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Miasma revisited

The intellectual history of tropical medicine

Tropical medicine arose as an area of medical practice in the last decade of the 19th century. Patrick Manson dominated its early history, and it thrived through the height of the colonial era. With the end of colonialism, tropical medicine underwent an evolution, with the rise of the disciplines of travel medicine, geographic medicine, international health, and global medicine. With the links of tropical medicine to commerce, and tropical medicine's indirect association with miasma, history might be seen to repeat itself.

'Science knows no country, because knowledge belongs to humanity, and is the torch which illuminates the world'.

Louis Pasteur, 1876

'Alas, what danger will it be to us maids as we are to travel so far?'

Rosalind in William Shakespeare
As You Like It, Act 7, Scene 3

■ **The history of tropical medicine began with miasma as a central issue. Rising to prominence in the 18th century, this anticontagionist concept presented the notion that rotting material, waste, filth and stagnant waterways gave rise to gaseous discharges, and that these discharges led to disease.¹ This idea may have fed early 19th century ideas that 'the tropics' were an unhealthy place, for where better to find such materials?**

It had long been considered that the tropics were an unhealthy place for Europeans to visit. The colonial efforts of imperialist European powers were tempered by disease. The west coast of Africa was the 'white man's graveyard'.² The relationship between illness and climate remained unclear. Not all diseases of the tropics affected the indigenous population as badly as the Europeans, some affected only the indigenous population, and some tropical diseases were not confined to the tropics. The cholera epidemics in temperate countries demonstrated this point.³

With the advent of the germ theory of disease, practitioners searched elsewhere for an explanation for illness. In the latter half of the 19th century, the causal agent and basic means of transmission of almost every bacterial and parasitic infection of humans was identified. In the area of parasitic infection in the tropics, one notable practitioner was Sir Patrick Manson. He has been called 'the father of tropical medicine'.³ Manson and his descendants edited the first 19 editions of his textbook on tropical medicine, thus maintaining his long paternal shadow for 80 years after his death.

So what is tropical medicine?

The very name seems out of place in medical nomenclature. Medicine is usually classified into divisions aligned to the body system involved, the age of the patient, or the disease process. In comparison to this internal classification, with its reference to the sick body, tropical medicine has been defined by an association with geography and place. Its title defines and is defined by a location on the earth's surface.

Strictly speaking, tropical means the 'waistband' around the globe, bounded by the Tropic of Cancer and the Tropic of Capricorn. In recent textbooks of tropical medicine, the definition has become broader, including areas such as northeast Asia, northern Australia, Central America and the Mediterranean littoral from Spain to Israel in the 'medical tropics'.⁴

Manson was more simplistic in the preface to the first edition of his book *Tropical Diseases*, which was to become the 'bible' of tropical medicine for almost 100 years, when he called it 'a manual of the diseases of warm climates'.⁵

The theme that held places of warm climate together was that they were usually places visited by Europeans to spread Christianity, to colonise and then exploit local natural resources, to wage war, or to conduct all three in varying degrees. Linking them all was colonialism, and the desire to extend empires. In both Britain and the United States, tropical medicine was a specialty 'conceived out of the very specific needs of colonialism'.⁶

Of paramount importance in the colonial venture was the maintenance of a healthy population of the colonisers, and to a lesser extent a healthy population of the colonised, but usually only if their bodies were important as labour. The empires required commercial interests to be maintained in the colonies and the long arm of commerce was entwined into the control of tropical medicine as a discipline from its earliest days. The founder and first chairman of the Liverpool School of Tropical Medicine was Sir Alfred Jones, 'a great and distinguished business man having large interests in the tropics'.⁷

Between 1866 and 1890, Patrick Manson worked in Asia. While he did some work attending to the needs of the local population, he was predominantly caring for Europeans, who were involved in commerce, and with conducting research into the mechanism of transmission of local diseases. He did ground breaking research into malaria, filariasis, and leprosy. On returning to England in 1890 Manson brought with him a sizeable reputation as an expert in tropical medicine.⁸

Manson became involved with the Seamen's Hospital Society with its ward at the Albert Dock Hospital, and with the Dreadnought Hospital at Greenwich, giving him, through the port of London, a steady stream of ill seaman from all over the globe. Manson therefore had ready access, in a temperate climate, to diseases contracted in the tropics, and he could continue his research in tropical medicine.⁹ He began to deliver public lectures on the subject, and in 1897 was appointed Medical Adviser to the Secretary of State for the Colonies, by which 'his status was sensibly enhanced'.⁹ A close association thus began with Mr Joseph Chamberlain, the colonial secretary. This association was said to be very fruitful. 'It led to a recognition that successful colonisation in the tropics... depended upon the preservation of the health of the officials and of the agents of commerce'.⁹ In 1898 Manson's *Manual of Tropical Disease* was published, and it quickly became the standard text for medical officers in the Colonial Medical Service.

The teaching of tropical medicine

Manson developed the teaching of tropical medicine. With his lobbying of the General Medical Council, it was decided that the Colonial Medical Service medical officers should have instruction in tropical medicine, hygiene and climatology. In 1899, The London School of Tropical Medicine was established in association with the Seaman's Hospital Society. Over the next 20 years it expanded and was eventually combined with the London School of Hygiene.⁸

Schools of tropical medicine were established in Germany, Belgium, Italy, India and the United States of America.⁸ The School of Tropical Medicine at Harvard was notable for its association with commercial enterprises in tropical locations.¹⁰

In war, Manson's new discipline claimed vindication of its recognition, and the value of its training. During World War I, with disease causing more morbidity and mortality than bullets and high explosives, the pupils of the London School were said to have provided valuable knowledge and advice in all theatres of operation in Europe and the Middle East, thus vindicating Manson's original vision.⁹ The establishment of a United States Army Yellow Fever Commission in 1900 had resulted from the terrible death rate from yellow fever in the Spanish-American War in Central America.¹ Using the discipline of tropical medicine in solving the yellow fever problem, and thereby allowing completion of the Panama Canal, was a notable achievement with a spectacular commercial windfall.¹

Thus in commerce, colonialism and conflict were the credentials of tropical medicine established. It maintained its influence throughout the colonial era, with the various schools and institutes producing thousands of doctors equipped for colonial service.

As the colonial period declined there was a rise in the influence of public health as the key area for allowing improvements in the health of the local population in developing countries. For physicians in such countries, the idea of 'geographic medicine' evolved, although this seemed to be a reworking of the traditional volumes on tropical medicine into a more manageable format.¹¹

Tropical medicine was adopted as a subject within the new discipline of travel medicine, which held its first international conference 1988.¹² A burgeoning industry in travel medicine clinics sprang up.¹² Asking the all important questions: 'Where have you been? And when?' became an essential part of taking a clinical history.⁴

The emergence of 'global health'

In the last years of the 20th century there was also a return to the issue of the link between commerce and tropical medicine. Companies operating in developing countries were using tropical medicine to help the local communities to develop health and medical programs. These are now seen to be key elements in the range of activities that demonstrate corporate social responsibility.¹³

At the close of the 20th century, the last evolution in the history of tropical medicine also began. Global health arose as a concept, based on an ethical value of worldwide solidarity. The understanding

that the planet as a whole was suffering a health crisis led to the recognition that thinking globally was essential.

Global climate change was recognised as having significant human health effects, and this association between health and climate change has led to the return of the subject of miasma, not as the outmoded theory of disease causation, but as MIASMA (Modelling framework for the health Impact ASessment of Man-induced Atmospheric changes),¹⁴ an eco-epidemiological modelling device designed to describe the major cause and effect relationships between atmospheric changes and human population health. It is ironic that science was striving to quantify the relationship between atmospheric conditions and the incidence of diseases. Maybe the global health literature will produce ‘a manual of the diseases of warm climates’. Patrick Manson would be pleased.

Summary

The history of tropical medicine shows an area of medical practice that has adapted to changing times. From its origins in colonialism, and with strong links to commerce, it has evolved into the more generalised subject of global health. Some ties to commerce however remain. The history began with miasma, and at the present time, it ends with MIASMA being revisited, albeit in a variant form. History has repeated itself.

Conflict of interest: none declared.

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