

by seventy-four authors are all well worth reading, and thousands clearly rejoice to have their books chosen for them by genuine experts. The selection is excellent, among the philosophers indeed largely inevitable. Since it has been made on the basis of significance that is enduring and not merely historical, some important philosophies and thinkers are omitted. Thus, ancient skepticism is a great philosophy, but Sextus Empiricus is not here (though Montaigne is); it is obviously not a Great Book. Leibnitz notoriously put his ideas into no book at all. One wonders (without desolation) at the absence of Nietzsche. Twenty of the authors are mathematicians and natural scientists, and seventeen more social scientists—exactly half of those represented; so philosophy is not pursued in a vacuum: here are the thinkers who have made philosophers necessary.

With three exceptions, including Aquinas, all the works are given in their entirety; there are none of the snippets of preceding collections, like the "Five-Foot Shelf." Of philosophers, the works of Plato, Aristotle, Lucretius, Marcus Aurelius, and Plotinus are printed complete. Where possible the best English translations have been used, like the new Knox version of Hegel's "Philosophy of Right"; this apparently could not be done for the "Critique of Pure Reason." The complete MacKenna Plotinus in one volume (though the selections by Joseph Katz are a much better translation), and Kant's three critiques in another, will make many wish the volumes were available separately. There is no critical apparatus, no notes aside from biographical notices of a page or two—all such effort has gone into the "Synopticon."

With the vanishing of Greek and Latin from our education, it has been remarked that we may shortly possess the intellectual experience of the ancients as men did in the early Middle Ages through encyclopedic collections like those of Martianus Capella and Isidore of Seville. That this set might come to perform some such function in determining our own longer heritage starts a good many sobering reflections. Or is the comparison rather with Cicero, from whose compilations the dawning modern world learned so much of past thought, and received so many suggestions for its own adventures? (It is interesting to realize that though Cicero dominated the Renaissance, he wrote no Great Book, and is absent here.) Is it to be Martianus or Cicero, the wisdom of the past or the stimulus to new achievement? What is the right manner of reading the Great Books?



5. SCIENCE: *Not an Easy Field for "G. B."*

By I. BERNARD COHEN



I. Bernard Cohen

THE "great books" of science in this collection have only a kind of archaeological value: not only are whole areas such as geology omitted, but almost all the major currents of scientific thought of the last two and a half centuries are not represented. Perhaps it was supposed that these "great books" might serve twentieth-century man as illustrations of the creative process in science seen in isolated examples, or as examples to show him science in the growth of Western culture, as part of the background of the ideas met in the other selections from literature, philosophy, or history. Unfortunately, however, these scientific classics can never fulfil these admittedly useful purposes, since they will be found to be largely unreadable even by persons of better-than-average education, and even if that education has been primarily scientific.

The book as such is still a vehicle for works of literature, philosophy, and history, but not for science. During the last 300 years, the great works of science have tended to become journal articles. Newton could still embody his monumental contributions to science in two "great books," but Einstein, Rutherford, and Bohr made known their heroic achievements in short articles published in scientific journals. The last great discovery to be announced in a book was probably the theory of evolution, although even Darwin had previously published a preliminary report in a journal. Faraday's "Experimental Researches"—one of the three "great" books of nineteenth-

century science in this collection—may seem to be an exception, yet it is merely a reprint made by Faraday of his papers in scientific journals. Thus, to present science within the limitation of "great books" is to forsake any attempt to display science as it has actually developed, and makes of it a publicist-academician's topic.

The choice of titles for this series has caused the omission of such important topics as organic chemistry and the whole of atomic and molecular chemistry and physics, the foundations of mathematics, the cell theory, telescopic astronomy (and modern cosmogony), anatomy, the germ theory of disease, modern physiology—to mention but a few fields in which "great books" exist, as by Pasteur, Claude Bernard, and Helmholtz. In view of such omissions, the inclusion of the physical treatises of Pascal, Gilbert's book on the magnet, Harvey's work on the generation of animals, and the arithmetic of Nicomachus seems especially curious. They are plainly not of the stature of Newton's "Principia."

But it is the subject of comprehensibility which invokes the strongest criticism against the whole idea of "great books" in science. Was it really supposed that many purchasers of the set would be able to read Fourier's great "Analytic Theory of Heat" which contains differential equations? To understand Newton requires not only a knowledge of the physics since Newton's day, but also the mathematical methods then current. In the decades following the publication of Newton's "Principia," the non-scientists—and even many scientists—found this book too difficult to read and learned their Newtonian science from the excellent books of first-rate vulgarizers like Pemberton or Voltaire; yet the twentieth-century reader is apparently expected to perform an heroic task that proved impossible to his predecessors.

Professional scientists today, and
(Continued on page 39)

I. Bernard Cohen, managing editor of *Isis*, is assistant professor of the history of Science at Harvard University.

6. LITERATURE: *A European Bookshelf*

By THOMAS BERGIN



Thomas Bergin

THE works of European fiction in the "Great Books" project were carefully selected with an eye to their relationships to the non-fiction selections and to their role in the exposition of the pattern of ideas which the editors wish to develop. But even if we did not have the editors' statement and even if there were no "integration" at stake, the books chosen in this area would need no further justification than themselves. They are not the only "great books" of European fiction by any means but, all things considered, one cannot reasonably quarrel with the selections.

A mixed lot they are, to be sure, at first glance. The inspired Dante, at once warm with passion and capable of the coolest detachment, the mischievous Rabelais, the obsessed Dostoevsky, the serene and amiable Cervantes, the profound Goethe, the Olympian Tolstoy—what have they in common? Greatness in their own right, of course, and significance and solace for us who come after them. This is easily said but needs some gloss if the twentieth-century reader is to approach them with hope as well as respect.

Perhaps it should be said, first of all, that while each of these works is immortal so far as human judgment can pronounce, they all contain as well as transcend their own times. Dante's determined struggle to reveal the divine order underlying the apparent chaos of the world is meaningful to us because we, too, must discover order and discipline; but even as we perceive with increasing clarity the significance of the "Divine Comedy" as an allegory for our times, so we are drawn progressively to an awareness of the tone and texture of the Middle Ages, an awareness which cannot but broaden our humanity. And in like fashion the immortal madman of Cervantes will make you an understanding contemporary of

the Counter Reformation and Rabelais will illuminate the ebullience of the Renaissance. It is the gift of men of genius to make us sharers of their world even as they project themselves into ours.

Similarly, as these great works convey to us a sense of the solidarity of mankind, they also enlarge our sympathy for other nations and ways of life different from our own. It is interesting to note that the two selections from European fiction of the nineteenth century come from Russia—add Germany if we think of Goethe as a representative of that century, as we fairly may. Nor is this unreasonable in spite of the enormous contributions of France, for example, to the literature of the past 150 years, for surely no writers have expressed more perceptively than these the aspirations and perplexities of that great era. And while they speak for all Europe and not Europe alone but for our whole Western world, observe that they speak with their native accent. This, too, is salutary—perhaps especially for the American reader.

Finally, it should not be forgotten that these books, if they serve to illustrate the intellectual trends, the "ideas" of their times—which they do—they also, being works of art, do more. They not only clothe in flesh and blood the concepts of the "thinkers" which would otherwise remain arid, they are a distillation of life itself, both intellectual and supra-intellectual. Nor is it irreverent to add that they are entertaining.

As for the editions at hand, one might make some criticisms. The introductory statements are brief and good, the translations are good but perhaps not in all cases the best. And it is a little misleading to entitle a volume "Cervantes," for instance, when it contains only one work (granted the most important) of this very prolific author. In appearance the books are a little austere—suitable for Dante, less so for Rabelais. Not everyone will care for the double-column page. But such defects, if they be defects, are inherent in the general principle of the project and should not detract from our admiration of the boldness of the concept and the soundness of judgment displayed in the selection.



Thomas Bergin is chairman of the department of Spanish and Italian at Yale University.

7. ECONOMICS: *The System and the Ideas*

By GEORGE SOULE



George Soule

IF one must pick but two authors from the great economists, Adam Smith is of course obligatory, and Karl Marx, though not accepted as a theorist by the fraternity of economic professionals, is an obvious choice because of

the immense influence he and his followers have exerted.

"The Wealth of Nations," "Capital," and the "Communist Manifesto," like other classics, should be read at first hand; each new generation needs to find out for itself what is of contemporary value in germinal thinkers of the past. Yet the consequence of so narrow a choice illuminates the difficulty of deriving a liberal education suitable for modern needs solely from great books of past centuries. A reading of Smith and Marx alone would be poor equipment for understanding the present world or the doctrines relevant to it; unannotated and uncorrected they might sadly mislead the diligent amateur. Indeed, they have often done so.

Adam Smith was a shrewd observer, a salty and persuasive writer, whose immense success was well deserved. Like all great economists, he said much that was necessary to his times. But it is only in his historical setting that his significance can properly be understood. When he wrote, the commercial revolution had not yet fully won its battle against the mercantilist practices of power-seeking national states, and the industrial revolution was only just beginning. His arguments provided just the faith that budding British capitalism needed. Yet his utopia of laissez-faire was never fully achieved and today is further than ever from realization. His theory of the automatic mechanisms of the market, even as refined and elaborated by generations of followers, is irrelevant to many contemporary economic problems. His largely ignored comments on the nature of long-term economic growth are likely to furnish more nourishing food to

George Soule, lecturer in economics at Bennington College, has just written "Ideas of the Great Economists."