

book reviews

Goldberger's war: the life and work of a public health crusader

By Alan M. Kraut. Hill & Wang, New York 2003. 313pp. \$25.

The idea that disease was caused by a positive malign influence dominated medicine throughout its early history. Magic spells, demons, wrathful gods, celestial or other natural phenomena and bad air or water were all incriminated. The recognition of bacterial and parasitic infections strengthened the view that something positive had to happen to cause disease. Although Hippocratic thought embraced the concept of a deficit as well as an excess of one or more of the four humours, the idea that lack of any factor, intrinsic or extrinsic, could do so emerged very slowly. In endocrinology, despite what we would today regard as compelling evidence, it took many years for the concept of deficient production of secretions to develop. Disorders that followed experimental removal or natural loss of the adrenal or thyroid glands were attributed to their failure to remove noxious substances from the body, rather than the loss of something essential for the maintenance of health. The same blind spot characterised studies of dietary deficiencies. Microbial infections were thought to account for scurvy, beriberi, rickets and pellagra, causing in each case long delays in prevention and treatment, with much unnecessary suffering and many deaths; the concept that the cause might be something missing from the diet took many years to materialise.

This book is about Joseph Goldberger's long struggle to find the cause of pellagra, to prevent it, to convince a sceptical medical and scientific community that his claims of a dietary origin were valid and, finally, to persuade governments to take action to prevent it. Goldberger had entered the US Public Health and Marine-Hospital Service shortly after qualifying in medicine, and was immediately posted to deal with epidemics of dengue fever, typhus and yellow fever, all three of which he personally contracted. He was shocked at the high prevalence of pellagra he encountered, most markedly in the southern states. In 1912, South Carolina alone had reported thirty thousand cases with 40% mortality. In the US between 1906 and 1940 about three million people were affected, of whom about 100,000 died. Because of its epidemic proportions, and the fact that the germ theory was now dominant, the instinctive professional reaction was to regard it as infective. Goldberger, trained in epidemiology, felt otherwise. He noted that medical and other attendants did not contract the disease despite close contact with patients. His own experience in contracting three infective diseases in this way increased his doubts. The difficulty was to produce convincing scientific evidence. He carried out meticulous epidemiological studies, charting the distribution of the disease in detail, trying to correlate it with the victims' food intake. This increased his suspicions that dietary aberration was the cause, and the link was poor nutrition due to poverty. Proof was needed and there

was only one fully acceptable way to provide it; he had to conduct experiments on human subjects.

First, to disprove the infection theory, he injected blood from pellagra sufferers into volunteers, one of whom was his long-suffering wife, Mary; none developed pellagra. He then applied nasopharyngeal secretions from pellagrins to the nasal mucosa of volunteers; epidermal scales from skin lesions, urine and faeces were formed into pills and swallowed. Again, there was no sign of pellagra. This was not enough; he needed positive evidence that the disease could be produced by manipulating the diet. So, he began a long series of tests on volunteer prisoners placed on deficient ('traditional southern') diets for up to six months, to see whether the disease could be reproduced. In exchange for their participation all were granted pardons, including some who had committed vicious murders. (This is not the place to comment on the ethics of this experiment – nor, for that matter, on the injection of pellagrins' blood or ingestion of other material!) Within five months, symptoms of pellagra appeared in many of the prisoners. Goldberger had proved the correctness of his hypothesis. It was still necessary to persuade governments to introduce foodstuffs that prevented the disease, and this he did by constant forceful argument until finally his goal was reached and pellagra was conquered. Within a few years, the deficient factor was identified as nicotinic acid. In the developed world enrichment of flour with B complex vitamins has eliminated the disease.

A book about this outstanding medical man was overdue. His personal history is not without interest: an immigrant Jew who abandoned religion and married outside of the faith, he encountered prejudice on this account in addition to strong professional opposition to his scientific views. In overcoming this, he was greatly helped by his wife, Mary, who deserves special credit. Throughout this long 'crusade' she stood by her husband, looked after a family on a small income during his long absences, took part as a volunteer in his experiments and lent him support through years of frustrating unproductiveness.

Goldberger was nominated for the Nobel Prize for five successive years, without recognition. He died of cancer in 1929 at the age of 57. In the same year Eijkman received the Prize for identifying another B complex vitamin, the anti-neuritic factor, thiamine.

SIR RAYMOND HOFFENBERG
Past President of the Royal College of Physicians

Flesh in the Age of Reason

By Roy Porter. Allen Lane, London 2003. 592pp. £25.

It is not surprising that philosophers such as Grayling and Tallis look back to the eighteenth century as a Golden Age of Reason. But the utility of reason depends on the premises it works from. One of the fundamental but unsound premises of the Age of Reason was the perfectibility of Man. For over a millennium and a half, the