Renaissance meteorology is a highly complex cultural constellation comprising a broad range of interconnected practices of observation, description, explanation, prediction, and interpretation of phenomena of (mostly) meteorological, climatological, or geophysical nature. Because of the economic, social, and political relevance of weather and climate in the early modern period, the importance of Renaissance meteorology for historical research can hardly be overestimated. Nonetheless, as Craig Martin notes, this fascinating subject has hitherto received little attention and Martin’s book makes a valuable contribution to filling this gap.

The volume focuses on one important aspect of the little-explored landscape: the way in which during the Renaissance notions and methods from Aristotelian epistemology and Aristotelian meteorological theory were adapted to meet the philosophical and cultural challenges posed by the historical developments usually referred to as "the scientific revolution." Following Charles Schmitt and other authors who have pleaded for a reassessment of the role of Aristotelianism in the scientific revolution, Martin aims at demonstrating how Aristotelian philosophy of the sixteenth and seventeenth centuries was not a rigid tradition whose demise opened up the field for innovative forms of natural philosophy associated with names like Galileo Galilei or René Descartes, but was rather a heterogeneous, lively constellation of evolving methods and ideas, which both Aristotelian and non-Aristotelian authors could appropriate and transform in different directions. Using chosen meteorological writings as examples, Martin argues that in the Renaissance no clear-cut line could be drawn between Aristotelianism and the "new" natural philosophies, and that Aristotelian ideas and methods provided a creative, necessary contribution to the scientific revolution. At the same time, he also convincingly makes the case that the growing interest in explaining meteorological phenomena was a powerful inspiration and motivation for reforming the Aristotelian tradition.
Working from different perspectives, the author on the one side explores similarities between Aristotelian meteorological theories and those by non-Aristotelian authors, such as Giovan Battista Della Porta and Descartes; on the other side, he shows how self-described Aristotelian authors heavily reshaped Aristotle's theory of weather and climate in a process of active and creative reception of theoretical and empirical results originating in rival, upcoming directions of natural philosophy. Although the case studies discussed in the volume concern meteorology, Martin's interest is primarily focused on epistemological issues, and the explanations given by the historical actors for certain phenomena are analyzed not so much as part of theories of weather and climate, but rather as examples of more general views on the foundations, origins, and limits of knowledge about nature. A particularly significant example in this sense is the meteorological treatise by Nicolò Cabeo, which, although presented as a modification of Aristotelian meteorology, was actually a highly innovative construct embedding very different epistemological and natural philosophical views, and a construct that, as Martin aptly demonstrates, was conceived by Cabeo as offering a new epistemic template for the development of a new "Aristotelian" philosophy of nature.

The book is organized around six case studies reproducing and expanding Martin's previous publications and forming the core of the six chapters of the book, so that, while partly building upon each other, the chapters can also be read independently. However, the exposition is, on the whole, somehow nonsystematic. For example, most chapters start with detailed discussions of Aristotle's views on specific subjects (the status of meteorological knowledge, final causes, the causes of earthquakes, the origin of inner fire of the earth. For a reader not familiar with the details of Aristotelianism, it would probably have been better if these discussions had been grouped together into an introductory chapter and embedded in a more general treatment of the basic features of Aristotelian natural philosophy.

As a study of how Renaissance Aristotelianism transformed and was transformed by new approaches to the explanation of meteorological phenomena, Martin's book deserves much praise. However, the book is not a comprehensive treatment of Renaissance meteorology, and the fact that its author chose to present it as such regretfully detracts from its value. The claim of addressing Renaissance meteorology in all its breadth is made not only in the title but also throughout the introduction, where Martin presents Aristotelian treatises of meteorology and commentaries to Aristotle's meteorology as constituting the bulk of Renaissance meteorology. This disputable statement allows him to justify the fact that his study mainly discusses Italian authors by claiming that "Renaissance Aristotelianism often leads discussions to Italy" (p. 20).

To rectify this misleading presentation of a little-known subject, I feel compelled to mention here those elements of the multiform landscape of Renaissance meteorology that Martin either fails to discuss or dismisses in a few words. First and foremost, history of science is today a history of both theoretical and empirical practices, and so any discussion of Renaissance meteorology should necessarily include the rich tradition of systematic weather observation and recording by authors of most different social and cultural extractions, as well as the various meteorological instruments developed from the early seventeenth century onward, which came to be embedded in the observational tradition. Martin mentions neither these issues nor the relevant research literature, such as, to name only the most basic references, Gustav Hellmann's collection of sources on medieval and early modern weather observations reprinted as part of his Neudrucke von Schriften und Karten über Meteorologie und Erdmagnetismus (1892-1904) or William Edgar Knowles Middleton's monographs on the early modern ori-
gins of meteorological instruments like the thermometer and barometer (1964, 1966, 1969). Second, when discussing the theoretical practices linked to meteorology, Martin devotes much attention to detailing the multiform character of Renaissance Aristotelian epistemology and meteorology, but makes little or no effort to expound the equally complex views of other traditions of philosophical and meteorological thought with which, as Martin himself correctly points out, Renaissance Aristotelianism interacted. Two of these traditions played a particularly central role in Renaissance meteorology: the first one is the "chemical philosophy" (in the sense of Allen G. Debus), in whose context extremely influential meteorological writings were composed outside of Italy by the German-Swiss Paracelsus, the Dutchman Cornelius Drebbel, and the Englishman Robert Fludd, and to which also Della Porta's treatise may be counted. These texts have, for example, been discussed by Gustav Hellmann in his *Beiträge zur Geschichte der Meteorologie* (1914-22) and in various works by Debus. The second tradition is astrology, whose role in Renaissance culture and natural philosophy was central, especially as far as weather forecasts were concerned, and which was a main component of the worldview of some authors whom Martin discusses at length: Philipp Melanchton and his Wittenberg circle, Pietro Pomponazzi, and Della Porta. Although Martin in his introductory remarks acknowledges that the alchemical and astrological traditions played a role in Renaissance meteorology and quotes Debus's *The Chemical Philosophy* (1977) and Steven Vanden Broecke's *The Limits of Influence: Pico, Louvain, and the Crisis of Renaissance astrology* (2003), he never seriously includes alchemy and astrology in his discussions, although this perspective would have added much to his analyses, as I shall discuss below.

Let us now turn to the contents of the chapters. The first one focuses on Renaissance Aristotelian epistemology and uses meteorology to support the claim that Renaissance Aristotelians did not view all knowledge about nature as a "scientia" based on syllogism, but saw it also as a corpus based on probable arguments which could be integrated by experience. Chapter 2 discusses the issue of final causes in Renaissance Aristotelianism using as a case study debates on the possible aims of meteorological phenomena, especially destructive ones, and on their eventual nature as signs of God's will. Martin here details how Italian (Pomponazzi, Agostino Nifo) and German Lutheran (Melanchton and his circle) authors variously tried to fit notions of divine providence with natural causations and ethics. In this context, taking into account how astrology provided many of these scholars with a template for conceiving natural order would have been a valuable addition in reconstructing the cultural context of the discussions.[1]

The subject of the third chapter is of particular cultural historical interest: the political use of (actual or predicted) natural catastrophes, like floods, storms, or earthquakes. Martin's case study concerns the earthquakes that hit the city of Ferrara in the years 1570-74 and that Pope Pius V claimed were sent as a punishment to the city's ruler Alfonso II d'Este for having granted residence to Jews against the pope's orders. To argue against the pope and also to counter claims that the earthquake had been predicted by astrologers, a number of scholars at the Ferrara court composed dialogues on the earthquake and its natural causes, employing arguments from both the Aristotelian and other traditions of meteorology and natural philosophy. Martin's very informative discussion is careful in detailing the variety of arguments brought forward by scholars and courtiers, but one might have wished that he had also discussed some texts from the opposing faction (such as papal writings and astrological forecasts), so as to have a complete picture of the dispute.

The theme of chapter 4 is "the chymistry of weather," in other words, the use of notions from early modern (al)chemical practices in the expla-
nation of meteorological phenomena. This is indeed a fascinating issue deserving much attention, but Martin's treatment of it is not completely satisfactory. Starting from Aristotle and Seneca, Martin shows how a number of (mostly Aristotelian) authors of antiquity, the Middle Ages, and the Renaissance employed notions of "sulfur" and "bitumen" in the explanation of specific meteorological phenomena, like thunder and lighting, earthquakes, and hot springs. With these examples, Martin convincingly shows that Renaissance Aristotelian authors were creatively embedding new chymical notions and results in their meteorology. However, his exposition does not address the fact that in the Renaissance the use of chymistry as a template for the explanation of aerial phenomena (and much more) did not simply go back to ancient and medieval writings, like the work of Pseudo-Geber, but was also firmly rooted in the new Paracelsian tradition. For example, the idea of explaining thunder with gunpowder was not first put forward by Della Porta, as Martin claims, but was at the time common in the alchemical literature and probably also outside of it. The theory of "aerial niter," a fiery substance similar to salniter/gunpowder to which (among other things) thunder and lightning were due, goes back to the work of Paracelsus and formed the basis for both philosophical and meteorological reflections of many Paracelsians, among them Daniel Sennert, whom Martin surprisingly discusses under the heading "late Aristotelian chymistry" (pp. 99-100).[2]

The last two chapters deal with authors writing in the first half of the seventeenth century, and they are the best ones in the volume. Chapter 5 focuses on the meteorological treatise of the Jesuit Cabeo and offers a detailed, fascinating account of how the scholar attempted a reform of Aristotelian philosophy by combining it with notions usually regarded as incompatible with it, such as atomism or spirits. Chapter 6 is devoted to the meteorology of Descartes, with particular attention to how the philosopher explicitly or implicitly employed Aristotelian notions and methods, and to the critiques that scholars from the Aristotelian and the alchemical traditions directed to his meteorological reflections.

In conclusion, in this volume Martin fully achieves his stated aim of using meteorology to positively reassess the creativity and historical significance of Renaissance Aristotelianism, and the book is certainly of great interest for historians of philosophy. Historians of science will also profit from reading it, but, if they are not already familiar with Renaissance meteorology, they should be aware of the specific perspective from which Martin looks at it.

Notes
