Editors). *Creationism in Europe*. Foreword by **Ronald L. Numbers**. xvi + 276 pp., illus., tables, index. Baltimore: Johns Hopkins University Press, 2014. \$35.96 (cloth).

The editors of this significant new book alert readers from the outset that “creationism is on the rise in Europe” (p. 1). Certainly, that was the view of the Council of Europe’s Parliamentary Assembly, which