*Journal of Interdisciplinary History,* xxxix:3 (Winter, 2009), 349–359.

*Anne Hardy*

# A New Chapter in Medical History

*Dropsy, Dialysis, Transplant: A Short History of Failing Kidneys.* By Steven J. Peitzman (Baltimore, Johns Hopkins University Press, 2007) 213 pp. $24.95

*The Making of a Tropical Disease: A Short History of Malaria.* By Randall M. Packard (Baltimore, Johns Hopkins University Press, 2007) 296 pp. $24.95

Among the many historical sub-disciplines that have emerged in the last forty years or so—historical demography, gender studies, women's history, urban history, and cultural history, to name but a few—the history of medicine has the most claims to interdisciplinarity. Once the domain of physicians intent on recording and memorializing professional achievements and an illustrious past, medical history now boasts scholars from a range of intellectual backgrounds who variously adopt and adapt approaches from, for example, anthropology, ethnography, sociology, demography, epidemiology, geography, cultural studies, social history, the history of science, and postmodernism. Topics under investigation range from infant mortality to disability, menopause, and old age; from the medical practices of the ancients to those of the twentieth-century East and West.

For those interested in the connections between the living worlds of the past and the present and in the different intellectual approaches to understanding it, the history of disease offers remarkable scope. Disease may well be the ultimate interdisciplinary phenomenon. A disease process is initiated and shaped not only by a known or unknown specific cause—a bacterium, a virus, or a genetic mutation—but also by a host of other factors, including individual immune status, heredity, diet, hygiene, terrain, climate,

Anne Hardy is Deputy Director of the Wellcome Center for the History of Medicine and Professor of the History of Modern Medicine, University College London. She is the author of *Health and Medicine in England since 1860* (Basingstoke, 2001); *The Epidemic Streets: Infectious Disease and the Rise of Preventive Medicine* (New York, 1993).

occupation, agricultural and industrial practices, technology, transport, demography, ideas, and applied medical knowledge. In Charles E. Rosenberg's words, disease is as much historically as biologically specific (see Rosenberg's introduction to both volumes under review, which share the first two pages).

Oddly, however, the problems that actually generate medicine, the diseases themselves, have—with such notable exceptions as plague, cholera, smallpox, tuberculosis, and HIV/AIDS—attracted relatively little attention. But the two volumes under consideration in this essay seem to indicate that disease history is ready to enter a new phase, perhaps as a response to such emerging infections as H5N1 influenza strains, SARS, and multiple-drug resistant tuberculosis. These two volumes provide, in different ways, significant evidence of the interdisciplinary nature of disease history. Because malaria and kidney failure are distinct conditions with their own causes, Packard and Peitzman adopt different approaches to them, but the contrasts are instructive.

As Rosenberg notes of malaria, "No disease illustrates the complex interdependencies that shape disease incidence and experience better . . . it is an index to a society's material conditions and social arrangements. Malaria is multifactorial, exquisitely sensitive to particular environmental circumstances and social and economic relationships (ix)." Transmitted by insects and environmentally related, the causes of malaria are external to individual human beings.

Failing kidneys, in contrast, are (despite being especially common in Japan, Taiwan, Spain, and the United States) internal to the human body. But the external relationships that they create—to disease concepts and medical management, as well as eventually to physiology, technology, and bureaucracy—combine to make the body an interdisciplinary site. Hence, as Rosenberg suggests, "We have entered a new phase in which the boundaries between individual and collective, internal and external, and body and available technology seem to be breaking down (xi–xii)."

Each of these books represents one extreme within the spectrum of disease history—on the one hand, focusing on the intrinsic nature of disease and, on the other, its discursive context. Although malaria has to be approached first from the outside and kidney failure first from the inside, both illnesses present interdisciplinary opportunities. The story of malaria engages with biology,

entomology, ecology, archaeology, transport and trade, geography, agriculture, epidemiology, and the history of war; the habitat and prevalence of malaria is determined by human activity. The history of kidney failure engages with the interventions that contribute to understanding and salvaging the dysfunctional human body; the prognosis and progression of kidney failure are now managed by human activity. This is not to say that the story of kidney failure does not have larger dimensions. It also relates to issues of patient power and bioethics, and to the vast network of economic linkages between medicine, government, and industry that developed during the later twentieth century.

The historian of kidney disease faces the difficult challenge of attracting a wide scholarly readership, as well as a popular one, beyond the community of kidney patients and their associates. Kidney disease is precisely the kind of topic that slips all too easily into the tradition of doctors' history—medical heroes, revolutionary innovations, and medical specialties. Peitzman, who is both a clinician and a professor of medicine, is well aware of this problem: His expressed goal for the book was to concentrate on kidney disease and the persons suffering with it, not to write an account of a medical specialty. His phrasing of "persons suffering with it" rather than "persons suffering from it" is significant. His perspective is mainly that of the patient, not the practitioner. From beginning to end, patients and the nature of their suffering constitute the central theme of the book. Peitzman interjects historical examples, but he also takes oral testimonies and offers a sympathetic discussion of the cases under his own management. No reader will emerge from this book without an enhanced understanding of what it means to suffer with kidney failure.

The foregrounding of the patient is not the only merit of this carefully crafted book. It also shows how other disciplines feed into medicine and medical innovation; medicine is not a scientifically isolated occupation. Peitzman notes that physicians of every period have viewed medicine as part of the natural sciences and disease as a part of the natural world, to be studied and understood (11). William Withering (1741–1799), who introduced extract of foxgloves as a treatment for dropsy, was an excellent botanist and a member of the leading scientific societies of his day. Bright (1759–1858), who stressed the importance of color in diagnosis, paid for the costly and painstaking hand-rendered mezzo-

tints in each published volume of his classic 1827 monograph, thereby helping to prove his case that kidney disease existed (long known as "Bright's Disease"). Bright had "long been fond of the visual" (30).[1] Proficient in geology as a child, and unusually skilled at drawing and sketching as a young man, he became an acute observer of pathological phenomena at postmortem. In these early days of morbid anatomy, doctors were just beginning to develop an understanding of disease processes through the colors and textures of pathology. The mid-nineteenth century also saw a flirtation with chemistry as a means of understanding the kidney, foreshadowing discoveries a century later.

Bright's use of the mezzotint and Peitzman's description of the processes of mezzotint production introduce the theme of technology to the story of kidney failure. Improvements in microscope technology during the 1830s brought the potential for developing a classificatory system for kidney disease. According to Peitzman, classificatory systems were crucial to the process of "taming" nature. Hence, they were as attractive to physicians as to botanists and zoologists at this time.

During the twentieth century, especially after 1940, technology assumed an increasingly important role in the understanding and treatment of kidney disease—in the form of the biopsy needle, haemodialysis (the artificial kidney), electron microscopy, and eventually organ transplantation. These technical developments permitted the emergence of the specialty of nephrology; the first textbooks began to appear in the 1960s.

Although the history of technology can be daunting to the non-specialist interested in kidney disease and its treatment, it does not overwhelm Peitzman's text. He cleverly negotiates the presentation of information, relegating his more "scientific" reflections to the end of his chapters in sections entitled "A Later Perspective," for those interested in tackling the most recent history of science and treatment.

With technology, however, came issues of medical ethics, which spawned a whole new academic discipline. Patients with irreversible kidney failure must undergo dialysis for hours at a time, several days a week. Specialist dialysis units emerged throughout

1 Richard Bright, *Reports of Medical Cases, Selected With a View of Illustrating the Symptoms and Cure of Diseases by a Reference to Morbid Anatomy* (London, 1827–1832), 2 v.

the United States during the 1960s; a survey published in 1969 showed that only eight states did not have at least one unit and that many of them had ten or more units. By 1970, more than 2,500 Americans and 3,000 Europeans owed their survival to these machines, but these numbers are small compared to those who might have benefited. Many people suffering irreversible kidney disease died untreated during this period.

Thus arose "an entirely novel dilemma in health care" (114)—a machine that could save lives but was often too expensive to supply and staff. In the United States, where health care was privately funded, American citizens were suffering needless and often premature death because they could not afford the costs of treatment. Although this particular dilemma was resolved in 1972 by an amendment to the Social Security laws that brought payment for chronic dialysis care and renal transplants into the federal Medicare program, the financial issues surrounding the treatment of kidney failure did not end. The introduction of expensive new technologies and the spiralling cost of delivering their benefits brought continuing problems well beyond patients' ability to pay for dialysis. In the United States, patient need was met not through state or government facilities but through profit-making private enterprises. By 2000, more than 75 percent of dialysis treatments were performed by commercial units that were not always of the best quality. In 1989, American dialysis patients were reported to have shorter, and less comfortable, lives than their counterparts in Europe and Japan.

Peitzman's deft handling of the commercial history of haemodialysis highlights one of the major interdisciplinary connections in this story. The for-profit industry's offer of free treatment at the point of delivery raised concerns about the cost and quality of care, about the power relationship between patients and physicians, and about the withholding of treatment from those who supposedly could not benefit from it (the demented, the very old, and those with disabling systemic disease). Yet, these private companies had capital resources that permitted them to staff and maintain facilities to treat hundreds of thousands of patients with end-stage kidney disease. Similarly, the pharmaceutical company that developed Epogen, a drug that improves the anemia suffered by patients with chronic kidney disease, made a fortune from the product, becoming a major supporter of nephrology, helping to

fund national and local conferences and advertising gaudily at annual association meetings.

As Peitzman observes, the large-scale care of people with irreversible kidney failure has created a "vast economic interlinkage of medicine, government and industry" (134). Yet the care of patients with long-term kidney disease is just one component of a far larger economic entanglement with global reach and profound local implications. Peitzman's case study signals, as clearly as does John Le Carré's *The Constant Gardener* (New York, 2000), that the economic history of medicine cannot be disassociated even from the treatment of individual patients and the history of specific diseases.

Whereas the economic aspects of haemodialysis constitute just one aspect of Peitzman's discussion of kidney failure, economic history lies at the core of Packard's contribution about malaria. Moreover, as much as the tenor of clinician history is evident in Peitzman's methodology, brilliantly and gracefully modernized, Packard's narrative has more the character and texture of socio-economic and political history. Like Peitzman, Packard has a personal angle on his topic. As a Peace Corp volunteer in Uganda during the late 1960s, he gained firsthand experience of malaria both as a patient and a clinical worker. His experiences and observations clearly inform his historical approach, with its emphasis on human activity, social expectations, and culture as critical elements in malaria's epidemiology. Packard's conviction is that the disease cannot be understood or controlled independently of change in the social forces that underlie it: "[T]he array of biomedical weapons mobilized in the war against malaria needs to be joined with efforts to understand and improve the social and economic conditions that drive the epidemiology of the disease" (xviii). Learning the lessons of history is the only way to gain control.

Three brief case studies introduce the book's theme, demonstrating that malaria need not be either a tropical disease or a disease of poverty and under-development. The epidemic in the Russian port of Archangel in 1922/23; eight cases in Palm Beach, Florida, in 2003; and the return of the disease to late nineteenth-century Bengal demonstrate malaria's insidiousness, given the right environmental conditions. These three histories all depict environmental changes that permitted the significant expansion of malaria-carrying mosquito populations. Packard points to three

shared characteristics—changing flows of water, the exposure of susceptible human populations, and the presence of malaria parasites. Given these three factors, the disease can become established almost anywhere in the world, as the historical record amply demonstrates.

The human activities influencing the history of malaria are many. The development and expansion of agriculture has played a central role, but mining, transport construction (roads and railways), trade, urbanization, warfare, famine, and, population movements are implicated as well. Packard locates the origins of human malaria in Africa—specifically in Africa's development of forest agriculture, between 8,000 and 10,000 years ago—and he traces its subsequent pattern of expansion and retreat across the globe. Not only does he interweave the multiple historical strands into a clear and cohesive account, but he also makes use of an extensive variety of evidence. Throughout his impressive global history of several thousand years, Packard calls upon genetic and DNA research, archaeology, mosquito biology, the natural history of the malaria plasmodium, nomenclature, and medical practice (the effective use of chinchona bark and quinine) in addition to the more prosaic historical records of warfare and social, economic, and political events. His is a genuine interdisciplinary study.

The structure of the book reflects something of a disjunction in the historical record. The first four chapters, which establish the lessons of history, track the pattern of malaria's geographical spread, retreat, and resurgence via human ecology and its own epidemiology. The last four chapters explore how, even as medical science came to understand the biology of malaria and its transmission at the turn of the twentieth century, social and economic understandings of the disease were eclipsed by a biomedical perspective.

At Chapter 5, Packard begins to weave the story of medical efforts to control the disease into the broader socioeconomic fabric of his account. He wastes no time in describing the heroic achievements of Alphonse Laveran, who discovered the malaria parasite in human blood in the 1880s; of Ronald Ross, who famously demonstrated the role of anopheline mosquitoes in the transmission of bird malaria in 1898; or of Giovanni Grassi, who, in that same year, concluded that human malaria was transmitted in a similar fashion. Packard shows that these discoveries, together

with subsequent research into mosquito biology and ecology, created a new, biological model for understanding the disease.

In the 1940s, four factors contributed to establish vector control as the dominant method to combat malaria—improved understanding of anopheline mosquitoes; success in eradicating *Anopheles gambiae* from Brazil (where it had been accidentally introduced); the development of new pesticides for use in war, especially DDT; and the increasingly conservative political climate in the West. In other words, biology, public health, chemistry, and politics combined to bring consensus on vector control.

The introduction of the biological model into Packard's narrative does not transform the rest of it into a history of medicine as traditionally conceived. The model inspired the attempt to eradicate the disease by targeting the mosquito, and it made the disease a focus of concerted public-health action. The aspiration to control the biological agents of disease was an outcome of later nineteenth-century developments both in immunology and in this new field of vector-transmitted diseases, resulting in more narrowly focused strategies. Packard notes that ideas about public health in the nineteenth century were based on the belief that disease could be prevented by improving general well-being. He cites Fee's observation that this was an interdisciplinary activity, requiring "a diverse set of disciplines and skills: economics, sociology, psychology, politics, law, statistics and engineering, as well as the biological and clinical sciences."[2]

But the new biological models made their appearance in a rapidly changing world. Packard does not discuss the adoption of these medical/biological perspectives and their influence on policy with an explicit reference to issues of modernity, but the application of new scientific/biological knowledge to disease control surely represented a novel and exciting departure from the methods of the past. Wider developments also guaranteed new interventions in malaria's evolving pattern. The end of World War I saw the rise of organizations dedicated to furthering international cooperation and social and economic welfare. First the League of Nations Health Office and the International Labour Organization and later the World Health Organization (WHO), the World Bank

2 Elizabeth Fee, *Disease and Discovery:. A History of the Johns Hopkins School of Hygiene and Public Health, 1916–1930* (Baltimore, 1987), 18–19.

and others after World War II worked to devise programs for disease control founded on the biological model. The League's Tuberculosis Committee abandoned previous concerns about social deprivation, diet, housing, and general health to focus exclusively on the Bacille Calmette Guerin (BCG) vaccine as a preventive against tuberculosis.

Packard's narrative about the post-World War II era reinforces the role of interdisciplinarity, both as a way to understand the modern history of malaria and as a way to demonstrate that societal forces continue to play a crucial role in its outbreak. Technology and culture, for example, were behind the decision to implement a policy of malaria eradication during the mid-1950s. The World Health Assembly's Malaria Eradication Programme acted on the conviction that Western technology had the power to change the natural world, as well as on the assumption that local peoples were in need of its help and guidance.

But the dream of eradicating malaria did not prove easy to accomplish. A complex series of factors—levels of economic and social development, geographical size and location (island nations were a good prospect), health infrastructures, communication networks, climate, epidemiological conditions, technical matters (for example, pesticide and drug resistance), and tactical and financial problems—determined the extent to which the program was successful at any particular site. Ironically, economic conditions sometimes suffered in places where malaria was eliminated. In low-lying areas of Nepal, for example, the local inhabitants were displaced and reduced to poverty by an influx of well-to-do Hindus, who had previously avoided the area. In its absence as much as its presence, disease can be a significant force for social and economic change.

Money constituted a central problem. In its fourteen years of existence, the eradication program cost nearly $1.4 billion; the United States donated $490 million and local governments $650 million. The United States, however, was not averse to withholding its funding from specific countries for political reasons, regardless of the consequences. For instance, reported cases of malaria in Sri Lanka escalated from 6 in 1963 to 1 million in 1968 after the United States withdrew its financial support because of Sri Lanka's socialist tendencies. Following WHO's decision (1969) to end the project, foreign aid dwindled, programs were cut back, and ma-

laria resurged. By 1980, the disease had made dramatic advances in nearly all of the areas where it still lingered, notably Southeast Asia and sub-Saharan Africa.

The modern history of global disease prevention, successful or not, is inextricably entangled with the histories of national finance and foreign aid. By the early 1990s, malaria's dramatic resurgence compelled its return to the global political agenda; the new strategy to control it reflected the lessons of the past. Nonetheless, Packard's book clearly shows that the ongoing Roll Back Malaria program, launched in 1998, cannot avoid negotiating a complex mix of social, biological, economic, and environmental forces. "Those charged with developing strategies for combating malaria," he writes, "need to take seriously what is currently only rhetoric in Roll Back Malaria" (250). This disease needs to be fought on multiple fronts.

The emphasis that Packard places on the ecological complexity of malaria means that *The Making of a Tropical Disease* is an intrinsically interdisciplinary book. But the book's multiple threads are never woven so tightly as to deaden the reader's sensibilities. Packard's lightness of touch allows his book to be both enjoyable and compelling, despite the frustration and heartbreak in his story. If the sense of human tragedy in Packard's narrative is never as immediate as it is in Peitzman's, with its focus on the individual human body, Packard's vignettes about his own experiences in Uganda serve to keep the human element close to the surface, and his survey of malaria's numerous victims constitutes tragedy on an epic scale.

Peitzman's and Packard's histories differ substantially in their sweep and methodology, but they are complementary. Both are clear demonstrations of the interdisciplinary nature and appeal of the history of medicine in the twenty-first century. They have many strands in common—money, technology, biology, and culture. In Peitzman's words, "it has become an accepted belief that the story of human disease can best be told in the context not just of scientific thought and clinical practice but also in its social and cultural setting. Similarly, disease, seemingly an inevitable part of human life, can serve as a revealing probe in understanding the workings of society"(174). The scholars who write the history of medicine have embraced interdisciplinary approaches in almost

every area of the field that they explore, allowing other analyses to enrich their own. The simultaneous publication of these two books offers a unique opportunity for interested readers, both inside and outside the academy, to see how histories of disease and medicine can contribute to other histories and other methodologies.