farmer rides" will know exactly how to show a child that "This is the way the Rocketman rides: JATO! JATO!! JATO!!!"; one can puzzle over the affairs of the three jolly sailors who "went to sea in a bottle by Klein"; and one can continue for quite a while after learning that "This is the Flaw that lay in the Theory Jack built."

I could go on and on, but

Russell and Whitehead and Hegel and Kant!
Maybe I shall and maybe I shan't.

DAEL WOLFLE
American Association for the Advancement of Science

The Liberal Arts College. A chapter in American cultural history. George P. Schmidt. Rutgers University Press, New Brunswick, N.J., 1957. ix + 310 pp. $6.

George P. Schmidt of Douglass College, Rutgers University, has accomplished a feat as unusual as it is useful. In 264 pages of text he has compressed a thoroughly readable and remarkably well-balanced account of the history and present situation of the liberal arts college in this country. The 31 pages of notes, together with the brief bibliographical note, provide a well-selected list of authorities and statistics on all manner of colleges and situations. Here, for example, we can find that in 1830 the essential expenses of attending college varied from a minimum of $72 a year (at Hamilton) to an estimated maximum of $190 at Yale. Or that in 1860 Yale had the largest student body (502) but a smaller faculty and smaller library than Harvard, the latter having a faculty of 24 and a library of 123,400 volumes for 409 students against Yale's 21 and 67,000. But the citation of such statistics may give the impression that this is a compendium of facts and figures. It is not that. Schmidt has written a short account of the rise of liberal arts colleges which makes skillful use of figures, frequently in notes, only to round out and support his story.

The book opens with a chapter on the "first fruits," a chapter on "Colleges in the wilderness." From the founding of Harvard in 1636 through the establishment of the other pre-Revolutionary colleges, he goes, by easy transition, to the establishment of numerous colleges, many short-lived, in the newer areas. Chapters dealing with the influence of the churches on the establishment and support of colleges, and on the classical tradition, carry the story well into the 19th century. There is a delightful chapter on the "Old-time college president," one which can be criticized only for the restraint exercised by the author—an authority on this subject—in not making it longer. The rise of the women's colleges to an academic equality with those for men, and the emergence of the modern, complex university, in which the liberal arts college is often a minor part, are informative but never heavy.

In the last five chapters, which make up just over a third of the book, the author deals with recent and contemporary tendencies, controversies, and problems. It seemed to me that he exaggerated the importance—for colleges as distinguished from elementary and secondary schools—of "Dewey vs. Hutchins," but he does justice to the influence of the new courses and curriculum of Columbia College and gives some indication of the variety of discussion and of experimentation in recent years.

A book of such broad scope and of so few pages cannot possibly deal fully with any of the scores of colleges, individuals, or arguments which have marked the history and present situation of American colleges. As I read it, I noticed half a dozen or more points, where, as I knew from observation or reading, Schmidt's account was incomplete, perhaps misleading. But it is not offered as a detailed, much less as a definitive, history. Within its limits of space it is remarkably comprehensive and well documented, as well as clear, honest, and entertaining. What more could we ask for?

BENJAMIN F. WRIGHT
Smith College

The Immense Journey. Loren Eiseley. Random House, New York, 1957. 210 pp. $3.50.

Loren Eiseley has taken an immense journey through time: backward to catch tantalizing glimpses through the fog of our ignorance at the beginnings of things; forward to wonder, a little pessimistically, about the future of man. It is an imaginative journey, reported in an imaginative and evocative prose. Eiseley is not trying to popularize science. He is writing about his own inward experiences, about his reactions to the paleontological record, about his wonderment at the world in which he finds himself. He is writing for the love of words and metaphors and ideas—I wonder whether love of words and of ideas can be separated—and he should be judged in terms of this intent.

I suppose scientists can be roughly divided into two groups: those mostly impressed by our knowledge and those mostly impressed by our ignorance. The "look-at-how-much-we-know" people will not like Eiseley's book. The others will find the reading a pleasant and rewarding experience, often provocative, often stimulating, often esthetically satisfying because of the aptness and beauty of the phrasing.

Eiseley is professionally concerned with human evolution, and much of *The Immense Journey* turns on this problem. Some of the text, on the break between Darwin and Wallace, was published in *Harper's Magazine* a couple of years ago. At that time Eiseley was criticized by some biologists for "undermining public confidence in evolution" or something similarly absurd. Because he explained Wallace's views and doubts, it was felt that he shared Wallace's mysticism. It seems to me, on the other hand, that Eiseley is looking at man in a quite hardheaded fashion, because he is willing to sketch problems for which he has no present and sure solution. We are not going to find the answers in human evolution until we have framed the right questions, and the questions are difficult because they involve both body and mind, physique and culture—tools and symbols as well as cerebral configurations. These are now the separate problems of many different sciences, but the understanding is a single problem for all science.

MARSTON BATES
Department of Zoology, University of Michigan

Engineering Manpower, How to Improve its Productivity. A special report for management by graduate students at the Graduate School of Business Administration, Harvard University, Boston, 1957. Engineering Managements Reports, P.O. Box 161, Cambridge, Mass., 1957. 162 pp. $16.50.

This is a report of a comprehensive survey of management practices in companies where engineering is an important function. It is the work of nine graduate students under the direction of Georges F. Doriot. They are R. E. S. Arndt, J. L. Clark, C. W. Coker, Jr., W. B. Ellis, Jr., G. C. Hibben, C. B. Johnson, Jr., S. Keehn, R. M. Pribleau, and G. A. Peterfly, the group leader.

The report concludes that the modern management practices that have been so effective in sales, production, finance, and other departments have not been applied so thoroughly in engineering. And here is something that can improve the effectiveness of engineering departments. Part of the trouble has been due to top management's not understanding the engineer's problems. Great improvement should be made in the engineering departments. In particular, the authors point to the need for better planning and leadership. Engineering's first-line supervisory personnel should be trained

in human relations, communications, and management practices, such as the setting of objectives, work evaluation, control, and appraisal.

The survey was made through a large number of personal interviews and correspondence. Questionnaires were also used to get wider coverage. The report is presented under 12 headings: organization, planning, hiring, stock-piling–hoarding, training, placement, leadership, supporting personnel, physical working conditions, personnel administration, compensation, and patents.

The summary on compensation is the least topical. It deals particularly with the narrowing range of engineers' salaries. The reduced spread for experience (telescoping) is considered serious. At the same time, the widening spread between salaries of engineers and of management seems to be condoned. For some time, even before the sputnik, leading companies have been concerned about the narrowing range of engineers' salaries for both experience and merit. Something has been done about it. A comparison of the Engineers Joint Council salary surveys for 1952 and 1956 shows that the tide has turned. The merit spread is being increased in some companies by providing two "ladders" for engineers to climb to the highest salaries—one the management ladder, the other the professional competence ladder.

This report presents a good case for more modern management practices in engineering. It is good reading for engineers and executives.

EDWARD B. PECK
Department of Mechanical Engineering, Rutgers University

UNESCO. Purpose, progress, prospects. Walter H. C. Laves and Charles A. Thomson. Indiana University Press, Bloomington, 1957. 469 pp. $7.50.

It may be that, in the years to come, somebody will write an "official" account of the birth and infancy of the United Nations Educational, Scientific and Cultural Organization (UNESCO), but, if so, it will not replace this book. Laves and Thomson have had access to more than the facts and documents. They have breathed the atmosphere of UNESCO's "founding fathers," and they know well the early hopes and plans. They themselves helped to shape the course of this *enfant terrible* of the U.N. family.

As a result, the book UNESCO minds its three *p*'s very well. It rejects the sentimentalist who, had he prevailed, would have made of UNESCO a pink cloud floating over and beyond all problems of practical significance. The authors have produced a reference work for the student, the teacher, or the government official. The 100 pages of notes at the end are invaluable source material.

The authors give a brief appraisal of UNESCO's achievements to date. The purpose of the organization is held to be sound in principle, even if somewhat diminished in practice. The unpredicted cold war inevitably relegated the United Nations' specialized branches to the business of reconstruction, technical assistance, and various forms of cultural interchange. Deprived of any leading role in keeping the peace, UNESCO, through various conferences and publications, has managed to study and report upon the great issues and to free the channels of communication. Increasingly it has recognized the political character of its basic decisions.

Progress in UNESCO has been twofold: (i) improvement in its educational, scientific, and cultural programs (through more concentration and better planning) and (ii) the slow realization that UNESCO could be effective if the member states would bring it into the center of the planning for peace. Perhaps a tie in the race for hydrogen-headed monsters will turn the nations toward the needs shared by all humanity. In this sense, UNESCO, an organization devoted to ideas, values, and humane services, is not so much a constructor of peace as it is a living example of whatever good will exists among the nations.

Laves and Thomson make no attempt to arouse support for UNESCO. Their style is quiet and judicial, although the final note is optimistic. The volume is useful and informative, but it does not dig deep, and it will stir no one to action. What UNESCO needs now is some penetrating writings that carry a sense of urgency.

GEORGE D. STODDARD
New York University

Conservation. An American story of conflict and accomplishment. David Cushman Coyle. Rutgers University Press, New Brunswick, N.J., 1957. xii + 284 pp. Plates. $5.

David Coyle has given us what is probably the first short but adequate history of the conservation movement in the United States. It offers the reader a comprehensive understanding of the principles of conservation, the development of the various branches, and the conflicts that arose in the many public issues that were involved in the movement. The subject is presented in four parts, with 16 chapters.

Part I, entitled "The beginnings of conservation," presents an excellent historical account of conservation. It is concerned chiefly with conservation of our forest resources. The meeting of prophet Gifford Pinchot with President Theodore Roosevelt marked the beginning of the conservation movement in the United States. The Forest Service grew up from the old Division of Forestry, which had a two-room office and a total staff of 11 people. Our present knowledge of forestry techniques has grown from Pinchot's *Primer of Forestry,* which told enough about the woods to guide the beginning forester or lumberman.

In part II, entitled "Reaction, war, and normalcy," the policies of conservation built up by Pinchot and Roosevelt are discussed; these came into direct conflict with the old-fashioned ideas of Taft and Ballinger. After this battle, the movement developed quietly for 25 years, until the next outburst in the expansion of 1933.

Part III deals with events of 1933 and after. Great strides were made in all branches of conservation under the leadership of President Franklin D. Roosevelt. Forestry marched forward under the impetus of the Civilian Conservation Corps program, the Norris-Doxey Law, the Taylor Grazing Act, and the shelterbelt program. This era saw the permanent establishment of a definite program of soil conservation. Progress was made on the problems of water, floods, navigation, irrigation, water power, rural electrification, and wildlife conservation. Such matters as Dixon-Yates and Hell's Canyon are discussed.

This well-organized and clearly written story of conservation could very possibly be used as a textbook for courses in forestry, conservation, wildlife, and agriculture.

L. W. R. JACKSON
Department of Forestry, University of Georgia

Advances in Documentation and Library Science. vol. I, *Progress Report in Chemical Literature Retrieval.* Gilbert L. Peakes, Allen Kent, and James W. Perry, Eds. vol. II, *Information Systems in Documentation.* J. H. Shera, Allen Kent, and James W. Perry, Eds. Interscience, New York, 1957. 217 pp.; 639 pp. $4.75; $12.

The first two volumes of *Advances in Documentation and Library Science* mark the beginning of a new and potentially useful undertaking. Two of the avowed purposes of this undertaking are "To meet the need for a publication the pages of which will be available for the recording of conference proceedings," and "To provide an instrument for the publication of monographic materials which are either too long or excessively detailed or specialized for the existing journals." These are laudable purposes.