between the author's 'Elements of Astronomy' and his 'General Astronomy.'

It is perhaps an open question whether the fact that a text-book contains more matter than can be mastered in the time allotted to the subject constitutes a valid objection to its use, or a legitimate demand for a book of less dimensions. To bring home to the student in this practical way the fact that some things still remain to be learned undoubtedly has a salutary effect in some cases.

Be that as it may, we have here an excellent book. To those acquainted with the author's 'General Astronomy,' the pages present a familiar appearance, suggestive of a simple abridgment of the larger work. A more careful examination, however, shows that we have much more than this. No inconsiderable portion has been rewritten with the introduction of new matter and illustrations and all brought strictly up to date. We mention a few of the many cases in point. The very satisfactory account of the planet Eros; the reference to Belopolsky's spectroscopic researches on the rotation period of Venus; the application of the results of the investigations of Nichols, Hall and Lebedew on the repulsive action of the solar radiation to the formation of comets' tails, and the story of the Nova Persei.

If any mistakes or errors exist they have escaped the notice of the reviewer.

C. L. D.

SOCIETIES AND ACADEMIES.

AMERICAN MATHEMATICAL SOCIETY.

THE Ninth Summer Meeting of the American Mathematical Society was held at Northwestern University, Evanston, Ill., on Tuesday and Wednesday, September 2–3, 1902. About fifty persons were in attendance, including thirty-nine members of the Society. Two sessions were held on each day. The President of the Society, Professor Eliakim Hastings Moore, occupied the chair at the opening session, being succeeded by Professor T. S. Fiske and Professor H. S. White. The following persons were elected to membership in the Society: Professor T. J. I'a. Bromwich, Queen's College, Galway, Ireland; Mr. J. S. Brown, New York City; Professor G. C. Edwards, University of California, Berkeley, Cal. Eight applications for membership in the Society were received.

A committee consisting of Professors H. W. Tyler, T. S. Fiske, W. F. Osgood, J. W. A. Young and Alexander Ziwet was appointed to consider and report on standard definitions of requirements in mathematical subjects for admission to college and scientific schools. This committee will cooperate with those recently appointed by the National Educational Association and the Society for the Promotion of Engineering Education.

President Moore, Professor F. Morley and Dr. Emory McClintock were appointed a committee on the nomination of officers of the Society for the coming year.

The recently organized Pacific Section of the Society received the official designation of the 'San Francisco Section.'

Pleasant social features of the meeting were the dinner at Northwestern University on Tuesday evening and a gathering in Chicago on Wednesday evening. Resolutions appreciative of the hospitality of the University were adopted at the close of the meeting.

The scientific program comprised the following thirty-two papers:

(1) Dr. F. R. MOULTON: 'A method of constructing general expressions for the elements of the planetary orbits which are valid for a definite time.'

(2) Professor A. S. HATHAWAY: 'The quaternion treatment of the problem of three bodies.'

(3) Dr. J. V. COLLINS: 'A general notation for vector analysis.'

(4) Professor L. E. DICKSON: 'Definitions of a linear associative algebra by independent postulates.'

(5) Professor L. E. DICKSON: 'Two definitions of a field by independent postulates.'

(6) Dr. E. V. HUNTINGTON: 'Definitions of a field by sets of independent postulates.'

(7) Dr. OTTO DUNKEL: 'Regular singular points of a system of homogeneous linear differential equations of the first order.'

(8) Professor OSKAR BOLZA: 'Some instructive examples in the calculus of variations.'

(9) Professor J. B. SHAW: 'On linear associative algebras.'

(10) Dr. W. B. FITE: 'Concerning the commutator subgroups of groups whose orders are powers of primes.'

(11) Dr. J. W. YOUNG: 'On a certain group of linear substitutions and the functions belonging to it' (preliminary report).

(12) Professor JACOB WESTLUND: 'On the class number of the cyclotomic number field k $(e2\pi i/p^n)$.'

(13) Professor L. E. DICKSON: 'Announcement of new simple groups' (preliminary communication).

(14) Professor ALFRED LOEWY: 'Ueber die Reducibilität der Gruppen linearer homogener Substitutionen.'

(15) Professor H. S. WHITE: 'A special twisted cubic with rectilinear directrix.'

(16) Professor F. MORLEY: 'Orthocentric properties of the plane n-line.'

(17) Dr. VIRGIL SNYDER: 'Forms of sextic scrolls of genus greater than 1.'

(18) Professor PETER FIELD: 'Quintic curves for which $p = 1$.'

(19) Dr. C. J. KEYSER: 'Concerning the line and plane geometries of point four-space, and allied theories.'

(20) Professor ARNOLD EMCH: 'A linkage for $u = e^{i\theta}z$.'

(21) Dr. EDWARD KASNER: 'The bilinear point-line connex in space; an extension of Clebsch's connex.'

(22) Mr. E. A. HOOK: 'Multiple points of Lissajous's curves in two and three dimensions.'

(23) Dr. L. P. EISENHART: 'Infinitesimal deformation of the skew helicoid.'

(24) Professor JOHN EIESLAND: 'Null systems in space of five dimensions.'

(25) Professor E. D. ROE: 'Note on a partial differential equation.'

(26) Dr. SAUL EPSTEEN: 'On integrability by quadratures.'

(27) Mr. W. B. FORD: 'On the possibility of differentiating term by term the developments for an arbitrary function of one real variable in terms of Bessel functions.'

(28) Professor T. F. HOLGATE: 'Apolar triads on a straight line and on a conic.'

(29) Professor H. B. NEWSON: 'List of continuous groups of collineations in space.'

(30) Miss HELEN BREWSTER: 'Group of collineations with invariant quadric surface.'

(31) Professor ALEXANDER PELL: 'On the generalized Beltrami problem.'

(32) Professor L. HEFFTER: 'Ueber die Curvenintegrale im m-dimensionalen Raum.'

The next meeting of the Society will be held at Columbia University, October 25.

F. N. COLE,
Secretary.

SOCIETY FOR THE PROMOTION OF AGRICULTURAL EDUCATION.

THE *Proceedings* of the 22d meeting of the Society, held in Pittsburgh, June 30 to July 2, 1902, is now in press and will contain the following papers: 'The Promotion of Agricultural Science,' by the President, Dr. W. H. Jordan, Director New York Experiment Station, Geneva, N. Y.; 'Notes on the Poisonous Plants of Nebraska,' Dr. C. E. Bessey; 'The Individuality of Plants an Important Factor in Plant Nutrition Studies,' Professor E. B. Voorhees; 'Some Soil Problems in the Dakotas,' Professor E. F. Ladd; 'The Results of Applying Crude Petroleum to Peach Trees in Ohio to Suppress San José Scale' (illustrated), F. M. Webster; 'The Available Energy in Timothy Hay' (illustrated), Dr. H. P. Armsby; 'The Composition of the Combustible Gases Excreted by Cattle,' J. A. Fries; 'The Statistics of the Dairy,' Maj. H. E. Alvord; 'The Æcidium as a Device to Restore Vigor to the Fungus,' Dr. J. C. Arthur; 'Crude Petroleum as an Insecticide,' Dr. E. P. Felt; 'Views of a Country Roadside' (illustrated), Dr. W. J. Beal; (1) 'The Use of the Centrifuge in Diagnosing Disease of the Cereal Grains,' (2) 'Preliminary Notes on a Continuous Process of Disinfecting Seed Grain with Formaldehyde Vapor' (illustrated), Professor H. L. Bolley; 'Some Variations in Introduced Garden Vegetables,' H. C. Irish; 'Plant Depredations and Plant Culture,' Professor F. W. Rane; 'The Mushrooms of Iowa, their Chemical Composition and Food Value,' Dr. J. B. Weems; 'Soil Bacteriology,' Professor F. B. Chester; 'The Relation of the Water Control of Certain Plants to their Hardiness,' Professor W. R. Lazenby; 'The Importance of Considering Previous Environment in Conducting Variety Tests,' Professor T. L. Lyon; 'Observation on Manure Sampling,' Dr. William Frear.

The next meeting of the society will be held in Washington, D. C., in connection with the American Association for the Advancement of Science, during the first week in January, 1903.

F. M. WEBSTER,
Secretary.