GEOGRAPHICAL REVIEWS

GEOGRAPHIES OF MARS: Seeing and Knowing the Red Planet. By K. MARIA D. LANE. xiii and 266 pp.; maps, ills., bibliog., index. Chicago: University of Chicago Press, 2011. $45.00 (cloth), ISBN 9780226470788.

The word "geography" embeds a double act of inscription. *Geo-graphein* means "describing" or, more literally, "writing, scratching the earth." By interpreting the earth, geographers inscribe its surface with stories based on preexisting knowledge and experience. By describing it, they produce textual and visual images that are in turn inscribed in the collective imagination. As a knowledge-making mode, geography nevertheless transcends the terrestrial realm. *Geographies of Mars* recounts the cultural history of how the red planet was inscribed and shaped by human vision and imagination between the late nineteenth century and the first decades of the twentieth century, in the age of high imperialism.

"Geographies," rather than "areography" (or "aresography," the delineation and study of Martian regions), is an appropriate term to describe the enterprise. As Maria Lane shows, in those imperialistic decades the surface of the red planet was constantly projected and inscribed with images of quasi-human Others and terrestrial landscapes akin to those encountered by the explorers of the time and consumed by their public. In this sense, *Geographies of Mars* is the story not of a progressive discovery of "what Mars looks like" but of what different generations of astronomers and science popularizers expected, or simply wished, to see on it. Throughout Lane's account the surface of the red planet acts like a mirror of the earth, reflecting back shifting global geopolitical fears and desires as well as territorial and environmental concerns tied to the different cultural contexts in which the astronomers' gazes originated.

Lane traces the beginnings of scientific enthusiasm for "Martian geographies" back to 1878, when the Italian astronomer Giovanni Schiapparelli identified numerous linear features on the surface of the planet. Originally interpreted as canals' straight lines, these features turned out to be nothing but optical illusions. Yet for decades they remained at the center of scientific speculation and were repeatedly invoked as proof of the existence of a technologically "superior race," able to cope with arid environment through a gigantic artificial irrigation system akin to those implemented in the U.S. West or in the British colonies. Why?

The history of inscribing Mars, we learn from this book, is above all a history of scientific legitimization. Emblematically, Lane explains, at the root of inhabited-Mars narratives "lay a series of detailed maps" (p. 23), traditionally deemed the objective scientific representations par excellence. It is thanks to their rhetoric of truth that Martian maps gave credibility and endurance to the idea of a red planet akin to the earth. But, as historians of cartography have been keen to point out for the past twenty years or so, no map is a transparent window on the world—or on other planets. It is therefore not surprising that late-nineteenth-century maps of Mars featured terrestrial namings linked to their makers' provenance; nor is it surprising that they employed popular projections such as Mercator's, thus conveying, on a different scale, the same imperialistic narratives as their terrestrial counterparts. What is surprising is the finale of the story: Ironically, Mars cartographies and theories were put in crisis by photography, a medium that was initially expected to corroborate, rather than challenge, cartographic authority.

Geographies of Mars, however, not only recounts the story of human visionary inscriptions on the planet's surface by means of optical devices and graphic representations; it also explores the complex terrestrial geographies through which such inscriptions were shaped and legitimized and, not least, their geographies of reception. Readers are taken on a compelling journey through amateurs' backyards in suburban European cities, professional mountain observatories in the wild U.S. West, oceanic islands, South American high places, and so on. Such a journey is not devoid of surprises, either. Although the official rationale for the selection of these sites was "clearer vision," in reality, Lane suggests, the primary function they ended up fulfilling was legitimizing individual astronomers' status as Mars experts. The late-nineteenth-century shift from metropolitan observatories to high-altitude observatories—a sort of hybrid between laboratory and field—went hand in hand with polar exploration. Their inaccessibility resonated well with a collective imagination of mountain ascents and masculine narratives of imperial conquest. Astronomers' popular identification as intrepid scientific explorers reinforced their authority and credibility. Narratives of arduous terrestrial journeys and mountain ascents compensated for the impossibility of physically reaching their exploration sites. The irony is that, in many cases, these locations did not necessarily grant a better view of Mars, just better visibility in the popular geographical imagination.

Ultimately, Lane shows, Martian and earthly landscapes were deeply intertwined. As with names and cartographic projections, the landscapes "mapped" on the Martian surface were those familiar to their observers: Arizona's mountains and their extreme climate biogeographies, but also the apocalyptic imagined landscapes of earth-dessication theories or the prodigiously irrigated landscapes of technocratic America and British India. As with any cultural landscape, Martian landscapes were "truly nothing more than a way of seeing" (p. 138). Beyond each type of landscape lay contemporary terrors regarding Earth's desertification and dreams about human technological progress. Likewise, increasing flows of immigrants to the United States translated into the haunting vision of a threatening Martian race "gazing back" at our planet, an extreme extension of Orientalism. As these terrestrial hopes and fears were projected unto the Martian surface, Lane argues, "the planet became sensationally popular[,] thus underscoring the relevance and significance of the Mars narrative well beyond disciplinary astronomy" (p. 215).

Geographies of Mars is a visionary book. Its value and originality lie in the combination of vivid narrative and compelling archival materials with current scholarship on the geographies of science making, the history of cartography, and cultural geography. In unfolding the history of seeing Mars, the author implicitly retraces the history of modern geographical vision and imagination. As she notes in the conclusions, today "the vision of a technologically controlled Martian globe continues to fascinate scientists, policy makers and general audiences" (p. 216). Yet, regrettably, this falls out of the temporal remit of the book, and the charmed reader is left wondering about the continuation of this compelling visual history in the years of the cold war, about reconnaissance orbiters and recent manned mission plans to Mars. As with any good book, however, one is also left with the hope this stellar journey will continue.—VERONICA DELLA DORA, *University of Bristol*

NATURE AND EMPIRE IN OTTOMAN EGYPT: An Environmental History. By ALAN MIKHAIL. xxv and 347 pp.; maps, ills., bibliog., index. New York: 0-bridge University Press, 2011. $99.00 (cloth), ISBN 9781107008762.

Alan Mikhail's goal is to present a social and environmental history of water usage and irrigation in Egypt between 1675 and 1820 C.E. Egypt was a province of the Ottoman Empire from 1571 to the Napoleonic interlude of 1799–1801 and then became the quasi-independent fiefdom of its Albanian-Ottoman governor, Mehmet 'Ali, whose family ruled the country until 1952.

At the beginning of the period discussed in this volume, traditional peasant knowledge and experience with local environments were paramount in the management of water, cultivation, plague, and timber resources. Wood was critical for shipbuilding, construction, and irrigation works but had to be imported from Anatolia in exchange for grain, creating a complementarity between the Ottoman heartland and the imperial breadbasket of the Egyptian alluvial lands. This coordinated system of local autonomy, directly sponsored by the sultan in Istanbul and by the bureaucracy of the province, allowed the Egyptian merchant fleet to trade freely in Ottoman waters of the Mediterranean and Black seas.

Symptomatic of a change in bureaucratic intervention was the use of ever-larger groups of forced laborers in canal repairs, though at first only for local irrigation works. But under the ruthless and authoritarian Mehmet 'Ali (1805–1849) the mobilization of workers, now conscripted from all over the country, increased exponentially. A major canal reconstruction between 1816 and 1820 used a cumulative total of almost 400,000 laborers, of whom perhaps a quarter succumbed to disease under inhumane conditions. The people had become pawns of a centralizing Albanian-Egyptian bureaucracy that insisted on ruling from the top down. Traditional ecological knowledge had been debased, never to recover its original role as Egypt swept through a painful modernization that periodically used the carrot of new irrigation developments but that ultimately failed to resolve deep structural problems.

Mikhail has facility with Arabic and Ottoman Turkish and used manuscript repositories in Cairo and Istanbul to add a wealth of archival materials to the socioeconomic discourse about irrigation management in early-modern Egypt.