

BOOK REVIEWS

**IMAGINING THE ELEPHANT:
A BIOGRAPHY OF ALLAN MACLEOD
CORMACK**

By Christopher L. Vaughan. 304 pp., illustrated. London, Imperial College Press, 2008. \$48. ISBN 978-1-86094-988-3.

SIXTEEN YEARS SHORT OF THE CENTENNIAL of Wilhelm Roentgen's discovery of the x-ray, the Nobel Committee recognized a signal development in the use of the ray that would revolutionize medical practice. In 1979, Allan MacLeod Cormack shared with Godfrey Hounsfield the Nobel Prize in Physiology or Medicine for the development of computer-assisted tomography. Cormack, unlike Hounsfield, who became famous with the development of the first commercial medical computed tomographic (CT) device in 1973, was relatively unknown while he was working in academia. Investigating what he called the "line integral function," a basis of CT that was described in the *Journal of Applied Physics* in 1963 and 1964, Cormack constructed his own prototype scanner to image an asymmetric aluminum and Lucite phantom model of a head with two "tumors," which he measured with the scanner. Hounsfield's first patent application in 1968 made reference to both of Cormack's earlier papers, but few people outside the field knew of them. Hounsfield's "successive approximation" algorithm, however, was found to be in no way similar to Cormack's reconstruction solution for CT.

This brief book is a fascinating biography. The author, Christopher Vaughan, warmly sketches Cormack as a quietly gregarious man, traces his Scottish parentage and antecedents, follows his schooling and family life in South Africa, and mines the origins of his research into CT at the University of Cape Town, later at Cambridge University, and during his subsequent years in the United States at Tufts University and at the Harvard University Cyclotron Laboratory. Writing this biography required an exhaustive review of documents and many interviews with those who knew Cormack and his work well. Vaughan's own engineering background, his similar position at the



Allan MacLeod Cormack at a Press Conference at Tufts University after the Announcement of His Nobel Prize for Medicine or Physiology, October 11, 1979.

Bettmann/Corbis.

University of Cape Town, and his access to Cormack's family and colleagues must have facilitated his gaining insight into the man and his investigations. The narrative is written in an accessible style that aims at an audience wider than the scientific community alone, but when scientific discussion is called for, it is done expertly and lucidly. Minor defects include occasional diversions into extraneous details and vignettes that distract from the central story.

To what extent this book will redress Cormack's undeserved relative anonymity is uncertain, but to those interested in biomedical science and medical imaging, Vaughan's descriptions of Cormack's investigations speak for themselves. The reader will be transported by a fascinating account

of a journey of discovery that began with a challenge to accurately calculate isodose curves for clinical radiotherapy and ended with the production of images from a series of line functions.

This book will especially fascinate readers who are interested in how a rotating series of images can create cross-sectional images of the body. Such curiosity helps to explain Vaughan's choice of title, *Imagining the Elephant*. It reflects the basic idea of tomography: that a single image of an elephant from one perspective hides various aspects of the elephant, which only become more apparent as images from more and more aspects are obtained. Those interested in the history of science are indebted to Vaughan for producing this wonderful biography of Allan Cormack and for creating an expert and vivid description of one of the two streams of discovery that led to the invention of CT.

Reginald Greene, M.D.

Massachusetts General Hospital
Boston, MA 02114
greene.reginald@mgh.harvard.edu

MY STROKE OF INSIGHT: A BRAIN SCIENTIST'S PERSONAL JOURNEY

By Jill Bolte Taylor. 183 pp., illustrated. New York, Viking, 2008. \$24.95. ISBN 978-0-670-02074-4.

DESPITE MAJOR ADVANCES IN THE TREATMENT of stroke in the past 20 years — particularly in stroke units and in thrombolysis — fear of stroke and its consequences remains deeply embedded in popular consciousness. In addition, there are major differences between what patients view as recovery and what physicians view as recovery. A recurring theme of the relatively small literature on the experience of stroke is how often the enormous psychological impact of stroke is neither recognized nor addressed by members of the medical profession.

Narratives of stroke can serve a useful purpose in bridging these gaps, educating not only the public and those affected by stroke, but also doctors, medical students, and other health professionals. Some recent personal accounts have already assumed classic status, such as Roger McCrum's *My Year Off: Recovering Life after a Stroke* (New York, W.W. Norton, 1998) and Jean-Dominique Bauby's *The Diving Bell and the Butterfly* (New

York, Alfred A. Knopf, 1997). Kirk Douglas's *My Stroke of Luck* (New York, William Morrow, 2002) gives a remarkable description of the personal growth that can occur with stroke. For those in the caring professions, reading these accounts protects us from becoming blasé about the seismic effect of stroke on our patients and reminds us of the times when we may have lacked sensitivity, perception, and attention to the real needs of our stroke patients.

In a new account, Jill Bolte Taylor, a notable neuroanatomist and an indefatigable advocate for brain banks, writes a moving and insightful account of her hemorrhagic stroke. The irony of a narrative of neurologic disease being recounted by a neuroscientist adds piquancy to the story, and Taylor's description of the onset and progression of the stroke while she was alone in her apartment is gripping. There is also much food for thought in her account of being met with both warmth and indifference by the many who were involved in her treatment, as well as the role of family in recovery from stroke. Taylor's bravery and resilience are formidable and help to dispel the simplistic notion of disability as a disaster.

What keeps this relatively short book from being a classic, however, is that it assumes more roles than its slender frame can comfortably bear. The perceptive narrative of the illness is invaluable, but it is burdened by an interpretation of stroke through the narrow lens of hemispheric function. Ascribing emotions, thoughts, and language to hemispheric function was clearly an important means of expression for Taylor, but stroke clinicians may chafe at her emphasis on lateralization and localization, which leaves out the wider effects of stroke on whole-brain function. The self-help advice given later in the book might be valuable for those who are similar to Taylor, but such advice needs to be matched carefully to the patient, and I would hesitate to pass this on to all patients. Nonetheless, this book is a valuable addition to the narratives of stroke and can be recommended, ideally along with the other narratives mentioned above, to those in medical humanities programs, as well as to students and professionals in the many disciplines that are involved in the treatment of stroke.

Desmond O'Neill, M.D.

Trinity College
Dublin 2, Ireland
doneill@tcd.ie