

a quadrangle of Christ Church college “with a far-away look on his face. The far-away thought behind that far-away look was evidently a happy one, for at that moment the exile’s countenance was serene and smiling. ‘Dr Einstein, do tell me what you are thinking,’ Murray said.

“I am thinking,’ Einstein answered, ‘that after all this is a very small star.’” ■

Walter Gratzer is at the Randall Institute, King’s College, University of London, 26–29 Drury Lane, London WC2B 5RL, UK.

.....

Beneficent squid

The Squid Synapse: A Model for Chemical Transmission

by Rodolfo R. Llinas
Oxford University Press: 1999. 224 pp.
£49.95, \$85

Tomoyuki Takahashi

When it comes to contributing to our knowledge of neuronal function, no creature can surpass the squid. Its axon has enabled us to discover the ionic basis of electrical signalling, and its synapse has revealed the chemical signalling between neurons. Rodolfo Llinas’ book summarizes what this invertebrate has told us about chemical synaptic transmission.

The author is a leading scientist in research fields ranging from cellular to system neurophysiology, and the first half of his book introduces readers to classic electrophysiological findings on chemical transmission, many of which cannot be found in general textbooks. The rest of the book is devoted to the molecular mechanisms of synaptic transmission, in particular the roles of synapsins and SNAREs in transmitter release.

Throughout, much emphasis is given to the key role of calcium, which is described with many original findings by the author and his collaborators. In this respect, the book may be regarded as the notebook of a scientist who has pursued the “painstaking deciphering of nature’s small print”, as the author himself puts it. Despite the book’s personal nature, it successfully reveals the current state of synaptic research and the direct approaches that have been used to build this up. It should therefore attract a wide audience, particularly those interested in listening to nature directly rather than passively accepting current paradigms.

Finally, the book comes with a CD-Rom containing an excellent program of a synaptic model. The program enables one to perform ‘virtual’ recordings from a presynaptic terminal and postsynaptic target cell, and to test the effects of manipulating various parameters such as intracellular and extra-



Axon at work: the squid’s oversized neuron has contributed much to neurophysiology.

cellular calcium concentrations or the shape and size of presynaptic action potentials. This program will surely attract young students, as well as researchers, who are interested in computer simulations of neuronal function. This model also reminds us of the dynamic aspects of synaptic function and that individual neurons are not merely passive elements in neuronal networks, but actively influence brain function through synaptic modulation.

Tomoyuki Takahashi is in the Department of Neurophysiology, Faculty of Medicine, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan.

.....

Medicine’s least respectable branch?

A Century of Psychiatry, Volumes I and II

edited by Hugh Freeman
Mosby-Wolfe: 1999. 360 pp. \$120, £59.95

Dylan Evans

The history of psychiatry is a complex and fascinating affair, but it has not been easy for the general reader to obtain an accurate picture of it. Most accounts have been either accurate and academic, or popular and tendentious. With *A Century of Psychiatry*, the general reader now has a reference source that is both accessible and balanced.

This multi-author, twin-volume work does not shrink from the darker moments in the history of psychiatry, from the reckless enthusiasm for poorly tested remedies in the

1930s and 1940s, to the political abuse of psychiatry in the former Soviet Union. However, these are not the basis for any sweeping pronouncements about the nefarious purposes of psychiatry à la Michel Foucault. Rather, the constant references to the wider social and scientific context in which these events occurred helps to make them understandable, even if not always excusable.

In his excellent chapter on the origins of convulsive therapy, for example, Max Fink makes palpable the sense of impotence felt by psychiatrists in the first decades of this century, when no effective treatment for the psychoses was known. Fink also explains the reasoning that led doctors to the idea of treating schizophrenia with artificially induced fits: they were guided by the theory of the antagonism of diseases, and thought that schizophrenia was antagonistic to epilepsy (an idea that also led to the converse therapy, namely the attempt to halt epilepsy with transfusions of the blood of psychotic patients). This is a welcome corrective to the misleading images of convulsive therapy perpetuated by popular culture.

The balanced approach is evident throughout the book. The sections on the emergence of psychoanalysis and Sigmund Freud by Martin Stanton, for example, avoid the extremes of hagiography and demonography that typically afflict works on these subjects. Anyone who baulks at the idea of including Freud in a history of psychiatry should read Gerald Grob’s section on American psychiatry in the 1960s, which makes clear the extent to which psychoanalytic ideas dominated the treatment of mental disorder there for several decades. As Charles Cahn’s section on the history of

the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* shows, it was not until the publication of *DSM-III* in 1980 that most psychoanalytic concepts were formally excluded from psychiatric orthodoxy in America. *DSM-III* replaced the old psychoanalytic concept of 'neurosis', which had been central to *DSM-I* and *DSM-II*, with the more general one of 'disorder' (although the word 'neurosis' was restored in parentheses after protests by psychoanalysts fighting a rearguard action).

The organization of the text is partly chronological and partly thematic. There are 10 chapters, each dedicated to one decade of the twentieth century. Each chapter consists of various sections which cover particular themes, such as a form of treatment, a diagnostic category, a famous psychiatrist, or some wider social or national development. Each section can be read on its own, making the book a handy reference tool. There is inevitably a degree of overlap between the various sections, but this is not a serious defect. The book is amply illustrated with archive photographs, which bring the stories vividly to life. There are no references in the text, as befits a non-academic work, but there are plenty of suggestions for further reading at the end of each chapter.

Perhaps the most interesting thing to emerge from this collection of historical essays is a real sense of the nitty-gritty of scientific discovery. The mental disorders are such terribly complex phenomena that they are still poorly understood today. As this book shows, there has been real progress in understanding and treating mental illness during the past century, but it has been a very haphazard advance. Many therapies that initially seemed promising turned out to be dead-ends, while the few therapies that have stood the test of time, such as neuroleptics and antidepressants, were largely discovered by accident.

Intuition and enthusiasm have played as important a role as theory in driving psychiatry forward, and the history of the discipline is correspondingly peppered with colourful characters and leaps of imagination. The fact that psychiatry has had more than its fair share of eccentric geniuses may be one of the reasons for its failure to shake off its image as the least respectable branch of medicine, but what progress there has been is almost entirely due to these mavericks. There is a view of scientific progress that downplays the context of discovery. The history of psychiatry favours a different view, one that sees nature's mysteries as giving way to an odd combination of brilliant mental leaps, accident and sheer, dogged persistence. ■

Dylan Evans is in the Department of Philosophy, Logic and Scientific Method, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, UK.

In retrospect: chosen by David Jones

The Year 2000: A Framework for Speculation on the Next Thirty-three Years

by Herman Kahn and Anthony Wiener
Macmillan: 1967. £3.15

The above volume was perhaps the most professional attempt made during the 1960s to predict the world of AD 2000. Its authors worked at the Hudson Institute, a respected US independent think-tank, and their remit covered several aspects of the world 33 years ahead.

One aspect was economic — how rich the world, and the different countries within it, would be by 2000. Knowing that the economy, and society in general, was driven largely by scientific and technical developments, the tank-thinkers made guesses in these areas too. They were greatly concerned by politics and wars. They even tried to predict sociological changes — the feel and character of society in the future. Like all sensible crystal-ball gazers, they hedged their bets. They expounded not only the most likely 'surprise-free projection', but a range of spreads around it, together with many possible surprises and variants. Their reference region was, of course, the United States, but their scope was global. How well did they do?

In economics, their forecasts tended to be on the high side. Thus, for the United States, they predicted a GNP for the year 2000 of (in 1965 dollars) \$1.3–4.5 trillion, with a best guess of \$3.2 trillion. Taking \$1 (1965) = \$5.14 (1998), this is \$7.1–23 trillion, with a best guess of \$17 trillion. The published figure for 1998 was \$8.5 trillion.

Their view of the technological future was similarly bold and expansive. They listed 100 significant developments they expected before the year 2000, and feared they would miss many others. In fact, fewer than 30 of their 100 have come to pass, mainly without much impact. They also suggested 35 "less likely" possibilities, such as direct input into the human memory, a drug equivalent to Aldous Huxley's "soma", and genetic modifications taking human beings beyond the definition of *Homo sapiens*. Perhaps mercifully, not one of their less-likely list has yet been realized.

Kahn and Wiener's few accurate predictions dealt mostly with electronic communications. They successfully foresaw home video-recording, automated banking systems, pervasive high-capacity data transmission, mobile phones, satellite broadcasting, the universal business use of computers, and new pervasive techniques for the surveillance, monitoring and control of individuals and organizations. But they did not miss as much as they had feared. The most noticeable absentees are the global positioning system, the personal computer (instead they envisaged universal 'thin client' terminals, served by central time-sharing mainframes), the pocket calculator and the video game. Technology has

not advanced as dramatically as they had guessed.

In their political prophesies, the tank-thinkers concentrated on the international scene — war and inter-bloc conflicts. They projected the cold war forward from 1967 in many ways, some culminating in nuclear exchanges (a professional concern of the Hudson Institute at the time), and others maintaining a tense stability. Some of their scenarios featured an erosion of communism, but none its outright collapse. Only the simple-minded genius of Ronald Reagan ever imagined that outcome.

But the most interesting speculations in the book are sociological. Here the dangerous optimism of the 1960s shines out clearly. Kahn and Wiener's predictions of economic growth, and the boundless wealth to come, led them to predict a "post-industrial society" whose main problem would be making the best use of leisure time. As they grew richer, such societies would evolve into a sort of hippy paradise, with perhaps half the population more or less voluntarily and cheerfully loafing on the vast output of an automated industrial system. Thirty-three years later, that boundless wealth, in GNP terms at least, has largely come our way; and yet we have somehow failed to enjoy or even notice it. Most working people feel as pressured as ever, perhaps more so. And the increase of the underclass, never anticipated by the most doom-laden prophets, has disfigured even the richest modern societies.

I cannot blame the tank-thinkers for failing to foresee the ramifications of the social trends of their day. The 1960s hippies, pursuing happiness as the Declaration permits them, caught it up in the form of addictive drugs — and lit a vast social conflagration that is still spreading. The feminist revolution, the environmental movement, the growth of global migration and ethnic cleansing, the eruption of AIDS: all these would have been beyond the most insightful of prophets.

Kahn and Wiener did, however, glimpse the spread of electronic totalitarianism. Their technical predictions included some shrewd guesses at how, by the merging of big databanks and the widespread installation of surveillance equipment, whole populations could be routinely and continually monitored. They clearly foresaw the erosion of privacy. To them this was an evil, a threat to freedom. Our more enlightened age knows it as a safeguard. Only the gaze of innumerable cameras saves us from the underclass. Only by allowing the government to peruse all our bank accounts can we discourage the tax-dodgers and the money-launderers. Only when every telephone conversation and every Internet connection is logged, and even recorded, can the gangsters, terrorists and pushers be kept in check. Freedom must sometimes be destroyed to save it. ■

David Jones is in the Department of Chemistry, University of Newcastle upon Tyne, Newcastle upon Tyne NE1 7RU, UK.