

The art of medicine

Road maps to health

"This long disease, my life."

Alexander Pope, *An Epistle to Dr Arbuthnot* (1735)

Is health or disease the default mode of the human condition? Are we born healthy and become sick, or do we carry from our conceptions the seeds of disease? The modern answer to this old question, posed so poignantly by Alexander Pope, is not either/or, but both/and. In our age of genomics, it would be a brave commentator who would discount the role of genes in the functions and dysfunctions of our bodies. It would be equally short sighted to discount the role of our physical and social environments in health and disease, however these two elusive terms might be defined. Consider the following categories: environment, the moral dimension of moderation, occupation, poverty, and politics. Each has had its analysts in the long history of medicine.

We are not the first generation to appreciate that how and where we live has a powerful bearing on the diseases that plague us. The environment was a particularly powerful force because of the traditional assumption of what biologists call "soft" heredity, or the inheritance of acquired characters. It is sometimes dubbed Lamarckianism, but that is a mistake, because Jean-Baptiste Lamarck was merely operating within the traditional explanatory paradigm when he argued that giraffes can acquire long necks by generations of them stretching to eat the leaves at the tops of trees. This biological plasticity was a commonplace in both medicine and the life sciences. It received its canonical expression in the Hippocratic treatise *Airs, Waters, Places*. As the title suggests, this essay dealt with the impact of the environment on both the physical characteristics and prevalent diseases of human groups. It offered advice on where to site your houses, which winds were healthful and which were harmful, and the impact of water supply on health. It argued that stature, skin colour, head shape, and a range of other features were directly moulded by the environment, and that these features in turn influenced the spectrum of common diseases within the group. Within a framework of soft heredity, social, cultural, and dietary factors were fundamental for a doctor to note.

Because of their lasting effect, these environmental matters also carried moral status. The Hippocratics saw health as situated in the middle way; excesses of any kind were to be avoided, since they led to an imbalance of one or other of the four humours, and therefore to disease. This emphasis on moderation was codified in the notion of hygiene, and Galen (c 129–210), writing centuries after the Hippocratics, believed that he had brought the medicine of his forebears to the perfect conclusion, in his own work *Hygiene*. The work is full of good advice, couched within the humoral framework, but always emphasising the need for will-power and discipline

in maintaining health. Galen's subject was blessed with the economic freedom to eat or drink as he or she pleased, and to live as he chose. Bad choices led to bad health.

Airs, Waters, Places took the group as the focus; *Hygiene* the individual. The latter has persisted as the more common mode of medical analysis, since doctors mostly deal with individuals and their ailments. In the early modern period, another category entered medical thinking: the role of occupation. Bernardino Ramazzini (1633–1714) was hardly the first doctor to note that certain occupations were associated with particular diseases, but his *De morbis artificum* (*The Diseases of Workers*) of 1700 justly occupies a privileged place in the history of medicine. Although he held chairs of medicine at Modena (1685) and Padua (1700), Ramazzini was always active as a medical practitioner, and his ordinary patients taught him much. An emptier of septic tanks informed him that he expected to go blind, so powerful were the exhalations. Plasterers, stonecutters, and millers knew that chronic pulmonary disease was their fate. Metal workers, potters, and tinsmiths recognised the signs and symptoms of what we know as lead poisoning—a condition, incidentally, recognised by the Hippocratics.

Ramazzini's insights were not lost to later generations of doctors, but they came to the fore after the Industrial Revolution, when altered ways of working threw up a new series of occupational disorders. Investigators in Leeds, Manchester, and the other burgeoning cities of Britain showed how the diseases that children, women, and men suffered were a direct result of the conditions to which the factories exposed them. In Paris, Louis Villermé (1782–1863) paid particular attention to textile workers, noting the long hours, crowded working conditions, bad nutrition, and poor pay among those employed in the industry. Increasingly, Villermé and other public-health reformers focused on a common feature of their subjects: poverty.

Long before he became Prime Minister, Benjamin Disraeli (1804–81) enunciated his famous evocation of Britain as divided into two nations "between whom there is no intercourse and no sympathy...who are formed by a different breeding, are fed by a different food, and ordered by different manners, and are not governed by the same laws". These two nations were the rich and the poor, and his insight, at both national and international levels, still has purchase today.

Disraeli's comment could have been at the masthead of the Victorian public-health movement, for poverty and its health consequences became leading candidates in the social investigations of death rates that drove reform. Villermé's counterpart in Britain was Edwin Chadwick (1800–90), and like Villermé, Chadwick was much concerned with the striking differential mortality between rich and poor. Chadwick,

a lawyer and disciple of the utilitarian Jeremy Bentham (1748–1832), became interested in health issues through his concern with the English Poor Laws. He masterminded their systematic examination in 1832–34, largely wrote the report that led to the New Poor Law of 1834, and administered his brain-child for a decade. He became increasingly aware that a major cause of poverty was disease, as breadwinners fell ill and could not work, and medical expenses placed strains on precarious family budgets. Chadwick's major work, *Report on the Sanitary Condition of the Labouring Population of Great Britain* (1842), documented with the newly available numerical techniques of the early Victorian period (called by them "statistics", although little more than systematic enumeration), showed how gentry, tradesmen, and labourers in Manchester, had average ages of death of 38, 20, and 17 years, respectively. Much of this discrepancy was, as he recognised, due to the much higher child mortality of working families, but even among adults, there were still major differences. His conclusion was clear: poor people have lower life expectancies than rich ones. Why?

Traditional explanations of poverty were moral in their implications. The poor were feckless, given to drunkenness and other vices, and spent what money they had unwisely. A thrifty labourer, so the scenario went, could rise above his circumstances, with discipline and determination. The gospel of Self-Help, elaborated so powerfully by Samuel Smiles (1812–1904), an unsuccessful doctor turned successful author, preached all the middle-class virtues, and made the rags to riches trajectory part of modern folklore. Chadwick would not have demurred except for one thing: disease. Disease pauperised large portions of the labouring population, and needed to be prevented to give everyone an equal playing field. Eliminate the filth diseases of overcrowding and insanitary living conditions, and the whole nation would be better off.

Disease causes poverty. But does poverty in itself cause disease? This is a much more subtle question, and if so, might take individual poverty out of the moral category. It might make the poor victims of a larger system rather, and thus require much more fundamental changes in social relations than the clean water and adequate waste disposal that Chadwick advocated. Although he put aside his cherished *laissez-faire* principles when health was an issue, he never challenged the guiding philosophy of Victorian economic life. Poverty for him always retained the taint of moral failing.

Rudolf Virchow (1821–1902) was of a different stamp. Remembered today as the leading pathologist of the 19th century, he did much more than make the cell the central feature of pathological (and biological) thinking. During the 1840s, he was a genuine revolutionary, and he never abandoned the reformist philosophy that led him to the barricades during the Prussian revolution of 1848. Despite his controversial reputation with the Prussian authorities, he was asked to investigate a serious outbreak of "typhus"



Rudolf Ludwig Karl Virchow (1821–1902)

in Upper Silesia, then part of Prussia, but with a large Polish majority. He went in February, 1848, stayed about 3 weeks and wrote a moving and radical critique of the causes of this epidemic. He not only introduced politics into his analysis, he made it central.

Virchow travelled throughout the area, met doctors and public officials, examined patients, and established the nature of the disease. He made some sensible recommendations for dealing with the immediate crisis (he was a good clinician as well as a pathologist), but his comments on how future epidemics might be prevented would not have gone down well in Berlin. What Upper Silesia needed was not simply more doctors, but a change in its social relations. It needed education, better roads, modern modes of agriculture, and, above all, universal democracy. His solutions to better health were not merely medical; they were political. We should not be surprised that this was Virchow's conclusion. After all, it was he who wrote that "Medicine is a social science, and politics nothing more than medicine on a large scale". In the largest sense, the first part of Virchow's ringing statement is true; the world would be a better place if the second part were as well.

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Further reading

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