

# Science literally speaking

Walter Gratzer

**The Faber Book of Science.** Edited by John Carey. *Faber*: 1995. Pp. 560. £17.50.

TAKE a close look, if you will, at this passage from an article in the *New Yorker* by Julian Barnes, whom I had counted among my favourite writers: "... both the present Prime Minister... and the present Leader of the Opposition have music-hall blood in their veins. That they should end up heading their parties in the House of Commons seems Darwinian: positive proof of the inheritance of acquired characteristics." You have to allow that Barnes's grasp of the principles of the theory of evolution is shaky (and that of the editorial staff of the *New Yorker* no less so, alas). I was shocked; but then I began to wonder whether, skulking in some underground chasm in Chicago or Geneva, one might not find a particle physicist who would have read Barnes's article and not even noticed. And I confess I have encountered successful biologists who are strangers even to the second law of thermodynamics (which was, you may recall, the shibboleth that helped C. P. Snow seek out the barbarians in our midst). Scientists, in short, do not always have deep roots in their culture.

All the more reason to wonder at the magisterial sweep of this remarkable compilation by John Carey, professor of English at the University of Oxford. *The Faber Book of Science* is everything an anthology should be; it is entertaining, stimulating and occasionally startling. Carey's reading is prodigious, and even the more familiar of his choices are illuminated by commentaries that crackle with literary and indeed scientific insights.

In his introduction, Carey contrasts what he sees as two types of writing about science; he calls these the mind-stretching (or jaw-slackening, which informs you how many of the water molecules that passed through Socrates in his hemlock draught you have in your breakfast cup of coffee or how far your DNA will stretch), and the explanatory, to which he is mainly drawn. He is tolerant of the occasional smugness of the Medawars and Haldanes, who, being scientists, are, in Medawar's words, not merely clever, but "have something to be clever about". He even sympathizes with Lionel Trilling, a man of letters, stricken by the bitter reflection that exclusion from the corpus of scientific thought was "bound to be experienced as a wound to our intellectual self-esteem". But Carey's is a mission of reconciliation, even to the extent that he finds a kinship between science and theology — a discipline that might, he believes, "be regarded as a

science". Here, I rather think, most of us would part company with him. The difference is surely encapsulated by Locke, who defined religious faith as something accepted not on the basis of evidence but on the authority of another. The cast of mind that draws scientists to their profession is the antithesis of that which predisposes towards religion. Most scientists, I suspect, would hold that not only is there no God, but the toast always falls on the carpet buttered-side down.

So then to the matter: Carey has arranged his selections chronologically by subject material, starting with Leonardo da Vinci's notebooks and progressing through the seventeenth and

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eighteenth centuries to the Victorian era, represented by majestic passages from works of the scientific Titans of the time, as well as such an unexpected figure in this company as John Ruskin with a sprightly essay on the nature of rust. Here are not only the crystalline periods of Lyell, but also the lugubrious stanzas that resulted when Tennyson read *Principles of Geology*.

Carey has trawled far beyond the usual confines of science writing. An account of August Kekulé's two celebrated dreams, which revealed to him the essence of stereochemistry and the structure of benzene, is culled from the *Journal of Chemical Education*, and for transfixing contemporary narratives about the discovery of X-rays and their properties he has gone to such sources as *McClure's Magazine* and *The Electrical Engineer* of 1896. By way of commentary he tells us that Professor Czermak of Graz could not sleep after seeing a photograph of his cranium which revealed to him the death's head beneath the skin, that inspecting the internal organs was widely held to be an affront to privacy, that Dr Banaduc of Paris exhibited X-ray photographs of the human soul and that M. Gaudoin of Dijon successfully offered high-dose irradiation as a depilatory beauty treatment. And he ends the section with a marvellous passage from Thomas Mann's *The Magic Mountain*.

The naturalists are well represented, not forgetting the romantics such as Maeterlinck, whose anthropomorphic

rhapsody on the life of the bees reads so quaintly today. There is a lethal parody by Mark Twain of Alfred Russel Wallace's proposition that the Universe was designed expressly to accommodate man (the strong anthropic principle, as it is now called), Albert Einstein and Arthur Stanley Eddington on the new physics, and a prizewinning exposition of the general theory of relativity by an Irish schoolteacher. (So much for Eddington's assertion that none but he and its begetter could properly understand the general theory.) Another unexpected pleasure is the limpid elegance of Max Born's inaugural lecture at Edinburgh on the subject of quantum mechanics.

Joseph Wood Krutch, professor of English at Columbia University and naturalist, is one of many unjustly forgotten writers whom Carey has disinterred, and he has discovered natural history among the essays of George Orwell and a small gem by John Steinbeck, whose interest was stimulated by his marine-biologist friend Ed Ricketts (portrayed as Doc in the Californian novels). And so to our own time, with verse and with the prose of Peter Medawar, Isaac Asimov, Arthur C. Clarke and many others.

An anthology is a distillation of one man's tastes and interests and it would be absurd to cavil about omissions, but I was surprised to find no H. G. Wells (if nothing else, then possibly his memorable portrait of T. H. Huxley at the blackboard in Kensington). Perhaps, like Max Beerbohm, Carey regards Wells's prose as so much "cold porridge spilt on the pavements of Gower Street". Nor are there represented here such outstanding contemporary writers on the ways of science and scientists as Jeremy Bernstein, Stephen Hall and Gary Taubes. But Carey has given us more than generous measure and no scientific anthologist that I know of, except, on a smaller scale, Martin Gardner, has even run him close.

Carey hints in his introduction at a more serious purpose than to entertain: "If young people are to be wooed back into science", he suggests, "it will not be done by telling them that if they continue to spurn it, Britain will face economic decline (true as that may be). But if scientists demonstrate by their writing that Medawar's promises of pleasure and self-fulfilment are true, they will not lack recruits." Let us pray that he is right, but he also contends that the true antithesis of science is politics, for this "is constructed out of preferences, which it seeks to elevate, by the mere manipulation of words, to the status of truths". Well now, in Britain at least (though not only here), politics has become, by its vulgar demand for instant economic returns, the most insidious enemy of science. The well is being poisoned. Rutherford used loudly to proclaim his

pity for those impoverished souls who had no labs to go to for solace and amusement. Science may be paying the price for letting the word leak out that scientists (the good ones at least) do it only because they enjoy it. But if that pleasure fades, I recommend Carey's admirable book as the next best thing. □

Walter Gratzer is at the MRC Muscle and Cell Motility Unit, King's College, 26-29 Drury Lane, London WC2B 5RL, UK. He is the editor of *A Bedside Nature: Genius and Eccentricity in Science 1869-1953*, an anthology soon to be published by Macmillan Magazines.

## Social medication

Richard Davenport-Hines

**The Pill: A Biography of the Drug that Changed the World.** By Bernard Asbell. Random: 1995. Pp. 411. \$25.

THE contraceptive pill is an exceptional drug. For the past 30 years it has been swallowed as a daily routine by more humans than probably any other prescribed medication in the history of the world. Yet it is intended neither to prevent nor to cure an illness. The first medicine to have been designed for a social rather than a therapeutic purpose, it inaugurated what Bernard Asbell calls the Era of BioIntervention, in which the human reproductive system is regulated and re-devised in an unprecedented manner. For these and other reasons, the oral contraceptive has caused the most serious confrontation between the Roman Catholic Church and science since Galileo. Asbell's account of the scientific research preceding the marketing of an oral contraceptive, and its social sequel, is a balanced, readable and interesting mix of biography, scientific history, theology and public-policy analysis.

The most vivid biographical passages describe the lifetime's work of Margaret Sanger (1879-1966) and Katherine McCormick (1875-1967), whom he rightly identifies as "the indisputable mothers of the Pill". Sanger came from an Irish Roman Catholic family, and, as a girl at her mother's funeral, had furiously reproached her father: "You caused this. Mother is dead from having so many children." Afterwards, as a social worker in

New York's Lower East Side, she was revolted by "poor, weak, wasted, frail women, pregnant year after year like so many automatic breeding machines", and by the many deaths due to illegal abortions. She set out to provide women with reliable contraceptive information, and was imprisoned for her pains in 1916. Later she realized that she could raise large sums for her planned-parenthood projects and obtain protection from legal harassment if her rhetoric emphasized the dangers of over-population rather than focusing on sexual oppression.

One of her supporters was a beneficent multi-millionaire named Katherine McCormick, whose husband had been diagnosed as schizophrenic some years into their marriage and who had been convinced by Mendelian theory that she must never have children. Together, in 1951, Sanger and McCormick commissioned Gregory Pincus of the Worcester Foundation for Experimental Biology to develop an oral contraceptive that could be taken as easily as a pill of aspirin and that would have the same level of fallibility as vaccination. The motives of Sanger and McCormick were threefold: they wanted to simplify life for women, to distance sexual acts as much as possible from contraceptive acts and to reduce the



"Halfway to the corner... shawled, hatless... all day long and far into the evening in ever increasing numbers they came" — the first US birth-control clinic, opened by Margaret Sanger and her sister, Ethel Byrne, in 1916 at 46 Amboy Street, Brooklyn.

fertility of the 'unfit'.

Overall, McCormick provided \$2 million for the research. Pincus in 1951 proved that progesterone inhibited ovulation and began a new search for synthetic drugs. Asbell gives a lucid account of the work of other contemporary researchers in this area: the Harvard gynaecologist John Rock; the maverick chemist Russell Marker; the steroids researcher Carl Djerassi; and Frank B. Colton of the G. D. Searle pharmaceutical company. The upshot of all their efforts was the

marketing from 1957 by Searle of a synthetic anovulent, ostensibly to stop ovulation in women with menstrual disorders, although its contraceptive effects were so well known that by 1959 half a million women in the United States alone were using it.

In 1960 the US Food and Drug Administration accepted the Searle anovulent as an oral contraceptive pill — an event that, as the *Ladies' Home Journal* later declared, made more "immediate difference in women's lives" even than obtaining political suffrage. The universal attraction of this new product, and its importance to married and unmarried women, is indicated by the simplicity and ubiquity of its popular name in the English-speaking world, "the Pill" of Asbell's title. The Pill's appeal was not limited to women. Men were pleased to be relieved of contraceptive responsibility. Biochemical and hormonal contraception seemed like hard science to doctors and complemented their view of the necessity of birth-management by scientific experts.

From the beginning the Pill was detested by those who did not want the fear of pregnancy to be disconnected from the pursuit of sexual pleasure. Asbell gives a shrewd and temperate account of the background to the papal encyclical of 1968, *Humanae Vitae* ("Of Human Life"), which interdicted artificial birth control, as much as anything, one feels, from Pope Paul VI's fear that any change in teaching would seem to repudiate his papal predecessors. Asbell is rightly dismissive of the self-victimization of some American feminists who attacked oral contraceptives as devices that reduced them to passive objects of male lust.

The final section of *The Pill* will make ominous reading for all those who value the free traffic of scientific ideas. Asbell shows how contraception in the United States has become so politicized that its techniques have plummeted as subjects of research. Even the continuing research in the United States into pharmaceutical substances that will kill or disable sperm is conducted in an intimidating social and political context. The bigotry directed by religious fanatics against scientists and physicians is mediaeval in its primitive savagery. Thus the campaign by American zealots against the pharmaceutical company Hoechst, which has marketed the RU-486 abortive tablet since 1988, involved not merely the threat of a worldwide boycott of Hoechst products if RU-486 was sold outside France, but also chilling menaces of extortion and violence. It is dismaying that the leading Western democracy should increasingly be held hostage by ignorant and unscrupulous enemies of scientific freedom. □

Richard Davenport-Hines is at 51 Elsham Road, London W14 8HD, UK.