

doubt he made anti-Semitic remarks on occasion, although I never heard one. But he was a complicated man, and whatever he may have said, he was not anti-Semitic in his conduct. As a graduate student, I regularly worked at the Kerckhoff Marine Laboratory on weekends with Morgan and Albert Tyler, one of the Jewish members of his faculty. (Kay misstates the nature of Morgan's work in those years.) Morgan never displayed the slightest anti-Semitism toward Tyler or me, but was always his rational, dignified self. Later he was chairman of my Ph.D. Oral Exam, asked me an interesting question, and, I have always believed, secured the National Research Council Fellowship I was awarded in 1939. I regret that Kay did not choose to discuss Morgan—Beadle also, whom she slurs—with me while she was working at Caltech, but instead uses some quoted remarks of the great man to further her political attack on molecular biology.

Much of the book deals with the relations between Caltech

and the Rockefeller Foundation. Scientifically, its major question—one that Kay handles well, given the limited scope of the treatment—is that of the biological role of proteins. Pauling's work on sickle-cell hemoglobin and the α -helix is clearly presented. At the time, it was commonly believed that genes are nucleoproteins. This view was accepted by many at Caltech even after the 1944 paper of Avery, MacLeod, and McCarty gave strong evidence that genes are nucleic acids. Kay treats the scientific issues here broadly, for the most part. This is well, because where she goes into detail, she tends to err, sometimes badly. Thus, she seems to think that the genetic code contains 124 codons.

A lot of effort went into this book, and it contains much of interest, more than I can comment on here. With more open-mindedness on the author's part and a good editor it could have been an important contribution to the historiography of science. What a pity that it turned out otherwise.

Electrical Properties of Mammalian Tissues: An Introduction **by B. J. Northover**

Chapman and Hall, London, 1992. 109 pages. \$29.95

Reviewed by Kenneth R. Foster, Department of Bioengineering, University of Pennsylvania

This brief text aims at providing "...a student of biology having little background knowledge of physics with a fairly painless, but rational, entry into the vast and detailed literature...on biological electricity." Northover, a cardiovascular pharmacologist at Leicester Polytechnic (UK), summarizes standard topics in electrophysiology—the behavior of electrically excitable cells, ion currents through membranes, cable theory, and so on—with special emphasis on the electrophysiology of the heart and kidney.

The natural audience for this book consists of advanced biology students with considerable knowledge of biology but an aversion to mathematics. The book is not an "introduction" as the term is used in the American textbook market. It includes a 30-page discussion on the electrophysiology of cardiac arrhythmias, but not an introduction to the electrophysiology of the normal heart of the sort presented in introductory physiology texts. Some of the discussion is very

brief—the chapter entitled "Models and Mechanisms of Ion Channels" covers gating mechanisms, patch clamping, and the modulated-receptor hypothesis—all in five pages. Nevertheless, many instructors and students will find the book useful and interesting as a supplementary text.

I recently reviewed an electrophysiology text for engineers, in which the choice of biological topics was skewed by what is mathematically interesting. This book has the opposite problem: a sketchy and at times confusing theoretical analysis. Northover pulls the Nernst equation literally out of thin air, by calculating the work needed to compress an ideal gas and abruptly substituting the chloride ion concentration in a cell for the gas pressure. Elsewhere, he declines to solve a simple differential equation, stating (incorrectly) that integral transform techniques are needed. If this book goes into a second edition, it would benefit by a more careful and comprehensive discussion of this large field.