

traced by quotations from the writings of Leonardo da Vinci, Cardan, Galileo, and others, its final formulation being given by Descartes.

The first chapter on dynamics contains long quotations from Galileo and Descartes presenting the idea of inertia. The second chapter deals with the phenomena of direct impact from which are deduced the law of action and reaction and the determination of the velocity after collision. The last two chapters treat of the center of oscillation, force and acceleration, and kinetic energy.

Throughout the book attention is called to the different ways of reaching a conclusion, the contrast being particularly striking in the development of the law of inertia, where the method of Descartes is characterized as metaphysical while the inferences of Galileo are drawn from physical observations and experiments. Some of the false conclusions of the early thinkers are presented in connection with the correct results which have led to the statement of modern fundamental principles.

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*Cours d'Astronomie. Seconde Partie : Astronomie pratique.* By H. ANDOYER. Paris, A. Hermann & Fils. 1909. 299 pp.

THIS volume completes the course, of which the first part deals with theoretical astronomy. As a text-book for a first course in practical astronomy, the subject matter of the second part is well chosen. Only the common instruments, namely, the theodolite, the equatorial, and the meridian transit are treated in detail, the more special instruments, such as the heliometer and the siderostat, receiving very brief mention. No cuts of astronomical instruments appear in the book and the question of construction is dismissed with the remark that a few hours' acquaintance with the instrument itself is more profitable than a study of the most minute description. The theory of the constants and errors of the instruments and their adjustment is thoroughly worked out. Very naturally the problems which receive the most attention are those connected with the determination of the geographical position of the observer, although a rather brief discussion is given of the observations used in the determination of the fundamental constants, including refraction, aberration, nutation, precession, obliquity of the ecliptic, position of the vernal equinox, and parallax of moon, sun, and stars. In addition to the subject

matter of observational astronomy the book contains an introductory chapter on numerical calculation, including the theory of interpolation and the method of least squares. The last chapter is an exposition of Gauss's method for determining the elements of an elliptic or parabolic orbit from three complete observations.

The material in the book is not new, but its careful selection and clear presentation make it valuable to the instructor of beginning classes in practical astronomy.

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#### NOTES.

AT the Colloquium of the AMERICAN MATHEMATICAL SOCIETY, to be held at Princeton University, September 15-17, courses of lectures will be delivered by Professor G. A. BLISS, on "Fundamental existence theorems," and Professor EDWARD KASNER on "Geometric aspects of dynamics." Professor J. H. JEANS having resigned his position at Princeton, the course of lectures announced to be given by him has been cancelled.

THE seventy-ninth annual meeting of the British Association for the Advancement of Science will be held in Winnipeg during the week August 25 to September 1. Sir J. J. THOMSON is president of the association for this meeting and Professor E. RUTHERFORD is president of Section A (Mathematics, Physics and Astronomy). Low rates are quoted by the Canadian railroads and there will be a number of excursions including one to the Pacific coast. Abstracts of papers, which the authors desire to have printed for use at the meetings, should be in the hands of the Secretary of Section A, Professor J. C. FIELDS, University of Toronto, early in June. For information other than that connected with the programme, application should be made to the "Local Secretaries of the British Association," Winnipeg, Manitoba.

AT the meeting of the London mathematical society held on April 22 the following papers were read: By F. TAVANI, "The general principles of the theory of integral equations"; by H. R. HASSÉ, "The equations of electrodynamics and the null influence of the earth's motion on optical and electrical