

# Emblem of a golden era

A physiologist's role in the coming of age of American biomedical science.

**Walter B. Cannon: Science and Society**

by Elin L. Wolfe, A. Clifford Barger & Saul Benison  
*Harvard University Press: 2000. 630 pp.*  
 \$30, £18.50

**W. F. Bynum**

Most biographers and readers of the genre will know that the second half of a person's life is often less interesting than the first. (I write this from the second.) It is as if Aristotle were more prescient than Plato, and becoming is exciting, while simply being is rather dull.

Walter Cannon's life may be an exception to this rule. For one thing, he began the second half with the war to end all wars; for another, he managed until the last few years of his life to keep an active research agenda going, even while his sense of civic duty kept the 'society' part of his activities at full throttle. Consequently, the second of this brace of volumes on the eminent American physiologist maintains the standard of the first, which appeared more than a decade ago (*Walter B. Cannon: The Life and Times of a Young Scientist*, Harvard University Press, 1987). The intervening years have taken their toll, with the death of Clifford Barger and the serious illness of Saul Benison. It has thus been left to Elin Wolfe to complete the monumental task that the trio began. The project was made more challenging, but also more rewarding, by the extensive archival collections relating to Cannon and his colleagues in repositories at Harvard University and other American and British institutions.

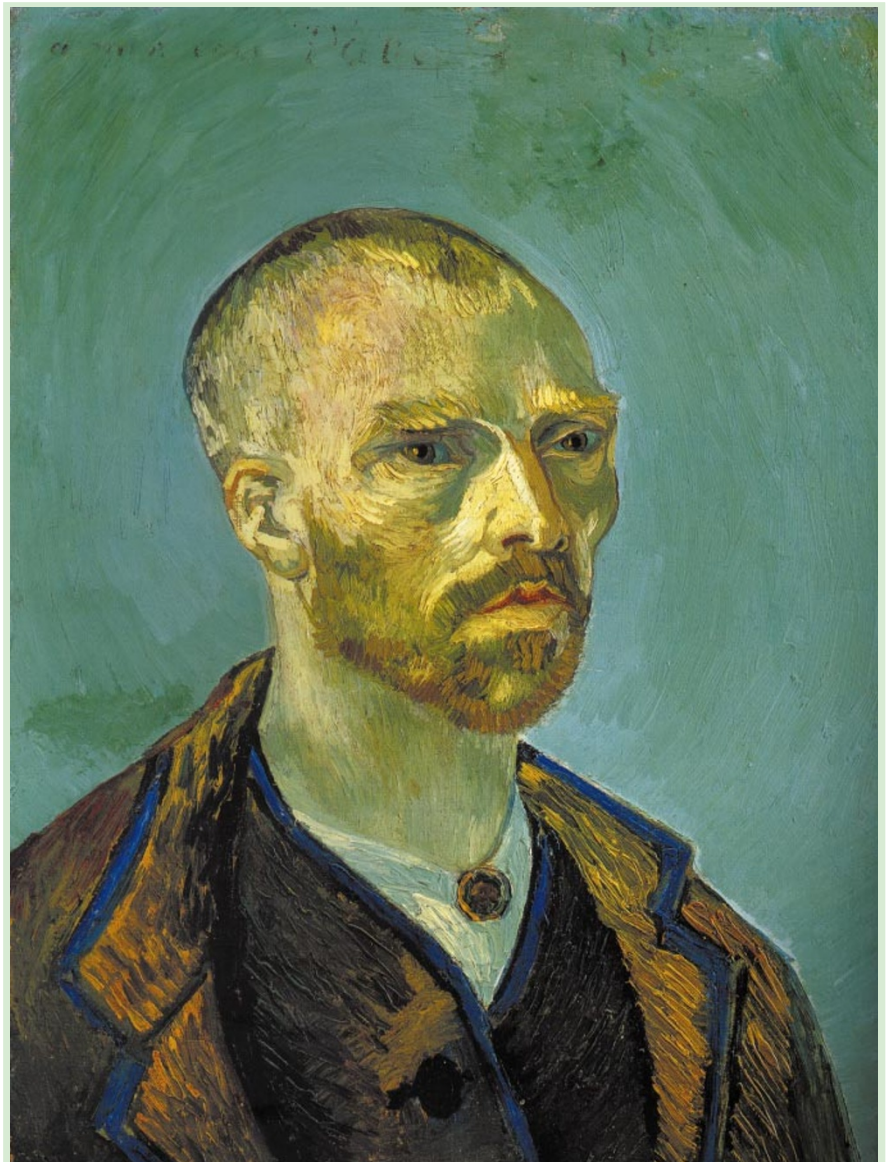
Cannon lived through the golden era of whole-animal physiology. Along with Ernest Starling and Sir William Bayliss, he was an experimentalist of such scope and originality that his absence from the Nobel prize lists seems surprising. He might have been considered when Sir Henry Dale and Otto Loewi shared the 1936 prize for their work on neurohumoral transmission at nerve synapses, although his mature theory of what actually happens at the synapse received little contemporary assent and did not stand the test of time. His researches on the physiological bases of emotional expression brought him to the attention of clinicians.

Of lasting quality was Cannon's work on regulatory mechanisms, embodied in his continuing preoccupation with homeostasis (a word he coined). Cannon's *Wisdom of the Body* (1932; out of print), one of a handful of modern physiological classics, is probably unique in its presentation of an important and novel synthesis in language that could be

appreciated by a non-specialist audience. It thoroughly deserved its popular acclaim. The last decade of his life was so clouded by ill health that he was driven wryly to remark that maybe the body was not so wise after all.

Cannon was already a highly visible scientist by the 1930s, but he also liked to describe himself as a hermit in the laboratory, even if his public as well as his domestic life remained exceptionally full. He was ever

an espouser of good causes. He served for years as the chairman of the American Medical Association's Committee for the Protection of Medical Research, a position that brought him face to face with the antivivisection movement. He was deeply touched by the Spanish Civil War, partly because of his Spanish students and colleagues, and devoted many hours to raising money for the relief of Republican groups. Visits to Russia



**Expressions that stand the test of time**

Vincent van Gogh wanted to create portraits that would "appear as revelations to people in a hundred years' time". He believed them to be a means of showing "the soul of the model". *Self-Portrait*

Dedicated to Paul Gauguin, shown here, was painted in 1888, two years before van Gogh's death. (From *Van Gogh Face to Face: The Portraits* by Roland Dorn et al.; Thames & Hudson, £32, \$50.)

and China inevitably involved him in the politics of communism and fascism. His ties with Russia were strengthened by his admiration for, and friendship with, I. P. Pavlov, whose well-being was the object of so much concern among the international physiological community.

Above all, Cannon had faith, as both a scientist and a citizen, in the capacity of science to transcend petty nationalism, and this faith was not broken even as he watched the abuse of science and rationality by Nazi spokesmen. He was concerned with the plight of Jewish refugees, although the faculty at Harvard was dominated by male Protestants who mostly preferred to aid their Jewish colleagues at a distance.

Harvard was, in the fullest sense, Cannon's Alma Mater. He was an undergraduate and medical student there, and spent his professional career guiding its department of physiology to a position of international pre-eminence. He was eventually able to secure recurrent funding from the Rockefeller Foundation, which enabled him to nurture his department through a period of sustained expansion. He worked with a succession of graduate students and fellows from all over the world, including Asia and South America. By the time he died, in the closing days of the Second World War, his students occupied chairs in key universities throughout the world. His had been a consistent voice, at Harvard and wherever he went, arguing for the value of medical research for human welfare, and the fundamental importance of free enquiry as a basic necessity for democratic societies.

Cannon's breadth of interests and activities endows his career with an emblematic quality. This volume is consequently as much about the maturation of American biomedical science as about the life of one individual. It is about Big Science in the making.

At the same time, Cannon's world seems incredibly remote from our own. Even at the time of his retirement, his department was minuscule by modern standards, with only a couple of other permanent members on the teaching staff. A few thousand dollars a year from the Rockefeller coffers made all the difference. Recruitment of students and fellows was often by word of mouth and can seem to us rather casual. Cannon published many research papers alone and rarely with more than one or two collaborators. Research assessment exercises were few and far between. He actually ran his own department.

Before anyone gets too nostalgic, however, we should remember that some features of modernity were also part of Cannon's scene. Many of his junior staff faced years of hand-to-mouth uncertainty. Jobs were scarce, especially during the 1930s, and Cannon spent his share of time fretting

about what would happen to his pupils. Experiments did not always go well, and priority disputes were not unknown. There was always too much to do.

On balance, though, these two substantial volumes devoted to this Harvard physiologist suggest that the first half of the twentieth century was not a bad time to be Walter Bradford Cannon. ■

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## Witness after the event

### A Fly for the Prosecution: How Insect Evidence Helps Solve Crimes

by M. Lee Goff  
*Harvard University Press: 2000. 240 pp.  
 \$22.95, £14.50*

Mark Benecke

"I didn't think anyone would actually be interested in reading about my cases," wrote Lee Goff about *A Fly for the Prosecution*, his first popular-science book. Such a lack of interest, however, was unlikely, as Goff is one of a small number of scientists who work out how long a corpse has been dead by using maggots and other creepy crime-scene reconstruction assistants. Furthermore, his lectures and workshops are constantly overcrowded and his sense of humour, combined with scientific accuracy, makes him the darling of his various audiences.

Although forensic entomology has a certain fascination for the public, any forensic pathologist will tell you that it is much more entertaining to read about cases than to collect live arthropods from decaying human corpses. This is where Goff's book comes in — it is a colourful collection of forensic entomology research and cases (mostly his own in Hawaii), along with personal thoughts about how to deal with violent death and decay, and the story of his life.

An expert on mites, Goff stumbled into forensic entomology after hearing a talk about the decompositional patterns of pigs in 1981. He quit his job at a local museum and accepted a position at the College of Tropical Agriculture in Hawaii. Soon after, he and a handful of colleagues, who were either researching the activity of insects on animal cadavers or looking into the use of entomology in criminal investigations, set up an informal

group called the Council of American Forensic Entomologists (CAFE). It is highly enjoyable to follow motorcycling arthropod specialist Lee Goff — at that time, with his beard, earring and shaggy hair — to formal forensic academy meetings, into the FBI Academy, in front of highly offensive US attorneys in murder trials, and away from the preparations of a peaceful New Year's Eve dinner to collect evidence at a crime scene. Thanks to the work of CAFE members, the method has grown in popularity among US forensic pathologists, forensic scientists and the police, until now the FBI Academy includes an annual arthropod collection class in their course "Recovery of Decomposed Bodies". The CAFE-edited book *Entomology and Death: A Procedural Guide* (Joyce's Print Shop, 1990) was a collection of practical information on the subject.

One of the most valuable points made in *A Fly for the Prosecution* is how different the characteristics of insect populations are in contrasting habitats such as corpses that are wrapped or burned, those hanging above ground compared with buried ones, and those poisoned with cocaine or with other drugs. This high variability of most biological processes is not only hard to explain in front of a jury, it also dampens the enthusiasm of many students and beginners. Goff sheds light on the limits of the method, stressing that forensic entomology needs experienced practitioners. As he points out, any investigation starts to get frustrating the moment identification of an uncommon arthropod species has to meet a deadline set by a subpoena instead of by common sense.

It can be difficult to persuade research agencies of the need for additional scientific studies, for example on the development of local arthropods at different temperature levels, on the identification of toxins produced by insects that have fed on corpses, and on DNA typing of insects. Therefore, it has taken years to bring the method into routine use in forensics. It is thanks to Goff and his US colleagues that forensic entomology is now widely known as an adequate and highly effective tool in difficult questions concerning the time of death and related matters of criminal investigation. Goff's book is the culmination of this effort.

The method was discovered

