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Sugar in the Economic Life of Mamluk Egypt

Sugar cane cultivation seems to have originated in northern India,[1] from where it spread both eastward and westward. As for the eastward route, it was only during the sixteenth–seventeenth centuries that sugar cane cultivation was introduced to Okinawa in Japan through southeast China, but it spread swiftly to the countries on the westward route. It is believed that sugar cane cultivation had already begun both in Iran and Iraq in the mid-seventh century at the end of the Sasanian period.[2]

According to *Tabaṣṣur bi-al-Tijārah* (Thoughts on commercial activities) by al-Jāḥiẓ (d. 255/868–69), the district of Ahwāz irrigated by the Dujayl River in western Iran was particularly well known as a major producer of sugar *(sukkar)* and silk brocade *(dībāj).*[3] According to Andrew M. Watson,[4] sugar cane cultivation was introduced to southern Iraq from western Iran and diffused further to the Jordan valley and the Syrian coastal regions up to Bāniyās around the tenth century. As to the situation in tenth century Iraq, Ibn Ḥawqal relates that there was no village without sugar cane *(qaṣab sukkar)* in this vast area.[5]

Before sugar cane spread to the Islamic world, a traditional treacle of grapes, carobs, and other fruits, called *dibs,* was very popular in addition to honey *('asal),* the universal sweetening agent among both the wealthy and common people.[6] However, even after the wide diffusion of sugar cane, the common people under the Abbasids still continued to use the less expensive treacle for sweetening.[7]

The first clear reference to the cultivation of sugar cane in Egypt comes from a papyrus of the mid-eighth century.[8] According to D. Müller-Wodarg, sugar cane cultivation spread in ninth-century Egypt.[9] However, the main sugar cane-producing

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[1]Joseph Needham, *Science and Civilisation in China,* vol. 6, pt. 3, *Biology and Biological Technology: Agro-Industries and Forestry; Agro-Industries: Sugarcane Technology,* by Christian Daniels and Nicholas K. Menzies (Cambridge, 1996), 191.

[2]Andrew M. Watson, *Agricultural Innovation in the Early Islamic World* (Cambridge, 1983), 26.

[3]Al-Jāḥiẓ, *Tabaṣṣur bi-al-Tijārah* (Cairo, 1935), 32.

[4]Watson, *Agricultural Innovation,* 26–28.

[5]Ibn Ḥawqal, *Kitāb Ṣūrat al-Arḍ* (Leiden, 1967), 254.

[6]M. M. Ahsan, *Social Life under the Abbasids* (London, 1979), 100–1.

[7]Ibid., 100.

[8]Watson, *Agricultural Innovation,* 28.

[9]D. Müller-Wodarg, ″Die Landwirtschaft Ägyptens in der frühen Abbasidenzeit,″ *Der Islam* 31

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districts noted in the Arabic sources up to the end of the eleventh century were mostly restricted to the outskirts of al-Fusṭāṭ and the villages of Lower Egypt. On the other hand, al-Bakrī (d. 487/1094) is probably the first to refer to sugar cane cultivated in such districts as Assiut and Qūṣ in Upper Egypt.[10] Accordingly, it was after the eleventh–twelfth centuries that sugar cane plantations spread to Upper Egypt on a large scale, resulting in an increase of sugar consumption in Egypt and sugar export from Egypt to other Muslim countries and Europe.[11]

The present article attempts to demonstrate the importance of sugar in the economic life of Ayyubid and Mamluk Egypt, focusing on sugar as merchandise, medicine, and festival goods after an explanation of the diffusion of sugar cane cultivation and its manufacturing technology.

THE DIFFUSION OF SUGAR CANE CULTIVATION IN EGYPT

Both Muḥammad al-Musabbiḥī (d. 420/1029) and Ibn al-Ma'mūn al-Baṭā'iḥī (d. 588/1192) refer repeatedly to the sugar consumption in the Fatimid court,[12] but do not identify the districts where it was grown in Egypt. However, the following account of the village of Naqqādah in Qūṣ shows that Ayyubid soldiers were eager to cultivate sugar cane.

> Ṣalāḥ al-Dīn granted the village of Naqqādah, together with one-third of the village of Sandabīs, as *waqf* to twenty-four soldiers who were guarding the prophet´s tomb. They set up a water wheel *(dūlāb),* constructed a sugar cane pressing factory *(ma'ṣarah lil-qaṣab)* there, and guarded the water wheel by turns.[13]

Thereafter during the reign of Saladin, Abū 'Amr 'Uthmān al-Nābulusī (d. 660/1261), an Ayyubid government official, under orders from Sultan al-Ṣāliḥ (r.

(1954): 47–48.

[10]Al-Bakrī, ″Kitāb al-Masālik wa-al-Mamālik,″ Österreichische Nationalbibliothek MS Cod. Mixt 779, fols. 19–20.

[11]Sato Tsugitaka, *State and Rural Society in Medieval Islam: Sultans, Muqta's and Fallahun* (Leiden, 1997), 211. Helmut Blume, based on the description by von Lippmann (*Geschichte des Zuckers* [Leipzig, 1890]), relates that sugar cane spread to the Levant and Egypt before the end of the seventh century, to Cyprus (about 700), Morocco (about 709), Andalusia (about 714), Crete (about 818), and Sicily (about 827) (*Geography of Sugar Cane* [Berlin, 1985], 24). However, the dates are too early to confirm the full spread of sugar cane cultivation into these districts. See Watson, *Agricultural Innovation,* 28–29.

[12]Al-Musabbiḥī, *Akhbār Miṣr* (Cairo, 1978–84), 1:65, 79–80; Ibn al-Ma'mūn, *Akhbār Miṣr* (Cairo, 1983), 26, 31, 35–36, 42, 63.

[13]Ibn Duqmāq, *Kitāb al-Intiṣār* (Cairo, 1893), 2:33, 49.

638–47/1240–49), observed the situation in the province of Fayyum for two years (641–42/1243–44) after which he wrote a history entitled *Tārīkh al-Fayyūm* dedicated to his master.[14] This book contains a vivid description of the introduction of sugar cane into the province of Fayyum. Here are a few examples.

1. The village Dahmā *(iqṭā‘):*
   In this village cotton had been cultivated until irrigation water was diverted to sugar cane. As sugar cane spread, all the water was devoted to its irrigation, which caused [the village] to abolish cotton cultivation.[15]
2. The village Dhāt al-Ṣafā’ *(iqṭā‘):*
   In this village sesame had been cultivated, then rice was introduced as the land worsened in fertility. But rice was abandoned eventually because the water was diverted to sugar cane newly introduced into the village.[16]
3. The village Shānah *(iqṭā‘):*
   As the population increased, the villagers went to the village of Lawāsī to cultivate there. But because Lawāsī was distant from their village, they emigrated to a nearby place. It is also said, however, that the cause of their emigration *(intiqāl)* was the lack of irrigation water *(qillat al-mā’)* due to the increase of sugar cane cultivation in the province of Fayyum.[17]
4. The village Shadamūh *(iqṭā‘):*
   The village has fruit orchards of dates, grapes, and sycamores. Winter crops [wheat, barley, broad beans, flax, etc.] are mainly cultivated, and summer crops [sesame, cotton, taro, eggplant, etc.] had also been cultivated until sugar cane increased.[18]

The instances described by al-Nābulusī show that sugar cane cultivation spread to the extent of supplanting such summer crops as rice *(aruzz),* cotton *(quṭn),* and sesame *(simsim),* because its cultivation required irrigation even after the Nile had receded. According to his survey during the middle of the thirteenth century, the cultivated area of sugar cane in the province of Fayyum amounted to 1,468 feddans (about 881 hectares), while the area of wheat, for example, was 29,000 feddans (about 17,400 hectares) in total.[19]

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[14]Ed. B. Moritz (Cairo, 1898). About *Tārīkh al-Fayyūm* and its author, see Claude Cahen, ″Le régime des impôts dans le Fayyūm ayyūbide,″ in idem, *Makhzūmīyāt* (Leiden, 1977), 194–96.

[15]Al-Nābulusī, *Tārīkh al-Fayyūm,* 101–2.

[16]Ibid., 102.

[17]Ibid., 122–23.

[18]Ibid., 125–26.

[19]Sato, *State and Rural Society,* 212–13.

The following accounts confirm that sugar cane cultivation was already widespread in the districts of Upper Egypt other than the province of Fayyum in the first half of the Mamluk period. We find an account in the annal for 697/1289 in *Kitāb al-Sulūk* by al-Maqrīzī (d. 845/1442):

> [After the Ḥusāmī *rawk* (the cadastral survey of Egypt conducted by Sultan al-Ḥusām Lājīn in 1289)][20] the viceroy *(nā'ib al-salṭanah)* Mankūtamur was granted vast *iqṭā'*s in Upper Egypt; that is to say, Marj Banī Humaym and its surroundings, Samhūd and its surroundings, Ḥarajat Qūṣ, Madīnat Udfū, and waterwheels *(dūlāb)* in these districts. The revenues were made up of over 110,000 *irdabb*s (about 9,900,000 liters) of crops *(ghallah),* raw sugar *(qand),* molasses *('asal),* dates, sheep, and firewood. He owned 27 sugar cane-pressing factories *(ma'ṣarah li-qaṣab al-sukkar)* there.[21]

Al-Maqrīzī gives another account on Mallawī in Upper Egypt:

> During the reign of Sultan al-Nāṣir, the cultivated area for sugar cane increased to 2,500 feddans (about 1,592 hectares) in this district. ['Abd al-Wahhāb] al-Nashw, supervisor of the sultan's domain *(nāẓir al-khāṣṣ),* seized all the sugar produced there in 738/1337–38 to send 14,000 *qinṭār*s (1,260,000 kilograms) of raw sugar *(qand)* other than molasses to Dār al-Qand at al-Fusṭāṭ. Later he forced the people in the district to deliver 8,000 *qinṭār*s (720,000 kilograms) of *qand* to it.[22]

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[20]About *al-rawk al-Ḥusāmī* carried out in Egypt in 697/1298, see Sato, *State and Rural Society,* 124–34.

[21]Al-Maqrīzī, *Kitāb al-Sulūk li-Ma'rifat Duwal al-Mulūk* (Cairo, 1939–73), 1:843–44. E. Ashtor relates that the sugar factories were usually in the same area where sugar was grown (″Levantine Sugar Industry in the Late Middle Ages: A Case of Technological Decline,″ in *The Islamic Middle East, 700–1900: Studies in Economic and Social History,* ed. Abraham L. Udovitch [Princeton, 1981], 93). However, while sugar pressing factories *(ma'ṣarat al-sukkar)* were in the same area, sugar refineries *(maṭbakh al-sukkar)* were often located in towns like Qifṭ, Qūṣ, and al-Fusṭāṭ (see below).

[22]Al-Maqrīzī, *Kitāb al-Mawā'iẓ wa-al-I'tibār bi-Dhikr al-Khiṭaṭ wa-al-Āthār* (Bulaq, 1270 H., repr. Baghdad, 1970), 1:204. Concerning the sugar industry in Mallawī, see Ashtor, ″Levantine Sugar Industry,″ 99. 'Abd al-Wahhāb Sharaf al-Dīn al-Nashw (d. 740/1339), a converted Coptic Muslim, was employed as a clerk *(kātib)* by Sultan al-Nāṣir and was later appointed *nāẓir al-khāṣṣ*. He was arrested because he had confiscated the estates of amirs and merchants and levied heavy taxes on the people (Ibn Ḥajar, *Al-Durar al-Kāminah* [Cairo, 1966–67], 3:42–43; Ibn Taghrībirdī, *Al-Manhal al-Ṣāfī* [Cairo, 1994], 7:390–93; al-Maqrīzī, *Kitāb al-Sulūk,* 2:473 f.).

Ibn Baṭṭūṭah (703–770 or 779/1304–1368–69 or 1377), who visited Mallawī at the beginning of the fourteenth century, states:

> The town has eleven sugar cane-pressing factories *(ma'ṣarah li-sukkar)* where even beggars or the poor *(faqīr)* can enter freely. They come to the factories with hot bread, put them into the pots which are boiling pressed juice, and go out with the bread steeped plentifully in sugar juice.[23]

According to Abū al-Fidā' (d. 732/1331), Qamūlah, a village located south of Qūṣ in Upper Egypt, had many orchards where sugar cane was cultivated.[24] Al-Udfuwī (d. 748/1347) further relates that he found forty sugar refineries *(maṭbakh lil-sukkar)* and six sugar cane-pressing factories *(ma'ṣarah li-qaṣab al-sukkar)* in Qifṭ, and in Samhūd there were many such factories with seventeen stone mills *(ḥajar)* in total.[25] Al-Udfuwī´s description shows that during the thirteenth–fourteenth centuries Qifṭ was a particularly important center for sugar production in Egypt. *Al-sukkar al-Qifṭī* was famous for its purity.[26]

These accounts reveal that sugar cane had come to be cultivated on a large scale in the districts of Upper Egypt by around the thirteenth or fourteenth century. The large plough known as *muqalqilah* must have been invented during this time.[27] The work required from planting to harvest is summarized by al-Nuwayrī

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[23]Ibn Baṭṭūṭah, *Tuḥfat al-Nuẓẓār fī Gharā'ib al-Amṣār* (Paris, 1854), 1:100–1. Ibn Baṭṭūṭah calls the town ″Manlawī.″ It was also called ″Mallawī″ or ″Maltawī″ (Muḥammad Ramzī, *Al-Qāmūs al-Jughrāfī lil-Bilād al-Miṣrīyah* [Cairo, 1953–68], 2:4:68–69).

[24]Abū al-Fidā', *Taqwīm al-Buldān* (Paris, 1840), 103–4. Yāqūt says that Qamūlah had many date trees and vegetables (*Mu'jam al-Buldān* [Beirut, 1955–57], 4:398–399).

[25]Al-Udfuwī, *Al-Tālī al-Sa'īd al-Jāmi' li-Asmā' al-Fuḍalā' wa-al-Ruwāt* (Cairo, 1914), 7–8, 9, 18; Ibn al-Ḥājj, *Al-Madkhal* (Cairo, 1981), 4:154; Yāqūt relates also that sugar cane cultivation was popular at Bahjūrah in Upper Egypt (Yāqūt, *Mu'jam al-Buldān,* 1:514). In 742/1341–42 Amir Qūṣūn was able to make numerous grants to his mamluks, partly because he held 500 feddans of privately owned land in Upper Egypt for sugar cane cultivation (al-Maqrīzī, *Kitāb al-Sulūk,* 2:561; al-Yūsufī, *Nuzhat al-Nāẓir fī Sīrat al-Malik al-Nāṣir* [Beirut,1986], 370–71). See also S. D. Goitein, *A Mediterranean Society* (Berkeley and Los Angeles, 1967–93), 1:125–26.

[26]Ibn al-Ḥājj, *Al-Madkhal,* 4:154; Subhi Y. Labib, *Handelsgeschichte Ägyptens im spätmittelalter (1171–1517)* (Wiesbaden, 1965), 320; E. Ashtor, *A Social and Economic History of the Near East in the Middle Ages* (Berkeley and Los Angeles, 1976), 243.

[27]″A Memorandum to Amir Kitbughā″ issued in 1281 may be the first reference to this *muqalqilah*, which was used for the construction of canals and irrigation dikes (Sato, *State and Rural Society,* 111, 207). See also Hassanein Rabie, ″Some Technical Aspects of Agriculture in Medieval Egypt,″ in *The Islamic Middle East,* ed. Udovitch, 64.

(d. 733/1333) with respect to his native land, Qūṣ:

> In the Coptic month of Barmahāt (25 February–26 March), after weeded fields are cultivated six times by the *muqalqilah*—a large-sized plough *(miḥrāth kabīr)*—and smoothed by harrows after six more ploughings, sugar cane with two joints is planted by throwing it into ridged fields. The second-year sugar cane *(khilfah)* is irrigated after burning the old stubble. When seed leaves grow, the soil is hoed *(ʻazq)* to weed the fields, which continues until the end of Bashnas (26 April–25 May). During this period the plants are to be irrigated at fixed intervals, twenty-eight times in total, for two to three hours. The second-year cane harvest in Kīhak (27 November–26 December) and the first-year cane *(raʼs)* harvest in Ṭūba (27 December–25 January) are reaped and carried on camels or donkeys to pressing factories *(maʻṣarah)*.[28]

Al-Nuwayrī adds, ″This explanation is about sugar cultivation in the province of Qūṣ, but it is not much different from that of other provinces.″[29] In any case, sugar cane, in addition to its long term of cultivation (about 10 months), required complicated tasks, such as deep ploughing, weeding, hoeing, irrigation at intervals, pressing, and processing. That is to say, sugar production in medieval Egypt was conducted with high technology, large capital outlays, and much labor. Sugar production, therefore, was mostly carried out under the control of the government from the Fatimid period on.

SUGAR PRODUCTION TECHNOLOGY

As to who cultivated sugar cane in Ayyubid and Mamluk Egypt, al-Nābulusī says that in the province of Fayyum cultivation was chiefly done on crown farms (*wasīyah,* pl. *awāsī*). *Awāsī,* in the early Islamic period, designated a private domain *(ḍayʻah)* mostly consisting of estates belonging to Coptic monasteries *(dayr)* and great bishops *(rāhib)*.[30] On the other hand, *awāsī* during the Ayyubid and Mamluk periods have been regarded as state domains cultivated by corvée or as village common lands.[31] However, when we examine the terms provided by

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[28]Al-Nuwayrī, *Nihāyat al-Arab fī Funūn al-Adab* (Cairo, 1954–92), 8:264–67.

[29]Ibid., 8:271.

[30]Morimoto Kosei, *The Fiscal Administration of Egypt in the Early Islamic Period* (in Japanese) (Tokyo, 1975), 342.

[31]Cahen, ″Le régime des impôts,″ 28; idem, ″Contribution à l'étude des impôts dans l'Égypte médiévale,″ *Journal of the Economic and Social History of the Orient* 5(1962): 265–66.

al-Nābulusī in detail, we find both explanations somewhat inadequate. Al-Nābulusī gives us various accounts: government income through cultivation of *al-awāsī al-dīwānīyah* (ministry *awāsī*); *al-awāsī al-sulṭānīyah* (the sultan′s *awāsī*) in the town of Fayyum; and provisions from *al-wasīyah al-ʻādilīyah* (charitable *wasīyah*).[32] Furthermore, it is interesting to find *awāsī* not only as a part of *iqṭāʻ*, but also in the villages belonging to the sultan′s domain.[33] We may therefore conclude that *awāsī* under the *iqṭāʻ* system were crown farms controlled directly by the government or sultan.

Al-Nābulusī gives us brief references to their cultivators:

1. sugar cane in the village of al-ʻUdwah (80 feddans)
   80 feddans cultivated by *murābiʻūn*[34]
2. sugar cane in the village of Sinnūris (318 feddans)
   222 feddans cultivated by *muzāriʻūn*
   96 feddans cultivated by *murābiʻūn*[35]
3. sugar cane in the village of Fānū (268 feddans)
   95 feddans cultivated by *murābiʻūn*[36]

There is another example from the village Maṭar Ṭāris, where both *muzāriʻūn* and *murābiʻūn* cultivated sugar cane and vegetables on 76 feddans of *awāsī*.[37] Furthermore, the town of Fayyum allotted 110 feddans for sugar cane cultivation in the surrounding area, among them 28.5 feddans cultivated by *muzāriʻūn,* and 81.5 feddans by *murābiʻūn.*[38]

Muzāriʻūn, who were usually called *fallāḥūn,* were peasants who customarily cultivated the land allotted under *qabālah* contracts concluded with the government or *iqṭāʻ* holders *(muqṭaʻ)* after the annual flood of the Nile in autumn.[39] On the other hand, *murābiʻūn,* according to Cahen, meant peasants who had the right to take one-fourth *(rubʻ)* of what they produced. They paid the ordinary tax in cash

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[32]Al-Nābulusī, *Tārīkh al-Fayyūm,* 25–26.

[33]Ibid., 32–34, 100, 108, 134, 157, 158. See also al-Makhzūmī, ″Minhāj fī ʻIlm Kharāj Miṣr,″ British Library MS Add. 23483, fols. 99r–100v.

[34]Al-Nābulusī, *Tārīkh al-Fayyūm,* 32–34.

[35]Ibid., 107–10.

[36]Ibid., 156–59.

[37]Ibid., 156–59.

[38]Ibid., 27, 174–75.

[39]Sato, *State and Rural Society,* 192–97. After the annual flood of the Nile, irrigated land was classified according to each cultivation contract *(qabālah)* concluded between peasants *(muzāriʻūn)* and *iqṭāʻ* officials or government officials *(mubāshirūn).*

on their cultivation of sugar cane.[40] I have my doubts about *murābi'ūn* paying the ordinary tax in cash, but the following two points should be taken into consideration. First, most of the *murābi'ūn* cultivated sugar cane in *awāsī,* while *muzāri'ūn* cultivated wheat and barley in addition to sugar cane. Secondly, *murābi'ūn* were provided with both crops and cash by the government every year, while the *muzāri'ūn* were given only seed for cultivation.[41] That is to say, *murābi'ūn*, who might have formed a class of agricultural laborers, were apparently inferior in status to *muzāri'ūn.*[42] However, it should be noted that *murābi'ūn* were not slaves in any sense of the word.[43]

Now, let us turn to the description of al-Nuwayrī once again explaining the way sugar was produced in Qūṣ.

> The harvested sugar cane is carried on camels or donkeys to pressing factories *(ma'ṣarah)* and put in a place called ″the sugar cane plant″ *(dār al-qaṣab),* where laborers cut it into small pieces with large knives and clean the mud off. The cleaned pieces are carried to mill stones *(ḥajar)* which are rotated by excellent oxen *(baqar jayyid).* The pressed juice is boiled in large pots (with a capacity of 3,000 *raṭl*s, about 1,350 kilograms of juice) called *khābīyah* in the refinery *(maṭbakh)* after filtrating the crushed cane through a sieve *(munkhal).* The boiled juice is filtered three times through wool and put in another room after further boiling to produce raw sugar *(qand)* and molasses *('asal).* Then the raw sugar is boiled once again with water and fresh milk *(al-laban al-ḥalīb)* to get white sugar *(al-sukkar al-bayāḍ)* and fine molasses *(quṭārah).* The refining percentage of white sugar is one-fourth or one-sixth of raw sugar.[44]

According to his explanation, the process of sugar production can be summarized as follows: (1) sugar cane cutting and cleaning at the *dār al-qaṣab,* (2) pressing with mill stones rotated by oxen, (3) filtration of the crushings and boiling juice in the refinery *(maṭbakh),* (4) reboiling to produce raw sugar *(qand)* and molasses

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[40]Cahen, ″Le régime des impôts,″ 23.

[41]Al-Nābulusī, *Tārīkh al-Fayyūm,* 32-34, 107–10, 133–38.

[42]Sato, *State and Rural Society,* 217–19.

[43]Al-Maqrīzī explains that ″*'abd qinn*″ is a slave for life who cannot expect to be sold or emancipated (*Khiṭaṭ,* 1:85). Egyptian peasants (*muzāri'ūn* or *fallāḥūn*) under the *iqṭā'* system were also not slaves by law, but were actually likened to *'abd qinn*. See Sato, *State and Rural Society,* 177.

[44]Al-Nuwayrī, *Nihāyat al-Arab*, 8:267–71, 272.

('asal), and (5) further boiling of raw sugar with water and fresh milk to make white sugar.

Al-Nuwayrī explains that sugar cane was pressed with mill stones *(ḥajar)* rotated by oxen; however, we do not know whether these mills were of the vertical or horizontal type. In *Description de l'Égypte* published after Napoleon's expedition to Egypt in 1798, we find a drawing of horizontal and roller-type mills for sugar cane pressing.[45] In the Caribbean islands, where sugar manufacturing technology was introduced from the Islamic world, roller-type mills were popular among planters.[46] Based on these later facts, it may well be supposed that horizontal and roller-type stone mills were used for sugar cane pressing in Egypt during the Ayyubid and Mamluk periods.

Al-Nuwayrī relates that when raw sugar is boiled a second time with water and fresh milk, white sugar and fine molasses can be produced. Does his assertion have any scientific grounds? According to a scientist at the Department of Agriculture, the University of Tokyo, fresh milk is effective in creating white sugar because heated milk protein curdles absorb the impurities in raw sugar. In the same vein, raw sugar was boiled with fresh eggs to get white sugar in Okinawa during the Tokugawa period. Consequently, al-Nuwayrī's explanation is based on sound scientific grounds.

Al-Nuwayrī does not refer to the method of adding ashes into the pressed juice before boiling; however, there is the well-known story told by Marco Polo (1254–1324) about sugar production in China. His travel account reads:

> Before this city (Unken) came under the Great Khan (Qubilai 1260–94) these people knew not how to make fine sugar; they only used to boil and skim the juice, which when cold left a black paste. But after they came under the Great Khan some men of Babylonia who happened to be at the Court proceeded to this city and taught the people to refine the sugar with the ashes of certain trees.[47]

It is annotated that Babylonia in this passage indicates "little Babylonia of Egypt" within the old city of al-Fusṭāṭ and Unken is a city located near Zaytun. If this account is reliable, sugar-refining technology was introduced into the coastal areas of southeast China from Mamluk Egypt. According to Christian Daniels, most scholars regard this as a factual report due to the lack of evidence of the use

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[45]*Description de l'Égypte* (Cologne, 1994), 692.

[46]Blume, *Geography of Sugar Cane,* 27.

[47]*The Book of Ser Marco Polo,* trans. and ed. H. Yule, 3rd ed. (London, 1929), 2:226.

of plant extracts for sugar refining in China.[48]

Al-Qazwīnī (d. 682/1283) relates that Assiut in Upper Egypt was a sugar-producing center transporting every kind of sugar all over the world.[49] Raw sugar *(qand)* (that is, poor quality sugar) was called ″red sugar″ *(al-sukkar al-aḥmar)* in the Arab world.[50] *Sulaymānī* was a kind of sugar produced from *qand* after another boiling.[51] Then *sulaymānī* was refined to *fānīdh* or white sugar by another boiling.[52] What was produced after further refining was rock sugar *(ṭabarzad or thalij),* regarded as the highest-quality sugar.[53]

As to ″Egyptian sugar″ during the Mamluk period, al-Qalqashandī (d. 821/1418) lists in *Ṣubḥ al-A'shá* the following varieties: *mukarrar* (repeated), *taba'* (subordinate), *wasaṭ* (middle), and *nabāt* (literally ″plants,″ that is, sugar candy).[54] According to Ashtor, *mukarrar* was thrice-boiled sugar, *taba'* and *wasaṭ* twice-boiled, and *nabāt* once-boiled.[55] I assume that these three types correspond roughly to *fānīdh*, *sulaymānī,* and *qand,* respectively.

As sugar production spread from Lower to Upper Egypt on a large scale by the thirteenth or fourteenth century, sugar was considered the most important export to European countries as well as a luxury good consumed by Egyptian sultans and amirs at their residences or at public festivals. Taking a great amir as an example, the account book *(daftar)* of amir Ṭaybars al-Ḥājj al-Wazīrī (d. 687/1288), which was written down by one of his mamluks, discloses that Ṭaybars and his household had consumed totally in his career 3,000 sheep *(ghanam),* 600 cows *(baqar),* 500 horses *(ikdīsh),* 28,000 *qinṭār*s of sugar for drinks *(sukkar lil-mashrūb)* and 160 *qinṭār*s of sugar for making sweets *('amal al-ḥalāwāt).*[56] As one *qinṭār* was about 45 kilograms, 28,000 *qinṭār*s and 160 *qinṭār*s were equivalent to 1,260 tons and 7.2 tons of sugar respectively. Ṭaybars, who was related to

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[48]Needham, *Science and Civilisation in China*, 351–52.

[49]Al-Qazwīnī, *Āthār al-Bilād wa-Akhbār al-'Ibād* (Beirut, 1960), 147.

[50]Ibn al-Ḥājj, *Al-Madkhal,* 4:149, 152; al-Dimashqī, *Kitāb al-Ishārah ilá Maḥāsin al-Tijārah* (Cairo, 1318), 32.

[51]Al-Idrīsī, *Kitāb Nuzhat al-Mushtāq fī Ikhtirāq al-Āfāq* (Naples and Rome, 1970–84), 3:227.

[52]Yāqūt, *Mu'jam al-Buldān,* 5:42. Yāqūt relates that *al-fānīdh al-māsakānī* is a kind of fine sugar produced in the district of Māsakān in Sijistān in southeast Iran.

[53]Al-Tha'ālibī, *Laṭā'if al-Ma'ārif* (Cairo, n.d.), 82–83. Concerning the various kinds of sugar produced in the Islamic world, von Lippmann, *Geschichte des Zuckers,* 98–102.

[54]Al-Qalqashandī, *Ṣubḥ al-A'shá fī Ṣinā'at al-Inshā'* (Cairo, 1963), 3:309.

[55]Ashtor, ″Levantine Sugar Industry,″ 96–97. He concludes that *mukarrar, taba', wasaṭ,* and *nabāt* correspond respectively to *muccaro, caffettino, musciatto,* and *candy* found in the description of Pegolotti who travelled to China via the Middle East and wrote a book entitled *La practica della mercatura scritta* (1335–43).

[56]Al-'Aynī, *'Iqd al-Jumān* (Cairo, 1987–92), 3:172.

Sultan Baybars by his daughter´s marriage, was promoted to amir of one hundred and appointed as *nā'ib al-salṭanah* in Damascus in 659/1261.[57] This shows evidently that the households of great amirs during the early Mamluk period were already consuming a large quantity of sugar.

SUGAR IN EGYPTIAN SOCIETY UNDER THE MAMLUKS

SUGAR AS A COMMODITY

We find various descriptions of domestic and international transactions involving sugar in Arabic historical sources dating back to around the ninth century. For example, al-Ṭabarī relates that in 238/852 the Rūm (Byzantine) army attacked Damietta in Lower Egypt, plundering goods *(amti'ah),* raw sugar *(qand),* and flax *(kattān)* to be carried to Iraq.[58] Besides, according to Ibn Ḥawqal, white sugar *(fānīdh)* produced in Kirmān was transported to Sijistān and Khurāsān in Iran during the tenth century due to an increase of sugar cane cultivation there.[59] Al-Muqaddasī (tenth century) also states that sugar produced in Khūzistān was transported to Iraq, Yemen, and other countries.[60]

As to the sugar carried from Egypt to Syria, Bar Hebraeus (d. 685/1286) has the following to say:

> [A Jew said to Ṣalāḥ al-Dīn, who was encamped before Acre], ″I am a Jew and a merchant of Damascus. I was coming by sea from Alexandria, and I had with me twenty loads of sugar. And when I came to the port of 'Akkā thy servants plundered me.″ . . . and when they admitted that they had deposited it in the Treasury, he [Ṣalāḥ al-Dīn] commanded the officials and they gave to the Jew the price of the sugar.[61]

Goitein says, ″Sugar production must have been one of the major, if not the greatest, industry in Fusṭāṭ during the Fatimid and Ayyubid periods, and the share of the Jews in this field was very extensive.″[62] He further relates that *sukkarī,* or maker (and seller) of sugar, was one of the most common occupations and family

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[57]Al-Ṣafadī, *Kitāb al-Wāfī bi-al-Wafayāt* (Wiesbaden, 1982), 16:508–9; al-Maqrīzī, *Kitāb al-Sulūk,* 1:448.

[58]Al-Ṭabarī, *Tārīkh al-Rusul wa-al-Mulūk* (Leiden, 1879–1901), 3:1418.

[59]Ibn Ḥawqal, *Kitāb Ṣūrat al-Arḍ,* 313.

[60]Al-Muqaddasī, *Aḥsan al-Taqāsīm fī Ma'rifat al-Aqālīm* (Leiden, 1906), 416.

[61]Bar Hebraeus, *Chronology,* ed. and trans. E. A. Wallis Budge (London, 1932), 2:342.

[62]Goitein, *A Mediterranean Society,* 1:125–26.

names occurring in the Geniza documents.[63]

We find another account about the sugar carried from Egypt to Baghdad in *Kitāb al-Sulūk* by al-Maqrīzī:

> In this year [650/1252] the news arrived that the Mongol army encountered a caravan *(qāfilah)* headed for Baghdad from Ḥarrān and plundered it of great assets, including 600 loads *(ḥiml)* of Egyptian sugar, valued at 600,000 dinars.[64]

As one *ḥiml* was about 225 kilograms during the twelfth–thirteenth centuries,[65] 600 *ḥiml*s were equivalent to 135 tons of sugar. Consequently, these accounts show that Egypt had already become one of the most important sugar-producing countries in the Islamic world, exporting to such countries as Syria and Iraq.

As to sugar exportation from Egypt to European countries during the Mamluk period, al-Maqrīzī relates:

> When the water of the Nile flows into the Alexandria Canal during Misrā (25 July–23 August), ships *(markab)* loaded with various kinds of goods, like crops *(ghallah),* spice *(bahār),* and sugar *(sukkar),* set sail.[66]

The Alexandria Canal was a long canal connecting a place near Ṭanṭā and the coastal town of Alexandria, where Italian merchants chiefly from Venice, Genoa, and Pisa purchased various spices from Muslim merchants under the protection of their own consulates.[67] However, as al-Maqrīzī discloses, the goods purchased by the Italians also included agricultural crops, sugar, alum, and paper from Egypt, besides spices from the East.[68]

It is well known that the Kārimī merchants carried on a flourishing spice trade

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[63]Ibid., 126. We find the account of the Jewish merchants of sugar *(al-Yahūd al-sukkarīyūn)* in Ibn Duqmāq, *Kitāb al-Intiṣār,* 1:41.

[64]Al-Maqrīzī, *Kitāb al-Sulūk,* 1:383–84.

[65]Walther Hinz, *Islamische Masse und Gewichte* (Leiden, 1955), 13–14; E. Ashtor, *Histoire des prix et des salaires dans l'Orient médiéval* (Paris, 1969), 141.

[66]Al-Maqrīzī, *Khiṭaṭ,* 1:273.

[67]Ashtor, *A Social and Economic History,* states on page 299, ″Even after the fall of Acre [in 1291] the trading nations sent embassies to the sultan of Cairo and concluded new commercial treaties, reducing imposts and acquiring new rights.″

[68]Concerning the sugar transportation from Egypt to European countries, see the following works: Labib, *Handelsgeschichte Ägyptens,* 320; Ashtor, A *Social and Economic History,* 306; Sato, *State and Rural Society,* 215.

in Yemen, Egypt, and Syria during the Ayyubid and Mamluk periods. According to al-Ashqar, 201 Kārimī merchants can be identified from the Arabic sources of the Mamluk period.[69] Based on the vast profits from the spice trade, they made loans to the sultan of Cairo and other princes. However, it should be noted that they traded also in wood, sugar, textiles, precious metals, wheat, and ceramics for the Italian merchants.[70]

As to sugar production and trade by the Kārimī merchants during the Mamluk period, here is an example from *Kitāb al-Intiṣār* by Ibn Duqmāq (d. 809/1406). Among the 65 refineries *(maṭbakh al-sukkar)* located at al-Fusṭāṭ,[71] 7 were owned by the sultan, 21 by amirs, 13 by merchants *(tājir),* and 27 not identified. Among the 13 *maṭbakh*s owned by merchants, 4 were managed by *sukkarī*s[72] (Muslim or Jewish sugar merchants), and another 4 by the Kārimī merchants.[73] This indicates that in the Mamluk period, Kārimī merchants were involved in managing sugar refineries in addition to trading sugar with Muslim and European countries.

Among the above-mentioned four *maṭbakh*s owned by Kārimīs, two were managed by the Kharrūbī family from Cairo. Badr al-Dīn Muḥammad al-Kharrūbī (d. 762/1361) was particularly well known as a ″sugar refinery merchant″ *(tājir fī maṭābikh al-sukkar)* at al-Fusṭāṭ and as founder of a school *(madrasah)* across from the Nilometer, where he stipulated that every post at the school should be occupied by Arabs.[74] On the other hand, his brother, Ṣalāḥ al-Dīn Aḥmad al-Kharrūbī (d. 769/1368), started out as a poor merchant, but earned immense profits later through trade and constructed a large tomb *(turbah)* in the district of al-Qarāfah, south of Cairo.[75]

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[69]Muḥammad ʻAbd al-Ghanī al-Ashqar, *Tujjār al-Tawābil fī Miṣr fī al-ʻAṣr al-Mamlūkī* (Cairo, 1999), 467–539. According to Ashtor, people of all denominations belonged to the Kārimīs, Muslims, Christians, and Jews (*A Social and Economic History,* 300).

[70]Labib, *Handelsgeschichte Ägyptens,* 93; Ashtor, *A Social and Economic History,* 241, 300; al-Ashqar, *Tujjār al-Tawābil,* 76.

[71]Ibn Duqmāq, *Kitāb al-Intiṣār,* 1:41–46.

[72]Among the merchants who sought protection from amirs like Qūṣūn and Bashtāk in 737/1336–37, there was a sugar merchant *(rajul sukkarī)* who had made adulterated sugar and molasses *(zaghal fī al-sukkar wa-al-ʻaṣal)* (al-Yūsufī, *Nuzhat al-Nāẓir,* 370).

[73]The names of the refineries owned by the Kārimī merchants were as follows: Maṭbakh ʻUqbah al-Milḥ, Maṭbakh al-Kamāl ibn Marzūq, Maṭbakh Sirāj al-Dīn ibn al-Kharrūbī, and Maṭbakh Nūr al-Dīn ibn al-Kharrūbī.

[74]Al-Maqrīzī, *Khiṭaṭ,* 2:369–70. Al-Maqrīzī relates also that Badr al-Dīn Muḥammad constructed a quarter *(rabʻ)* near the school. On the Kharrūbī family, see Labib, *Handelsgeschichte Ägyptens,*114–15, 228; E. Ashtor, ″The Kārimī Merchants,″ *Journal of the Royal Asiatic Society* (1956): 48–50; Ira M. Lapidus, *Muslim Cities in the Later Middle Ages* (Cambridge, Mass., 1967), 121, 212.

[75]Al-Maqrīzī, *Khiṭaṭ,* 2:369.

Ṣalāḥ al-Dīn′s grandson, Nūr al-Dīn ʻAlī (d. 802/1400), called ″the last merchant of the Kharrūbī family,″ made the Meccan pilgrimage several times and was reputed to be an honest and pious person. However, at the age of thirty he was whipped by the amir Barqūq (later sultan 784–91/1382–89, 792–801/1390–99) for trying to secure the position of vizier at the Mamluk court by bribery.[76] His grandson, Sirāj al-Dīn Sulaymān (d. 864/1460), could not maintain his status as one of the notables *(aʻyān)* at al-Fusṭāṭ, for in 826/1423 Sultan Barsbāy (825–41/1422–38) proclaimed a government monopoly over sugar refining and trade and in 832/1429 ordered that spices be traded at prices fixed by the government, dealing the Kārimī merchants a fatal blow.[77] Sulaymān, who could not pay his debts under such severe conditions, was arrested and sent to prison in Cairo.[78]

The fall of the Kharrūbī family symbolized the fate of the Kārimī merchants during the later Mamluk period. Under monopolistic policies imposed on sugar and spices by Sultan Barsbāy, they suddenly lost their livelihoods in Egypt. Ibn Taghrībirdī (d. 874/1470) relates in his chronicle that the Kārimī merchants had disappeared from the Egyptian markets by the middle of the fifteenth century.[79]

SUGAR AS MEDICINE

Sugar was widely used also for medical purposes in the medieval Muslim world and elsewhere. Ibn Bayṭār (d. 646/1248), who was born in Malaga in Andalusia and lived in both Ayyubid Cairo and Damascus as a pharmacologist, compiled a voluminous work entitled *Al-Jāmiʻ li-Mufradāt al-Adwiyah wa-al-Aghdhiyah* (Compiled terminology on medicines and nourishments),[80] based on the results of his reading and field work. The item on *″sukkar″* in this book reads:

> Dioscorides [first century] relates that it is a kind of honey *(ʻasal),* but solid. In fertile lands like al-Hind and al-Maghrib, it is found

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[76]Ibn Ḥajar al-ʻAsqalānī, *Inbāʾ al-Ghumr bi-Anbāʾ al-ʻUmr* (Cairo, 1969–72), 1:195–96. It is said that Nūr al-Dīn [or Kamāl al-Dīn?] proposed a bribe of 100,000 dinars to get the position.

[77]Aḥmad Darrāj, *L'Égypte sous le règne de Barsbay* (Damascus, 1961), 57 f.; Labib, *Handelsgeschichte Ägyptens,* 355 f.; Lapidus, *Muslim Cities,* 36, 52, 57, 96.

[78]Al-Sakhāwī, *Al-Ḍawʾ al-Lāmiʻ li-Ahl al-Qarn al-Tāsiʻ* (Beirut, 1353–55), 3:267.

[79]Ibn Taghrībirdī, *Ḥawādith al-Duhūr fī Madá al-Ayyām wa-al-Shuhūr* (Berkeley, 1930–42), 2:247. He says, ″This year [859/1455] not a single Kārimī merchant was to be found [in the market] from the end of Ramaḍān to date, which caused much damage to the situation of the common people.″ Concerning the monopolistic policies of Sultan Barsbāy, see the following works: Darrāj, *L'Égypte sous le règne de Barsbay*; Labib, *Handelsgeschichte Ägyptens,* 422–23; Ashtor, *A Social and Economic History,* 309; al-Ashqar, *Tujjār al-Tawābil,* 439–51.

[80]Ibn Bayṭār, *Al-Jāmiʻ li-Mufradāt al-Adwiyah wa-al-Aghdhiyah* (Bulaq, 1291).

as [sugar] cane.[81] It looks like salt, but if one drinks it with water, his stomach will be relieved. It is also effective against bladder *(mathānah)* and kidney *(kulyah)* pain.

Galen [ca. 129–ca. 200] relates that the *sukkar* carried from al-Hind and al-Maghrib was apparently extracted from cane and congealed. It is not harmful to the stomach, unlike our honey *(ʻasal)*.

Ibn Māsawayh [160–243/775–857] relates that it is effective for the stomach, in particular for persons whose gall *(al-mirrah al-ṣafrāʾ)* is not sufficient. *Ṭabarzad* (rock sugar) is not softened like *sulaymānī* and *fānīdh*.

ʻĪsá al-Baṣrī[82] relates that if one drinks it with almond powder, it is effective both against colic (*qawlanj)* and impotence *(ʻatīq)*. It is also capable of removing phlegm *(balgham)* from the stomach.

Al-Sharīf[83] relates that if one drinks it with butter, it becomes a fine diuretic. If one drinks one *ūqīyah* [25 grams] of sugar with two *ūqīyah*s of butter, it is effective against stomachache, and it also purifies afterbirth. If one drinks sugar with hot water, it heals sore throat and is effective against cough *(suʻāl)* and asthma *(taḍāyq)*. Persons with experience relate that it relieves cough.

Al-Rāzī [543–606/1149–1209] relates that it relieves chest *(ṣadr)* and lung *(riʾah)* pain. If raw sugar *(nabāt)* is boiled with rosewater *(māʾ al-ward),* it becomes the coldest and lightest of drinks. And if it is boiled with violet leaves *(waraq al-banafsaj),* it becomes the gentlest drink for the body.[84]

For all these reasons, sugar was one of the generic medicines sold by druggists, *(ʻaṭṭār),* as well as a luxury good traded by sugar merchants *(sukkarī)*. The *ʻaṭṭār*s during the Mamluk period also sold spices like pepper, nutmeg, and cloves, and perfumes like frankincense, musk, and saffron in addition to generic medicines like pomegranate and lemon bark or root, medicinal herbs, dry fruit, rosewater, and sugar.[85] Furthermore, Ibn al-Ḥājj (d. 737/1336), who wrote a guide to everyday life, relates that sick Muslims require foods and drinks mixed with sugar.[86]

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[81]It is doubtful that the material related by Dioscorides refers to the sugar made from sugar cane.

[82]ʻĪsá ibn Ibrāhīm al-Baṣrī? See Fuat Sezgin, *Geschichte des arabischen Schrifttums* (Leiden, 1970), 3:128.

[83]Perhaps ″al-Sharīf al-Idrīsī.″ See Ibn al-Bayṭār, *Al-Jāmiʻ li-Mufradāt,* 1:5.

[84]Ibid., 3:22–23.

[85]A. Dietrich, ″Al-ʻAṭṭār,″ *Encyclopaedia of Islam,* 2nd ed., 1:751–52.

[86]Ibn al-Ḥājj, *Al-Madkhal,* 4:153–154.

We find another example of the medicinal importance of sugar in *Ighāthat al-Ummah* by al-Maqrīzī:

> The year 695/1295–96 began with the people distressed because of high prices and diminishing income. However, they placed their hopes on the crops *(al-ghilāl al-jadīdah),* which were almost due. When the crops were ripe, a wind coming from the direction of Barqa blew like a storm and darkened the horizon, carrying a yellow dust that covered the crops in the area. . . . The crops withered; the summer crops, such as rice, sesame, colocasia, and sugar cane, as well as other irrigated plantings, all failed. Consequently, prices soared. This wind was followed by diseases and high fevers that afflicted the entire population, thus causing the prices of sugar, honey, and other products needed by the sick to soar.[87]

Faced with this severe situation, Sultan Kitbughā (694–96/1294–96) ordered that the poor and needy *(faqīr, dhū al-ḥājāt)* be assembled and distributed among the amirs. He allocated one hundred of them to every amir of one hundred, fifty to every amir of fifty, and so on down to every amir of ten receiving ten.[88] However, the situation was worsened by the epidemics following rampant inflation. Al-Maqrīzī continues:

> Epidemics intensified throughout the countryside and in the villages, and disease spread in Cairo and Old Cairo (al-Fusṭāṭ). The number of deaths multiplied, and medicines were so much in demand for the sick that a druggist *(ʻaṭṭār)* located at the beginning of the Daylam quarter in Cairo sold 32,000 dirhams [of medicines] in one month.[89]

It is probable that what this Cairene *ʻaṭṭār* sold, in the midst of the epidemic, was mostly sugar. At the end of the thirteenth century, the annual *iqṭāʻ* revenue of a

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[87]Al-Maqrīzī, *Ighāthat al-Ummah bi-Kashf al-Ghummah* (Cairo, 1940), 33–34; English tr. by Adel Allouche as *Mamluk Economics* (Salt Lake City, 1994), 44. The translation has been modified slightly by the present writer.

[88]Al-Maqrīzī, *Ighāthah,* 35; *Mamluk Economics,* 45. In 694/1294, when Kitbughā acceded to the sultanate, the disaster began in Egypt and he was regarded as an ″ill-omened sultan″ (Sato, *State and Rural Society,* 106).

[89]Al-Maqrīzī, *Ighāthah,* 35; *Mamluk Economics,* 45.

ḥalqah cavalryman was 20,000 dirhams or less, lower than the sum earned in a month by the above Cairene *'aṭṭār*.[90] We find another example in the annal for 709/1309 by al-Maqrīzī:

> During this year fierce disease spread among the people and epidemic *(wabā')* also prevailed. Medicines and doctors were in demand, but what was needed by the sick became so scarce that sugar was purchased at five dirhams per *raṭl* [450 grams], chicken at the same price, and melon at one dirham. Under such circumstances, an *'aṭṭār* could earn from two to three hundred dirhams per day.[91]

Furthermore, during the autumn of 748/1347 plague *(ṭā'ūn)* spread to Egypt from Syria, then throughout Lower Egypt and further to Upper Egypt the next year.[92] In 749/1348 the daily death toll in Cairo increased rapidly from 300 to 2,000, devastating Barjawān quarter, where al-Maqrīzī was born and raised, leaving 42 vacant houses.[93] The plague spread outside Egypt; for example, in Ghazzah a peasant was found dead, grasping a plough *(miḥrāth)* in his hands.[94] At this time, the price of sugar needed by the sick soared to 23–27 dinars per *qinṭār* (45 kilograms),[95] which was equivalent to 4.6–5.4 dirhams per *raṭl,* enabling the *'aṭṭār*s of Cairo to enjoy once again windfall incomes, far beyond that of the *ḥalqah* cavalrymen.

SUGAR AS A FESTIVAL GOOD

Nāṣir-i Khusraw (d. 453/1061), a Persian poet and traveller who visited Fatimid Egypt in 439/1047,[96] states in his travel account, *Safar Nāmah:*

> They say that during Ramaḍān sugar granted by the sultan [Fatimid caliph] to his servants amounted to 50,000 *mann* (about 41,650 kilograms). I actually saw an [ornamental] tree shaped like a citron *(turanj),* with all its branches, leaves, and fruits made of sugar.[97]

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[90]Sato, *State and Rural Society,* 133.

[91]Al-Maqrīzī, *Kitāb al-Sulūk,* 2:55.

[92]Concerning the plague in the Middle East during the years 748–49/1347–49, see Michael W. Dols, *The Black Death in the Middle East* (Princeton, 1977).

[93]Al-Maqrīzī, *Kitāb al-Sulūk,* 2:780, 782.

[94]Ibid., 775.

[95]Ashtor, *Histoire des prix,* 317.

[96]Nāṣir-i Khusraw converted to the Isma'ili sect during his stay in Egypt.

[97]Nāṣir-i Khusraw, *Safar Nāmah* (Berlin, 1340), 79.

This was an elaborate decoration of sugar to display the authority of the Fatimid caliph, al-Mustanṣir (487–95/1094–1101) to the Muslim and non-Muslim peoples in Cairo. Based on the above description, we may see further that the practice of distributing sugar by the caliphs or sultans in the sacred month of Ramaḍān had already begun in the Fatimid period. It is related also that in 624/1227 the Ayyubid sultan al-Kāmil (615–35/1218–38) spent his money on schools *(madrasah)* and Sufi convents *(khānqāh),* giving bread, meat, candy *(ḥalawī),* and sugar to every scholar *(faqīh)*.[98] Furthermore, in 636/1238 Sultan al-Malik al-ʻĀdil (635–37/1238–40), who had acquired lordship over Egypt and Syria, held a banquet *(simāṭ)* below the citadel in Cairo and provided candy and 5,000 *ublūj*s of sugar (about 50,000 kilograms) to the common people.[99]

In 660/1262 over 200 Mongol soldiers who had been defeated by Berke Khan arrived in Cairo with their families. They were cordially received as *"wāfidīyah"* (immigrants) by Sultan Baybars (658–76/1260–77), who ordered that they be provided with fodder, sheep, robes, and sugar.[100] According to *Ṣubḥ al-Aʻshá* by al-Qalqashandī (d. 821/1418), the cadastral surveys conducted by Sultan al-Nāṣir *(al-rawk al-Nāṣirī)* during the years 713–25/1313–25 helped establish the basis of an empire which continued up to the end of Sultan Ashraf Shaʻbān*'*s reign (764–78/1363–77).[101] It is related that this Sultan al-Nāṣir, who had a deep appreciation for horses *(khayl),* granted textiles, sugar, and other goods to persons who brought excellent horses to him.[102]

During the third reign of Sultan al-Nāṣir (709–41/1310–41), the sugar grant to

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[98]Ibn al-Dawādārī, *Al-Durr al-Maṭlūb fī Akhbār Mulūk Banī Ayyūb* (Cairo, 1972), 283.

[99]Ibn Duqmāq, "Nuzhat al-Anām fī Tārīkh al-Islām," Dār al-Kutub al-Miṣrīyah MS 1740 Tārīkh, fol. 35a–35b. The *ublūj* originated from the Persian *āblūj* which meant a loaf of sugar. According to al-Maqrīzī, one *ublūjah (ublūj)* was equal to about a ninth *(tusʻ)* of a *qinṭār [jarwī]* (about 10 kilograms) (*Khiṭaṭ,* 1:103). Ashtor reads the words *"tisʻ* (nine) *qinṭār*s" (810 kilograms) ("Levantine Sugar Industry, 123, 127), but the output of sugar per feddan based on that weight far exceeds the figure seen in modern Egypt. Cf. H. A. B. Rivlin, *The Agricultural Policy of Muḥammad ʻAlī in Egypt* (Cambridge, Mass., 1961), 146. See also Sato, *State and Rural Society,* 219–20.

[100]Al-Maqrīzī, *Kitāb al-Sulūk,* 1:473–74. Notables of the *wāfidīyah,* also called *"mustaʻminūn"* (persons who requested safety), were granted the rank of amir, and the others were incorporated into the Bahri Mamluks. See also Ibn ʻAbd al-Ẓāhir, *Al-Rawḍ al-Zāhir fī Sīrat al-Malik al-Ẓāhir* (Dacca, 1956), 58–59; David Ayalon, "The Wafidiya in the Mamluk Kingdom," *Islamic Culture* 25 (1951): 89–104.

[101]Al-Qalqashandī, *Ṣubḥ,* 4:14. See also Sato, *State and Rural Society,* 161. Ibn Khalīl al-Asadī (ninth/fifteenth c.) estimates that the Nāṣirī *rawk* brought about the prosperity of villages through fair administration promoting public welfare, which continued until the reign of Sultan Barqūq (al-Asadī, *Al-Taysīr wa-al-Iʻtibār* [Cairo, 1968], 74, 76–77).

[102]Al-Maqrīzī, *Kitāb al-Sulūk,* 2:526.

the Mamluk amirs in Ramaḍān had already become an established custom. Al-Maqrīzī states:

> During the days of al-Nāṣir Muḥammad ibn Qalāwūn, the annual grant of sugar *(rātib al-sukkar)* [to amirs and sultan′s mamluks] during Ramaḍān amounted to 1,000 *qinṭār*s (about 45,000 kilograms), then increased to 3,000 *qinṭār*s (135,000 kilograms) in 745/1344–45 [under the reign of al-Ṣāliḥ Ismā'īl ibn Muḥammad], estimated at 600,000 dirhams which are equal to 30,000 Egyptian dinars.[103]

The purchase of a great number of mamluks and horses by Sultan al-Nāṣir, as well as the generous grant of sugar to his servants, gradually affected the finances of the Mamluk government. However, heavy sugar consumption continued during the reigns of his successors. Here is an example from 778/1377:

> We could not estimate the loads of kitchenwares, drinks, and various kinds of eatables [prepared for the Meccan pilgrimage by Sultan Ashraf Sha'bān]. Among them there were 30,000 small bags of sugar candy *(ḥalawī),* each bag weighing 5 *raṭl*s [about 2.25 kilograms], 180,000 *raṭl*s [about 81,000 kilograms] in total. Since all the candy was made of pure sugar, it was worth more than 100 *mithqāl*s [about 468 grams] of musk, except sandalwood and aloes.[104]

Since the amirs who accompanied Sultan Ashraf to Mecca also provided sugar candy, 360,000 *raṭl*s (162,000 kilograms) of sugar was consumed in only one month. Although the small bags of sugar candy were prepared for the Meccan pilgrims, the Cairene people criticized such luxury, saying ″it is not suitable for the Meccan pilgrimage.″[105]

Besides the lavish consumption of sugar by sultans and amirs, the close relationship between sugar consumption and festivals had already appeared among the common people in Fatimid Cairo. Al-Baṭā'iḥī writes that on Mawlid al-Nabī (12 Rabī' I 517/10 May 1123) sugar, almonds, honey, and sesame oil (*sīraj*) were provided to every religious shrine *(mashhad)* in Cairo.[106] Al-Maqrīzī further relates a case in Mamluk Cairo in his *Khiṭaṭ:*

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[103] Al-Maqrīzī, *Khiṭaṭ,* 2:231.

[104] Al-Maqrīzī, *Kitāb al-Sulūk,* 3:273.

[105] Ibid.

[106] Al-Baṭā'iḥī, *Akhbār Miṣr* (Cairo, 1983), 62.

> The Sugar Candy Market *(Sūq al-Ḥalawīyīn)* [in Cairo]. This is a market for selling sugar candy *(ḥalawī),* called today ″various sweets.″ It was the best market where one could find shops selling plates, heavy brass-wares, and various colored sugar candy. I witnessed that in this sugar market each *qinṭār* (45 kilograms) of sugar was sold at 170 dirhams. . . . During the month of Rajab one finds a beautiful scene in this market. Many kinds of sugar candy are made in the shapes of horses *(khayl),* lions *(sab‘),* cats *(qiṭṭah),* etc. Since the candy is hung by threads in the shops, they are called ″hung candy.″ Each piece weighs between 1/4 *raṭl* [about 110 grams] and 10 *raṭl*s [4.5 kilograms] and are all purchased for children. The markets in al-Fusṭāṭ, Cairo, and their environs are also filled with goods like these.[107]

The tradition of abstaining from raids and warfare during the holy month of Rajab has been observed since the Jāhilīyah. Furthermore, it is related that on the 26th night of this month the Prophet Muḥammad travelled to Jerusalem on a legendary horse *(al-Burāq)* and ascended to heaven (the *isrā’* and *mi‘rāj* legends based on Quran 17: 1). We are not certain whether the custom of ″hung candy″ in Rajab originated from this popular legend or not. In contemporary Cairo, we find similar customs on the occasions of the Prophet′s birthday *(mawlid al-nabī),* and the Feast of the Sacrifice *(‘īd al-aḍḥá)*.[108] At the sugar candy stores, large candies in the shape of brides, camels, and horses are displayed, as well as boxes filled with small candy in the shape of radishes, eggplants, turnips, strawberries, etc.

According to al-Maqrīzī, successive misfortunes after the latter half of the fourteenth century caused a swift decline in sugar production in Egypt. He states,

> Misfortunes *(miḥnah)* happened [intermittently]. The price of sugar increased due to the ruin of both waterwheels *(dūlāb)* in Upper Egypt and sugar refineries *(maṭbakh al-sukkar)* in the town of al-Fusṭāṭ. Since many sugar candy artisans *(ṣāni‘)* died out, production also declined.[109]

Miḥnah in the works of al-Maqrīzī indicates *fasād* (corruption) on the part of

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[107] Al-Maqrīzī, *Khiṭaṭ,* 2:99–100.

[108] On the Muslim festivals, see Gustav E. von Grunebaum, *Muḥammadan Festivals* (London, 1951).

[109] Al-Maqrīzī, *Khiṭaṭ,* 2:99.

sultans and amirs rather than natural disasters—mostly *ṭa'ūn* (plague)—that struck Egypt intermittently beginning with the great epidemic of 748/1347–48, which was called ″the Black Death″ in Europe.[110] On the other hand, Ashtor states that the Egyptian and Syrian sugar industries during the later Mamluk period adhered to their old methods, using oxen as power to drive the pressing mills,[111] while in the sugar mills of Sicily and Cyprus, oxen had been replaced by horses and waterpower.[112] This argument is not correct, however, because the above account by al-Maqrīzī discloses that waterwheels *(dūlāb)*[113] were already in use in Egypt under the Mamluk sultans. Consequently, it may well be that it was not technological stagnation, but rather both political corruption and natural disasters that caused the decline of the Egyptian sugar industry in the later Mamluk period.

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[110]Al-Maqrīzī gives the following explanation as to the causes of famine and high prices in late Mamluk Egypt. The first is political corruption among the Mamluk amirs. Political posts such as vizier, qadi, and *wālī* could not be obtained without paying bribes *(rishwah).* The second is the rise in the taxes levied on *iqṭā'*s; and the third is the circulation of copper coins. During the reign of Barqūq, dinars and dirhams disappeared from the market places (*Ighāthah,* 71). In contrast to the explanation of al-Maqrīzī, Abraham Udovitch proposed that repeated plague epidemics from the middle of the fourteenth century must have significantly decreased the population in Egypt, which led to the stagnation of economic activity in rural and urban society (″England to Egypt, 1350–1500: Long Term Trends and Long-distance Trade,″ in *Studies in the Economic History of the Middle East*, ed. M. A. Cook [London, 1970], 115–28). However, since Egyptian agriculture was closely tied to administrative affairs, we cannot easily reject al-Maqrīzī′s suggestion on the grounds that he mistook cause for effect. See also Sato, *State and Rural Society,* 237–39.

[111]Ashtor relates that from the second half of the thirteenth century until the end of the fourteenth, the technological level of the Middle Eastern sugar industry was relatively high and was by no means lower than that of the sugar industries in the southern European countries (″Levantine Sugar Industry,″ 105).

[112]Ibid., 105–6.

[113]On *dūlāb* see Rabie, ″Agriculture in Medieval Egypt,″ 70–71; Sato, *State and Rural Society,* 134 n. 2.