NEW BIOLOGICAL BOOKS

The aim of this section is to give brief indications of the character, content, and cost of new books in the various fields of biology. More books are received by The Quarterly *than can be reviewed critically. All submitted books, however, are carefully considered for originality, timeliness, and reader interest, and we make every effort to find a competent and conscientious reviewer for each book selected for review.*

Of those books that are selected for consideration, some are merely listed, others are given brief notice, most receive critical reviews, and a few are featured in lead reviews. Listings, *without comments, are mainly to inform the reader that the books have appeared; examples are books whose titles are self-explanatory, such as dictionaries and taxonomic revisions, or that are reprints of earlier publications, or are new editions of well-established works.* Unsigned brief notices, *written by one of the editors, may be given to such works as anthologies or symposium volumes that are organized in a fashion that makes it possible to comment meaningfully on them.* Regular reviews *are more extensive evaluations and are signed by the reviwers. The longer* lead reviews *consider books of special significance. Each volume reviewed becomes the property of the reviewer. Most books not reviewed are donated to libraries at Stony Brook University or other appropriate recipient.*

The price in each case represents the publisher's suggested list price at the time the book is received for review, and is for purchase directly from the publisher.

Authors and publishers of biological books should bear in mind that The Quarterly *can consider for notice only those books that are sent to The Editors.* The Quarterly Review of Biology, *C-2615 Frank Melville, Jr. Memorial Library, Stony Brook University, Stony Brook, NY 11794-3349 USA. We welcome prepublication copies as an aid to early preparation of reviews.*

ARE YOU AN EXPERT?

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A review of
THE PHILOSOPHY OF EXPERTISE.
Edited by Evan Selinger and Robert P Crease. New York: Columbia University Press. $49.50. vii + 421 p; ill.; index. ISBN: 0-231-13644-7. 2006.

Scientists are, by any understanding of the term, experts. But what exactly is an expert, and on what grounds is the nonexpert going to decide whom to trust? Leave it to philosophers to ask such uncomfortable questions, and the volume edited by Selinger and Crease is an excellent starting point for this discussion.

Although the book covers much more than science, with chapters ranging from moral expertise to distance learning, scientists and science itself feature prominently, and the community of scientists ought to pay attention to some of the issues raised. We live in a society where science plays an ever-increasing role both in our personal lives and in questions of global survival. Yet, scientific exper-

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tise is being questioned as never before, with creationists demanding equal time in public schools, global warming deniers creating the appearance of a scientific controversy where there is little, and postmodernists claiming, as Michel Foucault put it, that there are "no truly universal truths," even in science.

As the editors of this volume write, "[d]emocracy depends . . . on educated decision making in the myriad judgments that have to be made in the day-to-day operations of government" (p 3), but ironically enough the "ability to doubt particular expert claims necessitates appealing to an alternative base of knowledge" (p 2), which means that the intelligent critic of expertise, at least to some extent, has to be an expert.

As Alvin Goldman notes in the opening chapter of the collection, the problem is not exactly a new one. In Plato's dialogue, *Charmides*, Socrates poses the question of how one should go about distinguishing a real doctor from a quack, an issue still very much alive today, especially with the NIH subsidizing a program on so-called "alternative" medicine, where quackery is being funded by taxpayer's money. Things are not that much better across the pond, either, with an increasing number of British universities offering courses and degrees in homeopathy and similarly assorted nonsense.

Goldman goes on to examine five criteria by which nonexperts could assess the reliability of a purported expert: the quality of their arguments; the degree of agreement from additional putative experts; appraisal by "meta-experts" of the expert's credentials; evidence of the expert's biases; and the expert's past track record. This is very sensible, but not quite the straightforward solution to the problem that it may appear to be at first glance. For example, creationist Duane Gish is highly rhetorically skilled (first criterion), can martial the agreement of a (admittedly small) number of other "experts" on creation science (second criterion), and has been awarded a legitimate PhD (in biochemistry, not evolutionary biology) by the University of California at Berkeley (third criterion). By contrast, an atmospheric scientist who speaks up about the dangers of global warming can be faulted with, say, a liberal bias (fourth criterion), and may have a record of wrong predictions about environmental issues (Paul Ehrlich of Stanford University immediately comes to mind). That is, of course, why it is so easy to manipulate the general public, and also why it is so crucial that scientists get involved in force in public debates.

Stephen Turner (Chapter 4) discusses the type of issues that make a lot of scientists very nervous, such as the merits of a view of the relationship between science and state as analogous to that established by the U.S. Constitution between religion and state, as advocated for example by Michael Polanyi in the 1940s. The idea that the state has no interest in either furthering or impeding the progress of science may sound superficially fair and attractive, until one realizes the potentially catastrophic consequences for a country that left scientific research and technological development entirely in the hands of private donors, essentially a return to Renaissance-style patronage.

Turner's central point of analysis is the contention, again inspired by that overrated philosopher, Foucault, that a culture of expertise is fundamentally contradictory to the ideals of democracy. Fortunately, Turner seems to see through the logical fallacy that underlies a number of "science studies" programs in universities across the country: while it is certainly true (and important to appreciate) that no activity—not even science—is immune from personal and ideological biases, it does not follow that experts' opinions are therefore to be discarded as pernicious or on a par with unaided public opinion. In other words, it is a good thing to warn the public about the fact that scientists are not to be considered straightforward purveyors of knowledge, but to go as far as completely discarding scientific findings and opinions would be a classic case of throwing the baby out with the bath water.

Hélène Mialet's essay (Chapter 8) will probably make most scientists even more uncomfortable (which is by no means a bad thing), since she takes a field anthropologist's approach to the study of "genius," by actually spending months in the laboratory of William Montel, an expert in applied ther-

modynamics, and by closely investigating the modus operandi of cosmologist Stephen Hawking (she never could get direct access to the man himself). Mialet's main point is that—not surprisingly—scientists, even geniuses, do not work alone. Rather, they are at the center of a complex network that involves students, colleagues, and sophisticated experimental and analytical machinery. However, when these scientists are talked about in the media, the complex background vanishes from the public view, and the mythical figure of the lone genius emerges, perhaps most powerfully in the case of Hawking, considering his physical disability. Indeed, as Mialet's analysis reveals, it may be the scientist himself who more or less consciously cultivates the myth—for example, in the case of Hawking's oft-made remark that he was born "exactly three hundred years to the day after the death of Galileo," an amusing coincidence, but what of it?

Mialet's work is refreshing and at times even amusing, as when we learn that Hawking's first wife thinks her main task was to remind the scientist that he is not God. At other times, however, it is somewhat irritating, as when she asks: "does . . . this identity constructed with this succession of discourses, representations and presentations, really have anything in common with 'the real, unique Mr Hawking,' the flesh-and-blood person?" (p 269). The answer is that of course it does, unless one thinks of Hawking as a disembodied entity bent on fooling the rest of humanity through a very elaborate scam. This, incidentally, reveals the limits of the anthropological approach, as useful and insightful as it often is. Stephen Hawking may be universally considered a genius, but he is certainly not representative of scientists in general, largely because of his special physical condition. How much can we learn, one could reasonably ask, from a close analysis of his life that will turn out to be actually applicable to the general workings of science? And if the answer is "not much," then is not the anthropologist herself falling for the myth she set out to debunk?

Don Ihde's essay (Chapter 15) is another mix of good points and questionable claims. His aim is to rescue science studies from the bad reputation they have developed (not just among scientists, but among philosophers as well), by making an analogy with literary criticism. The idea is that a literary critic does not hate literature, but can nonetheless be very critical of both specific literary pieces and of aspects of the entire field as well. Indeed, literary criticism certainly plays a positive role in the development and appreciation of literature itself. The problem is that, by contrast, science studies practitioners do frequently come across as having a fundamentally negative attitude toward science, and often, as blissfully ignorant of its contents (try being a literary critic without having a deep knowledge of, say, Shakespeare, or the American novel). Ihde is, of course, correct when he seems to endorse the fundamental insight of deconstructionism, that science itself is a human enterprise where subjectivity and social influences play a much larger role than scientists are generally willing to acknowledge. In this sense, we do need science criticism (and, contrary to Ihde's claim, this is in fact regularly done within the broad field of philosophy of science). However, when he says that the Enlightenment "cast religion as 'superstition' and science as 'rationality'" and that this led to "the Modernist substitution of what I am calling technoscience for religion" (p 396), Ihde comes across as living in a parallel universe with little contact with our own. First of all, religion *is* superstition. It may be useful, or well intentioned, but the fact remains that religious storytelling is essentially based on mythology. Second, perhaps individual scientists may worship at the altar of rationality (Richard Dawkins, a self-professed "son of the Enlightenment," comes to mind), but even a cursory look at the day's news shows that our society at large is very far from falling prey to the dangers of hyperrationality.

Although scientists and philosophers can find both sources of insight and of aggravation in most chapters in this book—which is a good reason to read it—I experienced only exasperation at the reading of Chapter 13, by Paul Feyerabend. He died in 1994, and wrote the chapter included in this book in 1974, but it is still a great puzzle to me why he is so venerated in certain philosophical circles.

His writings are openly self-contradictory, and were written by someone who decried academic elitism at the same time that he held a plush job at the University of California at Berkeley, one of the most elite institutions in the world. In typical Feyerabend fashion, at the beginning of the chapter he says that he accepted the invitation to write the original lecture on which the essay is based "because it paid for my flight to Europe" (p 358). He goes on to accuse science of inhibiting freedom of thought and of being a "monster" that must be eradicated. He claims—apparently talking with expertise—that "there are phenomena such as telepathy and telekinesis" (p 364), and that the Church saves souls while science does the opposite (which of course begs the question of how does he know all of this, considering his skepticism of the very concept of expertise).

Feyerabend also calls for a formal separation of state and science, because "the competence, the complications and the successes of science are vastly exaggerated" (p 365) and goes on to write "[t]hree cheers to the fundamentalists in California who succeeded in having a dogmatic formulation of the theory of evolution removed from the textbooks and an account of Genesis included" (p 365; fortunately, and I assume to Feyerabend's great disappointment, that decision was overturned by the Courts). For an alleged educator paid by a prestigious public university, Feyerabend talked of education not as an imperfect enterprise in need of much improvement, but as a "myth," and looked forward to a society in which the role of scientists "will be more balanced by magicians, or priests, or astrologers" (p 367). It does not seem to occur to him that we have already experimented with such a society, it was during the Middle Ages, and it was not a pretty sight to behold.

Feyerabend notwithstanding, Selinger and Crease's collection of essays should be on the shelves of all philosophers interested in science, and even more of all scientists interested in how their discipline is perceived by the general public. And perhaps the latter is the most important knot to be addressed in the future: Why is it, exactly, that so few scientists pay any attention to fundamental discussions regarding their discipline? Do we not realize that disengagement from public discourse is the surest way to actualize Feyerabend's nightmarish vision of a "free" society where scientists, astrologers, and priests compete on equal footing for the patronage of the rich? The choice of whether to engage is ours, and being aware of the challenges (constructive and not) to the role of scientific experts ought to be familiar territory for every scientist.