Life cycle of a biologist

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Lives of a Biologist: Adventures in a Century of Extraordinary Science
by John Tyler Bonner
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John Tyler Bonner, best known for his many books on the development and life cycles of various organisms, now symbolically closes his own life cycle by reliving the important events of his life, this time accompanied by the readers of his new book. As its title suggests, the result is an entertaining and educating story that spans the whole of the twentieth century, starting with the lives of his elders, circa 1900, and ending with the description of his senior days as a professor emeritus at Princeton University in 2000.

Bonner was born in 1920, and his academic trajectory covered the period during which the life sciences developed so fast that they dominated the other sciences. He discusses the enormous technical progress that was made over these years, even though his own experiments were not particularly high-tech. Bonner's main scientific interest was, and still is, understanding the development and life cycle of the cellular slime mould *Dictyostelium discoideum*. Bonner successfully shares with the reader his fascination for these social amoebae, which start life as free-living individual cells and then at some defined point collectively 'decide' to form complex colonies. These slug-shaped colonies undergo co-ordinated migration, and are transformed into fruiting bodies in which some cells die altruistically, forming a stalk that lifts up other cells that are converted into spores. We learn about

several of Bonner's experiments, aimed at understanding the underlying mechanism of this amoebic metamorphosis. I was particularly struck by the fact that Bonner describes the first experiments of his doctoral thesis and his recent ones as a professor emeritus with the same vivid enthusiasm. It is common that such fervour does not fade with age, and I hope that European universities will follow the Princeton model, in which scientists can continue active research even after reaching retirement age.

As well as chronicling the general scientific progress of the past century, Bonner devotes many pages to the social progress he witnessed during this period, especially in the university campuses. I was surprised to learn that Princeton only began to accept women students as late as the 1960s. And especially relevant today is the description of the students' revolt at Princeton that was triggered by the US bombing of Cambodia and the killing of the students who were demonstrating at Kent State University. Students' demonstrations at Princeton interfered with classes, but resulted in meetings in which students intermingled with all categories of university employees, from janitors to faculty. During one of these meetings, the students asked Bonner—then a chairman of the biology department—for help so that it ran smoothly. Under his professional chairmanship, the meeting was productive and "all agreed that the war was misguided and, worse, immoral; it had to be put to a stop". Bonner sent the resolution passed at the meeting as a telegram to President Nixon. As I write this review, American B52s are again on a deadly mission, this time bombing Iraq, and resistance to the war is again mounting in American campuses.

Over the years at Princeton, Bonner has met many luminaries of science, either those who worked there, such as Albert Einstein, or those who were visitors. One such guest lecturer—who probably visited in the mid-1950s, although exact dates are not given by Bonner—is described very favourably. He was Konrad Lorenz, who went on to be awarded the Nobel Prize for Physiology and Medicine in 1973. Bonner classified him as a pioneer in studies of animal behaviour, and

a wonderful showman, whose lecture "was without doubt a marvel, full of bird calls and bird postures, along with a wonderful grasp of the mood of his audience." The next day, Bonner took Lorenz to the 'perception centre' in the psychology department, where one could experience various optical illusions. There they met another visitor, Niels Bohr, the winner of the Nobel Prize for Physics in 1922. Bonner describes Bohr negatively as a person who "mumbled terribly in a thick Danish accent" and who did not let "Lorenz, a brilliant talker" express his thoughts. In addition, the conclusion Bonner extracted from Bohr's monologue was as dull as "things are not always what they seem". Those who have seen the play *Copenhagen* and have read about the dark past of Lorenz would probably interpret the message of Bohr quite differently. Bohr was probably not referring to the optical illusions they had all just seen, but to Lorenz himself. This gentle-seeming man—who liked to be photographed together with a flock of ducklings mistaking him for their mother—was, in fact, the same person who in Nazi Germany had called for racial purification and was one of the members of the NSDAP Office of Race Policy. According to the policy propagated and endorsed by him and some other scientists, the races considered by the Nazis to be valueless were to be eliminated like a cancer from the body of the superior race. How this policy ended we all know too well. Even if my interpretation of Bohr's intentions are not correct, I would have preferred Bonner to have mentioned the dark past of Lorenz instead of praising him uncritically.

With the exception of this point, I greatly enjoyed the book by Bonner. It is a fascinating account of biology's progress through the twentieth century, but it also teaches us how to look back on our own or someone else's life and to learn from these past experiences. One should not wait to be a professor emeritus before looking back and formulating a vision of one's own life cycle.

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