

## DISEASE AND HISTORY

Like climate and geography, disease belongs to a category of influences whose importance is easy to acknowledge but difficult to specify. It is indisputable that disease is an important human experience that occupies time; causes discomfort, pain, and death; diverts resources from other uses; and may kill individuals or groups of people at critical moments. However, it is difficult to decide how much weight to assign to the disease experience, show that resources diverted to coping with disease would otherwise have been deployed in a particular way, or prove that a death or many deaths altered the course of events. The historical challenge that disease poses is evident in the two levels on which historians discuss the issue.

### Two Views of Disease

On one level, disease has monumental significance. According to Roy Anderson and Robert May, infectious diseases have been "the most significant agents of natural selection acting on human populations since the . . . agricultural revolution." Because Europeans, Asians, and Africans shared a particularly competitive disease pool, they carried with them to the Americas, Australia and New Zealand, and the Pacific islands an advantage of prior exposure to many diseases as well as diseases new to those territories that caused sickness and death in virgin-soil populations. Andrew Nikiforuk claims that "an alarming tide" of new and resurgent diseases threatens in the twenty-first century to undo human gains in material comfort, population size, and longevity. Disease plays the role of a Greek god, powerful but unpredictable. For Nikiforuk, the presence of malaria accounts for the decline of the civilization of classical Greece and its absence accounts for rapid population growth and civil war in modern Sri Lanka. The fourteenth-century Black Death made English the language of intellectual discussion and created the commercial revolution. The main actors in this drama are dread diseases—leprosy, plague, smallpox, and syphilis—that kill and maim and diseases known for the vast range of their effects, such as malaria, tuberculosis, and influenza. On this level disease is given an implausible degree of credit, and the cause-and-effect relationships remain indecipherable and murky.

On the other level, disease appears as a background force with profound but unspecifiable im-

portance and is given implausibly little credit as a historical force. Nevertheless, it is on this level that the most useful insights have been acquired. Three approaches merit discussion here. First, there is the history of attempts to explain disease, all of which have proved unsatisfactory or incomplete. Second, there is the increasingly rich history of diseases: the profile of maladies that cause sickness and death. Third, there is the deployment of information about disease as a cause of sickness and death in an attempt to diminish morbidity and mortality.

### Explaining Disease

In written history attempts to explain disease date from classical antiquity. Hippocrates, in a summary of older traditions, incriminated airs, waters, and places: the complex of environmental circumstances in which people live. The Ayurvedic tradition in India and the Greek physician Galen, working in the second century C.E., pointed instead to imbalances in the body among entities called humors. Hippocratic ideas emphasized the usefulness of avoiding certain things, such as swamps, whereas Ayurvedic-Galenic ideas pointed to medical treatment and to behaviors designed to conserve health. In the West the Galenic tradition carried more weight until the late seventeenth century, when the physician Thomas Sydenham and others revived Hippocratic ideas. From the claim that environmental forces, perhaps especially the decomposition of organic matter, give rise to disease and from the allied idea that diseases are transmitted through the air arose the notion of controlling disease by cleansing the environment. That laid the foundations of public health, which initially, after 1840, was directed less often at disease matter carried in the air than at such matter carried in water, especially water contaminated with human waste.

Two contrary explanations for disease and its transmission arose in the nineteenth century. First, after noticing the disease-ridden life of impoverished urban residents, protomedical sociologists incriminated crowding, bad housing, a lack of air and sunlight, and other circumstances of the urban environment as disease enablers or provocateurs, although not agents. Asiatic cholera and tuberculosis, the first a fearsome epidemic disease and the second the leading cause of death in Western Europe in the nineteenth century, fit this conception of disease causation and transmission. Second, evidence began to accumulate in mid-century that specific disease

agents could be identified, and not just for a few diseases. By the 1890s the scientists Louis Pasteur and Robert Koch had identified enough germs to give precedence to the idea that specific diseases are caused by specific pathogens. Germ theory temporarily displaced the conditions of poverty as the leading explanation for disease, even though the germ theorists initially claimed far too much, associating germs with all diseases and failing to clarify the process of causation.

None of these ideas has maintained its dominance. Germ theory reigned from about 1890 to about 1970 before giving way to a revival of modernized humoral ideas that stress the individual's responsibility to conserve health. It encountered difficulty in explaining why lower socioeconomic groups so often die earlier and suffer more sickness than do elites, even in social democracies. At the end of the twentieth century these three traditions—humoral, sociological, and biomedical—all played important roles in explaining disease.

### Profiling and Theorizing about Disease

More and more research attention was directed toward discovering the major diseases of the past. Scientists learned how to detect specific diseases from skeletal remains, complementing the insights of morbid pathology into the postmortem signs of disease first acquired in the early nineteenth century. Researchers also learned how to decode some of the diseases mentioned vaguely in historical texts, recognizing tuberculosis, typhus, bubonic plague, dysentery, and some forms of heart disease. They learned how to construct profiles of the major diseases and injuries causing sickness and death for a few areas in the seventeenth and eighteenth centuries and for many more areas of the world in the nineteenth century.

This research, which remains in progress, has produced a general description of evolution in the leading causes of death in recent times, a description that has some theoretical elements and is associated with the name of the demographer Abdel Omran and the idea of epidemiologic transition. Omran's original formulation identified three disease eras: one of pandemic infections, another of receding pandemics, and a third dominated by chronic diseases of the body organs. Death rates declined in the second and third stages, giving rise to population growth and increased longevity.

More recently the term *health transition* has been used to describe these phenomena. Under that term scholars have tried to add to the theoretical understanding of change over time in the identity of diseases causing sickness and death and to learn more about how to control and manage disease. Health transition theory also corrects some of the misleading elements of older ideas: Pandemics did occur in the distant past, but they were not the major killers, which instead were commonplace diseases that are mostly familiar in the early twenty-first century. This new approach also has been able to assimilate many important distinctions in regard to disease and its avoidance, such as exposure and resistance, nutritional status while sick, and immune status. However, there is still nothing available to formulate a general theory of disease in the past.

### Collecting Information about Disease

Whereas informed eighteenth-century medical commentators in the West preferred the idea that diseases are inconstant, capable of changing in the same person from one day to the next, and nonspecific in their origins, the idea arose in the nineteenth century that diseases are specific, having particular causes, pathways, periods of incubation, durations, lethality, biases by sex and age, and other distinctive characteristics. One effect of this idea was the promotion of efforts to create disease taxonomies, which led to the development at the century's end under French guidance of an international scheme of disease classification. By the end of the twentieth century that scheme had evolved through ten editions into a classification of diseases and injuries under 26 headings, each with many subdivisions.

Progress in identifying diseases; uncovering the postmortem signs of disease as well as the signs, symptoms, and chemistry of disease among the living; and classifying diseases increased the importance of knowing the diseases that were said to cause sickness and death. Some countries and cities had long tried to collect information about diseases causing death; that effort gained momentum in the nineteenth and early twentieth centuries, at least among rich countries that could afford the required investment of expertise and money. However, most of the world's population remained undiagnosed in regard to the causes of death. Even in rich countries the causes of most sickness episodes were not recorded. Some diseases were "notifiable," especially communicable diseases about which early warning was

wanted. However, the sicknesses of everyday life and many noncommunicable diseases and injuries were poorly counted and recorded. Nevertheless, this idea led to an effort to produce a schedule of all the diseases in the world causing sickness and death, rank them by their scale and effect and perhaps also by their preventability or treatability, and then try to reduce the number of unnecessary deaths from about 54 million persons a year across the globe around 2000 to the 30 million or fewer that would take place if all the world were as well served by disease prevention as the rich countries are.

Disease remains a threat in the present and the future. Too many people, especially infants and children, die each year in light of the degree of human understanding of disease and the potential to control it. There is also too much sickness, much of which could be avoided through less poverty, the application of public health measures and medical knowledge and by a global population better informed about germ theory and risk factor theory. Moreover, there remains the threat of new or resurgent diseases that could defy the means of control currently available. Nevertheless, what is most remarkable about disease and history is the marked retreat of disease since about 1800. It is principally the waning of communicable diseases, especially diseases of childhood, that accounts for the rising life expectancy of the last 200 years, arguably the most important achievement of humankind during that period.

**See also:** *Black Death; Epidemiological Transition; Health Transition; Mortality Decline; Tuberculosis.*

#### BIBLIOGRAPHY

- Anderson, Roy, and Robert May. 1991. *Infectious Diseases of Humans: Dynamics and Control*. Oxford: Oxford University Press.
- Bobadilla, José Luis, Julio Frenk, Rafael Lozano, et al. 1993. "The Epidemiologic Transition and Health Priorities." In *Disease Control Priorities in Developing Countries*, ed. Dean T. Jamison, W. Henry Mosley, Anthony R. Measham, José Luis Bobadilla, et al. Oxford: Oxford University Press.
- Crosby, Alfred. 1972. *Columbian Exchange: Biological and Cultural Consequences of 1492*. Westport, CT: Greenwood.
- Hays, J. N. 1998. *The Burdens of Disease: Epidemics and Human Response in Western History*. New Brunswick, NJ: Rutgers University Press.
- Johansson, S. Ryan, and Carl Mosk. 1987. "Exposure, Resistance, and Life Expectancy: Disease and Death during the Economic Development of Japan, 1900–1960." *Population Studies* 41: 207–235.
- Karlen, Arno. 1996. *Man and Microbes: Disease and Plagues in History and Modern Times*. New York: Putnam.
- Kiple, Kenneth F., ed. 1993. *The Cambridge World History of Human Disease*. Cambridge, Eng.: Cambridge University Press.
- . 1997. *Plague, Pox, and Pestilence*. New York: Barnes & Noble.
- McNeill, William. 1977. *Plagues and Peoples*. Garden City, NY: Anchor.
- Murray, Christopher J. L., and Alan D. Lopez, eds. 1996. *The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability from Diseases, Injuries, and Risk Factors in 1990 and Projected to 2020*. Cambridge, MA: Harvard University Press.
- Nikiforuk, Andrew. 1992. *The Fourth Horseman: A Short History of Epidemics, Plagues and Other Scourges*. London: Fourth Estate.
- Omran, Abdel. 1971. "The Epidemiologic Transition: A Theory of the Epidemiology of Population Change." *Milbank Memorial Fund Quarterly* 49: 509–538.
- Riley, James C. 2001. *Rising Life Expectancy: A Global History*. Cambridge, Eng.: Cambridge University Press.

JAMES C. RILEY

## DISEASES, CHRONIC AND DEGENERATIVE

Chronic and degenerative diseases (CDDs) are morbid pathological processes characterized by slow development, long duration, and gradual deterioration in the functioning of the affected tissue, organ, or