The Nature of Plague in Late Eighteenth-Century Egypt

ALAN MIKHAIL

SUMMARY: This article uses an examination of the 1791 plague in Egypt to explore the relationships among disease, famine, flood, drought, and death in late eighteenth-century Egypt. It analyzes how plague functioned as part of a regular biophysical pathology of the environment in which the disease came and went as one iteration in a cycle that included famine, wind, flood, drought, price inflation, and revolt. Using the works of Egyptian chroniclers, archival materials, secondary studies, and traveler accounts, this article integrates plague into the study of the Egyptian environment by showing how it was a regular and expected part of life in Egypt.

KEYWORDS: plague, Egypt, nature, Ottoman Empire, water, wind

Introduction

Many historians have documented the intimate temporal and geographic coincidences of plague, famine, drought, flood, and price inflation in Ottoman Egypt.[1] Few, though, have shown how the connections between plague and these phenomena fit into a recurring pattern of death and hardship during the sixteenth, seventeenth, and eighteenth centuries that came to inform Egyptians' experiences both of their natural environment

For their critiques, questions, and suggestions, I would like to thank Rifa'at Abou-El-Haj, Khaled Fahmy, Thomas Laqueur, Maria Mavroudi, Anne-Marie Moulin, Leslie Peirce, Sheldon Watts, and the three anonymous reviewers for the *Bulletin*. I would also like to acknowledge the staff of the Başbakanlık Ottoman Archives for their helpfulness throughout the period of my research in Istanbul.

1. Daniel Panzac, *La Peste dans l'Empire Ottoman, 1700–1850* (Louvain: Association pour le développement des études turques, 1985), pp. 29–57 and 381–407; Nāṣir Aḥmad Ibrāhīm, *al-Azamāt al-Ijtimā'iyya fī Miṣr fī al-Qarn al-Sābi' 'Ashar* (Cairo: Dār al-Āfāq al-'Arabiyya, 1998); André Raymond, "Les Grandes Épidémies de peste au Caire aux XVIIe et XVIIIe siècles," *Bulletin d'Études Orientales,* 1973, *25* : 203–10; William F. Tucker, "Natural Disasters and the Peasantry in Mamlūk Egypt," *JESHO,* 1981, *24* : 215–24.

and of plague itself. By examining one particular plague epidemic in Egypt—that of 1791—this article shows how plague was part and parcel of the pathology of the Egyptian environment at the end of the eighteenth century. The article thus highlights the multiple means through which plague functioned as a regular part of the Egyptian environment.

I argue that plague in Egypt must be studied as one pathological element of the Egyptian environment that was known and understood by Egyptians at the end of the eighteenth century to include floods, wind, drought, and famine. This episode of plague in Egypt fits into the kind of ecological history advocated by William Cronon, in which natural phenomena are considered elements in massively complex and numerous constructive and contradictory relationships. Cronon, for example, writes that "important as organisms like smallpox, the horse, and the pig were in their direct impact on American ecosystems, their full effect becomes visible only when they are treated as integral elements in a complex system of environmental and cultural relationships."[2]

Egyptians who regularly dealt with plague at the end of the eighteenth century did not consider plague a kind of "foreign" invader, coming to Egypt in the hulls of ships from faraway ports. Indeed, although feared, plague did not cause Egyptians to flee.[3] Like the annual Nile flood, increases in the prices of grain, famine, or other hardships, plague was an accepted and expected environmental reality.

Plague in Egypt after 1517

Some historians—for example, Michael Dols, the foremost recent historian of plague in the Middle East—identify 1517 as a dividing line for

2. William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 2003), p. 14. Also instructive is William Cronon, ed., *Uncommon Ground: Rethinking the Human Place in Nature* (New York: W. W. Norton, 1996).

3. Muslim writers on the subject of plague regularly comment on and struggle with the following three tenets derived from the teachings of the Prophet Muhammad: (1) plague is a mercy and a form of martyrdom sent by God for a pious Muslim (and a form of punishment for infidels), (2) a Muslim should neither flee from nor enter a region affected by plague, and (3) plague is not contagious because it comes directly from God. Although these principles, of course, did not influence the actions of all (or any) Muslims at all times, they did inform much of the contemporary writing on the subject and contributed to the religio-medico-legal underpinnings of many ideas about plague: Michael W. Dols, *The Black Death in the Middle East* (Princeton: Princeton University Press, 1977), pp. 23–25 and 109–21; idem, "Ibn al-Wardī's *Risālah al-Naba' 'an al-Waba'*, A Translation of a Major Source for the History of the Black Death in the Middle East," in *Near Eastern Numismatics, Iconography, Epigraphy and History: Studies in Honor of George C. Miles*, ed. Dickran K. Kouymjian (Beirut: American University of Beirut, 1974), pp. 444–45; Jacqueline Sublet, "La Peste prise aux rêts de la jurisprudence: Le Traité d'Ibn Ḥaǧar al-'Asqalānī sur la peste," *Stud. Islam.*, 1971, *33*: 141–49.

the study of plague in Egypt.[4] Although Egypt was conquered by Ottoman armies and made an administrative unit of the Empire in 1517, all of the evidence for a chronology and periodicity of plague points to the fact that 1517 did not represent a significant turning point in the frequency, severity, or treatment of plague in Egypt. Indeed, a new plague epidemic visited Egypt on an average of every nine years during the entire period from 1347 to 1894.[5] Put differently, plague was reported in Egypt in 193 of these 547 years.[6] This high incidence of plague suggests that the disease and its epidemics were regular and expected occurrences in the lives of most Egyptians. Commenting on the medieval period, William Tucker notes "that virtually every generation of Egyptians in the Mamlūk period experienced some untoward event in the course of their lives."[7] This high incidence of plague also suggests that historians should pay closer attention to the role of the disease in the shaping of Egyptian history, whether before or after 1517.[8]

Despite the artificiality of 1517 as a breaking point in the history of plague, this date proves significant for the historiography of plague in Egypt because it represents the ending point for most histories of disease in Egypt. Indeed, most work on plague in the Middle East focuses on the impact of the disease during the Mamlūk or medieval period or earlier.[9] Since plague was a consistent reality in Egypt during the Ottoman

4. For a discussion of some of the difficulties involved in the establishment of a chronology of plague in the Ottoman Middle East, see Michael W. Dols, "The Second Plague Pandemic and its Recurrences in the Middle East: 1347–1894," *JESHO*, 1979, *22*: 167–68. Dols cites a "dearth of oriental sources" as the reason for his chosen periodization: ibid., p. 166.

5. Ibid., pp. 169 and 176. For the period from 1416 to 1514, David Neustadt (Ayalon) reports that an outbreak of plague struck Egypt on an average of once every seven years: David Neustadt (Ayalon), "The Plague and Its Effects upon the Mamlûk Army," *Journal of the Royal Asiatic Society of Great Britain and Ireland,* 1946, 68: pp. 67–73. See also Dols, *Black Death* (n. 3), pp. 223–24; Panzac, *Peste* (n. 1), pp. 197–207.

6. Dols, "Second Plague" (n. 4), pp. 168–69 and 175–76; Raymond, "Grandes Épidémies" (n. 1). The epidemics of plague included in Raymond's study represent a subset of those cited by Dols.

7. Tucker, "Natural Disasters" (n. 1), p. 222. He further estimates that, on average, natural or social disasters (severe hardship stemming from extreme political injustice or from Bedouin raids) occurred once every two years during the period of Mamlūk rule from 1250 to 1517: Ibid., p. 222, n. 53.

8. One could rightly make the point that the arbitrary geographic and political division of Egypt is just as misleading in a discussion of plague as is the identification of the year 1517 as a chronological divide.

9. Works on plague in the medieval Middle East include Michael W. Dols, "The General Mortality of the Black Death in the Mamluk Empire," in *The Islamic Middle East, 700–1900: Studies in Economic and Social History*, ed. Abraham Udovitch (Princeton: Darwin Press, 1981), pp. 397–428; idem, *Black Death* (n. 3); idem, "Ibn al-Wardī" (n. 3); idem, "al-Manbijī's 'Report

period, what explains this historiographical preference for the study of plague in Egypt during the medieval period?[10] The most consistent answer given to this question is that there are more sources for the study of the medieval plague than there are for comparable studies during the Ottoman period. Take, for instance, the following explanation offered by Michael Dols: "the historical chronicles are relatively abundant for the Black Death and the recurrences of plague during the latter half of the Mamlūk Period in Egypt and Syria . . . These chronicles diminish sharply in quality and quantity in the last half of the fifteenth century, and we are no longer supplied with the specific descriptions of epidemics which enable us to determine with a fair degree of accuracy the duration and nature of the epidemics."[11]

Such explanations for the dearth of studies of plague during the Ottoman period are untenable, since numerous kinds of sources exist concerning plague after 1517. Although in the Mamlūk period, before 1517, most sources are literary chronicles, sources after 1517 include the documentary records of Ottoman governmental bureaucracies, the archives of Islamic courts, and records of correspondence between the Ottoman center in Istanbul and the various provinces of the Empire.

The records of Islamic courts prove extremely useful for the study of the history of plague in the Middle East. One of the primary functions of the court was to administer the inheritance of the deceased. Thus, one regularly finds inventories of estates (*tarikāt*) in the records of local courts.

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of the Plague:' A Treatise on the Plague of 764–765/1362–1364 in the Middle East," in *The Black Death: The Impact of the Fourteenth-Century Plague*, ed. Daniel Williman, Papers of the Eleventh Annual Conference of the Center for Medieval and Early Renaissance Studies (Binghamton: Center for Medieval and Early Renaissance Studies, 1982), pp. 65–75; Neustadt (Ayalon), "The Plague and the Mamlûk Army" (n. 5); Stuart J. Borsch, *The Black Death in Egypt and England: A Comparative Study* (Austin: The University of Texas Press, 2005). For works on earlier plague epidemics, see Lawrence I. Conrad, "The Plague in the Early Medieval Near East" (Ph.D. diss., Princeton University, 1981); idem, "The Biblical Tradition for the Plague of the Philistines," *J. Amer. Oriental Soc.,* 1984, *104* : 281–87; Michael W. Dols, "Plague in Early Islamic History," *J. Amer. Oriental Soc.,* 1974, *94* : 371–83; Josiah C. Russell, "That Earlier Plague," *Demography, 1968, 5* : 174–84. For a critical reading of many of the primary sources for the history of plague, see Lawrence I. Conrad, "Arabic Plague Chronologies and Treatises: Social and Historical Factors in the Formation of a Literary Genre," *Stud. Islam.,* 1981, *54* : 51–93. The bibliographical information provided in these major studies points to the enormity of the primary and secondary literature on plague in the Middle East.

10. Despite the fact that most studies of plague and other disasters in the Middle East focus on the medieval period, one historian of Mamlūk Egypt nevertheless complains that even this literature is lacking. See Tucker, "Natural Disasters" (n. 1), p. 215.

11. Dols, "Second Plague" (n. 4), pp. 164–65.

By tracing the vicissitudes in the number of such inventories before, during, and after known plague epidemics, one can gain an approximate idea of the scale of mortality for a given region.[12] In addition to these archival materials, the voluminous chronicles of the seventeenth and eighteenth centuries continue to offer a great deal of information about the outbreaks, nature, and impact of plague during these two centuries.[13] Moreover, there are dozens of manuscripts on the subject housed in various collections throughout the world.[14]

12. The reader should note, however, that this is not an exact science, as clearly the majority of plague deaths left no record in court registers. At present, we have no reliable way of knowing how to determine what percentage of actual deaths was recorded in a given court.

13. For examples of studies on plague in Egypt during this period, see Ibrāhīm, *al-Azamāt al-Ijtimā'iyya* (n. 1); Raymond, "Grandes Épidémies" (n. 1), pp. 203–10; idem, *Artisans et Commerçants au Caire au XVIIIe siècle*, 2 vols. (Damascus: Institut Français de Damas, 1974); Max Meyerhof, "La Peste en Égypte à la fin du XVIII siècle et le Mèdecin Enrico di Wolmar," *La Revue Médicale d'Égypte 1*, nos. 4 and 5 (1913): 1–13. Seventeenth- and eighteenth-century Arabic chronicles that include information on various plague epidemics in Egypt during the period include—but are by no means limited to—the following: Ismā'īl Ibn Sa'd al-Khashshāb, *Akhbār Ahl al-Qarn al-Thānī 'Ashar: Tārīkh al-Mamālīk fī al-Qāhira*, eds. 'Abd al-'Azīz Jamāl al-Dīn and 'Imād Abū Ghāzī (Cairo: al-'Arabī lil-Nashr wa al-Tawzī', 1990); idem, *Khulāṣat mā Yurād min Akhbār al-Amīr Murād*, ed. and trans. Hamza 'Abd al-'Azīz Badr and Daniel Crecelius (Cairo: al-'Arabī lil-Nashr wa al-Tawzī', 1992); Aḥmad al-Damurdāshī Katkhudā 'Azabān, *Kitāb al-Durra al-Muṣāna fī Akhbār al-Kināna*, ed. 'Abd al-Raḥīm 'Abd al-Raḥman 'Abd al-Raḥīm (Cairo: Institut Français d'Archéologie Orientale du Caire, 1989); Muṣṭafā Ibn al- Ḥājj Ibrāhīm Tābi' al-Marḥūm Ḥasan Aghā 'Azabān al-Damurdāshī, *Tārīkh Waqā'i' Miṣr al-Qāhira al-Maḥrūsa Kināt Allah fī Arḍihi*, ed. Ṣalāḥ Aḥmad Harīdī 'Alī, 2nd ed. (Cairo: Dār al-Kutub wa al-Wathā'iq al-Qawmiyya, 2002); Ibrāhīm Ibn Abī Bakr al- Ṣawāliḥī al-'Ufī al-Ḥanbalī, *Tarājim al-Ṣawā'iq fī Wāqi'at al- Ṣanājiq*, ed. 'Abd al-Raḥīm 'Abd al-Raḥman 'Abd al-Raḥīm (Cairo: Institut Français d'Archéologie Orientale du Caire, 1986); 'Abd al-Raḥman al-Jabartī, *'Ajā'ib al-Āthār fī Tarājim wa al-Akhbār*, ed. Ḥasan Muḥammad Jawhar, 'Abd al-Fattāḥ al-Saranjāwī, 'Umar al-Dasūqī, and al-Sayyid Ibrāhīm Sālim, 7 vols. (Cairo: Lajnat al-Bayān al-'Arabī, 1958–1967); Muḥammad Ibn Abī al-Surūr al-Bakrī, *al-Nuzha al-Zahiyya fī Dhikr Wulāt Miṣr wa al-Qāhira al-Mu'izziyya*, ed. 'Abd al-Rāziq 'Abd al-Rāziq 'Īsā (Cairo: al-'Arabī lil-Nashr wa al-Tawzī', 1998); Aḥmad Shalabī Ibn 'Abd al-Ghanī, *Awḍaḥ al-Ishārāt fī man Tawallā Miṣr al-Qāhira min al-Wuzarā' wa al-Bāshāt*, ed. 'Abd al-Raḥīm 'Abd al-Raḥman 'Abd al-Raḥīm (Cairo: Tawzī' Maktabat al-Khānjī, 1978).

14. For references to some of these manuscripts (many of which are copies or compilations of earlier sources), see the bibliographical information found in the following: Ibrāhīm, *al-Azamāt al-Ijtimā'iyya* (n. 1), pp. 316–20; Dols, *Black Death* (n. 3), pp. 320–39; Mohammed Melhaoui, *Peste, contagion et martyre: Histoire du fléau en Occident musulman médiéval* (Paris: Publisud, 2005), pp. 20–57. For a compilation that includes many translated excerpts of medieval Arabic plague treatises, see John Aberth, *The Black Death: The Great Mortality of 1348–1350, A Brief History with Documents* (New York: Palgrave Macmillan, 2005).

The Plague of 1791

The year 1791 began on a thoroughly foreboding note for Egyptians. On the basis of the reports of numerous astrologers (*al-falakiyyīn*), they came to believe that at midnight on the night of 1 February a great earthquake (*zalzala ʻaẓīma*) would strike Egypt, lasting for seven trembling hours.[15] Both the poor and the rich were convinced of the coming of this earthquake, and those who could manage to leave their cities and villages fled to broad open places (*al-amākin al-muttasiʻa*) like the desert or to one of Cairo's two main lakes—al-Azbakīyya and al-Fīl—to ready themselves for the anticipated calamity. Braced for the earthquake, Egyptians waited all night, but the quake never came, and all found themselves safe and sound the next morning.[16] Feeling thoroughly duped, people recited the following verse about their foolish naiveté: "and how many laughable things are in Cairo / but it is laughter like crying."[17]

However unfounded their fears of a colossal earthquake might have been, Egyptians had good cause to be afraid in February 1791. Later that month, plague struck Egypt with great force. Plague was, of course, nothing new to Egypt and, as I noted above, had struck at numerous points throughout the previous centuries. Accounts of the 1791 plague, though, seem to agree that this year's disease was especially potent. One eyewitness reports that at the start of the awful plague, 1,000 people died every day. It was not long, however, before the number of dead per day rose to 1,500.[18] Elsewhere, the same chronicler estimates that the plague killed 2,000 people every day.[19] Plague, as it was oft to do, did not discriminate between the young and the old, the powerful and the weak, the pious and the heathen.[20] We are told that an "uncounted number of babies, youths, maidservants, slaves, Mamlūks, soldiers, inspectors, and amīrs"

15. The story of this earthquake is reported in al-Jabartī, *Ajāʼib al-Āthār* (n. 13), vol. 4, p. 132.

16. For a discussion of earthquakes and their psychological impact on the population of Mamlūk Egypt, see Tucker, "Natural Disasters" (n. 1), pp. 219–20 and 222–23.

17. al-Jabartī, *Ajāʼib al-Āthār* (n. 13), vol. 4, p. 132. The verse is: *wa kam dhā bi-Miṣr min al-muḍḥikāt / wa lakinahu ḍiḥkun ka-al-bukkāʼ*.

18. al-Khashshāb, *Akhbār Ahl al-Qarn al-Thānī ʻAshar* (n. 13), p. 58.

19. Idem, *Akhbār al-Amīr Murād* (n. 13), p. 40.

20. According to John Antes, however, "it has been observed in Turkey, and particularly in Egypt, that persons of the age of seventy, and upwards, are not so much subject to the infection, and very old people not at all. The most vigorous and the strongest appear to be most subject to it": John Antes, *Observations on the Manners and Customs of the Egyptians, the Overflowing of the Nile and its Effects; with Remarks on the Plague and Other Subjects. Written During a Residence of Twelve Years in Cairo and its Vicinity* (London: Printed for J. Stockdale, 1800), p. 47. Born in 1740 in Frederick Township, Pennsylvania, John Antes was a composer, inventor, watchmaker, and missionary. He is purported to be the first American-born

(*mā lā yuḥṣā min al-atfāl wa al-shubbān wa al-jawārī wa al-'abīd wa al-mamālīk wa al-ajnād wa al-kushshāf wa al-umarā'*) all died in the spring of 1791.[21] The leader Ismā'īl Bey died during the plague along with many of his followers before an attempted escape to Istanbul.[22] Indeed, the plague caused a crisis of leadership in Ottoman Egypt, since no appointed leader could stay alive long enough to rule effectively. An Ottoman firman sent to Egypt from Istanbul during the plague of 1791 implores the surviving leadership of the province to do all it can to defend itself against the state of disorder (*perişanlık*) that had gripped Egypt because of the death of eight or nine of the province's most important beys. The decree further orders this leadership to inform Istanbul of the names, physical characteristics, and notable attributes of those important men who died and of those who replaced them.[23]

We learn as well that after the *aghā*[24] and *wālī*[25] died, successors immediately rose to power only to die themselves three days later. Those who

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composer of chamber music, was a member of the American Moravian Brethren, and was the first American missionary in Egypt. During his residence in Egypt from 13 January 1771 to 27 January 1782, he witnessed three plague epidemics. The first began in Alexandria in late 1770 and spread throughout the Delta but did not reach Cairo. In 1771, Antes writes, the plague came to Egypt with a group of Mamlūks returning from Istanbul, and the disease spread all throughout Cairo and the Delta and into parts of southern Egypt. The third plague epidemic he witnessed was that of 1781. According to Antes, this plague was brought to Egypt by a group of Jewish merchants who had bought a chest of old clothes in Izmir, where the plague was raging, hoping to sell its contents in Egypt. The chest was opened in three different customs houses in Cairo and, from there, spread throughout the rest of Egypt (Ibid., pp. 40–41). As one of the few foreigners resident in Egypt at the end of the eighteenth century who wrote specifically on the subject of plague, Antes's account is particularly useful as a supplement to the various chronicles of Egyptian historians. For more on the life and work of John Antes, see Donald M. McCorkle, "John Antes, 'American Dilettante,'" *Music. Quart.,* 1956, *42* : 486–99; K. Marie Stolba, "Evidence for Quartets by John Antes, American-Born Moravian Composer," *J. Amer. Musicol. Soc.,* 1980, *33* : 565–74; Mohamad Ali Hachicho, "English Travel Books about the Arab Near East in the Eighteenth Century," *Die Welt des Islams,* 1964, *9* : 53–54.

21. al-Jabartī, *'Ajā'ib al-Āthār* (n. 13), vol. 4, p. 132.

22. Ibid., vol. 4, p. 133; al-Khashshāb, *Akhbār al-Amīr Murād* (n. 13), p. 40; idem, *Akhbār Ahl al-Qarn al-Thānī 'Ashar* (n. 13), p. 58.

23. Başbakanlık Osmanlı Arşivi (Istanbul), Cevdet Dahiliye, 1722.

24. *Aghā* was a title given to high-ranking Ottoman officials. The head of each of the seven military blocs stationed in Egypt was an *aghā*. Here the reference is most likely to the head of the Mustaḥfiẓān military bloc, who served as a kind of head of police in Cairo. For more on the meaning of *aghā*, see Stanford J. Shaw, ed. and trans., *Ottoman Egypt in the Eighteenth Century: The Nizâmnâme-i Mısır of Cezzâr Aḥmed Pasha* (Cambridge: Harvard University Press, 1964), pp. 10–11; Laylā 'Abd al-Laṭīf Aḥmad, *al-Idāra fī Miṣr fī al-'Aṣr al-'Uthmānī* (Cairo: Maṭba'at Jāmi'at 'Ayn Shams, 1978), pp. 176–77 and 229–32.

25. The *wālī* served under the aghā in the police administration of Cairo. On the position of the *wālī*, see Aḥmad, *al-Idāra* (n. 24), pp. 233–35.

replaced them also died in the course of a few days. al-Jabartī writes that "succession changed hands three times in one week" (*al-mīrāth intaqala thalāth marrāt fī jum'a wāḥida*).[26] al-Khashshāb describes the situation slightly differently. He writes that the appointment of an *aghā* and the need to replace that appointee because of his death from plague occurred three times in one day. Leaders came to power in the morning and died by late afternoon.[27] The pasha of Egypt, on the advice of his agents, left Cairo along with his amīrs to seek refuge in the region of Ṭurā.[28] Many large Cairene families (*buyūt*) were decimated by the plague.[29] The speed of death after the onset of plague is something noted throughout the descriptions of the plague of 1791.

So great a number of the soldiers and marines stationed in Old Cairo, Gīza, and Būlāq died that mass graves were dug into which their corpses were thrown without any ceremony or final rites.[30] For those not connected to the military, their funerals also had to be done en masse, with prayers being said for up to five people at one time. Indeed, the apparatuses charged with the management of death were stretched to their limits during this spring as the demand for undertakers (*al-ḥawānīt*) and corpse washers (*al-mughassilīn*) far exceeded their available numbers. Most economic and social functions unrelated to the present grim circumstances ceased during the plague because "there was not left for people any work except death and its attendant matters" (*lam yabqa lil-nās shughl illā al-mawt wa asbābaha*). Accounts of the spring of 1791 devote significant attention to the sick (*al-marīḍ*), the dead (*al-mayyit*), the visitor of the sick (*al-'ā'id*), the condoler (*al-mu'azzī*), the one going to a funeral (*al-mushayyī'*), the one returning from funeral or burial prayers, the one busy with preparing the dead, or the one weeping in anticipation of his own death.[31]

Later, in the summer of 1791, al-Jabartī tells us of another consequence of that year's plague: an absence of male heads of households. When a group of amīrs from southern Egypt attached to one Murād Bey came to Cairo in late July 1791, they found many houses without men, inhabited only

26. al-Jabartī, *Ajā'ib al-Āthār* (n. 13), vol. 4, p. 133.

27. al-Khashshāb, *Akhbār Ahl al-Qarn al-Thānī 'Ashar* (n. 13), p. 58.

28. al-Jabartī, *'Ajā'ib al-Āthār* (n. 13), vol. 4, p. 138. Ṭurā is located on the east bank of the Nile south of Old Cairo in the province of Aṭfīḥ. For more information on Ṭurā, see Muḥammad Ramzī, *al-Qāmūs al-Jughrāfī lil-Bilād al-Miṣriyya min 'Ahd Qudamā' al-Miṣriyyīn ilā Sanat 1945,* 2 parts/6 vols. (Cairo: al-Hay'a al-Miṣriyya al-'Āmma lil-Kitāb, 1994), part 2, vol. 3, pp. 15–16.

29. al-Khashshāb, *Akhbār al-Amīr Murād* (n. 13), p. 40.

30. al-Jabartī, *'Ajā'ib al-Āthār* (n. 13), vol. 4, p. 133.

31. Ibid.

by "women, maidservants, and slaves" (*al-ḥarīm wa al-jawārī wa al-khadam*). Finding this situation agreeable, the amīrs married these women, "replaced their bedding, and prepared their wedding feasts" (*jaddadū farāshahum wa 'amalū a'rāsahum*). Any amīr who did not have a house was free to enter any home he liked and to take it and everything in it without hindrance (*min ghayr māni'*).[32] In this way, God bequeathed to these men land, houses, riches, and wives. From the imperial perspective in Istanbul, the outbreak of plague in Egypt created a worrisome opportunity for enemies of the state and rebellious bureaucrats to escape to Egypt undetected amid the mayhem and general disarray. Indeed, in very strong language, Ottoman authorities ordered those still present in Egypt to prevent any fugitives from entering the province to hide.[33]

Geographic Beginnings

Although Egypt regularly experienced plague, it did not house an epidemiologically endemic focus of the disease.[34] The endemic foci of plague

32. Ibid., p. 140. Although al-Jabartī does not address the subject explicitly, one should not surmise from his descriptions of the absence of men any conclusions about relative immunities to plague among various social groups. Indeed, as stated above, plague seems to have been largely indiscriminant in its infection patterns. Moreover, "no convincing evidence is available to show that a natural immunity to insect-borne plague exists in man": Robert Pollitzer, *Plague* (Geneva: World Health Organization, 1954), p. 133; cited also in Conrad, "Plague in the Early Medieval Near East" (n. 9), p. 33, n. 58. As will be discussed below, the single biggest factor in the spread of plague is human proximity to infected fleas. Thus, claims that certain groups within Egypt had developed immunity to plague must be considered incorrect. For instance, David Neustadt (Ayalon) asserts that the victims of plague were predominantly children, foreigners, and slaves recently brought to Egypt, or, in his words, those "elements that had not secured a sufficient degree of immunity, a category which, of course, included the Mamlûks. The local inhabitants having become immune after many generations, were affected to a far lesser extent": Neustadt (Ayalon), "The Plague and the Mamlûk Army" (n. 5), p. 69. Dols also suggests—albeit with a fair degree of ambivalence—the possibility that Mamlūks who had been in Egypt for a significant period of time "may previously have been exposed to plague infection and gained a sufficient degree of immunity to withstand its recurrences": Dols, *Black Death* (n. 3), p. 188. For an extended discussion of the unlikely possibilities of immunity to plague, see Conrad, "Plague in the Early Medieval Near East" (n. 9), pp. 20–38. For the most recent general account of current medical and epidemiological thinking about plague, see Hugo Kupferschmidt, *Die Epidemiologie der Pest: Der Konzeptwandel in der Erforschung der Infektionsketten seit der Entdeckung des Pesterregers im Jahre 1894* (Aarau: Sauerländer, 1993).

33. Başbakanlık Osmanlı Arşivi, (Istanbul), Cevdet Dahiliye, 1722 (n. 23). This document is an Ottoman Turkish firman sent to the provincial seat of Cairo from the imperial center of Istanbul.

34. Dols, "Second Plague" (n. 4), p. 183; idem, *Black Death* (n. 3), p. 35.

include areas of central Asia, Kurdistan, central Africa, and northwestern India, where the disease is permanently maintained among rodent populations.[35] Plague came to Egypt from these and other places through the movement of goods, rats, fleas, and people.[36] As one American observer resident in Cairo at the end of the eighteenth century noted, "I could never find sufficient ground to ascertain that the plague ever broke out in Egypt, without being brought thither from other parts of Turkey [the Ottoman Empire]."[37] Indeed, the arrival of hundreds of ships and caravans every week from places like Istanbul, India, Yemen, the Sudan, China, central Africa, and Iraq ensured a consistent flow and constantly replenished supply of goods, people, and vermin in Egypt. The two main entry points of the disease were the major trading areas of Egypt: its Mediterranean ports and the southern route from the Sudan.[38] Thus, plague either entered Egypt through the ports of Alexandria and Rosetta before making its way further inland or traveled from central Africa to the Sudan and then into Egypt. Raymond suggests that the plague of 1791 entered Egypt from its Mediterranean ports, most likely from ships coming from Istanbul.[39]

Yet most seventeenth- and eighteenth-century Egyptians did not concern themselves with whether plague was endemic to Egypt.[40] What mattered

35. Because these endemic foci of plague cover huge geographical areas of sparse human and vast rodent populations, the complete eradication of plague remains unlikely. On this point, see idem, "Second Plague" (n. 4), p. 178; Conrad, "Plague in the Early Medieval Near East" (n. 9), pp. 6–7.

36. Dols, "Plague in Early Islamic History" (n. 9), p. 381; Raymond, "Grandes Épidémies" (n. 1), pp. 208–9. My discussion of the relationships between the movements of people and goods and the spread of plague is informed by the following: William H. McNeill, *Plagues and Peoples* (Garden City: Anchor Press/Doubleday, 1976); Janet L. Abu-Lughod, *Before European Hegemony: The World System A.D. 1250–1350* (New York: Oxford University Press, 1989).

37. Antes, *Manners and Customs* (n. 20), p. 39.

38. Raymond, "Grandes Épidémies" (n. 1), pp. 208–9; Dols, "Second Plague" (n. 4), pp. 179–80. Dols compiled a list of plagues that came to Egypt and North Africa from Sudan and central Africa on the basis of Georg Sticker, *Abhandlungen aus der Seuchengeschichte und Seuchenlehre* (Giessen: A. Töpelmann, 1908–12). For more on plague in the Sudan, see Terence Walz, *Trade between Egypt and Bilād as-Sūdān, 1700–1820* (Cairo: Institut Français d'Archéologie Orientale du Caire, 1978), pp. 200–201.

39. Raymond, "Grandes Épidémies" (n. 1), pp. 208–9.

40. Discussions among nineteenth-century European physicians about the endemic nature of plague in Egypt are relevant here. The main antagonists in this debate were Etienne Pariset, Permanent Secretary to the French Academy of Medicine, who came to Egypt in 1827 to study plague, and Clot Bey, a French surgeon and physician who was brought to Egypt by Muḥammad ʿAlī to organize the Egyptian army's medical division and who helped to establish the Egyptian School of Medicine in 1827. Pariset ascribed to the cadaveric virus theory and postulated that Egypt did not suffer from plague during the ancient period because of

most was that plague *functioned* as though it were endemic. Although it was not epidemiologically endemic, plague was historically endemic in Egypt because of the consistency of its incidence and, more important, because it functioned as a regular force in the Egyptian environment, similar to famine, flood, and drought. For their part, many European observers considered Egypt to be the so-called "cradle of the plague."[41] It came to Egypt on a regular basis and was a consistent feature of the Egyptian environment. Whether a particular epidemic's origins lay in Kurdistan or the Sudan did not affect the ultimate outcome of the disease on the Egyptian population. Interestingly, though, al-Jabartī seems to subscribe to the notion that plague was somehow endemic to Egypt, or, more specifically, that it was present in the soil of the land. Thus, during the French occupation of Egypt between 1798 and 1801, al-Jabartī concurred with French views about the etiology of plague in Egypt. "They say that putridity or rottenness (*al-ʿufūna*) pollutes the depths of the ground. If winter arrives and the underground becomes cooled due to the flow of the Nile, rain, and humidity, the putrid vapors that had been trapped in the ground emerge and pollute the air, causing epidemics and the plague (*al-wabā' wa al-ṭāʿūn*)."[42] al-Jabartī's explanations of the causes of plague in Egypt

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Pharaonic embalming practices and because corpses were entombed outside of the Nile's flood plain. Plague came to Egypt, he claimed, in the Christian era, when embalming was replaced with burial. Moreover, he described the Egyptian Delta as the world's largest area of warm and humid land filled with decaying animal matter. For his part, Clot Bey believed that plague was endemic to Egypt. This belief contributed to his anti-contagionist stance on plague, which he dramatically demonstrated when he inoculated himself several times with the blood of plague victims without falling ill. For more on Clot Bey's views on plague in Egypt, see Antoine Barthélemy Clot Bey, *De le peste observée en Égypte: recherches et considerations sur cette maladie* (Paris: Fortin, Masson, 1840). For a more general discussion of the European debate about plague in Egypt, see LaVerne Kuhnke, *Lives at Risk: Public Health in Nineteenth-Century Egypt* (Berkeley: University of California Press, 1990), pp. 70–71 and 87–88.

41. Kuhnke, *Lives at Risk* (n. 40), p. 70; J. Worth Estes and LaVerne Kuhnke, "French Observations of Disease and Drug Use in Late Eighteenth-Century Cairo," *J. Hist. Med. Allied Sci.,* 1984, *39*: 123. There were, of course, differing opinions on this point. John Antes writes that "I think Egypt cannot, with any truth, be called the mother of the plague": Antes, *Manners and Customs* (n. 20), p. 41; see also pp. 36–37. Ibn al-Wardī writes of plague beginning "in the land of darkness," which Dols (citing Alfred von Kremer) identifies as "northern Asia": Dols, "Ibn al-Wardī" (n. 3), p. 448. He then goes on to trace the disease's course from China and India, through Sind and the land of the Uzbeks, to Persia and the Crimea, and finally into Rūm, Egypt, Syria, and Palestine (ibid., pp. 448–53). The Mamlūk Egyptian chronicler al-Maqrīzī and others also place the origins of plague in a vague "East" or in parts of Mongolia. For more on these accounts, see Borsch, *Egypt and England* (n. 9), pp. 4–5; Dols, *Black Death* (n. 3), pp. 35–42.

42. al-Jabartī, *ʿAjā'ib al-Āthār* (n. 13), vol. 4, p. 322.

suggest both the persistence of the miasmatic theory of disease causation and the perception that plague was somehow natural to, endemic in, or constitutive of Egypt.

Demographic Effects

Despite the existence of multiple descriptions of plague, determining its demographic effects is difficult.[43] A corollary of the noted preference for the study of plague during the medieval period and during the nineteenth century is the fact that we have very few studies of the Egyptian population at the end of the eighteenth century and during the period of Ottoman rule more generally.[44] Furthermore, the Egyptian chroniclers' reports cited earlier in this article claiming that 1,000, 1,500, or 2,000 people died every day of plague are likely incorrect and difficult to interpret.[45] Indeed, these descriptions seem to raise more questions than they answer.[46] How were these figures determined? For how many days did this same number of people die? What were the relative mortality rates in cities and the countryside? Were these figures symbolic rather than statistical numbers meant to express the severity of a given outbreak? André Raymond suggests that the massive amount of death brought about by recurring plague epidemics in the seventeenth and eighteenth centuries in Egypt and elsewhere in the Middle East was a contributing factor in the ascendancy of Europe over the Middle East in the nineteenth century.[47] Raymond estimates

43. In Dols's words, "What we cannot judge accurately is the severity of the major plague epidemics from the late fifteenth to the late eighteenth centuries in the Middle East . . . Therefore, we cannot propose, as we have done in the earlier period, a significant demographic effect of these epidemics": Dols, "Second Plague" (n. 4), pp. 176–77.

44. For statistics on and discussions of the demographic effects of the Black Death in Egypt, see Dols, *Black Death* (n. 3), pp. 143–235; idem, "General Mortality" (n. 9); Borsch, *Egypt and England* (n. 9), pp. 40–54. Studies of the demographic effects of the plague on nineteenth-century Egypt include Panzac, *Peste* (n. 1), pp. 231–78 and 339–80; Kuhnke, *Lives at Risk* (n. 40), pp. 84–86. For a critical discussion of plague mortality statistics, see Conrad, "Plague in the Early Medieval Near East" (n. 9), pp. 415–47.

45. By way of comparison with reported plague deaths reaching 1,000 to 2,000 a day, take, for example, the records of French doctors who tracked plague deaths during the French occupation of Egypt from 1798 to 1801. They recorded plague deaths on an order of approximately 500 to 800 deaths per month, with the total number of deaths surpassing 1,000 for only four of twenty-nine reported months: Panzac, *Peste* (n. 1), p. 346.

46. For a discussion of the veracity of mortality figures as cited in Mamlūk chronicler reports, see Neustadt (Ayalon), "The Plague and the Mamlûk Army" (n. 5), pp. 68–71.

47. Raymond, "Grandes Épidémies" (n. 1), pp. 209–10. Whether this conjecture is indeed true remains to be fully proven; yet it is a point made by numerous authors. See, for example, Borsch, *Egypt and England* (n. 9), pp. 113–17.

that the plague of 1623–26 killed close to 300,000 Egyptians. The same number died during the 1718 epidemic, representing close to an eighth of the entire Egyptian population at that time. Daniel Panzac reports that the plague of 1784–85 killed anywhere from 30,000 to 40,000 of Cairo's 300,000 inhabitants and that the plague of 1791 claimed the lives of a fifth of the 300,000 people inhabiting Cairo that year.[48]

The Flood before the Plague

During the fall of 1790, before the plague's attack in the spring of 1791, an unusually large amount of rainfall in Egypt caused many parts of Cairo to flood. In characteristically hyperbolic style, al-Jabartī describes this large rainfall as the result of one enormous deluge.[49] On the night of 14 October 1790, the skies above Cairo filled with clouds and soon opened and poured water over the city, "as if from the mouths of waterskins" (*ka-afwāh al-qirab*).[50] Accompanying this rain were continuous claps of thunder and lightening powerful enough to blind all those who saw it. The rains continued for the entire day, rushing down off the mountains and filling the desert outside the city's walls. al-Jabartī notes that the waters destroyed tombs and graves and caused houses to collapse, killing those trapped inside.

As if all of this had not been disastrous enough, this saturated Friday coincided with the return of pilgrims to Cairo from the annual pilgrimage to Mecca and Madina. Returnees were cruelly welcomed to the city with floods that carried away "the pavilion of the *Amīr al-Ḥajj* with all that was inside of it" (*ṣīwān amīr al-ḥajj bimā fīhi*).[51] The waters had by this time entered the city and flooded its numerous *wakāla*s (storage facilities for grains and other foodstuffs), caravanserais, and mosques. Businesses, residences, and even entire neighborhoods were destroyed. For example, more than half of the houses in the district of al-Ḥusayniyya were swept

48. Panzac, *Peste* (n. 1), p. 361. André Raymond writes that the population of Cairo when the French expedition arrived in 1798 was 260,000: André Raymond, "La population du Caire et de l'Egypte à l'époque ottomane et sous Muhammad Ali," in *Mémorial Ömer Lûtfi Barkan* (Paris: Libraire d'Amérique et d'Orient Adrien Maisonneuve, 1980), pp. 169–78. For a comparison of Egypt's plague mortality figures with Milan, Aleppo, Izmir, Marseille, and other cities during the seventeenth, eighteenth, and nineteenth centuries, see Panzac, *Peste* (n. 1), pp. 353–62; idem, *Quarantaines et lazarets: l'Europe et la peste d'Orient (XVIIe–XXe siècles)* (Aix-en-Provence: Édisud, 1986), p. 12.

49. al-Jabartī, *'Ajā'ib al-Āthār* (n. 13), vol. 4, pp. 129–30.

50. Ibid., p. 129.

51. Ibid., p. 130. For more on the gathering points of pilgrims in Cairo, see Antes, *Manners and Customs* (n. 20), p. 69.

away, and we are told that a huge lake was created in and around the city.[52] al-Jabartī ends his account with the simple statement that "this was a most terrible affair" (*wa kāna amran muhawwilan jiddan*).[53]

Whether this flooding occurred as the result of one deafening deluge or merely a steady rain is ancillary to the result: significant destruction of the city and its resources.[54] As in years in which the Nile flooded far beyond its banks, the waters of 1790 likely destroyed vast areas of agricultural land in and around Cairo and its hinterland.[55] This meant a significantly lower amount of food production for the coming harvest season. And more destructive than even an excessive flood season, the torrential rains of 1790 destroyed stored grain supplies in the markets and *wakāla*s of Cairo. This doubly magnified the danger for the coming year in and around Cairo, since both fields and grain supplies were washed away. The population thus likely experienced food shortages and even famine, weakening its resistance to and resolve against any disease. That plague is preceded by famine is commonly observed throughout the history of plague epidemics in the Middle East and elsewhere.[56]

The second result of the floods in Cairo was the movement of thousands of rats seeking refuge. Although most species of rat do swim, these rodents—much like humans—seek out dry areas to escape rushing water.[57] In the fall of 1790, therefore, rats and humans were competing for space in areas of Cairo that had not been damaged by the flood waters

52. A useful comparison with the rains of 1790 is Antes's description of the rains and flooding in Cairo in 1771. "It once happened, during my abode, in November 1771, that heavy showers of rain, accompanied with some thunder and lightning, followed one another for five successive nights, though it did not rain in the day time . . . Some houses fell down on that occasion, and several lives were lost": Antes, *Manners and Customs* (n. 20), p. 99.

53. al-Jabartī', *'Ajā'ib al-Āthār* (n. 13), vol. 4, p. 130.

54. For a discussion of precedents of this sort of damage from rain in Mamlūk Egypt, see Tucker, "Natural Disasters" (n. 1), pp. 216–17.

55. On this point, Antes writes, "Sometimes the river rises so rapidly, and to such a height, that all their [peasants'] endeavours are in vain, and all such vegetables are destroyed": Antes, *Manners and Customs* (n. 20), p. 72.

56. For instance, in 638 or 639, the plague struck Syria, killing at least 25,000 soldiers and countless others. Important for our purposes here is the observation that this instance of plague was preceded by a severe famine, which likely, as in the plague of 1791 in Egypt, weakened the population, making them all the more vulnerable to infection. Dols, "Plague in Early Islamic History" (n. 9), p. 376. See also Tucker, "Natural Disasters" (n. 1), pp. 217–19.

57. For more on the physical attributes and abilities of rats, see the classic study on typhus: Hans Zinsser, *Rats, Lice and History, Being a Study in Biography, which, after Twelve Preliminary Chapters Indispensable for the Preparation of the Lay Reader, Deals with the Life History of Typhus Fever* (London: George Routledge and Sons, 1935), pp. 197–204.

drenching the city.[58] Rats sought refuge in the hatched roofs of homes, in homes themselves, and in other protected areas. In the countryside along the Nile, the flood caused rats and their fleas to escape from areas near the river, like fields and embankments, to search for higher ground.[59] When the Nile flooded and then receded quickly, the Egyptian countryside was especially susceptible to the dangers of rodent and insect infestation. As Antes—the American resident in Egypt at the time—notes, "Should it [the Nile] happen to rise suddenly to a very great height, but not remain long enough to soak the fields sufficiently, it will not be a fertile year, and other bad consequences may likewise follow if it leaves the fields too soon, before the air begins to cool, for many sorts of vermin will breed in the ground which are pernicious to some kinds of vegetables."[60] Although rats and humans did often share the same dry, protected spaces, rats usually hid in dry places that humans could not or did not enter, thus allowing them ample space in which to breed. As the waters receded and people returned to their dwellings, they encountered a large concentration of rats—as well as fleas and other insects—feasting on the contents of numerous unearthed graves and a great quantity of wet food left by the flood. Indeed, "the plague flea, *Xenopsylla cheopis*, breeds most freely and lives longest in the debris of cereals."[61] Thus the flood caused rats, fleas, and humans to come into much closer proximity than they normally would have.[62]

Types of Plague

This proximity is a key factor in the etiology of plague, since the primary vectors of plague transmission in humans are rats and the fleas associated with them.[63] As long as the rat population in a particular area is large

58. On the competing histories of man and rat, Zinsser writes, "Like man—the rat is individualistic until it needs help. That is, it fights bravely alone against weaker rivals, for food or for love. . . . The natural history of the rat is tragically similar to that of man" (ibid., pp. 196 and 207).

59. Conrad, "Plague in the Early Medieval Near East" (n. 9), p. 35.

60. Antes, *Manners and Customs* (n. 20), p. 69.

61. Dols, *Black Death* (n. 3), p. 163.

62. Dols makes a similar point about the proximity of humans and rats in the plague epidemic of 638 or 639 in Syria: idem, "Plague in Early Islamic History" (n. 9), p. 376.

63. For more on the epidemiology, pathology, and etiology of plague, see Conrad, "Plague in the Early Medieval Near East" (n. 9), pp. 4–38; Dols, *Black Death* (n. 3), pp. 68–83; and Borsch, *Egypt and England* (n. 9), pp. 2–8. For the most recent works, see Kupferschmidt, *Die Epidemiologie der Pest* (n. 32) and Graham Twigg, *The Black Death: A Biological Reappraisal* (London: Batsford, 1984). The standard works nevertheless remain Pollitzer, *Plague* (n. 32), and L. Fabian Hirst, *The Conquest of Plague: A Study of the Evolution of Epidemiology* (Oxford: Clarendon Press, 1953).

enough to support a sizeable flea population, plague will survive. The disease exists in the blood of an infected rodent, and when this rodent is bitten by a flea, the flea ingests blood infected with plague bacilli. These bacilli create a blockage in the digestive tract of the flea, preventing the passage of any blood. When the flea attempts to consume blood to feed its appetite by biting another rat, the blood of the healthy animal comes into contact with the bacilli wall and is thus infected. Because of the bacilli blockage in its digestive tract, the flea then regurgitates this newly infected blood back into the animal, thereby infecting the formerly healthy rodent. When the rat population begins to die from the plague, fleas seek out new hosts. Very commonly, especially in situations of close proximity like the ones described above, these hosts are human. It is through this process, then, that plague moves from rats to humans.

When infected blood enters the human blood stream, bacilli rapidly multiply. Lymph glands filter plague bacilli from the blood, and these bacilli accumulate in the glands where they continue to multiply, thus producing the characteristic buboes on the neck or groin associated with plague.[64] This version of the disease is known as bubonic plague. The buboes of bubonic plague cause intense pain, and the combination of this pain with high fever (40–42°C) often leads either to bouts of unconsciousness or to dementia, hallucinations, and hysteria. It is not uncommon for victims of bubonic plague to commit suicide or extreme acts of violence or assault on others.[65] If the bacilli settle in the lungs rather than in the lymph glands, the afflicted person is said to have pneumonic

64. Arab physicians and observers of plague used many different sorts of terms to describe plague buboes. Some of these included "the cucumber," "the almond," "the pustule," "grains," and "blistering." For more on the terminology used for plague buboes, see Dols, *Black Death* (n. 3), pp. 75, 77–79, and 316–19.

65. One such case of apparent hysteria followed by suicide is recounted about the plague of 1735 in Cairo. This year's plague was known as the *kaw* (or possibly *kū*) plague because of the curious actions of a certain black slave. With the coming of the plague, this man ran around the market naked screaming the meaningless word *kaw* (or *kū*) before throwing himself into a pit of fire (*jūrat nār*) and dying: al-Khashshāb, *Akhbār Ahl al-Qarn al-Thānī 'Ashar* (n. 13), p. 58. This plague was also known for its severity, as it killed 120 people in the household of 'Uthmān Katkhudā al-Qāzdughlī alone and as it forced undertakers to work long into the night burying the dead. In addition to being known as the *kaw* (or *kū*) plague, al-Jabartī relates that it was called "the hindering impediment that takes one easily" (*al-faṣl al-'ā'iq ya'khudh 'alā al-rā'iq*): al-Jabartī, *'Ajā'ib al-Āthār* (n. 13), vol. 2, p. 12. al-Shalabī also chronicles this plague, reporting that twenty-three members of the al-Dhahabī family died during the epidemic. His account is also noteworthy because it documents that the people of Cairo were amazed by the fact that this plague occurred in the winter: al-Shalabī, *Awḍaḥ al-Ishārāt* (n. 13), p. 607.

plague. Unlike bubonic plague, the pneumonic version of the disease is highly contagious, as it moves easily from person to person—without an intermediary like the flea—through airborne droplets of sputum coughed or sneezed by an infected person. The death rate from pneumonic plague also exceeds that from the bubonic variety of the disease. The septicaemic version of plague, in which bacilli attack primarily the victim's blood, is the most virulent and quickest to kill.[66] The course of the disease is so rapid that buboes do not have time to form, and victims often die only hours after the onset of the disease. Because septicaemic plague exists in the blood, it is the only form of plague that can be transferred via fleabite from human to human without the need for an infected rat intermediary.[67]

Egyptian chroniclers do not directly address the epidemiological character of the 1791 plague. Nevertheless, enough evidence exists to suggest that this episode was bubonic rather than pneumonic or septicaemic. Although al-Jabartī's account states that plague victims were not feverish and that they died in a matter of two or three days, which is suggestive of pneumonic plague, he goes on to describe a situation in which the sick, the dead, and the living were all together in very close proximity.[68] He tells of those going to visit the sick and those caring for the sick in their own homes and relates that despite the close interaction between amīrs and their wives, only the former died of plague, while the women themselves did not fall ill with the disease.[69] If the 1791 plague had indeed been pneumonic, then all of the uninfected would soon have contracted the disease because of their close interactions with the sick. Victims of pneumonic plague often experience violent coughing spells, and a simple cough or sneeze would have been enough to infect a healthy person in close proximity to a victim of pneumonic plague. Since al-Jabartī makes no mention of whole families and neighborhoods being wiped out by the plague, and because he shows at some length how the healthy interacted with and cared for the sick, it seems likely that the 1791 plague was bubonic.

Likewise, John Antes describes a similar situation of intimate proximity and contact between plague victims and their caretakers at the end of the eighteenth century. "It [plague] perhaps takes one or two only out of twelve, fifteen, or more, and those sometimes die in the arms of others,

66. On septicaemic plague, see Twigg, *A Biological Reappraisal* (n. 63), p. 19; Hirst, *The Conquest of Plague* (n. 63), p. 29; and Pollitzer, *Plague* (n. 32), pp. 439–40.

67. Other kinds of plague include the tonsillar and the vesicular varieties. For a discussion of these and other types of plague, see Dols, *Black Death* (n. 3), pp. 73–74; Borsch, *Egypt and England* (n. 9), p. 4; and Hirst, *The Conquest of Plague* (n. 63), p. 30.

68. al-Jabartī, *'Ajā'ib al-Āthār* (n. 13), vol. 4, p. 133.

69. Ibid., p. 140.

who, with all the rest, escape unhurt. There are instances of two people sleeping in one bed, one of whom shall be carried off by it, and the other remain unaffected."[70] Antes's descriptions of the behavior of other Europeans resident in Egypt also suggest that this episode of plague was less contagious. For instance, the Friars de Propaganda Fide stationed in Cairo "always appoint two of their number to visit the sick, and to administer extreme unction to those of their persuasion who are dying: and it happens but seldom, that any of these visitors die of the plague, which constantly inclines them to make a miracle of it."[71] Antes also tells us that a Venetian doctor in Cairo regularly visited plague victims but was never stricken with the disease himself.[72] As a strong proponent of quarantine as the only suitable means to protect effectively against plague, Antes seeks to find an explanation of why these Europeans never fell ill with plague.[73] He finds his answer in the fact that these men drank a large quantity of brandy before visiting plague victims. Brandy, so it seems, "supplies . . . what a great degree of heat would naturally do. A timorous person, who is in constant fear and apprehension, will be much more liable to have it [plague]. It is well known that fear acts the contrary way, and will prevent or obstruct perspiration [brought on by heat]."[74] In even more explicit terms, Antes confirms that the plagues he witnessed in Egypt at the end of the eighteenth century were indeed bubonic. He writes that "there are buboes in the arm-pits, or the soft part of the belly, with a few dark purple spots, or carbuncles, on the legs. When the buboes break, and discharge a great deal of matter, such patients may chance to recover. . . . The sick commonly complain of intolerable heat, and say they feel as if thrown into a fire."[75] Furthermore, most historians of plague note that the most common form of plague in Egypt was of the bubonic variety.[76] Dols even

70. Antes, *Manners and Customs* (n. 20), p. 42.

71. Ibid., p. 47.

72. Ibid.

73. On his beliefs that quarantine is the means by which plague must be treated, Antes writes, "I, for my part, find no reason to doubt that, if it were possible to make all nations, and all individuals of nations, perfectly sensible of the importance of a strict quarantine, and of destroying every thing coming from people and persons infected with the plague, this dreadful disorder might, with many others of the infectious kind, be banished out of the world" (ibid., p. 52). For more on Antes's ideas concerning quarantine, see ibid., pp. 33–36.

74. Ibid., p. 48. As will be discussed later in this article, heat was thought to be a common antidote to the plague.

75. Ibid., p. 42.

76. Dols, "Second Plague" (n. 4), pp. 176–77 and 182–89; Kuhnke, *Lives at Risk* (n. 40), p. 72.

suggests that pneumonic plague disappeared from the Middle East in the second half of the fifteenth century.[77]

Nevertheless, one noteworthy pocket of pneumonic plague was known to exist in Egypt around the southern city of Asyūṭ. LaVerne Kuhnke explains this singular anomaly of pneumonic plague in Asyūṭ as a product of late nineteenth-century Egyptian and British efforts to expand the irrigation network in the south of Egypt, which unwittingly created a permanent population of rats and fleas. Extreme aridity, she continues, further irritated the respiratory faculties of those in southern Egypt, thereby increasing their susceptibility to pulmonary infection. In addition, men returning to their home villages from Egypt's Mediterranean port cities likely carried plague with them, and housing in these villages was also usually cramped. These factors combined to create a situation ripe for the spread of plague.[78]

Yet Kuhnke's explanation for the presence of pneumonic plague in and around Asyūṭ does not adequately explain the phenomenon. Evidence suggests that Asyūṭ and southern Egypt were home to pneumonic plague long before the end of the nineteenth century. al-Jabartī, for instance, includes in his chronicle a letter from his friend and associate, Ḥasan al-'Aṭṭār, who was present in Asyūṭ in May 1801 during an especially virulent plague epidemic.[79] al-'Aṭṭār's letter states that this unprecedented plague killed more than 600 people everyday in Asyūṭ alone and that it "exterminated most of the people of the region" (*wa innahu abāda mu'ẓam ahl al-bilād*).[80] Although we do not know conclusively whether this plague in May 1801 was pneumonic or bubonic, given the almost certain fatality of pneumonic plague and the stated severity of this plague in Asyūṭ, this plague was in all likelihood pneumonic. This seems all the more probable because even during the period of the Black Death, "pneumonic plague was far more frequent in the south than in the north."[81] The exceptionally mild temperatures of Asyūṭ, along with its large rat and flea populations, contributed to the plague's historically endemic character in this city.[82]

77. Dols, "Second Plague" (n. 4), p. 182.

78. Kuhnke, *Lives at Risk* (n. 40), pp. 72–73 and 200–201, n. 16.

79. al-Jabartī, *Ajā'ib al-Āthār* (n. 13), vol. 5, pp. 241–42.

80. Ibid., p. 241. Mention is also made of this plague in Panzac, *Peste* (n. 1), p. 284.

81. Dols, *Black Death* (n. 3), p. 60, n. 92.

82. Kuhnke herself concedes as much in her discussion of plague in Asyūṭ: Kuhnke, *Lives at Risk* (n. 40), p. 73.

The Famine after the Plague

If the causes of the 1791 plague are to be found in an excess of water, its effects in the form of the continuing hardship of Egyptians at the end of the eighteenth century are to be found in a dearth of water. On 21 August 1791, the Nile crested.[83] Every year, at the cresting of the Nile, the Ottoman government of Egypt undertook a series of celebrations associated with the event that culminated in the breaking of a dam constructed at the mouth of an artificial canal in Cairo known as *al-Khalīj*.[84] This dam was erected every year to prevent water from flowing into the canal except during the flood season. When the Nile's waters crested, the dam was broken to great fanfare as water then rushed through the canal into Cairo, symbolically inaugurating the yearly flood and the beginning of the agricultural year.[85] Although an event of great joy, this ceremony could also be a harbinger of hard times ahead, for a lower or higher than expected flood would mean famine and death for many Egyptians. This was exactly the case in 1791. After the breaking of the dam, people soon realized that the flood waters of that year were quite meager. As al-Jabartī writes, "the flood stopped and did not increase after the inundation except for a small amount . . . The people clamored."[86]

That year's flood was indeed much lower than average. As in instances of excessive flooding (like the kinds experienced in 1790), a poor inundation meant food shortages, famine, and death. These effects were even more acute in the late summer and fall of 1791 because of the ravages of plague that had taken place earlier that year. The population of Cairo and other parts of Egypt was already suffering from a lowered resistance and, hence, greater susceptibility to plague because of the floods of 1790. When plague hit Egypt in 1791, the stage was thus set for a very bad epidemic. By the end of 1791, then, the next phase in the cycle of Egypt's plague pathology occurred—namely, that after floods and plague come drought and famine.[87] The combination of flood in the fall of 1790, plague in the

83. al-Jabartī, *'Ajā'ib al-Āthār* (n. 13), vol. 4, pp. 141–42.

84. On this waterway, Antes writes, "The remaining water is horribly corrupted, by the filth thrown in from the adjoining houses, and the great number of necessaries that empty themselves into it, which occasions a most abominable stench for several months of the year, tarnishing in a short time even gold and silver in the houses near it": Antes, *Manners and Customs* (n. 20), p. 38.

85. For a description of the function and importance of these festivities in Fatimid Cairo, see Paula Sanders, *Ritual, Politics, and the City in Fatimid Cairo* (Albany: State University of New York Press, 1994), pp. 99–119.

86. al-Jabartī, *'Ajā'ib al-Āthār* (n. 13), vol. 4, pp. 141–42.

87. For a discussion of the relationship between famine and plague in Mamlūk Egypt, see Tucker, "Natural Disasters" (n. 1), pp. 217–19. Instructive also on this point is Elisabeth

spring of 1791, and drought in the fall of 1791 resulted in widespread famine, severe price inflations, and massive death. Indeed, as al-Jabartī tells us, later in 1791 irrigation canals dried up and fields became parched because they did not receive adequate amounts of water.[88]

As fields dried out, crops began to wither and die. Peasants worried and prepared for the onset of famine. The poor harvest meant an increase in grain prices for that year and the corollary: revolts and agitations by peasants and the poor against these increased prices for basic foodstuffs and against their rulers (*ḍajjat al-fuqarā' wa 'ayyaṭū 'alā al-ḥukkām*). In November and December 1791, Egyptian authorities began to seize the properties and lands of merchants and peasants, ostensibly to relieve the economic pressures brought about by plague and famine.[89] Drought continued through these months and into January 1792. al-Jabartī writes that "not one drop of water fell from heaven" (*lam yanzil min al-samā' qaṭrat mā'*).[90] Some peasants did their best to farm the lands that seemed salvageable, but when they plowed, they found only worms and rats. These vermin competed among themselves and against their human rivals for fruits and the precious few crops that were grown in the fields that year. Many people had to make do with weeds, and the cattle had no spring feed.

The information from al-Jabartī about this state of affairs in the countryside of Egypt confirms the presence of a large rural rat population in 1791.[91] As stated earlier, this presence was essential for the movement and tenacity of plague during this period.[92] Famine also meant that rats and humans became veritable competitors for the stored grains of Cairo and the few crops growing in the fields outside the city.[93] As Dols eloquently notes, "Grain is the favorite food not only of this species of flea [*Xenopsylla*

Carpentier, "Autour de la Peste Noire: famines et épidémies dans l'histoire du XIVe siècle," *Annales,* 1962, *17*: 1062–92.

88. al-Jabartī, *Ajā'ib al-Āthār* (n. 13), vol. 4, p. 197.

89. Ibid., p. 199.

90. Ibid.

91. For more on the presence of rodents in the Egyptian countryside, see Antes, *Manners and Customs* (n. 20), pp. 85–86.

92. On the absence in Arabic plague treatises of any association between the pathology of plague and rodent populations, see Dols, "al-Manbijī's 'Report of the Plague'" (n. 9), p. 71.

93. Although in reference to the relationship between the people of Cairo and Cairo's bakers, the following popular verse aptly reflects how hardship often made humans take on the character of rats: "In the past I resembled a lion, devouring raw meat, / But now I have turned into a nibbling rat." This verse is included in the chronicle of the late Mamlūk and early Ottoman writer Ibn Iyās: Boaz Shoshan, "Grain Riots and the 'Moral Economy': Cairo, 1350–1517," *J. Interdiscip. Hist.,* 1980, *10*: 459–78, on p. 474.

cheopis], but also of the domestic rat and of man. The staff of life was perversely the scepter of death during plague epidemics."[94]

This cycle of flood, plague, drought, famine, price inflation, and death in Egypt suggests that there was a kind of cyclical pathology to the economy that functioned alongside the ecological pathology of plague in Egypt.[95] As foodstuffs decreased, prices and the severity of official measures to secure adequate supplies for the powerful and for the military increased.[96] In response, there were numerous instances of agitations, complaints, and small-scale revolts by peasants and merchants sparked by these official actions. For example, when Mūrad Bey and his amīrs—the same group of soldiers who married the wives of those men who died during the plague—entered Cairo in July 1791, grain prices began to soar.[97] Because of the low Nile and the weakness of the population (*ḍa'f al-nās*) from plague and hardship, the amīrs began to seize grains for themselves and their entourage. Their cruelty was proven when one of them attempted to extract an unjustly large sum from a village outside of Cairo. A revolt broke out in Cairo and in the village itself in response to this draconian move on the part of one of Mūrad Bey's amīrs. The villagers refused to pay, and the *'ulamā'*[98] denounced the amīr's illegal actions. A violent struggle between the amīr and the villagers soon ensued but was brought to an end when Mūrad Bey, fearful that unrest might spread, reined in his amīr and apologized to the *'ulamā'* and the villagers.

The relationship between the city of Cairo and rural villagers during plague epidemics serves to highlight yet again the importance of urban grain reserves during times of want. The phenomenon of rural depopulation was a common one during plague epidemics and the famines that usually accompanied them, as peasants from the Egyptian countryside fled their lands in search of food and work.[99] The flight of rural labor thus exacerbated the hardships brought on by food shortages—the very problem from which peasants were escaping. Thus, ironically, "in time

94. Dols, *Black Death* (n. 3), p. 163.

95. Suggestive of a similar concept is Ira Lapidus's use of the phrase "economic geography of Egypt": Ira M. Lapidus, "The Grain Economy of Mamluk Egypt," *J. Econ. Soc. Hist. Orient,* 1969, *12*: 1–15, on p. 13.

96. For another example of the relationship between food shortages and price increases during plague epidemics, see Dols, "al-Manbijī's 'Report of the Plague'" (n. 9), p. 71.

97. This account is related in Khashshāb, *Akhbār al-Amīr Murād* (n. 13), pp. 33–34.

98. Members of the elite classes of Muslim religious scholars.

99. Dols, *Black Death* (n. 3), pp. 154–69. On the movement of the civilian population during plague epidemics in the Mamlūk period, see Neustadt (Ayalon), "The Plague and the Mamlûk Army" (n. 5), p. 72.

of famine, peasants actually came to Cairo in search of food rather than the reverse."[100] In addition to food, cities like Cairo also offered peasants access to physicians, healers, and religious institutions.[101]

The "Icy Gale of Death"

The consistent discursive trope of likening plague to a wind further suggests that plague was considered a part of the natural world of Egypt. For instance, al-Jabartī writes that the amīr Riḍwān Bey's candle was extinguished by a plague that came like "the icy gale of death" (*ṣarṣar al-mawt*).[102] Plague is elsewhere described as something that scatters the lives and possessions of its victims.[103] In the only eyewitness account of the Black Death in the Middle East, Ibn al-Wardī (who died of plague in Aleppo in 1349) likened plague to a cloud: "it eclipsed totally the sun of Shemsin and sprinkled its rain upon al-Jubbah. In al-Zababani the city foamed with coffins."[104] Later Ibn al-Wardī writes that "the air's corruption kills," an obvious reference to the then still-dominant miasmatic theory of disease causation.[105] As noted previously, the possibly pneumonic plague epidemic of 1801 powerfully affected the southern Egyptian city of Asyūṭ. Shaykh Ḥasan al-ʻAṭṭār, al-Jabartī's associate who was in Asyūṭ at the time, compared the plague to the winds that came and scattered the dried foods of the fields of southern Egypt.[106]

Perhaps the most important reason for the association of plague with wind is that, as in 1791, plague usually afflicted Egypt contemporaneously with the *khamāsīn*—the warm southerly winds that blew into Cairo every year in late spring and early summer.[107] These winds carry dust from the deserts south of Cairo and cover the city with sand, dust, and dirt. As one observer of the *khamāsīn* notes, "In spring it [the wind] often changes

100. Lapidus, "The Grain Economy" (n. 95), p. 8, n. 2; cited also in Borsch, *Egypt and England* (n. 9), p. 50. On the procurement, politics, and economy of grain in Mamlūk Egypt, see also Shoshan, "Grain Riots and the 'Moral Economy'" (n. 93), pp. 459–78.

101. Dols, *Black Death* (n. 3), p. 163; Tucker, "Natural Disasters" (n. 1), pp. 222–24; Borsch, *Egypt and England* (n. 9), pp. 49–50.

102. al-Jabartī, *ʻAjāʼib al-Āthār* (n. 13), vol. 4, p. 188.

103. Ibid., p. 192.

104. Dols, "Ibn al-Wardī" (n. 3), pp. 450–51. Ibn al-Wardī's account is written in rhymed prose (*sajʻ*). Its content, therefore, is to a large extent dictated by the need to conform to this literary form.

105. Ibid., p. 454.

106. al-Jabartī, *ʻAjāʼib al-Āthār* (n. 13), vol. 5, p. 242.

107. Ibrāhīm, *al-Azamāt al-Ijtimāʻiyya* (n. 1), pp. 72–75; Dols, "Second Plague" (n. 4), p. 181.

to south-east, and then it is of a whirling nature, filling the atmosphere with such quantities of sand and dust as to make it almost totally dark. I once remember being obliged to light a candle at noon on such a day, as the sky was at the same time covered with thick clouds."[108] The frequent contemporaneousness of the *khamāsīn* and plague caused many to think that plague, like dust and sand, was brought in these annual winds. For instance, Aḥmad al-Damurdāshī Katkhudā ʻAzabān draws a connection between the plague of 1690–91 and the *khamāsīn* that occurred at the same time. He writes that, like the winds of the *khamāsīn*, plague swept into Cairo filling the city's quarters and lanes (*al-ḥārāt wa al-aziqqa*) with dead bodies.[109] Elsewhere, we are told that plague diffused itself into Cairo and its surroundings, spreading all around the region during a period when the markets were covered with dust (*muʻaffara*).[110]

Climate and Plague

The so-called "season of plague" in Egypt—the period of greatest regular recurrence of plague in Egypt in any given yearly cycle—also usually coincided with the winds of the yearly *khamāsīn*, making the point once again that plague was part of a regular cycle of environmental phenomena that included famine, flood, drought, and so on.[111] In 1791, the plague epidemic began in late winter, seems to have been most deadly in the spring, and waned towards the middle of the summer. This pattern is the one most commonly observed for the course of plague in Cairo, which Panzac identifies as beginning in February, peaking in May, and dissipating towards its eventual end in July or August.[112] A more nuanced study of the "season of plague" in Egypt suggests a gradual movement of the disease from the south toward the Mediterranean.[113] Those plague epidemics that traveled from Upper Egypt (as the south is known) to

108. Antes, *Manners and Customs* (n. 20), p. 94. On wind in Egypt more generally, see ibid., pp. 93–99.

109. Aḥmad al-Damurdāshī Katkhudā ʻAzabān, *al-Durra al-Muṣāna* (n. 13), p. 29. Aḥmad al-Damurdāshī Katkhudā ʻAzabān, moreover, goes on to write that during this plague, one would wake to find ten new victims every morning. As in other plagues, there was also a shortage of corpse washers, and because of the great number of dead bodies, gravediggers were forced to work long into the night.

110. al-Jabartī, *ʻAjā'ib al-Āthār* (n. 13), vol. 5, pp. 138–39.

111. For a general discussion of the periodicity, timing, and seasonal incidence of plague in the Middle East, see Panzac, *Peste* (n. 1), pp. 195–227; Conrad, "Plague in the Early Medieval Near East" (n. 9), pp. 323–27; and Kuhnke, *Lives at Risk* (n. 40), p. 72–78. For a more general treatment of the subject, see Hirst, *The Conquest of Plague* (n. 63), pp. 254–82.

112. Panzac, *Peste* (n. 1), p. 223.

113. Kuhnke, *Lives at Risk* (n. 40), p. 201, n. 18.

Cairo seem to have occasioned much more fear among the population than those that originated in Egypt's Mediterranean ports. We read, for example, that "there is a saying among the people, that the plague, which was brought from Upper Egypt, was the most violent."[114] In Upper Egypt, plague began in March and ended in May. In the middle of the country, it began in April and ended in June. In the Egyptian Delta above Cairo, plague began in April and ended in July, and in Egypt's Mediterranean ports the disease began in May and ended in October. The reasons for this slow movement of plague from the south to the north were climatic, since temperatures rise first in the south and then move north as the country warms through the spring and into the summer. The ideal meteorological conditions for plague are temperatures between 20°C and 25°C with mild humidity, and these are precisely the conditions that move up the Nile valley from spring into summer, taking mild temperatures—along with plague—up the country. Moreover, fleas—the primary agents of plague transmission—are at their most active during the warm months of the spring and early summer.[115] The dry heat of the summer eventually makes Egypt unfavorable for the maintenance of plague and for fleas, with temperatures well above 27°C and humidity lower than 40 percent.[116] As Dols notes, "the change in climatic conditions in Cairo affected the etiology of plague, particularly with respect to the flea, and accounts for this seasonal variation."[117]

For his part, Antes also ascribes the disappearance of plague in Egypt to the increase in temperatures during the summer months.[118] To illustrate this point, he relates the following:

> In the year 1781, the plague broke out about the middle of April, and increased with such rapidity and virulence, that sometimes one thousand people died of it in one day at Grand Cairo; but, about the middle of May, the wind shifted to the east, which occasioned a few days violent heat, in consequence of which it immediately diminished; and though, as the weather became again cooler, the plague did not leave the country before the end of June, yet it never encreased to the same degree as before, but continued dwindling away, till it ceased

114. Antes, *Manners and Customs* (n. 20), p. 39. Although initially hesitant to believe such a statement, Antes later concedes "that traditions have often some truth in them" (ibid., p. 40).

115. Conrad, "Plague in the Early Medieval Near East" (n. 9), p. 326.

116. Panzac, *Peste* (n. 1), p. 225.

117. Dols, "Second Plague" (n. 4), p. 181.

118. Antes writes the following about the climate of Egypt: "There is scarcely a country on the globe, where the climate is so very regular as it is in Egypt . . . . The difference between the greatest degree of cold and the greatest, or, more properly, the most usual heat in summer, does not exceed thirty degrees, according to Fahrenheit's thermometer": Antes, *Manners and Customs* (n. 20), pp. 89 and 91.

> entirely when the summer heat became regular. It has always been observed in Egypt, that a great degree of heat, if even but for a few days, had this effect; but this time it was very remarkable.[119]

According to Antes, heat was also effective in curing those already afflicted with the disease. He often observed that plague victims arriving in Egypt from other parts of the Ottoman Empire during the summer months recovered after staying for only a few days. In cities like Istanbul and Izmir, he continues, plague was much more virulent, since heat was never as regularly intense as it was in Cairo. Moreover, Antes uses this evidence about the effects of heat on plague to argue against the notion, suggested by some, that plague was a putrid fever, since heat was thought to increase, not diminish, the severity of a putrid fever.[120]

Egyptians took 24 June as the date after which no plague could exist in Egypt due to the consistently hot temperatures of the summer.[121] This tradition was connected to several events celebrated annually by Egyptians, and especially by Copts, at the end of June. The first was the celebration of *al-Nuqṭa* (the drop) on 17 June, which commemorated the beginning of the yearly Nile flood season; it was also the Coptic festival of the Archangel Michael. It was believed that on this day the Archangel threw into the Nile one drop of holy water of such fermenting power that it made the river overflow its banks, thereby flooding the entire land of Egypt. On this day also, the Archangel commanded all other angels to cease striking the people of Egypt with plague, since it was believed that angels were sent by God to infect those intended as sacrifices. If by 24 June, the festival of Saint John, any angels were found to be still lurking about in search of humans to strike down with plague, they would have to face the heavenly consequences.[122] Thus, the end of the plague season in Egypt was considered to fall in mid-June between the start of the flood and the time when all angels were to cease infecting humans with plague.

Conclusion

Plague in late eighteenth-century Egypt owes the regularity of its outbreaks to Egypt's strategic location as a center of trade and to the many thousands of people—and rats—that came to Egypt every year from else-

119. Ibid., p. 44.

120. Ibid., pp. 44–45.

121. Ibid., pp. 43 and 67.

122. Kuhnke identifies 26 June as the date of the festival of Saint John and of "the death of the plague" in Egypt. For more on the celebrations of this day by Europeans and Egyptians, see Kuhnke, *Lives at Risk* (n. 40), p. 73.

where. Although plague was not epidemiologically endemic to Egypt, it was a historically endemic phenomenon that functioned in conjunction with other environmental and natural forces. Plague in late eighteenth-century Egypt was just one aspect of a regular biophysical pathology of the environment: the disease came and went as one iteration in a cycle that included famine, flood, drought, price inflation, wind, and revolt. Climatic factors, the level of the Nile's inundation, and relative populations of rats, fleas, and humans contributed to the incidence and severity of plague for any given year in Egypt.

I have argued here for the inclusion of plague in the study of the Egyptian environment alongside natural elements and forces such as flood, famine, wind, animals, and drought. Given my focus on the interactions between plague and nature in Egypt, questions emerge as to the relationship between plague and Egyptian society and culture during this same period. If, as I argue above, plague was indeed a regular part of the Egyptian environment, how did this regularity affect the ways Egyptians interacted with and thought about the natural world? How, for example, did social institutions like the family and religion adapt to, explain, and employ the constant presence of plague in Egypt? How did plague enable the deployment of sets of practices and institutions related to sickness, disease, and death? To answer these and other questions, historians must consider plague in its social and cultural, as well as its natural, contexts. Plague, in other words, existed not only in Egyptian nature, but also in Egyptian society.

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ALAN MIKHAIL recently completed his doctoral dissertation, entitled "The Nature of Ottoman Egypt: Irrigation, Environment, and Bureaucracy in the Long Eighteenth Century," in the Department of History at the University of California, Berkeley, 3229 Dwinelle Hall, Berkeley, CA 94720-2550 (e-mail: amikhail@stanford.edu). He is currently a postdoctoral fellow in the Humanities Fellows Program at Stanford University and will be an assistant professor in the Department of History at Yale University beginning in 2010. He has published articles in both English and Arabic on the history of coffee and cafés in the Ottoman Middle East, on the history of quarantine in Ottoman Egypt, and on subaltern studies. His broad research interests include the history of medicine, environmental history, agricultural history, and the history of early modern empires.