The Cambridge World History of Human Disease

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Old Diseases

It is very difficult to trace precisely the historical development of particular epidemic diseases in China. First, traditional Chinese medical terminology is based on a system hardly translatable into modern Western terms. Second, not only the concepts of disease, but the diseases themselves have changed, so much so that it is impossible to determine whether an ancient classical term meant the same thing when used in prescientific texts, or to find the exact modern counterpart of a disease discussed in such texts.

Only during the second half of the nineteenth century did diseases in China begin to be scrutinized by Western medical practitioners, and as late as the early twentieth century, it was difficult to construct a complete picture because there were classes of disease that were rarely brought for treatment to modern doctors (Poulainia 1970).

One principal feature of the traditional Chinese medical system (a system that achieved classical form by the second century) that makes it difficult to identify individual epidemics in premodern China is the ancient categorization of both epidemic and endemic diseases along with other afflictions into a large group labeled shanghan (“affection by cold,” although today it is the modern term for typhoid fever). Ge Hong, one of China’s most important early medical thinkers, specified in the early fourth century A.D. that the Shanghan diseases included not only those caused by winter cold but also those caused by spring warmth and by seasonal qi (epidemic “breath”). However, he conceded that differences among the origins of the three types of diseases were slight and they should therefore be grouped into a single category. This ambiguous conception of epidemic “fevers” as part of a more general category of “cold fevers,” despite some minor modifications, remained essentially unshaken in Chinese medical thought until the seventeenth century (late Ming and early Qing dynasties).

Widespread epidemics during the late Ming dynasty (approximately 1700) induced certain medical thinkers to reject the ancient Shanghan theory because most of the diseases they were called on to treat were found not to be caused by winter cold. The most representative of these pioneer thinkers was Wu Youxing, a seventeenth-century native of the epidemic-stricken eastern Jiangsu region. His work, Treatise on Warm Epidemic Disease, written in 1642, put forward the theory that seasonal epidemics were caused by deviant qi (“other”) in the atmosphere (Dunant 1975). This “warm factor” was separated over the “cold factor” as cause for the disease. Even diseases such as smallpox that had traditionally been considered manifestations of the body’s internal “fire” or “poison” were now grouped with communicable diseases caused by external factors.

Even this important development in understanding the etiology of epidemic diseases in premodern China does not help us understand all diseases in this period. Insufficient descriptions of the symptoms of diseases in medical texts as well as in local gazetteers and dynastic histories where most of the information on epidemics can be found constitute the main obstacle to such understanding. Moreover, China’s vast size implies regional differences in disease history that are still grossly unappreciated. At the present stage of research, with the exception of a few diseases that are easily identifiable, the best guesses as to the identity of most remain highly hypothetical.

Old and New Diseases

The sixteenth century can be considered a watershed in China’s disease history. With the opening of European traders to China’s southeast coast and the intensification of international commercial activity, diseases from South and Southeast Asia, China entered the world community and a new epidemic diseases entered China. Scarlet fever, cholera, diphtheria, and syphilis are the more important ones to be added to the reservoir of older diseases that had been ravaging China for centuries. Among the latter were smallpox, pulmonary tuberculosis, malarial-type fevers, other febrile illnesses, dysentery, and possibly plague. However, the social and demographic impact of the new diseases on China after the sixteenth century is a field largely unexplored despite its important historical implications.

Smallpox is one of the oldest diseases known to China. An early sixth-century medical work claimed that the malady (then called tuchuang, “barbarian boils”) was introduced around A.D. 435 during a war with the “barbarians” in northern China (Fan 1953; Hopkins 1983). Little is known of the development of smallpox thereafter, until the late eleventh century (Northern Song) when it was first treated in a disease written by pediatricians appeared.

That pediatricians wrote of smallpox suggests that by this time it had developed into a childhood illness among the Chinese population (Leung 1987). The technique of vaccination using human pox was first practiced in the Ionian or Tangus regions in the late sixteenth century not later than the second half of the sixteenth century, and vaccination became popular in the early nineteenth century, when Jennerian vaccination techniques were introduced through Canton. Yet, despite the early practice of vaccination, smallpox was rampant in China, especially in the north (the Manchu and the Mongolians were the most vulnerable, and two of the Manchu emperors died of the disease) where vaccination was much less practiced than in the south (Leung 1987).

Malarial-types of fevers (nue or zhang) first appeared in medical texts in the seventh century, when the economy of the subtropical regions south of the Qinling Mountains became of great importance to the northern central government. From the twelfth century on, after northern China was occupied by the Jurchen and the Song government fled to the south, southern medical books on malarial fevers and other subtropical diseases believed to be caused by the “miasm” (shanghe) of these regions appeared in increasing number (Fan 1986). Some scholars believe that temperatures during the Tang period (A.D. 618–907) were higher than those of today, which suggests that the northern limits of diseases associated with the southern climates (malaria, schistosomiasis, and dengue fever) were further north than they are today (Twitchett 1979). The number of victims of these diseases was therefore likely to be larger than previously thought. In fact, malaria was still a major killer in South and Southeast China during the early twentieth century (Chen 1982).

The history of plague in China is a controversial subject. Some believed that it arrived in China in the early seventh century (Twitchett 1979), whereas others date the first appearance in the 1130s in Canton (Fan 1986). Yet both of these views are based at least in part on simple descriptions of symptoms (appearance of “hotness,” “nodes,” or "houbi, "congestion of the throat"), which is far from conclusive evidence. By tracing the development of plague epidemics in the Roman Orient, and in Iraq and Iran from the mid-sixth century to the late eighth century, D. Twitchett (1979) has argued that at least some of the epidemics that struck China from the seventh and eighth centuries were those of bubonic plague. By contrast, those who feel that plague burst out as devastating epidemics only in the early thirteenth or fourteenth century (McNeill 1976; Fan 1986) suggest a possible relationship to the European Black Death of the same period.

Unfortunately, there is no direct evidence to support either of the above hypotheses. Even as late as the seventh century, when China was again struck by a series of epidemics, it is impossible to prove that these were outbreaks of plague (Dunant 1975). The first epidemic in China, which we have some evidence of, was in 792 and was called the "Black Plague," that first striking Yunnan in 1792. It then spread to the southeastern provinces of Guangdong and Guangxi, up the Chinese coastline to Fujian and to the northern part of China (Beneict 1988). But it was only in the late nineteenth century that medical works on the "rat epidemic" (shayu) began to be published (Fan 1986).

In addition to the epidemic diseases discussed above, several endemic ailments were likely to be equally devastating: many of these were malarial diseases (probably pneumonia and tuberculosis, dysentery, various fevers (the shanghan category of fevers), which probably included typhoid fever, typhus, and possibly meningitis, cerebral fever, influenza, and the like. Most popular almanacs and family encyclopedias of the Ming–Qing period that contained chapters on common illnesses and their treatment mentioned dysentery, the shanghan diseases, and coughs. Skin diseases, huoxian (protruding fever with diaphoresis), beriberi, and nue (malaria-type fever) were also frequently discussed (Leung 1987a).

Perhaps some notion of the relative importance of these endemic diseases, especially in southern China, can be gleaned from surveys done in Taiwan.
during the Japanese occupation period (1895–1945). The disease that caused the highest mortality in Taiwan from 1895 to 1915 was malaria. In 1923, it accounted for 17.29 percent of mortality among the native Taiwanese, causing 4,622 deaths per 1,000. Malaria was followed by dysentery and enteritis until 1927, after which "pneumonia" became the leading cause of death, killing 4,423 people per 1,000 in 1926, which had reportedly killed "10 million people," may have been cholera. But regardless of the possibility of cholera's presence at an earlier date, there is no question about the devastating effects of cholera in nineteenth-century China, especially in crowded urban centers (C. Chen, 1981; S. Chen 1981; Fan 1986).

Scrub typhus and diphtheria came to China in the early and late eighteenth century, respectively. Scarelet fever was endemic in the lower Yangtze region in the 1730s during the winter–spring transition and was then called "rotten-throat fever" (lankousha). The contemporary epidemiologist Ye Gui (1865–1945) noticed that the viruses struck all age groups and that the victims were covered with small red spots and had red sore throats. The disease seemed to be more devastating in the north. In the Peking area of the 1930s, the estimated mortality of scarlet fever was 80 per 100,000 (S. Chen 1981).

Diphtheria was confused with scarlet fever when it first reached China in the late eighteenth century. It became widespread and epidemic in the decades of the 1820s through the 1850s, spreading from the southern regions to the regions to the south through the northeastern regions before it reached the north-west in the late nineteenth century. The first medical work on diphtheria (then called "white-throat disease," bualunfou or bouchanou) was also published in the late eighteenth century (Fan 1986).

It is difficult to estimate quantitatively the mortality caused by the new diseases. Their older counterparts seemed to remain on the top of the list of high-mortality diseases into the early twentieth century. However, as scarlet fever was the tenth leading cause of mortality in the Peking area between 1926 and 1932 (S. Chen 1981), and as syphilis (with gonorrhea) accounted for 2 to 5 percent of all deaths in China, their role cannot be underestimated. Perhaps the reason why the impact of cholera and diphtheria epidemics in the premodern period was not quantified was that the former was too seasonal and the latter basically a childhood disease.

According to medical records from the southern provinces, epidemics usually struck during the summer–spring and the summer–autumn transitions. This seasonality of disease prevalence was confirmed by the 1909 Pioshow Missionary Hospital Report, which recorded 2,004 patients treated in May, 1,943 in June, and 1,380 in October—a nearly equal number of the 17,456 patients treated during the entire

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year (Kinsear 1909). Dysentery was generally the biggest killer in the summer, whereas cholera did its most important damage in October. Unlike Japan whose isolation from the important world trade routes kept major diseases away from its shores during premordum times (Jannetta 1987), China was always exposed to epidemic disease. The most common disease was rice and barley "barbarians," travel to and from India and Indo-China—all brought the "old" diseases to China, whereas the coming of the Europeans by sea from the sixteenth century onward brought a few "new" ones.

The low mortality rate resulting from diseases in premordum Japan preceded a period of low fertility, all of which shaped Japan's demographic development (Jannetta 1987). Comparison with Japan in turn raises the question of the extent to which epidemiologic diseases in China may have been an important factor in its population growth. For example, did China ever experience something similar to the Black Death, which struck Europe in the fourteenth and fifteenth centuries, or the smallpox epidemics that paralyzed the Amerindian communities in the sixteenth century?

Population and Disease

Questions such as those above have always intrigued historians of China because the Chinese population has experienced mysterious declines that were possibly caused by widespread epidemics. One such decline occurred in north China in the late seventh century, whereas another was a decline in the lower Yangtze region during the ninth century. Other examples are the drastic depopulation of north China during the Mongol dynasty in the fourteenth century, and the decline during the Ming–Qing transition in the mid–sixteenth century (Cartier and Will 1971; Zhou 1983; Wu 1988). Indeed, despite the nature of Chinese sources that do not provide any precise demographic construction, it is generally conceded that China's population in the tenth century remained very much the same as it had been nine centuries earlier. A significant growth, however, took place during the three centuries following the tenth century and in the early thirteenth century, when the population was estimated to have reached an unprecedented high of between 100 million and 120 million people (Cartier and Will 1971). Yet the fourteenth century was one of demographic disaster. Hsing Ko-ting estimates that the population level at the end of the fourteenth century to have been around 65 million, although it exceeded 130 million by the turn of the following century and soared to 150 million by 1600 (Ko 1693). Another drastic decline seems to have occurred in the mid–seventeenth century, which may have reduced the population to 83 million in 1651 (Wu 1988). Momentum was regained during the eighteenth century by the end of which the population had tripled, reaching 313.2 million in 1796. By comparison, China's population in 1866 was only 101.7 million.

Scholars have attributed some of these drastic population declines to epidemics. Twitchett (1979), for example, argues that epidemics had some effect upon demographic trends in the seventh, eighth, and ninth centuries, and might have been one major reason for population stagnation before the tenth century. It is also tempting to attribute the mysterious but real decline of population in north China during the fourteenth century to plague, as does William McNeill (1976). Some scholars would go even further by hypothesizing that plague was ravaging northern China as early as the thirteenth century. The beginning of the century saw a series of epidemics in Hebei and Shanxi, and then an epidemic struck Kai-feng (Henan) in 1222, reportedly killing nearly 1 million people within 50 or 60 days (Fan 1986).

Moving to the late Ming period, of the sixteenth and seventeenth centuries, H. Dunstan's (1970) preliminary survey of epidemics suggests that these catastrophes also had long-term effects on population growth and that the prosperity of the ensuing early and middle Qing dynasty was the result of an easing of pressure on land resources brought about by huge die-offs from disease, as well as from war and famine around the middle of the seventeenth century.

Yet the question of the impact of disease on China's population remains controversial because of different interpretations of demographic sources (Cartier and Will 1971; Biesengstien 1987; Wang 1989). Also remaining is the question of the regional differences in population development can be related to local epidemics. Natural catastrophes like epidemics or famines were usually local rather than widespread occurrences and of smaller magnitude and shorter duration than impressionistic accounts have led many to believe. In fact, it could be argued that they were unlikely to have had long-term demographic impact (Watkins and Monk 1965).

Thus, it is perhaps more appropriate to use the presence or absence of epidemic disease in China as just one of the determining factors in long-term population growth. The unprecedented upsurges in popul-
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The health of the mother is an important variable in infant mortality, whereas better resistance to childhood disease typically explains a reduced mortality in children over one year of age. Surely mother’s education and infant mortality are directly related; however, the relationship is impossible to verify in this period. In the late twentieth century Taiwan was closely linked to the improvement in general hygiene (Chen 1982; Riley 1986).

Unfortunately, it would be mere speculation to say anything about the improvement in organized provision in the hygienic conditions (especially the provision of clean water for drinking, washing, and bathing) in premodern China at this stage, and in any event, there must have been enormous regional differences.

However, the early practice of variolation against smallpox is a possible factor in explaining the decline in Chinese mortality. An eighteenth-century smallpox specialist, for example, claimed that over 80 per cent of the children of wealthy families in China had been inoculated against smallpox (Lee 1987b). On the other hand, the majority of children were not inoculated, and clearly, no single factor is likely to serve as an explanation. Averages of research that may appear in an expanded work on the question of reduced infant and child mortality include changing concepts of pregnancy, childbirth, and infancy (Lue 1984; Farth 1987); the attitudes behind the national-wide establishment of founding homes; improved hygiene and immunization; and traditional diet therapy based on the humoral dimensions, and the whole folk nutritional science built largely on empirical observation (Anderson 1988).

If we are uncertain of the positive effects of new developments in agriculture, new crops, or variolation on reducing mortality, we can at least begin to question that diseases no longer hindered long-term population growth, and that the contribution of disease to the mortality rate was no longer as great as it had been in the post-Ming period. The introduction of some new diseases from the sixteenth century onward, the spread of variolation, and an increasingly denser network of charitable dispensaries in the same period may also have played an important role, especially in southern China. Improved hygiene and child care practices were also probably important factors in bringing about what seems to have been a decline in infant mortality rates, but this has yet to be demonstrated.

Chinese Medicine

Discussion of some prominent features of Chinese medicine and the traits of people toward disease will help us understand the Chinese system and allow us to gauge its relative effectiveness from the modern point of view. Quanrantine, which was a common practice in Europe from the fifteenth century onward, was never widely practiced in China. There were, however, instances of isolation of individuals for certain diseases such as smallpox and especially leprosy.
Popular Ming–Qing almanacs and encyclopedias must also have reinforced this trend (Leung 1887a). As in premodern Europe, pediatric-doctors, self-taught midwives, women-pharmacists and other ‘heterodox’ healers flourished especially in the coun-
tryside. Women and children were often treated by female healers exclusively (Leung 1879). In 1799, a book on the principles and practices of pedi-
atrian doctors, A Collection of Improved Counseling on Childbirth (Chuang xin washui), was published by the scholar-pharmacologist Zhuo Xuexin. The work was based on his interviews with a pediatric-doctor and reveals a long tradition of pop-
ular healing that relied heavily on acupuncture, purg-
ing, either through ingestion of uncooked millet or chuan (provoked diarrhoea), and other methods (moe) that aimed at stopping symptoms instantly. Yet heal-
ers who practiced these “violent” methods were the lowest strata in a system that emphasized memoriza-
tion of abstract theories from the medical classics, subtle diagnosis, and a long and respectable family tradition of medical practice.

More often than not during epidemics, state finan-
cial aid was used for buying coffee to brew the dead (Leung 1879a), and people, high and low alike, com-
monly resorted to rituals and shamanistic practices when illness struck. Indeed, healing by charms and amulets (shayao he), which had its roots in antiqui-
ty, was part of the current Imperial Academy of Me-
dicine since Tang times. Diseases and especially epidemic diseases were firmly believed to be caused by unspecified ghosts and spirits of the local town; thus rituals were essential in disease avoid-
ance. Physicians and other healers who affected by illness were likely to seek help from vari-
ous deities, or to correct moral faults that were be-
lieved to be the source of the physical corruption (Leung 1879a).

Such fatalistic attitudes toward illness and lack of total confidence in medicine should not be cause for

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