BOOKS

MECHANICAL ENGINEERING PRACTICE

by C. F. Shoop and G. L. Tuve
McGraw-Hill, N.Y., 513 pp. $4.50

Reviewed by Peter Kyropoulos
Assistant Professor of
Mechanical Engineering

The fact that this book is in its fourth edition since it first appeared in 1930 indicates that it is well received and that its authors are trying to keep it up to date. This is not an easy task when it comes to a laboratory text, but in general the authors have been successful.

A number of new chapters and individual items have been included for the first time in a laboratory text (oscilloscope; noise measurement; a chapter on properties of fluids; automatic control; heating, ventilating and conditioning — to mention the major additions). The section on report writing has not been changed. It is brief but good.

After these general and favorable comments, it is in order to point out what the reviewer thinks are perhaps minor but not unimportant omissions.

The book claims to be intended primarily for use in engineering schools, but also as a reference for the student after graduation. In either case, more references and precise references are needed. It is the reviewer's experience that the average engineering student is utterly helpless when confronted with the necessity of looking up original literature. A reference book ought to be full of references where more detail can be found. The whole problem of electronic pressure pickups is covered in 14 correct but sketchy lines. Mechanical indicators and PV diagrams are given 13 pages. It is understandable that not all the gruesome detail of high speed engine indicators is presented, but a list of references would be highly desirable.

While on the subject of engine indicators, one general lack comes to mind: the complete absence of an appraisal of accuracy or methods for such appraisal (exception: fluid meters). The reader remains in the dark as to the difficulties of getting indicated work from diagrams. On page 468 (in the section on engine testing) the ASME Code is quoted as prohibiting the use of an indicator above speeds of 400 rpm. Yet Figure 40 presents an indicator supposedly good up to 2,400 rpm. For once the ASME Code is right.

In the section on dynamometers, no mention is made of the speed-power absorption characteristics of the different types. This is important "after graduation" in selecting the proper dynamometer for a given purpose. True, this is no problem in the school laboratory with its usual tailor-made experiments, but it is vital for the understanding of the art of dynamometry. Large Prony and rope brakes should be thrown out of the instruction laboratories as well as the text. Instead it would be nice to see a few do's and don'ts of adapting electric motors for use as dynamometers.

The chapter on oiling devices could well be left out. The same goes for the section on reciprocating steam engines. This type of engine is in engineering what the platypus is in zoology.

Chapter on oils, friction and lubrication: In the classification of oils the use of "compounds" is misleading. In modern practice a "compound oil" is one containing additives. It has escaped the authors' notice that the bulk of lubricating oils are no longer obtained by fractional distillation, but by solvent refining. No definition on premium and heavy duty oil is given. Again the lack of proper references is annoying. There is a whole book on petroleum testing issued by the ASTM. Reference to this collection would be preferable to the occasional listing of ASTM number designation alone.

The section on viscosity is fine but the subject could be approached in a more fundamental manner. The Saybolt viscosimeter is going out fast and the Ostwald viscosimeter in one form or another is becoming the standard. It is a very nice application of laminar flow and can serve well as an experiment both in viscosimetry and fluid mechanics. Likewise, the torsion viscometer can be used to show that this instrument yields the absolute viscosity for physical reasons. The falling ball viscosimeter (Hoeppler) can be used in the laboratory to find the viscosity of gases, to mention only one good reason for using it. The text gives none.

The SAE classification of oil viscosities is given in tabular form which is not revealing. A plot of vis-

cosity vs. temperature (ASTM chart) would show its usefulness by making it apparent that the SAE numbers define adjoining bands of viscosity ranges — a function which in turn prevents specification writers from pinning the lube-oil refiner down to a single line or value of viscosity.

In the section on the Orsat analyzer there should be a discussion of the likelihood of errors and their strong effect on the F/A calculation. Later on the Orsat analyzer is recommended for measurement of F/A ratios in internal combustion engines but not a word is said about the inherent error due to the unavoidably overestimated amount of N_2. This actually means that charts must be used in preference to calculation from the analyzer data. The reviewer is aware of the fact that school laboratories generally avoid the subject — which prolongs the lives of instructors and is prone to make asses of the students "after graduation."

The reviewer should apologize at this point for going over a book with a fine-toothed comb. It is done because he is constantly grappling with laboratory instructions and is, therefore, rather fussy. To reassure the alarmed authors he should also mention that he will keep on using the text in preference to others.

EARTH ABIDES

by George R. Stewart

Random House, Inc., New York,

373 pp. $3.00

Reviewed by Eric T. Bell
Professor of Mathematics

Doubtless many readers of this magazine are familiar with two of Stewart's earlier books, *Storm*, and *Fire*. Although he is a professor of English at U.C. (Berkeley), he sometimes writes like an engineer. But for this, his latest book might have been pure corn. It is not, although the dual themes are as old as Genesis and have been worked over in numerous variations many times. Not a flood but a swift and deadly new disease wipes out all but a few of the human race. Ish (for "Isherwood") is the Noah of this "Great Disaster." As material civilization begins to crumble, Ish gradually devolves into a kind of Adam who, inevitably, finds his Eve, Em (for "Emma"), a level-headed lady with Negro blood, and nature takes its time-worn course. Em is hailed by

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Ish as "The Mother of Nations." She is not quite that, but the few survivors who gather round Ish do make a very impressive start toward repopulating at least the San Francisco Bay region. Romantic love is out. Capital punishment is in, but is imposed only once by "the tribe," the crime being "Cupid's diseases."

The vast stores of canned, glassed, and bottled goods remained for long as fresh as ever. So did the jeeps, more or less. As a consequence, Ish and his clan became parasites on a dead civilization. Ish foresaw that this could not last long, and taught the young men of the tribe to make use of the reliable bow and arrow. This is Paradise Regained. It is just as if World War III had been fought.

Some of the most graphic descriptions concern the gradual failure of the public utilities. The electric light and water plants were functioning without human guidance long after the race had all but completely perished. But these too finally went under and nature took over. Without human repression the rats, grasshoppers and others literally went to town. When they had eaten themselves out of vegetation and packaged supplies, they departed for the country. Ish and his fast-growing tribe adapted themselves to a primitive life. At first Ish had thought to preserve something of the old American civilization and build on that. But, encouraged by Em, he talked himself out of the idea. "Men come, and men go, but Earth abides." Ish lived to a great age. He died, "The Last American," on the San Francisco Bay Bridge. And where could any American die better?

There is a certain fugal quality about the narrative. It is Ish who unifies it all. Anyone with a technological or scientific background will appreciate the mastery with which the author handles his materials.

MALE AND FEMALE
by Margaret Mead
William Morrow & Co., N.Y.,
477 pp. $5.00

Reviewed by Hunter Mead
Professor of
Philosophy and Psychology

Any book with the title *Male and Female* is certain to have readers, and when its author is one of the most widely known social anthropologists in America, a very large audience is assured. Margaret Mead's latest book can definitely be depended upon to enhance her reputation among educated laymen, whether or not they actually read it or understand it. Like Dr. Kinsey's celebrated opus I, *Male and Female* can be relied upon to fill in conversational lags all this winter and beyond.

This is by no means a popular or readable volume, however. Although it lacks the many pages of bewildering statistics which made Kinsey's book the most widely unread best-seller of recent years, there are large hunks of undigested anthropology which should prove no less discouraging to the untrained reader. Some of this material could have been better organized, but even in its present lumpy form it is worth the time of any thoughtful person who wishes to enlarge his horizons and sharpen his insight into our American culture.

In essence, *Male and Female* is a comparative study of the way seven different South Pacific cultural groups prepare their children for playing the roles of adult males or females. The term "comparative" should be emphasized. Not only does Dr. Mead constantly stress the contrasts and similarities among the seven cultural groups, but when analyzing American life and American preparation for adult socio-sexuality, she still manages to maintain an objectivity typical of the comparative method at its best.

Many of the comparisons between American training for adult maleness or femaleness and South Pacific training are implicit and subtle, but nonetheless thought-provoking, and even disturbing. Margaret Mead clearly suggests that some of her aboriginal groups do a better job of it than America does.

In part, the inadequacy of the American preparation for adulthood comes from our still powerful puritanism, which makes it impossible for the child and adolescent properly to learn the "ways of the body." The major obstacle, however, which often excludes Americans from adequate preparation for their adult roles of men and women is our general cultural uncertainty as to just what it is to be a male or a female in our society.

Margaret Mead's analysis of this confusion is a major part of the book, perhaps its most important part. If this somewhat helter-skelter volume can be said to have a "message," it is the plea that American men and women make a clear-headed effort to determine their real role in these United States, and above all that they cease "competing" with one another. This is not an anti-feminist reactionaryism, but rather a blunt reminder that people can be happy and efficient only if they are first full-fledged males or females, and second, members of some occupational or social group. Margaret Mead does not argue that women belong in the kitchen or the nursery, but she does deny that they need to masculinize themselves because they work alongside men in industry, commerce and the professions.

This is a meaty, controversial, idea-packed book, which stands as a challenging invitation to all who like to think.

RED FLANNELS AND GREEN ICE
by Arthur Pocock
Random House, Inc., New York,
272 pp. $2.75

Reviewed by Robert P. Sharp
Professor of Geomorphology

Red Flannels and Green Ice, a first book by a former Tech graduate student, is a light, jaunty, and sometimes downright funny account of a war-time patrol by the Coast Guard cutter *Laurel* to Labrador, Northern Quebec, Baffin Island, and Greenland. This is no descriptive travelogue, but rather an account of the experiences and impressions of Pocock and his shipmates. It is told in a manner designed to wring every last twitter from each situation. Titles of the first seven chapters indicate the nature and content of the book: 1. Pregnant Seals and Other Notes. 2. You're Going to Greenland—Oh, Goody. 3. How to Be a Stinker. 4. Of Women and Fish. 5. You Can't Take It With You. 6. Navel Maneuvers. 7. Sex Life in a Deep Freeze.

Initially, Mr. Pocock's amazingly facile mind and glib pen are entertaining, but after a few chapters one is bemused instead of amused. Nonetheless, occasional remarks are undeniably funny, such as that describing the seal skin trousers worn by Greenlander women as being so low slung that cutting two inches off the top would convert them to hip boots. Good writing punctuated by witty or humorous remarks is enjoyable, but punctuation by itself is tiresome. Some of the best passages are those pertaining to experiences involving some degree of danger—which seem to have sobered the author.

At present, Mr. Pocock is working as a geologist in Saudi Arabia. He is probably well along on his second book, and if the letters received from time to time at the Division of Geological Sciences are a sample, it will be better than the first. The author shows promise, and it may well be that *Red Flannels and Green Ice* was selected by Random House as winner of its Serviceman's Prize Contest on the basis of this promise.