REVIEW

What can the Third World learn from the health improvements of Victorian Britain?*

G C Cook

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In 1904 (some three years after the Victorian era had come to a close), Sir George Clarke KCMG, late Secretary to the Colonial Defence Committee, wrote to the editor of the *Times*: “The bacteriologists have made our flesh creep. We have been taught to expect ptomaines in food, bacilli in the running brooks, and germs in everything”. He continued: “We know the elaborate precautions taken in all well-managed hospitals to avert septic conditions”. And he ended his letter: “We must either modify the germ theory of disease, or ... regard the *dust* [my italics] of a great city, with hospitals and diseased persons in its midst, much more seriously than has been our custom hitherto.”¹ Clarke was thus highlighting the fact that the (urban) environment in London was heavily contaminated; this had been the case in Victorian Britain, and remains the case in all Third World countries—where even today, nearly 50% of deaths are caused by infectious disease.²

Prior to the development of the “germ theory” (by, among others, Pasteur, Koch, and Lister) and many years before the introduction of antibiotics, enormous advances in human health in Britain had taken place in the Victorian era (that is, 1837–1901).³ These resulted first and foremost from improvements in the prevailing infrastructure in our rapidly increasing urban conurbations.

A major early protagonist for an improvement in the standard of living conditions was Thomas Southwood Smith (1788–1861)—the “father of sanitary reform”.⁴ Initially trained for the dissenting Christian ministry, Smith was appointed at the age of 36 years as physician to the London Fever Hospital. Other prominent names in disease prevention at that time were: Neil Arnott (1788–1874) and James Kay, later Sir James Kay–Shuttleworth (1804–77). Factors in the spread of epidemic disease (which in Smith’s opinion all had a telluric origin) were: confinement within a limited space, overcrowding, and decay of vegetable/animal material—which contaminated the atmosphere (the “miasmatic” theory of disease was still dominant).⁵

In 1839 (two years after Victoria came to the throne), it was Smith who was largely instrumental in forming the Health of Towns Association. In 1848, he was appointed as the sole medical representative on the General Board of Health where he had a close liaison with the lawyer Sir Edwin Chadwick (1800–90).⁶

PREVENTION OF DISEASE BEFORE THE VICTORIAN ERA

William Guy, FRCP, FRS (1810–85), professor of hygiene at King’s College, London from 1869 until 1878, addressed the subject of disease prevention before the 19th century. He concentrated on four diseases: the lead colic of Devon, scurvy, jail fever (typhus), and smallpox. The major participants, in his opinion, in the solution of these preventable diseases were: Sir George Baker (1722–1809), John Woodall (1556–1643) and James Cook (1728–79), John Howard (1726?–90), and Edward Jenner (1749–1823), respectively.⁶

THE VICTORIAN CONTRIBUTION

At the beginning of the Victorian era, therefore, many preventive strategies had been well established. Guy emphasised: space, ventilation, drainage and water supply, and cleanliness all of which were of paramount importance. The box summarises these priorities. He also emphasised that good health is vital to the labourer, and furthermore that disease is overall very costly to a nation. The major contribution during the Victorian era was thus implementation of much of what was already known in the 18th century and before.

Florence Nightingale (1820–1910) highlighted reforms of hospital design, concentrating on improved ventilation.⁷ The new St Thomas’s Hospital designed by Henry Currey (1820–1900) was one of the first to incorporate the “pavilion principle” (instead of the “corridor plan”) with improved ventilation.⁸

From the mid-19th century, there had been increasing evidence that many of Chadwick’s filth diseases were the result of poor standards of sanitation and overcrowding. In this context, John Snow (1813–58), although his views were not widely accepted in his lifetime, was an important pioneer.⁹ Incidentally, Snow’s mind on this issue was made up before he published his widely quoted work on cholera prevention in 1854 and 55; in a lecture, which is rarely quoted, given to the Medical Society of London in 1853, he had outlined his seminal views on the cause and prevention of faecally transmitted infections by an agent that was certainly not a miasma.¹⁰ The development of ideas on cholera transmission during the Victorian era is illustrated by accounts given by George Roupell (1797–1854) in 1833 and Joseph Fayrer (1824–1907) in 1888, respectively.^{11 12}

Joseph Bazalgette (1819–91), the Chief Engineer to the Metropolitan Board of Works (the “sewer king”), was an early enthusiast that pure drinking water, coupled with satisfactory sewerage disposal were of paramount importance in the prevention of many of these faecally transmitted infections. In fact, although he was an engineer, and not medically qualified, behind his work was the realisation (outlined in his Presidential address to the Institution of Civil Engineers) that both the health, and longevity, of mankind could be improved by his work. It is estimated that he was responsible for the construction of 1300 miles of London sewers, and that 318 million bricks were used in their construction. As well as preventing a whole host of intestinal infections, including ones as diverse as that caused by *Giardia lamblia* and dracunculiasis, this strategy also decreased the prevalence of such diseases as amoebiasis and liver “abscess”.^{13 14}

* Based on an address delivered to the History of Medicine Section of the Royal Society of Medicine on 5 May 2004.

Health priorities in Victorian Britain

- Space/overcrowding
- Ventilation
- Cleanliness
- Sanitation/water supply
- [Nutrition]

WHAT CAN THE THIRD WORLD LEARN FROM THESE PIONEERING ACHIEVEMENTS?

Health budgets in developing countries are notoriously restrictive in magnitude, and furthermore curative medicine is both extremely costly and usually available to a very small percentage of the population. Consequently preventive strategies should assume a pivotal role. There are many lessons therefore to be learned from Victorian Britain. A shift should occur from curative to preventive strategies, and health budgets should be oriented with this in view. Major priorities are space (and ventilation) and overcrowding, together with improved sanitation and the purification of drinking water.

Many respiratory tract infections, including pulmonary tuberculosis (arguably the most important tropical disease at present) are dominant in medical practice in developing countries and both are essentially preventable. Frequently, ventilation in overcrowded habitations is far less than adequate. Therefore, improved living conditions, including greater space and less overcrowding are of paramount importance. In this context, there is much to be learned from the work and writing of Nightingale and Currey.

Much disease in Third World countries is transmitted by the oral-faecal route. Therefore any strategy aimed at improving the drinking water supply, and sewage disposal, such as that implemented by Bazalgette in Victorian London, is destined to improve the overall health of tropical communities.

Regarding malaria, recognition that mosquitoes are essential in transmission by Ronald Ross (1857–1932) in 1897–8 (at the latter end of the Victorian era) has by no means led to abolition of this infection as envisaged by him.¹⁵ Instead, we have witnessed a reversion to preventive strategies, including the widespread use of mosquito nets. Bazalgette's embankment on the northern shore of the River Thames led to a sharp diminution in *Plasmodium vivax* infection in London.

Smallpox vaccination was eventually successful in eliminating this infection, but nearly 200 years elapsed before Edward Jenner's dream materialised—in October 1977. Inoculations for a whole host of infections—especially those in childhood are far more cost effective than curative regimens. Regarding HIV/AIDS, the answer must lie in prevention rather than the development of new and expensive antiviral agents. The Victorians already had a

shrewd suspicion regarding the “portal of entry” and the appropriate means of prevention of diseases as diverse as cholera, enteric fever, and typhus.³ That HIV/AIDS is essentially a sexually transmitted disease now seems obvious.

The fact that many of the “new” infections (for example, Simian foamy virus infection, Ebola disease, and variant CJD) to afflict *Homo sapiens*, result from defective nutritional practices has recently been highlighted in the *Times* newspaper.¹⁶ Surely, realisation of satisfactory sources of food could prevent many of these potentially lethal infections.

EPILOGUE

I am a physician who has spent nearly half of an active professional life practising *curative* medicine in developing countries. It is now clear to me that *preventive* strategies are overall more important, and there is much to be learned from the historical perspectives of Victorian Britain—many years before the “germ theory” of disease, and the antibiotic era.

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Correspondence to: Professor G C Cook, 11 Old London Road, St Albans, Hertfordshire AL1 1QE; admin@fpm-uk.org

REFERENCES

- 1 Clarke GS. Dust. *Times* 1904;4 Apr:6.
- 2 Shetty N, Shetty PS. Epidemiology of disease in the tropics. In: Cook GC, Zumla A, eds. *Manson's tropical diseases*. 21st ed. London: Saunders, 2003:19–31.
- 3 Thorne RT. *On the progress of preventive medicine during the Victorian era*. London: Shaw and Sons, 1888:63.
- 4 Anonymous. Contagion and sanitary laws. *Westminster Review* 1825;3:134–67.
- 5 Cook GC. Thomas Southwood Smith FRCP (1788–1861): leading exponent of diseases of poverty and pioneer of sanitary reform in the mid-nineteenth century. *J Med Biog* 2002;10:194–205.
- 6 Guy WA. *Public health: a popular introduction to sanitary science. Being a history of the prevalent and fatal diseases of the English population from the earliest times to the close of the War of the French revolution in 1815*. London: Henry Renshaw, 1874:342.
- 7 Cook GC. *Victorian incurables: a history of the Royal Hospital for Neuro-Disability*. Spennymore, Durham: The Memoir Club, 2004:90–7.
- 8 Cook GC. Henry Currey FRIBA (1820–1900): leading Victorian hospital architect, and early exponent of the “pavilion principle”. *Postgrad Med J* 2002;78:352–9.
- 9 Shephard AE. *John Snow, anaesthetist to a queen and epidemiologist to a nation: a biography*. Cornwall, Canada: York Point Publishing, 1995:373.
- 10 Snow J. *On continuous molecular changes: more particularly in their relation to epidemic diseases*. London: John Churchill, 1853:38.
- 11 Roupell GL. *The Croonian lectures, delivered at the Royal College of Physicians in MDCCCXXXIII on cholera*. London: Nicol, 1833:91.
- 12 Fayer J. *The natural history and epidemiology of cholera*. London: Churchill, 1888:71.
- 13 Cook GC. Joseph William Bazalgette (1819–1891): a major figure in the health improvements of Victorian London. *J Med Biog* 1999;7:17–24.
- 14 Cook GC. Construction of London's Victorian sewers: the vital role of Joseph Bazalgette. *Postgrad Med J* 2001;77:802–4.
- 15 Cook GC. Mosquito involvement in the malaria life cycle. *J Med Biog* 1998;6:182–3.
- 16 N Hawkes. Monkey virus found in man ‘may lead to new epidemic’. *Times* 2004;19 Mar:16.