than twice as large. Considering the whole range of mathematics it is somewhat unsafe to claim that any large number of these titles is alone "desirable from the bibliographical and historical standpoint."

A similar list for mechanics, aeronautics, geodesy, ballistics, navigation, and astronomy is also a decided desideratum in these days.

R. C. ARCHIBALD.

July, 1918.

NOTES.

AT the annual meeting of the American Mathematical Society, to be held at Chicago on December 27–28, President DICKSON will deliver his retiring address, on "Mathematics in War Perspective." Abstracts and titles of papers intended for presentation at this meeting should be in the hands of the Acting Secretary, Professor E. J. MOULTON, 909 Colfax Street, Evanston, Ill., by December 2. The meeting will be immediately preceded by that of the Mathematical Association of America, and a joint session will be held on December 27.

THE seventy-first meeting of the American association for the advancement of science will be held at Johns Hopkins University, Baltimore, Md., December 27–31. G. D. BIRKHOFF is vice-president, and F. R. MOULTON secretary of Section A.

THE opening (September) number of volume 20 of the *Annals of Mathematics* contains the following papers: "Functions of limited variation and Lebesgue integrals," by G. P. HORTON; "On the Teixeira construction of the unicursal cubic," by N. ALTSHILLER; "The functional equation $f[f(x)] = g(x)$," by G. A. PFEIFFER; "The existence of the functions of the elliptic cylinder," by MARY F. CURTIS; "The gamma function in the integral calculus," by T. H. GRONWALL.

THE closing (October) number of volume 40 of the *American Journal of Mathematics* contains: "Theta modular groups

determined by point sets," by A. B. COBLE; "On the asymptotic solution of the non-homogeneous linear differential equation of the nth order. A particular solution," by W. V. N. GARRETSON; "A collineation group isomorphic with the group of the double tangents of the plane quartic," by C. C. BRAMBLE; "Proof of Pohlke's theorem and its generalizations by affinity," by ARNOLD EMCH; "Arithmetical theory of certain Hurwitzian continued fractions," by D. N. LEHMER.

THE following 24 doctorates with mathematics as major subject were conferred by American universities in the academic year 1917–1918; the title of the dissertation is added in each case: I. A. BARNETT, Chicago, "Differential equations with a continuous infinitude of variables"; R. F. BORDEN, Illinois, "On the Laplace-Poisson mixed equation"; H. E. BRAY, Rice Institute, "A Green's theorem in terms of Lebesgue's integral"; TERESA COHEN, Johns Hopkins, "An investigation of plane quartic curves"; H. H. DALAKER, Cornell, "On the automorphic functions of the group (0, 3; 2, 4, 6)"; H. D. FRARY, Illinois, "The Green's function of a plane contour"; G. H. HALLETT, Pennsylvania, "Linear order in three-dimensional euclidean and double elliptic space"; ANNA M. HOWE, Cornell, "The classification of plane involutions of order three"; GLENN JAMES, Columbia, "Some theorems on the summation of divergent series"; J. M. KINNEY, Chicago, "The general theory of congruences without any preliminary integrations"; E. P. LANE, Chicago, "Conjugate systems with indeterminate axis of curves"; J. E. MCATEE, Chicago, "Modular invariants of a quadratic form for a prime power modulus"; F. R. MORRIS, California, "Classification of involutory cubic space transformations"; W. P. OTT, Chicago, "The general type of the brachistochrone with variable end points"; C. P. PAINE, Wisconsin, "Modes of air motion and the equations of the general circulation of the earth's atmosphere"; O. J. RAMBLER, Catholic University, "Three-cusped hypocycloids fulfilling certain assigned conditions"; JOSEPHINE R. (Mrs. E. D.) ROE, Syracuse, "Interfunctional expressibility problems of symmetric functions, with tables"; L. J. ROUSE, Michigan, "A contribution to the question of linear dependence in linear integral equations"; H. M. SHOEMAKER, Pennsylvania, "A generalized equation of the vibrating membrane expressed in curvilinear coördinates";

L. S. SHIVELY, Chicago, "A new basis for the metric theory of congruences"; W. G. SIMON, Chicago, "On the solution of certain types of linear differential equations in infinitely many variables"; M. G. SMITH, Illinois, "On the zeros of functions defined by homogeneous linear differential equations containing a parameter": MARY A. SZNYTHER, California, "The hypersurface of the second degree in four-dimensional space"; J. S. TAYLOR, California, "A set of five postulates for Boolean algebras in terms of the operation 'exception.'"

THE Paris academy of sciences announces the award of the following prizes for work in pure and applied mathematics for the year 1918: Poncelet prize (2,000 francs) to JOSEPH LARMOR, of Cambridge University, for the totality of his mathematical researches. Francoeur prize (1,000 francs) to P. MONTEL, of the University of Paris, for his investigation of series of analytic functions. Lalande prize (540 francs) to A. BELOPSLKŸ, of the Pulkowa observatory, for his contributions to the application of spectrum analysis to astronomy. Valz prize (460 francs) to F. SY, of the Algiers observatory, for the totality of his works on astronomy. Janssen prize (medal) to S. CHEVALIER, director of the Shanghai observatory, for his researches in physical astronomy.

AMONG the mathematicians associated with Major Oswald Veblen at the Aberdeen proving ground are A. A. Bennett, Texas; H. F. Blichfeldt, Stanford; G. A. Bliss, Chicago; T. H. Gronwall; C. R. Dines and C. N. Haskins, Dartmouth; Dunham Jackson, Harvard; H. H. Mitchell, Pennsylvania; W. H. Roever, Washington (St. Louis). With Major F. R. Moulton in the ordnance department at Washington are J. W. Alexander, Princeton; Thomas Buck, California; W. D. MacMillan, Chicago; J. F. Ritt and Caroline E. Seely, Columbia; H. L. Smith, Princeton; H. S. Vandiver, Philadelphia. Commissions in the ordnance department of the army have been given to First Lieutenant Thomas Buck, Captain H. H. Mitchell, Captain Dunham Jackson, Major W. D. Macmillan. Dr. J. R. Musselman, Illinois, has been appointed first lieutenant on the statistics branch of the general staff. Dr. D. F. Barrow, Yale, has entered the government service. Dr. J. N. Rice, Catholic University, is serving in the national army. Mr. J. J. Nassau, Syracuse, is in a regiment of engineers in France. Professor

Arnold Dresden, Wisconsin, sailed for France in September for service with the Red Cross.

PROFESSOR W. R. LONGLEY, of Yale University, is on leave of absence and is engaged in the ballistic division of the Dupont Company in Delaware.

MR. G. H. SCOTT has been appointed professor of mathematics in Doane College.

AT the University of Illinois Dr. ELIZABETH B. GRENNAN and Dr. JOSEPHINE GLASGOW have been appointed instructors in mathematics and Mr. L. E. YAEGER assistant in mathematics. Mr. C. H. RICHARDSON, assistant in mathematics, has been appointed professor of mathematics in Georgetown College, Kentucky.

AT Cornell University Mrs. D. NAYLOR has been appointed instructor in mathematics. Instructor E. P. FRALEIGH has resigned to engage in the ordnance work at the Aberdeen proving ground. Seven members of the faculty have been temporarily transferred from other departments to assist in the mathematical instruction.

AT the University of Missouri Mr. F. DUNCAN, Miss Z. FERGUSON, and Mr. A. GROSSMAN have been appointed instructors in mathematics.

DR. F. D. MURNAGHAN, of the Rice Institute, has been appointed associate in applied mathematics at Johns Hopkins University.

AT the University of Pennsylvania, Professor H. B. EVANS, of the department of mathematics, has been made dean of the Towne Scientific School.

PROFESSOR L. LINDSEY, of Syracuse University, has been promoted to an associate professorship of applied mathematics.

DR. E. W. CHITTENDEN, of the University of Illinois, has been appointed assistant professor of mathematics in the University of Iowa.

PROFESSOR T. O. WALTON, of William and Vashti College, has been appointed professor of mathematics in the Colorado School of Mines.

AT the University of Rochester assistant professor C. W. WATKEYS has been promoted to a full professorship of mathematics.

PROFESSOR H. R. PHALEN, of Berea College, has been appointed instructor in mathematics in the Armour Institute of Technology.

DR. G. W. SMITH, of Beloit College, has been appointed instructor in mathematics in the University of Kentucky.

DR. W. G. SIMON, of the University of Chicago, has been appointed instructor in mathematics in Adelbert College.

DR. L. L. SILVERMAN, of Cornell University, has been appointed assistant professor of mathematics in Dartmouth College.

PROFESSOR C. A. BARNHART, formerly of Carthage College, has been appointed professor of mathematics in the University of New Mexico.

DR. F. R. MORRIS has been appointed to an instructorship in mathematics in the University of California.

PROFESSOR J. H. GRAF, of the University of Bern, died recently at the age of sixty-six years.

PROFESSOR S. LATTÈS, of the University of Toulouse, died July 5, 1918, at the age of forty-three years.

PROFESSOR C. WOLF, of the University of Paris, died in the summer of 1918 at the age of ninety-one years.

PROFESSOR O. HENRICI, of the City and Guilds Technical College, London, died August 10, at the age of seventy-eight years.

MR. H. W. POWELL, tutor in mathematics in the college of the City of New York, died July 23, 1918. Mr. Powell had been a member of the American Mathematical Society since 1907.

PROFESSOR H. G. KEPPEL, head of the department of mathematics in the University of Florida, died October 5 at the age of fifty-two years. Professor Keppel had been a member of the American Mathematical Society since 1897.

COL. E. W. BASS, professor of mathematics at West Point from 1878 to 1898, died November 6 at the age of seventy-six years.

DR. ARTEMAS MARTIN, of the U. S. Coast Survey, died November 7 at the age of eighty-four years. Dr. Martin had been a member of the American Mathematical Society since 1891.

NEW PUBLICATIONS.

I. HIGHER MATHEMATICS.

ADAMS (O. S.). General theory of the Lambert conformal conic projection. (U. S. Coast and Geodetic Survey, Special Publication No. 53.) Washington, Government Printing Office, 1918. 38 pp. Paper. $0.10

BOUTROUX (E.). See GOBLOT (E.).

DUCLOUT (J.). Temas elegidos de matemáticas elementales. La serie de Taylor y la teoria general de las series infinitas, para funciones de una variable real. Desarrollo de las ideas esbozadas par F. Klein en "Matemáticas elementales desde un punto de vista superior," Buenos Aires, Centro Estudiontes de Ingenieria, 1917.

GOBLOT (E.). Traité de ,logique. Préface de E. Boutroux. Paris, Librairie Armand Colin, 1918. 8vo. 24 + 412 pp. Fr. 9.60

HARNACK (A.). See SERRET (J. A.).

KLEIN (F.). See DUCLOUT (J.).

KOREN (J.). The history of statistics. New York, Macmillan, 1918. 12 + 773 pp. $7.50

MCCLENON (R. B.). Introduction to the elementary functions by R. B. McClenon with the editorial cooperation of W. J. Rusk. Boston, Ginn, 1918. 8vo. 9 + 244 pp. $1.80

MORÁVEK (G.). Allgemeine Beweise der Gültigkeit des letzten Fermatschen Satzes. Mit einem Anhang über Pythagoraische Zahlen. Prag, G. Morávek, 1916. 8vo. 18 pp. M. 1.00