NOTES

The following individuals were among those who received doctorates during 1955 in the mathematical sciences and related subjects from universities in the United States and Canada. The university, month in which the degree was conferred, minor subjects (other than mathematics), and title of the dissertation are given in each case if available.

S. S. Abhyankar, Harvard, March, *Local uniformization on algebraic surfaces over modular ground fields.*


M. W. Al-Dhahir, Michigan, June, *Configurational characterizations of commutativity in projective spaces.*


R. J. Aumann, Massachusetts Institute of Technology, June, minor in humanities, *Asphericity of alternating linkages.*


J. Y. Barry, Yale, June, *Generation of abstract Markov processes.*


E. H. Batho, Wisconsin, January, *On a class of rings with ideal nuclei.*

W. A. Beck, Purdue, June, *On commutators and generalizations of commutators in a Hilbert space.*

Barbara J. Beechler, Iowa, June, *Complete ideals in polynomial rings.*

Stoughton Bell, II, California, Berkeley, June, *Aspects of the boundary-layer problem near the leading edge of a flat plate.*

R. H. Bender, Boston, June, *An investigation of the general second order linear partial differential equation of elliptic type.*

J. P. Benzecri, Princeton, June, *Variété localement plate.*

Sterling Berberian, Chicago, December, *The ring of closed operators affiliated with a finite AW*-algebra.*


E. A. Bishop, Chicago, June, Spectral theory for operators on a Banach space.

C. H. Boll, Stanford, April, Comparison of experiments in the infinite case and the use of invariance in establishing sufficiency.

W. E. Boyce, Carnegie Institute of Technology, June, Vibrations of rotating beams.

D. L. Boyer, Kansas, October, minor in physics, Enumeration theorems in infinite abelian groups.

Helen Bozivich, Iowa State, June, minor in animal breeding, Power of test procedures for certain incompletely specified random and mixed models.

L. R. Bragg, Wisconsin, August, The solutions of a linear ordinary differential equation of the third order about a simple turning point of the second order.


C. C. Braunschweiger, Wisconsin, August, The C-cone and geometric constructions of (L) and (M) spaces.


S. H. Brooks, Johns Hopkins, Comparison of methods for estimating the optimal factor combination.

E. C. Bryant, Iowa State, June, minor in economics, An analysis of some two-way stratifications.

D. L. Burkholder, North Carolina, August, On a certain class of stochastic approximation processes.

A. T. Butson, Michigan State, June, Systems of linear congruences and left-associativity of matrices, whose elements are integers from an algebra.


Thelma M. Chaney, University of Washington, March, Invariant means and measures on semigroups.

C. C. Chang, California, Berkeley, June, Cardinal and ordinal factorization of relation types.

Clive Chester, New York, June, Uniform asymptotic expansions.

T. S. Chihiara, Purdue, June, Generalized Hermite polynomials.

Solomon Ciolkowski, New York, June, Swept-back wing.

E. J. Cogan, Pennsylvania State, January, minor in philosophy,
A formalization of the theory of sets from the point of view of combinatory logic.
Raymond Collier, Minnesota, Experimental designs in which the observations are assumed to be correlated.
Erben Cook, Jr., Boston, June, The fundamental solution of a parabolic differential equation of arbitrary even order.
T. H. M. Crampton, Indiana, June, minor in chemistry, Explicit formulas for norm groups in generalized local class field theory.
E. H. Crisler, Michigan, June, On partition systems, chordal systems and their application to regular curve-families filling the plane.
Lonnie Cross, Cornell, September, On the distribution of eigenvalues of \( \int_a^b (s-t)\phi(t)dt = \rho \left[ \int_a^b (s-t)\phi(t)dt + \eta\phi(s) \right] \).
C. H. Cunkle, Missouri, August, Equicontinuity in dynamical systems.
P. C. Curtis, Jr., Yale, June, Representations of AW* algebras.
R. H. Davis, California, Berkeley, June, Singular normal differential operators.
Ruth M. Davis, Maryland, June, On a regular Cauchy problem for the Euler-Poisson-Darboux equation.
F. W. Donaldson, Texas, August, minor in physics, Integration formulae and boundary conditions for the elliptic parabolic partial differential equation with three independent variables.
W. S. Dorn, Carnegie Institute of Technology, June, On plastic collapse of structures and linear programming.
L. E. Dubins, Chicago, September, Generalized random variables.
Kathryn P. Ellis, Iowa, August, On the structure of topological rings.
Lillian Elveback, Minnesota, Some aspects of estimation problems in follow-up studies in chronic disease.
Walter Feit, Michigan, June, Topics in the theory of group characters.
Leopold Flatto, Massachusetts Institute of Technology, June,
minor in languages, Periodic solutions associated with singular perturbations of a system of non-linear differential equations.


N. P. Fofonoff, Brown, June, minor in oceanography, A theoretical study of zonally uniform oceanic flow.

J. E. Folkert, Michigan State, August, The distribution of the number of components of a random mapping function.

W. C. Fox, Michigan, June, The critical points of real functions defined on 2-manifolds.

T. T. Frankel, California, Berkeley, September, Harmonic integrals.

R. J. Fruend, North Carolina State, Introduction of risk into a linear programming model.

B. A. Galler, Chicago, September, Some results in algebraic logic.

Seymour Geisser, North Carolina, June, On the exact distributions of certain statistics related to the mean square successive difference.

L. S. Gephart, Florida, January, minor in education, A study of the effect of non-normality on sampling distributions of the range.

E. F. Gillette, Syracuse, May, On the four-vertex theorem and some of its generalizations.


A. J. Goldstein, Massachusetts Institute of Technology, June, minor in physics, On some operations in homotopy groups.

A. V. Granato, Brown, June, Internal friction and modulus changes due to dislocation damping in undeformed crystals.

R. T. Gregory, Illinois, June, minor in astronomy, A numerical solution to a class of Sturm-Liouville systems.

J. S. Griffin, Jr., Tulane, August, A notion of parallelism in general fibre bundles.

R. C. Gunning, Princeton, June, A classification of factors of automorphy.

Irwin Guttman, Toronto, May, minor in genetics, Characterization of tolerance regions.


Dilla Hall, St. Louis, June, A relationship of Reiss with extensions to multiple points, tangential points, inflectional points and simple cusps.

W. J. Hall, North Carolina, June, Most economical multiple-decision rules.
J. W. Hamblen, Purdue, June, *Distributions of roots of algebraic equations with variable coefficients.*


J. W. Hardy, Jr., Stanford, June, *On axially-symmetric subsonic flow of a compressible fluid.*

Juris Hartmanis, California Institute of Technology, June, minor in physics, *Some embedding theorems for lattices.*


Smith Higgins, Jr., Notre Dame, August, *On minima of indefinite ternary quadratic forms.*

T. P. Higgins, Texas, June, minors in electrical engineering and physics, *On the Hankel transform.*

J. H. Hodges, Duke, June, minor in physics, *Number of solutions of some matrix equations in a finite field.*

J. F. Hofmann, Iowa State, June, minor in economics, *Life testing in controlled environmental conditions.*

L. I. Holder, Purdue, August, *On generalizations of absolute and strong Cesàro summability.*

B. J. Hollingsworth, Kansas, June, minor in physics, *A study of conjugate nets on n-ply systems of hypersurfaces in n-dimensional projective space.*

C. V. Holmes, Kansas, October, minor in astronomy, *Automorphisms of monomial groups.*


H. T. Hsu, Yale, June, *Semi-groups and the problems of Cauchy for linear partial differential equations.*

D. R. Hughes, Wisconsin, January, *Planar division neo-rings.*

J. A. Hummel, Rice, June, *Doubly orthogonal functions on Riemann surfaces.*


George Jeromson, California, Berkeley, September, *Propagation of electromagnetic waves in ferrites.*

J. W. Jewett, Michigan, February, *Differentiable approximations to light interior transformations.*

Guy Johnson, Jr., Rice, June, I. *Collective singularities of families of
analytic functions. II. Regions of flatness for analytic functions and their derivatives.


J. A. Kalman, Harvard, June, *Some inequalities related to Hölder inequality and some contributions to lattice theory.*

D. A. Kearns, Boston, June, *Initial value problem for a parabolic equation of arbitrary even order.*

R. W. Kennard, Carnegie Institute of Technology, June, *On the determination of significance levels of control charts for continuous variables.*

Jean Kestens, Brown, June, *The normal self-adjoint eigenvalue problem and upper and lower bounds for the eigenvalues with the iteration method.*

John Killeen, California, Berkeley, September, *Asymptotic perturbation of differential equations.*

E. G. Kimme, Minnesota, *On the convergence of sequences of stochastic processes with independent increments.*


Manfred Kochen, Columbia, December, *Organized systems with discrete information transfer.*


Lester Kraus, New York, June, *Diffraction by a plane angular sector.*

I. S. Krule, Tulane, August, *Structs on compact spaces.*


Anneli Lax, New York, June, *Cauchy's problem for a partial differential equation with real multiple characteristics.*

Eugene Levin, California, Los Angeles, June, *Reinforced openings in plane structural members.*


C. S. Lin, Ohio State, December, *On sums of sets of integers.*
C. T. Long, Oregon, June, *Minimal conditions for normality of numbers.*
F. W. Lott, Jr., Michigan, February, *The use of a certain linear order statistic, related to the mean difference, as an unbiased estimate of the standard deviation in finite and infinite populations.*
R. A. Lytle, Georgia, June, *Properties of the overlap topology.*
P. J. McCarthy, Notre Dame, June, *On genera of class number one.*
F. S. McFeely, Virginia Polytechnic Institute, *Decision procedures for the comparison of exponential and geometric populations.*
H. P. McKean, Jr., Princeton, April, *Sample functions of stable processes.*
R. M. McLeod, Rice, June, *On the zeros of the derivatives of some entire functions.*
T. J. McMinn, California, Berkeley, January, *Topics in measure theory: I. Restricted measurability. II. Measure splitting and average measurability.*
Vincent McRae, Catholic, June, minors in physics and education, *On the unitary similarity of matrices.*
J. G. MacCarthy, Pittsburgh, August, *The homomorphic aspect of the Euler-Knopp transformation.*
Mark Mahowald, Minnesota, July, minor in physics, *Measure in groups.*
M. A. Martino, Illinois, June, minor in aeronautics, *Concerning a measure of non-analyticity for functions of a complex variable.*
H. F. Mattson, Jr., Massachusetts Institute of Technology, June, minor in humanities, *Generalization of the Riemann-Roch theorem.*
C. N. Maxwell, Illinois, October, minor in physics, *Fixed point and coincidence theorems for multi-valued functions.*
Elliott Mendelson, Cornell, June, *The independence of the axiom of choice.*
W. E. Mientka, Colorado, June, minor in philosophy, *A method of
approach towards the solution of the problem concerning the existence of at least one prime between consecutive perfect squares.

V. J. Mizel, Massachusetts Institute of Technology, September, minor in physics, Boundary layer problem for an elliptic equation in the neighborhood of a singular point.

J. T. Mohat, Texas, June, Concerning spirals in the plane.
T. O. Moore, Missouri, August, Metric foundations of elliptic 2-space.

Dietrich Morgenstern, Indiana, June, minor in physics, Analytical studies related to the Maxwell-Boltzmann equation.

W. W. Murray, Brown, June, Interaction of a spherical acoustic wave with a cylindrical beam.


J. A. Novarro, Purdue, August, Studies in statistical ecology.

R. J. Nunke, Chicago, September, Modules of extensions over Dedekind rings.

F. C. Ogg, Jr., Johns Hopkins, June, minor in physics, The domain of existence of the isoperiodic families of the first kind in the restricted problem of three bodies.


J. M. Osborn, Michigan, February, Sets of radial discontinuity of entire and meromorphic functions.

Robert Osserman, Harvard, June, Contributions to the problem of type.

J. B. O'Toole, Pittsburgh, August, Ideals of null sets of a topological space.

F. P. Palermo, Brown, June, Cohomology rings of product complexes.

Prom Panitchpakdi, Kansas, June, minor in physics, Extension of uniformly continuous transformations and hyperconvex metric spaces.

H. C. Parrish, Ohio State, December, On the symmetric structure of unconditioned point sets and real functions.

M. H. Pearl, Wisconsin, June, Some extensions of Cayley's theorem.

B. J. Pearson, Texas, June, A connected point set in the plane which spirals down on each of its points.

D. K. Pease, Pittsburgh, August, A study of affinities and anti-affinities of the plane of two complex variables and their representation in a space of four dimensions.
W. M. Perel, Indiana, June, minor in physics, *The co-ideal theory of commutative semigroups.*

F. P. Peterson, Princeton, June, *Generalized cohomotopy groups.*


Roger Pinkham, Harvard, June, *Inversion of the Laplace and Stieltjes transforms utilizing difference operators.*

John Pratt, Stanford, *Some results in the decision theory of one-parameter multivariate Pólya type distributions.*

R. T. Prosser, California, Berkeley, June, *Structure of operator algebras.*

John Raleigh, Pennsylvania, June, *The Fourier coefficients of the invariants j(2^{1/2}; r) and j(3^{1/2}; r).*

K. V. Ramachandran, North Carolina, June, *On certain tests and the monotonicity of their powers.*

Paul Randolph, Minnesota, *Multivariate acceptance sampling.*


George Resnikoff, Stanford, *Contributions to sampling inspection by variables.*

R. A. Restrepo, California Institute of Technology, June, minor in physics, *Optimal decisions with applications to tactical problems.*


W. J. Riordan, Chicago, December, *On the interpolation of operations.*


A. C. Rohloff, Purdue, January, *Sequential tests of composite hypotheses.*

Marvin Rosenblum, California, Berkeley, January, *Perturbation of the continuous spectrum.*


Parfeny Saworotnow, Harvard, June, *On the generalization of the notion of H*-algebras.*


Morris Schreiber, Chicago, December, *Unitary dilations of operators.*


Norman Shapiro, Princeton, June, *Degrees of computability.*


O. K. Smith, Princeton, April, *Discontinuous oscillations.*

R. F. Smith, Syracuse, September, *An experimental comparison of two liberal arts courses in general mathematics at Syracuse University.*


James Snover, Syracuse, September, *Contributions to the theory of almost complex manifolds.*


D. A. Sprott, Toronto, May, minor in genetics, *Balanced incomplete block designs.*

D. P. Squier, Stanford, September, *On some convex cones and associated monotone functions.*

F. W. Stallard, North Carolina, June, *Differential systems with interface conditions.*
G. P. Steck, California, Berkeley, *Limit theorems for conditional distributions.*

E. M. Stein, Chicago, December, *Linear operators on* $L_p$ *spaces.*

F. M. Stein, Iowa, August, *Approximate solution of integro-differential equations.*

H. A. Steinberg, Yale, June, *Diffusion processes with absorption.*


W. B. Stenberg, California, Berkeley, June, *On sequences with divergent total variation and on separation of convex sets in linear spaces.*

Ruth Struik, New York, June, *On associative products of groups.*

B. V. Sukhatme, California, Berkeley, *Testing the hypothesis that two populations differ only in location.*

W. J. Swartz, Iowa State, March, minor in physics, *Iterative procedures for obtaining the periodic solution of certain nonlinear differential equations.*

Peter Swerling, California, Los Angeles, June, *Families of transformations in the function spaces* $H^p$.


Morris Tenenbaum, Cornell, September, *Transforms of Tauberian series by Riesz methods of different orders.*

P. E. Thomas, Princeton, October, *A generalization of the Pontrjagin square cohomology operation.*

G. T. Thompson, Oregon State, June, minor in college teaching, *On Bateman’s method for solving linear integral equations.*


J. A. Tischendorf, Purdue, June, *Linear estimation techniques using order statistics.*


Donald Truax, Stamford, *Multi-decision problems for the multivariate exponential family.*

H. G. Tucker, California, Berkeley, June, *Contributions to the mathematical theory of accident proneness, with particular reference to multiple exposure.*

Anna E. Vaughan, Stanford, June, *Estimation of a biological population which is subject to a biased mortality.*

M. J. Vitousek, Stanford, January, Some flows in a gravity field satisfying the exact free surface condition.
D. T. Walker, Georgia, August, On the diophantine equation \(a^x - b^y = 1\).
E. A. Walker, Kansas, October, minor in physics, Cancellation in direct sums of groups.
L. J. Warren, Oregon, June, An ideal in the ring of polynomials over a ring.
A. D. Wasel, Stanford, June, On integral operators in compressible fluid flow.
G. P. Weeg, Iowa State, June, minor in education, Completely primary algebras which are direct products modulo the radical.
J. W. Weihe, California, Berkeley, On a Stieltjes integral.
Eleanor Weiss, Harvard, Factor analysis of mathematical ability.
Irving Weiss, Stanford, Limiting distributions in some occupancy problems.
Patricia J. Wells, Michigan State, August, The solution of the integral equation for the prolate spheroidal transmitting antenna.
D. V. V. Wend, Michigan, June, Branched regular curve families and finite asymptotic paths of analytic functions.
Oscar Wesler, Stanford, A modified minimax principle.
J. S. White, Minnesota, Some problems of point estimation in stochastic difference equations.
Harold Widom, Chicago, September, Embedding of AW*-algebras.
M. B. Wilk, Iowa State, June, minor in chemical engineering, Linear models and randomized experiments.
R. E. Williamson, Pennsylvania, June, On multiply monotone functions and their Laplace transforms.
R. L. Wine, Virginia Polytechnic Institute, June, A power study of multiple range and multiple F tests.
Izaak Wirszup, Chicago, December, On an extension of the Cesàro method of summability to the logarithmic scale.

Ralph Wormleighton, Princeton, June, *Some extensions of the sign test.*

L. G. Worthington, Texas, August, *Integration formulae and boundary conditions for the hyperbolic equation with three independent variables and regions exterior to the cone.*


J. E. Yarnelle, Pittsburgh, February, *“Heredity” theorems of certain product transformations of the line.*


The following doctorates were conferred in 1954, but were not included in the list in the preceding volume of this Bulletin (vol. 61, pp. 262–274):

R. E. von Holdt, Northwestern, August, *An iterative procedure for the calculation of the eigenvalues and eigenvectors of a real symmetric matrix.*

E. M. Jacobs, Iowa State, June, minor in economics, *A statistical technique for estimating the characteristics of consumer behavior.*

Melvin Shader, Syracuse, August, *Some inequalities for axially-symmetric potential functions.*