graded by subjects, so that the student is required to determine for himself the class into which each problem falls and to select the formula required for its solution. The problems are preceded by three pages of hints as to how to analyze and solve a problem. The more important formulas used are listed. Hints are given in connection with some of the more difficult examples. A complete set of answers is printed at the end of the book.

This collection will be of great assistance to teachers who wish a supplementary list of miscellaneous examples for review, or who wish to use the textbook for a series of years without the necessity of assigning the same problems year after year.

CLINTON H. CURRIER.

NOTES.

PROFESSORS L. E. DICKSON, of the University of Chicago, and L. P. EISENHART, of Princeton University, have been elected delegates of the American section of the International mathematical union to attend the meeting of the union at the University of Strasbourg beginning September 18, 1920.

THE April number (volume 42, number 2) of the *American Journal of Mathematics* contains the following papers: "On the convergence of certain classes of series of functions," by R. D. CARMICHAEL; "On the solution of linear equations in infinitely many variables by successive approximations," by J. L. WALSH; "Self-dual plane curves of the fourth order," by L. E. WEAR; "On the groups of isomorphisms of a system of abelian groups of order p^m and type $(n, 1, 1, \cdots, 1)$," by L. C. MATHEWSON; "On the satellite line of the cubic," by R. M. WINGER.

AT the meeting of the Edinburgh mathematical society on May 14, the following papers were read: By E. T. WHITTAKER, "Some developments in curve fitting and the calculus of differences"; by C. G. KNOTT, "Robert Hooke on molecular interplay." At the meeting of June 11, a paper was read by

G. SMEAL, "On direct and inverse interpolation by divided differences."

BEGINNING with volume 81, the *Mathematische Annalen* will be published by Julius Springer, of Berlin, instead of by Teubner as heretofore.

THE following university courses in mathematics are announced for the academic year 1920–1921:

PRINCETON UNIVERSITY. By Professor H. B. FINE: Theory of functions, three hours.—By Professors L. P. EISENHART and OSWALD VEBLEN: Seminar in relativity, three hours.—By Professor OSWALD VEBLEN: Projective geometry, three hours —By Professor J. H. M. WEDDERBURN: Theory of functions of a real variable, three hours.—By Professor J. W. ALEXANDER: Conformal representation, three hours.

STANFORD UNIVERSITY. First quarter (October–December):—By Professor R. E. ALLARDICE: Advanced calculus, five hours.—By Professor H. F. BLICHFELDT: Vector analysis, four hours. Second quarter (January–March):—By Professor GREEN: Modern coordinate geometry, five hours.—By Professor R. E. ALLARDICE: Projective geometry, five hours.—By Professor H. F. BLICHFELDT: Differential equations, five hours. Third quarter (April–June):—By Professor GREEN: Modern coordinate geometry, five hours.—By Professor R. E. ALLARDICE: Theory of functions, five hours.—By Professor H. F. BLICHFELDT: Non-euclidean geometry, four hours.

THE Buchhandlung Gustav Fock, of Leipzig, offers for sale the library of the late Professor MORITZ CANTOR, of Heidelberg, the historian of mathematics. The library consists of about 2,000 volumes and 2,500 pamphlets.

AT the University of Berlin, Professor L. E. BROUWER, of the University of Amsterdam, has been appointed professor of mathematics, Professor R. VON MISES, of the Dresden technical school, has been appointed professor of applied mathematics, and Dr. ISSAI SCHUR has been promoted to a full professorship of mathematics. Professor C. CARATHÉODORY has resigned, to accept a professorship at the National University at Athens.

AT the University of Clermont, Dr. G. GIRAUD has been appointed chargé de cours for the differential and integral calculus, in place of Professor A. C. E. PELLET, who has retired from active teaching.

DR. RENÉ GARNIER has been appointed chargé de cours for theoretical and applied mechanics at the University of Poitiers.

AT the University of Nancy, Dr. LÉOPOLD LEAU has been appointed professor of the differential and integral calculus, as successor to Dr. A. S. E. HUSSON.

DR. L. SIRE, of the University of Rennes, has been appointed professor of applied mathematics at the University of Lyons, as successor to the late Professor D. J. B. FLAMME.

PROFESSOR H. LAMB, of the University of Manchester, Sir T. L. HEATH, and Professor W. H. BRAGG, of the University of London, have been elected honorary fellows of Trinity College, Cambridge.

THE senate of the University of Dublin has conferred the honorary degree of doctor of science on Professor W. H. BRAGG, of the University of London, and Professor R. A. MILLIKAN, of the University of Chicago.

MR. W. E. H. BERWICK has been appointed lecturer in mathematics at the University of Leeds.

PROFESSOR JACQUES HADAMARD has been elected a foreign honorary member of the American academy of arts and sciences.

PROFESSOR AUGUSTUS TROWBRIDGE, of the department of physics of Princeton University, has been appointed chairman of the division of astronomy, mathematics and physics of the National research council, for the year beginning July 1, 1920.

AMONG the grants for research made by the American association for the advancement of science in April are three hundred dollars to Professor S. LEFSCHETZ, of the University

of Kansas, to assist in the publication of his memoir on algebraic surfaces, which was awarded the Bordin prize by the Paris academy of sciences, and one hundred dollars to Professor OLIVE C. HAZLETT, of Mount Holyoke College, in support of her work in the theory of hypercomplex numbers and invariants.

ON the recommendation of the National academy of sciences, Columbia University has awarded its Barnard medal for meritorious service to science to Professor ALBERT EINSTEIN, for "his highly original and fruitful development of the fundamental concepts of physics through the application of mathematics."

DR. R. S. WOODWARD will retire from the presidency of the Carnegie Institution of Washington at the end of the present year, after sixteen years of service.

DR. J. W. ALEXANDER has been appointed assistant professor of mathematics at Princeton University.

IN the department of mathematics at the University of Minnesota, associate professor W. H. BUSSEY has been promoted to a full professorship and appointed assistant dean of the college of science, literature and the arts, and assistant professors A. L. UNDERHILL, R. W. BRINK, and W. L. HART have been promoted to associate professorships.   Mr. F. K. BAIER, JR., of Pennsylvania State College, and Dr. GLADYS GIBBENS, of the University of Chicago, have been appointed instructors.

ASSOCIATE professor J. E. ROWE, of the Pennsylvania State College, was promoted to a full professorship of mathematics in January, 1920.

ASSISTANT professor C. W. WESTER, of Iowa State Teachers' College, has been promoted to a full professorship of mathematics.

AT Oberlin College, associate professor W. D. CAIRNS has been made full professor and head of the department of mathematics.   Professor FREDERICK ANDEREGG has retired from active teaching, after thirty-three years of service.

DR. J. R. MUSSELMAN, of Washington University, has been appointed associate in mathematics at Johns Hopkins University.

MR. JESSE DOUGLAS has been appointed instructor in mathematics at Columbia University.

AT the Carnegie Institute of Technology, assistant professor J. R. EVERETT, of Baker University, and Professor G. W. HESS, of Bethany College, have been appointed instructors in mathematics.

ASSISTANT professor A. E. BABBITT, of the University of Nebraska, has resigned to enter actuarial work.

MR. C. GOUWNES, of the University of Kansas, has been appointed assistant professor of mathematics at the State College of Iowa.

DR. ANNA M. HOWE has been appointed instructor in mathematics at the Sophie Newcomb College of Tulane University.

MR. H. B. MEEK has been appointed instructor in mathematics at Yale University.

MISS MARIAN M. TORREY has been appointed instructor in mathematics at the University of West Virginia.

MISS MAY J. SPERRY, of Brown University, has been appointed instructor in mathematics and physics at Knox College, Galesburg, Ill.

THE death is reported of the Indian mathematician, SRINIVASA RAMANUJAN, F. R. S., fellow of Trinity College, Cambridge, at the age of thirty-two years.

PROFESSOR P. VAN GEER died at the Hague, on October 3, 1919, at the age of seventy-eight years.

PROFESSOR M. HAID, of the Karlsruhe technical school, died November 15, 1919.

THE death is reported of Professor A. BOERSCH, at Homburg.

THE death is reported of Professor R. HEGER, at Dresden, at the age of seventy-three years.

PROFESSOR PAUL STÄCKEL, of the University of Heidelberg, died December 13, 1919, at the age of fifty-seven years.

THE death is reported of Professor R. MALSTROEM, of the department of mechanics at the technical school at Helsingfors.

BOOK CATALOGUES: Buchhandlung Gustav Fock, Leipzig, Handapparate und Sammlungen von Dissertationen und Programmen auf dem Gebiete der Naturwissenschaften sowie der Mathematik.—Gauthier-Villars, Paris, Bulletin des Publications nouvelles, 4e trimestre, 1919.—Rudolf Geering, Basel, Antiquariats-Katalog Nr. 383 (containing the library of the late Professor J. H. Graf, of Bern).—B. G. Teubner, Leipzig, Neuerscheinungen und Neuauflagen, 1914–1919.

NEW PUBLICATIONS.

I. HIGHER MATHEMATICS.

CHILD (J. M.).   The early mathematical manuscripts of Leibniz.   Translated from the Latin texts published by Carl Immanuel Gerhardt with critical and historical notes by J. M. Child.   Chicago and London, Open Court, 1920.   8vo.   4 + 238 pp.

EUCLID.   See HEATH (T. L.).

GERHARDT (C. I.).   See CHILD (J. M.).

GROSSE (W.).   Graphische Papiere und ihre vielseitige Anwendung. Düren, Schleicher und Schüll, 1919.   179 pp.

HEATH (T. L.).   Euclid in Greek.   Book I, with introduction and notes· Cambridge, University Press, 1920.   12mo.   240 pp.   10s·

LABOUREUR (M.).   Cours d'exercices sur le calcul mathématique, algébrique, différentiel et intégral.   Paris et Liège, Béranger, 1920. 8vo.   8 + 318 pp.   Fr. 30.00

LEIBNIZ (G. W.).   See CHILD (J. M.).

II. ELEMENTARY MATHEMATICS.

AMMERMAN (C.).   See FORD (W. B.).

BALL (K. F.) and WEST (M. E.).   Household arithmetic.   (Lippincott's unit texts.) Philadelphia, Lippincott, 1920.   8vo.   271 pp.