binaries. It is well written and reflects the authors' enthusiasm for their subject as well as their knowledge of it. The senior author has been a guiding light of the American Association of Variable Star Observers for many years. One may confidently predict that every member of this organization will want a copy of the book, as will other amateurs who are looking for observational work to do.

The authors stay close to the subject in hand, though on page 98, one is reminded of the difficulty of throwing a twelve with a pair of dice and on page 113, Samson and Delilah are introduced. It is pleasant to find specific figures given, as for example, the shortest and longest periods known for a given type of variable star. One is encouraged to learn on page 131 that it is improbable that our sun will explode, a possibility to which too much space has been given in our newspapers.

For a horizontal inflexion point, the authors use the word "still-stand," presumably because there is no better English word for it. They might have used the initial letters of "horizontal inflexion point," thereby giving a new and descriptive use to an old word. The characteristic curve of a photographic emulsion has a "toe" and a "shoulder"; why shouldn't an occasional light-curve of a variable star have "hips"?

At the end of the book are given the following tables: Names of the constellations and their abbreviations; Table for conversion of decimal of a day to hours and minutes; Julian Day Table 1940–1950; Twenty interesting variable stars; Fourteen interesting Novae.

Earth, Moon and Planets. By FRED L. WHIPPLE. 293 pp. 140 illustrations. Philadelphia: Blakiston Company. 1941. $2.50.

This lucid book has a freshness which is amazing when one considers the large number of books which have been written about the solar system. The field covered is adequately described by the title. One finds the true spirit of science in the impersonal manner in which the evidence bearing on a given theory is evaluated and in the breadth of mind reflected in the phrasing of conclusions drawn from that evidence.

Every chapter in the book is interesting, but the discussions of "The Earth as an Abode of Life" and of Mars are of especial interest. In contrast to the other three books reviewed above, metric units are not used, nor is temperature given on the Centigrade scale. The average American reader will find miles and degrees Fahrenheit easier to understand than kilometers and degrees Centigrade. One can read this book with pleasure and understanding, even though one has no scientific background.

Some readers will dislike the use of many footnotes; the presence of a dagger or an asterisk at the end of a sentence does interrupt the smooth continuity of a paragraph. Others may take exception to the spelling of some words, such as "clews" and "crape," and to the use of "island universe" for a spiral nebula. Those making the latter criticism will insist that though "island universe" has been widely used, by definition there is only one universe and it includes the spiral nebulae.

In a small pocket in the back of the book, there is a good star-map covering the region of the sky within 65 degrees of the celestial equator. This is convenient, since one does not need to take the whole book out into the garden when one wishes to study the stars. No maps are given for the regions near the celestial poles. One unusually valuable feature of this book is the Planet Finder, with which one can determine the approximate locations in the sky of the Sun, Mercury, Venus, Mars, Jupiter and Saturn at any time between 1940 and 1970, inclusive.

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CALCULUS OF EXTENSION

The Calculus of Extension. By HENRY GEORGE FORDER. xvi + 490 pp. Cambridge: At the University Press. New York: The Macmillan Company. 1941. $6.75.

THIS book gives an account of the use of Grassmann's Calculus of Extension in geometry. The abstract algebra, which is The Calculus of Extension, is developed postulationally and is applied in a variety of geometric situations.

The treatment advances from the special to the more general. Chapter I is devoted to "Plane Geometry," and Chapter II to "Geometry in Space." Chapter III is concerned with "Applications to Projective Geometry," and "The General Theory" begins with Chapter VII. In all there are fifteen chapters, treating among others such further topics as "Rotors in Space, the Screw, and the Linear Complex" in Chapter IV, "Circles" in Chapter XI, and "Transformations and Square Matrices with Applications to Central Quadrics" in Chapter IX.

Much of the material included is classic. However, a characteristic of this work which is due to the author is the emphasis on identities. His aim is "to express geometric theorems as identities, involving not coordinates but the geometric entities themselves which appear in the theorems."

The author is professor of mathematics in University College, Auckland, New Zealand. He comments in the Preface upon the unfavorableness of his environment to scholarly endeavor, noting particularly

a dearth of good mathematical libraries. It would seem that this book which he has written is especially well adapted to the needs of students where a good mathematical library is not readily accessible. To master this volume would imply an algebraic and geometric education of no mean order. However, if the author had been writing in the United States, where students acquire in courses in higher algebra a reasonably good mastery of this subject, he might have been disposed to devote less space to certain

algebraic subjects, for example, "The General Theory of Matrices," to which Chapter XIII is devoted.

In writing this book the author has served the cause of geometry well. Students of geometry wherever English is spoken will find this a practicable reference for the topics discussed and the method employed. The author has succeeded in his purpose "to show the algebra at work, to illustrate its power and its range."

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SOCIETIES AND MEETINGS

THE SECTION OF PSYCHOLOGY OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

SECTION I (Psychology) of the American Association for the Advancement of Science will meet in Dallas, Texas, on Monday, December 29, and Tuesday, December 30, as part of the general meeting of the American Association for the Advancement of Science which extends from December 29 through January 3.

In addition to the usual program of contributed papers there will be, on Monday, December 29, a symposium on "Recent Advances in the Appraisal of Personality" under the chairmanship of Professor Ernest R. Hilgard, of Stanford University, and on Tuesday, December 30, a joint symposium with Section Q (Education) on "The Psychology of Learning and the Educative Process."

It is hoped that a large number of psychologists will attend and participate in the Dallas meetings. The character of the general program must depend on the submitted papers, and all psychologists are urged to send in abstracts. Both theoretical and experimental papers are acceptable.

Psychologists who wish to read papers should submit abstracts in duplicate (not more than 300 words in length). Please note on the abstract the time required for presentation up to a limit of 15 minutes, and also whether a slide projector or moving picture projector

will be required. Abstracts should be sent to the Chairman of the Program Committee, Professor John A. McGeoch, Department of Psychology, State University of Iowa, Iowa City, Iowa, so that they will be received not later than November 15, 1941.

The meetings of Section I of the American Association for the Advancement of Science offer to psychologists not only an opportunity to participate in meetings of their own, but also to become acquainted with current investigations and investigators in other sciences. The activities of Section I can do a great deal toward establishing the place of psychology among the sciences, toward cementing friendly relations with related sciences, and toward increasing the influence and usefulness of psychology. It is hoped that many among the members and associates of the American Psychological Association who are not now members of the American Association for the Advancement of Science, and through it of Section I, will join the American Association for the Advancement of Science and participate in its meetings. By so doing they will be supporting the advancement of science in general and of psychology in particular. The secretary of Section I will be happy to receive and endorse applications of members and associates of the American Psychological Association, and to answer questions concerning the work of Section I.

ARTHUR W. MELTON, *Secretary*

UNIVERSITY OF MISSOURI

SPECIAL ARTICLES

PURIFICATION OF THE VIRUS OF MOUSE ENCEPHALOMYELITIS (THEILER'S VIRUS)[1]

BEARD and his collaborators[2] were able to purify the virus of equine encephalomyelitis and that of rab-

bit papilloma by differential centrifugation of infected tissue extracts. Working with encephalomyelitis virus in chick embryos, they observed, however, serious disturbances of the purification process, unless the brain and chord were removed from the embryos before preparation of the extracts.

The study on the virus of mouse encephalomyelitis to be reported here was made with the highly virulent FA strain of the virus.[3] Infected mouse brains served

[1] This study was made with the aid of a grant from the King of Sweden's Birthday Fund for Prevention of Disabling Diseases.

[2] H. Findelstein, W. Marx, D. Beard and J. W. Beard, *Jour. Inf. Dis.*, 66: 117, 1940; and J. W. Beard, W. R. Bryan and W. G. Wyckoff, *Jour. Inf. Dis.*, 65: 43, 1939.

[3] M. Theiler and S. Gard, *Jour. Exp. Med.*, 72: 49, 1940.