

interfere too much with his student writers at work. He must, however, be on a constant look-out for the teachable moment, and he must be accessible to the student writer at those crucial times when a writer needs the comfort and advice of a confidant, or the feedback of a critic, or the eye of a demanding editor.

This book has much to commend it; not the least of its merits is the accessibility of its message to those of us who are far from expert in the fields of cognitive psychology and psycholinguistics. By developing in this fashion relevant background to some critical issues in curriculum development and methodology, and above all by offering a coherent personal view of the subject, Smith has rendered a valuable service. At a time when we are in danger of being swamped by a rising tide of composition textbooks, programs, courses, centres, and workshops, coherence of any kind is a virtue, even if one is unable to accept all of an author's propositions.

His most significant contribution, however, may have been to remind us how vitally important is the task of helping others (and ourselves) learn how to write. Being able to write fluently may be more important to our cultural survival and individual sanity than mastery of computer technology. As John Ciardi once said to an audience of businessmen, "An ulcer, gentlemen, is an unwritten poem."

E.C. Bockus
McGill University

Marcel Chotkowski La Follette, ed.
CREATIONISM, SCIENCE, AND THE LAW.
Cambridge, Massachusetts: The MIT Press, 1983.
236 pp. \$(U.S.)9.95.

This book contains records of and commentaries on yet another episode in the attempts by American Fundamentalists to have their point of view on the origins of things represented in public school courses.

In March 1981 the Arkansas Legislature passed Act 590, requiring "balanced treatment" of "Creation Science" and "Evolution Science" in all public schools in the state. The law was soon challenged on constitutional grounds, as the plaintiffs, a group comprising mostly dignitaries and organizations representing several religious denominations, contended that it

violated the separation of church and state, abridged academic freedom, and also, because of its allegedly vague wording, brought the right of teachers to due process into question. Less than ten months after its passage into law Act 590 was overturned by District Judge William R. Overton, who accepted the first claim while handing down an opinion unfavourable to the other two.

This volume includes the text of the Act itself, excerpts from the pre-trial briefs of both sides, and the full text of the judge's "opinion", along with an introduction by the editor and fourteen essays on the legal and philosophical issues involved. It concludes with two appendices, an excerpt from a statement by the Attorney-General of Maryland on comparable legislation proposed in that state, and the text of a recent "balanced treatment" amendment to the General School Law of Louisiana.

Not one of the contributing essayists sympathizes with the creationist case, and, indeed, eleven of the fourteen testified for the plaintiffs at the trial or worked for the law firm that represented them. Since the case was won on the establishment-of-religion plea, the equally interesting and important problems of academic freedom, and of due process enforcement of laws regulating the content of courses of study, are almost entirely ignored.

A few of the articles describe candidly how the winning strategy was worked out by the law firm in conjunction with its secular allies, a large and talented group of scientists, philosophers, and historians who gave freely of their time and expertise. Given the history of recent American court decisions, it seemed obvious what tack to take. Rather than defend in detail the adequacy of the evolutionary scheme actually taught in schools, they set out to show that so-called creation-science was religion pure and simple. To this end, they showed that the six-part definition of creation-science in Act 590 was merely a paraphrase of Fundamentalist interpretations of Genesis. Their case was aided by the scientific incompetence of many defence witnesses. Particularly telling was the induced admission that no one could think of a creationist "scientist" who had ever submitted a study to a mainstream scientific journal. To make matters worse for the defence, one of their own witnesses, called to challenge prevailing opinions on the origin of life on earth, was even harder on parts of the creationist schema.

To hammer their objections home, the plaintiffs didn't hesitate to resort to ad hominem arguments. The history of Fundamentalism and the recent upsurge of anti-evolutionism was detailed, and the direct ancestry of Act 590 traced to unmistakably religious motives.

In contrast to its infamous prototype, the Scopes trial, the case against Act 590 was an unmitigated success. This is amply shown in the judge's "Opinion" that accompanied his decision.

Not only did he find for the plaintiffs, but his reasoning and even his terminology closely paralleled theirs.

An air of zealotry pervades most of these essays. We are invited to celebrate yet another victory of enlightenment over superstition: the Church Triumphant. We are called upon to gear up for new challenges as the creationist campaign rolls into new states: the Church Militant. And we are reminded of dangers to freedom and progress of reactionary and obscurantist movements: the Church Suffering. In this peculiarly American atmosphere, where the content of public-school courses can become a matter of law and constitutional adjudication, the reader is almost tempted to consider with sympathy what is dismissed with contempt by all the contributors: the defence claim that "evolutionism" often includes what amounts to a religious belief.

It is indeed true, as so many contributors are eager to point out, that creationist literature is almost entirely apologetic, and is noteworthy for its dogmatism, sterility, and, all too often, downright dishonesty. Unfortunately, these unpleasant features are not entirely absent from "evolutionary" accounts, especially when it comes to questions of origin - of the universe, the earth, life, the human race - major controversies that Act 590 purports to address. Clearly it is outrageous, given the poor quality of fundamentalist science, to require teachers to give "balanced treatment" to the Flood story and serious geological explanations of fossil remains, or to abjure discussing radio-active decay unless they are willing to take note of arbitrary hypotheses designed to make minerals younger than they seem to be. "Creation-science" - the set of claims that the universe and the earth are no more than ten or twenty thousand years old, that the basic kinds of living creatures are much the same now as they ever were, that rock and fossil stratifications are essentially products of a single universal flood - is merely sectarian pleading. It is well that its claim to parity with the discourse of actual science in the schools of Arkansas was rejected.

The plaintiffs in the case used both an appeal to the authority of experts against the validity of creationism and a Sunday-best account of legitimate science. The judge duly repeated their criteria for genuine science - inquiry guided by natural law, explanations based on natural law, theories that are empirically testable, tentatively framed, and falsifiable. One of the few contributors with second thoughts about the case, Professor Larry Laudan, who specialises in the history and philosophy of science, points out that, in the first place, a good case can be made that creationism formally meets those criteria as well as evolutionism does - except that it in fact stands falsified; and, in the second place, that it is current coin in contemporary philosophy of science to see no obvious path from raw evidence to theory, but rather an historical succession of

models, programmes, and paradigms that guide inquiry and change, in complex ways that may be determined as much by ideological and sociological factors as by the observation and analysis of data.

Laudan suggests that a fairer approach, and one more consonant with the way belief-systems in science and elsewhere are actually generated and tested, would be to challenge creationism as bad science because it is wildly out of accord with the evidence. For it is hardly true that religious beliefs never change, regardless of experience, while science is dynamically self-correcting.

Perhaps students deserve to be exposed to a candid discussion of the merits of the rather arbitrary exegesis of Genesis offered by dogmatic preachers, on the one hand, and the impressive but highly complex and highly tentative research approaches to speciation and the geological record on the other - as they are actually carried out rather than as they are too often presented by arrogant and tendentious synthesizers.

Again, it is hard to see how scientists have the right to make a priori judgments about whether origins are supernatural or in accordance with law. Where the ultimate source of nature is involved, we are all fideists, except perhaps for some metaphysicians. Even beliefs in the separate creation of man, or of life, or in the Flood, are surely beliefs about empirical events, and cannot be ruled out as invidiously non-scientific on the sole grounds that they do not appeal to the blind operations of currently observed natural regularities.

One can only rejoice that attempts to foist Fundamentalist claims on the curriculum are being turned back. But the friends of reason should be just as vigilant towards the tendency of any entrenched body of experts to present their current prejudices as having the same exclusive legitimacy as the genuine fruits of their professional competence.

This book is well-documented, and devastating in its attacks on creation-science. However, it is one-sided and should be complemented by an analysis of the tendency of mainstream textbooks to present quasi-religious views and unproven assumptions under the guise of science.

Norman Bimson
Dawson College