

Feeling for nature

Robert M. May

Gilbert White: A Biography of the Author of The Natural History of Selborne. By Richard Mabey. *Century Hutchinson, London:1986. Pp.239. £14.95.*

ONLY three books in the English language have gone through more editions than Gilbert White's *The Natural History of Selborne*. This claim leaps out from the blurb on the back of the 1977 Penguin edition, and has left me wondering what ranks third behind the Bible and Shakespeare; probably *Pilgrim's Progress*. The separate editions of *Selborne*, over 200 of them, have appeared at a steady rate since the book was first published in 1789 (note the impending bicentenary), forming an interesting record of changing tastes in book design and changing visions of the countryside as revealed in the illustrations.

On first acquaintance, *Selborne* is a surprising book to have evoked such unwavering affection. As Mabey observes, it is

the kind of book presented on prize-giving days, ... a work, in all senses, of the old school. Even when I eventually came to read it, I cannot say my opinion changed dramatically. I could not cope at first with its rambling disorder, its sudden plunges into thickets of taxonomic Latin, and, for a while, I failed to notice the feeling behind the often dispassionate prose.

Selborne is organized as a collection of letters, similar to many other works about local natural history by enthusiastic parsons. It endures while these other books ornament the libraries in stately homes because beneath its unassuming surface is a fully contemporary appreciation — quite new in its own time — of plants and animals as more than curiosities, but as parts of a community, interacting among themselves, with their environment and with humans. White raises general questions (such as how populations are regulated), but always against a background of keenly observed detail (the breeding success of swifts, the singing of crickets, or the way fly-catchers keep their fledglings cool in summer by fanning their wings above the nest).

Richard Mabey has produced the first biography of Gilbert White for over 80 years. The difficulty is that not a lot is known about White, except that he lived an uneventful bachelor life in the parish and rarely left it (as Richard Boston observed, reviewing the book in *The Guardian*, how else could White have described the South Downs as "that chain of majestic mountains"). Mabey's book is more in the nature of an introduction to, and appreciation of, *Selborne*, than a biography in the strict sense. At such, it

does a fine job of relating Gilbert White and his book to the village of Selborne as it was then and is now. Despite his observations, White never fully gave up the contemporary notion that swifts and swallows disappeared in winter because they hibernated; Mabey empathizes, suggesting that White simply could not imagine why anyone could want to leave Selborne.

Mabey explains that "it was seeing Selborne itself, the source of White's inspiration, that changed my view [quoted above] decisively, and helped me to understand what the book was truly

about". The patterns of field and woodland around the village have changed little since White's time, and the village itself conducts its Gilbert White trade in a low-key way (the stained glass memorial window in the church, with White as Saint Francis among his birds, is alone worth a visit: see the cover illustration of *Nature*, 22 December 1983). Visit Selborne and read Mabey. Then read *The Natural History of Selborne*. □

Robert M. May is Class of 1877 Professor of Zoology at Princeton University, Princeton, New Jersey 08544, USA.

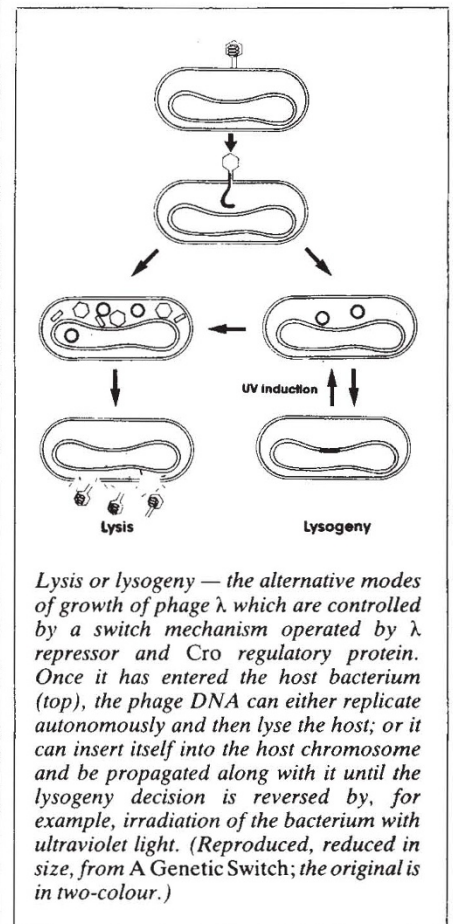
In the groove

Sydney Brenner

A Genetic Switch: Gene Control and Phage λ . By Mark Ptashne. *Cell Press, Cambridge, Massachusetts/Blackwell Scientific: 1986. Pp.128. Pbk \$16.95, £14.50.*

MAX Delbrück did not believe in lysogeny. He thought that the persistence of bacteriophages in some bacterial cultures was due to cryptic infection and he dismissed it as a fringe phenomenon. Everybody he influenced therefore worked on virulent bacteriophages, especially T4, and their work led to one branch of molecular genetics and to the discovery of the fine structure of the gene, the general nature of the genetic code and messenger RNA. Fortunately, Delbrück's influence was not totally pervasive and in Paris, where there was a long tradition of research on lysogenic bacteria, the work of Lwoff and of Jacob and Wollman on bacteriophage λ revealed that lysogeny is in fact due to a gene regulatory mechanism that allows the phage DNA to remain silent in the bacterial chromosome until activated by, for example, ultraviolet light. Their major step was the realization that the properties of the phage mutants on which they worked were isomorphous with those affecting the expression of β -galactosidase, and that in both cases gene regulation was achieved by the negative effect of repression.

Mark Ptashne isolated the λ repressor in 1967 and has spent nearly 20 years in pursuing its molecular structure and mode of action. This little book is an account of his research, focused especially on how the λ repressor and *Cro*, another regulatory protein, form a switch by their interaction with an operator, O_R . In one state, corresponding to stable prophage, the binding of λ repressor inhibits the rightward transcription from the promoter site P_R and stimulates its own production by transcription in the direction from another promoter, P_{RM} . When the repressor is removed by proteolysis induced by ultraviolet light, rightward transcription is



turned on and *Cro* is produced. The binding of *Cro* to O_R prevents any further synthesis at P_{RM} , thus turning off repressor, irreversibly throwing the switch and sending the phage down the lytic pathway. Ptashne shows how these events are precisely conditioned by the mode of binding of repressor and *Cro* to the three-component sequence of the operator. The structure of these proteins is known and both recognize the major groove of DNA through a characteristic α -helix-bend- α -helix, a motif now known to be present in a large number of DNA-binding proteins.

This work is a paradigm for the mechanisms of regulation but Ptashne would like to go further and sees the λ switch as the model for switching between develop-