

Essay Review

LABORATORY POLITICS

ANDREW CUNNINGHAM and PERRY WILLIAMS (eds), *The laboratory revolution in medicine*, Cambridge University Press, 1992, pp. xi, 347, illus., £40.00, \$69.95 (0-521-40484-3).

JOHN V. PICKSTONE (ed.), *Medical innovations in historical perspective*, Science, Technology and Medicine in Modern History series, Basingstoke, Macmillan, 1992, pp. xvi, 288, illus., £40.00 (0-333-55619-4).

In their introduction to *The laboratory revolution in medicine* the editors make a relatively unassailable case for the significance of the laboratory in modern medicine. Although “revolutionary” is possibly an unhelpful term, they argue that the “transition” to laboratory medicine was as revolutionary as “the transition to hospital medicine which preceded it” (p. 3). To substantiate this claim they point to historical studies which have elucidated both the cognitive novelty of laboratory science and the place of that science in medical education, medical practice, public health, and industry. The studies in the volume, although very uneven in quality, add further important matter to this literature. Under the title *Medical innovations in historical perspective* the consistently high quality studies in John Pickstone’s volume, although telling us about innovation, also add yet more substance to our knowledge of the history of laboratory medicine. Ostensibly about innovation and the laboratory, the titles of these volumes might almost be exchanged without much loss of information about the contents.

The essays in *The laboratory revolution in medicine* begin with two studies of laboratory medicine in Germany. The first by Timothy Lenoir explores the place of laboratory science as bourgeois culture. The second, by Richard Kremer, examines the particular contexts in which Prussian natural scientists promoted and pleaded for their disciplines. Jointly, these detailed essays will force historians to reflect on the variety of meanings physiology could have in early-nineteenth-century Germany, and on the elitism of its relatively few practitioners. John Harley Warner’s excellent account of the role of the empirical in the culture of the mid-nineteenth-century American physician is a wonderfully tempting prelude to a non-existent second paper. Warner lucidly shows how, in the United States, the empirical in clinical practice was deemed to constitute *the* science of medicine. In this context, knowledge of laboratory science was seen as an important accomplishment, but hardly as the foundation of medicine. Warner leaves the reader longing for a full account of how that view was repudiated and how the laboratory did become the rhetorical and practical cornerstone of American medicine. He only hints, however, that, after 1870, it gained favour as Americans became committed to a culture of professionalism characterized by bureaucratic organization and specialized compartmentalism. Stewart Richards’ curious piece on anaesthetics and animal experimentation, although very informative about the place of anaesthesia in the late Victorian laboratory, is not really an historical account at all, but a detour in moral philosophy. The “sentiment of distaste” (p. 166) for animal experiment, says Richards, can (read should) only give rise to aesthetic objections to the practice and not moral ones. Hence, he concludes, anti-vivisectionists were, and still are, misguided. Such an approach produces bad history and not much better moral philosophy. Declaring *ex-cathedra* that sentiments cannot be a source of morals hardly shows familiarity with the British moral philosophical tradition. More conventionally, Paul Weindling usefully compares the Pasteur Institute and Robert Koch’s Institute for Infectious Diseases. Despite similarities, Weindling shows how differently they were organized. More indication of how these differences generated different sorts of science would have been helpful. An essay by Michael Osborne on a little known French epidemiologist Louis-Félix-Achille Kelsch is a valuable counterweight to a view of the career of laboratory medicine as inexorable. Kelsch endeavoured to create a science of medicine which downgraded the laboratory in comparison to medical geography. In the next essay Andrew Cunningham lucidly sets out the radically dissimilar meanings of the word plague before and after the laboratory. As an exercise illustrating semiotic transformation, it is exemplary. However, historians may feel that, in the programmatic sub-text, they are being taught how to suck eggs. One of the

delights of this volume was the last substantive piece. In this, Wai Chen demonstrates how Almroth Wright's vaccine-producing laboratory at St Mary's was a major business, and in the process also gives an excellent account of the local meanings of penicillin in the work of one of Wright's subordinates, Alexander Fleming. Only the slight tendency to proclaim discovery of the methodological wheel mars this splendid account. Reflections by Nicholas Jardine, Bruno Latour and Hilary Rose follow these papers. Rose's is the most striking. Quite properly, she draws attention to the absence of the issue of gender in these papers (strictly the conference from which they were derived). Her feminist insistence on "we", however, whether university teacher or whore (p. 337), may remind the reader that reflections on class and the laboratory might equally appropriately have been included.

Grouped around the theme of innovation, the essays in John Pickstone's volume are all also devoted to medicine since the 1860s. In the first, Lindsay Granshaw demonstrates extremely well how Lister's employment of carbolic antiseptics was but one of many surgical innovations in the late nineteenth century. She also shows how carbolic antiseptics was not perceived as particularly remarkable by contemporary surgeons. How it came to be accounted as a major innovation would have made an interesting sequel to this essay. Michael Worboys has produced two first-class pieces for the volume. The first, reveals how the introduction of sanatorium treatment for consumption depended on the new, late nineteenth-century, emphasis on the individual's responsibility for generating the disease. His second piece, on vaccine therapy, complements Wai Chen's article in the *Laboratory* volume. It casts its net wider, however, looking at how vaccine therapy was enrolled by pathologists to promote the place of the clinical laboratory in medical life. Paul Weindling, obviously in demand, also makes an appearance in this book. Here he concentrates on serum therapy for diphtheria, and on how this significant innovation benefited from a large injection of hyperbole about the value of medical research and the role of the laboratory. This is usefully demonstrated by his concentration on the usually forgotten players: the critics of serum therapy. Steve Sturdy's admirable essay pursues with great clarity the issue of the relations of the clinician and the basic scientist by exploring oxygen therapy in the First World War and after. He shows the differing perceptions which clinicians and physiologists had of the therapeutic value of oxygen, and the relation of these perceptions to the organization of medical practice.

The remaining four essays all circle round the issue of clinical specialities and specialization. Anja Hiddinga pursues the career of x-ray technology among Yale obstetricians, and Roger Cooter examines the creation of fracture clinics by orthopaedic surgeons. David Cantor looks at rheumatologists and their custodianship of cortisone therapy, particularly in response to the miracle cure claims of the popular press. Finally, the editor shows how psychiatric care was increasingly integrated into general medical organization in the Manchester area well before the national guidelines on this issue appeared.

Although devoted to the theme of innovation, none of the essays, thankfully, explores the theoretical literature on the subject (much of which is very poor) in depth. The task is left to the editor who accomplishes it briefly and clearly in the introduction. Leaving aside the theme of innovation, the complementary nature of these two volumes is striking. Together they add a great deal to the stock of literature on the history of modern orthodox medicine. In many ways it is the issue of the rise of the laboratory which links them together, a phenomenon which is never fully dissected by Cunningham and Williams in their Introduction. In this they adumbrate helpfully the ways in which laboratory medicine differs from previous medical universes. They point out that decisions about disease existence and causality are now generally made in laboratories, that laboratories are central to medical education, and that laboratory research careers figure large in the professional repertoire. Quite properly, they treat claims about the power and importance of the laboratory as noises to be addressed historically. Endorsing the views of some of their contributors, they recognize the rise of laboratory science to be part of nineteenth-century social reorganization, which "gave a leading role to a new professional class laying claim to expert knowledge and certain values such as freedom, truth and objectivity". The rise of the laboratory was also related to "the rise of industry, which placed a new premium on deterministic causal laws in the realm of theory and on technical control in the realm of practice". In general, they conclude, "the laboratory revolution can

be set alongside the political, industrial and philosophical revolutions of the nineteenth century as one aspect of the transformation from a society dominated by Church and aristocracy to one dominated by the industrial, commercial and professional classes" (p. 12).

All this seems quite correct, yet what might be called the health politics of the laboratory is missing from this analysis (Hilary Rose's commentary makes the sexual politics of the laboratory quite evident). Collectively the essays in these volumes suggest what these politics were. The rise of the medical laboratory occurred at a time in which it was increasingly accepted that, in some degree, the state should take responsibility for the health and welfare of its citizens. In this context, doctors (and others) used the laboratory to redefine the very notion of what sort of intervention best promoted health and welfare. During the late nineteenth and early twentieth centuries, individual intervention, and especially technologically-based therapeutic and prophylactic intervention, performed by individually contracted doctors, was increasingly pushed to the forefront of welfare practice.

A striking example of this is seen in the deployment of germ theory. At the bedside and in the realm of public health, germ theory was developed and employed in such a way as to reinforce the individual medical encounter as a significant site of political intervention. Take Lister's use of germ theory. Lister "solved" the problem of hospitalism by directing attention, not to dirt, diet or drains, but to the moment of surgical intervention. The "problem" of hospitalism for Lister lay in the wound. Solving the problem in this way meant saving the large university-based hospital. The success of antisepsis as an innovation lies in the fact that it could be acclaimed as a laboratory-derived solution to the problem of wound sepsis, whereas in fact it was also a therapeutic solution of a political issue; should large hospitals be the seats of medical care and who should the carers be? This redirection was simply one instance of the many ways in which medical men, as they became more influential in the politics of poverty, shifted attention from wholesale reform to personal intervention (by a doctor or another) at the individual level.¹ Slowly but distinctly, in the public health sphere, doctors moved their attention from environmental manipulation to the question of the individual's responsibility for disease; personal habits, hygiene, and diet (especially choice of diet) were perceived as crucial to the national health or lack of it. The causes of tuberculosis, as Michael Worboys shows, were increasingly seen to lie not only in bad housing but also in lack of personal cleanliness, irregular habits and moral laxity. Surveys which regularly revealed high morbidity and mortality rates among the poor were used by medical men as evidence for the necessity of intervention at the individual level. For example, the very high infant mortality of the Edwardian era was attacked, primarily, by the provision of health visitors, maternity services, and infant welfare centres: that is by the direction of attention to individual mothers.² The clinic, informed by the findings of the laboratory, was installed as the solution to death and disease among the poor.

Laboratory medicine itself was developed in ways which reinforced the individual encounter, particularly the therapeutic encounter, as the significant point of medical intervention. As Paul Weindling, Wai Chen and Michael Worboys show, in the three decades before the First World War a string of prophylactic, and therapeutic agents appeared from the laboratory. These included Koch's tuberculin for tuberculosis (claims for this agent's power were later rejected), diphtheria antitoxin, salvarsan for syphilis and, during the first decade of the new century, a large number of therapeutic vaccines (again the claims made for many of these were eventually rejected). Steve Sturdy's paper on oxygen demonstrates the same phenomenon. The perceived potency of these agents was a significant factor in creating the view that the appropriate site of intervention for, say, diphtheria was at the level of individual treatment. To this day, clinical medicine continues to claim credit for the decline in diseases such as diphtheria, whose incidence, as many critics pointed out, then and now, continued to fall as housing, diet, and *per capita* income of the population improved.

¹ See a splendid example of this transformation in the pronouncements of the Providence, Rhode Island, health officer Charles V. Chapin as elucidated in Judith Walzer Leavitt, "'Typhoid Mary' strikes back: bacteriological theory and practice in early twentieth-century public health", *Isis*, 1992, **83**: 608–29.

² See Jane Lewis, 'Providers, "consumers"', the state and the delivery of health-care service in twentieth-century Britain', in Andrew Wear (ed.), *Medicine in society: historical essays*, Cambridge University Press, 1992, pp. 317–45.

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Equally important as the perception that individual intervention was the key to better health, in Britain at least, was the democratization associated with this change. From socialist and New Liberal perspectives it was increasingly regarded as a mark of progress (civilization) that somehow either the state or charity, or both, should make provision for treatment available to all. From there it was not much of a step to regard such therapy as the right of each individual. The dyad of laboratory and clinic, science and dramatic medical intervention, is the creation which is summoned every time politicians and pundits make reference to what is laughably called a *health* service. The ways in which the laboratory revolution has transformed our lives have only begun to be plumbed.

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