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Keith Wailoo. *Drawing Blood: Technology and Disease in Twentieth-Century America.* Baltimore: Johns Hopkins University Press, 1997. xii + 288 pp. $39.95 (cloth), ISBN 978-0-8018-5474-3.

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Get out your hardhats! Reading Keith Wailoo's history of blood disease and the changing identity of hematology (both as practice and as specialty) in twentieth-century America entails extensive experience in a construction zone. Among the topics explored in this far-ranging book are the construction and demise of the chlorotic girl, the construction of memories about chlorosis, the construction of the susceptible worker and the disease of aplastic anemia, the pharmaceutical construction of disease and the development of liver extract as a treatment for pernicious anemia, and the diverse ways in which technologies constructed both "Negro blood" and "hemoglobinopathy" in the case of sickle cell anemia. Although the discourse of construction is somewhat heavy-handed, Wailoo provides a thoughtful and thought-provoking analysis of the ways in which American physicians used blood and blood testing to make and unmake categories of health and disease and create new opportunities for professional authority and identity in the twentieth century.

As Wailoo argues, blood offered an especially fertile starting place. Physicians in the twentieth century, as in the nineteenth century, continued to see blood as a "motive force in heredity, racial identity, and disease" (p. 6). A culturally potent fluid, the blood for both patients and physicians contained a wealth of information about the individual, society, disease, and moral status. In the twentieth century, physicians developed a new set of tools to interpret and manipulate some of the information obtained from the blood. (Interestingly, Wailoo does not address the issue of the blood types identified by Karl Landsteiner and others that, after the first world war, were used in blood transfusion. He does not discuss the decision to omit blood typing.) In this book, Wailoo undertakes the task of explaining how the new technologies of blood analysis and the data spawned by their use became part of the matrix of professional identity and practice over the course of the twentieth century.

The centrality of the blood and its signal importance in health and disease made its ownership highly contested. One of Wailoo's most intriguing case studies is the rise and fall of a blood disease, splenic anemia, over which American surgeons claimed mastery in the first three decades of the twentieth century. Based on their experience with surgical removal of the spleen following accident or trauma, American surgeons using a hemacytometer (a technique in which individualized cells could be counted against a grid background of a sterile glass slide on which a drop of blood was placed) noted an increase in the red blood cells. Surgeons reasoned that the spleen, an organ that remained mysterious in the twentieth century, played a role in the destruction of the blood and caused anemia. Splenic anemia did not respond well to medical treatment; surgical treatment, the removal of the offending organ, offered a cure to the problem and further buttressed the authority of the abdominal surgeon.

As Wailoo convincingly demonstrates, American surgeons used the information obtained from blood testing to legitimate surgical practice and ground it in science. This first generation of "scientific surgeons" viewed themselves in heroic terms, as explorers on the verge of great discoveries, charting the unknown and crossing hitherto forbidden frontiers. Reflecting a masculine and adventurous sensibility, these surgeons, as Wailoo explains, saw themselves as "intrepid explorers of a dark continent, venturing forth with scalpel in hand, ...thinking as they navigated but fortified in their quest by hematological science. Indeed it was in this era that surgeons coined the term exploratory surgery" (p. 50). The undiscovered country for these surgeons was the human abdomen, a territory newly open to exploration as a result of lowered operative risk due to antiseptic surgery.

The power to diagnose and perhaps, more importantly, to treat splenic anemia bears witness to the ascendancy of abdominal surgeons in the early twentieth century. By 1930, however, the diagnosis of splenic anemia became rarely mentioned, and today the disease no

longer exists. For some people, the heyday of splenic anemia represents the triumph of enthusiasm and imagination rather than science. For his part, Wailoo seeks to explore how the disease could have disappeared so quickly from surgical thinking and locates the answer in the changing institutional arrangements of surgery in the first half of the twentieth century, especially the cooperative and bureaucratic world of the twentieth-century hospital, which required surgeons to cede some of their authority to clinical pathologists and specialists in blood diseases.

Some of the evidence for the contested nature of splenic anemia comes from state legislatures and court cases. Critical of the expansion of surgery and fearful of unnecessary surgery, some legislators proposed legal oversight and regulation of surgical practice, although such radical measures were never adopted. For their part, some patients disputed the authority of abdominal surgeons in the courts. In one 1912 New York case, cited by Wailoo, a machinist received a financial settlement from a building owner when the injury he sustained in the building required the surgical removal of his spleen. The machinist's successful suit, predicated on the claim that loss of his spleen would reduce his life expectancy, challenged surgical thinking that splenectomy did not pose a threat to patient welfare. Wailoo might have explored in greater detail other challenges brought by patients to the culture of surgical exploration he documents. The question of consent, written or oral, to surgical exploration of the body was highly contested in the first two decades of the twentieth century. Prompted by an increasing number of lawsuits brought by patients and their families, surgeons discussed the issue of obtaining explicit permission for exploratory surgery and other types of surgical procedures. Some examination of the implications of the consent question and the relations between surgeons and their patients would have enhanced Wailoo's analysis, for although patients are frequently mentioned, they receive much less attention than medical practitioners and specialists in the book.

Splenic anemia, as Wailoo explains, lost its potency as a diagnostic category because the various symptoms associated with the condition were reclaimed by other hospital-based specialists, leaving surgeons little room to manoeuver. The history of sickle cell anemia, elegantly analyzed by Wailoo, represents a mirror image of splenic anemia. Sickle cell anemia arose as a diverse assortment of symptoms, initially treated (or missed) by a variety of physicians. Pediatricians and hematologists together identified a constellation of clinical signs that they maintained constituted this clinical entity. In the case of sickle cell anemia, Wailoo explicitly discusses the role that patients and their families played in bringing attention to one aspect of the disease experience, the "sickle cell crisis," the recurrent bouts of joint and abdominal pain that constituted the experiential reality of the disease. Increased advocacy for the sufferers of sickle cell disease prompted controversial federal legislation in the form of the National Sickle Cell Anemia Control Act of 1972. Mandating increased funding for research, treatment and counseling, the act was viewed by a number of people as further stigmatization of the disease and the black community. Part of the difficulty, as Wailoo makes clear, reflected the confusion between those individuals who carried a gene for the condition with those who had the disease. This new understanding of the disease in terms of the new molecular biology in turn reflected new technologies, especially electrophoresis, which replaced older clinical tests for the disease. Electrophoretic studies of sickle cell hemoglobin not only developed a new identity for the disease, but prompted greater optimism that molecular biology could provide "an ostensibly objective, nonracial language for thinking about blood." Wailoo quotes physician Kenneth Walter who in the late 1950s promoted the abandonment of the older linkage of blood and race: "We talk of pure blood, of mixed blood, of bad blood and of Jewish, Negro and Chinese blood, but from the standpoint of the scientist the blood of one race is quite indistinguishable from the blood of another race" (p. 157).

Almost twenty years earlier, the old linkage of blood and race that Walker and others hoped would dissipate with the new molecular paradigm of sickle cell anemia had prompted the segregation of "Negro blood" from that of whites as part of the National Red Cross effort to collect blood for use by American soldiers during the second world war. Initially, in fact, the Red Cross had refused to allow black Americans to act as donors. After considerable lobbying and publicity, the agency agreed to allow blacks to donate blood even as they separately labeled and maintained the "Negro blood." (As the records of the Red Cross make clear, this policy created questions for collection centers who, confronted with Chinese and Filipino donors, had to consult the national center about the classification of this donated blood. In the early 1940s, these donors were classified as whites.) More than the association of Negro blood with sickle cell anemia fostered the segregation of the blood supply and the symbolic meaning of Negro blood. In part, concerns about the safety of the blood supply reflected the national preoccupation with sexually-transmitted disease, especially syphilis, the disease of "bad blood." Widespread belief

in the higher incidence of venereal diseases in the black population, which "tainted" this potential blood source, influenced the blood collection policies of the Red Cross. It also seems likely that the increasing use of blood typing and the dissemination of information about incompatible blood types for transfusion may have promoted greater concern about mixing blood of ethnically or racially distinct individuals. More attention to these aspects of blood would be valuable for the light they shed on the meaning of Negro blood.

Most compelling in Wailoo's analysis of sickle cell anemia is his discussion of the ways in which the clinical test for the disease became a marker of racial identity in the 1930s and 40s. Wailoo documents how physicians, who, using Emmel's test, detected sickled cells in the blood of white patients, insisted that these apparently white individuals nevertheless had evidence of Negro ancestry. "So convinced were some physicians of the ability of the diagnostic technique to detect Negro blood," observes Wailoo, "that when faced with disagreement between the test and a patient's testimony about his or her own family history, physicians suggested that shame would understandably prompt patients to deny 'Negro Blood' in their pedigree" (p. 147). How patients experienced the rejection of their testimony in light of results of tests conducted by their medical practitioner is, perhaps understandably, not addressed as it is not easily recoverable in the documents available, but it is nonetheless significant in understanding the implications of medical technology for patient identity.

Wailoo's book is valuable for the issues it raises about the relationship between medical technologies and those individuals, both patients and professionals, who are benefitted or burdened by the results. *Drawing Blood* makes clear that the high stakes involved in medical technology are not just financial, but moral and far-reaching. They have been harnessed to describe clinical phenomena and to reflect social and cultural realities that influence not only medical treatment but self-identity, power, and authority.

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