

BOOK REVIEW

Robert Halleux, with the collaboration of
Blanche El Gammal, *Les Alchimistes Grecs*,
Tome IX, 1ère partie, *Traité des Arts et
Métiers*. Paris: Belles Lettres, 2021. 207 pp.
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This book review discusses *Les Alchimistes Grecs*, Tome IX, 1ère partie. *Traité des Arts et Métiers*, edited by Robert Halleux in collaboration with Blanche El Gammal. The book is foundational for the completion of the publication of the entire corpus of Greek alchemical texts, which has been the joint undertaking of the International Academy of the History of Sciences (IAHS) and the Academy of Inscriptions and Belles Lettres (AIBL). This project, currently directed by Jacques Jouanna (AIBL) and Matteo Martelli (IAHS), aims to publish what remains of the Greek alchemical corpus, including the Syriac and Arabic traditions that contributed to the transmission of Graeco-Egyptian and Byzantine alchemical sources.

Halleux is known as one of the most respected among the select few classical scholars, expanding knowledge of the history of alchemy with critical editions of early alchemical writings, enriched by his knowledge of chemistry and metallurgy. This includes, for instance, the first volume in *Les Alchimistes Grecs*, the 1981 critical edition of *Papyrus de Leyde*,

Papyrus de Stockholm, Recettes (Paris: Les Belles Lettres, 1981). With volume IX, the series includes the critical edition of Byzantine texts on arts and crafts in two parts. Part two, *La Teinture des Pierres Précieuses. La Chimie de Moïse*, is forthcoming and will hopefully still see its completion following Halleux's sad passing last year. Part one, published in 2021 and reviewed here, includes the critical edition of several technical treatises (presented in the order of occurrence in Halleux and El Gammal's volume) on the making of yellow copper, a copper-zinc alloy (i.e., brass) (I); the making of Indian steel (II); the tempering of swords and stone-cutting tools (III); the making of silver, mercury, and cinnabar (IV); the making of molds and reliefs (V); the diversity of lead and gold leaf (VI); the imitation of pearls (VII); and the cleaning and polishing of pearls (VIII). These relatively small clusters of artisanal recipes are scattered throughout the Greek corpus of manuscripts on alchemy and were first edited as part of volume two of Marcellin Berthelot's (1827—1907) pioneering *Collection des Anciens Alchimistes Grecs* (Paris: Georges Steinheil, 1887—1888), which he produced in collaboration with Charles-Émile Ruelle (1833–1912).

In the introduction, Halleux points out that the technical recipes hold a special place in the Greek *corpus chemicum* as they relate the practice of arts and crafts with a particular focus on innovative processes from the East. As such, they constitute particularly valuable sources for the history of Byzantine craftsmanship. The recipes also point to fundamental similarities between the practices of alchemists and artisans. From goldsmiths to glassmakers and from illuminators to jewelers, Halleux argues that the material-technical explorations of artisans are often similar to those working in the alchemical tradition; they sourced their materials from the same places, e.g. pharmacies, and worked with similar tools and equipment, including terracotta or glass vessels, mortars, grinding stones, furnaces, and so on. The careful study and analysis of the often-shared practical realities of artisans and alchemists have gained much momentum in recent scholarship on artistic creation and alchemical knowledge, often highlighting how these fields intersect and influence each other throughout history. In this light, it is of interest to compare Halleux's claim that alchemy should be considered “une superstructure théorique des arts et métiers” (p. 10) to the view presented by Lawrence Principe in *The Secrets of Alchemy* (Chicago: University of Chicago Press, 2012). Principe points out that “the authors of alchemical treatises borrowed techniques, processes, and tools from a wide variety of contemporaneous artisans, yet they saw themselves as a group distinct from those artisans” (p. 13). Rather than considering alchemy a theoretical superstructure, therefore, Principe shows that the birth of alchemy required the union of practical artisanal knowledge (which has come down through recipes), coupled with “theoretical speculations about the nature of matter and change present in Greek natural philosophy.”

As anyone familiar with the historical study of recipes will recognize, there are many difficulties in interpreting artisanal recipes, and often, especially for the early Greek and medieval corpus, relating them to the artisanal realities of their time. As Halleux points out in the introduction, some terms and processes were not fully understood by him, and while he, in his own words, hesitated to produce this book for that reason, we can be grateful that he did. This critical edition of early technical treatises will prove indispensable for further opening up the corpus of early Greek recipes to contemporary scholarship. Careful editions such as this one make possible comparative research with other collections of recipes and allow for the tracing of potential long *durée* legacies of some of the practices these recipes document.

To give one example of the latter, Halleux points out that there is strong resonance between the recipes for the cleaning and imitation of pearls recorded in the early Greek technical texts (treatises VII and VIII) and several recipes found in the third to fourth-century Stockholm papyrus. The cleaning of pearls appears to have been a particularly pressing matter, as precious pearls tend to yellow over time due to a complex array of environmental factors, including dehydration or their reaction to acidic exudations from the skin (e.g. sweat). Several recipes in treatise VIII *Décapage et Brillantage des Perles* explain how to remedy this problem, such as baking dark and dirty pearls in bread to whiten them (VIII.7); using a complex method of dissolving pearls in filtered lemon juice and accordingly placing the dissolved pearl in a root bulb before baking it in the oven, having a bird ingest the dissolved pearl to eventually find that, upon killing the bird, the pearl can be retrieved from its insides in all its former glory (VIII.8); soaking and dipping yellowed pearls for several days in “whitened dog’s milk” (VIII.9); and bleaching yellowed pearls by placing them in a concoction made from the parts of several plants, potentially with the addition of “virgin’s urine and a little white honey” (VIII.13).

The *Stockholm Papyrus* (ed. Halleux, Paris: Les Belles Lettres, 1981) contains two instructions for whitening pearls that are not the same but markedly similar compared to the above recipes, including having a rooster swallow a yellowed pearl and then upon killing the bird retrieving it in a whitened state (p. 118, nr. 25). The second recipe explains how to make “brownish pearls white when it is due to smoke” by a complex method of smearing the pearls with a concoction of cooked honey-fig root-water and afterwards wiping off the substance with a “pure linen rag” (p. 113, nr. 10). Perhaps more notable even than these early concordances is the apparent *Nachleben* (after-life) of these ancient pearl cleaning recipes in much later instructions. *Henley’s Twentieth Century Book of Recipes, Formulas and Processes* (New York, NY: The Norman W. Henley Pub. Co., 1909), for instance, contains six methods for cleaning pearls that have turned yellow “in the course of time by absorbing perspiration on account of being worn in the hair, at the throat, and on the arms” (p. 208). Several of these

instructions—even though published many hundreds of years later—are reminiscent of the recipes above. Most notably, Henley’s fifth pearl cleaning recipe explains, similar to recipe VIII.7, that pearls can be cleaned by stringing them on a silk thread or wrapping them in a thin gauze and then baking them in a loaf of bread or barley flour. Recipe number four in Henley’s collection is similar to recipe VIII.9 in that it also recommends milk for treating yellowed pearls; here, however, by boiling them in cow’s milk (instead of dog’s milk) “into which a little cheese or soap has been scraped.”

While many artisanal practices have fundamentally changed over centuries and are thus difficult for historians to access, some practices, such as attempts to mitigate the effects of aging on pearls, have been long-term craft pursuits. Since pearls have remained a precious commodity and still pose the problem of yellowing, methods for cleaning them have retained their relevance and continued to develop. It is precisely such long-term practices that lend themselves to comparative approaches across different knowledge practices over longer periods of time and even continents. Halleux and El Gammal’s book will therefore not only prove invaluable for its foray into the corpus of early Greek artisanal texts, but it will also help trace traditions of material exploration and technical expertise—be it artisanal, alchemical, or other—across geographies and chronologies.