

sequences” (*The Child in America: Behavior Problems and Programs* [Knopf, 1928], p. 572). Following in the tradition of Alain Desrosières and Laurent Thévenot (*Les catégories socio-professionnelles* [Découverte, 1988]), Godin is well aware of this subtle dimension of statistical work. Third, there is understanding the drive to measure, whether or not the measurements were real. In a passage reminiscent of Trevor Pinch, Michael Mulkey, and Michael Ashmore’s *Health and Efficiency: A Sociology of Health Economics* (Open Univ. Press, 1988), Godin notes, for example, that “all in all, the success of American predictions on the supply and demand of scientists and engineers was about zero: by 1968 all predictions of shortages had proved incorrect. But this did not deter the NSF nor any other organizations from pursuing and refining the same general discourses” (p. 245). Involved as I am in current attempts to measure and evaluate scientific cyberinfrastructure, I can testify to the continued importance of failed statistics!

The complexity of the two latter dimensions is that they lead you into questions you cannot answer just by looking at the policy literature. Godin is, however, committed to telling the story from the top down, as he openly acknowledges. The key actant in his story is the OECD, and, accordingly, the central players are the highly industrialized nations. Thus the work of measuring science and technology in the developing world—in particular, the conceptually innovative work of the Institut de le Recherche pour le Développement (formerly the Organisation de Recherche Scientifique et Technique Outre Mer)—is not mentioned. He does not look at the work it takes actually to complete the surveys or at whether they are filled out differently in different institutional settings—the kind of question that Anne Fagot-Largeault discusses so superbly for the International Classification of Diseases (*Causes de la mort: Histoire naturelle et facteurs de risque* [Vrin, 1989])—even though he is aware of such concerns (p. 163). He points to work in bibliometrics, and the need for a history of the same (p. 321), but does not discuss in detail this field so closely related to the development of science and technology studies.

However, what he does provide is rich enough of itself. Much bureaucratic work over the past two centuries has involved conjuring the world into statistical tables in order to make it, in Michel Foucault’s term, “governmentable.” We have had the development of international classifications of and statistics for jobs, diseases, science, ethnicities, and UFO sightings. Godin hints at this larger history in the course of writing

a richly textured reference work for the history of measurement and statistics in science and technology.

GEOFFREY C. BOWKER

Jonathan Harwood. *Technology’s Dilemma: Agricultural Colleges between Science and Practice in Germany, 1860–1934*. 288 pp., figs., bibl., index. New York: Peter Lang Publishing Group, 2005. \$49.95 (paper).

A few months ago, the Minister of Agriculture visited our university to present his latest policy plans and discuss the role of science in them. His message was simple and optimistic: the Dutch agrarian economy is flourishing, and the science institute in Wageningen, with its historical legacy, remains a key player. The first discussant, an economics professor, challenged the minister. The minister sees growth, he argued, because the figures include multinational firms doing things like buying up barley from all over the world to make beer or importing cocoa from West Africa to process it into cocoa butter for chocolate producers elsewhere in Europe. Farming on Dutch soil is in decline, with a handful of farms closing every day. Clearly, he added, modern agriculture is a global affair and the “key position” of the Wageningen institute in it is far from obvious. The minister could not deny those facts but of course refused to let his optimism be tempered.

Arguments between ministers and professors play a central role in Jonathan Harwood’s book on German agricultural colleges. Although the subtitle, “Agricultural Colleges between Science and Practice in Germany, 1860–1934,” adequately tells what the main chunk of the book is about, the question Harwood addresses has wider relevance in space and time. This question, coherently worked out in the first chapter, is how the practical sciences can balance scientific requirements with practical demands. The issue is similar in engineering and the medical sciences, and the problem is not confined to Germany, as Harwood shows in the last chapter by discussing studies on Britain, the Netherlands, and the United States. The tension between science and practice has been amply studied, and all cases show that the balance ultimately tips toward science, a process known as “academic drift.” Yet hardly any of those studies reveal details of that overall pattern, and this is the challenge Harwood takes up. In Chapter 2 he further demarcates the empirical terrain. In the period in question Germany had thirteen agricultural colleges. Harwood develops an analytical framework that considers institutional features (curricula, staff

employment, and teaching facilities) in terms of how an institution related itself to the academic field, the politico-economic field, and geographical circumstances. In Chapters 3–5 Harwood gradually focuses in on institutional change, first giving an overall analysis of curriculum development, then looking more specifically at five institutions (Berlin, Halle, Bonn, Breslau, and Hohenheim), and, finally, inspecting the differences between two neighboring institutions (Munich and Weihenstephan). The result is a rich and well-written history showing that “academic drift” is inadequate to explain the various ways in which the German agricultural colleges tried to gain sympathy and respect among scientists, ministers, practitioners, and (potential) students.

Harwood’s study is of interest to a wide audience. Science historians will find detailed contextual information about the activities of many German scientists (Justus Liebig, Julius Kuhn, and Erich von Tschermak, to name a few) and developments in agriculture-related disciplines, most notably genetics and plant breeding. The excursion into plant breeding, in Chapter 4, reveals a knotty issue. Interestingly, Harwood shows that colleges with closer ties to agricultural practice housed what he calls “Mendelian sceptics.” These sceptics saw plant improvement not as a systematic application of Mendelian principles (as “Mendelian enthusiasts” saw it) but mainly as a practical skill, developed in cooperation with farmers. Although Harwood argues that this difference resulted in different methods and forms of experimenting, it remains somewhat unclear how it relates to the question of scientific status. Moreover, the reader can only guess whether similar patterns existed in other branches of the agricultural sciences. Nevertheless, the plant breeding example shows that agricultural science developed through its more or less intimate relationship with practice. This dynamic picture of science as research contrasts to some extent with the more static indicator Harwood uses to assess scientific education: the amount and status of basic sciences (mathematics, physics, chemistry, and botany) in the curriculum. This suggests that “academic drift” in education works out differently than “academic drift” in research. This point also relates to Harwood’s recommendations for present-day curriculum designers in the practical sciences, particularly those affiliated with agriculture. As my opening anecdote makes clear, recent changes in Western (indeed, global) agriculture pose serious challenges to the sciences active in that domain. Finding an adequate balance between science and practice will have to include a more funda-

mental rethinking of the adequacy of agricultural science, which still has a primarily national rather than international policy bias. Clearly, *Technology’s Dilemma* is compulsory reading for any such reflection.

HARRO MAAT

Lynette A. Jackson. *Surfacing Up: Psychiatry and Social Order in Colonial Zimbabwe, 1908–1968.* (Cornell Studies in the History of Psychiatry.) xxi + 230 pp., figs., index. Ithaca, N.Y.: Cornell University Press, 2005. \$55 (cloth).

Over the last twenty years there have been a great number of studies in the history of colonial psychiatry that have explored the place of psychiatry in colonial societies, its participation in or resistance to colonial regimes, the regulation of madness in a colonial context, and the way racial theories and colonial realities are reflected in psychiatric thinking. These studies have provided an important addition to histories of medicine with an exclusively Western focus. The strength of Lynette Jackson’s study is her extensive use of patient records, which illuminate day-to-day life in the asylum. In addition, she discusses the history of the asylum after independence, providing an interesting contrast to colonial realities. According to Jackson, the asylum fit seamlessly within colonial life as one of the many repressive and racist social institutions, among them the pass system, the exploitation of labor, and the prison. For the African inmates, life in the asylum was distinctly unpleasant—and became even more so after the introduction of electroshock therapy. Before that, it was characterized by overcrowding and more or less benign neglect. “Surfacing up” refers to the way Africans became visible to colonial authorities as potentially suffering from mental illness. For African men, this was often the consequence of violent behavior that disturbed the social order. For women, appearing outside the confines of African village life was often sufficient.

Jackson documents how the asylum at times functioned somewhat uneasily in Rhodesian society. Often, police and prison superintendents pressed the asylum physicians to institutionalize individuals, and often the physicians refused (because of lack of space as well as the absence of mental illness in the individual whose confinement was sought). The strict maintenance of racial boundaries was imposed on the asylum by a commission of inquiry and was not inspired by racist psychiatric theories. In other words, the racist appearance of colonial psychiatry and its apparently seamless fit within colonial society