learning and human development and student teaching, could possibly become the basic course for teachers.

All those interested in the modern education scene will find much pleasure in reading these excerpts and the editors' stimulating interpretations of them. As academicians become more involved in planning teacher education programs, this material can be a source of substantial information on the educational thought of all the ages.

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Relativity for the Layman. James A. Coleman. Macmillan, New York, N.Y. (reissue), 1959. x + 127 pp. $3.50

The ABC of Relativity. Bertrand Russell (revised edition, edited by Felix Pirani). Allen and Unwin, London; Essential Books, Fair Lawn, N.J., 1959. 139 pp. $3.50.

Both these books are intended to explain relativity to the layman. Both authors are competent to do so, and both books have sufficient merit and acceptability that one represents a revised version and the other a reissue. But there the similarity ends. Whereas James Coleman is an experienced teacher of physics at a university catering principally to undergraduates, Bertrand Russell is a veteran philosopher and mathematical logician, who addresses the highly educated and sophisticated layman.

Coleman devotes about three-quarters of his book to the special theory of relativity; in the remainder he discusses the general theory of relativity, cosmological implications, and unified field theory. For a first introduction, intended for persons not specializing in physics, this appears an altogether reasonable balance. The presentation is on the whole careful, although it is remarkable that, in his discussion of Lorentz transformations, Coleman avoids completely any discussion of simultaneous events. The explanation concerning the relative character of simultaneity, which is offered later on and which is based on the time of transit of light signals, is misleading, if not downright incorrect. Likewise the explanation of the twin "paradox" leaves much to be desired.

Probably the root of the difficulty in his handling of the twin paradox is an erroneous belief, shared by Coleman with many others, that the special theory of relativity deals only with objects in uniform motion or at rest, whereas the general theory of relativity deals with accelerated objects and systems. The fact of the matter is, of course, that the special theory deals with accelerated objects and is capable of using even accelerated (coordinate) systems, but only the general theory of relativity treats successfully the gravitational field and accelerations caused by gravitational forces. Accordingly, the twin paradox was stated and explained definitively by Einstein in his first paper on the special theory, dated 1905, long before he even came to grips with the problem of gravitation.

Though these are relatively serious criticisms, the readers for whom Coleman writes—the not-too-serious, nonscience majors in an undergraduate school—will probably not be led too far astray by these lapses, and they will profit from the author's style, which conveys some of the drama of scientific discovery without becoming pompous. The illustrations are whimsical, some of them instructive, and they will maintain the reader's interest in the proceedings.

Russell writes for an entirely different public. The first edition of the *ABC* appeared in 1925, when any nonscientist would read a book on relativity only because of intellectual curiosity, not because science might be good for something. Accordingly, Russell makes demands on his readers' intellectual cooperation, and he hardly bothers with "sweetening the pill." This is a serious book, which includes a discussion of the epistemological aspects of relativity, as well as of its relationship to quantum theory and to the remainder of physics and the natural sciences. Less than half of this book is devoted to the special theory, and several chapters are alloted to the philosophical and semiphilosophical issues. There is one passage of dubious validity that I noticed: It is claimed that the steady-state model is consistent with the conservation of energy, an assertion that is, at best, speculative. Otherwise the book is written elegantly, with Russell's usual felicity of formulation. For the truly intelligent layman, Russell's exposition, along with Einstein's own (*Relativity, the Special and the General Theory*, 1917) and that by Einstein and Infeld (*The Evolution of Physics*, 1938) remain my favorites. The revisions by Pirani have brought the book up to date, without destroying the continuity of contents and style.

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Scoring Human Motives: A Manual. John Dollard and Frank Auld, Jr. Yale University Press, New Haven, Conn., 1959. 452 pp. $9.50.

Anyone interested in the analysis of verbal productions, such as those used in psychotherapy, will find this book indispensable. Based on extensive research, it gives instructions for delimiting each unit and for ascribing conscious or unconscious motivations such as anxiety or hostility. Two chapters of evidence are presented in support of validity and reliability.

The main content of the manual comprises the coding categories, their definitions, and some extensive illustrations and practice exercises. There are 77 categories of classifications of the patient's productions; 15 of these are major categories, the others are permutations. There are only four important therapist's categories; this small number is probably the main weakness of the manual. Perhaps this may reflect restrictive aspects of the authors' therapy. However, the authors indicate, possibly as self-justification, that other investigators have devised numerous methods for analyzing the verbal activity of therapists, and that it is the client material which has not previously been well handled.

Hours of careful hypothesizing and validating are reported. Dollard and Auld have produced what is undoubtedly one of the best available classification schemes for analyzing client productions in psychotherapy. Whether the scheme can be used in nontherapeutic interviews is not easily determined, since the motives occurring in other types of interviews may constitute different patterns; it seems probable, however, that the method has fairly widespread applicability. Although the authors have reviewed the contributions of other investigators, an apparent oversight is the lack of reference to the classification scheme for motives devised by Henry

Murray in the 1930's; the present classifications are strikingly parallel. Dollard and Auld know Murray's system, and it is hard to believe that enmity between Yale and Harvard could have produced unconscious repression. Rather, it is apparent that Murray's fundamental work on the analysis of projections can now be taken for granted.

In a long appendix, James Dittes contributes a scholarly, evaluative survey of previous studies bearing on content analysis in psychotherapy.

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Handbook of Circulation. Analysis and compilation by Philip L. Altman. Dorothy S. Dittmer and Rudolph M. Grebe, Eds. Saunders, Philadelphia, Pa., 1959. xv + 393 pp. Paper, $7.50.

This volume, prepared under the direction of the Committee on the Handbook of Biological Data (National Academy of Sciences–National Research Council), is the tenth in that committees' *Handbook* series and is a companion volume to the *Handbook of Respiration* (1958). Its purpose is to provide a one-volume, comprehensive compilation of data on circulation; the volume lists 325 contributors and reviewers.

Class in American Society. Leonard Reissman. Free Press, Glencoe, Ill., 1959. xii + 436 pp. $6.75.

Presumably this work is intended primarily as a text for sociology courses, but since the professional jargon is kept to a minimum and the footnotes are grouped inconveniently at the back, a general reader interested in the subject might be tempted to buy it. I do not advise him to do so. Two other recent books with approximately the same title, one by Bernard Barber and one by Joseph Kahl, are more competent, more original, more interesting.

In the very first sentence, we are informed that this work is about "the place of class and its synonyms, status, prestige, and power, in the structure of American society." As Reissman assures us, he has made "no attempt . . . to insist too obviously upon neat distinctions" among these several terms. This lack of conceptual order, combined with his facile eclecticism, means that every element of the book is the consequence merely of the author's caprice, for it is obviously impossible to include as much as the absence of discrimination promises. Why a discussion of Marx and not of Lenin, Bernstein, Milosz? Why Schumpeter and not T. H. Marshall? Why an analysis of elites with no mention of Pareto and Mosca? And among those who made significant contributions specifically to the study of "class in American society," why pass over Kinsey, Liston Pope, Patricia West, Philip Selznick, Paul Lazarsfeld, Bernard Berelson, and so on? Nor is the book better for concentrating on only a portion of its supposed subject. The study of social classes is ordinarily polemical; Reissman manages, with an adeptness worthy of a better object, to express the bias of his favorite sources while emasculating their frequently virile styles. "Objectivity," as too often in the social sciences, is merely symbolized by flabby prose. The "dominant theme" of the book, announced in the second sentence, is that "classes do exist even though individuals are not chained to these social positions with unequivocal finality"; and the routine perspective suggested in this opening sets the tone for the entire work.

While there are few errors of fact, many interpretations are subject to serious challenge. Is it true, for instance, that Marx began with "the forms and character of classes as they were found to exist" and then "went on from there to a more general analysis"? In his historical studies Marx invariably found it necessary to recognize five or six social classes, and the two-class theory that bears his name derived from his political philosophy and ultimately from the Hegelian dialectic. Is it reasonable, as another example, to measure the educational "opportunities" available to the various social classes by the proportions that actually attend school? Is it consistent to denote professional occupations as "the most closed" to persons born in other classes when the proportion of professionals has increased by almost three times since 1870; or to denote the unskilled as relatively immobile when the proportion so characterized fell off over the same period from 44 to 19 percent of the labor force?

More fundamentally, I seriously doubt whether one can appreciate the complexities of America's social structure without a detailed cross-cultural comparison. As Reissman demonstrates, it is far too easy without such a check to belittle the relatively impressive record of social mobility, to denounce the "prophets of conformity" who express the culture's self-consistency—in general, to analyze every feature of this society as specific to it.

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New Books

Advances in Clinical Chemistry, vol. 2. Harry Sobotka and C. P. Stewart, Eds. Academic Press, New York, 1959. 400 pp. $12.

Atlas of Bacterial Flagellation. Einar Leifson. Academic Press, New York, 1960. 177 pp. $7.50.

Cates' Primary Anatomy. J. V. Basmajian. Williams and Wilkins, Baltimore, ed. 4, 1960. 371 pp. $6.50.

Chemical Micromethods in Clinical Medicine. R. H. Wilkinson. Thomas, Springfield, Ill., 1960. 121 pp. $5.

Chromatographie. En chimie organique et biologique. vol. 1, *Généralités.* Applications en chimie organique. E. Lederer. Masson, Paris, 1959. 682 pp. Paper, F. 9000; cloth, F. 10,000.

Classical Mathematics. A concise history of the classical era in mathematics. Joseph Ehrenfried Hofmann. Philosophical Library, New York, 1959. 159 pp. $4.75.

Consequences of Disturbance. Alan Mozley. Lewis, London, 1960. 71 pp. 9s.

Cybernetics and Management. Stafford Beer. Wiley, New York, 1959. 232 pp. $4.50.

Directory of Nuclear Reactors. vol. 2. Research, test and experimental reactors. International Atomic Energy Agency, Vienna, Austria, 1959 (order from International Publications, New York 22). 348 pp. Paper, $3.50.

Elements of Cartography. Arthur H. Robinson. Wiley. New York, ed. 2, 1960. 351 pp. $8.75.

Enzymes. Uitgevers, Zwolle, Netherlands, 1959. 158 pp. F. 9. The seven lectures published in this volume were given at the International Conference on Enzymes and Their Action held in Wageningen on 6–9 April 1959.

Figures of Equilibrium of Celestial Bodies. With emphasis on problems of motion of artificial satellites. Zadnek Kopal. Univ. of Wisconsin Press, Madison, 1960. 141 pp. $3.

Fundamentals of Electronics. E. Norman Lurch. Wiley, New York; Chapman and Hall, London, 1960. 645 pp. $8.25.

Subsurface Mapping. Margaret S. Bishop. Wiley, New York, 1960. 207 pp. $5.75.

The Thunder of the Guns. A century of battleships. Donald Macintyre. Norton, New York, 1960. 352 pp. $3.95.