

Silent travellers

Robert Desowitz

Power Unseen: How Microbes Rule the World. By Bernard Dixon. *W. H. Freeman*: 1994. Pp. 237. £16.99, \$22.95.

The Outer Reaches of Life. By John Postgate. *Cambridge University Press*: 1994. Pp. 276. £16.95, \$22.95.

SIXTY-seven years have passed since Paul De Kruif introduced the microbe to an anxious, largely defenceless public. Although the AIDS virus has spawned a flourishing industry in the arts and letters, microbes have, since then, largely withered on the literary vine. And, come to think of it, in De Kruif's *Microbe Hunters* it was the microbiologist, not the microbe, who had star billing.

These two popular science books make a significant new contribution in educating the public in the ways of microbes. They differ in content and style, reflecting the occupation and interests of each author. Bernard Dixon is a scientist who has become a science writer; a former editor of *New Scientist*, he has written seven trade books and has a monthly "Microbe of the Month" column in the *Independent*. John Postgate, a fellow of the Royal Society and a distinguished microbiologist, is a scientist who writes. Dixon 'talks story', as they say here in Hawaii; Postgate-the-professor-emeritus treats members of the reading public as if they were his students — he teaches.

The manner in which the two authors discuss the nitrifying bacteria is an example of their divergent interests. Dixon

focuses on the nitrifiers' destruction of stone monuments and provides only a cursory two-sentence description of the chemical mechanism of their acid-forming properties. Postgate, in considering how a microbe can live off an insoluble substance, focuses on its chemical physiology and gives the reader a chemistry lesson in enzymatic action and acid end-products. Another difference: Dixon calls *Nature* a "journal", Postgate calls it a "magazine".

Power Unseen covers the entire microbial gamut in 75 short essays. But the gamut is markedly skewed towards the pathogenic bacteria. Viruses get short shrift, seven essays (eight if you count the bacteriophage). It's all very even-handed; the AIDS virus gets the same three-page treatment as *Micrococcus sedentarius*, the bacterium accused of causing the effluvium rising from athletes' toes and socks. Dixon forgoes the opportunity to lead the reader from the AIDS virus to the phenomenon of the opportunistic disease caused by otherwise benign, quiescent microbes, particularly the protozoa. *Cryptosporidium*, *Toxoplasma* and *Pneumocystis* (although probably not a protozoan) are not mentioned. The only protozoan represented is the malaria parasite, *Plasmodium*, and its three-page allotment is restricted to a not entirely perceptive account of its pyrogenic potential. A pathogen responsible for more than two million deaths a year deserves better treatment — in all sorts of ways.

Dixon relishes the telling of cascade stories that stretch our imagination and, occasionally, our credulity. David Lloyd George is minister of munitions. He needs acetone to make cordite. He turns for help to a Jewish East European immigrant bacteriologist, Chaim Weizmann. Weizmann discovers that *Clostridium acetobutylicum* produces acetone as a metabolic end-product. The war is won and Lloyd George is prime minister. Arthur Balfour is his foreign secretary. Weizmann asks for, and is rewarded with, a Jewish homeland. *Clostridium*



Jeremy Burgess/SPL

Spore chain of the soil bacterium *Streptomyces lividans*.

acetobutylicum has fathered Israel.

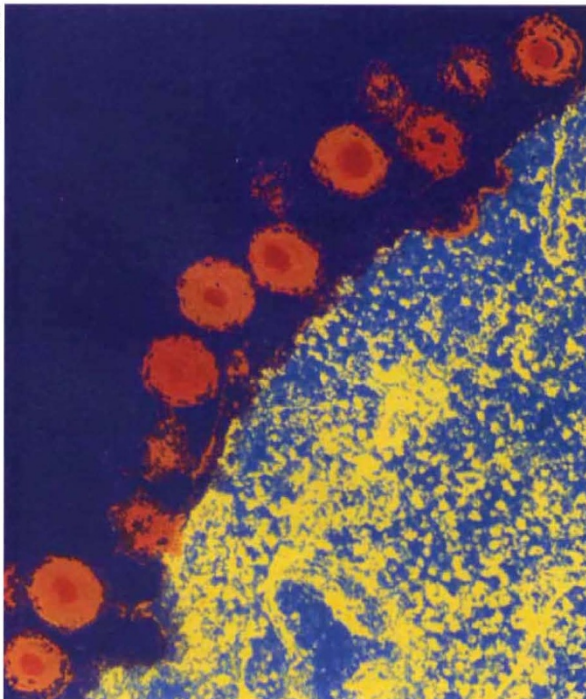
The Outer Reaches of Life eschews the pathogen and directs attention to those microbes that are, in anthropomorphic judgement, the wretched of the Earth. These are the 'simple' organisms that have made the not-so-simple adjustments to environments that are the 'outer reaches of life' — the cold of Antarctica, the near-boiling water of hot springs, the near-nutritionless benthic depths, the corrosive highly acidic and alkaline media. Postgate speculates that if life can evolve and be sustained in the harshest conditions of Earth, then creation and complex evolution is possible on the other planets of our Solar System.

Explaining the mechanisms that allow microbial life in these specialized, restricted environments involves a lot of chemistry. Postgate is not entirely successful in his efforts and it can be pretty heavy going for the nonscientific audience to whom the book is directed. But the reader who perseveres will be rewarded with a broadened vision of the nonpathogenic bacteria and the ways in which they have insinuated themselves into seemingly unsustainable habitats.

I recommend both books; Dixon's for a good read, Postgate's for solid popular science writing in a neglected field of microbiology. Individually or together they are not the new *Microbe Hunters*, but they are informative and, especially in the case of *Power Unseen*, entertaining. □

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Human herpes virus type 6 on the surface of an infected cell.