and appreciation of his scientific contribution to the theory of Pulsation.''

In the opinion of Dr. and Mrs. Fortuyn, my husband would not be able to make the journey under present traveling conditions, if he were offered the opportunity to be exchanged.

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SCIENTIFIC BOOKS

TEXT-BOOKS OF PHYSICS

A Laboratory Manual of Experiments in Physics. By L. R. INGERSOLL and M. J. MARTIN. 5th edition. xi + 342 pp. McGraw-Hill Book Company. 1942. $2.50.

General Physics for the Laboratory. By L. W. TAYLOR, W. W. WATSON and C. E. HOWE. Revised edition. vii + 184 pp. + 107 record sheets. Ginn and Co. 1942. $2.00.

A Laboratory Manual of Electricity and Magnetism. By LEONARD L. LOEB. Revised edition. xii + 121 pp. + experiment data sheets. Stanford University Press. 1941. $1.90.

University Physics, Part III, Light. By F. C. CHAMPION. 172 pp. London and Glasgow: Blackie and Son, Ltd. New York: Interscience Publishers, Inc. 1941. $1.50.

College Physics. By A. W. DUFF and MORTON MASIUS. x + 588 pp. Longmans, Green and Co., Inc. 1941. $3.80.

College Physics. By HENRY A. PERKINS. Revised edition. xi + 802 pp. Prentice-Hall, Inc. 1943. $4.50.

A Survey of Physics for College Students. By FREDERICK A. SAUNDERS. Third edition. xii + 724 pp. Henry Holt and Co., Inc. 1943. $4.00.

Physics. By FRANK L. ROBESON. ix + 819 pp. The Macmillan Company. 1942. $4.50.

Introduction to Physics. By HARLEY HOWE. xii + 559 pp. The McGraw-Hill Book Company. 1942. $3.75.

Analytical Experimental Physics. By H. B. LEMON and MICHAEL FERENCE, JR. xvi + 584 pp. 66 plates. 584 zincs. University of Chicago Press. 1943. $7.00.

THE first three books on the list are laboratory manuals of real merit.

Ingersoll's "Experiments" appeared in a modest first edition almost two decades ago. It established a clientele. Professor Martin joined in preparing the third edition. Through successive editions the manual has been enlarged and enriched and now ranks with the best available.

"Taylor, Watson and Howe" appears in a revised edition after sixteen years of successful use. New experiments have been added; old ones have been brought up-to-date. The M-K-S units are now used throughout. One hundred and seven pages of "Record Sheets" have been added. These innovations will encounter warm friends and ardent foes.

For years the reviewer has recommended a short list of "manuals" to his pupils in general physics. "Ingersoll and Martin" and "Taylor, Watson and Howe" have been on the list. Could not an effective course in general physics be offered with a manual like either of these, perhaps reshaped a little, as the core text-book with a shelf of the usual texts in general physics at hand for collateral reading?

Professor Loeb's "Manual of Electricity and Magnetism" presents in 120 pages twelve admirable experiments chosen to supplement the author's course, each presented in great detail. There follow at least 200 pages of "Experiment Data Sheets." The treatment follows conservative and classical lines proceeding from magnets and magnetic fields to current, potential difference, resistance and so on.

The "soul of the book" is revealed in its twelve pages of "preface" and "announcement." The reviewer pauses to salute the loyal teacher who wrote them. The manual has been written, says the author, in an attempt "to put into practice certain ideals of laboratory instruction gleaned from his years as a student teacher." The author proposes so to plan and to conduct his laboratory instruction that the work of his pupils will automatically rise to a high level of laboratory ethics. May the author's kind increase! And may his ideals motivate all instruction everywhere!

Up from mighty London comes Part III, "Light," of Professor Champion's "University Physics." Packed into thirteen chapters and 172 pages are the essentials of optics. Numerous illustrations, well drawn and aptly chosen, illuminate the text. Questions and numerical exercises follow each chapter. A list of seventy-five examples closes the book. This text should receive serious consideration for a one-semester course at the second-course level.

The rest of the books, six in all, are texts for the general college course. Each author has written the "Thing as he sees it for the God of Things as They Are," for teachers as they are and for students as they are supposed to be. What an array of boundary conditions! Small wonder that the solutions are so varied.

Perhaps never before have texts been so critically scrutinized, for are not most of these on the list of texts recommended for the "basic courses" of the

Army and Navy? Thousands and tens of thousands of young men who neglected to conquer General Physics while in civilian clothes must now face him in uniform in preparation for encounters with foes that are still more formidable.

None but the oldest oldsters can recall the days before there was a "Duff's Physics." And it now seems altogether likely that youngsters yet unborn will study "Duff" in their turn. Let's create a list of the perennial texts with Duff's "Physics" at the top. Its lucidity, thoroughness, meticulous accuracy and usableness have been recognized for decades. And now Professor Masius joins Professor Duff in a revision of Duff's "College Physics." "Vitai lampada tradunt."

Perkins's "College Physics" has gone through six printings and an "abridged edition" in five years, and now is issued as a revision. The author has been alert to opportunities to improve his original text. New problems, without answers, have been added to match the original ones, with answers, which are retained. New topics have been added, and some old topics have been rewritten. The claims that the book is meaty, thorough, sound, conservative and attractively written are in accord with the reviewer's personal experience in using it. For instance, compare Perkins's treatment of "Waves" with run-of-the-mine treatments. This book has earned a place for itself.

Saunders's "Survey of Physics" has been in use for thirteen years. The third edition has just appeared.

One envies the student who uses this text. One reads, and reads on, just for the joy of reading English that says things so frankly and clearly, so convincingly, so attractively—even humorously at times. The illustrations are right to the point. And the paragraphs in fine print present interesting topics, such as: "the fission of uranium," "the ultra-red telescope," "theories of magnetism," "Foucault's pendulum." The recommended reading includes the old classics and the latest word—"Heat as Mode of Motion" and "Phenomena at the Temperature of Liquid Helium"—side by side.

The M-K-S system is put in fine print as a proposal of merit and promise, to be learned along with the other systems.

He who masters this "Survey" learns a lot of solid, live and growing physics.

Robeson's "Physics" and Howe's "Introduction to Physics" made their bows during the past year. A preliminary examination of both books reveals all the signs of texts well written. All the old familiar landmarks are preserved, and the new find their places among the old. As in Duff and Masius and in Perkins and in Saunders the M-K-S system is recognized and is given its place. It supplants nothing. Time only will decide the place it will occupy. Both Robeson and Howe are to be commended for many original and striking ways of presenting old concepts and familiar principles. The reviewer could use either text with confidence.

For the reception of Lemon and Ference's "Analytical Experimental Physics" the reviewer's mind had been conditioned by "From Galileo to Cosmic Rays" and by "Cosmic Rays so Far." Imagine then his surprise when handed five pounds, 250 cubic inches and seven dollars worth of book! And between the covers one finds good straightforward physics, at an advanced undergraduate level, set forth with unusual clarity in great detail and beautifully illustrated with diagrams, photographs and strips from motion picture films. This book invites perusal. It promises to be worth all that it costs, all the space that it occupies, and all the effort required to lift it and carry it.

For some years past consistent effort has been made at the University of Chicago to bring the students into more intimate contact with physical phenomena by the use of moving pictures and of the demonstration laboratory. And now the moving pictures and the demonstration laboratory have been put, in part at least, between the covers of a book.

When the reader opens Lemon and Ference he steps into the presence of the phenomena, and on the printed page he reads the language, the equations and the graphs that men employ when thinking and speaking about the phenomena. Has there not appeared a new and a significant development of the art of writing text-books?

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MAN AND HIS PHYSICAL WORLD

Man and His Physical World. By DWIGHT E. GRAY. Van Nostrand, 1942. 665 pp. $3.75.

THIS is a remarkable book. If I had to describe it in a single phrase, I should say that the author has managed to be encyclopaedic without being ponderous, no mean achievement! The mere scope of the book is startling. I can give a notion thereof in no better way than by listing the chapter-titles, numerous as they are: Science and the Scientific Method—The Solar System—The Universe Beyond the Solar System—Astronomical Measurements—The Earth as an Astronomical Body—Factors Which Change the Surface of the Earth—Clues to Earth History—Geological History—Numbers and Number Systems—Units of Measurement—The Nature of Matter—Air and Water—Fuels—Metals and Alloys—Colloids and Rubber—Synthetics—Force, Work and Power—Energy and Its Transformations—Heat Engines—Magnetism—Static Electricity—Current Electricity—Electricity