Behind the bifocals

Roy Porter

Franklin of Philadelphia. By Esmond Wright. *Harvard University Press:1986. Pp.404. $25, £21.25.*

BENJAMIN Franklin is safely installed in one of the most prominent niches in science's pantheon. An early dabbler in experiments, the Philadelphia printer had put electrostatics on a new footing by the time he was forty. He advanced the theory that electricity constituted a single fluid, explained the conservation of charge, and introduced the concepts of plus and minus, positive and negative. But harnessing that terrifying force was no less vital to him than understanding it. Through demonstrating by experiment that lightning was electrical, Franklin was able to pioneer the lightning conductor (though George III stubbornly refused to employ the gadget of the Yankee rebel). And by explaining the charges of the Leyden Jar, he anticipated times when electricity would constructively lie at man's service (he himself tried shock treatment in cases of paralysis, but doubted the lasting efficacy of electrotherapy). As thumbnail sketches go, it is accurate enough to see Franklin as the founder of modern electrical science.

Yet he was also a scientific all-rounder with a ready gift for invention. He studied the Gulf Stream, developed bifocal glasses, rationalized spelling and fireplace design, and even improved the rocking-horse (how like his English contemporary Erasmus Darwin!). A jack-of-all-trades, it was his rare good fortune to be master of many.

But Franklin was never more than a part-time scientist. And it is the achievement of Esmond Wright's polished biography that, recognizing that Franklin's scientific career has already been fully analysed, he has concentrated on painting a rounded portrait of all the facets of this supremely versatile and talented man. Franklin as business-man, journalist, raconteur, politician, diplomat, sage, architect of American independence and man of the world: all are here. Not least, we see Franklin as author and embodiment of the American dream. His is an extraordinary tale of self-help and hard work leading to success.

Born in 1706 of poor immigrant stock, Franklin trained as a printer; publishing led to writing, and Franklin soon won himself renown as the author of *Poor Richard's Almanac,* full of wise saws for getting on ("Early to bed, early to rise..."). By mid-life he was wealthy enough to retire from business. Ever energetic, he threw himself into public affairs. Prominent in founding the American Philosophical Society and what was to become the University of Pennsylvania, he was elected to the colony's assembly in 1746. Soon he found himself sent to England, in effect as ambassador for the Colonies, at precisely the moment when relations between them and Westminster were going sour.

The canny Franklin was all for compromise not confrontation. In any case, he was profoundly Anglophile, envisaging America's greatness lying within a glorious global British Empire. But it was not to be. Extreme counsels prevailed on both sides of the Atlantic, Parliament became intransigent and Franklin found himself forced to abandon pragmatism for patriotism. Becoming the elder statesman of the War of Independence, he ensured that France entered the war on the rebels' side, helping to tip the balance. He was sure of American victory, for there was no holding back progress. New Worlders were ambitious, no-nonsense and free from the fossilized forms of the Old. Combining realism and optimism, Franklin nailed his colours to the mast of the future.

Scientific biographers all too often forget that their subjects are flesh and blood creatures, with lives outside the laboratory. Franklin certainly was, with his eye for women, a taste for old madeira and an unquenchable thirst for life. Above all, Wright shows how science and politics were inextricably linked in Franklin's outlooks and career. Natural science was the technique of improving man's material lot; politics the art of social progress. "O that moral science were in as fair a way of improvement", lamented Franklin, "that men would cease to be wolves to one another, and that human beings would at length learn what they now improperly call humanity".

Amen. Ben Franklin was full of such maxims, no less wise for being homely. Anyone wishing to penetrate behind the bifocals, into the urbane mind of the first and greatest of the Yankee scientists, cannot do better than to sample this feast of a biography. □

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Only natural?

Alastair Fitter

The Oxford Dictionary of Natural History. Edited by Michael Allaby. *Oxford University Press:1986. Pp.688. £20, $29.95.*

THE two essentials of a good dictionary are comprehensive coverage of its subject, and accurate and up-to-date definition of terms. The editor of *The Oxford Dictionary of Natural History* (who, incidentally, has only edited it, and not provided definitions) states that it takes in the "earth sciences, atmospheric sciences, genetics, cell structure and function, biochemistry, parasitology and other disciplines". Curiously missing from this list is ecology, once described as scientific natural history.

The natural history component is in fact supplied by copious and extensive references to taxa of living organisms, complete (apparently, and I found no exceptions) down to family level and with many genera and species of greater than average interest included as well. These entries make up at least half of the total, and they will, I suspect, be of great value both to professional biologists and to the book's intended audience: students and amateur naturalists. I know of no equivalent compilation with coverage ranging through bacteria to fungi, plants and animals, and both the choice of taxa and the comments in each entry seem appropriate.

But the list of disciplines included, with biochemistry and cell structure and function among them, worries me. How many amateur naturalists want to know about the sliding-filament theory of muscle contraction? And, curiously, though many enzymes have entries to themselves, those that might interest naturalists, such as esterases (for their importance in electrophoretic studies) and ribulose bisphosphate carboxylase (the commonest protein in the world) do not appear. Surely natural history is not concerned with mechanisms at the infra-organismic level, and biochemistry and cell biology are out of place in a book such as this. Conversely, the word "history" is used here in the Aristotelian sense, a general account of natural phenomena; so it is right that the earth and atmospheric sciences should be represented.

What, then, of the details? Here I can only turn to the areas I know best. Generally, the definitions seem good, though I would quibble with some (for example those of *fitness, polyploidy* and *red light*), and others seem a little dated (under *succession* no mention is made of concepts such as facilitation). But in a book of over 12,000 entries it is pointless to pick out one or two individual definitions. More disturbing is the absence of some terms: