

APPENDIX II

RESEARCH SUPPORT PROGRAM

BASIC RESEARCH GRANTS AWARDED IN FISCAL YEAR 1958

Astronomy

- UNIVERSITY OF CHICAGO, Chicago, Ill.; W. W. Morgan and B. Stromgren, Yerkes Observatory; *Interstellar Hydrogen Emission Regions*; 18 months; \$7,300.
- UNIVERSITY OF CINCINNATI, Cincinnati, Ohio; P. Herget, Cincinnati Observatory; *Orbits of the Minor Planets*; 1 year; \$5,500.
- HARVARD UNIVERSITY, Cambridge, Mass.; B. J. Bok, Harvard College Observatory; *Radio Astronomy in the Microwave Region*; 2 years; \$32,000.
- VANDERBILT UNIVERSITY, Nashville, Tenn.; C. K. Seyfert, Barnard Observatory; *Galactic Structures and Eclipsing Variable Stars*; 2 years; \$12,000.
- UNIVERSITY OF VIRGINIA, Charlottesville, Va.; H. L. Alden, Leander McCormick Observatory; *Astrometric Studies of Selected Stars*; 2 years; \$10,000.
- UNIVERSITY OF WISCONSIN, Madison, Wis.; A. E. Whitford, Washburn Observatory; *Structure of the Southern Milky Way as Outlined by O and B Stars*; 1 year; \$10,000.
- YALE UNIVERSITY, New Haven, Conn.; R. Wildt, Yale University Observatory; *Solid Hydrogen in the Planets*; 18 months; \$4,200.

Chemistry

- UNIVERSITY OF CALIFORNIA, Berkeley, Calif.; W. G. Young, Department of Chemistry; *Displacement Reactions Involving Allylic Systems*; 2 years; \$14,000.
- UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles, Calif.; N. Kharasch, Department of Chemistry; *Free Radical Reactions of Sulfenyl Halides*; 1 year; \$2,500.
- UNIVERSITY OF COLORADO, Boulder, Colo.; R. N. Keller, Department of Chemistry; *Low Count-Rate Techniques in Radiocarbon Dating*; 1 year; \$9,000.
- CORNELL UNIVERSITY, Ithaca, N. Y.; D. F. De Tar, Department of Chemistry; *Mechanism of Reactions of Aromatic Rings with Free Radical Intermediates*; 1 year; \$8,000.
- UNIVERSITY OF DELAWARE, Newark, Del.; E. Dyer, Department of Chemistry; *Effect of Oxygen on Vinyl Compounds in the Presence of Free Radicals*; 1 year; \$6,400.
- DUKE UNIVERSITY, Durham, N. C.; F. London, Department of Chemistry; *Theoretical Investigations of Low Temperature Phenomena*; 18 months; \$4,500.
- HARVARD UNIVERSITY, Cambridge, Mass.; F. C. Uhle, Department of Pharmacology; *Chemistry of Ergot Alkaloids*; 1 year; \$12,000.
- HOWARD UNIVERSITY, Washington, D. C.; L. N. Ferguson, Department of Chemistry; *Study of Aromatic Bromination*; 1 year; \$6,100.
- UNIVERSITY OF ILLINOIS, Urbana, Ill.; J. C. Bailar, Jr., Department of Chemistry; *Metal Complexes in Resolution of Optically Active Organic Substances*; 1 year; \$5,000.

- UNIVERSITY OF ILLINOIS, Urbana, Ill.; H. A. Laitinen, Department of Chemistry; *Adsorption Processes at Electrode Surfaces*; 1 year; \$5,000.
- UNIVERSITY OF ILLINOIS, Urbana, Ill.; H. R. Snyder, Department of Chemistry; *Alkaloids of Haplophyton Cimicidum*; 1 year; \$9,500.
- JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; A. H. Corwin, Department of Chemistry; *Synthetic Studies on Chlorophyll*; 2 years; \$13,200.
- KANSAS STATE COLLEGE OF AGRICULTURE AND APPLIED SCIENCES, Manhattan, Kans.; S. Searles, Jr., Department of Chemistry; *Reactions of Some Substituted Trimethylene Oxides*; 3 years; \$8,100.
- MICHIGAN STATE COLLEGE, East Lansing, Mich.; K. G. Stone, Department of Chemistry; *Quantitative Oxidation-Reduction in Non-Aqueous Media*; 1 year; \$3,100.
- MISSISSIPPI STATE COLLEGE, State College, Miss.; L. C. Behr, Department of Chemistry; *Position Isomerism in the Azoxybenzenes*; 1 year; \$3,000.
- MOUNT HOLYOKE COLLEGE, South Hadley, Mass.; L. W. Pickett, Department of Chemistry; *Vacuum Ultraviolet Spectra of Selected Organic Compounds*; 1 year; \$7,400.
- UNIVERSITY OF NORTH DAKOTA, Grand Forks, N. Dak.; R. G. Severson, Department of Chemistry; *Preparation and Properties of Certain Substituted Organosilanes*; 1 year; \$3,300.
- NORTHWESTERN UNIVERSITY, Evanston, Ill.; R. L. Burwell, Jr., Department of Chemistry; *Relative Reactivities of Various Radicals by Cleavage Reactions of Ethers*; 2 years; \$7,000.
- NORTHWESTERN UNIVERSITY, Evanston, Ill.; A. A. Frost, Department of Chemistry; *Molecular Potential Energies*; 2 years; \$13,000.
- RENSSELAER POLYTECHNIC INSTITUTE, Troy, N. Y.; S. Ross, Department of Chemistry; *Adsorption of Pure Hydrocarbons on Ionic Crystal Surfaces*; 1 year; \$4,800.
- ST. JOHN'S UNIVERSITY, Brooklyn, N. Y.; H. A. Horan and J. A. Skarulis, Department of Chemistry; *Correlation of Structures and Properties of Some Alums*; 1 year; \$3,800.
- SMITH COLLEGE, Northampton, Mass.; M. D. Soffer, Department of Chemistry; *Synthetic and Structural Investigations in the Sesquiterpene Series*; 2 years; \$8,800.
- UNIVERSITY OF SOUTH CAROLINA, Columbia, S. C.; H. W. Davis, Department of Chemistry; *Decomposition of Benzoyl Peroxide in 1,4-Epoxy cyclohexane*; 6 months; \$2,400.
- UNIVERSITY OF UTAH, Salt Lake City, Utah; H. Eyring, Department of Chemistry; *Theory of Reaction Rates*; 2 years; \$18,000.
- WASHINGTON UNIVERSITY, St. Louis, Mo.; A. C. Wahl, Department of Chemistry; *Kinetic Studies of Oxidation-Reduction Reactions*; 1 year; \$9,500.
- WAYNE UNIVERSITY, Detroit, Mich.; C. Djerassi, Department of Chemistry; *Application of Rotatory Dispersion to Steroids*; 18 months; \$9,500.
- WEST VIRGINIA UNIVERSITY, Morgantown, W. Va.; J. B. Hickman, Department of Chemistry; *Binary Liquid Mixtures of Fluorocarbons, Halides and Hydrocarbons*; 1 year; \$3,600.
- UNIVERSITY OF WISCONSIN, Madison, Wis.; W. S. Johnson, Department of Chemistry; *Synthesis of Structures Related to the Steroids*; 18 months; \$6,000.

Developmental Biology

- UNIVERSITY OF CHICAGO, Chicago, Ill.; E. C. Olson, Department of Geology; *Biometrical Study of Evolution*; 3 years; \$25,200.
- UNIVERSITY OF CHICAGO, Chicago, Ill.; S. L. Washburn, Department of Anthropology; *Growth of the Brain Case*; 1 year; \$3,900

- UNIVERSITY OF VIRGINIA, Charlottesville, Va.; M. S. McKeehan, Department of Medicine; *Growth and Differentiation in the Developing Lens of the Chick Embryo*; 2 years; \$5,400.
- YALE UNIVERSITY, New Haven, Conn.; J. P. Trinkaus, Osborn Zoological Laboratory; *Tissue Differentiation and Transformation*; 2 years \$5,100.

Earth Sciences

- COLUMBIA UNIVERSITY, New York, N. Y.; J. L. Kulp, Lamont Geological Observatory; *Carbon 14 Measurements of Ocean Floor Sediments*; 1 year; \$16,000.
- UNIVERSITY OF MIAMI, Coral Gables, Fla.; I. Hela, Marine Laboratory; *Ocean Currents in the Cape Hatteras-Bermuda-Bahamas Area*; 6 months; \$1,450.
- OHIO DEPARTMENT OF NATURAL RESOURCES, Columbus, Ohio; G. N. Cady, Division of Geological Survey; *Petrographic Constitution of Ohio Coals*; 2 years; \$24,000.
- TEMPLE UNIVERSITY, Philadelphia, Pa.; A. V. Grosse, Research Institute of Temple University; *Investigation of Natural Tritium Content in Various Waters*; 1 year; \$10,300.
- WASHINGTON UNIVERSITY, St. Louis, Mo.; H. N. Andrews, Jr., School of Botany; *Studies of Coal Ball Floras from the Central Coal Fields of the United States*; 1 year; \$2,700.
- UNIVERSITY OF WASHINGTON, Seattle, Wash.; T. J. Chow and T. G. Thompson, Department of Oceanography; *Distribution of Some Minor Constituents of Sea Water*; 2 years; \$11,700.

Engineering

- UNIVERSITY OF CALIFORNIA, Berkeley, Calif.; F. E. Romie, Department of Engineering; *Heat Transfer to Fluids in Pulsating Flow*; 18 months; \$8,400.
- CLARKSON COLLEGE OF TECHNOLOGY, Potsdam, N. Y.; H. L. Shulman, Department of Chemical Engineering; *Determination of Interfacial Area in Packed Absorption and Distillation Columns*; 15 months; \$10,200.
- GEORGE WASHINGTON UNIVERSITY, Washington, D. C.; B. D. Greenshields, Department of Civil Engineering; *Mathematical Models for Traffic Patterns*; 18 months; \$8,000.
- ILLINOIS INSTITUTE OF TECHNOLOGY, Chicago, Ill.; M. Jakob, Department of Mechanical Engineering; *Fundamental Studies in Boiling*; 1 year; \$9,000.
- LEHIGH UNIVERSITY, Bethlehem, Pa.; A. C. Zettlemoyer, Department of Chemistry; *A Study of Mixed Vapor Adsorption*; 1 year; \$5,600.
- LOUISIANA STATE COLLEGE, Baton Rouge, La.; J. Coates, Engineering Experiment Station; *Thermal Conductivity of Pure Liquids and Solutions as a Function of Temperature*; 1 year; \$10,500.
- MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, Mass.; M. C. Shaw, Mechanical Engineering; *An Investigation of the Stress and Energy Characteristics of Brittle Materials During Comminution*; 1 year; \$5,500.
- MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, Mass.; T. K. Sherwood, Department of Chemical Engineering; *Mechanism of Mass Transfer With Chemical Reaction*; 18 months; \$4,600.
- UNIVERSITY OF MINNESOTA, Minneapolis, Minn.; H. S. Isbin, Department of Chemical Engineering; *Natural Convection Studies in Regions of Maximum Fluid Densities*; 18 months; \$5,000.
- NORTHWESTERN UNIVERSITY, Evanston, Ill.; A. B. Bronwell, Department of Electrical Engineering; *Theoretical and Experimental Studies of a New Type of Microwave Detector*; 1 year; \$11,000.
- PENNSYLVANIA STATE COLLEGE, State College, Pa.; A. Rose, Department of Chemical Engineering; *Mass Transfer in Simple Two-Phase Systems*; 1 year; \$8,800.

PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; J. E. Goldberg, Engineering Experiment Station; *Relation of Residual Stresses to the Compressive Strength of Structural Steel Columns*; 1 year; \$9,000.

PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; W. L. Sibbitt and G. A. Hawkins, Department of Mechanical Engineering; *Experimental Determination of Viscosity of Steam over Wide Ranges of Temperatures and Pressures*; 1 year; \$9,000.

RENSSELAER POLYTECHNIC INSTITUTE, Troy, N. Y.; J. O. Hougen, Department of Chemical Engineering; *Kinetic Research in the Field of Reduction of Tungsten Oxide with Hydrogen*; 18 months; \$4,000.

UNIVERSITY OF TENNESSEE, Knoxville, Tenn.; H. J. Garber and F. N. Peebles, Department of Engineering; *Mass Transfer in Liquid-Gas Bubble Systems*; 2 years; \$6,700.

WASHINGTON UNIVERSITY, St. Louis, Mo.; M. Stippes, Department of Applied Mechanics; *Large Deflections of Flat Plates*; 18 months; \$6,000.

UNIVERSITY OF WISCONSIN, Madison, Wis.; O. A. Hougen and W. R. Marshall, Department of Chemical Engineering; *Transport Properties of Fluids Related to the Separation Processes of Chemical Engineering*; 2 years; \$16,000.

UNIVERSITY OF WYOMING, Laramie, Wyo.; H. S. Sweet, Department of Civil Engineering; *Application of Nuclear Radiations to Properties of Engineering Materials*; 18 months; \$8,000.

Environmental Biology

CATHOLIC UNIVERSITY OF AMERICA, Washington, D. C.; M. Gusinde, Department of Anthropology; *Demography and Physiology of South African Bushmen*; 1 year; \$4,500.

WOODS HOLE OCEANOGRAPHIC INSTITUTION, Woods Hole, Mass.; J. H. Ryther; *Etiology of Plankton Blooms*; 1 year; \$3,000.

Genetic Biology

UNIVERSITY OF CHICAGO, Chicago, Ill.; J. R. Raper and J. P. San Antonio, Department of Botany; *Naturally Occurring Filtrable Mutagens in Schizophyllum*; 2 years; \$11,000.

STATE UNIVERSITY OF IOWA, Iowa City, Iowa; E. Witschi, Department of Zoology; *Natural Causes of Teratogenesis*; 3 years; \$34,500.

UNIVERSITY OF MARYLAND, College Park, Md.; D. T. Morgan, Jr. and R. D. Rappleye, Department of Botany; *Effect of X-Ray on Embryonic Development in Plants*; 3 years; \$12,000.

UNIVERSITY OF MICHIGAN, Ann Arbor, Mich.; D. L. Nanney, Department of Zoology; *Protozoan Genetics*; 3 years; \$10,000.

UNIVERSITY OF PENNSYLVANIA, Philadelphia, Pa.; J. R. Preer, Jr., Department of Zoology; *Genetic Cytoplasmic Factors in Paramecium*; 1 year; \$4,600.

STANFORD UNIVERSITY, Stanford, Calif.; W. C. Steere, Department of Biological Sciences; *Cytology of Bryophytes*; 3 years; \$10,600.

UNIVERSITY OF TEXAS, Austin, Tex.; W. F. Blair, Department of Zoology; *Interbreeding of Vertebrate Populations*; 3 years; \$18,000.

Mathematics

BROWN UNIVERSITY, Providence, R. I.; H. Federer, Department of Mathematics; *Investigations into the Theory of Measure and Area*; 1 year; \$3,500.

BROWN UNIVERSITY, Providence, R. I.; D. Gale, Department of Mathematics; *Mathematical Theory of Economic Models and Related Topics*; 1 year; \$2,800.

- BROWN UNIVERSITY, Providence, R. I.; B. Jonsson, Department of Mathematics; *Free Lattices and Decision Problems for Modular Lattices*; 1 year; \$3,000.
- UNIVERSITY OF CHICAGO, Chicago, Ill.; R. Carnap, Department of Philosophy; *Development of a New Theory of Probability*; 1 year; \$6,400.
- COLUMBIA UNIVERSITY, New York, N. Y.; C. Chevalley, Department of Mathematics; *Methods of Laurent Schwartz in the Theory of Distributions*; 1 year; \$4,100.
- COLUMBIA UNIVERSITY, New York, N. Y.; E. R. Kolchin, Department of Mathematics; *Topics in the Galois Theory of Differential Fields*; 1 year; \$5,100.
- CORNELL UNIVERSITY, Ithaca, N. Y.; P. Olum, Department of Mathematics; *Homotopy Types of Topological Spaces*; 1 year; \$5,000.
- UNIVERSITY OF ILLINOIS, Urbana, Ill.; P. T. Bateman, Department of Mathematics; *Goldbach Problem in Algebraic Number Fields*; 1 year; \$5,100.
- UNIVERSITY OF ILLINOIS, Urbana, Ill.; J. Mitchell, Department of Mathematics; *Research in the Geometry of Matrices*; 1 year; \$3,000.
- STATE UNIVERSITY OF IOWA, Iowa City, Iowa; H. T. Muhly, Department of Mathematics; *Numerical Characters of Local Rings and Some Relative Invariants of Algebraic Surfaces*; 8 months; \$1,700.
- UNIVERSITY OF MICHIGAN, Ann Arbor, Mich.; W. Kaplan, Department of Mathematics; *Investigation of Problems in Theory of Functions of a Complex Variable*; 18 months; \$5,400.
- UNIVERSITY OF PENNSYLVANIA, Philadelphia, Pa.; R. D. Schafer, Department of Mathematics; *Non-Associative Algebras*; 1 year; \$4,200.
- PRINCETON UNIVERSITY, Princeton, N. J.; N. E. Steenrod, Department of Mathematics; *Homology Groups of the Symmetric Groups*; 6 months; \$3,000.
- UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles, Calif.; L. A. Henkin, Department of Mathematics; *Formal Systems and Their Mathematical Models*; 1 year, \$4,000.
- UNIVERSITY OF VIRGINIA, Charlottesville, Va.; E. J. McShane, Department of Mathematics; *Partially Ordered Spaces*; 6 months; \$7,600.
- UNIVERSITY OF WASHINGTON, Seattle, Wash.; F. H. Brownell, Department of Mathematics; *A General Theory of Operators with Applications to Partial Differential Equations and Potential Theory*; 1 year; \$9,600.
- WASHINGTON UNIVERSITY, St. Louis, Mo.; H. M. Elliott, Department of Mathematics; *Approximation by Rational Functions to Harmonic and Analytic Functions*; 1 year; \$2,900.
- UNIVERSITY OF WISCONSIN, Madison, Wis.; R. H. Bing, Department of Mathematics; *Embedding Sets in Manifolds*; 10 months; \$3,100.
- UNIVERSITY OF WISCONSIN, Madison, Wis.; L. C. Young, Department of Mathematics; *Existence of Solutions in the Calculus of Variations*; 1 year \$5,700.

Microbiology

- UNIVERSITY OF CALIFORNIA, Berkeley, Calif.; D. M. Reynolds, Department of Bacteriology; *Microbiological Aspects of Chitin Decomposition*; 2 years; \$7,000.
- UNIVERSITY OF ILLINOIS, Urbana, Ill.; W. A. Wood, Department of Dairy Science; *Pathways of Carbohydrate Oxidation in Aerobic Bacteria*; 3 years; \$17,500.
- INDIANA UNIVERSITY, Bloomington, Ind.; E. D. Weinberg, Department of Bacteriology; *Nutritional Basis of Antibiotic Action*; 2 years; \$4,500.
- UNIVERSITY OF NORTH CAROLINA, Chapel Hill, N. C.; V. M. Cutter, Jr., Department of Biology, The Woman's College at Greensboro, N. C.; *Isolation and Culture of Plant Rusts*; 3 years; \$9,300.

- UNIVERSITY OF PENNSYLVANIA, Philadelphia, Pa.; D. J. O'Kane, Department of Botany; *Enzymes in Metabolism of Microorganisms*; 3 years; \$24,000.
- ST. JOHN'S UNIVERSITY, Brooklyn, N. Y.; D. M. Lilly, Department of Biology; *Nutrition and Growth of Suctorian Protozoa*; 1 year; \$4,000.
- UNIVERSITY OF TEXAS, Austin, Tex.; J. Meyers, Department of Zoology; *Physiology of Blue-Green Algae*; 2 years; \$10,000.
- STATE COLLEGE OF WASHINGTON, Pullman, Wash.; R. E. Hungate, Department of Bacteriology and Public Health; *Microbiology and Biochemistry of the Rumen*; 3 years; \$17,800.
- YALE UNIVERSITY, New Haven, Conn.; H. P. Treffers, Department of Microbiology; *Microbial Resistance to Drugs and Antibiotics*; 2 years; \$13,500.

Molecular Biology

- UNIVERSITY OF CALIFORNIA, Berkeley, Calif.; A. L. Black, School of Veterinary Medicine, College of Agriculture; *Biosynthesis of Amino Acids in Dairy Cows*; 2 years; \$6,900.
- CONNECTICUT AGRICULTURAL EXPERIMENT STATION, New Haven, Conn.; H. B. Vickery, *Metabolism of Organic Acids of Leaves*; 3 years; \$24,500.
- HARVARD UNIVERSITY, Cambridge, Mass.; F. H. Westheimer, Department of Chemistry; *Chemical Models of Enzyme Systems*; 15 months; \$6,000.
- STATE UNIVERSITY OF IOWA, Iowa City, Iowa; C. Tanford, Department of Chemistry and Chemical Engineering; *Physico-Chemical Investigation of Protein Molecules*; 2 years; \$9,000.
- STATE UNIVERSITY OF NEW YORK, Albany, N. Y.; R. A. Turner, Department of Biochemistry, College of Medicine, Brooklyn, N. Y.; *Chemical Structure of Peptides and Proteins*; 3 years; \$15,000.
- RETINA FOUNDATION, Boston, Mass.; M. A. Jakus, *Fibrous Components of the Eye*; 2 years; \$8,000.
- UNIVERSITY OF TENNESSEE, Knoxville, Tenn.; R. E. Koeppe, School of Biological Sciences; *Precursors of the Carbons of Glutamic Acid*; 2 years; \$8,000.
- TUFTS COLLEGE, Medford, Mass.; H. Z. Sable, Tufts College Medical School; *Intermediary Metabolism of Nucleic Acid Fragments*; 1 year; \$5,700.
- YALE UNIVERSITY, New Haven, Conn.; J. S. Fruton, Department of Physiological Chemistry; *Hydroxyamino Acids in Protein Structure*; 3 years; \$30,000.
- YALE UNIVERSITY, New Haven, Conn.; G. E. Hutchinson, Department of Zoology; *Amino Acids in Lake Waters, Organisms and Sediments*; 1 year; \$1,000.
- YALE UNIVERSITY, New Haven, Conn.; J. M. Sturtevant, Department of Chemistry; *Calorimetric Investigations of Proteins*; 3 years; \$20,700.

Physics

- BRIGHAM YOUNG UNIVERSITY, Provo, Utah; H. Fletcher, Department of Physics; *Research in Musical Acoustics*; 1 year; \$10,000.
- UNIVERSITY OF CALIFORNIA, Berkeley, Calif.; L. B. Loeb, Department of Physics; *Research in the Field of Gaseous Electronics*; 1 year; \$4,000.
- CARNEGIE INSTITUTE OF TECHNOLOGY, Pittsburgh, Pa.; S. DeBenedetti and R. Siegel, Department of Physics; *Electronic States in Solids and in Chemical Compounds with the Method of Observations on Positron Annihilation Radiations*; 1 year; \$10,000.

- UNIVERSITY OF CHICAGO, Chicago Ill.; M. G. Inghram, Department of Physics; *Mass Spectrometric Investigations*; 1 year; \$20,000.
- UNIVERSITY OF COLORADO, Boulder, Colo.; W. B. Pietenpol, Department of Physics; *Solar Radiation in 2100 Angstrom Region*; 1 year; \$6,900.
- COLUMBIA UNIVERSITY, New York, N. Y.; H. M. Foley, Department of Physics; *Theoretical Analysis of Hyperfine Structure Problems*; 1 year; \$10,100.
- DUKE UNIVERSITY, Durham, N. C.; M. M. Block, Department of Physics; *Mass and Momentum Spectra and Interactions of Charged Cosmic-Ray Particles*; 2 years; \$15,000.
- FLORIDA STATE UNIVERSITY, Tallahassee, Fla.; G. Schwarz and G. Rogosa, Department of Physics; *Anomalous Transmission of Radiation Through Single Crystals at the Bragg Angle*; 2 years; \$16,800.
- GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, Ga.; L. D. Wyly, Department of Physics; *Angular Correlation Between Nuclear Radiations*; 1 year; \$7,000.
- UNIVERSITY OF ILLINOIS, Urbana, Ill.; R. Maurer, Department of Physics; *Low Temperature Electronic Phenomena in Solids*; 2 years; \$9,200.
- INDIANA UNIVERSITY, Bloomington, Ind.; E. J. Konopinski, Department of Physics; *Theory and Interpretation of the Interaction of Elementary Particles*; 2 years; \$30,000.
- LEHIGH UNIVERSITY, Bethlehem, Pa.; P. Havas, Department of Physics; *Theoretical Study Concerning the Nature and Interaction of Fundamental Particles*; 1 year; \$4,300.
- LOUISIANA STATE UNIVERSITY, Baton Rouge, La.; J. M. Reynolds, Department of Physics; *Measurements on the Hall Effect and Magneto-Resistance of Graphite and Bismuth*; 1 year; \$11,800.
- MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, Mass.; B. E. Warren, Department of Physics; *Elastic Spectrum of Solids by the Measurement of the Temperature Diffuse Scattering of X-Rays*; 2 years; \$12,400.
- UNIVERSITY OF MINNESOTA, Minneapolis, Minn.; A. O. C. Nier, Department of Physics; *Atomic Mass Determinations with Double-Focusing Mass Spectrometer*; 2 years; \$45,000.
- NORTHWESTERN UNIVERSITY, Evanston, Ill.; J. A. Marcus, Department of Physics; *Investigation of the Hall Effect in Metal Single Crystals at Low Temperatures*; 1 year; \$9,000.
- OHIO STATE UNIVERSITY, Columbus, Ohio; A. N. Dingle, Department of Physics; *Physics of Natural and Artificial Precipitation*; 2 years; \$14,900.
- UNIVERSITY OF OREGON, Eugene, Oreg.; S. Y. Ch'en, Department of Physics; *Shift and Broadening of Spectral Lines Under High Pressures of Foreign Gases*; 3 years; \$18,900.
- UNIVERSITY OF PENNSYLVANIA, Philadelphia, Pa.; B. Chance, Johnson Foundation; *Physical Methods for the Measurement of Biological Phenomena*; 3 years; \$8,800.
- UNIVERSITY OF PITTSBURGH, Pittsburgh, Pa.; P. M. Stehle, Department of Physics; *Theoretical Study of Positron Annihilation in Matter*; 1 year; \$5,900.
- ST. LOUIS UNIVERSITY, St. Louis, Mo.; H. U. Rhoads, Department of Physics; *Structure of Evaporated Metal Films as a Function of Film Thickness*; 1 year; \$2,900.
- WESTERN RESERVE UNIVERSITY, Cleveland, Ohio; R. G. Winter, Department of Physics; *Double Beta Decay*; 1 year; \$9,500.

Psychobiology

- BROWN UNIVERSITY, Providence, R. I.; C. Pfaffmann, Department of Psychology; *Psychophysiology of the Chemical Senses*; 3 years; \$16,300.
- CORNELL UNIVERSITY, Ithaca, N. Y.; H. E. Evans, Department of Entomology; *Behavior Patterns of Solitary Hymenoptera*; 3 years; \$7,900.
- UNIVERSITY OF KANSAS, Lawrence, Kans.; C. D. Michener, Department of Entomology; *Origin and Evolution of Caste Behavior Among Certain Bees*; 2 years; \$13,500.

- UNIVERSITY OF MICHIGAN, Ann Arbor, Mich.; E. L. Walker, Department of Psychology; *Comparison of Conditioning Techniques in Learning*; 2 years; \$14,000.
- STANFORD UNIVERSITY, Stanford, Calif.; C. P. Stone, Department of Psychology; *Behavior of Hypophysectomized Rats*; 2 years; \$7,400.
- STATE COLLEGE OF WASHINGTON, Pullman, Wash.; D. Ehrenfreund, Department of Psychology; *Role of Drive-Reward Interaction in Learning*; 2 years; \$11,300.
- YALE UNIVERSITY, New Haven, Conn.; F. A. Logan, Department of Psychology; *Stimulus Conditions in Learning*; 1 year; \$5,000.
- YALE UNIVERSITY, New Haven, Conn.; H. E. Rosvold, Department of Psychiatry; *Brain Functions in the Behavior of Infra-Human Primates*; 2 years; \$25,600.

Regulatory Biology

- ANTIOCH COLLEGE, Yellow Springs, Ohio; P. Feigelson, Department of Biochemistry; *Adaptive Enzyme Formation in Mammals*; 2 years; \$8,500.
- CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena, Calif.; A. W. Galston, Division of Biology; *Light Controlled Growth Reactions in Plants*; 2 years; \$11,000.
- UNIVERSITY OF CALIFORNIA, Berkeley, Calif.; T. H. Bullock, Department of Zoology; *Neurological Study of Animal Responses to Infrared Radiation*; 3 years; \$15,000.
- UNIVERSITY OF CALIFORNIA, Berkeley, Calif.; C. H. Sawyer, Department of Anatomy, School of Medicine, Los Angeles, Calif.; *Hormonal Control of Enzymal Synthesis*; 1 year; \$7,000.
- INDIANA UNIVERSITY, Bloomington, Ind.; W. R. Breneman, Department of Zoology; *Reciprocal Endocrine Interactions in the Chick*; 3 years; \$14,000.
- HARVARD UNIVERSITY, Cambridge, Mass.; L. R. Cleveland, Biological Laboratories; *Molting Hormone and its Effect on Cells*; 3 years; \$23,500.
- HARVARD UNIVERSITY, Cambridge, Mass.; K. V. Thimann and R. H. Wetmore, Biological Laboratories; *Growth and Differentiation in Plants*; 3 years; \$34,700.
- UNIVERSITY OF MARYLAND, College Park, Md.; M. J. Pelczar, Jr., Department of Bacteriology; *Microbiological Degradation of Lignin*; 1 year; \$5,000.
- UNIVERSITY OF MINNESOTA, Minneapolis, Minn.; P. D. Boyer, Division of Agricultural Biochemistry; *Function of Sulfhydryl Groups in Enzymes*; 3 years; \$18,200.
- UNIVERSITY OF PENNSYLVANIA, Philadelphia, Pa.; H. Borei, Department of Zoology; *Biochemistry and Biophysics of the Fertilization Process*; 1 year; \$8,000.
- UNIVERSITY OF PENNSYLVANIA, Philadelphia, Pa.; J. R. Brobeck, Department of Physiology, School of Medicine; *Regulation of Food Intake by the Central Nervous System*; 3 years; \$14,500.
- PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; H. Beevers, Department of Biological Sciences; *Fat Metabolism in Seeds and Seedlings*; 2 years; \$5,000.
- VANDERBILT UNIVERSITY, Nashville, Tenn.; F. R. Blood, Department of Biochemistry, School of Medicine; *Biochemistry and Nutrition of the Bat*; 2 years; \$9,500.
- WOODS HOLE OCEANOGRAPHIC INSTITUTION, Woods Hole, Mass.; P. F. Scholander; *Mechanism of Buoyancy Control of Fish*; 1 year; \$4,000.

Systematic Biology

- F. HARPER, Mt. Holly, N. J.; *Study of Nueltin Lake, Keewatin*; 1M years; \$7,000.
- W. H. HODGE, Silver Spring, Md.; *Flora of Dominica, B. W. I.*, 1 year; \$1,700.
- ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, Philadelphia, Pa.; R. Patrick, Curator of Limnology; *Fresh-Water Diatoms of the United States*; 3 years; \$31,500.

- UNIVERSITY OF ARIZONA, Tucson, Ariz.; E. L. Cockrum, Department of Zoology; *Mammals of Arizona*; 3 years; \$5,000.
- BERNICE P. BISHOP MUSEUM, Honolulu, T. H.; J. L. Gressitt, Department of Entomology; *Insects of Micronesia*; 18 months; \$15,200.
- BRIGHAM YOUNG UNIVERSITY, Provo, Utah; V. M. Tanner, Department of Zoology; *Weevils of Western United States*; 1 year; \$2,400.
- DARTMOUTH COLLEGE, Hanover, N. H.; H. Croasdale, Department of Zoology; *Fresh-water Algae of Alaska*; 1 year; \$2,500.
- COLLEGE OF NEW ROCHELLE, New Rochelle, N. Y.; M. D. Rogick, Department of Biology; *Bryozoa of the Antarctic*; 1 year; \$2,300.
- PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; J. S. Karling, Department of Biological Sciences; *Taxonomy of the Genus Synchytrium*; 3 years; \$7,500.
- SMITHSONIAN INSTITUTION, Washington, D. C.; A. C. Smith, Division of Phanerogams; *Descriptive Flora of the Fiji Islands*; 1 year; \$5,000.
- SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY, Rapid City, S. Dak.; J. R. Macdonald, Museum of Geology; *Study of the North American Anthrocotheres*; 1 year; \$2,100.
- STANFORD UNIVERSITY, Stanford, Calif; W. C. Steere, Department of Biological Sciences; *Bryophytes in Arctic Alaska*; 1 year; \$3,500.
- UNIVERSITY OF TENNESSEE, Knoxville, Tenn.; L. R. Hesler, Department of Botany; *Southern Appalachian Fungi, with Special Reference to the Basidiomycetes*; 2 years; \$5,000.
- UTAH STATE AGRICULTURAL COLLEGE, Logan, Utah; A. H. Holmgren, Curator, Intermountain Herbarium; *Intermountain Flora*; 2 years; \$4,000.
- UNIVERSITY OF UTAH, Salt Lake City, Utah; S. D. Durrant, Department of Vertebrate Zoology; *Mammals of Isolated Mountains of Southern Utah*; 2 years; \$5,000.

General

- UNIVERSITY OF CALIFORNIA, Berkeley, Calif., S. F. Cook and N. Pace, Department of Physiology, School of Medicine; *Operating Expenses of the White Mountain High Altitude Research Station*; 3 years; \$32,800.
- MARINE BIOLOGICAL LABORATORY, Woods Hole, Mass.; P. B. Armstrong; *Research in Marine Biology*; 2 years; \$20,000.
- WORCESTER FOUNDATION FOR EXPERIMENTAL BIOLOGY, Shrewsbury, Mass.; G. Pincus, Director of Laboratories; *Analysis of Steroids by Ultra-Violet Spectroscopy*; \$10,000.