

## APPENDIX C

### Grants For Basic Research

#### BIOLOGICAL AND MEDICAL SCIENCES

##### DEVELOPMENTAL BIOLOGY

- AMERICAN SOCIETY OF ANIMAL SCIENCES, Beltsville, Md.; H. H. Cole, University of California, Davis; *Animal Reproduction Symposium*; 1 year; \$2,700
- BRANDEIS UNIVERSITY, Waltham, Mass.; Chandler Fulton; *Cell Organelle Development in Naegleria*; 3 years; \$56,800
- BROWN UNIVERSITY, Providence, R.I.; Malcolm Nasatir; *Free Amino Acids and Deoxyribosides in Mitosis*; 2 years; \$19,200
- CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena; Anton Lang; *Action of G4bberulins in Plant Development*; 2 years; \$97,500  
Albert Tyler; *Problems of Fertilisation and Early Development*; 5 years; \$89,000
- CARLETON COLLEGE, Northfield, Minn.; Thurlio B. Thomas; *Lacrimal Gland Cytology*; 1 year; \$5,200
- COLLEGE OF THE HOLY CROSS, Worcester, Mass.; B. T. Lingappa; *Self-inhibition of Germination in Fungi*; 2 years; \$27,400
- COLLEGE OF WILLIAM AND MARY, Williamsburg, Va.; Robert E. L. Black; *Enzyme Systems in Marine Embryos*; 2 years; \$28,200
- COLUMBIA UNIVERSITY, New York, N.Y.; Paul A. Marks and David Danon; *Mammalian Erythrocyte Aging*; 1 year; \$18,000  
Melvin L. Moss; *Comparative Calcification Mechanisms of Invertebrates*; 3 years; \$27,700
- FREDERICK BURK FOUNDATION FOR EDUCATION, San Francisco, Calif.; James T. Duncan; *Differentiation of Melanophores in the Skin of Certain Salamanders*; 27 months; \$27,300
- GRAMBLING COLLEGE, Grambling, La.; Vernon Henderson; *Regeneration of Fin Elements in Fish*; 1 year; \$4,900
- HOWARD UNIVERSITY, Washington, D.C.; John P. Rier; *Organisation of Vascular Tissues in Plants*; 1 year; \$11,800
- INTER-AMERICAN INSTITUTE OF AGRICULTURAL SCIENCES OF THE ORGANIZATION OF AMERICAN STATES, Turrialba, Costa Rica; Lee M. Hutchins; *Gall Development and Behavior*; 2 years; \$15,000
- JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Betsy G. Bang; *Vertebrate Upper Respiratory Tract Anatomy*; 2 years; \$12,800
- KENTUCKY RESEARCH FOUNDATION, Lexington; B. H. Weaver; *The Branching Mechanism in Lactobacillus Bifidus*; 2 years; \$15,800
- LOUISIANA STATE UNIVERSITY, Baton Rouge; John A. Davison; *Frog Spotting Patterns*; 2 years; \$14,700
- LOUISIANA STATE UNIVERSITY, Baton Rouge; Willie M. Reams, Jr.; *Pigment Cell Behavior in PET Mice*; 2 years; \$26,800
- MANHATTAN COLLEGE, New York, N.Y.; Ulrich Naf; *Antheridium Formation in Ferns*; 3 years; \$100,000
- MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge; Eugene Bell; *Cellular Differentiation and Limb Development*; 5 years; \$249,800
- MASSACHUSETTS GENERAL HOSPITAL, Boston; Jerome Gross; *Fine Structure of Differentiating Tissues*; 1 year; \$46,100
- MEDICAL COLLEGE OF SOUTH CAROLINA, Charleston; Elsie Taber; *Differentiation, Growth and Function of Gonadal Tissue*; 3 years; \$40,000
- MERCY INSTITUTE FOR BIOMEDICAL RESEARCH, Denver, Colo.; V. L. van Breemen; *Electron Microscopic Studies of Interfibrillar Membrane Systems in Striated Muscle*; 1 year; \$19,800
- MICHIGAN STATE UNIVERSITY, East Lansing; G. B. Wilson; *Chemical Disruption of the Mitotic Cycle*; 2 years; \$15,000
- NEW YORK UNIVERSITY, New York; John M. Cook; *DNA-Polymerase and Photoreactivating Enzyme in Echinoderm Zygotes*; 3 years; \$35,800
- NORTHWESTERN UNIVERSITY, Evanston, Ill.; Joan M. Whitten; *Morphology of Insect Growth and Metamorphosis*; 3 years; \$37,100
- PASADENA FOUNDATION FOR MEDICAL RESEARCH, Pasadena, Calif.; C. M. Pomerat; *Experimental Cytology Using Cell Cultures*; 3 years; \$84,000
- PRINCETON UNIVERSITY, Princeton, N.J.; William P. Jacobs; *Control of Differentiation and Growth in Higher Plants*; 3 years; \$86,400
- PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; Joe H. Cherry; *Nucleic Acid Metabolism in Development of Plant Cells*; 3 years; \$35,400  
James S. Lovett; *Morphogenesis in Aquatic Fungi*; 1 year; \$10,000  
D. James Morre; *Membrane Structures in Cell Wall Formation*; 3 years; \$46,500  
Richard C. Sanborn; *Properties of Anthropod Cells and Tissues in Culture*; 1 year; \$19,000  
Joseph W. Vanable, Jr.; *Skin Gland Emergence During Amphibian Metamorphosis*; 3 years; \$50,000  
Richard H. White; *Eye and Brain Development in the Mosquito*; 3 years, \$119,000
- RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, ALBANY; Wilfred A. Cote, Jr., College of Forestry at Syracuse University,

## BIOLOGICAL AND MEDICAL SCIENCES

- SYRACUSE, N.Y.**; *Ultrastructure of Wood Cells*; 2 years; \$8,800
- RESEARCH FOUNDATION, OKLAHOMA STATE UNIVERSITY**; Stillwater; E. A. Grula; *Cell Division in Bacterial and Mammalian Cells*; 1 year; \$18,300
- ROCKEFELLER INSTITUTE, New York, N.Y.**; Armin C. Braun; *Normal and Abnormal Growth and Development in Plants*; 4 years; \$87,200
- Sam Granick; *Studies Toward the Growth and Differentiation of Chloroplasts in Vitro*; 2 years; \$41,100
- RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.**; Michael J. LaMarca; *Functional Studies of the Reproductive Organs of Elasmobranchs*; 3 years; \$25,700
- Albert List, Jr.; *Changes Accompanying Differentiation in Plant Cells*; 2 years; \$44,600
- SAN DIEGO STATE COLLEGE FOUNDATION, San Diego, Calif.**; David C. Shepard; *Growth of Single Cells During the Post Irradiation Division Pattern*; 1 year; \$11,600
- SETON HALL UNIVERSITY, South Orange, N.J.**; Silvio Flala, Jersey City; *Biochemical Aspects of Cellular Growth and Proliferation*; 2 years; \$41,000
- SIMPSON COLLEGE, Indianola, Iowa**; Margaret L. Watson; *Maturation of the Visual System*; 2 years; \$10,700
- SMITH COLLEGE, Northampton, Mass.**; David A. Haskell; *Origin and Development of Growth Centers in the Plant Embryo*; 1 year; \$6,600
- SOUTHERN UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE, Baton Rouge, La.**; James Travis Coleman, New Orleans; *Effect of Nervous Tissue in Regeneration*; 2 years; \$5,400
- STANFORD UNIVERSITY, Stanford, Calif.**; Allen H. Gates and Robert C. Goodlin; *Regulation of Development of the Mouse Egg*; 2 years; \$51,500
- Donald L. Stilwell; *Vascularization and Innervation of Skeletal Structures*; 2 years; \$29,400
- STATE UNIVERSITY OF IOWA, Iowa City**; Eleanor H. Slifer; *Fine Structure of Insect Sense Organs*; 1 year; \$7,600
- STATE UNIVERSITY OF NEW YORK COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY, Ithaca**; Stanley A. Zahler; *Developmental Biology of Mycobacteria*; 3 years; \$88,900
- STATE UNIVERSITY OF SOUTH DAKOTA, Vermillion**; Herman J. Haas; *Pattern Formation in Embryonic Systems*; 3 years; \$22,200
- SYRACUSE UNIVERSITY, Syracuse, N.Y.**; Roy H. Doi; *Control Mechanisms in Bacterial Differentiation*; 3 years; \$68,200
- SYRACUSE UNIVERSITY RESEARCH INSTITUTE, Syracuse, N.Y.**; Bertie F. Argyris; *Mechanism of Acquired Tolerance in Mice*; 2 years; \$29,600
- Thomas S. Argyris; *Hair Growth Stimulation During Skin Regeneration*; 2 years; \$51,400
- John H. Miller and Pauline M. Miller; *Morphogenetic Factors in Fern Gametophyte Development*; 3 years; \$37,200
- TEXAS AGRICULTURAL EXPERIMENT STATION, College Station**; Julius W. Dieckert; *Fine Structure of Plant Embryos*; 3 years; \$26,900
- Henry C. Tracy, Memphis, Tenn.; *The Anatomy and Development of the Toadfish*; 1 year; \$200
- UNION COLLEGE AND UNIVERSITY, Schenectady, N.Y.**; Raymond Rappaport, Jr.; *Mechanisms of Cytokinesis in Animal Cells*; 3 years; \$9,200
- UNIVERSITY OF CALIFORNIA, Berkeley**; F. W. Lorenz and F. X. Ogasawara, Davis; *Physiology of the Avian Oviduct*; 2 years; \$50,400
- Richard C. Strohmman; *Muscle Protein Biosynthesis During Embryonic Development*; 3 years; \$42,100
- Ursula K. Abbott, Davis; *Relative Growth of Bone Graftments*; 3 years; \$51,900
- E. M. Gifford, Jr., Davis; *Cytology and Morphogenesis of Vegetative and Flowering Shoots*; 2 years; \$29,400
- W. O. Reinhardt, San Francisco; *Micro-Injection of Mammalian Ova*; 1 year; \$4,900
- UNIVERSITY OF COLORADO, Boulder**; Douglas E. Kelly; *Cellular Differentiation of the Amphibian Pineal Body*; 3 years; \$35,400
- Seymour Katsch and John T. Willson, Denver; *Cell Culture of Testicular Tissue*; 3 years; \$35,300
- UNIVERSITY OF CONNECTICUT, Storrs**; Walter Landauer; *Studies of Developmental Malformations in the Chick Embryo*; 3 years; \$15,900
- UNIVERSITY OF DELAWARE, Newark**; Marenes R. Tripp; *Maintenance of Oyster Tissues in Vitro*; 2 years; \$16,000
- UNIVERSITY OF GEORGIA, Athens**; David T. Lindsay; *Role of Histone Proteins in Cellular Differentiation*; 3 years; \$51,900
- UNIVERSITY OF IDAHO, Moscow**; Lorin W. Roberts; *Differentiation of Wound Vessel Members*; 1 year; \$3,800
- UNIVERSITY OF ILLINOIS, Urbana**; Frank H. Moyer; *Control of Melanocyte Differentiation*; 3 years; \$90,400
- Dominick J. Paolillo, Jr.; *Archegonial Maturation in Vascular Cryptogams*; 2 years; \$20,800
- UNIVERSITY OF KANSAS, Lawrence**; Eleanor Wenger and Paul A. Kitos; *Differentiation and Carbohydrate Metabolism in the Salamander*; 2 years; \$34,500
- UNIVERSITY OF LAGOS MEDICAL SCHOOL, Surulere Lagos, Nigeria**; Robert D. Cahn; *Embryonic Cellular Enzyme Differentiation*; 3 years; \$60,600
- UNIVERSITY OF MASSACHUSETTS, Amherst**; Arthur C. Gentle; *Visible Light Effects in Plant Tissue Culture*; 3 years; \$21,000
- John G. Moner; *Effects of Deuterium Oxide on Synchronized and Logarithmic Populations of Tetrahymena Pariformis*; 2 years; \$23,200
- John R. Rowley; *Origin of the Pollen and Spore Exine and Nature of Sporopollenin*; 2 years; \$31,000
- UNIVERSITY OF MICHIGAN, Ann Arbor**; Alexander Barry; *Development of the Duct System of the Liver*; 2 years; \$26,000

## ENVIRONMENTAL BIOLOGY

James N. Cather; *Development and Differentiation of the Molluscan Shell Gland*; 3 years; \$21,800

Wilfrid T. Dempster; *Architectonics of the Human Skull*; 3 years; \$29,400

UNIVERSITY OF MINNESOTA, Minneapolis; Martin Dworkin; *Nutrition and Developmental Physiology of the Fruiting Mycobacteria*; 3 years; \$77,600

A. Glenn Richards, St. Paul; *Structure and Development of Insect Membranes*; 3 years; \$80,800

UNIVERSITY OF PENNSYLVANIA, Philadelphia; Ralph B. L. Gwatkin and John D. Biggers; *Effects of Viruses and Nucleic Acids on Early Development*; 3 years; \$67,900

UNIVERSITY OF PITTSBURGH, Pa.; Peter Gray; *Studies of Electron Microscope Techniques*; 1 year; \$17,000

UNIVERSITY OF ROCHESTER, N.Y.; William B. Muchmore; *Immunochemical Studies of Muscle Development*; 2 years; \$31,100

UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles; Carmel M. Roberts; *Early Differentiation in the Embryonic Heart*; 1 year; \$12,700

UNIVERSITY OF TEXAS, Austin; Harold C. Bold; *Cytoplasmic Lamella Systems in Algae*; 3 years; \$73,000

W. Gordon Whaley; *Structure and Functioning of the Golgi Apparatus*; 3 years; \$126,900

UNIVERSITY OF VIRGINIA, Charlottesville; J. David Deck; *Studies of Amphibian Limb Regeneration*; 2 years; \$14,300

James E. Kindred; *Histological Studies of Vertebrate Blood Cells*; 1 year; \$1,000

Robert Louarn Searls; *Metabolic Control in the Early Embryo*; 3 years; \$60,600

UNIVERSITY OF WASHINGTON, Seattle; Alex J. Haggis; *Inducing Capacity of Amphibian Brain Fractions*; 2 years; \$41,000

UNIVERSITY OF WISCONSIN, Madison; Ray F. Evert; *Development of the Phloem in Woody Dicotyledons*; 2 years; \$29,600

Eldon H. Newcomb; *Electron Microscopic Investigations of Higher Plant Development*; 4 years; \$113,000

WABASH COLLEGE, Crawfordsville, Ind.; Willis H. Johnson; *Culture of Planarian Cells in vitro*; 2 years; \$41,500

WASHINGTON UNIVERSITY, St. Louis, Mo.; Allen C. Enders; *Mechanisms of Implantation in Mammals*; 1 year; \$20,200

WAYNE STATE UNIVERSITY, Detroit, Mich.; Werner G. Helm; *Occurrence, Nature and Role of Certain Blood Proteins*; 2 years; \$31,200

WESLEYAN UNIVERSITY, Middletown, Conn.; Earl D. Hanson; *Studies of Morphogenesis and Differentiation in Paramecium and Other Organisms*; 2 years; \$36,500

John B. Morrill; *Problems of Mosaic Development in Molluscs*; 2 years; \$27,000

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Philadelphia; Thomas D. Malewitz; *Histological Studies of the Reproductive System*; 2 years; \$8,600

WOODSTOCK COLLEGE, Woodstock, Md.; Roland J. Lesseps; *Cell Activities in Drosophila Imaginal Discs*; 2 years; \$6,000

Anthony P. Mahowald; *Development of Polar Granules in Drosophila*; 2 years; \$6,000

YALE UNIVERSITY, New Haven, Conn.; Edgar J. Boell; *Developmental Changes in Mitochondria*; 3 years; \$62,700

Sheila J. Councé and Donald F. Poulson; *Analysis of Insect Embryogenesis*; 3 years; \$66,700

Dorothea Rudnick; *Glutamyltransferase in the Chick Embryo During Development*; 1 year; \$4,900

J. P. Trinkaus; *Histogenetic and Contact Specificity of Differentiating Cells*; 3 years; \$84,900

YESHIVA UNIVERSITY, New York, N.Y.; Lois Jean Smith; *Factors Controlling Normal Axial Development*; 2 years; \$20,900

### ENVIRONMENTAL BIOLOGY

ALMA COLLEGE, Alma, Mich.; Ronald O. Kapp; *Pollen Analytical Studies of Middle Pleistocene Sediments*; 3 years; \$19,800

AMERICAN MUSEUM OF NATURAL HISTORY, New York, N.Y.; Phyllis H. Cahn; *Acoustico-Lateralis Function in Fish*; 3 years; \$18,100

Hugo D. Freudenthal; *Nutrition and Physiology of Planktonic Foraminifera*; 2 years; \$26,800

ARIZONA STATE UNIVERSITY, Tempe; Gerald A. Cole; *Limnological Investigations in Arizona*; 3 years; \$46,000

AUBURN UNIVERSITY, Auburn, Ala.; E. W. Shell; *Reproduction Control Factor in Fishes*; 2 years; \$24,200

BERMUDA BIOLOGICAL STATION FOR RESEARCH, INC., St. George's West; David W. Menzel; *Equipment for Analysis of Nutrients in Marine Environments*; 1 year; \$14,500

BOYCE THOMPSON INSTITUTE FOR PLANT RESEARCH, INC., Yonkers, N.Y.; Jean P. Vite, Forest Research Laboratory, Grass Valley, Calif.; *Response of Ips and Dendroctonus to Attractants*; 3 years; \$57,600

BROOKLYN COLLEGE, Brooklyn, N.Y.; Solomon Goldstein and Melvin M. Belsky; *Developmental Morphology and Nutritional Requirements of Marine Fungi*; 2 years; \$83,100

CALIFORNIA ACADEMY OF SCIENCES, San Francisco; William J. Hamilton III; *Night celestial Orientation in Migratory Birds*; 2 years; \$18,100

CHICAGO NATURAL HISTORY MUSEUM, Ill.; Robert F. Inger and Bernard S. Greenberg, Roosevelt University; *Herpetofauna of an Oriental Rain Forest Area*; 3 years; \$32,900

CHICAGO ZOOLOGICAL PARK, Ill.; George B. Rabb; *Breeding Behavior of Anurans*; 2 years; \$15,800

COLORADO STATE UNIVERSITY RESEARCH FOUNDATION, Fort Collins; Paul H. Baldwin; *Ecology of Rocky Mountain Ptarmigan*; 3 years; \$27,600

Richard T. Ward; *Ecotypic Variation in Various Plant Species*; 3 years; \$12,100

COLUMBIA UNIVERSITY, New York, N.Y.; Allan W. H. Be', Fallades; *Ecology of Living Planktonic Foraminifera*; 3 years; \$73,600

BIOLOGICAL AND MEDICAL SCIENCES

CORNELL UNIVERSITY, Ithaca, N.Y.; Clifford O. Berg; *Biology of European Sclero-myssidae*; 2 years; \$23,200

Roger A. Morse; *Social Organization in Apis Mellifera Colonies*; 3 years; \$40,300  
 DARTMOUTH COLLEGE, Hanover, N.H.; F. H. Bormann and Gene Likens; *Hydrologio-Mineral Cycle Interaction in a Small Watershed*; 3 years; \$59,400

DUKE UNIVERSITY, Durham, N.C.; W. Dwight Billings; *Altitudinal Limits of Alpine and Subalpine Plants*; 3 years; \$54,000

I. E. Gray; *Faunal Distribution and Abundance in Transitional Marine Habitats*; 3 years; \$53,600

Paul J. Kramer; *Effects of Water Stress on Plant Processes*; 3 years; \$88,300

F. John Vernberg and Winona B. Vernberg, Beaufort; *Climatic Adaptation in Uca*; 3 years; \$52,900

FLORIDA A & M UNIVERSITY, Tallahassee; Margaret S. Collins; *Factors Influencing Water Loss in Certain Isoptera*; 3 years; \$11,000

FLORIDA STATE UNIVERSITY, Tallahassee; Harry W. Wells; *Seasonal and Vertical Distribution of Littoral Marine Invertebrates*; 2 years; \$17,400

FRANKLIN AND MARSHALL COLLEGE, Lancaster, Pa.; John J. McDermott; *Host-Parasite Relations of Pinnotheridae*; 2 years; \$10,100

GRINNELL COLLEGE, Grinnell, Iowa; Benjamin F. Graham, Jr.; *Root Grafting in Forest Communities*; 3 years; \$17,800

INDIANA UNIVERSITY FOUNDATION, Bloomington; David G. Frey; *Studies in Aquatic Ecology*; 3 years; \$26,300

IOWA STATE UNIVERSITY, Ames; Milton W. Weller; *Brood Parasitism in Heteronetta atricapilla*; 1 year; \$18,600

KANSAS STATE UNIVERSITY, Manhattan; G. Richard Marzolf; *Migration and Age Structure of a Pontoporeia affinis Population*; 1 year; \$3,300

Carl W. Rettenmeyer; *Behavior and Biology of Arthropods Associated with Army Ants*; 3 years; \$23,200

LONG BEACH STATE COLLEGE FOUNDATION, Long Beach, Calif.; Bruce H. Carpenter; *Influence of Light Quality on Rhythmic Flowering Responses of Plants*; 2 years; \$20,800

LOS ANGELES STATE COLLEGE FOUNDATION, Calif.; Brian Capon and Willard Van Asdall, University of Arizona, Tucson; *Influence of Water Stress on Flowering of Desert Plants*; 1 year; \$6,300

LOUISIANA STATE UNIVERSITY, Baton Rouge; Murray S. Blum; *Biology of Solempate saevissima Nichteri*; 3 years; \$25,900

George H. Lowery, Jr.; *Telescopic Analysis of Avian Migration*; 1 year; \$9,600

MACALESTER COLLEGE, St. Paul, Minn.; Waldo S. Glock; *Tree Growth and Rainfall*; 3 years; \$24,000

MANCHESTER COLLEGE, North Manchester, Ind.; William R. Eberly; *Environmental Requirements of Planktonic Blue-green Algae*; 2 years; \$10,800

MARINE BIOLOGICAL LABORATORY, Woods Hole, Mass.; Melbourne R. Carriker; Year-

*Round Program of Research in Marine Ecology*; 3 years; \$192,300

MARLBORO COLLEGE, Marlboro, Vt.; Kenneth L. Crowell; *Species Interactions and Habitat Selection in Insular Faunas*; 2 years; \$10,000

MARQUETTE UNIVERSITY, Milwaukee, Wis.; Reneat M. Darnell; *Quantitative Aspects of Secondary Production in Estuarine Fishes*; 1 year; \$9,000

MICHIGAN STATE UNIVERSITY, East Lansing; Manfred D. Engelmann; *Respiration of Oribatid Mites Under Field Conditions*; 2 years; \$10,500

G. W. Prescott; *Limnological Exploration of Far-South Latitude Lakes*; 1 year; \$12,800

MISSOURI BOTANICAL GARDEN, St. Louis; Frits W. Went; *Mobile Gas Chromatograph Laboratory*; 1 year; \$20,400

MONTANA STATE UNIVERSITY, Missoula; Richard D. Taber and Robert S. Hoffmann; *Ecology of Alpine Communities*; 2 years; \$10,900

MUSEUM OF NATURAL HISTORY, Reykjavik, Iceland; Finnur Gudmundsson; *Cyclic Phenomenon in Populations of Lagopus mutus*; 2 years; \$8,400

NORTH DAKOTA STATE UNIVERSITY, Fargo; Gregory B. Mulkern; *Host Plant Selection by Phytophagous Acridoid Orthoptera*; 3 years; \$38,900

NORTHWESTERN UNIVERSITY, Evanston, Ill.; Frank A. Brown, Jr.; *Organismic Response to Magnetic and Other Physical Forces*; 3 years; \$61,700

OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; Aurele La Rocque; *Paleoecology of Pleistocene Non-Marine Mollusca*; 2 years; \$18,500

OREGON STATE UNIVERSITY, Corvallis; Andrew G. Carey, Jr.; *Ecology of Benthic Fauna Off the Oregon Coast*; 3 years; \$34,800

Charles E. Warren; *Dynamics of Simplified Stream Communities*; 3 years; \$31,600

PENNSYLVANIA STATE UNIVERSITY, University Park; Richard D. Schein; *Ecology of Fungal Plant Parasitism*; 3 years; \$28,600

POMONA COLLEGE, Claremont, Calif.; Edwin A. Phillips; *Physiological Rates and Environment as Determinants of Plant Associations*; 3 years; \$18,700

PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; R. L. Glese; *Population Fluctuations of Corthylus columbianus*; 3 years; \$28,500

R. J. Green, Jr., and G. H. Peterson; *Soil Fungistasis and Survival of Soil-Borne Microorganisms*; 2 years; \$30,300

Alton A. Lindsey; *Environmental Control of Tree Species in Pre-Settlement Forests*; 1 year; \$10,600

RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.; David Pramer; *Ecology of Predaceous Fungi*; 3 years; \$17,800

SOUTHERN ILLINOIS UNIVERSITY, Carbondale; William G. Ashby; *Internal Water Balance in Plants Under Field Conditions*; 2 years; \$18,900

Willard D. Klimstra; *Behavior and Movements of Branta Canadensis Interior*; 3 years; \$27,000

## ENVIRONMENTAL BIOLOGY

- SOUTHWEST MISSOURI STATE COLLEGE**, Springfield; Paul L. Redfearn; *Taxonomic and Ecological Study of Bryophytes*; 3 years; \$9,800
- STANFORD UNIVERSITY**, Stanford, California; Walter Creighton Brown; *Herpetofauna of the Philippine Tropical Forests*; 3 years; \$33,400
- STATE UNIVERSITY OF IOWA**, Iowa City; G. Edgar Folk, Jr.; *Physiological Rhythms of Unrestrained Mammals*; 3 years; \$30,300
- STATE UNIVERSITY OF NEW YORK, COLLEGE OF AGRICULTURE** at Cornell University, Ithaca; David Pimentel; *Population Ecology of the Genetic Feed-Back Mechanism*; 3 years; \$90,800
- TULANE UNIVERSITY**, New Orleans, La.; Gerald E. Gunning; *Behavior of Centrorchids Within Home Ranges*; 2 years; \$13,000
- George H. Penn; *Competition and Behavior in Cambarellus*; 2 years; \$10,500
- UNIVERSITY OF ALASKA**, College; Richard C. Dugdale; *Nitrogen Cycle in the Sargasso Sea*; 2 years; \$60,000
- Clyde F. Herreid II; *Physiology and Ecology of Rana Sylvatica as Related to Temperature*; 3 years; \$32,100
- James E. Morrow; *Influence of Low Temperature on the Survival and Composition of Sub-Arctic Fish Populations*; 2 years; \$3,400
- Bonita J. Neiland; *Composition and Structure of Forest of Muskeg Communities*; 2 years; \$21,700
- UNIVERSITY OF ARIZONA**, Tucson; Harold C. Fritts; *Physiological Basis for Correlations of Tree-Ring Width and Climate*; 2 years; \$41,900
- Robert W. Hoshaw; *Life Cycle Studies of Zygnemataceae in Culture*; 2 years; \$22,600
- UNIVERSITY OF ARKANSAS**, Fayetteville; J. A. Sealander; *Influence of Latitude and Season Upon Small Mammal Physiology and Behavior*; 2 years; \$13,700
- UNIVERSITY OF CALIFORNIA**, Berkeley; Herbert G. Baker; *Chambers for Plant Growth Studies*; 1 year; \$81,100
- Paul D. Hurd, Jr.; *Ecology and Bionomics of Sphecid Wasps*; 2 years; \$38,000
- J. W. McSwain; *Ethology of Bees and Onagraceae*; 3 years; \$39,200
- A. E. Michelbacher; *Comparative Ecological Study of Insect Pollinators of Oenotheraceae*; 3 years; \$27,400
- Oscar H. Paris; *Trophic Dynamics of Terrestrial Isopod Populations*; 2 years; \$15,000
- Arnold W. Schultz; *Productivity and Nutrient Cycles of Arctic Tundra Ecosystems*; 3 years; \$77,800
- Hans Abplanalp and W. O. Wilson, Davis; *Rhythm of Oviposition in Gallinaceous Birds*; 3 years; \$44,900
- Carl L. Hubbs, La Jolla; *Quaternary Environments and Biotas*; 2 years; \$44,400
- George A. Bartholomew, Los Angeles; *Water Economy and Thermal Physiology of Desert Birds*; 3 years; \$59,600
- Monte Lloyd, Los Angeles; *Species Diversity in the Fauna of Woodland Litter*; 3 years; \$18,600
- Monte Lloyd, Los Angeles, and Henry S. Dybas, Chicago Natural History Museum, Ill.; *Population Ecology of Periodical Cicadas*; 3 years; \$47,400
- Helen T. Loeblich, Los Angeles; *Ecology, Morphology, and Taxonomy of Sahul Shelf Foraminifera*; 2 years; \$20,700
- Kenneth S. Norris, Los Angeles; *Functions of Color in the Thermal Relationships of Reptiles and Amphibia*; 2 years; \$29,600
- Joseph H. Connell, Santa Barbara; *Ecological Diversity of Temperate and Tropical Communities*; 2 years; \$11,800
- Cornelius H. Muller and Walter H. Muller, Santa Barbara; *Role of Natural Chemical Inhibitors in Plant Competition*; 3 years; \$43,200
- Eimer R. Noble, Santa Barbara; *Ecology of Parasitism in the Embiotocidae*; 3 years; \$27,000
- UNIVERSITY OF CHICAGO**, Ill.; Thomas Park; *Experimental Studies of Competition*; 3 years; \$23,000
- UNIVERSITY OF COLORADO**, Boulder; Erik K. Bonde; *Ecological-Physiological Studies of Alpine Flora*; 1 year; \$8,600
- David M. Gates; *Heat Transfer Between Plants and Environment*; 3 years; \$59,700
- UNIVERSITY OF FLORIDA**, Gainesville; Archie Carr; *Ecology and Migrations of Marine Turtles*; 3 years; \$43,200
- Carl D. Monk; *Plant Community Dynamics*; 2 years; \$20,200
- Martin H. Muma, Lake Alfred; *The Biology of North American Solpugids*; 3 years; \$9,800
- UNIVERSITY OF GEORGIA**, Athens; Preston E. Hunter; *Population and Host Association Studies in Mites*; 2 years; \$16,400
- Dirk Frankenberg, Sapelo Island; *Animal-Sediment Relationships in Marine Bottom Communities*; 2 years; \$22,700
- Lawrence E. Pomeroy, Sapelo Island; *Dynamics of Phosphorus in Aquatic Systems*; 2 years; \$39,000
- UNIVERSITY OF HAWAII**, Honolulu; Albert H. Banner; *Environmental Origin of Toxin in Ciguatera Fishes*; 2 years; \$39,900
- Barry S. Muir; *Environmental Influences on Reef Fish Metabolism*; 3 years; \$28,700
- UNIVERSITY OF ILLINOIS**, Urbana; Frank C. Bellrose; *Directional Orientation of Birds in Migration*; 1 year; \$23,000
- Frank C. Bellrose; *Directional Orientation of Birds in Migration*; 1 year; \$26,500
- Lawrence C. Bliss; *Photosynthesis and Respiration Rates of Alpine Plant Communities*; 1 year; \$4,100
- Gottfried S. Fraenkel; *Orientation Behavior and Ecology of Marine Invertebrates*; 3 years; \$19,000
- S. Charles Kendeligh; *Energy Requirements of Birds as Related to Migration and Distribution*; 3 years; \$45,700
- Herbert H. Ross; *Ecological Conditions During Wisconsin Phase of the Pleistocene*; 2 years; \$13,600
- UNIVERSITY OF KANSAS**, Lawrence; Philip V. Wells; *Vegetational and Climatic Change as Revealed by Neotoma Middens*; 1 year; \$8,500

BIOLOGICAL AND MEDICAL SCIENCES

UNIVERSITY OF MIAMI, Coral Gables, Fla.; Hillary B. Moore, Miami; *Feeding and Metabolism of Lytechinus Variegatus and Tripneustes Escaulentus*; 2 years; \$18,500

UNIVERSITY OF MARYLAND, College Park; Raymond G. Stross; *Influence of Light in Initiating Activation of Diapausing Daphnid Eggs*; 3 years; \$28,600

UNIVERSITY OF MICHIGAN, Ann Arbor; John E. Bardach; *Fish Activity Rhythms*; 1 year; \$14,700

William H. Burt; *Influence of the Environment on the Distribution and Behavior of Glaucomys Volans*; 3 years; \$14,700

Robert V. Kesling; *Ecology and Morphology of Recent and Fossil Ostracoda*; 2 years; \$40,000

Frederick E. Smith; *Dynamics of a Natural Population of an Amphipod*; 2 years; \$12,600

UNIVERSITY OF MINNESOTA, Minneapolis; Frederick M. Swain; *Environmental Relations of Coastal Ostracods*; 3 years; \$22,600

Thomas F. Waters; *Dynamics of Fresh-Water Stream Invertebrate Populations*; 3 years; \$34,800

UNIVERSITY OF MISSOURI, Columbia; Clair L. Kucera; *Organic Turnover and Nutrient Circulation in a Grassland Ecosystem*; 3 years; \$22,600

Arthur Witt, Jr.; *Comparative Ecology of the Holostat*; 2 years. \$18,200

UNIVERSITY OF NEBRASKA, Lincoln; Kenneth P. Preuss; *Migration of *Choriagrotis auxiliaris* (Grote)*; 3 years; \$18,900

UNIVERSITY OF NEW MEXICO, Albuquerque; C. Clayton Hoff; *Pseudoscorpions of Florida and the West Indies*; 2 years; \$7,700

Marvin L. Riedesel; *Physiological Strains During Hibernation and Aestivation*; 3 years; \$28,300

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; Elizabeth A. McMahan; *Termite Behavior*; 3 years; \$20,000

Alan E. Stiven; *Experimental Epidemiology of a Host-Parasite System*; 3 years; \$24,600

UNIVERSITY OF OREGON, Eugene; Richard M. Castenholz; *Growth of Marine Littoral Diatoms*; 2 years; \$18,500

Peter W. Frank; *Population Studies of Intertidal Invertebrates*; 3 years; \$39,400

J. Arnold Shotwell and Kakichi Sohma; *Late Tertiary Differentiation of U.S. Pacific Coast Flora*; 2 years; \$19,300

UNIVERSITY OF THE PACIFIC, Stockton, Calif.; Joel W. Hedgpeth; *Biology of Certain Elasmobranchs*; 1 year; \$1,800

UNIVERSITY OF PENNSYLVANIA, Philadelphia; Robert H. MacArthur; *Comparison of Avian Species Diversity and Habitat*; 3 years; \$34,700

UNIVERSITY OF PUERTO RICO, Rio Piedras; Luis R. Almodover, Mayaguez; *Marine Algae of Mangroves*; 2 years; \$14,100

Peter W. Glynn, Mayaguez; *Ecology of a Coral Reef-flat Community*; 3 years; \$20,500

Harold Heatwole; *Comparative Studies of Water Balance in Species of Eleutherodactylus*; 3 years; \$25,900

UNIVERSITY OF RHODE ISLAND, Kingston; Nelson Marshall; *Ecological Characteristics of Waters Overlying the Substrate in Shallow Tidal Environments*; 3 years; \$31,400

Richard D. Wood; *Benthic Plant Ecology*; 3 years; \$20,100

UNIVERSITY OF SASKATCHEWAN, Saskatoon, Saskatchewan, Canada; Ralph L. Dix; *Behavior of Prairie Plant Species in a Tension Zone*; 3 years; \$42,600

Richard S. Miller; *Habitat Requirements of Animal Populations*; 2 years; \$13,000

UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles; Orville J. Bandy; *Paleoecology of the Tertiary Section of the Tecolote Tunnel*; 1 year; \$2,400

UNIVERSITY OF SOUTHWESTERN LOUISIANA, Lafayette; William D. Reese and John W. Thieret; *Vegetation of Louisiana Salt Domes*; 2 years; \$9,300

UNIVERSITY OF TEXAS, Austin; W. Frank Blair; *Ecological and Evolutionary Significance of Vocalization in Rana*; 2 years; \$29,900

Joseph P. Kennedy, Houston; *Reproductive Success in *Sceloporus**; 1 year; \$4,700

UNIVERSITY OF WASHINGTON, Seattle; Karl Banse; *Analysis of Indian Ocean Plankton Data*; 1 year; \$4,800

Allan C. DeLacy; *Life History and Ecology of *Spirinchus Thaleichthys* in Lake Washington*; 1 year; \$13,200

W. Thomas Edmondson; *Nutrient Supply in a Lake*; 3 years; \$118,100

Gordon H. Orans; *Ecology of Vertebrate Social Organization*; 3 years; \$33,100

Robert T. Paine; *Experimental Analyses of Simple Predator-Prey Interactions*; 2 years; \$22,000

UNIVERSITY OF WISCONSIN, Madison; Myron P. Backus and William F. Whittingham; *Ecology of Soil Fungi*; 3 years; \$51,900

John T. Emlen, Jr.; *Environmental and Physiological Factors in Bird Migration*; 3 years; \$35,600

UNIVERSITY OF WYOMING, Laramie; Paul O. McGrew; *Paleoecology of Fish-Bearing Shales of the Green River Formation*; 3 years; \$34,500

WASHINGTON STATE UNIVERSITY, Pullman; Irvon O. Buss; *Behavior of *Lowodonta Africana**; 2 years; \$44,800

WAYNE STATE UNIVERSITY, Detroit, Mich.; S. K. Gangwere; *Food Selection and Feeding Behavior in Certain Acrididae*; 3 years; \$20,300

WESTERN ILLINOIS UNIVERSITY, Macomb; Robert A. Main; *Ecological Requirements of *Calanota Copepods**; 2 years; \$10,000

WESTERN RESERVE UNIVERSITY, Cleveland, Ohio; Charles C. Davis; *Ecology of Egg Masses of Aquatic Invertebrates*; 3 years; \$26,300

WEST VIRGINIA UNIVERSITY, Morgantown; V. G. Lilly, H. L. Barnett and M. E. Gallegly; *Physiological Comparison of *Phytophthora* Species*; 3 years; \$42,800

WOODS HOLE OCEANOGRAPHIC INSTITUTION, Woods Hole, Mass.; Richard H. Backus; *Biological Aspects of Oceanic Deep Scattering Layers*; 3 years; \$108,700

## GENETIC BIOLOGY

George D. Grice; *Distribution and Abundance of Bathypelagic Copepods*; 2 years; \$48,600

Robert R. L. Guillard; *Comparative Environmental Physiology of Marine Planktonic Algae*; 3 years; \$51,200

David W. Menzel; *Equipment for More Refined Analyses of Factors Affecting Phytoplankton Production*; 1 year; \$10,500

Howard L. Sanders; *Studies of Deep-Sea and Shallow Water Benthos*; 3 years; \$102,700

John M. Teal; *Energy Requirements of Marine Organisms and Their Adaptation to Environmental Changes*; 3 years; \$71,100

Ralph F. Vaccaro; *Biological Role of Ammonia in the Sea*; 3 years; \$45,700

YALE UNIVERSITY, New Haven, Conn.; W. R. Henson; *Dispersal of the Gallinulea Migrants of Pinus Pinifoliae (Pitch)*; 3 years; \$43,800

G. E. Hutchinson; *Research in Paleolimnology*; 3 years; \$96,000

Gordon A. Riley; *Ecological Significance of Particulate Matter in the Sea*; 2 years; \$17,100

### GENETIC BIOLOGY

AUBURN UNIVERSITY, Auburn, Ala.; John S. Mecham; *Genetics of Speciation in Certain Southeastern Amphibians*; 3 years; \$21,300

BRANDEIS UNIVERSITY, Waltham, Mass.; Albert Keiner; *Relationship Between Photo-reaction and Bacterial Transformation*; 2 years; \$34,900

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena; N. H. Horowitz; *Genetic Studies of Tyrosinase in Neurospora*; 3 years; \$122,100

CENTRE D'ENSEIGNEMENT ET DE RECHERCHES DES INDUSTRIES ALIMENTAIRES ET CHIMIQUES, Brussels, Belgium; R. Lavalie; *Regulation of Cellular Division and Nucleic Acid Synthesis by Escherichia Coli*; 3 years; \$51,600

CITY OF HOPE MEDICAL CENTER, Duarte, Calif.; William D. Kaplan; *Effects of Radioactive Isotopes: (a) Germ Cell Incorporation, and (b) Induced Sex-linked Recessive Lethals*; 2 years; \$29,400

COLUMBIA UNIVERSITY, New York, N.Y.; Helen V. Crouse and J. Herbert Taylor; *Chromosomes of Solara and DNA Replication in Lilium Longiflorum*; 3 years; \$63,500

Howard Levene; *Genetics and Evolution of Drosophila Pupalistarium*; 1 year; \$42,700

Francis J. Ryan; *Mutation as a Macromolecular Process*; 3 years; \$100,700

CORNELL UNIVERSITY, Ithaca, N.Y.; Bruce Wallace; *X-Ray Machine for Genetic Research*; 1 year; \$28,000

DARTMOUTH COLLEGE, Hanover, N.H.; Raymond W. Barratt; *Gene Control of Glutamic Dehydrogenase in Neurospora*; 1 year; \$17,500

DUKE UNIVERSITY, Durham, N.C.; Samson R. Gross; *Regulatory Mechanisms of Enzyme Synthesis and Function in Neurospora*; 3 years; \$84,000

GOUCHER COLLEGE, Baltimore, Md.; Ann M. Lacy; *Structure and Function of Td Locus in Neurospora Crassa*; 3 years; \$43,700

HARVARD UNIVERSITY, Cambridge, Mass.; Nicholas W. Gillham; *Genetics of Streptomyces Resistance in Chlamydomonas Reinhardtii*; 2 years; \$26,600

R. P. Levine; *Genetics of Chlamydomonas Reinhardtii*; 2 years; \$26,800

INSTITUTE FOR CANCER RESEARCH, Philadelphia, Pa.; Irwin I. Ostar; *Mode of Action of Chemical Mutagens*; 3 years; \$104,700

IOWA STATE UNIVERSITY, Ames; A. W. Nordskog; *Blood Group Studies in the Fowl*; 3 years; \$71,600

JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; C. A. Thomas, Jr.; *Genetic Integrity of the Hemophilus Chromosome*; 2 years; \$25,000

Heinrich Ursprung; *Experimental Differentiation of Nuclei in Amphibian Development*; 3 years; \$51,800

MARIETTA COLLEGE, Marietta, Ohio; William P. Brown; *Heterosis and Fitness in Drosophila Metanogaster*; 1 year; \$11,400

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge; Maurice S. Fox; *Genetic Recombination in Transformed Bacteria*; 2 years; \$55,200

OREGON STATE UNIVERSITY, Corvallis; William E. Sandline; *Genetic Studies on Lactic Acid Streptococci*; 1 year; \$11,200

PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; A. E. Bell; *Effects of Genotype-Environment Interaction*; 6 months; \$4,500

Oliver E. Nelson; *Effects of Intracellular Regulators and Mutation on Protein in Maise*; 3 years; \$36,300

J. R. Singleton; *Mapping of the Chromosome Complement of Neurospora Crassa*; 2 years; \$50,300

QUEENS COLLEGE, Flushing, N.Y.; Marvin Wasserman; *Cytogenetic and Evolutionary Studies of Genus Drosophila*; 2 years; \$18,800

REED COLLEGE, Portland, Oreg.; Margaret J. Watkins; *Measurement of DNA and Total Mass of Insect Chromosomes*; 1 year; \$7,100

SANTA BARBARA BOTANIC GARDEN, Santa Barbara, Calif.; Marta Sherman Walters; *A New Structure in Meiosis*; 2 years; \$85,100

STANFORD UNIVERSITY, Stanford, Calif.; Victor C. Twitty; *Experiments on the Behavior, Genetics and Association of California Newts*; 3 years; \$109,800

STATE UNIVERSITY OF NEW YORK COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY, Ithaca; Douglas S. Robson; *Osmulant Component Analysis*; 3 years; \$39,700

UNIVERSITY OF ARIZONA, Tucson; Albert T. Ellis; *Amino Acid and Peptide Metabolism Influenced by Gross Gene Rearrangement*; 2 years; \$19,700

UNIVERSITY OF BRITISH COLUMBIA, Vancouver, British Columbia, Canada; Henretta T. Band; *Genetic Structure of Populations*; 2 years; \$6,700

UNIVERSITY OF CALIFORNIA, Berkeley; Spencer W. Brown; *Nature and Evolution of Leucan-Diaspidid Genetic Systems*; 3 years; \$90,500

Donald A. Glaser; *Synchronized Bacterial Cultures*; 2 years; \$83,600

W. T. Ebersold, Los Angeles; *Genetics of Chlamydomonas Reinhardtii*; 2 years; \$39,300

BIOLOGICAL AND MEDICAL SCIENCES

Richard W. Siegel, Los Angeles; *Genetic Control of Two Pairs of Complementary Mating-Type Substances in Paramecium Bursaria*; 3 years; \$36,600

Stanley E. Mills, San Diego; *Antigenic Structure of Animal Cells*; 2 years; \$52,300

UNIVERSITY OF CHICAGO, Ill.; William K. Baker; *X-Irradiation of Genetical and Cytological Material*; 1 year; \$7,500

E. D. Garber; *Genetic and Chromosomal Homology in the Genus Collinsia*; 3 years; \$55,900

John Lee Hubby and Lynn H. Throckmorton; *Genetic Control of Proteins in Drosophila*; 2 years; \$78,400

Bernard S. Strauss; *Biochemical Study of Genetic Recombination*; 3 years; \$50,600

UNIVERSITY OF COLORADO, Boulder; Melvin Laurance Morse; *Genetic Studies of Bacteria*; 2 years; \$20,500

UNIVERSITY OF CONNECTICUT, Storrs; Arthur Chovnick; *Organization of a Complex Locus in Drosophila Melanogaster*; 1 year; \$2,640

UNIVERSITY OF ILLINOIS, Urbana; K. C. Atwood; *Operator Translocation in E. Coli*; 3 years; \$86,900

L. Leon Campbell; *Genetic and Structural Studies on the A-Amylases of Bacillus Subtilis*; 3 years; \$132,600

Jerry Hirsch; *Experimental Behavior Genetics*; 2 years; \$38,000

Clyde Manwell; *Evolution of the Respiratory Pigments*; 2 years; \$52,200

E. B. Patterson; *Genetic and Chromosomal Tester Stocks of Maize*; 3 years; \$83,500

UNIVERSITY OF LOUISVILLE, Ky.; Steven G. Vandenberg; *Human Biometrical Genetics*; 1 year; \$3,600

UNIVERSITY OF MELBOURNE, Victoria, Australia; C. E. Folsome; *Recombination in the rII Region of Bacteriophage T4*; 2 years; \$22,000

UNIVERSITY OF MIAMI, Coral Gables, Fla.; Lauren C. Gilman; *Type Cultures of Syngens of Paramecium Caudatum*; 6 months; \$2,400

Sheldon Greer; *Chemical Studies of Deoxyribonucleic Acids*; 2 years; \$33,800

UNIVERSITY OF MICHIGAN, Ann Arbor; Berwind P. Kaufmann; *Varying Patterns of Cellular Fine Structure*; 1 year; \$32,700

UNIVERSITY OF MINNESOTA, Minneapolis; William M. Clement, Jr.; *Genetic Application of Single Cell Culture Techniques in Alfalfa*; 2 years; \$44,000

L. A. Snyder and Richard S. Caldecott, St. Paul; *Chemical Mutagenesis in Higher Plants*; 2 years; \$54,200

UNIVERSITY OF MISSOURI, Columbia; E. G. Anderson; *Genetics of Maize*; 3 years; \$56,600

E. H. Coe, Jr.; *Non-Mendelian Inheritance in Maize*; 2 years; \$18,900

M. G. Nuffer; *Mutational Behavior of Selected Loci in Maize*; 3 years; \$64,700

Gyorgy Pal Redei; *Physiological Genetics Studies With Arabidopsis*; 2 years; \$14,300

E. R. Sears; *Cytogenetic Studies with Polyploid Species of Wheat*; 3 years; \$32,600

L. M. Steinitz-Sears; *Centromere Structure and Behavior*; 2 years; \$19,800

UNIVERSITY OF NEBRASKA, Lincoln; Dwight D. Miller; *Investigations of Drosophila affinis Subgroup*; 3 years; \$26,600

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; Bruce M. Eberhart, Greensboro; *Control of B-glucosidase Activity in Neurospora Crassa*; 6 months; \$4,300

Frank L. Haynes, Jr., Raleigh; *Cytogenetic Studies in the Genus Solanum*; 1 year; \$10,800

H. F. Robinson, Raleigh; *Cytogenetics of Maize*; 2 years; \$14,400

Ben W. Smith; *Evolution of Sex-determining Mechanisms*; 2 years; \$31,100

A. C. Triantaphyllou, Raleigh; *Evolution of Parthenogenesis in the Family Heteroceridae*; 1 year; \$12,900

UNIVERSITY OF OREGON, Eugene; Stanton A. Cook; *Heterozygosity in Higher Plants*; 2 years; \$16,500

Franklin W. Stahl; *Growth, Mutation and Recombination in Bacteriophage*; 3 years; \$144,000

UNIVERSITY OF PENNSYLVANIA, Philadelphia; Alan Garen; *Genetic Control of Alkaline Phosphatase Formation in E. Coli*; 3 years; \$105,000

John R. Preer, Jr.; *Gene Action in Paramecium*; 3 years; \$62,600

UNIVERSITY OF ROCHESTER, N.Y.; R. C. Lewontin; *Experimental Studies of Population Fitness*; 2 years; \$44,700

Arnold W. Ravin; *Molecular Genetics of Streptomycin Resistance*; 2 years; \$41,100

UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles; Beatrice L. Kelly; *Relationship Between P2 Prophage and Its Host Cell, Escherichia Coli*; 2 years; \$33,100

Margaret Lieb; *Mechanisms of Mutation in Bacteria and Bacteriophages*; 3 years; \$48,900

UNIVERSITY OF TEXAS, Austin; David P. Bloch; *Role of Histones in Cell Division and Cell Development*; 3 years; \$36,000

Thomas S. Matney; *Recombination in Bacteria*; 2 years; \$21,800

Marshall R. Wheeler and Willson S. Stone; *Evolutionary Relationships of the Drosophilidae of the Hawaiian Islands*; 18 months; \$45,200

UNIVERSITY OF UTAH, Salt Lake City; George D. Hanks; *Genetic Analysis and Population Studies of Meiotic Drive in Drosophila Melanogaster*; 2 years; \$10,800

UNIVERSITY OF WISCONSIN, Madison; S. J. Peloquin; *Genetics of Solanum Tuberosum*; 3 years; \$35,600

Ruby Marie Valencia, Oak Ridge, Tenn.; *Cytogenetic Analysis of Irradiated Whole Genomes of Drosophila*; 2 years; \$28,600

WASHINGTON STATE UNIVERSITY, Pullman; William C. McDonald; *Genetic Studies on Bacterial Growth at High Temperatures*; 2 years; \$14,000

WESTERN RESERVE UNIVERSITY, Cleveland, Ohio; Irving P. Crawford; *Effect of Mutation on Enzymes*; 3 years; \$86,700

WISTAR INSTITUTE OF ANATOMY AND BIOLOGY, Philadelphia, Pa.; Drew Schwartz; *Genetic Studies on Mutant Enzymes in Maize*; 3 years; \$129,300



## METABOLIC BIOLOGY

Andrzej W. Kozinski; *Incomplete or Partial Replication of the T4 Phage DNA*; 3 years; \$121,700

YALE UNIVERSITY, New Haven, Conn.; Edward A. Adelberg; *Equipment for Microbial Physiology*; 1 year; \$19,700

### METABOLIC BIOLOGY

ALBERT EINSTEIN MEDICAL CENTER, Philadelphia, Pa.; Herman Friedman; *Role of Nucleoproteins in Antibody Biosynthesis*; 2 years; \$36,000

Robert Rabin; *Glyoxylate Metabolism as a Function of Butyrate in Bacteria*; 2 years; \$15,000

BOYCE THOMPSON INSTITUTE FOR PLANT RESEARCH, INC., Yonkers, N.Y.; Karl Marasch; *Regulation of Insect Metabolism by Plant Viruses*; 3 years; \$83,200

Leonard H. Weinstein and Clark A. Porter; *Biosynthesis and Metabolism of Quinic Acid in Higher Plants*; 3 years; \$44,500

BRANDEIS UNIVERSITY, Waltham, Mass.; Attila O. Klein; *Early Metabolic Events Induced by Light in Dark-grown Leaves*; 2 years; \$15,500

Harold P. Klein; *Formation of Alpha-amylase by Pseudomonas Saccharophila*; 3 years; \$40,000

John Martin Lowenstein; *Control of Metabolism by Intracellular Compartmentation*; 3 years; \$50,000

Morris Soodak; *Enzymatic Mechanisms Involved in the Biosynthesis of Thyroglobulin, a Glycoprotein*; 3 years; \$35,000

BRIGHAM YOUNG UNIVERSITY, Provo, Utah; Richard D. Sagers; *Acetate Formation in Anaerobic Microorganisms*; 4 years; \$76,000

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena, Calif.; Samuel Epstein and Isaac R. Kaplan; *The Biological Fractionation of Carbon and Hydrogen Stable Isotopes*; 3 years; \$30,000

CHICAGO MEDICAL SCHOOL, Ill.; S. G. A. Alivisatos; *Metabolism of Histamine and Related Compounds*; 2½ years; \$37,500

COLORADO STATE UNIVERSITY RESEARCH FOUNDATION, Fort Collins; Ralph Baker; *Mechanism of Reproduction in Hypomyces Solani F. Cucurbitae*; 2 years; \$11,600

Cleon W. Ross; *Synthesis of Pyrimidine Nucleotides of Ribonucleic Acid in Higher Plants*; 3 years; \$26,000

COLUMBIA UNIVERSITY, New York, N.Y.; R. F. Dawson; *Biosynthesis of Nicotinic Acid and Related Pyridine Compounds in Nicotiana*; 3 years; \$35,400

David B. Sprinson; *Biosynthesis of Aromatic Amino Acids*; 5 years; \$125,000

CORNELL UNIVERSITY, Ithaca, N.Y.; James L. Gaylor; *Precursors of Steroidal Hormones*; 3 years; \$30,300

DARTMOUTH COLLEGE, Hanover, N.H.; Melvin V. Simpson; *Biosynthesis of Cytochromes in Liver and Particles from Rhodospirillum Rubrum*; 3 years; \$30,000

GEORGE WASHINGTON UNIVERSITY, Washington, D.C.; Robert C. Wood; *Folic Acid Metabolism in Bacteria*; 2 years; \$45,000

GOUCHER COLLEGE, Baltimore, Md.; Helen M. Habermann; *Comparative Physiology of Pigment-Deficient Sunflower Mutants*; 3 years; \$50,700

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL, Philadelphia, Pa.; Herbert J. Eichel; *Studies on Respiratory Enzymes in Protozoa*; 2 years; \$26,600

HARVARD UNIVERSITY, Cambridge, Mass.; Edmund Chi Chien Lin; *Evolution of Biochemical Pathways in Bacteria*; 3 years; \$31,300

Herbert L. Ennis and Martin Lubin; *Biosynthetic Control Mechanisms in Mammalian and Bacterial Cells*; 2 years; \$32,600

Leon Goldstein; *Regulation of Ammonia Excretion*; 3 years; \$30,000

Martin Lubin; *The Amino Acid and Cation Transport Systems of Bacterial Cells*; 2 years; \$20,000

INDIANA UNIVERSITY FOUNDATION, Bloomington; Arthur R. Schulz; *A Study of the Mechanism of Photophosphorylation*; 1½ years; \$13,900

IOWA STATE UNIVERSITY, Ames; S. Aronoff; *Biogenesis of Chlorophyll*; 3 years; \$37,800

Robert M. Chasson; *Mitochondrial Development and Activity in Relation to Formation of Ion Absorption Capacity in Plant Cells*; 2 years; \$15,800

JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Andre T. Jagendorf; *Synthesis of Chloroplast Proteins*; 4 years; \$90,000

Gale W. Rafter; *Chemistry and Metabolism of Escherichia Coli Phosphoproteins*; 2 years; \$20,000

KAISER FOUNDATION RESEARCH INSTITUTE, Oakland, Calif.; Morton Rothstein; *Lysine Metabolism in Algae*; 1 year; \$10,000

KANSAS STATE COLLEGE OF PITTSBURG, Howard J. Stein; *Uptake and Utilization of Amino Acids by the Roots of Higher Plants*; 2 years; \$13,100

LETOURNEAU COLLEGE, Longview, Tex.; Robert L. Stephens; *Biological Oxidation of Alcohols to Carbonyl Compounds by Plants and Higher Fungi*; 2 years; \$4,000

LOS ANGELES STATE COLLEGE FOUNDATION, Calif.; Joseph A. Sacher; *Tissue Senescence: Metabolism and Permeability*; 3 years; \$29,100

LYNCHBURG COLLEGE, Lynchburg, Va.; Paul J. Osborne; *Phylogenetic and Ontogenetic Study of Phosphatases*; 2 years; \$15,000

MIAMI UNIVERSITY, Oxford, Ohio, David W. Newman; *Physiology and Biochemistry of Chromoplasts-Lipides*; 2 years; \$15,000

MICHAEL REESE HOSPITAL AND MEDICAL CENTER, Chicago, Ill.; Clarence Cohn; *Influence of Rate of Ingestion of Diet on Intermediary Metabolism*; 2 years; \$10,000

MICHIGAN STATE UNIVERSITY, East Lansing; Norman E. Good and Seikichi Izawa; *The Mechanism of the Hill Reaction and Photophosphorylation*; 3 years; \$70,000

Harold M. Sell; *Biochemistry of Natural and Synthetic Growth Substances as Applied to Higher plants*; 2 years; \$18,000

OHIO UNIVERSITY, Athens; John T. McQuate, Richard T. Huling and James A. Wilson; *Biochemical Equipment (Recording Spectrophotometer)*; 2 years; \$5,100

BIOLOGICAL AND MEDICAL SCIENCES

OKLAHOMA STATE UNIVERSITY, Stillwater; Norman N. Durham; *Utilization of D-Tryptophane and Anthranilic Acid by Microorganisms*; 1 year; \$6,100

Franklin R. Leach; *Uptake of Lipotic Acid by Streptococcus Faecalis*; 3 years; \$17,600  
 OREGON STATE UNIVERSITY, Corvallis, Victor J. Brookes; *Biochemistry of Insect Development*; 2 years; \$20,000

Te May Ching; *Fat Metabolism in Germinating Seed of Douglas Fir*; 2 years; \$11,800

Leo W. Parks; *Ergosterol Metabolism in Saccharomyces Cervisiae*; 2 years; \$25,000

PENNSYLVANIA STATE UNIVERSITY, University Park; E. S. Lindstrom; *Chromatophoral Photometabolism of Rhodospirillum*; 2 years; \$19,000

PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; Joseph Kuc and Oliver E. Nelson; *Biochemical Pathways for the Synthesis of Lignin in Plants*; 1 year; \$2,900

E. B. Williams and Joseph Kuc; *Metabolic Pathways Controlling Host-Parasite Relationships*; 2 years; \$30,000

REED COLLEGE, Portland, Oreg.; Helen A. Stafford; *The Physiology of Lignin Formation*; 3 years; \$39,300

RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, Albany; Vincent Santilli, Buffalo; *Role of Leaf Ribonuclease in Tobacco Mosaic Virus Infection*; 2 years; \$20,000

RESEARCH INSTITUTE OF TEMPLE UNIVERSITY, Philadelphia, Pa.; John M. Ward; *Biochemical Aspects of Morphogenesis of the Slime Mold*; 3 years; \$45,000

RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.; Bernard W. Koft; *Biosynthesis of Pteridines by Bacteria*; 2 years; \$16,000

James Oliver Lampen; *Enzyme Secretion and Cell Wall Formation*; 1 year; \$7,000

Wayne W. Umbreit; *A study of Autotrophy*; 3 years; \$54,100

Selman A. Waksman; *Biogenesis of the Streptomycin Group of Antibiotics*; 2 years; \$32,200

SAINT JOSEPH HOSPITAL, Burbank, Calif.; Morris Cohen, Reuben Straus and Charles I. Barron; *Hypoxic Induction of a Structural Abnormality in Liver Mitochondria*; 2 years; \$20,000

SAN FERNANDO VALLEY STATE COLLEGE FOUNDATION, Northridge, Calif.; Warren A. Furumoto; *The Initial Acts of Infection by Tobacco Mosaic Virus*; 1 year; \$5,500

SETON HALL UNIVERSITY, South Orange, N.J.; Vincent P. Cirillo, Jersey City; *Role of Facilitated Diffusion in Active Transport*; 3 years; \$26,600

John H. Glick, Jr. and Amedeo F. D'Adamo, Jr.; *The Pathway of Aspartate Metabolism in Mammalian Tissues*; 2 years; \$19,000

STANFORD UNIVERSITY, Stanford, Calif.; Frederick A. Fuhrman; *Regulation of Carbohydrate Metabolism at Low Temperatures*; 2 years; \$29,000

STATE UNIVERSITY OF IOWA, Iowa City; R. E. Kallio; *Study of Certain Lithotrophic Microorganisms*; 2 years; \$25,000

TRAINING SCHOOL AT VINELAND, N.J.; George Rendina; *The Regulation of Carbohydrate Metabolism in Brain Subcellular Particles*; 2 years; \$26,000

TEXAS AGRICULTURAL AND MECHANICAL RESEARCH FOUNDATION, College Station; Donald W. Hood; *Lipids of Organisms Constituting the Main Bulk of a Coral Reef, With Emphasis on Hydrocarbons*; 2 years; \$24,000

TUFTS UNIVERSITY, Medford, Mass.; Alton Meister, Boston; *Biochemical Mechanisms*; 5 years; \$169,800

UNION COLLEGE AND UNIVERSITY, Schenectady, N.Y.; C. Hurwitz, R. A. Peabody and C. L. Rosano, Albany; *Mechanism of Action of Streptomycin*; 2 years; \$16,000

UNIVERSITY OF CALIFORNIA, Berkeley; Gordon Mackinney; *Carotenoid Differences in Tomatoes*; 3 years; \$40,000

Clinton O. Chichester, Davis; *Biosynthesis of Carotenoids: The Pathway of Synthesis of the Isoprenoid C<sub>40</sub> Compounds in Plant Material*; 3 years; \$75,000

Mendel Mazells, Davis; *Metabolic Role of Peroxidase in Higher Plants*; 3 years; \$35,500

Robert J. Weaver, Davis; *Metabolism of Gibberellin in Vitis Vinifera L.*; 2 years; \$26,300

S. C. Rittenberg, Los Angeles; *Bacterial Metabolism and Physiology*; 7 months; \$24,200

Sydney C. Rittenberg, Los Angeles; *Bacterial Metabolism and Physiology*; 3½ years; \$121,800

Otto H. Scherbaum, Los Angeles; *Cytochemical and Immunochemical Analysis of Mechanisms Regulating Regeneration and Digestion in Stentor*; 1 year; \$15,000

John A. DeMoss, San Diego; *Regulation of Cellular Metabolism*; 3 years; \$63,800

UNIVERSITY OF CHICAGO, Ill.; Lawrence Bogorad; *Chloroplast Development and Ultrastructure*; 3 years; \$42,000

Wayne J. McIlrath; *Physiological Functions of Boron in Plants*; 2 years; \$20,000

UNIVERSITY OF DELAWARE, Newark; John H. McClendon; *Respiratory Mechanisms in the Cultivated Mushroom*; 2 years; \$9,000

UNIVERSITY OF FLORIDA, Gainesville; Merrill Wilcox and S. H. West; *Aryl Hydroxylation in Higher Plants*; 2 years; \$12,500

UNIVERSITY OF GEORGIA, Athens; William J. Payne; *Influence of Cations on the Metabolism of Marine Bacteria*; 2 years; \$20,000

D. S. Van Fleet; *Chemistry and Function of the Endodermis*; 2 years; \$10,000

D. S. Van Fleet; *Histochemical and Cytochemical Studies of Phloem*; 1 year; \$4,560

UNIVERSITY OF ILLINOIS, Urbana; H. P. Broquist; *Folic Acid and Leucine Metabolism in Yeast*; 3 years; \$31,500

R. H. Hageman and E. R. Leng; *Physiological Basis of Hybrid Vigor in Corn*; 2 years; \$20,000

B. Connor Johnson; *Metabolism of Acetate and Other Volatile Fatty Acids in Ruminant*; 2 years; \$20,000

UNIVERSITY OF KANSAS, Lawrence; David Paretsky; *Studies on the Biochemistry of Rickettsiae*; 2 years; \$35,000

## MOLECULAR BIOLOGY

UNIVERSITY OF LOUISVILLE, Ky.; John W. Brown; *Interrelationships Between Bacterial Nucleoproteins*; 2 years; \$48,000

Thomas G. Scharff; *Sugar and Potassium Transport in Yeast*; 2 years; \$25,000

UNIVERSITY OF MARYLAND, College Park; Leslie C. Costello; *Instrumentation for Identification of Enzyme Systems Related to the Oxidative Metabolism of Developing Ascaris Eggs*; 1 year; \$14,200

Morris Lieberman; *Biosynthesis of Ethylene and Related Problems*; 2 years; \$18,400

UNIVERSITY OF MASSACHUSETTS, Amherst; Trevor Robinson; *Enzymatic Pathways of Alkaloid Biosynthesis*; 3 years; \$16,600

UNIVERSITY OF MICHIGAN, Ann Arbor; James F. Hogg; *Function of Glyoxylate Bypass Enzymes*; 2 years; \$28,400

UNIVERSITY OF MINNESOTA, Minneapolis; Edward Leete; *Biosynthesis of Natural Products*; 3 years; \$60,000

UNIVERSITY OF NEBRASKA, Lincoln; Francis A. Haskins; *Chemical Genetics of Metabolism of Coumarin and Related Compounds in *Melilotus Alba* and Other Plant Species*; 5 years; \$98,750

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; Max H. Hommersand; *Effects of Monochromatic Light on Photosynthesis, Respiration, and Intermediary Metabolism*; 2 years; \$25,500

A. T. Miller and Werner Straus; *Lysosomes, Phagosomes and Hydrolytic Enzymes*; 3 years; \$36,000

Walter J. Dobrogosz, Raleigh; *Mechanism of the Diauxic Phenomenon*; 3 years; \$38,500

UNIVERSITY OF OKLAHOMA, Norman; John R. Sokatch, Oklahoma City; *Oxidation of the Branched Chain Amino Acids by Microorganisms*; 3 years; \$32,000

UNIVERSITY OF OKLAHOMA RESEARCH INSTITUTE, Norman; Simon H. Wender; *Production of Scopolin, Scopoletin, and Related Compounds in Plants*; 3 years; \$30,000

UNIVERSITY OF OREGON, Eugene; William R. Sistrom; *Control of Enzymes Concerned in Oxidation of Aromatic Compounds*; 2 years; \$35,300

Jacob Straus; *Changes in the Nutrient Medium Caused by Plant Tissue Cultures*; 2 years; \$20,900

UNIVERSITY OF PENNSYLVANIA, Philadelphia; Walter D. Bonner; *Electron Transport Systems in Higher and Lower Plants*; 1 year; \$37,000

UNIVERSITY OF TENNESSEE, Knoxville; D. Frank Holtman; *Factors Influencing Growth and Pathogenicity of Staphylococci Under Anaerobic Conditions*; 2 years; \$15,000

John T. Smith; *Sulfur Metabolism and Vitamin E*; 2 years; \$19,300

UNIVERSITY OF TEXAS, Austin; Jack Myers; *Photosynthetic Metabolism of Algae*; 1 year; \$6,500

Edward G. Rennels, Galveston; *A Study of Luteal Function in the Rat Ovary with Emphasis on its Hormonal Control*; 2 years; \$32,000

UNIVERSITY OF VERMONT, Burlington; Donald B. Melville; *Ergothioneine Function and Biosynthesis*; 3 years; \$36,000

UNIVERSITY OF WASHINGTON, Seattle; Erling J. Ordal; *Trace Inorganic Elements in the Metabolism of Bacteria*; 4 years; \$100,000

UNIVERSITY OF WISCONSIN, Madison; Robert M. Bock and Marilyn O. Halvorson; *Biochemical and Biophysical Investigations of Protein Synthesis at the Template Level*; 5 years; \$272,100

Dexter S. Goldman; *Fatty Acid Metabolism of the Tubercle Bacillus*; 2 years; \$24,000

P. W. Wilson and R. H. Burris; *Biological Fixation of Nitrogen*; 5 years; \$130,800

VALPARAISO UNIVERSITY, Valparaiso, Ind.; Kenneth E. Nichols; *Identification of the Photoreceptor in Phycocyanin Synthesis*; 3 years; \$20,800

VANDERBILT UNIVERSITY, Nashville, Tenn.; Oscar Touster; *Biosynthesis of Glucuronate an Ascorbate*; 3 years; \$72,750

WASHINGTON STATE UNIVERSITY, Pullman; Herbert M. Nakata; *Physiology of Sporulation in Aerobic Bacilli*; 2 years; \$14,000

J. L. Stokes; *Physiology of Psychrophilic Bacteria*; 3 years; \$63,200

WAYNE STATE UNIVERSITY, Detroit, Mich.; Chauncey R. Benedict; *Metabolism and Enzymology of Citramalic Acid*; 2 years; \$20,000

WELLESLEY COLLEGE, Wellesley, Mass.; Clifford R. Noll, Jr.; *Diphosphopyridine Nucleotide-linked Dehydrogenases in Lower Plants*; 1½ years; \$11,200

WEST VIRGINIA UNIVERSITY, Morgantown; Wayne W. Luchsinger; *The Mechanism of Action of the Beta-Glucanases*; 3 years; \$42,400

Elon G. Scott; *A Study of the Metabolic Role of Boron in Plants*; 2 years; \$10,400

WISLAR INSTITUTE OF ANATOMY AND BIOLOGY, Philadelphia, Pa.; Angus F. Graham; *Biosynthesis of Ribonucleic Acid in Mammalian and Bacterial Cells Infected with Ribonucleic Acid Containing Viruses*; 3 years; \$36,000

YALE UNIVERSITY, New Haven, Conn.; G. B. Bouck, J. Cronshaw and A. W. Galston; *Structural and Functional Association of Cytoplasmic Components of the Plant Cell*; 2 years; \$60,000

YESHIVA UNIVERSITY, New York, N.Y.; Jerard Hurwitz; *Role of DNA in RNA Synthesis*; 3 years; \$153,800

M. J. Osborn; *Biosynthesis of Bacterial Lipopolysaccharides*; 3 years; \$82,500

Harold J. Strecker; *Metabolism of Proline in Relation to Ornithine*; 3 years; \$45,700

## MOLECULAR BIOLOGY

ALBERT EINSTEIN MEDICAL CENTER, Philadelphia, Pa.; Daniel A. Boroff, David Ezekiel, and Robert J. Suhadolnik; *Equipment for Research in Biochemistry*; 1 year; \$50,000

Daniel A. Boroff; *Chemistry of the Toxin of *Clostridium Botulinum**; 1 year; \$80,000

BAYLOR UNIVERSITY, Waco, Tex.; Harris Busch, Houston; *Biochemistry of the Nucleolus*; 2 years; \$45,000

## BIOLOGICAL AND MEDICAL SCIENCES

- Saul Kit, Houston; *Enhanced Enzymatic Activity in Vaccinia Infected Animal Cells*; 2 years; \$70,000
- BERMUDA BIOLOGICAL STATION FOR RESEARCH, Inc., St. George's West; Donald G. Comb, Harvard University, Boston, Mass.; *Biochemistry of Differentiation*; 1 year; \$9,800
- BOSTON COLLEGE, Chestnut Hill, Mass.; Joseph A. Orlando; *Isolation and Function of Bacterial Haem Proteins*; 2 years; \$28,000
- BOSTON UNIVERSITY, Mass., George E. Hein; *Enzyme Specificity Used to Elucidate 'Active Sites'*; 2 years; \$35,000
- Karl Schmid; *Chemical Structure of the Low Molecular Weight Human Plasma Glycoproteins*; 2 years; \$25,800
- Frederick S. Brackett, Rockville, Md.; *Data Processing in Molecular Biology*; 2 years; \$21,000
- BRANDIS UNIVERSITY, Waltham, Mass.; Gerald D. Fasman; *Conformational Studies of Synthetic Poly- $\alpha$ -amino Acids*; 2 years; \$40,000
- Lawrence Grossman; *Structure and Function of Nucleic Acids*; 2 years; \$57,000
- Thomas C. Hollocher; *Mechanisms of Enzymatic Oxidation-Reduction Reactions*; 2 years; \$80,000
- Thomas C. Hollocher, Jr., *Mechanisms of Enzymatic Reactions*; \$5,000
- Mary Ellen Jones; *Biosynthetic and Transfer Reactions*; 2 years; \$65,000
- Julius Marmur; *Biological and Physical Properties of DNA*; 2 years; \$70,000
- Richard S. Morgan; *Structure of Microsomal Particle*; 2 years; \$30,000
- Edgar Zwilling; *Ultracentrifugal Studies of Biological Materials*; 3 years; \$43,000
- BROWN UNIVERSITY, Providence, R.I.; Paul R. Gross; *Messenger RNA Synthesis in Yeasts and in Higher Cells*; 2 years; \$45,000
- Seymour Lederberg; *Origin and Function of Subcellular Particles of Micro-organisms*; 2 years; \$25,000
- CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena; H. K. Mitchell; *Peptides and Protein Synthesis in Drosophila*; 2 years; \$48,000
- CASE INSTITUTE OF TECHNOLOGY, Cleveland, Ohio; James E. Shields; *Side-Chain Interactions in Peptides*; 1 year; \$8,000
- COLUMBIA UNIVERSITY, New York, N.Y.; Eloise E. Clark; *Equipment for Research on the Macromolecules and Their Biological Functions*; 1 year; \$13,000
- Eloise E. Clark; *Interactions of Muscle Protein Actin*; 2 years; \$30,000
- Bernard F. Erlanger; *Relationship of Structure to Activity of Trypsin*; 2 years; \$35,000
- Teru Hayashi; *Role of Actin in Muscle Contraction*; 2 years; \$46,000
- Alvin I. Krasna; *Denaturation of Deoxyribonucleic Acids*; 2 years; \$25,000
- Barbara W. Low; *X-Ray Crystal Structure Studies of Insulin and Oxytocin*; 2 years; \$90,000
- William L. Nastuk; *Quaternary Ammonium Ions on Junctional and Non-Junctional Membranes of Excitable Cells*; 2 years; \$40,000
- Stephen Zamenof; *Biochemistry of Polysugarphosphates*; 3 years; \$40,000
- CORNELL UNIVERSITY, Ithaca, N.Y., Robert W. Holley; *Biosynthesis of Proteins*; 3 years; \$88,300
- Harold A. Scheraga; *Thermodynamic and Kinetic Studies of Protein Reactions*; 3 years; \$120,000
- J. R. Vallentyne; *Biogeochemistry of Amino Compounds*; 1 year; \$14,500
- J. R. Vallentyne; *Ecological and Biogeochemical Studies on Amino Acids and Polypeptides*; \$2,900
- DARTMOUTH COLLEGE, Hanover, N.H.; R. Clinton Fuller; *Intracellular Structure and Function in Microbial Cells*; 2 years; \$110,000
- DUKE UNIVERSITY, Durham, N.C.; J. J. Blum; *Induced Enzyme Formation in Protozoa*; 2 years; \$40,000
- Paul Horowitz; *Electrical Properties of Muscle Membranes*; 2 years; \$50,000
- DUQUESNE UNIVERSITY, Pittsburgh, Pa.; Oscar Gawron; *Chemistry and Biochemistry of Sulfur Amino Acids*; 2 years; \$32,000
- EVANSTON HOSPITAL ASSOCIATION, Evanston, Ill.; Georg F. Springer; *Nature of Blood Group Active Substances from Bacteria and Higher Plants*; 2 years; \$50,000
- FLORIDA STATE UNIVERSITY, Tallahassee; Hans Gaffron; *Photobiology*; 2 years; \$100,000
- FRESNO STATE COLLEGE FOUNDATION, Fresno, Calif.; John H. Carr; *The Bacillus Pumilus-Bacteriophage System*; 2 years; \$9,200
- HARVARD UNIVERSITY, Cambridge, Mass.; Konrad E. Bloch; *Biological Synthesis of Unsaturated Fatty Acids*; 3 years; \$60,000
- Bruce A. Bonner; *Chemical and Physical Properties of Phytochrome*; 2 years; \$18,000
- Oleg Jardetzky; *Nuclear Magnetic Resonance Studies of Biologically Important Molecules*; 2 years; \$90,000
- John H. Law; *Biological Transalkylation Reactions*; 2 years; \$50,000
- Thomas J. Gill III, Lewis T. Mann, Jr. and Gustave J. Dammin, Boston; *In Vivo Fate of Antigen Using Synthetic Polypeptide Antigens of Varying Physical Chemical Properties*; 2 years; \$53,000
- HEALTH RESEARCH INC., Albany, N.Y.; Donald S. Berns; *Physical Chemistry of Deuterated Proteins*; 2 years; \$25,000
- HEALTH RESEARCH INC., Buffalo, N.Y.; David Harker; *Crystal Structure of Ribonuclease*; 3 years; \$150,000
- HOWARD UNIVERSITY, Washington, D.C.; Felix Friedberg; *Estimation of Peptides*; 2 years; \$17,000
- HUNTER COLLEGE, New York, N.Y.; Marcia Brody; *States of Chlorophyll in Vivo and Their Photochemical Activities*; 2 years; \$30,000
- INDIANA UNIVERSITY FOUNDATION, Bloomington; Eugene H. Cordes; *Catalytic Mechanisms Involved in Carbonyl Addition Reactions*; 2 years; \$30,000
- INSTITUTE FOR CANCER RESEARCH, Philadelphia, Pa.; Thomas F. Anderson; *Equipment for the Determination of Fine Structure of Genetic Control Mechanisms*; 1 year; \$40,000

## MOLECULAR BIOLOGY

Thomas F. Anderson; *Specific Syntheses in Cellular and Viral Systems*; 2 years; \$150,000

IOWA STATE UNIVERSITY, Ames; S. Aronoff; *Intercellular Movement of Organic Compounds*; 2 years; \$32,000

JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Howard M. Dintzis, G. von Ehrenstein and Michael A. Naughton; *Sequence Determination in Proteins and Nucleic Acids*; 2 years; \$100,000

Paul O. P. Tr'o; *Hydrophobic and Stacking Interaction of Bases in Nucleic Acids*; 3 years; \$90,500

KABUL UNIVERSITY, Kabul, Afghanistan; Syed Alef Shah Ghazanfar; *A Study of Abnormal Hemoglobins and Varieties of Plasma Proteins*; 2 years; \$20,000

KANSAS STATE UNIVERSITY, Manhattan; Karl G. Lark; *Cellular Control of Macromolecule Biosynthesis*; 2 years; \$32,500

LOUISIANA STATE UNIVERSITY, Baton Rouge; A. N. J. Heyn, New Orleans; *Fiber and Ultra Structure Research*; 2 years; \$41,800

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge; J. E. Darnell, Jr.; *Ribonucleic Acid Synthesis*; 2 years; \$70,000

Cyrus Levinthal; *Control of the Alkaline Phosphatase in Escherichia Coli*; 3 years; \$110,000

S. E. Luria; *Function and Organization of Viruses and Other Episomes*; 3 years; \$160,000

Boris Magasanik; *Regulation of the Metabolic Processes of the Single Cell at the Molecular Level*; 3 years; \$125,000

MASSACHUSETTS GENERAL HOSPITAL, Boston; Roger W. Jeanloz; *Chemistry of Neuraminic and Muramic Acids*; 3 years; \$50,000

Dorothy F. Travis; *Molecular Biology of Crustacean Mineralized Tissues*; 2 years; \$40,000

MCLEAN HOSPITAL, Belmont, Mass.; J. David Robertson and Helen H. Hess; *Molecular Architecture of the Retinal Rod Outer Segment*; 2 years; \$78,000

MICHIGAN STATE UNIVERSITY, East Lansing; Barnett Rosenberg; *Electrical Conductivity of Proteins in the Solid State*; 1 year; \$25,000

MONTANA STATE COLLEGE, Bozeman; K. J. Goering; *Isolation, Composition and Structure of the Carbohydrate Present in Myrocin*; 2 years; \$12,000

PENNSYLVANIA HOSPITAL, Philadelphia; Gilbert N. Ling; *Induction and Cooperative Phenomena in the Behavior of Isolated Proteins and of Living Cells*; 2 years; \$70,000

POLYTECHNIC INSTITUTE of Brooklyn, N.Y.; Murray Goodman; *Synthesis, Properties and Reactions of Peptides and Their Derivatives*; 2 years; \$60,000

PRESBYTERIAN-ST. LUKE'S HOSPITAL, Chicago, Ill.; James A. Hayashi; *Separation of O-Methyl-Rhamnosides by Gas Chromatography*; 2 years; \$16,000

PRINCETON UNIVERSITY, Princeton, N.J.; Jacques R. Fresco; *Physical Biochemistry of Polynucleotides and Ribonucleic Acids*; 3 years; \$105,000

Noboru Sueoka; *Base Composition of Nucleic Acids and Its Relation to Structure of Protein*; 1 year; \$40,000

Noboru Sueoka; *Equipment for Molecular Biological Studies*; 1 year; \$75,000

PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; Frederick L. Crane; *Comparative Biochemistry of Plastoquinones*; 2 years; \$45,000

Peter T. Gilham, West Lafayette; *Nucleic Acids: Their Structure, Degradation and Chemical Synthesis*; 2 years; \$75,000

Henry Koffler; *Biosynthesis of Proteins*; 2 years; \$100,000

Michael G. Rossmann and Edward L. McGandy; *X-Ray Structure Determination of Proteins and Viruses*; 2 years; \$140,000

Henry Koffler; *Equipment for Molecular Biology Research*; 1 year; \$100,000

RESEARCH FOUNDATION OF STATE UNIVERSITY of New York, Albany; T. E. Timell, Syracuse; *Characterization of O-Acetyl-4-O-Methylglucurono-Xylans from the Wood of Angiosperms*; 2 years; \$28,000

ROCKEFELLER INSTITUTE, New York, N.Y.; Lucien G. Caro and George E. Palade; *Synthetic Processes in Bacteria*; 2 years; \$28,000

Lyman C. Craig; *Equipment for Research on the Development of Methods for Isolation and Characterization of Active Principles*; 1 year; \$29,000

Christian de Duve; *Acid Hydrolases in Rat Spleen*; 2 years; \$25,000

David J. L. Luck and George E. Palade; *Biochemical Mutants of Neurospora Crassa*; 2 years; \$30,000

Beatrice S. Magdoff; *Structure of Small Virus Particles*; 2 years; \$20,000

Phillip Siekevitz; *Metabolism of Different RNA Species in Sea-Urchin Embryos*; 1 year; \$1,300

Walther Stoerkenius and Anatole Nicolai-ef; *Molecular Morphology of Nucleic Acids and Nucleoproteins*; 2 years; \$50,000

RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.; Walter J. Nickerson and George Straus; *Photodecomposition of Complexed Water in Biochemical Oxidation-Reduction Systems*; 3 years; \$23,000

SMITH COLLEGE, Northampton, Mass.; Gladys A. Anslow; *Structure of Small Peptides and Other Biological Molecules*; 2 years; \$20,000

SOUTHERN ILLINOIS UNIVERSITY, Carbondale; Maurice Ogur; *Nucleotide Sequence Studies*; 2 years; \$20,000

STANFORD UNIVERSITY, Stanford, Calif.; M. S. Blois; *Electron Paramagnetic Resonance Study of Unpaired Electrons in Photosynthetic Mutant and Wildtype Organisms*; 2 years; \$25,000

George A. Feigen and Geronimo Terres; *Selected Problems in Molecular Biology*; 1 year; \$23,500

Arthur Kornberg; *Nucleic Acid Metabolism in Bacterial Spores*; 3 years; \$68,000

Howard H. Pattee; *Infrared Microspectroscopy Using a Superconducting Bolometer Detector*; 2 years; \$20,000

Boris Weinstein; *Synthesis of Glucagon*; 2 years; \$23,500

BIOLOGICAL AND MEDICAL SCIENCES

STATE UNIVERSITY OF NEW YORK, COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY, Ithaca; George P. Hess; *Structural and Functional Interrelationships in Enzymes*; 3 years; \$75,000

TEMPLE UNIVERSITY, Philadelphia, Pa.; Alois H. Nowotny; *Chemical Investigation of Active Centers in Bacterial O-antigens*; 1 year; \$10,000

G. D. Shockman; *Bacterial Autolytic Enzymes and Function and Structure of Bacterial Cell Wall*; 2 years; \$40,000

TULANE UNIVERSITY, New Orleans, La.; Elliott Shaw; *Chemistry of Enzyme Active Centers*; 2 years; \$50,000

UNIVERSITY OF CALIFORNIA, Berkeley; Charles A. Dekker; *Structural Studies on Nucleic Acids*; 2 years; \$55,000

Heinz Fraenkel-Conrat; *Studies on the Chemical Nature of Biologically Active Ribonucleic Acid and Associated Proteins*; 3 years; \$200,000

Leonard Machlis; *Production and Determination of the Chemical Structure of Sirenin*; 1 year; \$20,000

Lester Packer; *Function of Sub-Cellular Membranes*; 2 years; \$50,000

Clarence Sterling, Davis; *Crystallographic Structure of B-Carotene*; 1 year; \$10,000

Denis L. Fox, Los Jolla; *Spectroscopic, Chemical and Metabolic Studies of Carotenoids, Carotenoid Chromoproteins, and Associated Lipids in Animals*; 2 years; \$30,000

UNIVERSITY OF CALIFORNIA, Los Angeles; William G. Clark, Los Angeles; *Mammalian Histidine Decarboxylase*; 2 years; \$30,000

Fritiof S. Sjostrand, Los Angeles; *In Vitro Studies on the Control of Hemoglobin Synthesis*; 2 years; \$32,000

Arthur Yowler, Los Angeles; *Studies on 5-Hydroxytryptophan 3, 4-Dihydroxyphenylalanine Decarboxylase*; 1 year; \$7,500

Andrew Benson; San Diego; *Radiochemical Investigations in Lipid Biochemistry*; 3 years; \$150,000

Martin D. Kamen, San Diego; *Biochemistry of Haematin Compounds in Photosynthetic Bacteria*; \$5,000

Joseph Kraut, San Diego; *X-ray Crystallography of Biological Molecules*; 2 years; \$60,000

Benjamin E. Volcani, San Diego; *Biochemical Studies on Silica Shell Formation in Diatoms*; 2 years; \$63,000

Joel W. Goodman, San Francisco; *Immunochemical Studies on Protein Antigens and Anti-Protein Antibodies*; 2 years; \$20,000

UNIVERSITY OF CHICAGO, Ill.; John Westley; *Enzyme Synthesis and the Biochemical Environment*; 2 years; \$40,000

UNIVERSITY OF COLORADO, Boulder; Leonard S. Lerman, Denver; *Mode of Combination of Deoxyribonucleic Acid with Polycyclic Aromatic Compounds*; 2 years; \$45,000

UNIVERSITY OF CONNECTICUT, Storrs; Jay S. Roth; *Study on the Molecular Level of Ribonucleases*; 2 years; \$25,000

UNIVERSITY OF FLORIDA, Gainesville; J. L. Nation; *Purine Catabolism in Insects*; 2 years; \$11,800

UNIVERSITY OF HAWAII, Honolulu; Howard F. Mower; *Characterization of Ferredoxin Proteins*; 2 years; \$45,000

UNIVERSITY OF ILLINOIS, Urbana; K. C. Atwood; *Equipment for Microbiological Research*; 1 year; \$60,000

L. M. Black; *Plant Viruses*; 2 years; \$55,000

Eugene Rabinowitch; *Primary Light Processes in Photosynthesis*; 3 years; \$65,000

S. Spiegelman; *Mechanism of Enzyme Synthesis*; 3 years; \$135,000

Noboru Sueoka; *Base Composition of Nucleic Acids and Its Relation to Structure of Protein*; 2 years; \$95,000

Clyde C. Doughty, Chicago; *Enzymatic Properties of a Phage-Induced Lysin for Staphylococcus*; 2 years; \$11,000

UNIVERSITY OF LOUISVILLE, Ky.; Bruce M. Anderson; *Mechanism of Enzyme Action*; 2 years; \$35,000

R. Duncan Dallam and John Fuller Taylor; *Quinones in Mitochondrial Enzyme Systems*; 2 years; \$30,000

Robert S. Levy; *Composition of Protein from Serum Lipoproteins*; 2 years; \$35,000

UNIVERSITY OF MAINE, Orono; Herman DeHaas; *Rat Liver Fructose-1, 6-Diphosphatase*; 2 years; \$5,525

George R. Pettit; *Steroid Peptides*; 2 years; \$35,000

UNIVERSITY OF MARYLAND, College Park; Audrey Stevens, Baltimore; *Ribonucleic Acid in Bacterial Extracts*; 6 months; \$2,400

UNIVERSITY OF MICHIGAN, Ann Arbor; Minor J. Coon; *Hydrocarbon Oxidation in a Bacterial Enzyme System*; 2 years; \$50,000

Makepeace U. Tsao; *Multiple Forms of Dehydrogenases of Neurospora Crassa*; 2 years; \$26,000

UNIVERSITY OF MINNESOTA, Minneapolis; Allan H. Brown; *Photosynthesis and Related Metabolic Processes*; 3 years; \$100,000

UNIVERSITY OF NEBRASKA, Lincoln; John H. Pazur; *Thymidine Diphosphate Hezoses and the Synthesis of Carbohydrates*; 3 years; \$49,000

UNIVERSITY OF NEW HAMPSHIRE, Durham; Edward J. Herbst; *The Molecular Form and Function of Spermine in Animal Tissues*; 2 years; \$20,000

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; David J. Holbrook, Jr.; *Transport of Purines and Purine Derivatives into the Cellular Nucleus*; 2 years; \$15,600

James R. White; *Ribosomal Function and the Action of Streptomycin*; 2 years; \$30,000

UNIVERSITY OF PENNSYLVANIA, Philadelphia; George Czerlinski; *Temperature Jump Method and its Application to Biological Systems*; 2 years; \$50,000

Abraham M. Shanes; *A Physicochemical Approach to Biological Membranes*; 2 years; \$42,000

UNIVERSITY OF RHODE ISLAND, Kingston; John Lines Purvis; *Incorporation of Pyridine Nucleotides and Pyridine Nucleotide Analogues into Mitochondria*; 2 years; \$25,000

## PSYCHOBIOLOGY

UNIVERSITY OF OKLAHOMA, Norman; Everett C. Bracken; *Characterization of Equine Abortion Virus*; 2 years; \$28,000

UNIVERSITY OF ROCHESTER, N.Y.; Thomas R. Punnett, Jr.; *Induction of Human Leucocyte and Mechanism of the Hill Reaction*; 2 years; \$28,000

UNIVERSITY OF SOUTH CAROLINA, Columbia; B. Theodore Cole; *Lipid Constituents of Cells and Cell Fractions*; 2 years; \$20,000

UNIVERSITY OF UPPSALA, Sweden; I. R. Fenichel and Samuel B. Horowitz; *Properties of Water in Respect to Nonelectrolyte Transport in Systems Which are Cellular Analogs*; 2 years; \$30,000

UNIVERSITY OF UTAH, Salt Lake City; George Eisenman; *Atomic and Molecular Origins of Ion Specific Phenomena*; 2 years; \$50,000

UNIVERSITY OF VERMONT, Burlington; William L. Meyer; *Purification and Properties of Phosphofructokinase*; 2 years; \$22,000

UNIVERSITY OF WASHINGTON, Seattle; Edmond H. Fischer; *Structure and Mechanism of Action of Pyridoxal-Phosphate*; 2 years; \$46,000

W. Mary Griffiths; *The Synthesis of Naphthoquinone Pigments by Two Species of Sea Urchin Larvae*; 2 years; \$16,000

UNIVERSITY OF WISCONSIN, Madison; Wm. Wallace Cleland; *Determination of Enzymic Mechanisms by Kinetic Studies*; 2 years; \$24,000

Hector F. DeLuca and Howard Rasmussen; *Multivalent Ion Transport in Biological Systems*; 2 years; \$50,000

H. Gobind Khorana; *Chemical Synthesis of Polynucleotides*; 3 years; \$141,000

VANDERBILT UNIVERSITY, Nashville, Tenn.; Leon W. Cunningham; *Chemical and Enzymatic Studies of Glycoproteins*; 2 years; \$36,500

WASHINGTON UNIVERSITY, St. Louis, Mo.; Barry Commoner; *Biological Properties of Tobacco Mosaic Virus*; 2 years; \$100,000

Luis Glaser; *Enzymatic Synthesis of Telcholic Acids*; 2 years; \$40,000

Roger G. Hart; *Factors Influencing the Quality of Metal Shadow Films Used for Electron Microscopic Observation of Particles*; 2 years; \$24,000

WASHINGTON STATE UNIVERSITY, Pullman; Leonard B. Kirschner; *Osmotic Regulation and the Function of Regulatory Organs*; 2 years; \$43,000

WAYNE STATE UNIVERSITY, Detroit, Mich.; Maurice H. Bernstein; *Functional Modifications of Sperm Structure*; 2 years; \$30,000

WEIZMANN INSTITUTE OF SCIENCE, Rehovoth, Israel; David Elson; *Studies on Ribosomes*; 2 years; \$35,000

WELLS COLLEGE, Aurora, N.Y.; D. G. Markees; *Synthesis of Substituted 2,6-diaminopyridines*; 2 years; \$6,500

WISTAR INSTITUTE OF ANATOMY AND BIOLOGY, Philadelphia, Pa.; Eberhard Wecker; *Bio-synthesis of Viral Substructures*; 2 years; \$48,000

WORCESTER FOUNDATION FOR EXPERIMENTAL BIOLOGY, Shrewsbury, Mass.; Eugene L. Hess and Willa K. Brunkhorst; *Interaction*

*of Glucocorticoids with Macromolecular Constituents of the Lymphocyte*; 2 years; \$35,000

YALE UNIVERSITY, New Haven, Conn.; Daniel L. Kline; *Activation and Purification of Fibrinolytic Enzymes*; 2 years; \$24,800

Harry H. Wasserman; *Varian EPR Spectrometer System*; 1 year; \$28,500

Arnold D. Welch and William H. Prusoff; *Mechanism of Action of Antitumor Agents*; 2 years; \$70,000

YESHIVA UNIVERSITY, New York, N.Y.; Henry D. Hoberman; *Enzymatically Catalyzed Hydrogen Transfer Reactions*; 3 years; \$57,000

Wolfgang K. Joklik; *Biochemistry of Poxvirus Multiplication*; 2 years; \$100,000

N. W. Penn; *RNA Synthesis in the Liver Mitochondrial Fraction*; 6 months; \$2,000

Matthew D. Scharf; *Synthesis and Structure of Poliovirus Protein*; 2 years; \$36,500

## PSYCHOBIOLOGY

ALAMEDA COUNTY STATE COLLEGE FOUNDATION, Inc., Hayward, Calif.; Arnold Mechanic; *Response Integration of Verbal Units as a Function of Articulation*; 2 years; \$30,500

AMERICAN MUSEUM OF NATURAL HISTORY, New York, N.Y.; Helmut E. Adler; *Sensory Factors in Bird Navigation*; 2 years; \$50,300

T. C. Schneirla; *Cooperative Studies on the Biology and Behavior of Old and New World Genera of Legionary (Doryline) Ants*; 2 years; \$33,500

Evelyn Shaw; *Schooling Behavior in Fishes*; 3 years; \$70,600

AMERICAN UNIVERSITY, Washington, D.C.; David J. King; *Experimental and Normative Studies in Verbal Learning*; 2 years; \$3,300

AMHERST COLLEGE, Amherst, Mass.; Lincoln P. Brower; *Analysis of the Factors Controlling Mimicry*; 2 years; \$3,600

BARNARD COLLEGE, Columbia University, New York, N.Y.; Tracy S. Kendler; *Problem-Solving Behavior in Children*; 4 years; \$36,600

BOSTON UNIVERSITY, Mass.; J. M. Harrison; *Anatomical and Behavioral Investigation of the Auditory System*; 2 years; \$44,400

BOWLING GREEN STATE UNIVERSITY, Bowling Green, Ohio; Louis C. Graue; *Bird Orientation*; 1 year; \$7,000

BROOKLYN COLLEGE, N.Y.; Eric G. Heine-mann; *An Experimental Investigation of the Mach Phenomenon*; 2 years; \$24,900

David H. Raab; *Forward and Backward Masking in Hearing and Vision*; 2 years; \$27,900

BROWN UNIVERSITY, Providence, R.I.; Trygk Engen; *The Psychophysical Similarity of Isomeric Alcohols*; 2 years; \$25,300

CITY COLLEGE OF THE CITY OF NEW YORK; Louis Levine; *Factors Affecting Mating Competition in Mice*; 1 year; \$8,500

COLGATE UNIVERSITY, Hamilton, N.Y.; Robert D. Myers; *Modification of Alcohol Preference in Rats through Periodic Intracranial Infusion*; \$1,300

BIOLOGICAL AND MEDICAL SCIENCES

COLUMBIA UNIVERSITY, New York, N.Y.; William N. Schoenfeld and John Farmer; *Research on Schedules of Reinforcement*; 1 year; \$23,400

CORNELL UNIVERSITY, Ithaca, N.Y.; William C. Diller; *Effects of Inheritance and Experience on Species-typical Behavior*; 3 years; \$105,000

J. J. Gibson, Cornell University, and Gunnar Johansson, University of Uppsala, Sweden; *Perception of Visible Motions*; 1 year; \$19,400

J. E. Hochberg; *Configurational and Meaningful Determinants of Visual Fixation and Attention*; 2 years; \$23,500

DARTMOUTH COLLEGE, Hanover, N.H.; William M. Smith; *Visual Movement, Contour Perception, and Eye Movement*; 1 year; \$10,600

DUKE UNIVERSITY, Durham, N.C.; Peter H. Klopfer; *Ontogenetic Analyses of Behavior*; 1 year; \$15,100

EMORY UNIVERSITY, Atlanta, Ga.; Albert S. Rodwan; *Coherence and Form Perception*; 2 years; \$20,100

FRANKLIN AND MARSHALL COLLEGE, Lancaster, Pa.; Kenneth H. Brookshire; *Factors Affecting Preference Behavior*; 1 year; \$10,600

FREDERIC BURK FOUNDATION FOR EDUCATION, San Francisco, Calif.; Lewis Petrinovich; *Reorganization of Memory Traces Following Cerebral Insult*; 2 years; \$40,200

GEORGE WASHINGTON UNIVERSITY, Washington, D.C.; Charles W. Hill; *Perceptual-Motor Reversal Learning*; 1 year; \$7,200

Richard D. Walk; *A Study of Visual Depth Perception*; 3 years; \$38,000

GRINNELL COLLEGE, Grinnell, Iowa; Irving Y. Fishman; *Osmoreception in Small Mammals*; 49 months; \$1,500

HARVARD UNIVERSITY, Cambridge, Mass.; Jacob Beck; *A Quantitative Study of Visual Pattern Perception*; 1 year; \$12,000

Donald R. Griffin; *Comparative Physiology of Sensory Discrimination*; 4 years; \$111,200  
Richard J. Herrnstein; *Studies on the Instrumental Behavior of Animals*; 2 years; \$47,700

W. W. Howells; *Ecology, Behavior, and Breeding of Tree Shrews*; 1 year; \$12,500

HOLLINS COLLEGE, Hollins College, Va.; Robert C. Bolles; *Associative Determinants of Eating and Drinking*; 1 year; \$16,100

IDAHO STATE COLLEGE, Pocatello; Edson Fichter; *Behavior and Social Organization of the Pronghorn (Antilocapra americana)*; 1 year; \$8,000

INDIANA UNIVERSITY FOUNDATION, Bloomington; James P. Egan; *Detection and Recognition of Auditory Signals*; 1 year; \$3,000

Isidore Gormezano; *Role of the Unconditioned Stimulus in Eyelid Conditioning*; 2 years; \$27,400

Frank Restle and James G. Greeno; *Studies of Choice and Judgment*; 2 years; \$30,000

Sherman L. Guth; *Additivity of Luminances at Threshold*; 1 year; \$9,300

Lloyd R. Peterson; *Studies in Short-term Retention*; 2 years; \$18,800

INSTITUTE FOR BEHAVIORAL RESEARCH, INC., College Park, Md.; Charles B. Ferster; *The Averate Properties of Unoptimal Conditions of Reinforcement*; 2 years; \$43,200

JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Leonard Martin; *Local Signs, Visual Direction, and Involuntary Eye Movements*; 2 years; \$25,100

KENT STATE UNIVERSITY, Kent, Ohio; Joseph H. Grosslight and Wesley C. Zaynor; *Reinforcement and Vocalization: Precursors of Speech in the Mynah Bird (Gracula Religiosa)*; II; 1 year; \$16,100

Robert Morin; *Information Theory and Reaction Time*; 1 year; \$13,300

KENTUCKY RESEARCH FOUNDATION, Lexington; John W. Donahoe; *The Reinforcing Effects of Variable Visual Stimulation in the Hooded Rat*; 1 year; \$10,600

LOS ANGELES COUNTY MUSEUM, Los Angeles, Calif.; David K. Caldwell and Melba C. Caldwell; *Cooperative Aiding Behavior in Captive Breeding Colonies of the Atlantic Bottlenose Dolphin*; 1 year; \$3,700

LOUISIANA STATE UNIVERSITY, Baton Rouge; Donald R. Hoffeld; *Comparative Behavior of Protozoa and Rotatoria*; 1 year; \$5,000

MICHIGAN STATE UNIVERSITY, East Lansing; Abram M. Barch; *Stimulus Familiarization, Stimulus Similarity, and Auditory Identification Learning*; 2 years; \$18,900

M. Ray Denny; *Relaxation Response as a Variable in Avoidance Learning*; 2 years; \$27,100

Stanley C. Ratner; *Functions of the Cerebral Ganglia in the Behavior of Annelids*; 2 years; \$17,100

NEW YORK UNIVERSITY, New York; Benjamin Dane; *Development of Behavior in the Goldeneye Duck (Bucephala clangula)*; 1 year; \$3,200

Howard H. Kendler; *Problem-Solving Behavior in Children*; 4 years; \$64,200

NEW YORK ZOOLOGICAL SOCIETY, New York; Allison Bishop; *A Behavioral Study of Lemur in the Field*; 2 years; \$27,400

John T. Emlen, University of Wisconsin, Madison; *Field Studies of the Mountain Gorilla*; 1 year; \$2,600

NORTHWESTERN UNIVERSITY, Evanston, Ill.; Winfred F. Hill and Albert Erlebacher; *Reinforcement Parameters in Extinction, Discrimination Reversal and Choice Behavior*; 2 years; \$23,000

OREGON RESEARCH INSTITUTE, Eugene; Paul J. Hoffman; *Test Reliability and Practice Effects*; 3 years; \$46,000

PENNSYLVANIA STATE UNIVERSITY, University Park; Henry D. Gerhold; *Influence of White Pine Hybridization on Olfactory Responses of Weevils*; 2 years; \$18,500

PRINCETON UNIVERSITY, Princeton, N.J.; B. A. Campbell; *Quantitative Studies of Animal Motivation*; 3 years; \$42,600

Frank A. Geldard; *Parameters of Olfactory Communication*; 1 year; \$23,900

QUEENS COLLEGE, Flushing, N.Y.; John S. Stamm; *Cortical Processes in Learning of Complex Tasks*; 2 years; \$62,300

RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, Albany; Hayne W. Reese,



PSYCHOBIOLOGY

Buffalo; *Mediation in Young Children*, 8 years; \$44,100

SAN DIEGO STATE COLLEGE FOUNDATION, San Diego, Calif.; R. G. Eason; *Psychophysiological Studies of Activation Level, and Perceptual and Motor Responses*; 3 years; \$74,500

Laverne C. Johnson and David G. McDonald; *Conditioning and Psychophysiological Response to Stimulation During Sleep*; 2 years; \$20,000

Duane M. Rumbaugh; *Comparative Studies of Learning in Monkeys and Apes*; 1 year; \$25,400

Evalyn F. Segal; *Secondary Reinforcement, Chaining and Discrimination*; 6 months; \$2,200

SAN FERNANDO VALLEY STATE COLLEGE FOUNDATION, Northridge, Calif.; Ralph Gunter; *The Nature of Primate Color Vision*; 2 years; \$40,000

SOCIAL SCIENCE RESEARCH COUNCIL, New York, N.Y.; Francis H. Palmer; *Workshop on Comparative Developmental Behavior*; 1 year; \$2,600

STANFORD UNIVERSITY, Stanford, Calif.; William K. Estes and Richard C. Atkinson; *Mathematical Behavior Theory*; 3 years; \$124,200

Seymour Levine; *Studies in Sexual Differentiation: Hormones and Behavior*; 2 years; \$47,800

SUL ROSS STATE COLLEGE, Alpine, Tex.; E. B. Coleman; *Improving the Comprehensibility of Printed Material*; 2 years; \$17,500

SWARTHMORE COLLEGE, Swarthmore, Pa.; Hans Wallach; *Study of Perceptual Learning*; 2 years; \$40,900

TRINITY UNIVERSITY, San Antonio, Tex.; Richard H. Lindley; *Coding Processes in Short-term Memory*; 2 years; \$12,800

TULANE UNIVERSITY, New Orleans, La.; Edward A. Bilodeau; *Regulation of Human Memory*; 2 years; \$18,000

UNIVERSITY OF ALBERTA, Edmonton, Canada; Stuart A. Altman; *Field Studies of Primate Behavior*; 1 year; \$26,000

UNIVERSITY OF BRIDGEPORT, Conn.; R. S. Beecroft; *Extinction of Differentially Reinforced Stimuli and Stimulus Compounds*; 2 years; \$7,400

UNIVERSITY OF BRITISH COLUMBIA, Vancouver, Canada; Edith G. McGeer; *Correlation of Brain Amine Levels with Behavior*; 2 years; \$26,600

UNIVERSITY OF CALIFORNIA, Berkeley; David Krech and Mark R. Rosenzweig; *Brain Chemistry and Behavior*; 1 year; \$10,800

Jacques W. Kaswan and Michael J. Goldstein, Los Angeles; *Stimulus and Situational Variables in Visual Perception*; 1 year; \$12,500

Nicholas E. Collas, Los Angeles; *Behavior and Ecology of the Red Jungle Fowl (Gallus Gallus)*; 1 year; \$12,400

F. Nowell Jones, Los Angeles; *Studies of Subjective Magnitude*; 2 years; \$10,800

Bernice M. Wenzel and Robert D. Tschirgl, Los Angeles; *Effects of Brain Lesions on Discrimination Learning in the Pigeon*; 1 year; \$9,000

Sally E. Sperling, Riverside; *Nondifferential Reinforcement of Irrelevant Stimuli During Discrimination Training*; 1 year; \$2,000

UNIVERSITY OF CHICAGO, Ill.; George S. Reynolds; *Spatial Location as a Stimulus*; 2 years; \$26,700

UNIVERSITY OF COLORADO, Boulder; Margaret Altman; *A Comparative Study of Interspecies Communications*; 2 years; \$28,400

UNIVERSITY OF FLORIDA, Gainesville; B. N. Bunnell; *Physiological Correlates of Social Dominance Behaviors in Rodents*; 2 years; \$38,200

UNIVERSITY OF HAWAII, Honolulu; William F. Oakes; *Response Class in Verbal Operant Conditioning*; 2 years; \$15,000

Ernest S. Reese; *Physiological Mechanisms Underlying the Behavior of Hermit Crabs and Other Marine Crustacea*; 2 years; \$24,200

UNIVERSITY OF HOUSTON, Tex.; Daniel E. Sheer; *EEG Correlates of General and Specific Facilitative Effects in Learning*; 2 years; \$24,400

UNIVERSITY OF ILLINOIS, Urbana; Raymond W. Frankmann; *Statistical Learning Theory and T-Maze Learning*; 1 year; \$700

Paul Thomas Young; *Incentive Motivation With Compound Taste Solutions*; 1 year; \$11,500

UNIVERSITY OF KANSAS, Lawrence; Kenneth B. Armitage; *Social Behavior in Population Dynamics of the Marmot*; 3 years; \$1,000

UNIVERSITY OF MARYLAND, College Park; Paul D. Coleman, Baltimore; *A Single Unit Study of Auditory Localization*; 3 years; \$68,100

Robert W. Ficken; *Comparative Ethology of Certain Wood Warblers (Parulidae)*; 2 years; \$15,700

UNIVERSITY OF MIAMI, Coral Gables, Fla.; Warren J. Wisby, Miami; *Hearing and Allied Senses in Fishes*; 2 years; \$44,900

UNIVERSITY OF MICHIGAN, Ann Arbor; Robert L. Isaacson; *Developmental Study of Hippocampally Ablated Kittens*; 2 years; \$22,900

Harlan Lane; *Topographical Properties of Instrumental Behavior*; 2 years; \$35,000

Robert W. Storer; *Comparative Behavior and Anatomy of American Grebes*; 4 years; \$24,000

Wilson P. Tanner, Jr.; *Statistical Decision Processes in Detection and Recognition*; 2 years; \$40,000

UNIVERSITY OF MINNESOTA, Minneapolis; David S. Palermo; *Associative Processes in Children's Verbal Learning*; 2 years; \$18,100

Harold W. Stevenson; *A Mobile Research Laboratory*; 1 year; \$5,900

UNIVERSITY OF MISSOURI, Columbia; Walter Kintsch; *A Marker Model for Paired-Associate Learning*; 2 years; \$14,800

Melvin H. Marx; *Effects of Incentive Contrast on Instrumental Acquisition and Performance*; 3 years; \$37,600

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; Lyle V. Jones; *Multivariate Analysis in Psychological Research*; 18 months; \$26,600

## BIOLOGICAL AND MEDICAL SCIENCES

- UNIVERSITY OF NEW MEXICO, Albuquerque; Henry C. Ellis; *Determinants of Visual Form Perception*; 2 years; \$15,500
- UNIVERSITY OF PENNSYLVANIA, Philadelphia; Kenneth P. Goodrich; *Studies in Classical Conditioning*; 2 years; \$24,000
- Leo M. Hurvich and Dorothea Jameson Hurvich; *Behavioral Study of Spectral Sensitivity and Color Discrimination in the Fish*; 2 years; \$35,300
- Andre Malecot; *Measurement of Selected Articulatory Events of Speech and Their Acoustic Correlatives*; 3 years; \$34,700
- Saul Sternberg; *Human Attention and Immediate Memory*; 1 year; \$17,600
- Phillip Teitelbaum; *Disturbances in Feeding and Drinking After Hypothalamic Lesions*; 3 years; \$94,100
- UNIVERSITY OF PITTSBURGH, Pa.; George J. Wischner and Harry Fowler; *Factors in Punishment Affecting Discrimination Learning*; 1 year; \$12,500
- UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles; Wayne S. Zimmerman; *Comparison of Analytical and Graphical Methods of Rotation in Factor Analysis*; 2 years; \$40,000
- UNIVERSITY OF TEXAS, Austin; Robert K. Young and David T. Hakes; *Serial Verbal Learning*; 2 years; \$27,600
- UNIVERSITY OF TORONTO, Ontario, Canada; Abram Amsel; *Frustrative Nonreward in Partial Reinforcement and Discrimination Learning*; 3 years; \$44,000
- George Mandler and Endel Tulving; *Organization and Structure in Verbal Learning and Memory*; 2 years; \$20,900
- UNIVERSITY OF WASHINGTON, Seattle; Eugene Galanter; *Research Equipment for a Psycho-Acoustic Laboratory*; 1 year; \$8,000
- Roger Brown Loucks; *Delimitation of Neural Tissue Essential for Higher-Order Conditioning*; 2 years; \$23,700
- UNIVERSITY OF WISCONSIN, Madison; Arthur D. Hasler; *Orientation Studies of Migratory Fishes*; 2 years; \$35,900
- Leonard E. Ross; *Studies of Inhibitory Phenomena Resulting From Non-reward in Selective Learning Situations*; 2 years; \$13,400
- Willard R. Thurlow; *Temporal Aspects of Sound Localization Mechanisms*; 2 years; \$19,700
- C. G. Screven and Harry L. Madison, Milwaukee; *Combining Effects of Internal and External Stimulation on Free Operant Performance Arousal*; 2 years; \$21,600
- WESLEYAN UNIVERSITY, Middletown, Conn.; William R. Thompson; *Behavior and Stress*; 2 years; \$45,500
- YALE UNIVERSITY, New Haven, Conn.; Richard J. Andrew; *Vocalization and Associated Responses in the Chick*; 2 years; \$44,400
- John P. Flynn; *Neural Mechanisms Mediating Attack*; 2 years; \$68,300
- YERKES LABORATORIES OF PRIMATE BIOLOGY, INC., Orange Park, Fla.; Irwin S. Bernstein; *Social Organization and Activity of Primate Groups*; 1 year; \$27,500
- Yeshiva University, New York, N.Y.; Irvin Rock; *Orientation in Form Perception*; 2 years; \$20,000
- ### REGULATORY BIOLOGY
- AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS, College Station; James R. Couch; *Muscular Dystrophy in the Avian Species*; 2 years; \$25,400
- ALFRED UNIVERSITY, Alfred, N.Y.; Charles A. Gifford; *Respiration in the Land Crab, *Cardisoma Guanhumi**; 2 years; \$13,700
- AMERICAN FOUNDATION FOR CREATIVE RESEARCH, Palo Alto, Calif.; Ralph Buchsbaum; *Biology of *Convolvula Roscoffensis**; 2 years; \$5,800
- AMERICAN MOUNT EVEREST EXPEDITION 1963, Santa Monica, Calif.; William E. Sirt; *Erythropoiesis and Adrenocortical Function in Man at High Altitude*; 1 year; \$11,600
- ARIZONA STATE UNIVERSITY, Tempe; Howard G. Applegate; *Hormones on Sea Expression in *Cannabis Sativa L.*, *Lycchnis Dioica L.* and *Cleome Spinosa Jacq.**; 3 years; \$32,300
- BOSTON COLLEGE, Chestnut Hill, Mass.; Robert M. Coleman; *Types of Immunological Response and Unresponsiveness to the Dwarf Tapeworm*; 3 years; \$34,800
- BOSTON DISPENSARY, Mass.; Edward H. Frieden and Arthur I. Cohen; *Effects of Pituitary Gonadotropins Upon Rat Ovarian Cells in Vitro*; 3 years; \$42,100
- BOSTON UNIVERSITY, Mass.; Stewart Duncan; *Histopathology of the Coccidial Parasite, *Eimeria Labbeana**; 1 year; \$10,200
- BOYCE THOMPSON INSTITUTE FOR PLANT RESEARCH, INC., Yonkers, N.Y.; Robert G. Owens and Eli V. Crisan; *Thermophilic Fungi and Thermophilism*; 3 years; \$62,200
- BRYN MAWR COLLEGE, Bryn Mawr, Pa.; L. Joe Berry; *Metabolic Effects of Bacterial Endotoxins*; 3 years; \$75,700
- CARLETON COLLEGE, Northfield, Minn.; Douglas C. Pratt; *Flash-Photolytic Investigation of Rhodopsin*; 3 years; \$28,500
- CHICAGO COLLEGE OF OSTEOPATHY, Ill.; Shannon C. Allen; *Mechanism of Oxygen Toxicity in the Development and Maintenance of Higher Organisms*; 2 years; \$23,900
- CHILDREN'S ASTHMA RESEARCH INSTITUTE AND HOSPITAL, Denver, Colo.; Kimishige Ishizaka; *Equipment for Research on Molecular Bases of Hypersensitivity Reactions*; 1 year; \$29,600
- CITY COLLEGE, New York, N.Y.; William Etkin; *Hypothalamic-pituitary Interactions in the Frog*; 4 years; \$64,200
- CLARK UNIVERSITY, Worcester, Mass.; Vernon Ahmadjian; *Laboratory Controlled Lichen Synthesis*; 2 years; \$21,200
- COLORADO STATE UNIVERSITY RESEARCH FOUNDATION, Fort Collins; Ronald H. Olsen; *Physiological Studies on Psychrophilic Bacteria*; 3 years; \$34,600
- COLUMBIA UNIVERSITY, New York, N.Y.; Soll Berl; *Amino Acid and Carbon Dioxide Metabolism in Developing Brain*; 2 years; \$27,400
- Louis J. Cizek and Mero R. Nocenti; *Hormonal Factors Influencing the Electrolyte and Water Exchanges in Normal and Starvation-Induced Salt Deficient Rabbits*; 3 years; \$39,100

## REGULATORY BIOLOGY

Werner R. Loewenstein; *Intracellular Membranes*; 5 years; \$179,100

Fred A. Mettler, *Effect of 6-Aminonicotinamide on Equine Neural System*; 1 year; \$3,800

Lee D. Peachey; *Cellular Mechanisms of Muscle Contraction and of Antidiuretic Hormone Action*; 5 years; \$177,500

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION, New Haven; James G. Horsfall; *Mode of Action of Powdery Mildew Fungicides*; 2 years; \$15,800

CORNELL UNIVERSITY, Ithaca, N.Y.; Richard H. Barnes; *Contributions of Intestinal Microflora to the Nutrition of the Host Animal*; 4 yrs.; \$90,900

Gerhard Giebisch and Erich E. Windhager; *New York; Ion Transport Across Renal Tubules of the Kidney*; 3 yrs.; \$47,500

DARTMOUTH COLLEGE, Hanover, N.H.; Kurt Benirschke; *Laboratory Equipment for Steroid Analysis*; 6 months; \$25,900

William T. Jackson; *Cellular Control of Cytoplasmic Streaming*; 2 years; \$23,500

Robert B. Hill; *Neural Control of Molluscan Myocardial Rhythmicity*; 3 years; \$35,200

DUKE UNIVERSITY, Durham, N.C.; F. G. Hall; *Regulation and Adaptive Responses in Small Mammals to Environmental Stresses*; 3 years; \$25,900

F. Harold McCutcheon; *University of Pennsylvania; Pressure Responses, Buoyancy Reflexes, Volume Control, and Ventilation Regulation in Aquatic Vertebrates*; 3 years; \$41,300

DUQUESNE UNIVERSITY, Pittsburgh, Pa.; Howard G. Ehrlich; *Host-Parasite Relationships in Stem Rust of Wheat*; 1 year; \$8,700

Howard G. Ehrlich; *Purchase of an Electron Microscope and Related Research Equipment*; 1 year; \$33,900

FLORIDA STATE UNIVERSITY, Tallahassee; George W. Keitt, Jr.; *Chemical Control of Growth and Differentiation in Plants*; 2 years; \$31,800

FOUNDATION FOR RESEARCH ON THE NERVOUS SYSTEM, Boston, Mass.; Samuel Bogoch; *Isolation and Characterization of Glycoproteins of Bovine and Human Brain*; 3 years; \$27,700

FRANKLIN AND MARSHALL COLLEGE, Lancaster, Pa.; Wilbur D. Shenk; *Distribution of Activity of Acetylcholine Esterase in Skeletal Muscle*; 1 year; \$4,000

GEORGETOWN UNIVERSITY, Washington, D.C.; Seymour Ehrenpreis; *Action of Drugs on Isolated Aortic Strip*; 3 years; \$27,100

Richard J. Feinberg and Robert Feinberg; *Reagin Antibody—Physical and Chemical Characterization*; 3 years; \$33,000

GEORGE WASHINGTON CARVER FOUNDATION, Tuskegee Institute, Ala.; James H. M. Henderson; *Mechanism of Action of Plant Growth Regulators*; 3 years; \$28,100

GRAVELLY SANATORIUM, Chapel Hill, N.C.; H. Mac Vandivier and H. S. Willis; *Host Resistance in Chronic Infections*; 1 year; \$9,500

HASKINS LABORATORIES, New York, N.Y.; S. H. Hutner and John J. Lee; *Nutrition of Trichomonads from Poikilotherms*; 2 years; \$35,900

L. Provasoli; *Nutritional Studies on Marine Organisms*; 3 years; \$84,200

INDIANA UNIVERSITY FOUNDATION, Bloomington, Ind.; Robert W. Bullard; *Role of Physiological Factors in Tolerance to Hypoxia*; 3 years; \$23,800

IOWA STATE UNIVERSITY, Ames; Loyd Y. Quinn; *Mesophilic Holotrich Ciliates in Aseptic Defined Medium*; 2 years; \$17,900

JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Abraham G. Osler; *Mechanisms of Hypersensitivity Phenomena*; 5 years; \$104,200

KANSAS STATE UNIVERSITY, Manhattan; Theodore L. Hopkins; *Functions of Cholesterol and Related Sterols in Insects*; 2 years; \$13,700

KENTUCKY RESEARCH FOUNDATION, Lexington; Richard Thurston and Walter T. Smith, Jr.; *Resistance in Nicotiana to Myzus Persicae*; 3 years; \$36,800

LONGWOOD COLLEGE, Farmville, Va.; Robert T. Brumfield; *Control of Cell Division and Growth of Plant Root Meristems*; 1 year; \$5,400

LOUISIANA STATE UNIVERSITY, Baton Rouge; L. D. Newsom; *Action Spectrum for the Photoperiodic Induction of Diapause in the Boll Weevil*; 2 years; \$10,600

Carlton Heckrotte, New Orleans; *Temperature Acclimation Mechanisms*; 1 year; \$3,100

MEDICAL COLLEGE OF SOUTH CAROLINA, Charleston; Sherwin Mizell; *Rhythmic Biological Phenomena*; 2 years; \$13,600

MICHIGAN STATE UNIVERSITY, East Lansing; Harry H. Murakishi and G. Bernard Wilson; *Virus Synergy and Antagonism in Plant Cells*; 3 years; \$38,000

MISSISSIPPI STATE UNIVERSITY, State College; Bruce Glick; *Influence of Testosterone Propionate on Bursa of Fabricius and Antibody Production of Chickens*; 3 years; \$21,500

MONTANA STATE COLLEGE, Bozeman; R. H. McBee and D. E. Worley; *Rumen Physiology and Parasitology of the Yellowstone Elk*; 1 year; \$12,000

MONTANA STATE UNIVERSITY, Missoula; E. W. Pfeiffer and Robert S. Hofmann; *Endocrine Factors Controlling Behavior and Breeding Plumage in Male and Female Wilson's Phalarope (Steganopus Tricolor)*; 1 year; \$8,400

MOUNT ST. MARY'S COLLEGE, Los Angeles, Calif.; Mary Gerald Leahy; *Reproductive Physiology of Aedes Aegypti*; 2 years; \$15,000

NEW YORK UNIVERSITY, New York; W. G. Van der Kloot; *Equipment for Department of Physiology and Biophysics*; 1 year; \$12,700

NEW YORK ZOOLOGICAL SOCIETY, New York; Thomas Goreau; *Photosynthesis and Calcium Carbonate Production in the Reef Building Corals and Algae*; 3 years; \$53,800

BIOLOGICAL AND MEDICAL SCIENCES

- NORTH TEXAS STATE UNIVERSITY, Denton; James R. Lott; *Water and Ion Movement in Root Systems*; 1 year; \$4,400
- NORTHWESTERN UNIVERSITY, Evanston, Ill.; Albert Wolfson; *Regulation of Gonadotropic Activity of the Anterior Pituitary*; 3 years; \$59,800
- OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; R. E. Franklin and E. O. McLean; *Effects of Colloids on Plant Nutrition*; 2 years; \$30,500
- OREGON STATE UNIVERSITY, Corvallis; Austin W. Pritchard; *Osmotic and Ionic Regulation in Crayfish*; 3 years; \$21,500
- PRINCETON UNIVERSITY, Princeton, N.J.; Robert D. Lisk; *Gonadal Hormones and the Hypothalamus*; 3 years; \$51,400
- PSYCHIATRIC RESEARCH FOUNDATION OF CLEVELAND, Cleveland, Ohio; Margaret A. Kelsall; *Hormones on DNA and Nucleoli in Purkinje Cells*; 2 years; \$15,100
- PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; Richard C. Sanborn; *Regulation of Growth of Arthropod Tissues*; 4 years; \$4,950
- REED COLLEGE, Portland, Oreg.; Stephen J. Karakashian; *Biochemical Investigation of an Hereditary Endosymbiosis Between Paramecium and Chlorella*; 3 years; \$29,900
- RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, Albany; Svend O. Heiberg and Albert L. Leaf, College of Forestry, Syracuse University, N.Y.; *Forest Tree Nutrition and Forest Fertilization*; 1 year; \$10,500
- Hope T. M. Ritter, Jr. (Buffalo); *Hind-Gut Fluid Properties of a Roach Which Support In Vitro Cultivation of its Mutualist Protozoa*; 3 years; \$22,400
- RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.; James H. Leatham; *Gonadotropin Stimulated Ovary*; 1 year; \$3,700
- James H. Leatham; *Reptilian Gonadal Hormones*; 1 year; \$7,600
- Paul D. Sturkie and Donald S. Douglas; *Role of Neurohypophysial Hormones on Oviposition and Water Metabolism in Chickens*; 1 year; \$8,300
- ST. JOHN'S UNIVERSITY, Jamaica, N.Y.; Daniel M. Lilly; *Biosynthesis of Growth Regulators in Protozoa*; 2 years; \$25,600
- ST. JOSEPH'S HOSPITAL, Phoenix, Ariz.; Eduardo Eidelberg; *Electrophysiological Studies on the Developing Brain*; 3 years; \$43,300
- SAN FERNANDO VALLEY STATE COLLEGE FOUNDATION, Northridge, Calif.; Mary Ritzel Corcoran; *Naturally-Occurring Inhibitors of Gibberellin-Induced Growth*; 3 years; \$41,800
- SOUTHERN ILLINOIS UNIVERSITY, Carbondale; Aristotle J. Pappelis, James N. BeMiller, and Walter E. Schmid; *Phytology of Senescence and Parasitism in Corn Stalk Tissue*; 3 years; \$69,900
- STANFORD UNIVERSITY, Stanford, Calif.; O. H. Robertson; *Hyperadrenocorticism in Pacific Salmon*; 3 years; \$36,100
- STATE UNIVERSITY OF IOWA, Iowa City; Rubin H. Flocks; *Urinary Transport System in Vertebrates*; 3 years; \$65,200
- Robert M. Muir; *Mechanism of Gibberellin Action*; 2 years; \$27,900
- STEPHEN F. AUSTIN STATE COLLEGE, Nacogdoches, Tex.; M. Victor Bilan; *Growth and Development of Root Systems in Loblolly Pine Seedlings*; 3 years; \$34,900
- TULANE UNIVERSITY, New Orleans, La.; Eugene Copeland; *Histophysiology of Gas Secretion*; 3 years; \$56,400
- UNIVERSITY OF ALABAMA, University; Howard C. Elliott and Herschel V. Murdaugh, Jr., Birmingham; *Excretion of Endogenous Metabolites and Related Transport Mechanisms*; 1 year; \$15,000
- UNIVERSITY OF ARKANSAS, Fayetteville; Lowell F. Bailey; *Growth Inhibiting Substances in Dormant Buds*; 2 years; \$18,100
- Joseph P. Fulton; *Nematode Transmission of Tobacco Ringspot Virus*; 2 years; \$51,300
- UNIVERSITY OF ARIZONA, Tucson; R. H. Maier; *Chemical Characterization of Iron Localized in Plant Cell Wall Material*; 1 year; \$9,100
- Lyle K. Sowls; *Reproduction in Collared Peccary*; 2 years; \$800
- UNIVERSITY OF CALIFORNIA, Berkeley; Howard A. Bern and Jean Nandi; *Interrenal Gland in Teleost Fishes and Its Relation to Osmoregulation*; 3 years; \$39,900
- Samuel Lepkovsky; *Regulation of the Pancreas*; 3 years; \$60,200
- Leonard Machlis; *Sex Hormones in Plants*; 5 years; \$217,300
- Elwin Marg; *Investigation of Accessory Optic System in Primates*; 1 year; \$29,300
- Herbert H. Srebnik; *Effects of Protein Deprivation on Pituitary Control of Reproduction in Male Rats*; 2 years; \$17,200
- C. E. Yarwood; *Predisposition in Plants*; 3 years; \$33,500
- Richard A. Booloolian, Los Angeles; *Digestion, Absorption, Translocation, and Storage of Food Stuffs by the Sea Urchin*; 3 years; \$25,700
- Morton I. Grossman, Los Angeles; *Pancreatic Physiology*; 5 years; \$67,700
- Bruce C. Parker, Los Angeles; *Translocation in the Giant Kelp Macrocystis*; 2 years; \$30,600
- M. J. Pickett, Los Angeles; *Cellular Immunity*; 3 years; \$66,500
- Ralph R. Sonnenschein, Los Angeles; *Physiology of Reptilian Circulation*; 1 year; \$4,200
- Warren J. Gross, Riverside; *Physiological Adaptations for Terrestrial Life Among the Crustacea*; 2 years; \$21,500
- John Letey, Jr., Riverside; *Role of Oxygen in the Rooting Behavior of Plants*; 3 years; \$42,900
- Marvin Nachman, Riverside; *Neurophysiological Mechanisms in Salt Preferences*; 2 years; \$19,900
- George A. Zentmyer and Donald C. Erwin, Riverside; *Physiology, Nutrition, and Morphology of the Reproductive and Growth Processes in the Genus Phytophthora*; 5 years; \$61,500
- UNIVERSITY OF COLORADO, Boulder; Joseph C. Daniel, Jr.; *Growth of Mammalian Embryos in Vitro*; 3 years; \$27,000

## REGULATORY BIOLOGY

Paul W. Winston; *Physiology of the Humidity Receptor Mechanism of the Grasshopper*; 2 years; \$17,200

Alfred J. Crowle, Denver; *Acquired Immunity to Tuberculosis*; 2 years; \$27,000

UNIVERSITY OF CONNECTICUT, Storrs; Donald F. Wetherell; *Physiological Basis of Salt Tolerance in Unicellular Green Algae*; 2 years; \$33,000

UNIVERSITY OF FLORIDA, Gainesville; Stanley E. Leland; *In Vitro Growth Requirements of Parasitic Nematodes*; 1 year; \$13,600

UNIVERSITY OF HAWAII, Honolulu; Richard B. Hine; *Infection Process of *Phytophthora Parasitica* as Influenced by Living-Host Tissue and Extracts of Papaya (*Carica-Papaya* L.)*; 3 years; \$28,100

Fred I. Kamemoto; *Ionic and Osmotic Relations in Earthworm and Other Annelids*; 1 year; \$3,200

Fred I. Kamemoto; *Neurosecretions and Ionic and Osmotic Relations in Annelids*; 3 years; \$44,100

UNIVERSITY OF ILLINOIS, Urbana; Marlyn E. Clark and Williamina A. Hinwlich; *Hemodynamic Similarity Studies of the Circle of Willis*; 1 year; \$4,700

Frederick Sargent; *Responses and Adjustments of the Human Female and Male to Hot Atmospheres*; 2 years; \$51,000

Kurt Stern; *Reticulo-Endothelial System in the Regulation of Growth*; 3 years; \$49,000

UNIVERSITY OF KANSAS CENTER FOR RESEARCH, INC., Lawrence; Cora M. Downs; *Penetration and Growth of *Pasteurella Tularensis* and *Coxiella Burnetii* in Immune and Non-Immune Cells*; 3 years; \$34,250

UNIVERSITY OF KANSAS, MEDICAL CENTER; Kansas City; Lawrence P. Sullivan; *Control of Collecting Duct Secretion of Hydrogen and Potassium*; 3 years; \$50,700

UNIVERSITY OF MARYLAND, College Park; William J. Adelman, Jr.; *Comparative Study of Ionic Conductances in Various Axon Populations*; 3 years; \$86,200

Robert G. Grenell, Baltimore; *Cell Regulatory Mechanisms and Membranes in Brain*; 2 years; \$39,600

Gabriel G. Pinter, Baltimore; *Blood Flow Through the Renal Medulla*; 2 years; \$28,800

Allen L. Steinhauer; *Hemolymph Proteins in the Molting Cycle of Insects*; 1 year; \$10,100

UNIVERSITY OF MIAMI, Coral Gables, Fla.; David C. B. Bridges, Miami; *Natural History of Photosensitive Retinal Pigments*; 3 years; \$27,800

UNIVERSITY OF MICHIGAN, Ann Arbor; Bernard W. Agranoff; *Biochemical Correlates of Behavior*; 3 years; \$72,700

Robert C. Laslewski; *Bioenergetics of Hummingbirds*; 2 years; \$14,900

UNIVERSITY OF MISSOURI, Columbia; Jacob Levitt; *Resistance of Plants to Frost and Drought*; 3 years; \$48,800

UNIVERSITY OF MINNESOTA, Minneapolis; Ralph L. Kitchell and Archie L. Good, St. Paul; *Respiratory Regulation by the Carotid Body in Aves*; 2 years; \$26,000

UNIVERSITY OF NEVADA, Reno; Dean C. Fletcher and Allie M. Lee; *Influence on Deoxyribose Nucleic Acid Levels in Rat Tissue Nuclei of Acute Stress-Producing Agents*; 2 years; \$15,000

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; Irvine R. Hagadorn; *Neurosecretion in the Leech*; 3 years; \$41,300

UNIVERSITY OF NOTRE DAME, Notre Dame, Ind.; Bernard S. Wostmann; *Antibody Formation with Germfree Animals*; 2 years; \$38,800

UNIVERSITY OF PENNSYLVANIA, Philadelphia; T. Richard Houpt; *Nitrogen Metabolism in Herbivorous Mammals*; 3 years; \$48,500

Benjamin Wolf and Israel Live; *Cellular Induction of Antibody Formation*; 3 years; \$60,200

UNIVERSITY OF PITTSBURGH, Pa.; Charles L. Ralph; *Neuroendocrinology of Arthropods*; 2 years; \$24,600

UNIVERSITY OF ROCHESTER, N.Y.; E. F. Adolph; *Regulatory Activities in Animals*; 3 years; \$61,500

Dale P. J. Goldsmith; *Isolation and Characterization of Enterocrinin*; 1 year; \$12,000

UTAH STATE UNIVERSITY, Logan; Datus M. Hammond; *Life Cycle Stages of Bovine Coccidia*; 3 years; \$17,100

UNIVERSITY OF TENNESSEE, Knoxville; James W. Fisher, Memphis; *Influence of Hormones and Radiation on Erythropoietin Production by the Kidney*; 1 year; \$900

UNIVERSITY OF VERMONT, Burlington; Thomas Sproston; *Role of Sterols in Metabolism and Reproduction of the Fungus *Sclerotinia**; 3 years; \$29,500

UNIVERSITY OF WASHINGTON, Seattle; Arthur W. Martin; *Comparative Circulatory Physiology*; 3 years; \$81,900

UNIVERSITY OF WISCONSIN, Madison; Robert S. Dorney; *Epizootiology of Blood and Coccidial Protozoa*; 2 years; \$6,200

Philip R. Ruck; *Visual Mechanisms in Insects*; 3 years; \$28,600

Luis Sequeira; *Growth Regulators and Pathogenesis in Wilt Diseases*; 3 years; \$40,100

VIRGINIA POLYTECHNIC INSTITUTE, Blacksburg; Richard E. Phillips; *Striatal Function in Birds*; 3 years; \$37,900

William W. Scott; *Degradation of Submerged Organic Debris by Aquatic Fungi*; 3 years; \$13,500

WAKE FOREST COLLEGE, Winston-Salem, N.C.; David W. Johnston; *Autumnal Migration in the Indigo Bunting*; 3 years; \$6,200

WASHINGTON STATE UNIVERSITY, Pullman; R. C. Lindner; *Mechanism of Action of Pear Psylla Toxin*; 2 years; \$36,800

WASHINGTON UNIVERSITY, St. Louis, Mo.; Jack Davies; *Hormonal Interrelationships of the Placenta, Pituitary Gland, Ovary and Adrenal Cortex in the Pregnant Rabbit*; 3 years; \$54,600

Theodor Rosebury; *Comparative Studies of Spirochetes of the Normal Flora of Man*; 2 years; \$31,100

Theodor Rosebury; *Significance of Antibodies to Indigenous Anaerobic Bacteria*; 3 years; \$37,800

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Philadelphia; A. B. Beasley, *Central Nervous System of the Laboratory Mouse*; 3 years; \$12,500

WOODS HOLE OCEANOGRAPHIC INSTITUTION, Woods Hole, Mass.; John W. Karwisher; *Physiology of Whales and Porpoises*; 2 years; \$42,000

YALE UNIVERSITY, New Haven, Conn.; Grace E. Pickford; *Fish Endocrinology*; 3 years; \$49,900

Anna M. Slicher; *Hematological Studies in Teleost Fishes*; 2 years; \$39,900

Jerome Sutin; *Central Nervous System Mechanism Regulating Food Intake*; 3 years; \$3,600

YEBHIVA UNIVERSITY, New York, N.Y.; Sheldon E. Kalmutz; *Development of Immunological Responses During Embryonic Life*; 3 years; \$85,200

Frederick N. Sudak; *Events of the Cardiac Cycle in Elasmobranchii and Teleostei*; 3 years; \$8,600

### SYSTEMATIC BIOLOGY

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS, College Station; Frank W. Gould; *Biostatistical Studies in the Genus *Bouteloua**; 2 years; \$19,000

ALBION COLLEGE, Albion, Mich.; William J. Gilbert; *Morphologic and Systematic Studies of Tropical Pacific Marine Algae*; 2 years; \$14,700

AMERICAN MUSEUM OF NATURAL HISTORY, New York, N.Y.; Roger L. Batten; *A Systematic Study of Some Carboniferous Gastropoda*; 1 year; \$6,000

William K. Emerson; *Reactivation of the Mollusk Reference Collection of the American Museum of Natural History*; 2 years; \$18,000

William G. George; *Classification of Perching Birds*; 2 years; \$18,000

Willis J. Gertsch; *American Spiders of the Families Dictynidae, Pileatidae, and Linyphiidae*; 3 years; \$31,800

Meredith L. Jones; *Abyssal and Neritic Benthic Macroorganisms Collected by the R/V VEMA*; 2 years; \$26,800

Kumar Krishna; *Termites of Burma and Revision of the Genus *Capritermes**; 3 years; \$14,000

Frederick H. Rindge; *North American Geometridae*; 3 years; \$17,500

Patricia Vaurie; *Revision of the Weevil Genus *Metamastus**; 2 years; \$18,000

AMERICAN SOCIETY OF ICHTHYOLOGISTS AND HERPETOLOGISTS, University of Hawaii, Honolulu; Carl L. Hubbs; *Semi-Centennial Meeting of the American Society*; 6 months; \$10,000

AMERICAN SOCIETY FOR PLANT TAXONOMISTS, Knoxville, Tenn.; Raymond C. Jackson; *Index of Current Research in Plant Taxonomy*; 5 years; \$3,200

ARIZONA STATE COLLEGE, Flagstaff; Richard S. Beal, Jr.; *Taxonomic Investigation of the Dermateid Beetle Genus *Attagenus**; 1 year; \$5,200

ASHEVILLE-BILTMORE COLLEGE, Asheville, N.C.; Cornelia Ann Serota; *Studies of Karyotypic Variation in Isolated and Mixed Populations of *Trillium* Species*; 2 years; \$7,000

Irving W. Bailey, Cambridge, Mass.; *Comparative Anatomy of the Cactaceae in Relation to Taxonomy*; 2 years; \$11,400

BEAUDETTE FOUNDATION FOR BIOLOGICAL RESEARCH, Santa Ynez, Calif.; J. L. Barnard; *Systematics of Intertidal Marine Amphipoda of California*; 2 years; \$15,500

BERNICE P. BISHOP MUSEUM, Honolulu, Hawaii; J. L. Gressitt; *Zoogeographic Studies of New Guinea Insects, Particularly the Family Chrysomelidae (Beetles)*; 2 years; \$50,000

BRIGHAM YOUNG UNIVERSITY, Provo, Utah; David L. Clark; *Cretaceous Cephalopods of Texas*; 4 years; \$800

Stephen L. Wood; *Taxonomy and Distribution of Bark and Ambrosia Beetles (Scolytidae and Platypodidae) in Central America and Mexico*; 2 years; \$22,500

Stephen L. Wood, Smithsonian Institution; *Purchase of the Karl E. Schedl Collection of Scolytidae and Platypodidae (Coleoptera)*; 1 year; \$18,750

BROWN UNIVERSITY, Providence, R.I.; George L. Church; *Analyses of Southern Species Complexes in the Genus *Elymus**; 3 years; \$27,000

CALIFORNIA ACADEMY OF SCIENCES, San Francisco; G. Dallas Hanna; *Siliceous Microfossils of the Late Miocene-Pliocene Part of Tertiary Sediments of California*; 1 year; \$4,800

Edward S. Ross; *A Monograph of the Insect Order, Embioptera*; 3 years; \$25,300

Vincent D. Roth; *South American Spiders of the Family Agelenidae*; 2 years; \$1,400

CALIFORNIA DEPT. OF FISH AND GAME, Sacramento; S. Stillman Berry, Redlands; *Systematic and Taxonomic Review of Pacific Coast Cephalopods*; 2 years; \$29,000

CANISIUS COLLEGE, Buffalo, N.Y.; John L. Blum; *Monographic Studies in Salt Marsh Algae*; 2 years; \$8,000

CAPE HAZE MARINE LABORATORY, INC., Sarasota, Fla.; Dorothy C. Saunders; *Blood Parasites of Florida Fishes*; 1 year; \$4,900

CARNEGIE MUSEUM, Pittsburgh, Pa.; Richard M. Fox; *Monograph of the Ithomidae (Lepidoptera)*; 2 years; \$18,000

CATHOLIC UNIVERSITY, Washington, D.C.; Ross H. Arnett, Jr.; *Isolating Mechanisms in Speciation of Oedemerid Beetle Genus *Ozocis**; 3 years; \$26,000

Robert A. Davidson; *Biometrics of Variation and Cytotaxonomy of *Froelichia**; 3 years; \$17,300

CHICAGO NATURAL HISTORY MUSEUM, Ill.; Joseph Curtis Moore; *Revision of the Beaked Whale Genus, *Mesoplodon**; 4 years; \$8,000

Louis O. Williams; *Botanical Field Work in Central America*; 2 years; \$35,800

William D. Turnbull and Ernest L. Lundelius, Jr., University of Texas, Austin; *Mammalian Paleontology in Australia*; 1 year; \$26,100

CHICO STATE COLLEGE, Chico, Calif.; Kingsley R. Stern; *Cytogeographic and Experimental Studies in the Fumariaceous Genus *Dicentra**; 3 years; \$13,000

CLEMSON COLLEGE, Clemson, S.C.; G. M. Armstrong and J. K. Armstrong; *Host Re-*

## SYSTEMATIC BIOLOGY

- relationships of *Fusaria*, Section *Elegans* (With *Fusaria*); 2 years; \$19,500
- COLORADO STATE UNIVERSITY RESEARCH FOUNDATION, Fort Collins; Edward B. Reed; *Free-Living Freshwater Nearctic Cyclopoid Copepoda*; 2 years; \$15,000
- Otto Degener, *Botanical Exploration of the Island of Lanai*; 1 year; \$2,000
- COLUMBIA UNIVERSITY, New York, N.Y.; Lindsay S. Olive; *Cellular Slime Molds (Acrosiales) of the Pacific Area*; 1 year; \$6,000
- Paul R. Burkholder, Palisades; *Identity of Marine Bacteria in the Culture Collection*; 2 years; \$38,000
- DUKE UNIVERSITY, Durham, N.C.; Lewis E. Anderson; *Systematic Studies of Mosses of the United States and Canada*; 3 years; \$52,100
- Terry W. Johnson, Jr.; *The Systematics and Occurrence of Marine Plankton-Inhabiting Fungi*; 2 years; \$53,300
- Robert J. Menzies, Beaufort; *Anatomy of Radular Apparatus and Its Musculature in Marine Mollusks, Particularly in Neopitina*; 1 year; \$5,500
- Robert Ornduff; *Breeding Systems and Bio-systematics of Heterostylous Plants*; 2 years; \$18,700
- FAIRCHILD TROPICAL GARDEN, Miami, Fla.; P. B. Tomlinson; *Systematic Anatomy of the Monocotyledons*; 2 years; \$24,700
- FLORIDA GEOLOGICAL SURVEY, Tallahassee; Harbans S. Puri; *Revision of Muller's Type Collections of Recent Ostracoda*; 3 years; \$2,880
- FLORIDA STATE UNIVERSITY, Tallahassee; Harry W. Wells; *Porifera of the Carolinian Province*; 2 years; \$17,500
- FORDHAM UNIVERSITY, New York, N.Y.; James Forbes; *Anatomical and Histological Studies of Male Ants*; 2 years; \$10,100
- FOUNTAIN VALLEY SCHOOL, Colorado Springs, Colo.; F. Martin Brown; *A Critical Study of W. H. Edwards' Type Specimens*; 2 years; \$14,000
- Hugh Avery Freeman, Garland, Tex.; *Systematic Study of the Megathymidae of North America*; 3 years; \$8,600
- HARVARD UNIVERSITY, Cambridge, Mass.; William J. Clench; *Monographs of the Land Mollusca of Cuba*; 3 years; \$10,400
- Phillip J. Darlington, Jr.; *Carabid Beetles of the Australian Region and Southern South America*; 3 years; \$30,700
- Elizabeth Deichmann and Giles Mead; *Marine Nematodes of the North Atlantic*; 1 year; \$4,200
- Bryan Patterson, Alfred Sherwood Romer, and George Gaylor Simpson; *Technical Assistance for Research on Vertebrate Paleontology*; 2 years; \$52,800
- Carroll E. Wood, Jr. and Reed C. Rollins; *Flora of the Southeastern United States*; 3 years; \$71,300
- INDIANA UNIVERSITY FOUNDATION, Bloomington; James E. Canright; *Comparative Morphology and Phylogeny of the Annonaceae and Related Ranalean Families*; 2 years; \$16,700
- David G. Frey; *The Systematics, Distribution, and Ecology of the Chydoridae (Cladocera)*; 2 years; \$28,600
- Charles B. Helsler, Jr.; *Numerical Taxonomic Studies of Solanum* (Morella); 2 years; \$8,200
- JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; David M. Raup; *Orientation of Calcite Crystals in Fossil and Living Echinoderms*; 2 years; \$22,000
- KANSAS STATE UNIVERSITY, Manhattan; Aylward E. R. Downe; *Serological Studies of Insect Proteins*; 2 years; \$19,200
- C. W. Rettenmeyer and Richard J. Elzinga; *Systematics of Mites Associated with Army Ants*; 3 years; \$8,900
- LOS ANGELES COUNTY MUSEUM, Calif.; J. R. Macdonald; *Geology and Paleontology of the Wounded Knee Area, South Dakota*; 2 years; \$16,800
- LOUISIANA POLYTECHNIC INSTITUTE, Ruston; Robert Kral; *Taxonomic Revision of *Fimbristylis* in North America*; 3 years; \$21,500
- LOUISIANA STATE UNIVERSITY, Baton Rouge; W. A. van den Bold; *Studies on the Miocene to Recent Ostracoda of the Caribbean Region*; 2 years; \$21,600
- Herbert J. Howe, New Orleans; *A Taxonomic Study of Three Genera of Brachiopods*; 1 year; \$3,300
- MARQUETTE UNIVERSITY, Milwaukee, Wis.; R. M. Darnell and Peter Abramoff; *Serological Analysis of a Gynogenetic Fish Species*; 2 years; \$18,000
- MIDWESTERN UNIVERSITY, Wichita Falls, Tex.; Walter W. Dalquest; *Paleontologic Fishes of the Leuders Formation, Permian of Texas*; 1 year; \$10,000
- MISSOURI BOTANICAL GARDEN, St. Louis; Frits W. Went; *Botanical Information on Costa Rica*; 1 year; \$1,900
- Robert E. Woodson, Jr.; *Flora of Panama*; 3 years; \$36,000
- MUSKINGUM COLLEGE, New Concord, Ohio; Clement E. Daesch; *Nearctic Diplazoninae and Mesochorinae (Ichneumonidae)*; 1 year; \$9,000
- NEW YORK BOTANICAL GARDEN, New York; Caroline K. Allen; *American Lauraceae: Taxonomy and Geographical Distribution*; 3 years; \$27,000
- NORTHEASTERN UNIVERSITY, Boston, Mass.; Andrew Starrett; *Morphology of Bats*; 1 year; \$3,000
- NORTHWESTERN UNIVERSITY, Evanston, Ill.; Charles F. Nadler; *Chromosome Analysis in Comparative Taxonomy of the Scuriidae*; 2 years; \$16,000
- OBERLIN COLLEGE, Oberlin, Ohio; Helen P. Foreman; *Taxonomic and Stratigraphic Study of Cretaceous Radiolarians*; 2 years; \$11,600
- OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; Dwight M. DeLong; *The Gyponinae of the World*; 2 years; \$15,100
- John J. Stephens; *Equipment for Museum Collections in Paleontology at Ohio State University*; 1 year; \$14,000
- OHIO WESLEYAN UNIVERSITY, Delaware; Elwood B. Shirling and David Gottlieb; *Characterization of Type Species of the Genus *Streptomyces**; 32 months; \$50,500

BIOLOGICAL AND MEDICAL SCIENCES

- OKLAHOMA STATE UNIVERSITY, Stillwater; Jan M. J. deWet; *Biosystematics of Bothriochloinae*; 3 years; \$36,200  
 Jack R. Harlan; *Biosystematics of the Genus *Cynodon**; 2 years; \$22,000
- OREGON STATE UNIVERSITY, Corvallis; Harold J. Jensen; *Preparation of a Permanent Slide Collection of Soil Nematodes*; 2 years; \$5,600  
 Herman A. Scullen; *Taxonomic Studies of the Wasp Tribe *Cercerini**; 2 years; \$9,800
- PRINCETON UNIVERSITY, Princeton, N.J.; Glenn L. Jepsen; *Paleocene and Eocene Vertebrate Faunas*; 2 years; \$44,200
- PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; John S. Karling; *Systematic and Phylogenetic Study of Plasmodiophorales*; 3 years; \$33,700
- REED COLLEGE, Portland, Oreg.; Bertram G. Brehm; *A Chemo-taxonomic Study of the Genus *Tragopogon* (Compositae)*; 3 years; \$25,600
- RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, Albany; Ronald H. Petersen, Buffalo; *Taxonomic Study of the Clavariaceae of the Eastern United States and Canada*; 3 years; \$13,200  
 Robert L. Gilbertson, Syracuse; *A Taxonomic Study of Resupinate *Hydnaceae* of North America*; 2 years; \$11,800  
 Josiah L. Lowe, Syracuse University, Syracuse, N.Y.; *Taxonomic Study of the *Polyporaceae* of North America*; 2 years; \$16,200
- ROOSEVELT UNIVERSITY, Chicago, Ill.; Charles H. Seevers; *Systematic Studies of the North American *Staphylinidae* (Coleoptera)*; 3 years; \$15,800
- RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.; Herbert A. Lechevalier; *Mode of Formation of Spores of *Actinomyces**; 2 years; \$18,000
- SMITHSONIAN INSTITUTION, Washington, D.C.; Doris Holmes Blake; *Revision of the Beetles of the Genus *Neobrotica* Jacoby*, 1 year; \$2,600  
 Richard S. Boardman; *Revision of the Genera of Paleozoic *Bryozoa**; 3 years; \$33,000  
 Doris M. Cochran; *Frogs of Western Brazil and of Colombia*; 1 year; \$2,700  
 Carl J. Drake; *Monographic Studies of the *Tingidae* of the World*; 2 years; \$18,700  
 Porter M. Kler; *Tertiary Echinoids of the Eastern United States and the Caribbean*; 3 years; \$23,500  
 Karl V. Krombini; *Indo-Australian *Vespidae sens. lat. and Sphecidae**; 2 years, \$11,000  
 Harald Rehder; *Marine Mollusks of *Polynezia**; 3 years; \$20,500  
 Leonard P. Schultz; *Monographic Revision of *Carcharintid* Sharks of the Tropical Indo-Pacific Oceans*; 1 year; \$16,900  
 Waldo L. Schmitt; *The American Commensal Crabs of the Family *Pinnotheridae**; 3 years; \$47,700  
 I. Gregory Sohn; *Lower Cretaceous *Ostracoda* of Israel*; 1 year; \$18,000  
 Donald F. Squires; *Zoogeography of Southern Ocean *Scleractinian* Coral Faunas*; 3 years; \$31,000  
 Jack A. Wolfe; *European Tertiary *Dicotyledon* Floras*; 1 year; \$9,000
- SOUTHERN METHODIST UNIVERSITY, Dallas, Tex.; Thomas E. Williams; *Permian *Fusulinidae* of the Huaco Mountains*; 2 years; \$14,500  
 Thomas E. Williams; *Recovery of Vertebrate Fossils of Pleistocene Age from Active Gravel Pit, Dallas County, Texas*; 6 months; \$5,100
- STANFORD UNIVERSITY, Stanford, Calif.; Paul R. Ehrlich; *Evolutionary Relationships in the *Lepidoptera**; 2 years; \$20,000  
 Warren C. Frelhofer; *Peripheral Nervous System of the Order *Salmopercae**; 2 years; \$21,000  
 Virginia Page; *Wood from the Upper Cretaceous of California*; 2 years; \$9,000  
 Peter H. Raven; *Systematics of *Oenothera**; 3 years; \$29,500
- STATE UNIVERSITY OF IOWA, Iowa, City; George W. Martin; **Myzomycetes* of the World*; 3 years; \$15,400
- STATE UNIVERSITY OF NEW YORK, COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY, Ithaca; J. Chester Bradley; *Revisions of the Taxonomy of the *Scoliidae* (Insecta: *Hymenoptera*)*; 2 years; \$17,000  
 William T. Keeton; *Systematics of *Diplopoda**; 2 years; \$15,600  
 Robert E. Lee and H. E. Moore, Jr.; *Biosystematic Studies in the *Gesneriaceae**; 1 year; \$1,900  
 Harold E. Moore, Jr.; *Storage of Research Herbarium Specimens*; 1 year; \$7,900  
 Edward C. Raney; *Cornell University Fish Collection*; 3 years; \$22,000  
 Edward C. Raney; *North American *Ichthyology**; 1 year; \$10,000
- TEXAS RESEARCH FOUNDATION, Renner; Donovan S. Correll; *Vascular Plants of Texas*; 2 years; \$25,300
- TULANE UNIVERSITY, New Orleans, La.; Harold E. Vokes; *Catalogue of the Genera of *Pelecypoda**; 1 year; \$1,800
- UNIVERSITY OF ALASKA, College; J. J. Gonor; *Pogonophores off the Northern Coast of Alaska*; 3 months; \$1,500
- UNIVERSITY OF ARIZONA, Tucson; Floyd G. Werner; *Systematic Studies of the New World *Anthricidae**; 4 years; \$11,000
- UNIVERSITY OF ARKANSAS, Fayetteville; G. T. Johnson; *The *Trypetheliaceae* of North America*; 2 years; \$14,100
- UNIVERSITY OF CINCINNATI, Ohio; Maxine L. Abbott; *Compression Flora of Upper Freeport Coal*; 2 years; \$18,800
- UNIVERSITY OF CALIFORNIA, Berkeley; Lincoln Constance; *American *Umbelliferae* and *Hydrophyllaceae**; 1 year; \$4,200  
 J. Wyatt Durham; *Paleontology and Stratigraphy of the Tertiary Amber-Bearing Beds of Chiapas, Mexico*; 2 years; \$8,200  
 George F. Papenfuss; *A Marine Algal Flora of South Africa*; 3 years; \$34,700  
 Donald E. Savage; *Vertebrate Paleontology and Non-Marine Stratigraphy of the Type Paleocene and Eocene*; 1 year; \$3,500  
 G. Ledyard Stebbins, Jr.; *Berry Fruited Species of *Galium* Endemic to California*; 2 years; \$16,800  
 John M. Tucker, Davis; *Evolution of the *Quercus Undulata* Complex*; 1 year; \$2,700



## SYSTEMATIC BIOLOGY

Kenneth Wells, Davis; *Morphological and Taxonomic Studies of Tremellales*; 5 years; \$22,000

Carl L. Hubbs, La Jolla; *Ichthyological Researches*; 33 months; \$4,552

Gordon H. Ball, Los Angeles; *Life Histories of Sporozoan Parasites in the Blood of Reptiles*; 3 years; \$7,000

Peter P. Vaughn, Los Angeles; *Early Permian Vertebrate Fauna of the Four Corners Area of the United States*; 3 years; \$32,700

Frank C. Vasek, Riverside; *Systematic Studies in Clarkia and Juniperus*; 2 years; \$15,400

Carl L. Hubbs, San Diego; *Endemic Marine Vertebrate Fauna of Guadalupe Island, Baja, California*; 2 years; \$35,000

UNIVERSITY OF CHILE, Santiago; Carlos Munoz Pizarro; *Genera of Chilean Plants*; 2 years; \$13,500

UNIVERSITY OF COLORADO, Boulder; Dharani Dhar Awasthi; *Taxonomic Studies in the Lichens of India and South Africa*; 1 year; \$7,500

UNIVERSITY OF DENVER RESEARCH INSTITUTE, Colo.; Kenneth R. Porter; *Investigation of Mating Calls and Parotoid Gland Secretions of Central American Bufo*; 2 years; \$21,200

UNIVERSITY OF FLORIDA, Gainesville; Roland F. Hussey; *Catalogue of the Hemiptera of the Americas*; 3 years; \$20,000

Frank J. S. Maturo, Jr.; *Offshore Ectoprotea of the Carolina Coast*; 3 years; \$22,000

Clayton E. Ray; *Quaternary Vertebrate Faunas from the West Indies*; 1 year; \$6,500

UNIVERSITY OF HAWAII, Honolulu; Albert H. Banner; *Alpheid Shrimp Fauna of Thailand*; 1 year; \$3,700

George W. Gillett; *Variation in Phacelia, Subgenus Cosmanthus (Hydrophyllaceae)*; 1 year; \$3,900

Satyu Yamaguti and Joseph E. Alicata; *Platyhelminthes of Fishes in Hawaiian Waters*; 2 years; \$50,000

UNIVERSITY OF ILLINOIS, Urbana; John O. Corliss; *Systematics of Ciliate Protozoa*; 2 years; \$31,500

UNIVERSITY OF KANSAS, Lawrence; William A. Clemens, Jr.; *Late Cretaceous Mammals of the San Juan Basin, New Mexico*; 3 years; \$28,200

Theodore H. Eaton, Jr.; *Phylogeny of Paleozoic Reptiles*; 2 years; \$20,000

Theodore H. Eaton, Jr.; *Revision of Niobrara (Cretaceous) Elopod, Clupeid and Enochodontid Fishes*; 2 years; \$28,500

E. Raymond Hall; *Curatorial Assistance for the Museum of Natural History*; 1 year; \$6,000

H. B. Hungerford; *Studies of Cortixidae, Notonectidae, Hydrometridae, and Other Hemiptera*; 2 years; \$16,300

Robert W. Lichtwardt; *Developmental and Systematic Studies of Fungi*; 1 year; \$700

Charles D. Michener; *Taxonomic Study of Halictine Bees*; 3 years; \$35,500

Robert K. Selander and Richard F. Johnston; *Geographic Variation and Evolution in North American House Sparrows*; 2 years; \$14,000

UNIVERSITY OF KANSAS CITY, Mo.; William W. Milstead; *Studies on the Evolution of the Box Turtles*; 1 year; \$5,100

UNIVERSITY OF MARYLAND, College Park; John W. Crenshaw, Jr.; *Species Variation in Blood Protein Patterns*; 2 years; \$14,800

Richard Highton; *Systematics of Plethodontid Salamanders*; 2 years; \$18,000

UNIVERSITY OF MASSACHUSETTS, Amherst; Charles P. Alexander; *Crane-flies of the Western United States and Canada*; 1 year; \$2,800

Robert T. Wilce; *Benthic Marine Algae of Northeast Canada*; 3 years; \$18,000

UNIVERSITY OF MIAMI, Coral Gables, Fla.; Raymond B. Manning, Miami; *A Monograph of the Stomatopod Crustaceans of the Western Atlantic*; 1½ years; \$14,000

Gilbert L. Voss, Miami; *Monograph of the Cephalopods of the North Atlantic*; 3 years; \$32,000

Donald P. de Sylva, Miami; *Systematics of Larval and Juvenile Fishes of the Family Istiophoridae*; 2 years; \$11,400

UNIVERSITY OF MICHIGAN, Ann Arbor; Richard D. Alexander; *Comparative Behavior, Systematics, and Zoogeography of Surface-Dwelling and Subterranean Crickets*; 3 years; \$30,500

John B. Burch; *Cytotaxonomic Studies of Aquatic Pulmonate Snails*; 2 years; \$35,000

Robert R. Miller; *Systematics of Cenozoic Freshwater Fishes*; 2 years; \$25,500

Rodger D. Mitchell; *Structural and Behavioral Adaptations in Water-Mites*; 2 years; \$10,500

Thomas E. Moore; *Acoustical Behavior, Systematics, and Evolution of American Cicadas*; 2 years; \$22,200

Ralph R. Stewart; *Synoptic Floras of West Pakistan and Kashmir*; 2 years; \$25,000

Henry K. Townes; *A Catalogue and Re-classification of the Eastern Parasitic Ichneumonidae*; 2 years; \$13,900

UNIVERSITY OF MINNESOTA, Minneapolis; Robert E. Sloan; *Vertebrate Paleontology of Hell Creek and Tullock Formations, Montana*; 1 year; \$10,800

UNIVERSITY OF MISSISSIPPI, University; Frank M. Hull; *Taxonomic and Phylogenetic Studies of Diptera*; 8 months; \$1,300

UNIVERSITY OF MISSOURI, Columbia; David B. Dunn; *Interspecific Relationship in Lupinus concinnusparviflorus Complex of Papilionaceae*; 3 years; \$25,000

Don L. Frizzell, Rolla; *Otoliths of Lower Cenozoic Fishes of the Gulf Coast*; 2 years; \$14,500

UNIVERSITY OF NEBRASKA, Lincoln; Paul A. Johnsgard; *Systematic Studies on the Avian Family Anatidae*; 3 years; \$41,000

Wallace E. LaBerge; *Systematics of the Genus Andrena in North America*; 3 years; \$22,000

Harold W. Manter; *Trematodes of Australian Fishes*; 2 years; \$14,200

Harold W. Manter and Mary H. Pritchard; *Trematodes of Fishes, Particularly of South Africa and Australia*; 4 years; \$24,900

UNIVERSITY OF NEW HAMPSHIRE, Durham; Alan G. Lewis; *Copepod Crustaceans Par-*

BIOLOGICAL AND MEDICAL SCIENCES

astic on Fishes of the Hawaiian Islands; 3 years; \$7,500

Marian H. Pettibone; *Polychaetous Annelids of New England*; 2 years; \$27,400

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; William J. Koch; *Studies on Posteriorly Unflagellated Series of Fungi*; 2 years; \$26,500

Theodore B. Mitchell, Raleigh; *Taxonomy and Biology of the Leaf-Cutter Bees and Their Allies*; 3 years; \$14,000

Albert E. Radford and Harry E. Ahles; *Herbarium Cases for the University of North Carolina*; 1 year; \$21,600

Cyde F. Smith, Raleigh; *Taxonomy and Biology of the Eriosomatinae (Aphidae: Homoptera)*; 1 year; \$10,000

UNIVERSITY OF NOTRE DAME, Ind.; Joseph A. Tihen; *Selected Tertiary Herpetofaunas and Their Evolutionary Significance*; 2 years; \$24,500

UNIVERSITY OF OKLAHOMA RESEARCH INSTITUTE, Norman; Maxim K. Elias; *Carboniferous Bryozoa of America and Europe*; 2 years; \$29,000

UNIVERSITY OF PENNSYLVANIA, Philadelphia; Hui-Lin Li; *The Flora of Formosa (Taiwan)*; 2 years; \$17,700

UNIVERSITY OF SOUTH FLORIDA, Tampa; Robert W. Long; *Taxonomic and Genetic Investigations in Ruellia (Acanthaceae)*; 3 years; \$16,000

UNIVERSITY OF SOUTHWESTERN LOUISIANA, Lafayette; M. J. Fouquette; *Relationships of Southeastern Chorus Frogs (Pseudacris Nigrita Complex)*; 2 years; \$16,800

UNIVERSITY OF TENNESSEE, Knoxville; L. R. Hesler; *Taxonomic Study of the Agaricales of the Southeastern United States*; 3 years; \$27,600

UNIVERSITY OF TEXAS, Austin; Constantine J. Alexopoulos; *Taxonomic Problems in the Myzomycetes*; 2 years; \$22,100

W. Frank Blair; *Amphibian Speciation and Evolutionary Relationships*; 2 years; \$39,200

John C. Briggs, Port Aransas; *Distribution of Marine Fishes*; 3 years; \$10,000

Clark Hubbs; *Interbreeding of Fish Populations in Relation to Speciation and Geographic Differentiation*; 2 years; \$23,900

B. L. Turner; *Biochemical-Systematic Studies in the Leguminosae, Genus Baptisia*; 6 months; \$4,300

UNIVERSITY OF UTAH, Salt Lake City; Stephen D. Durrant; *Taxonomy and Evolution of Mammals From the Zones of Contact Between the Major Faunal Areas*; 2 years; \$20,800

George F. Edmunds, Jr.; *Centipeds, Millipeds, and Spiders in the Chamberlin Collection*; 2 years; \$15,300

John M. Legler; *Improvement of Research and Curatorial Facilities for Herpetology*; 3 years; \$10,100

Robert K. Vickery, Jr.; *Evolution and Biosystematics of the Mimulus Glabratus Complex (Scrophulariaceae)*; 2 years; \$17,800

UNIVERSITY OF WASHINGTON, Seattle; C. Leo Hitchcock; *Vascular Plants of the Pacific Northwest*; 3 years; \$21,900

UNIVERSITY OF WISCONSIN, Madison; Kenneth B. Raper; *Biology and Interrelationship of Cellular Slime Molds*; 3 years; \$54,800

Andrew M. Torres, Milwaukee; *Cytotaxonomic Studies in Zinnia*; 3 years; \$12,200

VIRGINIA INSTITUTE OF MARINE SCIENCE, Gloucester Point; Mitchell A. Byrd, College of William and Mary, Williamsburg; *Mono-genetic and Digenetic Trematodes of the Middle Continental Shelf off West Africa*; 1 year; \$1,400

VIRGINIA POLYTECHNIC INSTITUTE, Blacksburg; Perry C. Holt; *Systematic Studies of the Branchiobdellidae*; 3 years; \$11,300

William W. Scott; *Taxonomy and Biology of Fungi Associated with Fish and Fish Eggs*; 3 months; \$2,340

Stuart E. Neff; *Immature Stages of Scatomyzinae*; 3 years; \$20,000

Chauncey G. Tillman; *Brachiopod Fauna of the Lower Devonian Rocks*; 2 years; \$14,400

WASHINGTON STATE UNIVERSITY, Pullman; Ruben Duran; *Teliospore Germination in Smut Fungi*; 2 years; \$12,000

Marlon Ownbey; *Purchase of Herbarium Cases for Washington State University*; 1 year; \$6,600

WASHINGTON UNIVERSITY, St. Louis, Mo.; Carroll W. Dodge; *Lichen Flora of the Antarctic Continent and Subantarctic Islands*; 1 year; \$6,600

Robert E. Woodson, Jr.; *Biometric Studies of the Butterfly Weed (Asclepias Tuberosa)*; 1 year; \$3,700

WAYLAND BAPTIST COLLEGE, Plainview, Tex.; Gordon C. Creel; *Invertebrate Fauna of Estelline Salt Spring*; 1 year; \$2,000

WEST VIRGINIA UNIVERSITY, Morgantown; M. E. Gallegly; *Sexuality in the Genus Phytophthora*; 2 years; \$20,000

WILLIAM MARSH RICE UNIVERSITY, Houston, Tex.; Harold W. Harry; *Systematics of Freshwater Mollusca of Puerto Rico*; 1 year; \$9,100

WOODS HOLE OCEANOGRAPHIC INSTITUTION, Woods Hole, Mass.; Harold L. Sanders and Olga Hartman; *Deep-Water Benthic Polychaetes of the Gayhead-Bermuda Transect*; 2 years; \$29,700

YALE UNIVERSITY, New Haven, Conn.; Hempstead Castle; *Revision of the Genus Radula*; 3 years; \$27,000

Theodore Delevoryas; *North American Cycadeoids*; 1 year; \$9,000

Willard D. Hartman; *Histology and Functional Morphology of Marine Demospongiae*; 2 years; \$11,700

Willard D. Hartman; *Indo-Pacific Coral Reef-Inhabiting Sponges*; 2 years; \$26,000

Willard D. Hartman; *Research Collections of Marine Invertebrates at the Peabody Museum*; 3 years; \$19,700

John H. Ostrom; *Lower Cretaceous Deposits of the Bighorn Basin and Adjacent Regions*; 3 years; \$25,700

Don B. Stallings; *Biosystematics of Megathyridae*; 3 years; \$5,800

Karl M. Waage, A. L. McAlester, John H. Ostrom and E. L. Simons; *Revision of Research Collections in Paleontology*; 2 years; \$77,200

## SPECIALIZED BIOLOGICAL AND MEDICAL SCIENCE FACILITIES

### GENERAL BIOLOGY

DUKE UNIVERSITY, Durham, N.C.; C. G. Bookhout, Beaufort; *Summer Research Activities at the Marine Laboratory*; 3 years; \$50,000

HIGHLANDS BIOLOGICAL STATION, INC., Highlands, N.C.; Thelma Howell; *Summer Research at Highlands Biological Station*; 2 years; \$17,000

MARINE BIOLOGICAL LABORATORY, Woods Hole, Mass.; Philip B. Armstrong; *Investigations in Marine Biology*; 3 years; \$120,000  
Philip B. Armstrong; *Operation of Boat for Collecting Research Materials*; 2 years; \$50,000

UNIVERSITY OF CALIFORNIA, Berkeley; Brian P. Boden, San Diego; *Development of Oceanographic Instruments for Scattering Layer Studies*; 1 year; \$23,300

F. T. Haxo and E. W. Fager, San Diego; *Ship Operating Cost for Biological Research*; 1 year; \$165,600

UNIVERSITY OF ILLINOIS, Urbana; Wilson N. Stewart; *Equipment for the Department of Botany*; 1 year; \$105,600

UNIVERSITY OF MICHIGAN, Ann Arbor; A. H. Stockard; *Research at the University of Michigan Biological Station*; 3 years; \$45,000

UNIVERSITY OF NEW HAMPSHIRE, Durham; L. W. Sianetz; *Electron Microscope Laboratory for Biological Research*; 1 year; \$39,300

UNIVERSITY OF THE PACIFIC, Stockton, Calif.; Joel W. Hedgpeth; *Summer Research Program in Marine Biology, Paleontology and Systematic Zoology*; 3 years; \$16,500

UNIVERSITY OF PENNSYLVANIA, Philadelphia; John R. Preer; *Equipment for Studies on Proteins and Nucleic Acids*; 1 year; \$56,650

WOODS HOLE OCEANOGRAPHIC INSTITUTION, Woods Hole, Mass.; John H. Ryther; *U.S. Program in Biology for the International Indian Ocean Expedition*; 3 years; \$271,600

### SPECIALIZED BIOLOGICAL AND MEDICAL SCIENCE FACILITIES

AMERICAN MUSEUM OF NATURAL HISTORY, New York, N.Y.; James A. Oliver; *Facilities for Housing and Improving Museum Research Materials*; 2 years; \$218,000

AMERICAN TYPE CULTURE COLLECTION, Washington, D.C.; William Arthur Clark; *Permanent Facilities for the American Type Culture Collection*; 5 years; \$215,500

BERMUDA BIOLOGICAL STATION FOR RESEARCH, INC., St. George's West; H. E. Lehman; *Summer Research Program in Experimental Marine Embryology*; 3 years; \$71,500

W. H. Sutcliffe, Jr.; *Marine Biology Research at the Bermuda Biological Station*; 5 years; \$12,500

BERNICE P. BISHOP MUSEUM, Honolulu, Hawaii; J. Linsley Gressitt; *Construction of an Entomology Research Building*; 3 years; \$300,000

CALIFORNIA ACADEMY OF SCIENCES, San Francisco; Edward S. Ross; *Rehabilitation*

*of Entomological Collections*; 2 years; \$64,800

CAPE HAZE MARINE LABORATORY, INC., Sarasota, Fla.; Eugenie Clark; *Operation of a 33-foot Vessel for Marine Biological Research*; 3 years; \$21,100

Eugenie Clark; *Research Boat for Marine Biological Program*; 1 year; \$25,000

CHICAGO NATURAL HISTORY MUSEUM, Ill.; E. Leland Webber; *Facilities and Support for Improvement of Research Collections*; 5 years; \$399,800

COLUMBIA UNIVERSITY, New York, N.Y.; Paul R. Burkholder, Palisades; *Research Laboratory for Marine Biology*; \$21,000

COLORADO STATE UNIVERSITY RESEARCH FOUNDATION, Fort Collins; Ralph Baker; *Construction of a Prototype Controlled Environment Chamber for Plants Research*; 1 year; \$4,400

DARTMOUTH COLLEGE, Hanover, N.H.; Raymond W. Barratt; *Collection and Maintenance of Genetic Stocks*; 5 years; \$80,000

DUKE UNIVERSITY, Durham, N.C.; C. G. Bookhout, Beaufort; *Cooperative Research and Research Training Program in Biological Oceanography*; 5 years; \$200,000

Peter H. Klopfer and Donald K. Adams; *Additions to the Duke Field Station for Animal Behavior Studies*; 1 year; \$25,000

Paul J. Kramer; *Feasibility Study for Construction of a Two-Unit Phytotron for the Southeastern States*; 1 year; \$40,500

GULF COAST RESEARCH LABORATORY, Ocean Springs, Miss.; Gordon Gunter; *Conversion and Outfitting of a 65-foot Research Vessel*; 1 year; \$99,350

INDIANA UNIVERSITY FOUNDATION, Bloomington; Dean Fraser; *Electron Microscope for Biological Research*; 1 year; \$33,600

Shelby D. Gerking; *Construction of Biological Research Facilities*; 1 year; \$126,500

MICHIGAN STATE UNIVERSITY, East Lansing; John H. Beaman; *Herbarium Facilities for Research Collections*; 1 year; \$25,100

MOUNT DESERT ISLAND BIOLOGICAL LABORATORY, Salsbury Cove, Maine; Alvin F. Rieck, Marquette University, Milwaukee, Wis.; *Remodeling, Renovation, Construction and General Support of Facilities*; 3 years; \$63,900

NAPLES ZOOLOGICAL STATION, Naples, Italy; Peter Dohrn; *Renovation and Refurbishing of Laboratories for Physiological Research*; 3 years; \$200,000

NEW YORK BOTANICAL GARDEN, N.Y.; Bassett Maguire, Sr.; *Acquisition and Installation of Herbarium Cases*; 2 years; \$88,800

ROCKY MOUNTAIN BIOLOGICAL LABORATORY, Crested Butte, Colo.; Robert K. Enders; *Construction and Improvement of Research and Living Quarters*; 1 year; \$5,000

SMITHSONIAN INSTITUTION, Washington, D.C.; Martin H. Moynihan, Canal Zone Biological Area, Balboa, Canal Zone; *Installation of Power Line to Barro Colorado Island from Mainland*; 2 years; \$110,000

STANFORD UNIVERSITY, Stanford, Calif.; Rolf Bollin; *Research and Graduate Training in Biological Oceanography*; 5 years; \$348,750

STATE UNIVERSITY OF IOWA, Iowa City; Richard V. Bovbjerg; *Building Addition for the Iowa Lakeside Laboratory*; 1 year; \$21,000

UNIVERSITY OF CALIFORNIA, Berkeley; Cadet Hand, Bodega Marine Laboratory; *Construction of Research Facilities for the Bodega Marine Laboratory*; 3 years; \$1,100,000

Gordon H. Ball, Los Angeles; *Bio-instrumentation Facility*; 2 years; \$150,000

John D. French, Los Angeles; *Laboratory and Tank Facilities for Marine Neurophysiological and Biological Research*; 3 years; \$240,000

Karl C. Hamner, Los Angeles; *Construction of a Prototype Low Cost Controlled Environment Chamber*; 2 years; \$25,000

Lars Carpelan, Riverside; *Completion of Facility for Desert Research*; 1 year; \$18,200

UNIVERSITY OF DELAWARE, Newark; Franklin C. Daiber; *Conversion of a Motor-Sailer for Oceanographic Research*; 1 year; \$15,000

UNIVERSITY OF HAWAII, Honolulu; Albert H. Banner; *Construction of a Laboratory Building*; 1 year; \$11,500

UNIVERSITY OF MIAMI, Coral Gables; Samuel P. Meyers, Miami; *Renovation of Research Facilities for Marine Microbiology*; 1 year; \$16,300

UNIVERSITY OF MINNESOTA, Minneapolis; William H. Marshall and E. W. Ziebarth; *Summer Research at Lake Itasca Station*; 2 years; \$42,800

UNIVERSITY OF OKLAHOMA, Norman; Carl D. Riggs; *Construction of Research Facilities at the University of Oklahoma Biological Station*; 2 years; \$114,500

UNIVERSITY OF PUERTO RICO, Mayaguez; John E. Randall; *Additions to Research Facilities on Maguqeyes Island*; 1 year; \$25,000

UNIVERSITY OF TEXAS, Austin; H. C. Bold and W. S. Stone; *Construction of Brackenridge Field Laboratory*; 3 years; \$258,000

UNIVERSITY OF VIRGINIA, Charlottesville; James L. Ripel; *Renovation and Improvement of Facilities at the Mountain Lake Biological Station*; 2 years; \$5,400

UNIVERSITY OF WASHINGTON, Seattle; Robert L. Fernald; *Expansion of Facilities and Support of Research on Marine Sciences at the Friday Harbor Laboratories*; 3 years; \$437,900

UNIVERSITY OF WISCONSIN, Madison; Harlyn Halvorson and Robert Burris; *Construction of a Laboratory of Molecular Biology*; 3 years; \$600,000

WOODS HOLE OCEANOGRAPHIC INSTITUTION, Woods Hole, Mass.; Bostwick H. Ketchum; *Expansion of Biological Research Programs and Provision of Related Shiptime*; 3 years; \$400,000

ZOOLOGICAL SOCIETY OF SAN DIEGO, Calif.; Georges Ungar; *Furnishings for New Laboratory Facility at the Institute for Comparative Biology*; 2 years; \$93,000

## MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

### ASTRONOMY

AMHERST COLLEGE, Amherst, Mass.; Robert H. Koch and Albert P. Linnell; *Eclipsing Binaries*; 3 years; \$97,300

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena; Bruce C. Murray and Guido Munch; *Long Wavelength Infrared Ground-Based Astronomy*; 1 year; \$26,400

Bruce C. Murray and James A. Westphal; *Long Wavelength Infrared Ground-Based Astronomy*; 1 year; \$25,000

Fritz Zwicky, *Construction of Catalog of Galaxies and Clusters of Galaxies*; 2 years; \$58,500

Fritz Zwicky, *Supernova Search*; 1 year; \$21,000

CASE INSTITUTE OF TECHNOLOGY, Cleveland, Ohio; S. W. McCuskey, *Low Dispersion Stellar Spectroscopy*, 1 year; \$95,600

S. W. McCuskey; *Renovation of the 36-Inch Cassegrain Reflector of the Warner and Swasey Observatory*; 1 year; \$15,000

CORNELL UNIVERSITY, Ithaca, N.Y.; Martin Harwit; *Detection of Near Infrared Radiation from Inter-Stellar Molecular Hydrogen*; 2 years; \$53,900

GEORGETOWN UNIVERSITY, Washington, D.C.; Vera C. Rubin; *Galactic Space Motion of Stars and Photometry of Galaxies*; 2 years; \$8,100

HARVARD UNIVERSITY, Cambridge, Mass.; David Layzer; *Atomic Energy Levels and Transition Probabilities*; 1 year; \$66,800

David Layzer; *Theoretical Studies in Cosmology and Cosmogony*; 1 year; \$27,400

A. Edward Lilley; *Hydrogen Line Radio Astronomy*; 1 year; \$202,800

Alan Maxwell; *Observations in Radio Astronomy at C-Band and L-Band*; 1 year; \$52,000

Fred L. Whipple; *Harvard Radio Meteor Project*; 2 months; \$33,000

INDIANA UNIVERSITY FOUNDATION, Bloomington, Ind.; Benjamin F. Peery, Jr.; *Observations of Astronomical Spectra with an Image Intensifier*; 2 years; \$13,300

INSTITUTE FOR ADVANCED STUDY, Princeton, N.J.; Otto Struve; *Preparation of the Manuscript for a Monograph on Astrospectroscopy*; 1 year; \$4,200

KING COLLEGE, Bristol, Tenn.; William W. Rolland, *Photoelectric Photometry of Variable Stars*; 1 year; \$12,000

William W. Rolland, *Photoelectric Study of Variable Stars*; 6 months; \$5,000

LOWELL OBSERVATORY, Flagstaff, Ariz.; Henry L. Giclas, *Proper Motion Survey of the Northern Hemisphere with the 13-inch Photographic Telescope*; 3 years; \$60,800

John S. Hall; *Improvements to the Perkins Reflector*; 1 year; \$111,300

MARQUETTE UNIVERSITY, Milwaukee, Wis.; William L. Reitmeyer; *Photoelectric Determination of Rotational Velocities and Redshifts of External Galaxies*; 6 months; \$3,800

## ASTRONOMY

NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL, Washington, D.C.; G. M. Clemence; *Support of Astrometric Research in the Southern Hemisphere*; 1 year; \$20,400

NORTHWESTERN UNIVERSITY, Evanston, Ill.; John D. R. Bahng; *Infrared Spectrophotometry of Stars*; 3 years; \$40,300

OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; Philip C. Keenan; *Spectra of Mira Variables*; 2 years; \$8,800

John D. Kraus; *Research in Radio Astronomy*; 2 years; \$176,500

Walter E. Mitchell, Jr.; *The Solar Spectrum in the Range 0.295–5.0 Microns*; \$23,600

PAN AMERICAN COLLEGE, Edinburg, Tex.; Paul R. Engel; *The Classification of the Spectra of B and B<sub>0</sub> Stars by Photoelectric Photometry*; 1 year; \$14,300

POMFRET SCHOOL, Pomfret, Conn.; James R. McCullough; *Ultra-Short-Period Variable Stars and Photoelectric Timing of Occultations*; 2 years; \$7,000

PRINCETON UNIVERSITY, Princeton, N.J.; Martin Schwarzschild; *Project Stratoscope II*; \$325,100

Lyman Spitzer, Jr.; *Modernization of Princeton Telescope*; 1 year; \$5,100

SAN DIEGO STATE COLLEGE FOUNDATION, San Diego, Calif.; Burt Nelson; *Photoelectric Study of Eclipsing Binary Stars*; 1 year; \$7,200

SMITHSONIAN INSTITUTION, Washington, D.C.; Charles A. Whitney, Cambridge, Mass.; *Stellar Atmospheres*; 1 year; \$28,900

STANFORD UNIVERSITY, Stanford, Calif.; Ronald N. Bracewell; *Microwave Radio Telescope Design*; 4 months; \$35,400

Ronald N. Bracewell; *Microwave Radio Telescope Design*; 1 year; \$30,000

SWARTHMORE COLLEGE, Swarthmore, Pa.; Peter van de Kamp; *Astrometric Study of Nearby Stars*; 2 years; \$33,800

TUFTS UNIVERSITY, Medford, Mass.; George S. Mumford, III; *Eclipsing Binaries Among the Dwarf Novae*; 14 months; \$11,100

DEPARTMENT OF THE NAVY, OFFICE OF NAVAL RESEARCH, Washington, D.C.; W. C. Hall; *Laboratory High Temperature Spectroscopy*; 1 year; \$75,000

Herbert Friedman; *Research in Rocket and Satellite Astronomy*; 1 year; \$800,000

UNIVERSITY OF ALASKA, College; Leif Owren; *Radio Studies of Solar Particle Emissions and the Solar Corona*; 2 years; \$115,700

UNIVERSITY OF ARIZONA, Tucson; Gerard P. Kuiper; *Stars and Stellar Systems*; 2½ years; \$65,000

Beverly T. Lynds; *Catalogue of Bright Nebulae*; 2 years; \$9,400

UNIVERSITY OF CALIFORNIA, Berkeley; Paul W. Hodge; *Southern Members of the Local Group of Galaxies*; 2 years; \$28,400

Jerzy Neyman; *Statistical Studies of Systems of Galaxies*; 1 year; \$40,600

George Wallerstein; *Abundances in Stars of Type F, G, and K*; 2 years; \$21,000

George Wallerstein; *Hydrogen to Metal Ratios in the Magellanic Clouds*; 1 year; \$4,000

Harold Weaver; *Kinematic Properties of Stars and Distribution of Mass in the Galaxy*; 1 year; \$11,900

George H. Herbig, Mount Hamilton; *High Dispersion Stellar Spectrography*; \$31,200

T. D. Kinman, Mount Hamilton; *RR Lyrae and Blue Stars of the Galactic Halo*; 2 years; \$10,000

Gerald E. Kron, Mount Hamilton; *Image Tube Development*; 1 year; \$35,000

Geoffrey Burbidge and E. Margaret Burbidge, San Diego; *Structure and Dynamics of External Galaxies*; 2 years; \$61,800

UNIVERSITY OF CANTERBURY, Christchurch, New Zealand; C. Ellyett; *High-Rate Radar Study of Variations in the Rate of Incidence of Meteors*; 3 years; \$19,900

UNIVERSITY OF CHICAGO, Ill.; W. A. Hiltner; *Galactic Structure*; 1 year; \$26,700

Masatoshi Koshiba and Riccardo Levi-Setti; *Nuclear Emulsion Detection of Gamma Rays in the Cosmic Radiation*; 1 year; \$42,200

Paul H. Roberts; *Stellar Dynamics*; 1 year; \$10,300

George Van Blesbroeck, Yerkes Observatory, Williams Bay, Wisconsin; *Astrometric Investigations*; 1 year; \$9,900

UNIVERSITY OF FLORIDA, Gainesville; Alex G. Smith; *Measurement and Analysis of Planetary Emissions at Radio Frequencies*; 3 years; \$62,600

Alex G. Smith; *Radio Observations of Jupiter and Saturn from Chile*; 2 years; \$65,100

UNIVERSITY OF MARYLAND, College Park; Roger Bell and Gert Westerhout; *Atmospheric Parameters of Cepheid Variables*; 1 year; \$7,500

UNIVERSITY OF MICHIGAN, Ann Arbor; Fred T. Haddock; *Solar Radio Bursts*; 2 months; \$3,800

William E. Howard, III; *Catalogue of Spectra of Cosmic Radio Sources*; 1 year; \$10,400

Otto Laporte; *Measurement of F-Values Using a Shock Tube*; 1 year; \$36,500

George Makhov; *Design and Construction of an X-Band Ruby Maser Radiometer*; \$32,900

Orren C. Mohler; *Measurements of Double Stars and the Spectral Classification of Bright Stars in the Southern Hemisphere*; 1 year; \$59,600

Orren C. Mohler; *Observation of Double Stars*; 4 months; \$13,000

UNIVERSITY OF OREGON, Eugene; E. G. Ebbighausen; *Scanner for Spectrograms of Spectroscopic and Eclipsing Binaries*; 1 year; \$5,500

E. G. Ebbighausen; *The Establishment of a Summer Mountain Research Observatory*; 6 months; \$4,400

UNIVERSITY OF PENNSYLVANIA, Philadelphia; L. Binnendijk; *Photoelectric Photometry of W Ursae Majoris Systems*; 1 year; \$3,500

L. Binnendijk; *Photoelectric Photometry of W Ursae Majoris Systems*; 2 years; \$8,300

Frank B. Wood; *New Zealand Site Survey*; 1 year; \$29,000

## MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

Frank B. Wood; *Multicolor Observations of Selected Eclipsing Variables*; 2 years; \$25,500

UNIVERSITY OF SYDNEY, Australia; B. Y. Mills; *Extension of Mills Cross Radio Telescope*; \$450,000

UNIVERSITY OF TEXAS, Austin; Frank N. Edmonds, Jr.; *An Analysis of Solar Granulation*; 1 year; \$2,500

UNIVERSITY OF WISCONSIN, Madison; John S. Mathis; *Photometry of Gaseous Nebulae and Evolution of a Rotating Star*; 2 years; \$18,300

Donald E. Osterbrock; *Photoelectric Photometry of Comets and Nebulae*; 3 years; \$22,100

VAN TUYL RUSCH, WILLARD, Los Angeles, Calif.; *Millimeter-Wavelength Radio Astronomy*; 6 months; \$300

VANDERBILT UNIVERSITY, Nashville, Tenn.; Robert H. Hardie; *Galactic Structure*; 2 years; \$40,000

VASSAR COLLEGE, Poughkeepsie, N.Y.; Henry Albers; *A Photoelectric Study of Selected M Stars*; 2 years; \$7,000

YALE UNIVERSITY, New Haven, Conn.; Harlan J. Smith and James N. Douglas; *Planetary and Solar Non-thermal Radio Emission*; 1 year; \$65,000

YOUNG, ANDREW T., Cambridge, Mass.; *Spiral Arms in the Galaxy*; 1 year; \$669

### ATMOSPHERIC SCIENCES

COLORADO STATE UNIVERSITY RESEARCH FOUNDATION, Fort Collins; Ferdinand Baer; *Possible Solution of Applicable Equations for Atmospheric Circulation*; 3 years; \$78,400

COLUMBIA UNIVERSITY, New York, N.Y.; William L. Donn, Palisades; *Atmospheric Microoscillations*; 3 years, \$108,700

James R. Heirtzler, Palisades; *Cooperative Geomagnetic Micropulsation Measurement Program for the International Year of the Quiet Sun*; 1 year; \$10,500

DARTMOUTH COLLEGE, Hanover, N.H.; Millett G. Morgan and Thomas Laaspere; *The Synoptic Study of Audio-Frequency Electromagnetic Waves at the "Whistlers-East" Network Under a Modified Program*; 1 year; \$111,800

DEPARTMENT OF THE AIR FORCE, Washington, D.C.; E. J. Timberlake; *Research Meteorologists for the International Indian Ocean Expedition*; 1 year; \$60,000

FLORIDA STATE UNIVERSITY, Tallahassee; Charles L. Jordan; *Large-Scale Aspects of Air-Sea Interactions in the Tropics*; 3 years; \$58,400

FRANKLIN INSTITUTE, Philadelphia, Pa.; Martin Pomerantz; *Time Variations of the Primary Cosmic Radiation Near the North Geomagnetic Pole*; 3 years; \$127,000

GRADUATE RESEARCH CENTER OF THE SOUTHWEST, Dallas, Tex.; Lloyd V. Berkner, Lauriston C. Marshall and Chaim Richman; *A Mathematical Model of Variations of Atmospheric Constituents over the Geologic Eras*; 2 years; \$87,700

Kenneth G. McCracken; *Super Neutron Monitor Studies During the International Year of the Quiet Sun*; 1 year; \$168,100

HARVARD UNIVERSITY, Cambridge, Mass.; Richard Goody; *Atmospheric Physics*; 3 years; \$504,000

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge; Raymond Hide; *Hydrodynamics of Rotating Fluids*; 6 months; \$40,000

Frederick Sanders; *Frontal Structure and the Dynamics of Frontogenesis*; 9 months; \$30,200

Victor P. Starr; *Observational and Theoretical Studies of Planetary Atmospheres*; 18 months; \$200,000

Hurd C. Willett; *Ocean and Atmosphere Interaction During Climatic Fluctuations*; 3 years; \$113,550

NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL, Washington, D.C.; Hugh Odishaw; *Support of Ad Hoc Committee on International Programs in Atmospheric Sciences and Hydrology*; 1 year; \$35,400

Hugh Odishaw; *Support of the Geophysics Research Board*; 1 year; \$118,600

Hugh Odishaw; *World Data Center A-Data Coordination Office*; 1 year; \$32,000

Hugh Odishaw; *Support of Ad Hoc Committee on International Programs in the Atmospheric Sciences and Hydrology*; 1 year; \$11,800

John R. Slevers; *Activities of the Committee on Atmospheric Sciences*; 1 year; \$62,000

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY, Socorro; W. D. Crozier; *Atmospheric Space Charge*; 1 year; \$26,000

Marvin H. Wilkening; *Radon and Its Decay Products in the Lower Atmosphere*; 1 year; \$26,500

NEW YORK UNIVERSITY, New York; Serge A. Korff; *Operation of Cosmic Ray Neutron Monitor in Alaska*; 2 years; \$38,000

Max Woodbury; *Extraterrrestrial Correlations with Meteorological Parameters*; 2 years; \$23,700

PENNSYLVANIA STATE UNIVERSITY, University Park; A. J. Ferraro and H. S. Lee; *D-Region by the Wave Interaction Technique During the International Year of the Quiet Sun*; 1 year; \$49,600

Charles L. Hosler; *Cloud and Precipitation Processes in Hilly Terrain*; 3 years; \$297,600

RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, Albany; Narayan R. Gokhale; *Dynamic Behavior of Nuclei in Ice-Formation*; 3 years; \$34,900

Vincent J. Schaefer; *Cloud Physics Field Research*; 2 years; \$53,000

Richard J. Howard, Buffalo; *Molecular Association in Supersaturated Vapors*; 2 years; \$28,300

SAN JOSE STATE COLLEGE FOUNDATION, San Jose, Calif.; Albert Miller; *Land-Sea Boundary Effects on Small-Scale Circulations*; 2 years; \$95,000

STANFORD RESEARCH INSTITUTE, Menlo Park, Calif.; Robert A. Young; *Very High Resolution Spectroscopic Studies of the Airglow*; 1 year; \$45,100

- STANFORD UNIVERSITY, Stanford, Calif.; R. A. Hellwell; *Conjugate VLF Studies at Great Whale River*; 1 year; \$48,000  
 Allen M. Peterson; *Backscatter Sounding Research*; 6 months; \$9,250
- U.S. ATOMIC ENERGY COMMISSION, New York, N.Y.; Morris Goldberg; *Use of AEC IBM-7090 Computer*; 1 year; \$2,985  
 Morris Goldberg; *Use of AEC IBM-7090 Computer*; 1 year; \$7,000
- U.S. DEPARTMENT OF COMMERCE, COAST AND GEODETIC SURVEY, Washington, D.C.; J. H. Nelson; *Observations at Island Stations of the Daily Magnetic Variations (Sq) in the Pacific Ocean Area*; 1 year; \$69,700
- U.S. NAVAL RESEARCH LABORATORY, Washington, D.C.; J. E. Dinger; *Water Vapor Measurement in the Stratosphere*; 1 year; \$50,000
- UNIVERSITY OF ALASKA, College; C. S. Deehr; *Spectrophotometry of Atmospheric Phenomena During a Total Eclipse of the Sun*; 1 year; \$50,000  
 C. T. Elvey; *IQSY Program of Auroral, Ionospheric and Magnetic Investigations in Alaska*; 1 year; \$191,200  
 Robert D. Hunsucker; *Radio Studies of the High-Latitude Ionosphere During a Solar Eclipse*; 1 month; \$4,600  
 Merle J. Young; *Operation of IGY World Data Center A—Aurora (Instrumental)*; 1 year; \$37,700
- UNIVERSITY OF ARIZONA, Tucson; Myron L. Corrin; *Surface Properties of Heterogeneous Condensation Nuclei*; 3 years; \$95,400  
 Walter H. Evans, Robert L. Walker, and Martin A. Uman; *Field and Laboratory Studies of Lightning Processes*; 9 months; \$40,000  
 A. Richard Kassandra and Louis J. Battan; *Physics of Convective Clouds and of Cloud Modification*; 1 year; \$46,600
- UNIVERSITY OF CALIFORNIA, Berkeley; Robert R. Brown; *Ionospheric Current Systems and Cosmic Radio Noise Absorption*; 3 years; \$150,000  
 Joanne S. Malkus, Los Angeles; *Cloud Formations Over Heat Sources*; 1 year; \$25,000
- UNIVERSITY OF CHICAGO, Ill.; Roscoe R. Braham, Jr.; *Physical Effects of Silver Iodide Seeding in Cumulus Clouds*; 2 years; \$400,000  
 Dave Fultz; *Meteorological Experimental Hydrodynamics*; 3 years; \$224,900  
 Collin O. Hines; *Theory of Magnetic Storms and Related Ionospheric Phenomena*; 3 years; \$190,500  
 H. L. Kuo; *Planetary Thermal Circulations*; 3 years; \$158,750  
 George W. Plateman; *Dynamical Studies of the Atmospheric General Circulation*; 3 years; \$150,000
- UNIVERSITY OF COLORADO, Boulder; A. Renne and Manfred H. Rees; *Theoretical Physics of the Upper Atmosphere*; 3 years; \$130,000
- UNIVERSITY OF IDAHO, Moscow; J. S. Kim; *Auroral Radar Echoes*; 3 years; \$75,000
- UNIVERSITY OF ILLINOIS, Urbana; Sidney A. Bowhill; *Production and Loss Processes for Atmospheric Ionization*; 1 year; \$28,900  
 Glenn E. Stout, Richard G. Semonin and Donald W. Staggs; *Cloud Electrification Studies in Illinois*; \$5,000  
 G. W. Swenson; *Atmospheric Ionization During a Solar Eclipse*; 1 year; \$79,500
- UNIVERSITY OF MICHIGAN, Ann Arbor; E. Wendell Hewson and Gerald C. Gill; *Atmospheric Diffusion in Transitional States*; \$5,000  
 E. Wendell Hewson; *Atmospheric Diffusion in Transitional States*; 1 year; \$47,000  
 Donald J. Portman; *Heat and Water Vapor Exchange at the Air-Sea Interface for the International Indian Ocean Expedition*; \$86,500
- UNIVERSITY OF MINNESOTA, Minneapolis; John L. Gergen; *Atmospheric Energy Balance*; 2 years; \$30,400  
 Alfred O. C. Nier; *Composition of Upper Atmosphere with Rocket-borne Magnetic Spectrometers II*; 1 year; \$17,500  
 William R. Webber; *Operation of IGY Data Center A—Cosmic Rays*; 1 year; \$14,700
- UNIVERSITY OF MISSOURI, Columbia; Wayne L. Decker; *Rain Gage Records Analysis of the University of Chicago Cumulus Cloud Research Project*; 3 years; \$39,500
- UNIVERSITY OF NEW MEXICO, Albuquerque; Victor H. Regener; *Time Variation of Cosmic Radiation*; 18 months; \$4,695
- UNIVERSITY OF NEVADA, Reno; Wendell A. Mordy; *Nevada Atmospheric Research Project*; 1 year; \$83,000
- UNIVERSITY OF ROCHESTER, N.Y.; Morton F. Kaplon; *Cosmic Ray Studies During the IQSY*; 1 year; \$54,900
- UNIVERSITY OF UTAH, Salt Lake City; J. Vern Hales; *Evaluation of Weather Modification*; 3 years; \$35,000  
 E. Paul Palmer; *Measuring the Influx of Interplanetary Dust by Means of Light Scattering*; 1 year; \$40,000
- UNIVERSITY OF WASHINGTON, Seattle; Robert G. Fleagle; *Energy Transfer Near the Earth's Surface*; 1 year; \$140,000
- UNIVERSITY OF WESTERN AUSTRALIA, Netherlands, Western Australia; William C. Macklin; *The Physics of the Growth of Halite Crystals*; 2 years; \$22,900
- UNIVERSITY OF WISCONSIN, Madison; Reid A. Bryson; *Interdisciplinary Study in Climatology*; 1 year; \$200,000  
 Verner E. Suomi and William P. Birkemeier; *The Lower Atmosphere Using Scattering of Microwaves*; 1 year; \$161,500
- WEATHER BUREAU, U.S. DEPARTMENT OF COMMERCE, Washington, D.C.; J. W. Osmon; *Upper Air Observations*; 2 years; \$11,000  
 F. W. Reichelderfer; *Weather Bureau Research Aircraft for the Indian Ocean Expedition*; 1 year; \$490,980  
 F. W. Reichelderfer; *International Indian Ocean Expedition Meteorological Program Aboard Oceanographic Vessels*; 3 years; \$330,000
- WOODS HOLE OCEANOGRAPHIC INSTITUTE, Woods Hole, Mass.; Andrew F. Bunker; *Air-Sea Interaction for the International Indian Ocean Expedition*; 1 year; \$110,720

Eric B. Kraus; *Air-Sea Interactions*; 3 years; \$99,000

Joseph Levine; *Cumulus Convection and its Interaction with Larger Scales of Motion*; 2 years; \$45,000

## CHEMISTRY

AMHERST COLLEGE, Amherst, Mass.; L. Willard Richards; *Vibrational Relaxation of Oxygen in Shock Waves*; 2 years; \$9,200

BOSTON COLLEGE, Chestnut Hill, Mass.; George Vogel; *Nucleophilic Attack on the 2-Pyrene Ring System*; 3 years; \$28,500

BOSTON UNIVERSITY, Mass.; Ronald M. Milburn; *Redox Reactions of Ligands*; 5 months; \$4,290

BRANDEIS UNIVERSITY, Waltham, Mass.; James B. Hendrickson; *Generalized Synthetic Approach to Some Indole Alkaloids*; 3 years; \$33,000

Thomas N. Margulis; *Crystal and Molecular Structure of Organic Compounds*; 2 years; \$21,800

Thomas R. Tuttle, Jr.; *Application of Electron Spin Resonance to Problems of Electronic Structure and Chemical Reactivity*; 1 year; \$17,800

BROWN UNIVERSITY, Providence, R.I.; Joseph F. Bunnett; *Benzynes and Phenyl Anion Chemistry*; 3 years; \$40,200

Richard L. Carlin; *Electronic Behavior in Transition Metal Complexes*; 2 years; \$19,700

BRYN MAWR COLLEGE, Bryn Mawr, Pa.; Frank B. Mallory; *Studies of Furazan Oxides and Related Heterocycles*; 3 years; \$49,300

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena; Harden M. McConnell; *Free Radicals in Crystals*; 2 years; \$107,000

John H. Richards; *Chemistry of Metalloenes*; 3 years; \$39,700

G. Wilse Robinson; *Low Temperature Chemistry and Spectroscopy*; 3 years; \$81,100

William P. Schaefer; *Vanadium (II) Complexes*; 2 years; \$14,000

CANISUS COLLEGE, Buffalo, N.Y.; Raymond Annino and Ronald E. Erickson; *Stereochemistry of Electroreductions*; 2 years; \$12,700

CASE INSTITUTE OF TECHNOLOGY, Cleveland, Ohio; Gordon M. Barrow; *Nature of Water-Base Complexes in Solution*; 2 years; \$30,700

Gordon M. Barrow; *Purchase of a Proton Magnetic Resonance Spectrometer*; 1 year; \$26,800

John P. Fackler, Jr.; *Properties and Structures of Oxygen-Containing Chelate Complexes*; 3 years; \$46,200

Malcolm E. Kenney; *Inorganic Studies Based on the Phthalocyanines*; 6 months; \$3,750

Jay K. Kochi; *Autoxidations Catalyzed by Metal Salts*; 3 years; \$52,100

Warren E. Thompson; *Spectroscopy of Trapped Free Radicals from Low Temperature Hydrogen Atom Reactions*; 2 years; \$27,400

CATHOLIC UNIVERSITY OF AMERICA, Washington, D.C.; Jan Rocek; *Chromic Acid Oxidation of Olefins*; 3 years; \$41,700

COLLEGE OF WOOSTER, Wooster, Ohio; Donald A. Tarr; *Hydrozamic Acid Complexes of Transition Metal Ions*; 2 years; \$7,600

COLUMBIA UNIVERSITY, New York, N.Y.; Charles O. Beckmann; *Purchase of a Mass Spectrometer*; 1 year; \$67,000

Ronald Breslow; *Pseudoaromatic Systems*; 3 years; \$51,500

Benjamin P. Dailey; *Microwave, Direct Quadrupole, and Nuclear Magnetic Resonance Spectroscopy*; 2 years; \$110,800

George K. Fraenkel; *Relaxation Effects in Electron Spin Resonance Spectra of Free Radicals*; 2 years; \$38,500

Harry B. Gray; *Substitution and Exchange Reactions of Transition Metal Hydrides and Nitrosyls*; 3 years; \$62,100

Thomas J. Katz; *Organometallic Compounds*; 3 years; \$56,200

Cheves Walling; *Organic Reaction Mechanisms*; 3 years; \$103,100

William H. Reinmuth; *Kinetics of Electrode Processes*; 3 years; \$59,500

CORNELL UNIVERSITY, Ithaca, N.Y.; P. Debye; *Ion Transport in Hydrocarbons*; 1 year; \$9,100

Melvin J. Goldstein; *Multi-center Transformations*; 3 years; \$49,600

Albert W. Laubengayer; *Synthesis and Characterization of Inorganic Polymers*; 3 years; \$77,800

William T. Miller, Jr.; *Chemistry of Unsaturated Carbon-fluorine Compounds*; 3 years; \$56,700

Bernhard Wunderlich; *Interference Microscopy of Crystalline Linear High Polymers*; 2 years; \$38,600

DARTMOUTH COLLEGE, Hanover, N.H.; James F. Hornig; *Energy Transfer in Molecular Solids*; 2 years; \$49,000

DENISON UNIVERSITY, Granville, Ohio; William A. Hoffman, Jr.; *Reduction of Oximes and Nitroso Compounds at Mercury Electrodes*; 3 years; \$11,900

FORDHAM UNIVERSITY, New York, N.Y.; Emil J. Moriconi; *Purchase of a Proton Magnetic Resonance Spectrometer*; 1 year; \$13,500

FRANKLIN INSTITUTE, Philadelphia, Pa.; Mortimer M. Labes; *Reactivity and Isomer Distribution in Reactions of Aromatic Hydrocarbons in the Solid State*; 1 year; \$19,400

GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta; John R. Dyer; *Synthesis of Streptose and Derivatives*; 3 years; \$13,700

Erling Grovenstein, Jr.; *Mechanism of Electrophilic Aromatic Halogenation*; 3 years; \$32,400

Robert A. Pierotti; *Adsorbed Layers on Metal Single Crystals*; 3 years; \$31,400

HARVARD UNIVERSITY, Cambridge, Mass.; John D. Baldeschwieler; *Theory and Applications of Nuclear Magnetic Double Resonance*; 3 years; \$65,000

Elias J. Corey; *Research in the Terpene Field*; 3 years; \$110,000

Richard H. Holm; *Transition Metal Chemistry*; 3 years; \$28,400

G. B. Kistiakowsky; *Unstable Intermediates in Gas Phase Reactions*; 2 years; \$51,100



- William N. Lipscomb; *Molecular and Valence Structures*; 2 years; \$99,800  
 August H. Maki; *Chemical Investigation by Electron Spin Resonance*; \$4,960  
 August H. Maki; *Chemical Investigation by Electron Spin Resonance*; 2 years; \$54,800
- HARVEY MUDD COLLEGE, Claremont, Calif.; Stephen V. Filseth; *Vacuum Ultraviolet Photochemistry of Low Molecular Weight Alcohols*; 2 years; \$6,800
- INDIANA UNIVERSITY FOUNDATION, Bloomington; Riley Schaeffer; *Chemistry of Boron Hydrides and Derivatives*; 3 years; \$74,900  
 Riley Schaeffer; *Compounds of Third Group Elements as Ligands*; 2 years; \$45,100  
 Ernest Wenkert; *Structure Studies and Syntheses of Terpenic Natural Products*; 3 years; \$45,200
- IOWA STATE UNIVERSITY, Ames; Lawrence S. Bartell; *Precise Studies of Molecular Structure*; 2 years; \$36,000  
 William C. Willman; *Alkaloid Degradations*; 3 years; \$46,600
- JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; J. D. H. Donnay; *Crystal Structure of a Synthetic Mica*; 3 months; \$2,370  
 Paul H. Emmett; *Catalytic Hydrogenation over Metals*; 2 years; \$29,000  
 Alex Nickon; *Ions from Polycyclic Molecules*; 3 years; \$38,200  
 Robert G. Parr and Klaus Ruedenberg; *Theoretical Investigations of the Electronic Structure of Molecules*; 2 years; \$154,700
- KANSAS STATE UNIVERSITY, Manhattan; Clifton E. Meloon; *Associated Water in Chelate Extractions*; 2 years; \$18,800
- KENT STATE UNIVERSITY, Kent, Ohio; John W. Reed; *Crystal Chemistry of the Halides of the Heavier Group III B Elements*; 2 years; \$20,000
- KENTUCKY RESEARCH FOUNDATION, Lexington; James E. Douglass; *Amine Complexes of Boronium Ions*; 2 years; \$19,400
- LEHIGH UNIVERSITY, Bethlehem, Pa.; Irving J. Borowitz; *Enol Phosphonium Salts*; 3 years; \$28,600  
 Albert C. Zettlemoyer; *Wetting of Solids by Liquids*; 6 months; \$4,800
- LEMOYNE COLLEGE, Syracuse, N.Y.; George A. Pearse, Jr.; *Synthesis and Analytical Application of Amidoximes*; 2 years; \$7,600
- LOUISIANA STATE UNIVERSITY, Baton Rouge; Paul Delahay; *Structure of the Double Layer and Correlation with Electrode Processes*; 3 years; \$100,400  
 Sean P. McGlynn; *Polarization of Molecular Absorption and Luminescence Processes*; 2 years; \$45,800
- MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge; F. Albert Cotton; *Thermochemistry of Organometallic Compounds*; 2 years; \$16,800  
 Herbert O. House; *Synthesis of Gibberellic Acid*; 3 years; \$31,200  
 William R. Moore; *Small-Ring Compounds*; 3 years; \$46,700
- MELLON INSTITUTE, Pittsburgh, Pa.; Hershel Markovitz; *Experimental Continuum Mechanics*; 2 years; \$30,100
- MICHIGAN STATE UNIVERSITY, East Lansing; Harold Hart; *Fundamental Studies in Organic Chemistry*; 3 years; \$58,100
- NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL, Washington, D.C.; G. D. Meld; *Support of the U.S. National Committee of the International Union of Crystallography*; 3 years; \$9,000
- NEW MEXICO STATE UNIVERSITY, University Park; John J. Monagle, Jr.; *Nucleophilic Activity of Organic Derivatives of Pentavalent Phosphorus, Arsenic and Antimony*; 2 years; \$24,700
- NEW YORK UNIVERSITY, New York; Kurt Mislow; *Optical Rotatory Dispersion*; 3 years; \$69,200
- NORTHWESTERN UNIVERSITY, Evanston, Ill.; Fred Basolo; *Carbon Monoxide Exchange and Substitution Reactions of Metal Carbonyls*; 3 years; \$95,500  
 Arthur A. Frost; *Purchase of High Resolution Infrared and Proton Magnetic Resonance Spectrometers*; 1 year; \$40,000  
 Robert L. Letsinger; *Selective Catalysis by Synthetic Polymers*; 3 years; \$47,500  
 Duward F. Shriver and Donald E. Smith; *Electrochemical Investigation of Borazine and Borazine Derivatives*; 3 years; \$23,000
- OCCIDENTAL COLLEGE, Los Angeles, Calif.; Frank L. Lambert; *Polarography of Organic Halogen Compounds*; 2 years; \$10,200
- OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; Daryl H. Busch; *Asymmetric Processes Involving Optically Active Complex Inorganic Compounds*; 3 years; \$64,000  
 Paul G. Gassman; *Identification of Strained Ring Systems in the Near-Infrared*; 2 years; \$16,200  
 Roger E. Gerkin; *Electron Paramagnetic Resonance Studies at Low and High Fields*; 2 years; \$55,900  
 Melvin S. Newman; *Fundamental Studies of Reaction Mechanism*; 3 years; \$48,900  
 Melvin S. Newman; *Syntheses and Properties of Intramolecularly overcrowded Molecules*; 2 years; \$34,600  
 Andrew Wojcicki; *Inorganic Derivatives of the Metal Carbonyls*; 3 years; \$40,700
- OHIO UNIVERSITY, Athens; William D. Huntsman; *Thermal Cyclization Reactions*; 3 years; \$35,800  
 William W. Paudler; *Isolation and Structure Determination of Certain New Alkaloids*; 2 years; \$15,200
- PENNSYLVANIA STATE UNIVERSITY, University Park; J. G. Aston and J. J. Fritz; *Low Temperature Research in Chemistry*; 2 years; \$117,800  
 Robert A. Bernheim; *Optical Pumping*; 2 years; \$58,900  
 C. David Schulbach and Frank Dachille; *Effect of Pressure Upon the Optical Activity of Crystalline Inorganic Compounds*; 3 months; \$2,800  
 William A. Steele; *Properties of Simple Fluids in External Potential Fields*; 2 years; \$25,200  
 Thomas Wartik; *Purchase of a Mass Spectrometer*; 1 year; \$75,000  
 Thomas Wartik; *Purchase of Electron Paramagnetic Resonance Spectrometer*; 1 year; \$29,600

MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

POLYTECHNIC INSTITUTE OF BROOKLYN, N.Y.; Reed F. Riley; *Fused Salts and Their Solutions of Complex Forming Metal Ions*; 2 years; \$41,600

PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; Robert A. Benkeser; *Chemistry of the Organic Compounds of Silicon, Germanium and Tin*; 3 years; \$61,200

James W. Cobble; *The Thermodynamic Properties of High Temperature Solutions*; 1 year; \$17,800

Alan F. Clifford; *Syntheses and Reactions of Compounds Derived from SF<sub>6</sub>*; 3 years; \$46,700

RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, Albany; Michael Szwarc; *Chemistry of Free Radicals*; 3 years; \$83,100

Peter T. Lansbury, Buffalo; *New Reactions of Lithium Aluminum Hydride in Pyridine Solution*; 3 years; \$35,000

Barry M. Gordon, Oyster Bay; *Kinetic Investigation of Fast Electron-Transfer Reactions in Aqueous Solution*; 2 years; \$17,300

Edward M. Kosower, Oyster Bay; *Photochemical Approaches to the "Active Site" of Enzymes*; 3 years; \$45,900

William J. le Noble, Oyster Bay; *Effect of High Pressure on Chemical Reactions in the Liquid Phase*; 3 years; \$31,400

Conrad Schuerch, College of Forestry, Syracuse; *Stereoisomerism of Vinyl Polymers*; 2 years; \$18,000

RESEARCH FOUNDATION, OKLAHOMA STATE UNIVERSITY, Stillwater; J. Paul Devlin; *Vibrational Spectra and Thermodynamic Properties of Some Cyanoethylenes and  $\pi$ -Complexes of Tetracyanoethylene*; 2 years; \$13,400

Leon H. Zalkow; *Synthesis and Stereochemistry of Tetracyclic Diterpenoid Alkaloids and Related Diterpenes*; 3 years; \$37,500

RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.; Donald B. Denney; *Organophosphorus Chemistry*; 3 years; \$57,100

William Rieiman, III; *Purchase of an Infrared Spectrophotometer*; 1 year; \$11,000

SACRAMENTO STATE COLLEGE FOUNDATION, Sacramento, Calif.; Rodney J. Sime; *Heterogeneous Equilibria of Some Group V Metal Halides*; 3 years; \$11,800

ST. LOUIS UNIVERSITY, St. Louis, Mo.; Bernard Rice; *High Temperature Raman Spectroscopy of Gaseous Species*; 2 years; \$24,700

ST. OLAF COLLEGE, Northfield, Minn.; John C. Marshall; *Application of the Hammett Acidity Function,  $H_0$ , to Acids and Bases in Anhydrous Formic Acid*; 2 years; \$6,300

SAN DIEGO STATE COLLEGE FOUNDATION, San Diego, Calif.; H. Edward O'Neal; *Primary Photochemical Decomposition Processes of Acetaldehyde*; 2 years; \$23,500

SAN JOSE STATE COLLEGE FOUNDATION, San Jose, Calif.; Ralph J. Fessenden; *Syntheses of Sila-heterocyclic Compounds*; 2 years; \$20,300

Lanny L. Replogle; *Synthesis of Heterocyclic Analogs of Non-Benzenoid Conjugated Hydrocarbons*; 2 years; \$12,000

SMITH COLLEGE, Northampton, Mass.; George S. Durham; *Purchase of a Recording*

*Ultraviolet Spectrophotometer*; 1 year; \$10,200

STANFORD UNIVERSITY, Stanford, Calif.; William S. Johnson; *Synthetic Studies Related to Natural Products*; 3 years; \$126,300

William S. Johnson; *Purchase of a Double Focussing Mass Spectrometer*; 1 year; \$130,000

Harry S. Mosher; *Grignard Reactions, Reagents and Mechanisms*; 2 years; \$28,600

Eugene E. van Tamelen; *Reaction of Organic Substances with Unstable Neutral Inorganic Species*; 2 years; \$22,800

SYRACUSE UNIVERSITY RESEARCH FOUNDATION, N.Y.; Donald C. Dittner; *Small-Ring Sulfur Compounds*; 3 years; \$45,000

SYRACUSE UNIVERSITY RESEARCH INSTITUTE, N.Y.; W. A. Baker, Jr.; *Spectra and Magnetic Properties of Metal Complexes Having Tetragonal Symmetry*; 5 months; \$2,490

George A. Wiley; *Non-Classical Directive Influences in Addition Reactions*; 3 years; \$28,400

TUFTS UNIVERSITY, Medford, Mass.; Robert D. Stolow; *Conformations of Cyclohexane Derivatives*; 2 years; \$23,500

UNIVERSITY OF AKRON, Ohio; Maurice Morton; *Mechanism of Homogeneous Anionic Polymerization*; 2 years; \$43,700

UNIVERSITY OF ARKANSAS, Fayetteville; Samuel Siegel; *Stereochemistry of the Catalytic Hydrogenation of Aromatic and Hydroaromatic Compounds*; 2 years; \$21,200

UNIVERSITY OF CALIFORNIA, Berkeley; W. F. Glauque; *Cryogenic and Magnetic Research in the Low Temperature Laboratory*; 1 year; \$140,500

Joel H. Hildebrand; *Properties and Solubility Relations of Nonelectrolytes*; 1 year; \$11,300

Thomas L. Jacobs; *Addition Reactions of Alkenes*; 3 years; \$36,800

Thomas L. Allen, Davis; *Relation Between Molecular Energy and Molecular Structure*; 2 years; \$38,500

Lawrence J. Andrews and Raymond M. Keefer, Davis; *Participation by Ortho Substituents in Reactions at Aromatic Side Chains*; 3 years; \$40,800

Herbert D. Kaesz, Los Angeles; *Transition Metal Carbonyls*; 4 months; \$3,285

James D. McCullough, Los Angeles; *Structural and Thermodynamic Studies of Group VIB Compounds*; 2 years; \$43,900

Robert L. Pecsok, Los Angeles; *Complexes of Chromium (II)*; 3 years; \$29,600

Robert L. Scott, Los Angeles; *Liquids and Solutions*; 2 years; \$36,200

William G. Young, Los Angeles; *Displacement Reactions Involving Allylic Systems*; 3 years; \$28,500

Jerry A. Bell, Riverside; *Energy Degradation Following Chemical Activation*; 2 years; \$23,400

John F. Garst, Riverside; *Organo-Alkali Complexes*; 2 years; \$18,500

M. Frederick Hawthorne, Riverside; *Displacement Reactions of Tetracoordinate Boron*; 3 years; \$42,700

James N. Pitts, Jr., Riverside; *Conversion of Dual-Purpose Electron Paramagnetic Resonance—Nuclear Magnetic Resonance Spec-*

CHEMISTRY

trometer to Separate EPR and NMR Spectrometers; 1 year; \$16,500

Teddy G. Traylor, San Diego; *Mechanisms of Electrophilic Substitution*; 2 years; \$12,100

Domenick J. Bertelli, Santa Barbara; *Synthesis of New Potentially Aromatic Compounds*; 32 months; \$21,800

Glenn H. Miller and Glyn O. Pritchard, Santa Barbara; *Gas Phase Kinetic Studies of Fluorine Containing Free Radicals*; 1 year; \$27,500

Pierce W. Selwood, Santa Barbara; *Molecular Interactions at Solid Surfaces*; 2 years; \$35,400

UNIVERSITY OF CHICAGO, Ill.; Gerhard L. Closs; *Chemistry of Cyclopropenes and Related Compounds*; 2 years; \$51,600

Philip E. Eaton; *Chemistry of Tricyclo [5.3.0.0<sup>2,5</sup>] Decane*; 3 years; \$42,100

Jack Halpern; *Mechanisms of Oxidation-Reduction Reactions*; 3 years; \$118,200

Clyde A. Hutchison, Jr.; *Magnetic Susceptibilities of Actinide Ions in Crystals*; 2 years; \$77,500

John C. Light; *Studies in Theoretical Chemistry*; 2 years; \$26,900

Donald S. McClure; *Electronic Spectroscopy*; 2 years; \$85,600

Lothar Meyer; *Experimental Investigations on the Properties of Matter at Low Temperatures*; 2 years; \$102,000

Norman H. Nachtrieb; *Purchase of Proton Magnetic Resonance Spectrometer and Accessories*; 1 year; \$42,000

J. W. Stout; *Electronic Energy Levels in Paramagnetic Crystals*; 2 years; \$84,200

UNIVERSITY OF CINCINNATI, Ohio; Darl H. McDaniel; *Strong Hydrogen Bonds: Ion-Molecule Interactions*; 2 years; \$25,700

UNIVERSITY OF COLORADO, Boulder; Stanley J. Gill; *Strain Birefringence and Optical Rotation Properties of Polymer Solutions*; 2 years; \$28,100

Edward L. King; *Complex Ions in Solution*; 3 years; \$92,400

Paul Urone; *Behavior of Polar Solutes on Polar Supports and Liquid Phases in Gas Chromatography*; 3 years; \$27,200

UNIVERSITY OF CONNECTICUT, Storrs; Roy J. Gitter; *Free Radical Chemistry of the Organic Ligands in Coordination Compounds*; 9 months; \$2,700

Lewis Katz; *Structure Studies of Crystalline Materials*; 2 years; \$35,300

UNIVERSITY OF DELAWARE, Newark; Harold C. Beachell; *Preparation of New Polymer Structures by Polymerization of Adsorbed Monomers*; 2 years; \$30,700

Harold Kwart; *Mechanisms of Claisen Rearrangement of Non-Ether Substrates*; 3 years; \$33,400

UNIVERSITY OF FLORIDA, Gainesville; Merle Battiste; *Preparation and Properties of Some Polyaryltropylium Ion Salts*; 2 years; \$15,400

George B. Butler; *Stereochemical Studies in Diene Monomers and Their Polymers Obtained by the Intra-Intermolecular Mechanism*; 3 years; \$29,800

S. O. Colgate; *Scattering of Monoenergetic Beams of Low Velocity Neutral Particles*; 2 years; \$41,000

William M. Jones; *Small Ring Carbenes*; 2 years; \$11,600

Robert C. Stoufer; *Essential Character and Consequence of Spin-Pairing in Cobalt (II) Complexes*; 4 months; \$3,915

Thomas L. Westman; *Transannular Reactions of Medium-Size Cyclanes*; 2 years; \$14,600

UNIVERSITY OF GEORGIA, Athens; S. William Pelletier; *Total Synthesis of Certain Natural Products*; 3 years; \$28,100

Thomas D. Walsh; *Stereochemistry of Solvolytic Reactions*; 32 months; \$17,600

UNIVERSITY OF IDAHO, Moscow; Jean'ne M. Shreeve; *Preparation and Characterization of Transition Metal Oxyfluorosulfonates*; 2 years; \$14,000

UNIVERSITY OF ILLINOIS, Urbana; Douglas E. Applequist; *Effects of Controlled Variation of Structure on Reactivity*; 3 years; \$35,300

John C. Ballar, Jr.; *Reactions of Complexes*; 3 years; \$91,400

Theodore L. Brown; *Electron-Deficient Compounds*; 3 years; \$54,800

Clarence E. Pfluger; *X-Ray Crystallography*; 2 years; \$16,700

Frederick T. Wall; *Macromolecular Configurations and Calculation of Reaction Probabilities*; 2 years; \$74,200

UNIVERSITY OF KANSAS, Lawrence; Benjamin Chu; *Critical Opalescence of Binary Liquid Mixtures*; 2 years; \$27,600

Robin T. M. Fraser; *Mediators in Inorganic Electron Transfer Mechanism*; 3 years; \$39,800

Earl S. Huyser; *Free Radical Elimination Reactions*; 30 months; \$30,400

Edward E. Smissman; *Chemistry of Podophyllum Components*; 3 years; \$15,100

C. A. VanderWerf; *Purchase of a Mass Spectrometer*; 1 year; \$75,000

UNIVERSITY OF MARYLAND, College Park; William C. Purdy; *Separation of Isomeric Compounds*; 2 years; \$23,900

UNIVERSITY OF MASSACHUSETTS, Amherst; William E. McEwen; *Mechanisms of Displacement Reactions at Trivalent Sulfur*; 2 years; \$29,800

UNIVERSITY OF MICHIGAN, Ann Arbor; Chul F. Liu; *Cis-Oxidation Involving Complexes as Oxidants*; 2 years; \$22,700

Max T. Rogers; *Purchase of a Mass Spectrometer*; 1 year; \$47,000

UNIVERSITY OF MISSISSIPPI, University; William C. Herndon; *Gas Phase Dehydrochlorination of Bicyclic Alkyl Chlorides*; 3 years; \$18,100

UNIVERSITY OF MINNESOTA, Minneapolis; Stanley Bruckenstein; *Principles of Chemical Stripping Chronopotentiometry*; 2 years; \$38,700

Doyle Britton and Henry A. Bent; *Structural Studies of Inorganic Cyanides and Related Compounds*; 2 years; \$36,500

William E. Parham; *Expansion Reactions Involving Carbene Intermediates*; 2 years; \$19,600

Lloyd H. Reyerson; *Magnetic Susceptibility Studies of Adsorbed Gases*; 9 months; \$2,700

MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

R. Stuart Tobias; *Metal-Ligand Bonds in Coordination Compounds of the Heavier Group IV Elements*; 3 years; \$37,600

UNIVERSITY OF MISSOURI, Columbia; R. Kent Murmann; *The Kinetic and Thermodynamic Stability of Planar Nickel (II) and Copper (II)  $\alpha$ -Aminoamide Chelate Compounds*; 2 years; \$27,900

UNIVERSITY OF NEBRASKA, Lincoln; Gordon A. Gallup; *Magneto-Rotatory Dispersion and Molecular Structure*; 2 years; \$19,800

Cecil E. Vandersee; *Thermochemical Studies on Cyanates, Thiocyanates, Thiocarbonates, and Related Compounds*; 1 year; \$11,600

UNIVERSITY OF NEW MEXICO, Albuquerque; Masanobu Yamauchi; *Boron Hydrides*; 2 years; \$28,400

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; Henry H. Dearman; *Molecular Spectroscopy and Photochemistry of Sacrificially Conjugated Organic Molecules*; 2 years; \$25,300

UNIVERSITY OF NORTH DAKOTA, Grand Forks; A. William Johnson; *Strained Polynuclear Aromatic Hydrocarbons*; 3 years; \$18,900

A. William Johnson; *Chemistry of Sulfur Ylides*; 2 years; \$8,600

UNIVERSITY OF OKLAHOMA RESEARCH INSTITUTE, Norman; Jordan J. Bloomfield; *Cyclodecapentaene and 9,10-Dihydronaphthalene*; 2 years; \$14,500

George W. Murphy; *Purchase of a Proton Magnetic Resonance Spectrometer*; 1 year; \$15,800

UNIVERSITY OF OREGON, Eugene; Virgil Boekelheide; *Aromatic Molecules Containing Functional Groups Internal to the  $\pi$ -Electron System*; 3 years; \$68,200

Lloyd J. Dolby; *Total Synthesis of Dihydrochitamine*; 3 years; \$21,600

UNIVERSITY OF PENNSYLVANIA, Philadelphia; Charles E. Evers; *The Physical Properties of Metal-in-Amine Solutions*; 2 years; \$36,300

Hendrik F. Hameka; *Interactions Between Radiation and Molecules*; 2 years; \$35,700

John G. Miller; *Compressibility Measurements of Gas Mixtures*; 1 year; \$18,000

UNIVERSITY OF PITTSBURGH, Pa.; Johannes F. Coetzee; *Properties of Electrolytes in Nitriles as Solvents*; 3 years; \$46,300

UNIVERSITY OF ROCHESTER, N.Y.; A. B. F. Duncan; *Excited States of Some Simple Polyatomic Molecules*; 2 years; \$27,200

W. Albert Noyes, Jr.; *Photochemical Investigations by Long-Path Infra-Red Spectroscopy*; 2 years; \$25,100

David J. Wilson; *Theory of Gas Reactions*; 2 years; \$42,300

UNIVERSITY OF SAN FRANCISCO, Calif.; G. E. McCasland; *Stereochemistry of the Cyclohexanes*; 7 months; \$3,000

UNIVERSITY OF SOUTH CAROLINA, Columbia; Robert S. Bly, Jr.; *Solvolytic Rearrangements of Unsaturated Neopentyl-Type Compounds*; 3 years; \$35,200

O. D. Bonner; *Solutions of Polyelectrolytes and Bolaform Electrolytes in Solvents of High Dielectric Constant*; 2 years; \$17,300

UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles; Arthur W. Adamson; *Chemical Actinometry for the Long Wave-Length Visible Spectral Region*; 1 year; \$10,850

Arthur W. Adamson; *Chemical Actinometry for the Long Wave-Length Visible Spectral Region*; \$1,200

Sidney W. Benson; *Kinetic and Thermodynamic Studies of Free Radicals*; \$5,000

Anton B. Burg; *Fluorocarbon-Phosphines*; 3 years; \$93,500

Jerry Donohue; *Crystal and Molecular Structures of Inorganic Substances of Unusual or Unknown Chemical Structure*; 2 years; \$45,600

Norman Kharasch; *Photolysis of Aromatic Iodo Compounds*; \$4,900

UNIVERSITY OF TEXAS, Austin; Joseph J. Lagowski; *Ionic Equilibria in Anhydrous Liquid Ammonia*; 7 months; \$1,530

UNIVERSITY OF TULSA, Oklahoma; Richard A. Tomasi; *Synthesis of Allenes via the Wittig Reaction*; 1 year; \$4,300

UNIVERSITY OF UTAH, Salt Lake City; Henry Byring; *Transport and Thermodynamic Properties of Liquids; Rate Processes, Optical Activity, and High Pressure Physics*; 2 years; \$60,000

J. Calvin Giddings; *Diffusion Phenomena and Nonequilibrium Kinetics*; 2 years; \$25,600

UNIVERSITY OF VERMONT, Burlington; Martin E. Kuehne; *Electrophilic Addition to Vinyl-Nitrogen and Vinyl-Oxygen Derivatives*; 3 years; \$39,200

UNIVERSITY OF VIRGINIA, Charlottesville; Thomas A. Gover; *Sensitized Decomposition of Simple Hydrocarbons Using the  $^1P_1$  Mercury Atom*; 2 years; \$18,100

Robert E. Lutz; *Electronic, Steric and Conformational Effects on Conjugation and Intramolecular Interaction of Groups in Unsaturated Carbonyl Systems*; 3 years; \$35,800

Paul N. Schatz; *Intermolecular Forces by Infrared Spectroscopy*; 2 years; \$38,800

UNIVERSITY OF WASHINGTON, Seattle; Arthur G. Anderson, Jr.; *New Heterocyclic Systems, the Tricyclo-[5.3.0.0.3.0] decane System and Azulene*; 2 years; \$24,700

Ernest R. Davidson; *Higher Excited States of the Hydrogen Molecule*; 2 years; \$26,600

B. S. Rabinovitch; *Kinetic Studies of Homogeneous Unimolecular Reactions*; 2 years; \$44,900

UNIVERSITY OF WISCONSIN, Madison; Louis J. Gosting; *Diffusion Studies on Electrolytes and Proteins*; 2 years; \$38,200

Edwin M. Larsen; *Reduced States of the Transitional Elements*; 3 years; \$34,600

UNIVERSITY OF WYOMING, Laramie; Sara Jane Rhoads; *Effect of Ring Size on the Direction and Rate of Alkylation of 2-Carboalkoxyacylanones*; \$1,100

UTAH STATE UNIVERSITY, Logan; Richard H. Boyd; *Activity Coefficients of Indicators and Other Molecules in Concentrated Acid Solutions*; 2 years; \$19,500

VANDERBILT UNIVERSITY, Nashville, Tenn.; K. Keith Innes; *Molecular Electronic Spectra and Structure*; 2 years; \$55,800

## EARTH SCIENCES

WASHINGTON STATE UNIVERSITY, Pullman; Carl M. Stevens; *Purchase of a Proton Magnetic Resonance Spectrometer*; 1 year; \$13,000

WAYNE STATE UNIVERSITY, Detroit, Mich.; Norman L. Allinger; *Conformational Effects in Medium Rings*; \$5,000

Norman L. Allinger; *Conformational Transmission*; 2 years; \$30,300

Darrell D. Ebbing; *Quantum Mechanical Studies of Molecular Properties*; 2 years; \$22,100

Carl R. Johnson; *Chemistry of Sulfoxides*; 3 years; \$37,100

Calvin L. Stevens; *A New Aminoketone Rearrangement*; 3 years; \$41,800

Calvin L. Stevens; *Purchase of a High Resolution Mass Spectrometer*; 1 year; \$75,000

WESTERN CAROLINA COLLEGE, Cullowhee, N.C.; Louis W. Clark; *Kinetic Studies on the Decarboxylation of Unstable Acids in Nonaqueous Solvents*; \$600

WILLIAM MARSH RICE UNIVERSITY, Houston, Tex.; Richard B. Turner; *Heats of Catalytic Hydrogenation in Solution*; 3 years; \$86,800

YALE UNIVERSITY, New Haven, Conn.; Basil G. Anex; *Electron Dynamics of Highly Adsorbing Crystals and Studies in Quantum Mechanics*; 1 year; \$17,700

Edward M. Burgess; *Photochemical Reactions of N-Nitrosamines*; 3 years; \$23,300

Charles S. Johnson, Jr.; *Electron Spin Resonance of Heterocyclic and Other Free Radicals*; 2 years; \$24,000

Walter Lwowski; *Reactions of Acyl-Intrenes*; 3 years; \$42,700

Benton B. Owen; *Piezochemistry of Electrolytic Solutions*; 29 months; \$37,700

William von Eggers Doering; *The Organic Chemistry of Divalent Carbon*; 3 years; \$78,400

Harry H. Wasserman; *Purchase of a Mass Spectrometer*; 1 year; \$67,000

Kenneth B. Wiberg; *Mechanisms of Oxidation Reactions*; 3 years; \$92,400

### EARTH SCIENCES

ALAMEDA COUNTY STATE COLLEGE FOUNDATION, Hayward, Calif.; Ivan P. Colburn; *Distribution of Current Structures: Diablo Range, California*; 3 years; \$15,850

AMERICAN GEOGRAPHICAL SOCIETY, New York, N.Y.; William O. Field; *Continuation of World Data Center A: Glaciology*; 1 year; \$25,000

AMERICAN MUSEUM OF NATURAL HISTORY, New York, N.Y.; Brian H. Mason; *The Mineralogical and Chemical Composition of Stony Meteorites*; 3 years; \$24,700

BIRGHAM YOUNG UNIVERSITY, Provo, Utah; Harold J. Bissell; *Permian Marine Basins of Sedimentation, Western Utah and Eastern Nevada*; 2 years; \$17,000

Lehi F. Hintze; *Structural Analysis of Mt. Nebo Overthrust Area*; 1 year; \$7,600

William R. Phillips; *Purchase of X-ray Diffraction Equipment*; 1 year; \$15,000

J. Keith Rigby; *Acquisition of Cut-off Saw, Grinder, and Finishing Lap*; 1 year; \$3,300

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena; Egdon T. Degens; *Geochemical Spectrum of Organic Compounds in Ancient Sediments*; 2 years; \$7,100

P. Edgar Hare and Heinz A. Lowenstam; *A Comparative Study on the Amino Acid Composition of Some Biologically Mineralized Materials, Both Recent and Fossil*; 2 years; \$25,800

Heinz A. Lowenstam; *The Contribution of Unrecognized Mineral Precipitates of Marine Organisms to Marine Sediments*; 3 years; \$48,600

Claire C. Patterson; *Construction of a Mass Spectrometer*; 1 year; \$9,900

Robert P. Sharp; *Glaciological Investigations on Blue Glacier, Washington*; 2 years; \$25,900

Leon T. Silver; *Uranium-Thorium-Lead Isotopic Systems in Minerals of Gabbroic Rocks*; 1 year; \$12,500

G. J. Wasserburg; *Reconstruction of Gas Mass Spectrometer to Increase Sensitivity*; 1 year; \$13,400

CARNEGIE INSTITUTE OF WASHINGTON, Washington, D.C.; Merle A. Tuve; *Geophysics Program in the Central Andes*; 3 years; \$120,000

Merle A. Tuve; *Logistics for International Seismic Crustal Studies in Lake Superior*; 1 year; \$58,400

COLORADO SCHOOL OF MINES, Golden, J. Harlan Johnson; *Fossil Algae from Guatemala*; 2 years; \$20,000

COLUMBIA UNIVERSITY, New York, N.Y.; Charles H. Behre, Jr.; *Nature and Origin of Zinc-Lead and Copper Gossans*; 2 years; \$18,800

Fred A. Donath; *Experimental Development of Metamorphic Structures Deep-Sea Sediments*; 3 years; \$40,000

John Imbrie; *Stratigraphy and Genesis of Post-Pleistocene Bahamian Sediments*; 2 years; \$20,000

Marshall Kay; *Comparative Stratigraphy and Structure on the Newfoundland and Irish Coasts*; 3 years; \$22,700

Allan W. H. Be, Palisades; *Paleoecology of Planktonic Foraminifera and Other Organic Constituents in North Atlantic*; 3 years; \$48,000

Wallace S. Broecker, Palisades; *Uranium Series Inequilibrium in Pleistocene Carbonates*; 2 years; \$40,000

William A. Cassidy, Palisades; *Meteoritic Impact Sites*; 1 year; \$21,700

Maurice Ewing, Palisades; *Participation in the International Indian Ocean Expedition*; 1 year; \$544,200

Maurice Ewing, Palisades; *Support for Research Vessel VEMA*; 1 year; \$180,000

James R. Heirtzler, Palisades; *Geomagnetic Studies*; 18 months; \$43,300

Maurice Ewing, John Kuo and Kenneth Hunkins, Palisades; *Solid Earth Tides*; 2 years; \$75,000

William M. Sackett, Palisades; *Stable Isotope Investigation of the Carbon Cycle*; 2 years; \$55,000

David L. Thurber, Palisades; *Natural Variations in  $U^{234}/U^{238}$  Ratios*; 1 year; \$29,400

MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

DARTMOUTH COLLEGE, Hanover, N.H.; Robert C. Reynolds, Jr.; *The Salinity of Precambrian Seas*; 1 year; \$5,900

FORDHAM UNIVERSITY, New York, N.Y.; Bartholomew Nagy; *Geologic Chromatography*; 6 months; \$5,000

Norman O. Smith and Bartholomew Nagy; *Solubility of Gases in Connate Water*; 2 years; \$19,000

FRANKLIN AND MARSHALL COLLEGE, Lancaster, Pa.; Stearns A. Morse; *Mineralogical, Geochemical and Structural Study of the Kiglapait Layered Intrusion, Labrador*; 2 years; \$31,250

FRESNO STATE COLLEGE FOUNDATION, Fresno, Calif.; George M. Stanley; *Relations of Quaternary Lakes of Salton Basin and Lower Colorado River*; 18 months; \$18,300

GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta; William M. Spicer; *Purchase of an Ultraviolet-Visible Spectrophotometer*; 1 year; \$10,000

GRADUATE RESEARCH CENTER OF THE SOUTHWEST, Dallas, Tex.; John W. Graham; *Paleomagnetic Research*; 1 year; \$45,000

Anton L. Hales; *Seismic Crustal Structure Studies*; 1 year; \$40,000

Anton L. Hales; *The Response of the Earth's Crust to Surface Loading*; 2 years; \$55,000

HAMILTON COLLEGE, Clinton, N.Y.; Donald B. Potter; *Stratigraphy and Structure of the Central Taconic Region, New York*; 2 years; \$16,000

HARVARD UNIVERSITY, Cambridge, Mass.; Francis Birch; *Measurement of Heat Flow in the United States*; 1 year; \$153,000

J. O. Brew; *Geology, Paleontology and Archaeology of the Pleistocene Valesquillo Region, Mexico*; 1 year; \$18,900

Bryan Patterson; *Paleontology of the East African Tertiary*; 3 years; \$56,200

Alfred S. Romer; *Stratigraphy of the Wichita Redbeds, North Central Texas*; 3 years; \$7,700

Henry Stommel; *Research in Oceanic Physics*; 1 year; \$40,000

HOLMES, G. WILLIAM, Rockville, Md.; *The Ra-Salpausselka Moraine System in Norway and Sweden*; 1 year; \$3,200

INSTITUTO GEOFISICO BOLIVIANO, La Paz, Bolivia; Reynaldo Salgueiro; *Geomagnetism and Gravity Work in Bolivia*; 3 years; \$33,000

INSTITUT POUR LA RECHERCHE SCIENTIFIQUE EN AFRIQUE CENTRALE, Brussels, Belgium; Eduard Berg; *Occurrence and Mechanisms of Earthquakes in Central Africa*; 1 year; \$19,500

JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; R. B. Montgomery; *Field Study of Equatorial Waters Near the Gilbert Islands*; 1 year; \$10,000

LEHIGH UNIVERSITY, Bethlehem, Pa.; Keith E. Chave; *Geochemistry of Estuarine Plankton*; 1 year; \$25,000

J. Donald Ryan; *Purchase of Spectrophotometer for Research in Geochemistry*; 1 year; \$5,073

LEO, GERHARD W., Washington, D.C.; *Petrology of Metapelitic Rocks, Brazil*; 1 year; \$5,700

LONG BEACH STATE COLLEGE FOUNDATION, Long Beach, Calif.; John G. Dennis; *Basic English Terminology for the International Tectonic Dictionary*; 1 year; \$11,900

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge; William F. Brace; *A Theoretical and Experimental Study of Brittle Behavior of Rocks*; 3 years; \$90,000

William F. Brace; *Brittle Fracture of Rocks*; 1 year; \$18,500

D. E. Carritt; *Chemical Oceanography*; 2 years; \$75,000

William H. Dennen; *Trace Elements in Quartz*; 1 year; \$15,500

Ely Mencher; *Geology of Northern Aroostook County, Maine*; 3 years; \$37,300

MICHIGAN STATE UNIVERSITY, East Lansing; Aureal T. Cross; *Significance of Spores and Other Detritus in Recent Sediments*; 2 years; \$43,400

MILTON, CHARLES, Washington, D.C.; *Petrology and Mineralogy of Carbonates of Tanganyika and Israel*; 1 year; \$6,500

MONTANA STATE UNIVERSITY, Missoula; Robert W. Fields; *Origin and Development of Northern Rocky Mountain Tertiary Basins*; 3 years; \$29,200

NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL, Washington, D.C.; Linn Hoover; *Support of Coordinator, Indian Ocean Expedition*; 1 year; \$19,300

Linn Hoover; *Committee on INQUA in Plans to Sponsor the 7th International Congress of INQUA in 1965*; 3 years; \$15,000

NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL, Washington, D.C.; William L. Petrie; *Support of AMSOC Committee Activities in Project Mohole*; 1 year; \$108,100

Richard C. Vetter; *Support of the Special Committee on Oceanographic Research*; 1 year; \$3,000

NATIONAL OCEANOGRAPHIC DATA CENTER, Washington, D.C.; Woodrow C. Jacobs; *Support for World Data Center-A for Oceanography (WDC-A)*; 3 years; \$27,000

NORTH DAKOTA STATE UNIVERSITY, Fargo; John A. Brophy; *Late Wisconsin and Post-Wisconsin Geologic History of Sheyenne Delta of Lake Agassiz*; 3 years; \$11,250

OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus, Ohio; Harold W. Borns, Jr. and Richard P. Goldthwait; *Glacial Geology of the Kaskawulsh Glacier Area, Yukon Territory*; 14 months; \$6,500

Richard P. Goldthwait and John H. Mercer; *Chronology of Late Glacial Movements, Patagonia Icefield*; 1 year; \$16,900

George M. Haselton; *Glacial Geology of Upper Muir Inlet Area, Alaska*; 20 months; \$14,200

W. A. Heiskanen and U. A. Uotila; *Purchase of Light Interference Comparator for Establishing a Geodetic Standard Base Line at Ohio State University*; 16 months; \$22,000

Malcolm P. Weiss and Walter C. Sweet; *Lithostratigraphy and Biostratigraphy of the Type Cincinnati*; 3 years; \$39,200

## EARTH SCIENCES

Samuel B. Treves; *Igneous-Metamorphic Geology of the Tasersiaq Area, Southwest Greenland*; 1 year; \$9,700

OREGON STATE UNIVERSITY, Corvallis; Joseph W. Berg, Jr. and Peter Dehlinger; *Navigational Instrumentation to Facilitate Marine Geophysics Research*; 1 year; \$17,600

Wayne V. Burt; *Oregon Oceanographic Studies*; 1 year; \$177,000  
 iversity Park; Thomas F. Bates; *X-Ray Diffractometer*; 1 year; \$6,300

William H. Taubeneck; *Evolution of the Willowa Mountains, Oregon*; 1 year; \$9,900

PENNSYLVANIA STATE UNIVERSITY, University Park; Thomas F. Bates; *X-Ray Amorphous Mineral Materials and Their Role in the Weathering Process*; 3 years; \$50,000

Russell R. Dutcher and Frank Dachille; *Effect of Heat and Pressure on Organic Matter in Coal Seams*; 3 years; \$25,000

Peter H. Given; *Chemical Investigation of the Petrological Components of Bituminous Coal*; 2 years; \$32,100

D. L. Hamilton and C. Wayne Burnham; *Phase Equilibrium Studies in a Simplified Eclogite System*; 2 years; \$50,000

Leonard F. Herzog, II; *Be<sup>10</sup> Dating Studies by Mass Spectrometry*; 8 months; \$3,037

B. F. Howell, Jr.; *Cooperation in Seismic Measurements of Crustal Structure in Minnesota*; 1 year; \$7,800

E. F. Osborn and A. Muan; *Role of Oxygen Pressure in Crystallization and Differentiation of Basaltic Magma*; 2 years; \$24,600

Robert Scholten; *Mechanisms of Transport in Rocky Mountain Thrust Belt*; 3 years; \$45,000

William Spackman; *Characteristics of Modern Organic Sediments and Their Use in the Identification, Description and Interpretation of Carbonaceous Rocks and Rock Sequences*; \$4,000

O. Frank Tuttle; *Leucocratic Rocks and Their Role in the Evolution of the Earth's Crust*; 3 years; \$75,000

O. F. Tuttle; *Experimental Study of Magmatic Origin for Magnetite-Apatite, Ilmenite-Hematite and Related Ore Deposits*; 3 years; \$50,000

Vladimir Vand and Frank Dachille; *X-ray Diffraction Studies of Minerals Formed at Very High Pressures*; 2 years; \$50,000

PIERCE, WILLIAM G., Menlo Park, Calif.; *Tectonic Mechanisms for Movement of De-collement of Detachment-type Thrust Faults*; 1 year; \$12,500

POMONA COLLEGE, Claremont, Calif.; Alexander K. Baird and Donald B. McIntyre; *Distributions of Elements in the Batholith of Southern California and Their Petro-genetic Significance*; 3 years; \$80,000

PRINCETON UNIVERSITY, Princeton, N.J.; William E. Bonini, A. F. Buddington, Alfred G. Fischer and R. B. Hargraves; *Rock Magnetism*; 2 years; \$69,000

William E. Bonini; *Seismic Crustal Studies*; 2 years; \$30,500

Walter M. Elsasser; *Convection in the Earth's Outer Mantle*; 2 years; \$31,500

Hugh J. Greenwood; *Hydrothermal Research on Mineral Systems*; 2 years; \$38,600

R. B. Hargraves; *Petrologic Study of the Diana Syenite Complex*; 3 years; \$25,000

Heinrich D. Holland; *Solubility of Carbonates in Aqueous Solutions at High Temperatures and Pressures*; 2 years; \$40,000

H. H. Hess, John C. Maxwell and Eldridge M. Moores; *Petrology, Structure, and Origin of Highly Differentiated Alpine Ophiolites*; 2 years; \$25,000

PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; Joe L. White; *The Weathering Sequence of Micaceous Clay Minerals*; 3 years; \$32,500

RENSSELAER POLYTECHNIC INSTITUTE, Troy, N.Y.; Samuel Katz; *The Elasticity and Density of the High-Pressure Polymorphs of Selected Solids*; 2 years; \$61,000

RIVERSIDE CITY COLLEGE, Calif.; Richard K. Rozelle; *Acidic Volcanic Activity in Late Cretaceous History of Northern California*; 1 year; \$2,700

ROSS, CLYDE P.; *The Origin of the Idaho Batholith*; \$1,600

ST. LOUIS UNIVERSITY, Mo.; Stanislaw A. Vincenz; *Experimental Study of the Natural Remanent Magnetization of Rocks*; 2 years; \$38,000

SMITH COLLEGE, Northampton, Mass.; Bruce Hawkins; *Calculation of a Model for Planet Formation*; 2 years; \$9,400

SMITHSONIAN INSTITUTION, Washington, D.C.; Edward P. Henderson; *Collection of Meteorites and Tektites in Australia*; 1 year; \$10,200

SOUTHERN METHODIST UNIVERSITY, Dallas, Tex.; Michael J. Holdaway; *Hydrothermal Studies of Epidotes*; 2 years; \$13,800

Gene Simmons; *Temperature Dependence of the Elastic Constants of Rock-Forming Minerals*; 2 years; \$27,600

STANFORD UNIVERSITY, Stanford, Calif.; Stanley N. Davis; *Micromovements of the Land Surface Produced by Subsurface Flow of Fluids*; 3 years; \$26,000

William R. Evitt; *Palynological Survey of Certain Mesozoic-Tertiary Strata in California*; 1 year; \$25,000

John W. Harbaugh; *Dolomite in Modern Sediments*; \$3,200

STEVENS INSTITUTE OF TECHNOLOGY, Hoboken, N.J.; Stephen J. Lukaski; *Data Recording System for Wave Energy Dissipation Studies*; 1 year; \$21,000

TEXAS AGRICULTURAL AND MECHANICAL RESEARCH FOUNDATION, College Station; Lela M. Jeffrey; *Development of Chemical Methods for Isolation and Characterization of the Principal Organic Compounds in Sea Water*; 2 years; \$40,000

Hugh J. McLellan; *Support of the Operation of the Research Vessel HILDALGO*; 1 year; \$55,700

Robert O. Reid; *Direct Evaluation of Sea Surface Roughness and Vertical Flux of Heat and Momentum*; 1 year; \$57,000

TEXAS CHRISTIAN UNIVERSITY, Fort Worth; Dan E. Feray, Arthur J. Ehlmann and Neil C. Hullings; *Tectonic and Environmental Factors in the Origin and Distribution of Puerto Rico Sediments*; 1 year; \$40,000

MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

TUFTS UNIVERSITY, Medford, Mass.: Robert L. Nichols; *Geomorphology of Inglefield Land, Northwest Greenland*; 1 year; \$13,000  
 J. H. Nelson; *World Data Center A for Geomagnetism, Seismology, and Gravity*; 1 year; \$32,000

U.S. NAVY OCEANOGRAPHIC OFFICE, Washington, D.C.; Woodrow C. Jacobs; *National Oceanographic Data Center*; 1 year; \$80,000

OFFICE OF NAVAL RESEARCH, Washington, D.C.; L. D. Coates; *Support of the Committee on Oceanography of the National Academy of Sciences*; 1 year; \$20,000

UNIVERSITY OF ARIZONA, Tucson; Paul E. Damon; *Geochemical Dating of Precambrian Rocks, Southwestern United States and Mexico*; 2 years; \$53,500

Robert L. DuBois; *Paleomagnetism of Rocks, Meteorites, and Archeological Materials*; 2 years; \$48,000

UNIVERSITY OF CALIFORNIA, Berkeley; Mark N. Christensen; *Pleistocene Deformation in the California Coast Ranges*; 18 months; \$15,800

Garniss H. Curtis and Jack F. Evernden; *Potassium-Argon Method of Dating Minerals and Rocks*; 30 months; \$71,000

Stanley H. Ward; *Polarization of Natural Magnetic Fields by Major Geologic Structures*; 1 year; \$15,000

Charles Meyer; *Mineral Equilibria at Broken Hill, Australia*; 2 years; \$18,900

George Backus and Freeman Gilbert, La Jolla; *The Free Oscillations of the Earth*; 1 year; \$39,000

Victor Vacquier, La Jolla; *Magnetic Properties of Rocks, Sediments and Minerals*; 2 years; \$49,000

Leason H. Adams and George C. Kennedy, Los Angeles; *Rapidly Running Transitions at Very High Pressures*; 1 year; \$20,000

Daniel I. Axelrod, Los Angeles; *Tertiary Floras of Nevada*; 3 years; \$28,000

W. G. Ernst, Los Angeles; *Stability Relations of Minerals Under Hydrothermal Conditions*; 2 years; \$33,000

W. F. Libby, Los Angeles; *Radiocarbon Dating Method and New Dating Methods of Longer Time Scale*; \$24,000

George W. Wetherill, Los Angeles; *Long-Lived Radiotopes for Geochronological and Other Geophysical Problems*; 2 years; \$60,500

Nathaniel T. Coleman, Riverside; *Sorption of Hydrolyzable Metal Ions by Clays*; 3 years; \$41,800

Frank W. Dickson, Riverside; *Ore-forming Processes*; 2 years; \$42,000

George Tunell, Riverside; *Ore-Forming Processes in Mercury and Antimony Deposits*; 2 years; \$25,800

G. Arrhenius, San Diego; *Geology of Pacific Ocean Floor off Central America*; 1 year; \$25,500

Robert L. Flsher and F. N. Spiess, San Diego; *Participation in the International Indian Ocean Expedition*; 1 year; \$680,300

John D. Isaacs, San Diego; *Development of Inexpensive Deep-Sea Devices*; 1 year; \$35,100

Alexander R. McBirney, San Diego; *Marine and Terrestrial Tectonic Relations in the Western Caribbean*; 1 year; \$126,900

Alexander R. McBirney and Howel Williams, San Diego; *Petrology of the Central American Volcanic Province*; 2 years; \$54,000

Melvin N. A. Peterson, San Diego; *Geochemistry of Marine Diagenesis and A Study of Marine Volcanism*; 2 years; \$50,000

William R. Riedel, San Diego; *Detailed Field Study of Stratigraphy in Part of the Western Pacific*; 1 year; \$5,000

W. R. Riedel, San Diego; *Stratigraphy and Paleogeography in Part of the Southeast-Tropical Pacific*; 1 year; \$116,800

George G. Shor, Jr., San Diego; *Reflection Studies of Geological Structure Under the Oceans*; 1 year; \$230,000

J. E. Tyler, San Diego; *Hydrologic Optics Research-Spacelight Spectroscopy*; 2 years; \$100,000

Victor Vacquier, San Diego; *Deep Ocean Magnetic Recorders*; 18 months; \$75,000

T. H. Van Andel and J. R. Curry, San Diego; *Sediments and Post-Pleistocene History of Continental Shelves*; 1 year; \$17,400

Richard P. Von Herzen, San Diego; *Geothermal Heat Flow Between San Diego and the Rio Grande Valley*; 1 year; \$166,800

UNIVERSITY OF CHICAGO, Ill.; John C. Jamieson; *Crystal Imperfections Using Pulse Techniques*; 1 year; \$4,900

Robert C. Newton; *High Temperature and High Pressure in Solid State Geophysics*; 3 years; \$40,000

Joseph V. Smith; *Structural and Chemical Analysis of Minerals*; 2 years; \$20,000

UNIVERSITY OF CINCINNATI, Ohio; Hans J. Hofmann; *Primary and Secondary Structures, Southwestern Ohio*; 1 year; \$2,300

Leonard H. Larsen; *Quartzite-Granite Series, Beartooth Mountains, Montana-Wyoming*; 2 years; \$13,000

UNIVERSITY OF COLORADO, Boulder; Donald D. MacPhail; *Glacio-Climatic Mapping of Front Range Glaciers*; 18 months; \$17,500

UNIVERSITY OF CONNECTICUT, Storrs; George R. Rumney, Noank; *Sea-Water Temperature Fluctuations in Shallow Tidal Estuaries*; 1 year; \$5,500

UNIVERSITY OF DELAWARE, Newark; Johan J. Groot; *A Palynological Investigation of Atlantic Ocean Bottom Sediments*; 2 years; \$44,800

UNIVERSITY OF EDINBURGH, Scotland; Patrick L. Willmore; *World Seismic Computation Project*; 3 years; \$280,700

UNIVERSITY OF GEORGIA, Athens; William K. Hamblin; *Radiographic Techniques for Geologic Study*; 2 years; \$20,000

John H. Hoyt and Vernon J. Henry, Jr.; *Sedimentation, Structure and Development of Salt Marshes and Divergent Barrier Islands of the Georgia Coast*; 3 years; \$45,000

UNIVERSITY OF HAWAII, Honolulu; Taivo Laevastu; *Energy Exchange Between the Sea and the Atmosphere in the North Pacific*; 2 years; \$20,400

John J. Naughton; *Potassium-Argon Method of Dating Volcanic Rocks and Minerals, Hawaiian Islands*; 2 years; \$55,000

G. Donald Sherman; *The Evaluation of*



## EARTH SCIENCES

*Post Climates as Expressed in Fossil Soils*; 1 year; \$5,000

UNIVERSITY OF ILLINOIS, Urbana; A. H. Beavers; *Characterization of Opal Phyto-liths in Soils and Selected Plants*; 1 year; \$17,600

Jack L. Hough; *Geological Studies in Lake Michigan*; 1 year; \$33,900

Harold R. Wanless; *Sequential Mapping of Paleoenvironments of the Pennsylvanian Period*; 2 years; \$32,500

UNIVERSITY OF MIAMI, Coral Gables, Fla.; James F. Corwin, Miami; *Isolation and Identification of Volatile Organic Matter in Tropical Sea Water*; 2 years; \$40,000

Cesare Emiliani, Miami; *Palynological Research on Southeastern United States Fresh Water Deposits*; 2 years; \$30,000

Cesare Emiliani; *Support of LOCO Committee*; 1 year; \$18,400

Cesare Emiliani; *Investigations of the Deep-Sea Floor and Adjacent Slopes of the Tropical-Subtropical Western Atlantic and Caribbean*; 1 year; \$230,000

Cesare Emiliani; *Paleotemperature Research*; 2 years; \$80,900

J. Edward Hoffmeister, Miami; *Florida Coral Reef Studies*; 2 years; \$14,600

Göte Ostlund and Gene A. Ruskak, Miami; *Facility for Low Tritium Measurements*; 1 year; \$54,600

Gene A. Ruskak, Miami; *Rates of Sedimentation and Chronology of Late Pleistocene Events by Radiocarbon Dating*; 2 years; \$50,000

F. G. Walton Smith, Miami; *Support of the Research Vessel GERDA*; 1 year; \$25,200

F. G. Walton Smith and Robert F. White, Miami; *Support of Research Vessel GERDA*; 1 year; \$28,100

UNIVERSITY OF MICHIGAN, Ann Arbor; Leigh C. Anderson; *Purchase of a Nuclear Magnetic Resonance Spectrometer*; 1 year; \$15,500

William C. Kelly and F. Stewart Turneaure; *Thermometry of Ores of the Bolivian Tin Belt*; 3 years; \$28,000

David E. Willis; *A Seismic Refraction Study and Attenuation Measurement Program in the Great Lakes Region*; 1 year; \$12,700

James H. Zumberge; *Lake Superior Coring II*; 1 year; \$57,000

UNIVERSITY OF MINNESOTA, Minneapolis; Harold L. James; *Origin of Iron Ores of Lake Superior Type*; 3 years; \$55,000

Henry Lepp; *Distribution of Manganese in Certain Iron Formations, Minnesota*; 2 years; \$21,200

Harold M. Mooney, Glenn E. Bowie and J. Campbell Craddock; *Geophysical and Geological Investigation of the Keweenaw Rocks of Southeastern Minnesota and Western Wisconsin*; 2 years; \$54,000

William C. Phinney; *Application of Phase Equilibrium Data to Interpretation of Petrological Problems*; 3 years; \$31,900

Tibor Zoltai; *Mineral Structure Determinations*; 2 years; \$25,000

UNIVERSITY OF MISSOURI, Columbia; Walter D. Keller; *Origin of Flint Clay Deposits*; 3 years; \$28,000

Maynard Slaughter; *Crystal Structures of Some Natural Zeolites*; 3 years; \$24,200

UNIVERSITY OF NEVADA, Reno; Alexis von Volborth; *X-ray Analysis of Rocks and Computation of "true" Rock Composition*; 1 year; \$14,500

UNIVERSITY OF NEW MEXICO, Albuquerque; Roger Y. Anderson; *Climatic Cycles and Patterns in Varved Sediments*; 2 years; \$22,900

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; William A. White; *Topographic Effects of Solution in Surficial Deposits of Coastal Plains*; 1 year; \$10,000

Ralph J. McCracken, Raleigh; *Weathering and Soil Genesis in Piedmont and Coastal Plain Regions*; 2 years; \$15,900

UNIVERSITY OF NOTRE DAME, Ind.; Raymond C. Gutschick; *Biostratigraphy of Madison Group and Sappington Formation, Western Montana*; 2 years; \$20,000

UNIVERSITY OF OREGON, Eugene; Francis J. Reithel; *Purchase of an Ultraviolet-Visible and a Nuclear Magnetic Resonance Spectrometer*; 2 years; \$25,000

UNIVERSITY OF PENNSYLVANIA, Philadelphia; Elizabeth K. Ralph; *Carbon-14 Measurements of Known Age Samples*; 2 years; \$30,000

UNIVERSITY OF PITTSBURGH, Pa.; Takeshi Nagata; *Influence of Chemical and Pressure Effects on Rock Magnetism*; 2 years; \$50,000

UNIVERSITY OF ROCHESTER, N.Y.; William A. Bassett and Taro Takahashi; *Development of High Pressure-Temperature X-ray Camera*; 1 year; \$10,000

UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles; George V. Chilingar; *Overburden Pressure and Moisture Content of Siliceous Acid, Organic Colloids, and Various Clays*; \$637

UNIVERSITY OF TEXAS, Austin; Virgil E. Barnes; *Composition and Origin of Tektites*; 2 years; \$30,000

Gregory A. Davis; *Structure and Petrology of the Klamath Mountains Area, California*; 28 months; \$16,300

William H. Easton; *Pleistocene Raised Reefs, Volcanic Ash, and Sediments in Hawaii*; 1 year; \$12,800

K. O. Emery; *A Study of Monterey Bay and Submarine Canyon*; \$1,800

J. Hoover Mackin; *Tertiary Deformational History of the Great Basin-Colorado Plateau, Southwestern Utah*; 2 years; \$13,700

Richard Merriam; *Source and Mode of Deposition of Palm Spring Formation, California*; 1 year; \$1,000

John A. Wilson and Stephen E. Clabaugh; *Early Tertiary Vertebrates and Potassium-Argon Dating of Associated Volcanic Rocks*; 2 years; \$36,800

UNIVERSITY OF WASHINGTON, Seattle; P. E. Church; *Photography of Northwest North American Glaciers*; 2 years; \$25,000

B. J. Enbysk; *Sedimentation and Foraminifera Distribution off the Washington-Oregon Coast*; 2 years; \$30,700

Richard H. Fleming; *Improvement in Seagoing Scientific Capabilities*; 1 year; \$10,600

R. H. Fleming; *Expansion of Oceanographic Facilities*; 2 years; \$1,400,000

## MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

Maurice Rattray, Jr.; *Theoretical Studies in the Dynamics of Estuarine Circulation*; 1 year; \$19,600

UNIVERSITY OF WISCONSIN, Madison; Sturges W. Bailey; *Microbeam Crystal Structure Determination of Clay Minerals*; 1 year; \$18,000

Murli H. Manghnani and Robert P. Meyer; *Seismic and Gravity Investigation of the Bitterroot Valley, Montana*; 1 year; \$7,800

Robert P. Meyer; *Reduction and Analysis of Seismic Refraction Measurements*; 2 years; \$75,000

Robert P. Meyer; *Crust and Upper Mantle Studies Through Explosion Seismology*; 1 year; \$115,000

Ned A. Ostenson and George P. Woollard; *Gravity Investigations of the Arctic Ocean Basin*; 1 year; \$13,500

G. P. Woollard and T. S. Laudon; *Gravity and Magnetic Studies in the Solomon Islands*; 1 year; \$22,400

VIRGINIA POLYTECHNIC INSTITUTE, Blacksburg; Bruce W. Nelson; *Geochemistry of Sediment Suspensions in the Upper Adriatic Sea*; 1 year; \$10,900

WASHINGTON STATE UNIVERSITY, Pullman; Ronald K. Sorem; *Mineralogy of Manganese Oxide Ores in Washington*; 1 year; \$5,100

WASHINGTON UNIVERSITY, St. Louis, Mo.; H. Leroy Scharon and Carl Tolman; *Paleomagnetic Investigations of the St. Francois Mountains Igneous Rocks, Missouri*; 2 years; \$49,000

WESLEYAN UNIVERSITY, Middletown, Conn.; James R. Balsley; *Magnetic Properties of Metamorphic Rocks and Minerals*; 3 years; \$39,000

WICHITA FOUNDATION, INC., Wichita, Kans.; Fred Wendorf, Taos, N. Mex.; *A Paleogeological Study of Late Pleistocene and Early Recent Deposits of the Northern Llano Estacado, Eastern New Mexican and Adjacent West Texas*; \$2,300

WILLIAM MARSH RICE UNIVERSITY, Houston, Tex.; Burrell C. Burchfiel; *Las Vegas Valley Shear Zone and Its Influence on Basin and Range High-Angle Faults*; 2 years; \$10,700

Thomas W. Donnelly; *Geological and Geophysical Investigations of the Older Rocks of the Puerto Rico-Virgin Islands Area*; 2 years; \$20,000

Edward G. Purdy; *Acquisition of Continuous Stratification Profiles*; 1 year; \$18,400

J. Cl. De Bremaecker; *The Completion of a Recorder for a Digitizing Seismograph*; 1 year; \$19,700

WOODS HOLE OCEANOGRAPHIC INSTITUTION, Woods Hole, Mass.; Paul M. Fye; *Studies in the Indian Ocean*; 1 year; \$150,000

J. B. Hersey; *Geophysical Studies Related to Mohole Site Selection in the North Atlantic*; 1 year; \$441,000

J. B. Hersey, C. O. Bowin, E. T. Bunce, and S. T. Knott; *Analysis of Seismic Reflection and Gravity Data North of Puerto Rico*; 1 year; \$86,000

John Reitzel; *Measurement of Heat Flow in Thermally Stable Lakes*; 2 years; \$24,700

Raymond Siever; *The Equilibrium Between Silicate and Carbonate Minerals and Associated Interstitial Waters in Recent Oceanographic Sediments*; 1 year; \$35,000

John M. Zeigler and Robert L. Miller; *Generalized Wave-Driven Mechanism for Near-Shore Sediment Transport*; 1 year; \$46,600

YALE UNIVERSITY, New Haven, Conn.; Sydney P. Clark, Jr.; *Perturbations of Temperature and Heat Flow in the Crust*; 15 months; \$6,200

Sydney P. Clark, Jr.; *Limits to Upper Mantle Mineralogy as Deduced from High-Pressure Experiments*; 2 years; \$100,000

A. C. Duxbury; *Seasonal Fluctuations in the Water Mass of New Haven Harbor*; 18 months; \$10,200

Richard F. Flint; *Glacial Studies, Eastern Base of Andes Mountains, Argentina*; 1 year; \$1,500

Mead LeRoy Jensen; *Bearing of Sulfur Isotopic Studies on the Origin of Bedded Ore Deposits of South Africa*; 2 years; \$35,500

Phillip M. Orville; *Feldspars and Alkali Ion Exchange Techniques*; 2 years; \$46,900

Elwyn L. Simons; *Paleontology and Stratigraphy of the Oligocene Deposits of the Fayum Region of Egypt*; 2 years; \$31,600

Minze Stuiver; *Isotopic Carbon, with Special Reference to Geochronometry and Geophysics*; 2 years; \$47,000

### ENGINEERING SCIENCES

ARIZONA STATE UNIVERSITY, Tempe; William R. Elliott; *Electron Paramagnetic Resonance Studies of Phase Transitions in Barium Titanate*; 2 years; \$29,400

BROWN UNIVERSITY, Providence, R.I.; Joseph Kestin and John Ross; *Transport Properties of Gases*; 2 years; \$53,000

P. S. Symonds; *Interaction Phenomena in Plastic Deformation*; 2 years; \$15,000

W. H. Reid; *Hydrodynamic Stability*; 3 years; \$127,600

P. D. Richardson; *Separated Flows*; 1 year; \$13,100

R. T. Shield; *Finite Elastic Deformation*; 2 years; \$54,400

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena; Y. C. Fung; *Forces Acting on a Circular Cylinder Perpendicular to a Flow of Air*; 2 years; \$45,800

George W. Housner and Donald E. Hudson; *Dynamic Properties of Full-Scale Structures*; 2 years; \$53,700

W. Duncan Rannie and Frank E. Marble; *The Dynamics of Fluids Containing Large Numbers of Small Solid Particles*; 2 years; \$63,500

Rolf H. Sabersky; *Flow Over Rough Surfaces*; 2 years; \$22,500

Ronald F. Scott; *Stress-Deformation and Yield Properties of Soil*; 2 years; \$13,600

Ronald F. Soohoo; *Relaxation Processes in Thin Ferromagnetic Films*; 1 year; \$18,200

CARNEGIE INSTITUTE OF TECHNOLOGY, Pittsburgh, Pa.; T. Au; *Elastic-Plastic Wave Propagation*; 2 years; \$30,900

Leo A. Finzi; *Superconductivity—Intermediate State and Superconductive State Material and Field Properties*; 2 years; \$43,400

Gaylord W. Penney; *The Phototization of Gases by Radiation from Discharges*; 2 years; \$38,300

## ENGINEERING SCIENCES

William H. Pierce; *Statistical Estimation Methods in Time-Optimal Control Systems*; 2 years; \$22,500

James P. Romualdi; *Tension Fracture Arrest in Reinforced Concrete*; 2 years; \$26,400

Herbert L. Toor; *Chemical Reactions in Turbulent Fluid*; 2 years; \$38,200

CASE INSTITUTE OF TECHNOLOGY, Cleveland, Ohio; Robert R. Archer; *Vibration of Thin Elastic Shells*; 2 years; \$38,300

Banan B. Banerji; *Artificial Intelligence*; 2 years; \$26,400

Florentino D. Miraldi; *Interaction of Separated Fissionable Systems*; 2 years; \$35,900

Simon Ostrach and Edward J. Morgan; *Shock Tube Investigations of High Temperature Gas Physics*; 2 years; \$74,200

Wen-Hsiung Ko; *Thermoelectric Effects in Thin Metallic and Semi-Conducting Films*; 1 year; \$22,600

CATHOLIC UNIVERSITY OF AMERICA, Washington, D.C.; Eugene P. Klier; *Transformations in Eutectoidal Alloys*; 2 years; \$35,200

CLARKSON COLLEGE OF TECHNOLOGY, Potsdam, N.Y.; H. L. Shulman; *Bubble Dynamics in Boiling*; 2 years; \$22,300

CLEMSON COLLEGE, Clemson, S.C.; Joseph H. Moore; *Stress Distribution in Prestressed Beams*; 1 year; \$6,100

Tah-Teh Yang; *Channel Flow and Nucleate Boiling Heat Transfer*; 1 year; \$6,100

COLORADO STATE UNIVERSITY RESEARCH FOUNDATION, Fort Collins; J. E. Cermak; *Electrokinetic-Potential-Fluctuation Method for Investigation of Turbulent Flow*; 2 years; \$50,900

Vujica M. Yevdjevich; *Analysis of River Flow Sequence*; 2 years; \$7,800

COLUMBIA UNIVERSITY, New York, N.Y.; Ferdinand Freudenstein; *Six-Link Kinematic Chains*; 2 years; \$36,600

Robert A. Gross; *Fundamental Study of a Highly Ionized Steady State Plasma*; 1 year; \$116,500

Wan H. Klm; *Analysis and Synthesis of Communication Networks*; 2 years; \$58,400

Eugene S. Machlin; *Field Ion Emission Microscope Studies of Alloys*; 2 years; \$60,000

Victor Paschakis and Charles F. Bonilla; *Thermal Fundamentals of Quenching*; 1 year; \$9,200

Richard Skalak; *Wave Propagation in Distensible Tubes*; 2 years; \$27,400

Thomas E. Stern; *Sequential Circuits and Applications to Error-Correcting Codes*; 1 year; \$17,800

Omar Wing; *Distributed Network Theory*; 2 years; \$22,200

CORNELL UNIVERSITY, Ithaca, N.Y.; Benjamin Gebhart; *Transients and Instabilities in Natural Convection*; 2 years; \$56,900

Peter Harriott; *Control of Exothermic Reactions in Fluidized Beds*; 17 months; \$10,200

James A. Liggett; *Secondary Currents in Non-Circular Conduits*; 2 years; \$37,900

Wilbur E. Meserve; *Optimization of Discrete Control Systems*; 2 years; \$51,000

John B. Newkirk; *Precipitation Reactions in Non-Metallic Crystals*; 2 years; \$26,000

Frank Rosenblatt; *Cognitive Systems*; 2 years; \$67,100

Robert L. Von Berg; *A Gamma Radiation Source*; 1 year; \$15,330

George Winter; *Fracture Processes of Concrete*; 2 years; \$53,200

GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta; Andrew W. Marris; *The Flow of Fluids in Curved Channels*; 2 years; \$13,000

A. R. E. Singer and J. H. Murphy; *Deformation of Metals in the Region of the Solidus*; 2 years; \$49,300

HARVARD UNIVERSITY, Cambridge, Mass.; Howard W. Emmons; *High Temperature Gas Dynamics Project*; 2 years; \$150,000

Ronald W. P. King; *Periodic Structures and Antenna Arrays*; 2 years; \$58,700

ILLINOIS INSTITUTE OF TECHNOLOGY, Chicago; Leonid V. Azaroff; *Fine Structure of X-ray Absorption Edges*; 2 years; \$1,000

Roger L. Fosdick; *The Theory of Non-Linear Elasticity*; 3 months; \$4,800

Sidney A. Guralnick; *Behavior of Reinforced Concrete Subjected to Repeated Cycles of Long Time Loading*; 2 years; \$60,000

Philp G. Hodge, Jr.; *Numerical Methods in Plasticity*; 2 years; \$65,500

JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Stanley Corrsin; *Isotropic Turbulence*; \$62,400

J. L. Ericksen; *Nonlinear Theories of Continua*; 2 years; \$40,800

Jerome Gavis; *Jet Flow of Viscoelastic Liquids*; 2 years; \$37,300

Robert E. Green, Jr.; *Recrystallization Textures in Aluminum*; 2 years; \$47,900

Maclyn McCarty, Jr.; *Internal Energy-Translational Energy Transfer Processes*; 1½ years; \$27,000

KENTUCKY RESEARCH FOUNDATION, Lexington; Prasad K. Kadaba; *Microwave Absorption and Mechanism of Dielectric Relaxation in Mixtures of Polar Substances*; 1 year; \$10,600

LEHIGH UNIVERSITY, Bethlehem, Pa.; Edward H. Kottcamp and George E. Kane; *Deformation in Sintered Carbide*; \$52,400

R. W. Kraft; *Structure and Properties of Unidirectionally Solidified Eutectic Alloys*; 2 years; \$53,400

Roy J. Leonard; *Strength Development of Lime Stabilized Minerals*; 2 years; \$33,700

LOUISIANA POLYTECHNIC INSTITUTE, Ruston; Joseph J. Thigpen, Ellis M. Killgore and Charles A. Whitehurst; *Heat Transfer and Frost Formations in Humid Air*; 2 years; \$42,700

MANHATTAN COLLEGE, New York, N.Y.; Donald J. O'Connor; *Distribution of Non-Conservative Contaminants in Estuaries*; 2 years; \$24,100

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge; All S. Argon and Egon Orowan; *Strain Hardening and Fracture in Ionic Crystals*; 2 years; \$64,900

Raymond F. Baddour; *Interphase Electronic Interactions in Polyphase Solid Catalysts*; 2 years; \$1,400

P. L. T. Brian; *Heat Transfer with Simultaneous Chemical Reaction*; 2 years; \$31,400

MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

P. L. T. Brian and Leonard A. Gould; *Control of Chemical Processes*; 2 years; \$182,100

Sanborn C. Brown and Henry J. Zimmermann; *Ionized Plasmas*; \$350,000

John C. Chato; *Fluid Flow and Heat Transfer in Multiple-Channel Natural Circulation Systems*; 2 years; \$29,400

Antoine M. Gaudin; *Hysteresis of Contact Angles*; 2 years; \$56,900

Nicholas J. Grant and Arthur W. Muldendre; *Elevated Temperature Deformation and Fracture of Metals*; 1 year; \$32,000

H. C. Hottel and G. C. Williams; *The Modeling of Firespread*; 3 years; \$69,000

Arthur T. Ippen; *Transport of Sediment in Streams*; 2 years; \$57,400

Edward A. Mason and Robert C. Reid; *The Effect of Radiation on Semiconductor Catalysts*; \$21,100

Warren M. Rohsenow; *Equipment for Pool Boiling Heat Transfer of Sodium*; 1 year; \$10,000

Warren M. Rohsenow; *Film Boiling Inside of Tubes*; 1 year; \$21,700

John G. Trump; *The Production of Intense, High-Energy Particle Beams*; 2 years; \$81,500

Wolf R. Vieth; *Transport of Gases and Vapors in Glassy Polymers*; 2 years; \$32,800

MICHIGAN STATE UNIVERSITY, East Lansing; Orlando B. Andersland; *Deformation and Flow of Frozen Soils*; 3 years; \$42,200

T. W. Forbes; *Human Factor Based Traffic Flow Theory*; 2 years; \$34,000

Lawrence E. Malvern; *Stress Wave Propagation and Dynamic Testing*; 2 years; \$55,900

MISSISSIPPI STATE UNIVERSITY, State College; E. W. Hough; *Adsorption of Gases on Silica and Other Solids*; 2 years; \$28,800

MONTANA SCHOOL OF MINES, Butte; Donald W. McGlashan; *Asphalt-Aggregate Reactions*; 2 years; \$50,900

MONTANA STATE COLLEGE, Bozeman; Donald A. Pierre; *Distributed-Parameter Control Systems*; 1 year; \$8,800

NEW MEXICO STATE UNIVERSITY, University Park; Sheila Prasad; *Measurement of Current Distributions Along Thick Cylindrical Antenna*; 1 year; \$17,100

NEW YORK UNIVERSITY, New York; Robert C. Geldmacher; *The Conducting Electromechanical Solid*; 3 years; \$55,500

Max Kronstein; *Heterophase Polymers*; 2 years; \$24,500

Edward Miller; *Cluster Configurations in CdSb Melts*; 2 years; \$35,800

Daniel B. Olfe; *Effect of Radiative Transfer on Shock Wave Flow Fields*; 2 years; \$21,300

NORTHEASTERN UNIVERSITY, Boston, Mass.; Ladislav Dolansky; *Fundamental Characteristics of Larynx Signals in Speech-Signal Communication*; 2 years; \$21,500

NORTHWESTERN UNIVERSITY, Evanston, Ill.; Robert B. Grieves; *Foam Fractionation*; 2 years; \$38,800

Robert L. Kondner; *Lateral Stability of Rigid Poles*; 2 years; \$21,000

John C. Slattery; *Studies of Heat Conduction and Diffusion*; 2 years; \$30,300

Julius T. Tou; *Nonlinear Digital Control and Information Systems*; 2 years; \$52,300

OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; Robert S. Brodkey; *Kinetic Interpretation of Non-Newtonian Flow*; 2 years; \$50,900

Bonner S. Coffman; *Forced Vibrations on Rods Penetrating Soils*; 2 years; \$44,100

Rudolph Edse; *Detonation Properties of Heterogeneous Combustible Mixtures*; 2 years; \$49,800

Webster B. Kay; *Critical Properties of Hydrocarbon Mixtures*; 3 years; \$31,300

Morris Ojalvo; *Lateral-Torsional Buckling in Beam-Columns*; 1½ years; \$14,300

OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; Gordon W. Powell and John P. Hirth; *Purchase of Electron Microscope*; 1 year; \$36,600

OHIO UNIVERSITY, Athens; Richard S. Mavor; *Convection Velocities in a Mass Diffusion Column*; 2 years; \$12,800

OKLAHOMA STATE UNIVERSITY, Stillwater; Kenneth J. Bell; *A Specialized Research Instrument*; 1 year; \$7,950

OREGON STATE UNIVERSITY, Corvallis; Edward W. Geller; *Rheoelectrical Analog for Flow About Airfoils*; 6 months; \$3,000

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Leonard M. Naphtali; *Applications of Non-Linear Networks in Chemical Engineering*; 2 years; \$50,400

PRINCETON UNIVERSITY, Princeton, N.J.; Roger Eichhorn; *Natural Convection*; 1 year; \$14,200

Leon Lapidus; *On Aspects of the Closed-Loop Digital Control of Chemical Engineering Processes*; 3 years; \$35,500

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Robert Goulard; *Non-Equilibrium Radiation Heat Transfer in Fluid Dynamics*; \$36,000

B. J. Leon; *Problems in Nonlinear Circuits and Systems*; 1½ years; \$51,200

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- J. A. McFadden; *Theory of Binary Random Processes*; 2 years; \$20,600
- Peter W. McFadden; *Heat Transfer to Liquid Helium*; 2 years; \$22,700
- Alexander Sesonske; *Turbulent Heat Transfer in Liquid Metals*; 2 years; \$44,800
- RENSSELAER POLYTECHNIC INSTITUTE, Troy, N.Y.; Walter R. Beam; *Magnetic Anisotropy in Thin Films*; 15 months; \$29,800
- Alfred H. Nissan and David Hansen; *Heat Transfer in Porous Media by Mass-Diffusion*; 2 years; \$49,600
- RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, Albany; Robert W. Davidson, Syracuse; *Stress-Time Dependency of the Mechanical Behavior of Wood*; 2 years; \$7,800
- Edward E. O'Brien, Oyster Bay; *Interaction Between Turbulent and Scalar Fields*; 2 Years; \$28,800
- Daniel Dicker, Stony Brook; *Transient Flow Through Porous Media*; 2 years; \$7,000
- ROSE POLYTECHNIC INSTITUTE, Terre Haute, Ind.; Robert M. Arthur; *Oxygen, 0-18 Utilization Rate*; 1 year; \$6,400
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- Joel Ferziger; *Neutron and Radiation Transport Phenomena*; 2 year; \$23,800
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- William M. Kays; *Variable Surface Temperature Heat Transfer to a Turbulent Boundary Layer in a Pressure Gradient*; 2 years; \$29,700
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 Ashley F. Emery and Creighton A. Dewey; *Liquid Metal Heat Transfer*; 1 year; \$6,100  
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Andrew H. Wallace; *Real Analytic Manifolds and Varieties*; 2 years; \$20,000

INSTITUTE FOR ADVANCED STUDY, Princeton, N.J.; Deane Montgomery; *Problems in Algebra and Topology*; 1 year; \$97,000

Andre Weil; *Arithmetic Theory of Algebraic Groups*; 1 year; \$7,500

Hassler Whitney; *Problems in Analysis*; 1 year; \$97,000

IOWA STATE UNIVERSITY, Ames; H. O. Hartley; *Statistical Estimation for Linear and Nonlinear Models*; 2 years; \$36,000

V. S. Huzurbazar; *Properties of Sufficient Statistics*; 1 year; \$7,300

JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Shreeram Abhyankar; *Analytic Structures and Algebraic Geometry*; 2 years; \$42,500

Jun-ichi Igusa; *Automorphic Varieties*; 2 years; \$49,000

Geoffrey S. Watson; *Mathematical Statistics*; 2 years; \$48,000

KANSAS STATE UNIVERSITY, Manhattan; Roshan L. Chaddha; *Stationary Queues and Inventory Processes*; 1 year; \$6,800

KENTUCKY RESEARCH FOUNDATION, Lexington; James H. Wells; *Convolution Theory*; 2 years; \$6,800

LAFAYETTE COLLEGE, Easton, Pa.; Thomas H. MacGregor; *Subordination and Univalent Functions*; 2 years; \$10,000

LOUISIANA POLYTECHNIC INSTITUTE, Ruston; Jackie B. Garner; *Systems of Difference and Differential Equations*; 15 months; \$5,500

LOUISIANA STATE UNIVERSITY, Baton Rouge; H. S. Collins; *Measure Algebras and Semigroups*; 2 years; \$16,600

Pasquale Porcelll; *Sequences and Algebras of Analytic Functions*; 2 years; \$28,000

MARQUETTE UNIVERSITY, Milwaukee, Wis.; James E. Simpson; *Spectral Operators on Locally Convex Spaces*; 15 months; \$7,900

Earl W. Swokowski; *Prime Rings and Lie Structures*; 2 years; \$5,900

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge; Warren Ambrose; *Differential and Algebraic Geometry*; 1 year; \$80,000

Norman Levinson and Irving E. Segal; *Problems in Analysis*; 1 year; \$95,000

Chia-Chiao Lin and Eric Reissner; *Problems in Mechanics*; 1 year; \$80,000

Phillip M. Morse; *Time Sharing in Computer Operation*; 1 year; \$180,000

Richard D. Schafer; *Algebraic Numbers, Non-Associative Algebras, and Recursive Functions*; 1 year; \$60,000

MICHIGAN STATE UNIVERSITY, East Lansing; Wilbur E. Deskins; *Subsets of Finite Groups*; 2 years; \$20,400

Patrick H. Doyle and John G. Hocking; *Invertibility and the Theory of Manifolds*; 15 months; \$23,000

NEW MEXICO STATE UNIVERSITY, University Park; Elbert A. Walker; *Infinite Abelian Groups*; 2 years; \$45,000

NEW YORK UNIVERSITY, New York; Allan Birnbaum; *Estimation and Statistical Inference*; 1 year; \$8,000

Richard Courant; *Methods of Mathematical Physics*; 2 years; \$80,000

Wilhelm Magnus; *Combinatorial Group Theory*; 2 years; \$70,000

James J. Stoker; *Differential Equations and Continuum Mechanics*; 1 year; \$100,000

NORTHEAST LOUISIANA STATE COLLEGE, Monroe; Daniel E. Dupree; *Approximation by Rational Functions*; 1 year; \$3,500

NORTHWESTERN UNIVERSITY, Evanston, Ill.; Donald G. Austin and Jerome Sacks; *Stochastic Processes*; 2 years; \$35,000

R. P. Boas; *External Problems for Trigonometric Polynomials and Entire Functions*; 1 year; \$52,000

Ky Fan; *Functional Analysis and Convexity*; 2 years; \$54,000

Eben Matlis; *Modules and Noetherian Rings*; 1 year; \$8,000

Ivar Stakgold; *Boundary Value Problems*; 2 years; \$50,000

Hsien Chung Wang; *Differentiable Transformation Groups*; 2 years; \$64,000

OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; Francis W. Carroll; *Differ-*

MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

- ence *Properties on Topological Groups*; 1 year; \$4,500  
 Louis Sucheston; *Mixing in Ergodic Theory*; 2 years; \$12,900
- OREGON STATE UNIVERSITY, Corvallis; Watson Fulks; *Differential and Integral Equations*; 1 year; \$74,000  
 Watson Fulks; *Partial Differential and Integral Equations and Asymptotics*; 1 year; \$21,000  
 Helmut Groemer; *Subdivisions of Euclidean  $N$ -Space*; 2 years; \$15,600
- PENNSYLVANIA STATE UNIVERSITY, University Park; Lee W. Anderson; *Topological Semi-Groups*; 2 years; \$19,000  
 Robert P. Hunter; *Decompositions of Compact Connected Semigroups*; 2 years; \$18,000  
 R. P. Kanwal; *Relativistic and Non-relativistic Magnetohydrodynamics*; 2 years; \$15,900
- POLYTECHNIC INSTITUTE OF BROOKLYN, N.Y.; Harry Hochstadt; *Analysis of Wave Propagation*; 2 years; \$21,000
- PRINCETON UNIVERSITY, Princeton, N.J.; Alonzo Church; *Recursive Arithmetic and Intensional Logic*; 1 year; \$49,000  
 R. C. Gunning; *Algebraic Methods in Analysis*; 2 years; \$62,000  
 John C. Moore; *Structures on Manifolds and Homological Algebra*; 1 year; \$86,000
- PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; Louis Auslander; *Analysis in the Large*; 2 years; \$30,000  
 Melvin Henriksen; *Topics in Functional Analysis*; 2 years; \$62,000  
 Eugene Schenkman; *Multiplicative Groups of Division Rings*; 2 years; \$27,000  
 Edward Silverman; *The Plateau Problem*; 2 years; \$18,000
- QUEENS COLLEGE, Flushing, N.Y.; Elliott Mendelson; *Axiomatic Set Theory and Model Theory*; 2 years; \$9,500  
 Arthur Sard; *Approximation in Function Spaces*; 2 years; \$17,500
- RENSSELAER POLYTECHNIC INSTITUTE, Troy, N.Y.; George H. Handelman; *Problems in Mechanics*; 1 year; \$75,000  
 Paul Slepian; *Network Theory*; 2 years; \$20,000
- RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, Albany; William C. Fox, Oyster Bay; *Topological Methods in Analysis*; 1 year; \$5,000  
 William C. Fox, Stony Brook; *Topological Methods in Analysis*; 2 years; \$11,500
- RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.; Rafael Artzy; *Quasigroups and Motion Groups*; 1 year; \$7,900  
 Robert Carroll; *Differential Equations*; 2 years; \$14,800  
 Kuo-Tsai Chen; *An Expansion Theory for Differential Equations*; 1 year; \$7,600  
 Richard M. Cohn; *Partial Difference Algebra and Recursion Theory*; 1 year; \$18,300  
 Earl J. Taft; *Substructures of Algebras*; 2 years; \$9,300
- SAN DIEGO STATE COLLEGE FOUNDATION, San Diego, Calif.; Charles B. Bell, Jr.; *Problems in Distribution-Free Statistics*; 2 years; \$48,000
- SEATTLE UNIVERSITY, Seattle, Wash.; T. S. Chihara; *Chain Sequences and Orthogonal Polynomials*; 3 months; \$3,900
- STANFORD UNIVERSITY, Stanford, Calif.; Isidore Heller; *Incidence Matrices*; 1 year; \$9,500  
 John Myhill; *Foundations of Mathematics*; 2 years; \$45,000  
 Ingram Olkin; *Multivariate Theory*; 2 years; \$88,000  
 Emanuel Parzen; *Amplitude Analysis of Time Series*; 2 years; \$54,000  
 Herbert E. Scarf and Harvey M. Wagner; *Mathematical Economics and Large-Scale Programming*; 2 years; \$48,000  
 Charles Stein; *Statistical Theory and Probability Models*; 2 years; \$70,000
- STEVENS INSTITUTE OF TECHNOLOGY, Hoboken, N.J.; Anthony Ralston; *Solutions of Simultaneous Nonlinear Equations*; 1 year; \$8,100  
 Anthony Ralston; *Expansion of the Computer Center*; 1 year; \$50,000
- SYRACUSE UNIVERSITY RESEARCH INSTITUTE, Syracuse, N.Y.; G. T. Cargo; *Topics in Analysis*; 2 years; \$10,900  
 Arthur Sagle; *Anti-Commutative Algebras*; 2 years; \$18,000
- TULANE UNIVERSITY, New Orleans, La.; Alexander D. Wallace; *Dimension and Imbeddings in Algebraic Systems*; 1 year; \$65,000  
 A. D. Wallace; *Relations on Topological Spaces*; 2 years; \$75,000
- UNIVERSITY OF ARIZONA, Tucson; L. M. Milne-Thomson; *Free Boundary Flows*; 2 years; \$34,000  
 Berthold Schweizer; *Geometric Characterization of Associative Functions*; 1 year; \$9,800
- UNIVERSITY OF CALIFORNIA, Berkeley; Hans J. Bremermann; *Several Complex Variables*; 2 years; \$45,000  
 S. S. Chern and G. P. Hochschild; *Geometry, Topology, and Algebraic Groups*; 1 year; \$92,000  
 Bernard Friedman; *Field Theories and Applied Mathematics*; 2 years; \$80,000  
 M. W. Hirsch; *Topology of Manifolds*; 2 years; \$16,000  
 Harry D. Huskey; *Computer Center Service Activities*; 1 year; \$100,000  
 Jerzy Neyman; *Probability and Statistics*; 15 months; \$155,000  
 William A. Nierenberg, Kenneth M. Watson, Alfred E. Glassgold and Howard A. Shugart; *Atomic and Molecular Properties and Collisions*; 2 years; \$69,400  
 Edwin H. Spanier; *Algebraic Topology and Differential Geometry*; 1 year; \$97,000  
 Alfred Tarski; *Metamathematics, Set Theory, and Foundations of Geometry*; 2 years; \$140,000  
 Alfred Horn and Chen Chung Chang, L.A.; *Application of Abstract Algebra to Mathematical Logic*; 2 years; \$39,000  
 Tilla S. Klotz, Los Angeles; *Conformal Structure of Surfaces in  $E^3$* ; 1 year; \$4,400  
 J. D. Swift, L.A.; *Combinatorial Problems with Computational Applications*; 2 years; \$17,500  
 Frederick A. Valentine, Los Angeles; *Convex Sets*; 1 year; \$7,600

## MATHEMATICAL SCIENCES

- Robert R. Hewitt, Riverside; *Nuclear Resonance in Metals*; 2 years; \$60,300
- F. Burton Jones, Riverside; *Problems in Plane Continua*; 2 years; \$22,000
- Hajimu Ogawa, Riverside; *Partial Differential Equations of Mixed Type*; 2 years; \$7,200
- Malcolm F. Smiley, Riverside; *Commutativity Theorems for Rings and Matrices*; 2 years; \$27,000
- Howard G. Tucker, Riverside; *Infinitely Divisible Distributions*; 1 year; \$5,100
- Clay L. Perry, San Diego; *Development of Computation Procedures*; 1 year; \$28,800
- H. S. Bear, Santa Barbara; *Function Algebras*; 2 years; \$16,300
- Marvin Marcus, Santa Barbara; *Inequalities and Invariance for General Matrix Functions*; 2 years; \$10,200
- UNIVERSITY OF CHICAGO, Ill.; A. A. Albert; *Groups, Homological Algebra, and Rings*; 1 year; \$68,000
- Walter L. Bally, Jr.; *Algebraic Function Theory*; 2 years; \$59,000
- Saunders MacLane; *Problems in Topology*; 1 year; \$78,000
- Paul Meier; *Statistical Inference and Probability*; 1 year; \$48,000
- Antoni Zygmund; *Research in Analysis*; 1 year; \$61,000
- UNIVERSITY OF COLORADO, Boulder; Robert W. McKelvey; *Differential Boundary Value Problems*; 1 year; \$8,600
- Donald Monk; *Mathematical Logic and Its Algebraic Counterparts*; 15 months; \$11,000
- UNIVERSITY OF CONNECTICUT, Storrs; Richard P. Gosselin; *Topics in Fourier Analysis*; 15 months; \$11,000
- UNIVERSITY OF GEORGIA, Athens; M. K. Fort, Jr.; *Topology of Euclidean Space*; 2 years; \$45,000
- UNIVERSITY OF ILLINOIS, Urbana; David G. Bourgin; *Problems in Algebraic Topology*; 2 years; \$85,000
- Mahlon M. Day; *Operators on Linear Spaces*; 2 years; \$66,000
- Evelyn Frank, Chicago; *Numerical Continued Fractions*; 2 years; \$9,600
- Maurice Heins; *Boundary Problems for Riemann Surfaces*; 2 years; \$28,500
- Howard A. Osborn; *Topics in Differential Geometry*; 2 years; \$24,500
- Michio Suzuki; *Simple, Finite Groups*; 2 years; \$61,000
- UNIVERSITY OF KANSAS, Lawrence; N. Aronszajn; *Differential Problems*; 2 years; \$67,000
- G. Baley Price; *Complex Variables and Related Topics*; 1 year; \$44,000
- UNIVERSITY OF MARYLAND, College Park; Robert E. Fullerton; *Topological Spaces and Linear Operators*; 2 years; \$65,000
- J. K. Goldhaber; *Matrix Theory and Projective Planes*; 2 years; \$36,000
- Adam Kleppner; *Representations of Topological Groups*; 2 years; \$29,000
- Lawrence E. Payne; *Boundary Value Problems*; 2 years; \$52,000
- Alexander Weinstein; *Singular Partial Differential Equations and Eigenvalue Problems*; 6 months; \$1,750
- James A. Hummel and Michael Zedek; *Problems in Geometric Function Theory*; 2 years; \$58,000
- UNIVERSITY OF MIAMI, Coral Gables, Fla.; Alton T. Butson; *Combinatory Analysis*; 2 years; \$19,400
- UNIVERSITY OF MICHIGAN, Ann Arbor; William V. Caldwell; *Light Interior Mappings*; 2 years; \$8,400
- Lamberto Cesari; *Continuous Transformations and Integral Manifolds*; 27 months; \$47,000
- Paul S. Dwyer; *Sampling Theory*; 2 years; \$50,500
- Paul R. Halmos; *Hilbert Space and Ergodic Theory*; 2 years; \$64,000
- Frank Harary; *Graphs, Matrices, and Enumeration*; 1 year; \$16,000
- Nicholas D. Kazarihoff; *Boundary Value Problems for Partial Differential Equations*; 1 year; \$60,000
- William J. LeVeque; *Number Theory*; 2 years; \$62,000
- Roger C. Lyndon; *Group Theory*; 2 years; \$71,000
- Ronald H. Rosen; *Topological Structures in Manifolds*; 2 years; \$26,000
- Charles J. Titus; *Topology of Bordered Riemann Surfaces*; 2 years; \$29,500
- UNIVERSITY OF MINNESOTA, Minneapolis; Eugenio Calabi; *Topological and Differential Structure of Manifolds*; 2 years; \$75,000
- Gerhard K. Kalisch and B. R. Gelbaum; *Functional Analysis*; 2 years; \$77,000
- Milton Sobel; *Decision Theory*; 2 years; \$80,000
- Hans F. Weinberger; *Analysis and Applied Mathematics*; 2 years; \$72,000
- UNIVERSITY OF MISSOURI, Columbia; M. V. SubbaRao; *Families of Function Spaces*; 2 years; \$7,900
- UNIVERSITY OF NOTRE DAME, Ind.; George Kolettis, Jr.; *Ulm's Theorem on Abelian Groups*; 2 years; \$20,000
- UNIVERSITY OF OREGON, Eugene; Paul Civin; *Normal Algebras and Harmonic Analysis*; 2 years; \$50,000
- UNIVERSITY OF PENNSYLVANIA, Philadelphia; Lewis E. Ward, Jr.; *Partially Ordered Topological Spaces*; 2 years; \$19,800
- Edwin J. Akutowicz; *Applications of Distributions to Analysis*; 3 months; \$5,500
- Murray Gerstenhaber; *Algebras with Non-Zero Radical and Certain Combinatorial Problems*; 2 years; \$87,000
- Saul Gorn; *Mechanical Languages*; 2 years; \$30,000
- W. H. Gottschalk; *Topological Dynamics*; 1 year; \$14,800
- Emil Grosswald; *Quadratic Forms and the Riemann Zeta Function*; 2 years; \$24,700
- UNIVERSITY OF ROCHESTER, N.Y.; Leonard Gillman; *Rings of Functions and Compactifications*; 2 years; \$75,000
- Richard E. Johnson; *Quotient Structure in Rings*; 2 years; \$61,000
- Johannes H. B. Kemperman; *Probability and Analysis*; 2 years; \$60,000
- Winston D. Walters; *Thermal Reactions of Small-Ring Compounds in the Vapor Phase*; 2 years; \$22,000

## MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles; Herbert Busemann; *Convex Functionals and Convex Bodies*; 2 years; \$51,000

James Dugundji; *Absolute Neighborhood Retracts*; 2 years; \$29,000

Paul A. White and Albert L. Whiteman; *Combinatorial Analysis*; 2 years; \$60,000

UNIVERSITY OF TENNESSEE, Knoxville; O. G. Harold; *Embedding Problems in Euclidean Spaces*; 2 years; \$40,000

UNIVERSITY OF TEXAS, Austin; James E. Scroggs; *Singularities of Vector-Valued Functions*; 21 months; \$9,500

David M. Young, Jr.; *Numerical Methods for Differential and Algebraic Equations*; 2 years; \$64,000

UNIVERSITY OF UTAH, Salt Lake City; C. E. Burgess; *Structural and Mapping Properties of Continua*; 2 years; \$18,200

UNIVERSITY OF VERMONT, Burlington; Erling W. Chamberlain; *Asymptotic Theory of Differential Equations*; 1 year; \$3,700

UNIVERSITY OF WASHINGTON, Seattle; Ross A. Beaumont and Richard S. Pierce; *Modules, Rings, and Groups*; 1 year; \$52,000  
Gunter Lumer; *Contraction Semigroups and Probability*; 2 years; \$45,000

Ronald Pyke; *Stochastic Processes and Related Problems in Statistical Inference*; 2 years; \$48,000

Victor L. Klee, Jr.; *Convexity and Functional Analysis*; 2 years; \$90,000

Ernest A. Michael; *Abstract Spaces*; 2 years; \$74,000

Robert F. Tate; *Estimation Problems in Statistics*; 2 years; \$19,000

UNIVERSITY OF WISCONSIN, Madison; R. H. Bing; *Topology of Three-Space*; 1 year; \$53,000

Richard H. Bruck; *Algebra, Number Theory and Geometry*; 1 year; \$70,000

Edmund H. Feller; *Prime and Semi-Prime Rings*; 2 years; \$6,200

Stephen C. Kleene; *Non-Classical Logics*; 2 years; \$72,000

John A. Nohel; *Lyapunov Functions*; 2 years; \$33,000

Walter Rudin; *Problems in Analysis*; 1 year; \$52,000

WASHINGTON STATE UNIVERSITY, Pullman; T. G. Ostrom; *Finite Projective Planes*; 2 years; \$21,500

WASHINGTON UNIVERSITY, St. Louis, Mo.; Allen Devinatz; *Problems in Analysis*; 2 years; \$76,000

Franklin Haimo; *Groups, Lie Groups, and Group Algebras*; 2 years; \$100,000

WAYNE STATE UNIVERSITY, Detroit, Mich.; Hideo Nakano; *Functional Analysis and Integration*; 2 years; \$54,000

S. Sherman; *The Ising Model*; 2 years; \$60,000

Daniel Waterman; *Fourier Analysis*; 2 years; \$26,000

WESLEYAN UNIVERSITY, Middletown, Conn.; Edward K. Blum; *Computer and Automata Theory*; 1 year; \$26,000

WESTERN RESERVE UNIVERSITY, Cleveland, Ohio; George F. Leger; *Classification of Nilpotent Lie Algebras*; 1 year; \$12,500

WEST VIRGINIA UNIVERSITY, Morgantown; Henry W. Gould; *Binomial Coefficient Summations*; 2 years; \$14,200

YALE UNIVERSITY, New Haven, Conn.; Fred-eric B. Fitch; *Consistency of the Foundations of Mathematics*; 2 months; \$4,500

Alan T. James; *Multivariate Statistical Analysis*; 2 years; \$36,000

Shizuo Kakutani and Charles E. Rickart; *Analysis and Banach Algebras*; 2 years; \$48,000

YESHIVA UNIVERSITY, New York, N.Y.; Martin Davis; *Algorithms, Symbolic Logic, and Recursive Function Theory*; 2 years; \$36,000

Leopold Flatto; *Overdetermined Systems of Partial Differential Equations*; 1 year; \$11,000

Donald J. Newman; *Uniqueness Problems for Unbounded Curves*; 2 years; \$36,000

Harry E. Rauch; *Differential Geometry in the Large*; 2 years; \$70,000

Jean F. Treves; *Partial Differential Operators*; 2 years; \$27,000

### PHYSICS

ADELPHI COLLEGE, Garden City, N.Y.; C. Rutherford Fischer; *Scattering of Electrons and Mesons*; 2 years; \$8,400

AMERICAN UNIVERSITY OF BEIRUT, Beirut, Lebanon; Frans Bruin; *Paramagnetic Resonance of Free Radicals*; 3 years; \$12,600

Frans Bruin; *Paramagnetic Resonance of Free Radicals at Weak Magnetic Fields*; 2 months; \$7,800

AMHERST COLLEGE, Amherst, Mass.; Robert H. Romer; *Nuclear Spin Resonance in Helium Three*; 3 Years; \$29,700

ARIZONA STATE UNIVERSITY, Tempe; Arnold G. Meister and Jerome M. Dowling; *Vibration-Rotation Spectra of Simple Polyatomic Molecules*; 1 year; \$23,800

BOSTON UNIVERSITY, Mass.; Edward C. Booth; *Nuclear Resonance Scattering of Bremsstrahlung*; 2 years; \$14,000

BRANDEIS UNIVERSITY, Waltham, Mass.; Saul Barshay, Kenneth W. Ford and Silven S. Schweber; *Elementary Particle Theory*; 2 years; \$123,500

Stephan Berko; *Positron Electron and Phonon Interaction Experiments*; \$5,000

Edgar Lipworth and Milton Baker; *Atomic Beam Study of Rare Earths*; 2 years; \$90,000

David L. Falkoff, Eugene P. Gross and Ronald Rockmore; *Statistical Mechanics and Theory of the Many Body Problem*; 2 years; \$65,000

BRIGHAM YOUNG UNIVERSITY, Provo, Utah; Harvey Fletcher; *Musical Acoustics*; 2 years; \$17,000

BROWN UNIVERSITY, Providence, R.I.; Rohn Truell; *Defects in Solids Using Ultrasonic Techniques*; 2 years; \$43,000

BUCKNELL UNIVERSITY, Lewisburg, Pa.; Robert A. Artman; *Ultrasonic Waves in Anisotropic Media*; 2 years; \$10,400

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena; Jesse W. M. DuMond and Felix Bohm; *An Inhomogeneous Field Magnetic Spectrometer*; 16 months; \$50,000

## PHYSICS

- Jesse W. M. DuMond and Harry A. Kirkpatrick; *Precision Comparison of the X-ray Wavelength Scales*; 1 year; \$4,800
- CARLETON COLLEGE, Northfield, Minn.; William A. Butler and Robert A. Reitz; *Thermoluminescence and Optical Absorption in Alkali Halides*; 2 years; \$18,000
- CARNEGIE INSTITUTE OF TECHNOLOGY, Pittsburgh, Pa.; J. S. Langer; *Solid State Theory*; 2 years; \$40,000  
Emerson M. Pugh; *Magnet Power Supply*; 1 year; \$19,800
- CASE INSTITUTE OF TECHNOLOGY, Cleveland, Ohio; Thomas G. Eck; *Fine and Hyperfine Structure of Excited States of Atoms*; 2 years; \$40,200
- CATHOLIC UNIVERSITY OF AMERICA, Washington, D.C.; Theodore A. Litovitz; *Ultra-sonic Spectroscopy in Molten Oxides*; 2 years; \$24,000  
T. A. Litovitz; *Structural Relaxation in Associated Liquids*; 2 years; \$66,000
- CITY UNIVERSITY OF NEW YORK, N.Y.; G. E. McDuffie and Robert M. Lea, City College; *Antiproton-Proton Scattering at 3.7 BeV/c*; 2 years; \$69,900
- COLUMBIA UNIVERSITY, New York, N.Y.; Henry A. Boorse; *Energy Gap and Heat Capacity Measurements in Superconductivity*; 2 years; \$84,000  
Sven R. Hartmann; *Adiabatic Demagnetization in the Rotating Frame*; 2 years; \$55,000  
Robert L. Mieser; *ENDOR, NMR and Optical Measurements on Alkali Halides*; 2 years; \$69,000  
Robert Novick; *The Optical Maser Applied to Brillouin Scattering Spectroscopy*; 2 years; \$70,000
- CORNELL UNIVERSITY, Ithaca, N.Y.; David M. Lee; *Magnet and Power Supply for Low Temperature NMR*; 1 year; \$21,900  
Watt W. Webb; *Critical Defects in Ideal Crystals*; 2 years; \$80,000
- DARTMOUTH COLLEGE, Hanover, N.H.; W. Frank Titus; *Gamma Ray Pair Production at High Atomic Number*; 1 year; \$8,300
- DUKE UNIVERSITY, Durham, N.C.; Henry A. Fairbank; *Low Temperature Physics*; 2 years; \$82,000  
Hertha Sponer; *Low Temperature Spectroscopy of Aromatic Molecules*; 2 years; \$42,000
- FLORIDA PRESBYTERIAN COLLEGE, St. Petersburg; Paul J. Haigh; *Molecular Structure and Vibrations of Nitrogen Compounds*; 2 years; \$12,000
- FORDHAM UNIVERSITY, New York, N.Y.; Joseph I. Budnick; *Nuclear Magnetic Resonance on Ferromagnetic Metals and Alloys*; 1 year; \$24,000
- FRANKLIN INSTITUTE, Philadelphia, Pa.; Franz R. Metzger; *Nuclear Structure Physics*; 2 years; \$195,000
- GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta; James R. Stevenson; *Optical Phenomena in Insulators*; 1 year; \$16,000  
L. D. Wyly and C. H. Braden; *Nuclear Data Decay Experiments*; 2 years; \$43,200
- GEORGE WASHINGTON UNIVERSITY, Washington, D.C.; Herbert Jehle; *Consistent Spinor Formulation of Kinematics and Dynamics*; 2 years; \$20,500
- HARVARD UNIVERSITY, Cambridge, Mass.; Gerald Holton; *Ultrasonic Velocity and Attenuation in Liquids at High Pressures*; 2 years; \$42,000  
Norman F. Ramsey; *Molecular Beams and Hydrogen Masers*; 2 years; \$150,000
- HARVEY MUDD COLLEGE, Claremont, Calif.; Robert P. Wolf; *Nuclear Magnetic Resonance in Solid Deuterated Methanes*; 1 year; \$55,400
- ILLINOIS INSTITUTE OF TECHNOLOGY, Chicago; Thomas Erber; *Vacuum Polarization in Quantum Electrodynamics*; 1 year; \$10,000
- INDIANA UNIVERSITY FOUNDATION, Bloomington; E. J. Konopinski; *Theory of Elementary Particle Interactions*; 2 years; \$145,000  
Hugh J. Martin; *Experimental Investigations of Elementary Particles*; 2 years; \$177,000  
Daniel W. Miller; *Nuclear Structure Physics with Indiana University Cyclotron*; 2 years; \$214,100
- JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Richard Zdanis; *Spark Chamber Studies of Elementary Particles*; 2 years; \$94,000
- KANSAS STATE UNIVERSITY, Manhattan; George L. Hall; *Quantum Theory of Disordered Alloys*; 2 years; \$16,000
- KENTUCKY RESEARCH FOUNDATION, Lexington; V. P. Kenney; *Elementary Particle Resonance Studies*; 2 years; \$181,700
- LAWRENCE COLLEGE, Appleton, Wis.; W. Paul Gilbert and J. Bruce Brackenridge; *A Hydro-Jet-Edge System*; 2 years; \$28,000
- LEHIGH UNIVERSITY, Bethlehem, Pa.; Peter Havas; *Relativistic Theory of Interacting Particles*; 2 years; \$40,000  
James A. Lennan, Jr.; *Statistical Mechanics and Kinetic Theory of Transport Processes*; 2 years; \$41,000  
Wesley R. Smith; *Shock Tube Condensation Studies*; 2 years; \$65,000
- LONG BEACH STATE COLLEGE FOUNDATION, Long Beach, Calif.; Charles A. Roberts, Jr. and K. Y. Shen; *Green's Functions for the Many-Body Problem*; 2 years; \$30,700
- LOUISIANA STATE UNIVERSITY, Baton Rouge; Richard W. Huggett; *Ultra High Energy Phenomena*; 2 years; \$90,000
- MANHATTAN COLLEGE, New York, N.Y.; Gabriel Kane; *Cooperative Nuclear Emulsion Research*; 2 years; \$13,300
- LOYOLA UNIVERSITY, New Orleans, La.; Carl H. Brans; *New Mathematical Methods in General Relativity*; 2 years; \$16,600
- MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge; Norman C. Rasmussen; *Precision Measurement of Nuclear Gamma-Ray Energies*; 1 year; \$60,000  
John C. Slater; *Chemical and Solid State Physics*; 2 years; \$399,000
- MICHIGAN COLLEGE OF MINING AND TECHNOLOGY, Houghton; Rolland O. Keeling, Jr.; *Dielectric Study of Hydrated Nitrates*; 1 year; \$19,000

## MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

- MICHIGAN STATE UNIVERSITY, East Lansing; Thomas H. Edwards and Clarence D. Hause; *Near Infrared Molecular Spectroscopy*; 2 years; \$38,000  
 Sherwood K. Haynes; *Beta-ray Spectroscopy at Very Low Energies*; 2 years; \$30,000  
 Egon A. Hiedemann; *Diffraction of Light by Ultrasonic Waves in Transparent Solids*; 2 years; \$18,000  
 Julius S. Kovacs and Don B. Lichtenberg; *Theory of the Interactions of Mesons and Hyperons*; 2 years; \$35,000  
 James H. Roberts and Raymond G. Ammar; *Investigation of Hyperfragments*; 1 year; \$35,100  
 Kamal K. Seth; *Nuclear Structure Physics*; 1 year; \$30,000  
 Truman O. Woodruff and Michael J. Harrison; *Theory of Solid-State Plasmas*; 2 years; \$46,400
- NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL, Washington, D.C.; G. D. Meld and John S. Coleman; *Committee on Nuclear Science*; 21 months; \$40,000
- NEW MEXICO STATE UNIVERSITY, University Park; H. Bartel Williams; *Spectrum Produced by Electron Multipacting Devices*; 1 year; \$35,000
- NEW YORK UNIVERSITY, New York; Martin Pope; *Electronic Conductivity in Organic Solids*; 2 years; \$47,000
- NORTHEASTERN UNIVERSITY, Boston, Mass.; Richard L. Arnowitz; *Theory of Elementary Particles*; 2 years; \$34,600  
 Michael J. Glaubman; *Nuclear Gamma Ray Spectroscopy*; 2 years; \$38,400  
 Roy Weinstein; *Elementary Particle Physics with Hodoscopes*; 2 years; \$110,400
- NORTHWESTERN UNIVERSITY, Evanston, Ill.; Laurle M. Brown and Richard H. Capps; *Field Theory and High Energy Physics*; 2 years; \$60,000  
 James H. Roberts and Raymond G. Ammar; *Investigation of Hyperfragments*; 1 year; \$59,100  
 Kamal K. Seth; *Nuclear Structure Physics*; 1 year; \$30,000
- OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; J. G. Drunt; *Physical Phenomena at Very Low Temperatures*; 2 years; \$259,000  
 J. C. Harris, H. J. Hausman, D. F. Herring and K. W. Jones; *Nuclear Structure Experiments*; 1 year; \$170,000  
 Robert L. Mills; *Quantum Field Theory*; 2 years; \$40,000  
 Harald H. Nielsen and K. Narahari Rao; *Infrared Spectroscopy*; 2 years; \$43,800  
 Charles H. Shaw; *X-Ray Scattering at Low Temperatures in Liquids and Solids*; 2 years; \$32,000
- PENNSYLVANIA STATE UNIVERSITY, University Park; Walter I. Goldburg; *Nuclear Magnetic Resonance and Mossbauer Experiments*; 2 years; \$52,000  
 Alan M. Jacobs; *Elementary Solution Methods in the Transport Equation*; 2 years; \$14,000  
 D. H. Rank; *Precision Infrared Spectroscopy*; 2 years; \$60,000
- John A. Sauer and Arthur E. Woodward; *Dynamic Mechanical Behavior of High Polymers Over a Wide Temperature Range*; 2 years; \$24,000
- POLYTECHNIC INSTITUTE OF BROOKLYN, N.Y.; Benjamin Post; *X-Ray Dispersion Effects*; 2 years; \$28,000  
 Alfred Zajac; *Borrmann Effect in Perfect Crystals*; 2 years; \$29,300
- PRINCETON UNIVERSITY, Princeton, N.J.; Allen G. Shenstone; *Atomic Spectra*; \$4,650  
 Roman Smoluchowski; *Inelastic Scattering of Neutrons*; 2 years; \$140,000  
 Eugene P. Wigner; *Quantum Theory*; 2 years; \$34,700
- PURDUE RESEARCH FOUNDATION, Lafayette, Ind.; Alexander N. Gerritsen; *Electron Transport Properties of Dilute Alloys*; 2 years; \$60,000  
 Masao Sugawara; *Interactions of Elementary Particles*; 2 years; \$30,000
- REED COLLEGE, Portland, Oreg.; John I. Shonle; *The Scattering of Electrons from Inert Gases*; 2 years; \$25,000
- RENSELAER POLYTECHNIC INSTITUTE, Troy, N.Y.; Hillard B. Huntington; *Calculations on Problems in Metal Physics*; 1 year; \$11,800  
 Heinrich A. Medicus and Paul F. Yergin; *Photonuclear Research*; 1 year; \$85,000  
 Roger W. Shaw; *Superconductivity and Lattice Defects*; 2 years; \$21,600
- RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, Albany; Robert G. Arns, Buffalo; *Experimental Beta Decay*; 2 years; \$20,000  
 Nandor L. Balas, Oyster Bay; *Theories of Irreversible Processes*; 2 years; \$20,500
- ROLLINS COLLEGE, Winter Park, Fla.; John S. Ross; *Atomic Isotope Shifts of Rare Earths*; 3 years; \$30,000
- RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.; Elihu Boldt; *Decay of Cosmic Ray Particles at Sea Level*; 1 year; \$4,000  
 Theodore H. Kruse; *Nuclear Spectroscopy With a Van de Graaff Accelerator*; 1 year; \$94,400  
 Charles Pine; *Dielectric Dispersion of Liquids*; 2 years; \$24,000  
 Richard J. Plano; *Elementary Particle Physics*; 2 years; \$195,300  
 Bernard Serin, Ernest A. Lynton, Peter Lindenfeld and William L. McLean; *Low Temperature Properties of Bulk and Film Metals and Alloys*; 1 year; \$52,700  
 Henry C. Torrey and Herman Y. Carr; *Magnetic Resonance Studies of Solids, Liquids and Gases*; 2 years; \$130,000  
 Henry C. Torrey; *Auxiliary Equipment for a Tandem Accelerator*; 1 year; \$272,000
- SAINT OLAF COLLEGE, Northfield, Minn.; Thomas D. Rossing; *Ferromagnetic Resonance in Thin Films*; 2 years; \$22,000
- SAINT PETER'S COLLEGE, Jersey City, N.J.; Po Lee; *Electric Discharge Through a Metallic Capillary*; 2 years; \$13,000
- SOUTH DAKOTA STATE COLLEGE, Brookings; George H. Duffey; *Application of Quantum Mechanics to Chemical Bonding*; 2 years; \$20,000

## PHYSICS

- SOUTHERN MISSIONARY COLLEGE, Collegedale, Tenn.; Ray Hefferlin; *Oscillator Strengths of Transition Elements*; 3 years; \$25,200
- STANFORD UNIVERSITY, Stanford, Calif.; William A. Little; *Many Particle Systems at Low Temperatures*; 2 years; \$92,000  
Walter E. Meyerhoff; *Nuclear Structure Research*; 1 year; \$55,000  
Marshall S. Sparks; *Theoretical Solid State Physics*; 2 years; \$31,700
- STATE UNIVERSITY OF IOWA, Iowa City; Fritz Rohrlich and Max Dresden; *Classical and Quantum Field Theory*; 1 year; \$33,500  
J. A. Van Allen; *Lithium-Induced Nuclear Reactions*; 1 year; \$120,000
- STEVENS INSTITUTE OF TECHNOLOGY, Hoboken, N.J.; Snowden Taylor and Earl L. Koller; *Properties of Elementary Particles*; 2 years; \$83,400
- SYRACUSE UNIVERSITY RESEARCH FOUNDATION, Syracuse, N.Y.; Peter G. Bergmann and Arthur B. Komar; *Gravitation and General Relativity*; 2 years; \$77,000  
Arnold Honig; *Paramagnetic Resonance at Very Low Temperatures*; 2 years; \$53,000  
Nahmin Horwitz; *Properties of K-minus Mesons*; 2 years; \$79,000
- TEMPLE UNIVERSITY, Philadelphia, Pa.; Elmer L. Offenbacher; *Paramagnetic Resonance Spectra of Rare Earth Ions*; 1 year; \$15,500
- TULANE UNIVERSITY, New Orleans, La.; Robert H. Morriss; *An Electron Microscopic and Light Scattering Examination of Multilayer Metallic Colloids*; 2 years; \$17,800
- UNIVERSIDAD MAYOR DE SAN ANDRES, La Paz, Bolivia; Ismael Escobar; *Construction of Super Pile on Mt. Chacaltaya, La Paz, Bolivia*; 2 years; \$64,600
- UNIVERSITY OF ARIZONA, Tucson; Theodore Bowen; *Spark and Counter Investigation of Elementary Particles*; 2 years; \$131,900
- UNIVERSITY OF CALIFORNIA, Berkeley; Sumner P. Davis; *Hyperfine Structure and Nuclear Properties*; 2 years; \$50,000  
John J. Hopfield; *Non-Linear Optical Investigations in Solids*; 2 years; \$45,000  
William A. Nierenberg and Howard A. Shugart; *Hyperfine Structure Anomaly*; 2 years; \$36,000  
M. Tinkham; *Far Infrared Resonance and Superconductivity in Solids*; 2 years; \$86,000  
George Feher, San Diego; *Paramagnetic Resonance Research*; 3 years; \$114,000
- UNIVERSITY OF CHICAGO, Ill.; Herbert L. Anderson; *High Energy Physics*; 2 years; \$200,000  
Morrel H. Cohen, James C. Phillips and Leopoldo M. Fallcov; *The Electron Theory of Solids*; 2 years; \$140,000  
Riccardo Levi-Setti; *Lambda Binding Energies in Heavy Hypernuclei*; 1 year; \$41,600  
Masatoshi Koshiba and Riccardo Levi-Setti; *Nuclear Emulsion Research in Cosmic Rays and High Energy Physics*; 1 year; \$103,200  
Robert S. Mulliken and C. C. J. Roothaan; *Quantum Mechanical Studies on Molecular Structure*; 15 months; \$120,000
- Le Roy G. Schulz; *Optical Properties of Metals and Alloys*; 2 years; \$32,000  
Robert W. Thompson; *High Energy Cosmic Ray Detector*; 1 year; \$150,000
- UNIVERSITY OF COLORADO, Boulder; Asim O. Barut; *Strong Interactions of Elementary Particles*; 2 years; \$16,800  
Masataka Mizushima; *Microwave Spectroscopy*; 2 years; \$34,800  
Frank Oppenheimer; *Elementary Particle Interactions from Bubble Chamber Photographs*; 2 years; \$150,000
- UNIVERSITY OF CONNECTICUT, Storrs; Arnold Russek; *Theory of High-Energy Atomic Collisions*; 2 years; \$27,000
- UNIVERSITY OF FLORIDA, Gainesville; Thomas A. Scott, Arthur A. Broyles and E. Dwight Adams; *Cryogenic Measurements at High Pressures*; 2 years; \$62,600
- UNIVERSITY OF ILLINOIS, Urbana; Donald M. Ginsberg; *Properties of Superconductors*; 2 years; \$76,000  
John C. Wheatley; *Properties of Matter at Low Temperatures*; 2 years; \$36,000
- UNIVERSITY OF KANSAS, Lawrence; J. W. Culvahouse; *Spin-Spin and Spin-Lattice Interactions in Paramagnetic Materials at Low Temperatures*; 2 years; \$50,000
- UNIVERSITY OF MARYLAND, College Park; Hans R. Griem and Thomas D. Wilkerson; *Shock Wave Structure and Precursor Effects*; 1 year; \$45,000  
John S. Toll; *Support of Research in Theoretical Physics*; 1 year; \$30,000
- UNIVERSITY OF MICHIGAN, Ann Arbor; Kenneth M. Case and George W. Ford; *Kinetic Theory of Gases and Plasmas*; 2 years; \$32,500  
Wayne E. Hazen; *Nuclear Components of Air Showers*; 2 years; \$84,000  
Noah Sherman; *The Pairing Interaction in Nuclei*; 2 years; \$37,000
- UNIVERSITY OF MISSISSIPPI, University; A. J. Zuchell; *The Annihilation of Positrons in Condensed Media*; 1 year; \$18,000
- UNIVERSITY OF MISSOURI, Columbia; Richard A. Anderson, Rolla; *Mercury Vapor as a Buffer Gas Upon the Fluorescence Spectrum*; 2 years; \$17,500  
Roland A. Hultsch; *Nuclear Magnetic Resonance of Alkali Halides as a Function of Pressure*; 2 years; \$37,700
- UNIVERSITY OF NEBRASKA, Lincoln; Paul A. Goldhammer and Henry S. Valk; *Nuclear Structure and Elementary Particle Physics*; 2 years; \$55,000
- UNIVERSITY OF NORTH CAROLINA, Chapel Hill; Richard C. Jarman and Marvin Silver; *The Nature of Charge Transport in Organic Substances*; 2 years; \$42,000
- UNIVERSITY OF NOTRE DAME, Ind.; Frederick D. Rossini; *Purchase of an Electron Paramagnetic Resonance Spectrometer*; 1 year; \$30,000
- UNIVERSITY OF OKLAHOMA RESEARCH INSTITUTE, Norman; Sybrand Broersma; *Stationarity and Inertia in Viscous Flow*; 2 years; \$22,400  
Richard G. Fowler; *Mobility of H+ Ions in Atomic Hydrogen*; 18 months; \$14,400

## MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

Richard G. Fowler; *Positive Column Discharge*; 2 years; \$25,000

Chun C. Lin; *Microwave Spectroscopy*; 2 years; \$35,000

J. Rud Nielsen; *Vibrational Spectra of Crystals and Polymers*; 2 years; \$13,200

UNIVERSITY OF OREGON, Eugene; Bernd Cramer; *Atomic Electrons in Nuclear Decay*; 1 year; \$8,400

UNIVERSITY OF PENNSYLVANIA, Philadelphia; Kenneth R. Atkins; *Liquid Helium*; 2 years; \$90,000

William E. Stephens; *Nuclear Structure Research with a Tandem Accelerator*; 25 months; \$679,100

G. Theodore Wood; *Nuclear Spectroscopy*; 1 year; \$40,300

UNIVERSITY OF PITTSBURGH, Pa.; Norman Austern; *Nuclear Structure*; 2 years; \$105,000

Irving J. Lowe; *Pulsed Nuclear Magnetic Resonance in Solids*; 1 year; \$17,200

UNIVERSITY OF PUGET SOUND RESEARCH INSTITUTE, Tacoma, Wash.; Martin E. Nelson; *Elementary Cosmic Ray Particles in Nuclear Emulsions*; 3 years; \$22,800

UNIVERSITY OF ROCHESTER, N.Y.; Edward H. Jacobsen; *Experiments in Phonon Physics*; 2 years; \$91,000

Morton F. Kaplon; *The Primary Cosmic Ray Flux*; 2 years; \$165,700

Ronald D. Parks; *Paramagnetic Metals at Low Temperatures*; 2 years; \$63,000

UNIVERSITY OF SANTA CLARA, Santa Clara, Calif.; William Duffy, Jr.; *Magnetic Susceptibilities of Crystalline Stable Free Radicals*; 2 years; \$21,000

UNIVERSITY OF TENNESSEE, Knoxville; David T. King; *Multiple Production of Pions*; 2 years; \$28,200

UNIVERSITY OF TEXAS, Austin; J. David Gavenda; *Ultrasonic Measurements of the Electronic Properties of Metals*; 2 years; \$36,000

Walter E. Millett; *Annihilation of Positrons in Matter*; 1 year; \$16,000

UNIVERSITY OF UTAH, Salt Lake City; B. G. Dick; *Theory of Metals and Ionic Crystals*; 2 years; \$40,000

Grant R. Fowles; *Fluorescence of Iodine Vapor*; 2 years; \$19,000

J. W. Keuffel; *Kiloton Detector for Cosmic Ray Neutrinos*; 2 years; \$68,500

UNIVERSITY OF VERMONT, Burlington; Thomas D. Sachs; *Intersecting Acoustic Beams*; 1 year; \$19,400

UNIVERSITY OF VIRGINIA, Charlottesville; Frank L. Hereford; *Reactions Induced by 1 Mev Deuterons*; 2 years; \$49,000

Frank L. Hereford, Jr. and Walter D. Whitehead, Jr.; *Acquisition of a 5.5 Mev Van de Graaff Accelerator*; 2 years; \$526,000

UNIVERSITY OF WASHINGTON, Seattle; J. J. Lord; *Analysis of ICEF Nuclear Emulsion Stack*; 1 year; \$18,000

Mark N. McDermott; *Nuclear Magnetic Moments*; 2 years; \$48,000

Edwin A. Uehling; *Magnetic Relaxation in Crystals*; 2 years; \$40,000

Robert W. Williams, Young B. Kim, George E. Masek and Howard F. Davis; *Elementary*

*Particle High Energy Physics*; 2 years; \$367,300

UNIVERSITY OF WISCONSIN, Madison; Adam M. Bincer, Raymond F. Sawyer, Charles J. Goebel and Kirk W. McVoy; *Dispersion Relations in Elementary Particle Theory*; 2 years; \$60,000

Harold W. Lewis; *Many-Body Problems and Meson Theory*; 2 years; \$39,000

UNIVERSITY OF WYOMING, Laramie; Burton H. Muller; *Nuclear Magnetic Relaxation*; 2 years; \$30,000

VANDERBILT UNIVERSITY, Nashville, Tenn.; Royal G. Albridge; *Permanent Magnet Electron Spectrograph*; 2 years; \$10,000

WABASH COLLEGE, Crawfordsville, Ind.; Robert L. Henry, Lewis S. Salter and Vernon J. Easterling; *Anharmonicity of Lattice Vibration in Crystals*; 2 years; \$12,900

WASHINGTON UNIVERSITY, St. Louis, Mo.; J. H. Burgess; *Hypersonic Interactions in Paramagnetic Solids*; 2 years; \$54,000

M. W. Friedlander and J. Klarmann; *Primary Cosmic Radiation*; 2 years; \$72,000  
G. E. Pake; *Nuclear Magnetic Relaxation and Knight Shifts*; 2 years; \$61,000

Franklin B. Shull; *Equipment for 30 MeV Cyclotron*; 1 year; \$45,000

WAYNE STATE UNIVERSITY, Detroit, Mich.; Leonard O. Roellig; *Bubble Nucleation and Positron Annihilation in Liquids*; 2 years; \$46,000

WESTERN RESERVE UNIVERSITY, Cleveland, Ohio; Leonard S. Kisslinger; *Nuclear Structure with Simple Residual Forces*; 2 years; \$55,000

WILLIAM MARSH RICE UNIVERSITY, Houston, Tex.; Harold E. Rorschach, Jr.; *Low Temperature Physics*; 2 years; \$40,000

YALE UNIVERSITY, New Haven, Conn.; Loyal Durand III, and Charles M. Sommerfield; *Elementary Particle Structure*; 2 years; \$50,000

Robert L. Gluckstern; *Theory of Elementary Particle Interactions*; 2 years; \$31,000

Jay L. Hirshfeld; *Instability in Plasmas*; 2 years; \$48,000

Robert G. Wheeler; *Far Infrared Spectroscopy of Spin Waves in Antiferromagnetic Crystals*; 2 years; \$55,000

### MATHEMATICAL, PHYSICAL, AND ENGINEERING SCIENCE FACILITIES

ADELPHI COLLEGE, Garden City, N.Y.; Frederick V. Pohle; *Establishment of Computing Center*; 2 years; \$50,000

BRADLEY UNIVERSITY, Peoria, Ill.; Francis C. Mergen; *Establishment of Computing Center*; 2 years; \$20,000

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena; F. C. Lindvall; *Expansion of a Computing Center*; 3 years; \$400,000

G. J. Stanley, Owens Valley Observatory; *The Construction of a Large Radio Telescope at the Owens Valley Observatory*; 1 year; \$220,000

CASE INSTITUTE OF TECHNOLOGY, Cleveland, Ohio; R. J. Nelson; *Expansion of Computing Center*; 1 year; \$500,000

COLUMBIA UNIVERSITY, New York, N.Y., Charles F. Bonilla; *Modification of the Nu-*



## MATHEMATICAL, PHYSICAL, AND ENGINEERING SCIENCE FACILITIES

- clear Research Reactor Facility; 2 years; \$120,000
- Ralph S. Halford; *Establishment of a Computing Center*; 2 years; \$200,000
- COLLEGE OF WILLIAM AND MARY, Williamsburg, Va.; James D. Lawrence, Jr.; *Establishment of a Small Computer Facility*; 1 year; \$20,000
- COLORADO STATE UNIVERSITY RESEARCH FOUNDATION, Fort Collins; Herbert Riehl; *Facilities for Field Research in Atmospheric Sciences*; 2 years; \$101,500
- CORNELL UNIVERSITY, Ithaca, N.Y.; Henry G. Booker; *Facilities for Probing the Magnetosphere, the Ionosphere, and the Subionosphere at High Frequencies*; 2 years; \$115,000
- J. Barkley Rosser; *Expansion of Computing Center*; 1 year; \$700,000
- Boyce D. McDaniel; *Electron Acceleration Studies at 3 Bev*; 6 months; \$25,000
- FLORIDA STATE UNIVERSITY, Tallahassee; E. P. Miles, Jr.; *Support of Computing Center*; 1 year; \$100,000
- GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta; William M. Spicer; *Purchase of an Ultra-violet-Visible Spectrophotometer*; 1 year; \$10,000
- HARVARD UNIVERSITY, Cambridge, Mass.; Anthony G. Oettinger; *Operation of Computing Center*; 1 year; \$50,000
- HOWARD UNIVERSITY, Washington, D.C.; Herman Branson; *Expansion of Computing Center*; 1 year; \$40,000
- JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Donald W. Pritchard; *Construction and Outfitting of a 150-Ton Catamaran Oceanographic Research Vessel*; 1 year; \$1,291,200
- MICHIGAN STATE UNIVERSITY, East Lansing; Henry G. Blosser; *Construction of a 40-Mev Cyclotron*; \$873,000
- NATIONAL ACADEMY OF SCIENCES, Washington, D.C.; Frederick Seitz; *Physical Sciences Wing and Related Facilities*; 2 years; \$240,000
- OAKLAND UNIVERSITY, Rochester, Minn.; Beauregard Stubblefield; *Establishment of a Small Computing Center*; 1 year; \$20,000
- OHIO UNIVERSITY, Athens; Lawrence J. Gallaher; *Digital Computer Installation*; 3 years; \$25,000
- OREGON STATE UNIVERSITY, Corvallis; Wayne V. Burt; *Converting and Outfitting a 180-Foot Oceanographic Research Vessel*; 1 year; \$600,000
- PENNSYLVANIA STATE UNIVERSITY, University Park; Donald T. Laird; *Operation of Computing Center*; 3 years; \$150,000
- PRINCETON UNIVERSITY, Princeton, N.J.; Robert M. Drake, Jr.; *Establishment of a Computing Center*; 1 year; \$700,000
- RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK, Albany; Aaron Finerman, Oyster Bay; *Establishment of a Computing Center*; 1 year; \$40,000
- STANFORD UNIVERSITY, Stanford, Calif.; George E. Forsythe; *Expansion of Computing Center*; 3 years; \$600,000
- Walter E. Meyerhof; *Acquisition of a Multi-Stage Van de Graaff Accelerator*; \$800,000
- U.S. NAVAL OCEANOGRAPHIC OFFICE, Washington, D.C.; E. C. Stephan; *Oceanographic Exhibit To Be Located in the Life of the Sea Hall of the Smithsonian Institution*; 1 year; \$15,000
- SYRACUSE UNIVERSITY RESEARCH INSTITUTE, Syracuse, N.Y.; Otway O'M. Pardee; *Expansion of Computing Center*; 3 years; \$200,000
- UNIVERSITY OF ARIZONA, Tucson; Gerard P. Kulper; *A 10-Foot Infrared Telescope*; 1 year; \$153,300
- Leon E. Salanave; *A Field Station Facility for Coordinated Optical and Electrical Observations of Lightning*; 1 year; \$14,500
- Albert W. Wymore; *Expansion of Computing Center*; 2 years; \$200,000
- UNIVERSITY OF CALIFORNIA, Berkeley; W. F. Glaugue; *Construction of a Highly Precise 10,000 Ampere Current Regulator*; 1 year; \$42,500
- Stanislav Vasilevskis, Mt. Hamilton; *Equipment for Surveying and Automatic Measurement of Astrographic Plates*; \$23,570
- Charles G. McClintock, Santa Barbara; *Establishment of a Computer Center*; 2 years; \$50,000
- Clay L. Perry, San Diego; *Development of Computation Procedures*; 1 year; \$31,700
- UNIVERSITY OF CHICAGO, Ill.; A. Adrian Albert; *Establishment of Computing Center*; 3 years; \$500,000
- Dave Fultz; *Equipment for Meteorological Hydrodynamics Laboratory*; 3 years; \$200,000
- UNIVERSITY OF FLORIDA, Gainesville; John E. Maxfield; *Purchase of Digital Computer*; 1 year; \$60,000
- UNIVERSITY OF HAWAII, Honolulu; Colin S. Ramage; *Atmospheric Circulation Project for the International Indian Ocean Expedition*; 1 year; \$181,800
- Walter R. Steiger; *K-Coronameter Mounting on Mount Haleakala*; 1 year; \$50,000
- Walter R. Steiger; *Mount Haleakala Flare Patrol*; 1 year; \$34,400
- UNIVERSITY OF IDAHO, Moscow; Ward Crowley; *Establishment of a Computing Center*; 1 year; \$10,000
- UNIVERSITY OF ILLINOIS, Urbana; J. N. Snyder; *Expansion of Computer Center*; 3 years; \$700,000
- UNIVERSITY OF MIAMI, Coral Gables, Fla.; F. F. Koczy, Miami; *Outfitting and Equipping FS-529 for Oceanographic Work*; 2 years; \$350,300
- Frederich F. Koczy, Miami; *Scientific Equipment for R/V JOHN ELLIOTT PILLSBURY for Participation in EQUALANT II and III*; 1 year; \$56,300
- UNIVERSITY OF MICHIGAN, Ann Arbor; Robert C. F. Bartels; *Expansion of Computing Facility*; 2 years; \$180,000
- E. Wendell Hewson; *Meteorological Computation and Data-Analysis Facility*; 2 years; \$319,000
- UNIVERSITY OF MINNESOTA, Minneapolis; Stanley Bruckenstein; *Purchase of Ultra-*

## SOCIAL SCIENCES

- violet-Visible Spectrophotometers; 1 year; \$9,900  
 Stuart W. Fenton; *Purchase of Recording UV-Visible Spectrophotometer and Automatic Rotary Dispersion Instrument*; 1 year; \$24,800
- UNIVERSITY OF NEW HAMPSHIRE, Durham; M. Evans Munroe; *Augmentation of Computer Facility at University of New Hampshire*; 2 years; \$20,000
- UNIVERSITY OF OREGON, Eugene; Francis J. Reithel; *Purchase of an Ultraviolet-Visible and a Nuclear Magnetic Resonance Spectrometer*; 2 years; \$25,000
- UNIVERSITY OF PITTSBURGH, Pa.; B. L. Cohen; *Acquisition of a Three Stage Tandem Van de Graaff Accelerator*; \$815,600
- UNIVERSITY OF ROCHESTER, N.Y.; Harry E. Gove; *Acquisition of a 20 MeV Tandem Van de Graaff Accelerator*; 3 years; \$3,561,000
- UNIVERSITY OF SOUTH CAROLINA, Columbia; O. D. Bonner; *Purchase of a Proton Magnetic Resonance Spectrometer*; 1 year; \$22,000
- UNIVERSITY OF TOLEDO, Ohio; E. T. Kirkpatrick; *Establishment of a Computation Center*; 1 year; \$20,000
- UNIVERSITY OF WASHINGTON, Seattle; Ronald Geballe; *Acquisition of a Tandem Van de Graaff Accelerator*; \$2,040,500
- UNIVERSITY OF WISCONSIN, Madison; J. E. Willard; *Expansion of Computing System*; 1 year; \$100,000
- WOODS HOLE OCEANOGRAPHIC INSTITUTION, Woods Hole, Mass.; Paul M. Fye; *Design and Construction of an Oceanographic Research Vessel*; \$167,600
- ### SOCIAL SCIENCES
- #### ANTHROPOLOGICAL SCIENCES
- AMERIND FOUNDATION, INCORPORATED, Dragoon, Ariz.; Charles C. Di Peso; *Casas Grandes Material Culture*; 3 years; \$78,100
- ARIZONA STATE UNIVERSITY, Tempe; Reynolds J. Ruppe; *Archaeological Investigations in Arizona*; 2 years; \$25,000
- BENNINGTON COLLEGE, Bennington, Vt.; L. M. Hanks; *Ethnographic Survey of Southeast Asia*; 3 years; \$86,400
- BROOKLYN COLLEGE, Brooklyn, N.Y.; Robert W. Ehrlich; *European Prehistory*; 1 year; \$7,000
- CARNEGIE MUSEUM, Pittsburgh, Pa.; Don W. Drago; *Prehistoric Cultures of the Ohio River Valley*; 2 years; \$18,800
- CASE INSTITUTE OF TECHNOLOGY, Cleveland, Ohio; Olaf H. Pruffer; *Ohio Hopewell*; 2 years; \$14,200
- CENTER FOR ADVANCED STUDY IN THE BEHAVIORAL SCIENCES, Stanford, Calif.; George L. Trager; *Language of the Taos Indians*; 1 year; \$9,600
- CHICAGO NATURAL HISTORY MUSEUM, Ill.; Paul S. Martin; *Cultural Processes and Adaptive Systems in Prehistoric Arizona*; 1 year; \$25,000
- COLUMBIA UNIVERSITY, New York, N.Y.; Morton H. Fried; *The Structure of a Taino Kinship System*; 2 years; \$26,300  
 Melvin L. Moss; *The Morphology of the Primate Pelvis*; 3 years; \$23,900  
 Ralph S. Solecki; *Prehistory of the Zagros-Taurus Mountain Province*; 1 year; \$19,600  
 Uriel Weinreich; *Linguistic Distributions in Coterritorial Societies*; 1 year; \$33,000
- CORNELL UNIVERSITY, Ithaca, N.Y.; Allan R. Holmberg; *Prehistoric Human Ecology in Peru*; 3 years; \$45,000  
 G. William Skinner; *Differential Patterns of Acculturation*; 2 years; \$42,400
- CORYNDON MUSEUM CENTRE FOR PREHISTORY AND PALEONTOLOGY, Nairobi, Kenya; L. S. Leakey; *Prehistory of Olduvai Gorge*; 5 years; \$48,400
- DARTMOUTH COLLEGE, Hanover, N.H.; Elmer Harp, Jr.; *Dorset Eskimo Culture*; \$2,200
- FORDHAM UNIVERSITY, New York, N.Y.; Stephen P. Dunn and Ethel D. Dunn; *Culture Change in the Soviet Union*; 1 year; \$11,800
- GREAT PLAINS HISTORICAL ASSOCIATION, Lawton, Okla.; Adrain D. Anderson; *Pleistocene Ecology of the Domebo Mammoth Site*; 1 year; \$1,500
- HARVARD UNIVERSITY, Cambridge, Mass.; Cora DuBois; *Culture Change and Stability*; 3 years; \$52,400  
 Hugh Hencken and Robert J. Rodden; *Early Food-Producing Communities in Northern Greece*; 2 years; \$34,000  
 Hallam L. Movius, Jr.; *Upper Palaeolithic Cultures in the Dordogne*; 2 years; \$51,200  
 Douglas Oliver; *Javanese Immigrants in New Caledonia*; 2 years; \$20,800  
 Hugh O'Neill Hencken; *Prehistoric Illyrians*; 1 year; \$2,600  
 Phillip Phillips and Stephen Williams; *Archaeology of the Upper Tensas Basin, Louisiana*; 2 years; \$34,500  
 Evon Z. Vogt and Irven DeVore; *Evolution of Human Behavior*; 2 years; \$44,900  
 Evon Z. Vogt; *Land Use and Settlement Patterns*; 2 years; \$49,900  
 Gordon R. Willey; *Archaeology of the Mayan Site of Seibal*; 4 years; \$94,600
- HUNTER COLLEGE, New York, N.Y.; Alphonse Riesenfeld; *The Effects of Upright Posture*; 1 year; \$600
- IDAHO STATE COLLEGE, Pocatello; Earl H. Swanson, Jr.; *Archaeological Exploration in Eastern Idaho*; 1 year; \$10,500
- ILLINOIS ARCHAEOLOGICAL SURVEY, Urbana; Melvin L. Fowler, Southern Illinois University, Carbondale; *Archaeology of the Mississippi River Valley*; 1 year; \$35,500
- INDIANA HISTORICAL SOCIETY, Indianapolis; Glenn A. Black, Newburgh; *Proton Magnetometer Project*; 1 year; \$11,400
- INSTITUTE FOR ADVANCED STUDY, Princeton, N.J.; Stephen Foltiny; *Iron Age Civilizations in Southeastern Europe*; 1 year; \$3,600
- INSTITUTE OF ANDEAN RESEARCH, INC., New York, N.Y.; John V. Murra; *Provincial Inca Life*; 3 years; \$89,800

## ANTHROPOLOGICAL SCIENCES

- MUSEUM OF NEW MEXICO, Santa Fe; Fred Wendorf and Ralph S. Solecki; *Nubian Prehistory and Geology*; 1 year; \$13,500
- NEBRASKA STATE HISTORICAL SOCIETY, Lincoln; Marvin F. Kivett; *Archaeological Investigation of the Logan Creek Complex*; 2 years; \$14,100
- NEVADA STATE MUSEUM, Carson City; Richard Shuttler, Jr.; *Pleistocene Man at Tule Springs*; 1 year; \$42,200
- NORTHWESTERN UNIVERSITY, Evanston; Paul Bohannon and Laura Bohannon; *Divorce in Cross-Cultural Perspective*; 2 years; \$29,800  
Robert C. Hunt and M. Eva Verbitsky Hunt; *Inter-Village Structure in Oaxaca*; 1 year; \$17,900
- PENNSYLVANIA STATE UNIVERSITY, University Park; William T. Sanders; *Prehispanic Settlement Patterns of Teotihuacan*; 1 year; \$22,300
- PORTLAND STATE COLLEGE, Portland, Oreg.; Marshall T. Newman; *Physical Changes in Vicos Indians*; 1 year; \$500  
Joe E. Pierce; *Indigenous Languages of Oregon*; 1 year; \$10,900
- QUEENS COLLEGE, Flushing, N.Y.; Ernestine Friedl; *Urbanization of Migrant Village Families*; 2 years; \$16,600
- ROBERT S. PEABODY FOUNDATION FOR ARCHAEOLOGY, Andover, Mass.; Frederick Johnson; *Radiocarbon Chronology for Tehuacan*; 1 year; \$6,600  
Richard S. MacNeish; *Tehuacan Archaeological Investigations*; 2 years; \$32,300
- SMITHSONIAN INSTITUTION, Washington, D.C.; C. G. Holland; *Prehistory of Southwest Virginia*; 1 year; \$3,100  
Saul H. Riesenber; *Megalithic Structures of Ponape*; 1 year; \$10,650  
Frank H. H. Roberts; *An Archaeological Investigation of the Key School Site, Georgia*; 1 year; \$2,100  
William C. Sturtevant; *Ethnoscience Analysis of Material Culture*; 1 year; \$26,900
- SOUTHERN METHODIST UNIVERSITY, Dallas, Texas; Jack Frederick Kilpatrick; *Cherokee Ethnology and Linguistics*; 1 year; \$15,100
- UNIVERSITY OF ARIZONA, Tucson; Bryant Bannister; *Dendrochronology of Southwestern United States*; 2 years; \$51,200  
Bryant Bannister; *Turkish Dendrochronology*; 1 year; \$3,900  
Edward H. Spicer; *Cultural Continuation and Extinction in the Casas Grandes Area*; 2 years; \$23,600  
Raymond H. Thompson; *Modern Tzotzil Cosmology and Prehistoric Maya Civilization*; 2 years; \$13,700
- UNIVERSITY OF ARKANSAS, Fayetteville; Charles R. McGimsey III; *The Prehistory of Arkansas*; 1 year; \$16,000
- UNIVERSITY OF BRITISH COLUMBIA, Vancouver, Canada; Robert J. Drake; *Animal Remains from Archaeological Sites*; 1 year; \$12,900
- UNIVERSITY OF CALIFORNIA, Berkeley; J. Desmond Clark; *Archaeology of Northern Rhodesia*; \$1,500
- J. B. Birdsell and Johannes Wilbert, Los Angeles; *Population Genetics of the Diego Antigen*; 1 year; \$16,800  
Joel M. Halpern, Los Angeles; *Urbanization of Peasant Communities*; 1 year; \$13,800  
H. B. Nicholson, Los Angeles; *Archaeology of Etzatlán*; 1 year; \$9,300  
H. B. Nicholson, Los Angeles; *Excavations at Cerro Portezuelo*; 1 year; \$5,400  
David Gebhard, Santa Barbara; *Prehistoric Petroglyphs of North America*; 2 years; \$4,800
- UNIVERSITY OF CHICAGO, Ill.; Robert J. Braidwood; *The Appearance of Food Production in Southwest Asia*; 3 years; \$79,400  
F. Clark Howell; *Acheulian Site in Torralba, Spain*; 2 years; \$59,700  
Sol Tax; *Ethnographic Restudy of Panajachel*; 3 years; \$28,900
- UNIVERSITY OF CINCINNATI, Ohio; John L. Caskey; *Animal Bones of Ancient Troy and Lerna*; 1 year; \$15,100
- UNIVERSITY OF COLORADO, Boulder; Gordon W. Hewes; *Archaeological Salvage near Wadi Halfa, Sudan*; 2 years; \$35,000  
Robert H. Lister; *The Prehistory of the Utes*; 1 year; \$10,400  
Joe Ben Wheat; *The Earl H. Morris Papers*; 1 year; \$9,300
- UNIVERSITY OF FLORIDA, Gainesville; William C. Massey; *Cultures of Baja California*; 1 year; \$20,300
- UNIVERSITY OF ILLINOIS, Urbana; Kenneth L. Hale; *Analysis and Classification of Native Australian Languages*; 1 year; \$2,300
- UNIVERSITY OF KANSAS, Lawrence; Carlyle S. Smith; *South Dakota Archaeology*; 1 year; \$6,000
- UNIVERSITY OF MARYLAND, College Park; Walter Deshler; *African Agricultural Patterns*; 3 years; \$17,900
- UNIVERSITY OF MICHIGAN, Ann Arbor; James B. Griffin; *Prehistoric Occupations of the Great Lakes Area*; 1 year; \$20,900  
Marshall D. Sahlins; *Intercultural Relations in Contiguous Societies*; 2 years; \$31,800
- UNIVERSITY OF MISSOURI, Columbia; Carl H. Chapman; *Osage Prehistory*; 1 year; \$16,400
- UNIVERSITY OF NEW MEXICO, Albuquerque; Harry W. Basehart; *The Matengo*; 3 years; \$24,900
- UNIVERSITY OF NORTH CAROLINA, Chapel Hill; Robert L. Rands; *Ecology of Mayan Centers*; 3 years; \$63,500
- UNIVERSITY OF OKLAHOMA RESEARCH INSTITUTE, Norman; Robert E. Bell; *Caddoan Archaeology*; 1 year; \$18,800  
Robert E. Bell; *Caddoan Archaeology*; 3 years; \$30,000
- UNIVERSITY OF OREGON, Eugene; Luther S. Cressman and Don E. Dumond; *Prehistory of Southwestern Alaska*; 2 years; \$57,600
- UNIVERSITY OF PENNSYLVANIA, Philadelphia; Ann Chowning and Jane C. Goodale; *The Ethnography of New Britain*; 2 years; \$37,200  
Froelich Rainey; *Research on Archaeological Techniques*; 1 year; \$27,900

## SOCIAL SCIENCES

- UNIVERSITY OF PITTSBURGH, Pa.; John A. Morrison; *Changes in an Anatolian Village: 1932-1962*; 1 year; \$14,900
- UNIVERSITY OF ROCHESTER, N.Y.; Rene Milon; *Map of Classic Period Teotihuacan*; 3 years; \$34,600  
Walter H. Sangree; *The Angas of Nigeria*; 2 years; \$50,200
- UNIVERSITY OF TEXAS, Austin; Jeremiah F. Epstein; *Archaeology of Northeastern Mexico*; 2 years; \$21,000
- UNIVERSITY OF UTAH, Salt Lake City; David M. Pendergast; *Archaeology of the Mayan Caves of Cayo District*; 1 year; \$5,500
- UNIVERSITY OF VIRGINIA, Charlottesville; Charles Kaut; *Tagalog Social Organization*; 3 years; \$35,000
- UNIVERSITY OF WASHINGTON, Seattle; Sol Saporta; *Psycholinguistic Analysis of Consonant Clusters*; \$800  
Laurence C. Thompson and William H. Jacobsen, Jr.; *Analysis of Linguistic Relationships*; 2 years; \$36,500  
James B. Watson; *Dynamics and Micro-evolution of a Human Community*; 1 year; \$82,200
- UNIVERSITY OF WISCONSIN, Madison; Murray Fowler; *Computer Analysis of the Etruscan Language*; 2 years; \$50,400  
William S. Laughlin and William G. Reeder; *Aleut-Konyak Prehistory*; 1 year; \$30,000  
Robert J. Miller; *Isolation and Integration of Communities in India*; 1 year; \$31,100
- WAYNE STATE UNIVERSITY, Detroit Mich.; James B. Christensen; *The Luguru of Tanganyika*; 1 year; \$6,900
- WESLEYAN UNIVERSITY, Middletown, Conn.; David P. McAllester; *Analysis of Navaho Ritual*; 3 years; \$26,100
- WICHITA FOUNDATION, Inc., Wichita, Kans.; Herbert W. Dick, Fort Burgwin Research Center, Taos, N. Mex.; *Picuris Pueblo Archaeology*; 1 year; \$24,000
- WILLIAM MARSH RICE UNIVERSITY, Houston, Tex.; Frank Hole; *Archaeological Investigation of Deh Luran, Iran*; 2 years; \$52,900
- YALE UNIVERSITY, New Haven, Conn.; Cornelius Osgood; *Culture Change in Simple and Complex Societies of Apfichau*; 2 years; \$48,400
- ECONOMIC SCIENCES**
- ASSOCIATED ROCKY MOUNTAIN UNIVERSITIES, Boulder, Colo.; Nathaniel Wollman; *Economic and Technical Coefficients of Water Use*; 2 years; \$68,500
- BROOKINGS INSTITUTION, Washington, D.C.; Lawrence R. Klein; *An Econometric Model of the United States Economy*; 3 years; \$248,400
- CARNEGIE INSTITUTE OF TECHNOLOGY, Pittsburgh, Pa.; Michael C. Lovell; *Fluctuations in Inventory Investment*; 7 months; \$10,800  
Edwin Mansfield; *Econometric Studies of Research and Development*; 3 years; \$113,600
- CORNELL UNIVERSITY, Ithaca, N.Y.; Ta-Chung Liu; *A Recursive Monthly Econometric Model*; 2 years; \$40,000
- GRINNELL COLLEGE, Grinnell, Iowa; John C. Dawson; *Savings-Investment Fluctuations*; 1 year; \$10,400
- HARVARD UNIVERSITY, Cambridge, Mass.; Alfred H. Conrad; *Empirical Study of Technological Change*; 1 year; \$12,200  
Edwin Mansfield; *Econometric Studies of Research and Development*; 1 year; \$16,100
- HAVERTFORD COLLEGE, Haverford, Pa.; Eugene Smolensky; *Economic Model of Urban Growth*; 15 months; \$10,700
- IOWA STATE UNIVERSITY, Ames; Bob R. Holdren; *Theory of the Multi-Product Firm*; 2 years; \$20,400
- JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Carl F. Christ; *Econometric Study of Liquid Assets*; 3 years; \$46,300  
Kelvin J. Lancaster; *Utilization of Data in Econometrics*; 2 years; \$41,400
- KANSAS STATE UNIVERSITY, Manhattan; Walter D. Fisher; *Aggregation-Partition Problem in Economics*; 3 years; \$28,700
- MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge; Albert K. Ando; *Economic Growth of the United States*; 3 years; \$140,300
- MICHIGAN STATE UNIVERSITY, East Lansing; Thomas R. Saving; *Relationship of the Demand for Educational Facilities to Relative Wage Changes*; 15 months; \$25,900
- NATIONAL BUREAU OF ECONOMIC RESEARCH, Inc., New York, N.Y.; H. G. Georgiadis; *Economic Performance in International Competition*; 30 months; \$72,600
- NATIONAL INDUSTRIAL CONFERENCE BOARD, Inc., New York, N.Y.; Daniel Creamer; *Statistical Analysis of Location of Manufacturing, 1947 to 1958*; \$1,700
- PRINCETON UNIVERSITY, Princeton, N.J.; Oskar Morgenstern; *Mathematical Methods for Time Series Analysis*; 2 years; \$80,500
- STANFORD UNIVERSITY, Stanford, Calif.; Marc Nerlove; *Methods of Analyzing Economic Time Series*; 3 years; \$130,400  
Hiroyumi Uzawa; *Two-Sector Model of Economic Growth*; 2 years; \$44,300
- UNIVERSITY OF CALIFORNIA, Berkeley; Dale W. Jorgenson; *Electronic Computation in Econometrics*; 1 year; \$21,850  
T. A. Marschak and C. B. McGuire; *Information Technology and Organizations*; 2 years; \$51,300
- UNIVERSITY OF CHICAGO, Ill.; Arcadius Kahan; *Russian GNP and National Income, 1855-1913*; 2 years; \$32,600  
James H. Lorie; *Research in Security Prices*; 2 years; \$68,300
- UNIVERSITY OF ILLINOIS, Urbana; Donald R. Hodgman and Robert W. Gillespie; *Micro-Analytic Simulation of the Banking System*; 3 years; \$80,200
- UNIVERSITY OF MICHIGAN, Ann Arbor; W. H. Locke Anderson; *Econometric Model of the U.S.*; 3 years; \$68,900  
James N. Morgan; *Testing of Economic Theories on Investment*; 2 years; \$98,000  
James N. Morgan and John A. Sonquist; *Methods of Survey Data Analysis*; 1 year; \$27,700

## SOCIOLOGICAL SCIENCES

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; George S. Tolley; *Area Population Adjustment and Economic Activity*; 2 years; \$40,000

UNIVERSITY OF PITTSBURGH, Pa.; Gerhard Tintner; *Stochastic Theory of Economic Development*; 3 years; \$43,300

UNIVERSITY OF ROCHESTER, N.Y.; Richard N. Rosett; *Investigation of Household Economic Behavior*; 6 months; \$3,550

Sho-Chieh Tsiang; *Theory of the Forward Exchange Market*; 2 years; \$24,200

UNIVERSITY OF VIRGINIA, Charlottesville; Gordon Tullock; *Models of Collective Decision*; 3 years; \$30,300

UNIVERSITY OF WASHINGTON, Seattle; Edgar M. Horwood; *Electronic Mapping Development*; 2 years; \$73,100

UNIVERSITY OF WISCONSIN, Madison; Arnold Zellner; *Bayesian Inference and Aggregation and Specification in Econometrics*; 3 years; \$107,000

WILLIAM MARSH RICE UNIVERSITY, Houston, Tex.; Sydney N. Afriat; *Analysis of Consumers' Preferences and Construction of Index-Numbers*; 2 years; \$38,400

YALE UNIVERSITY, New Haven, Conn.; Tjalling C. Koopmans; *Mathematical Economic Models*; 3 years; \$124,200

James Tobin; *Financial Institutions and Capital Markets*; 3 years; \$115,000

### HISTORY AND PHILOSOPHY OF SCIENCE

AMERICAN UNIVERSITY OF BEIRUT, Lebanon; E. S. Kennedy; *History of Islamic Astronomy*; 1 year; \$8,400

AMERICAN UNIVERSITY, Washington, D.C.; Eduard Farber; *The Chemistry of Oxidation*; 1 year; \$15,800

BROOKLYN COLLEGE, N.Y.; Gerald M. Henderson; *The Contributions of A. R. Wallace to the Foundations of Modern Biology and Anthropology*; 1 year; \$4,700

CITY COLLEGE, New York, N.Y.; Isaac Levi; *Probability and Potential Surprise*; 1 year; \$3,000

CORNELL UNIVERSITY, Ithaca, N.Y.; Eric T. Carlson, New York City; *The Psychiatric Thought of Benjamin Rush*; 1 year; \$7,200

DUKE UNIVERSITY, Durham, N.C.; Romane L. Clark and Robert W. Binkley; *The Concept of Causal Necessity*; 2 years; \$21,300

FRESNO STATE COLLEGE FOUNDATION, Fresno, Calif.; George B. Kaufman; *Alfred Werner's Coordination Theory*; 2 years; \$24,600

HARVARD UNIVERSITY, Cambridge, Mass.; I. Bernard Cohen; *The Scientific Thought of Isaac Newton*; 3 years; \$36,200

Everett Mendelsohn; *The Development of Modern Biology*; 1 year; \$6,400

John E. Murdoch; *The Concept of the Continuum*; 2 years; \$20,600

INDIANA UNIVERSITY FOUNDATION, Bloomington; Edward Grant; *A Study of Mathematical Proportionality*; 3 years; \$12,100

Wesley C. Salmon; *Probability, Frequency and Induction*; 2 years; \$8,000

JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Peter Achinstein; *Scientific Theories*;

*Explanation, Theoretical Terms, and Models*; 3 years; \$11,800

PRINCETON UNIVERSITY, Princeton, N.J.; Keith Gunderson; *Computer Models of Human Behavior*; 1 year; \$2,100

John E. Murdoch; *Medieval Treatment of the Continuum*; 2 years; \$18,700

Gregory Vlastos; *Zeno's Criticisms of Plurality and Motion*; 2 years; \$11,800

POMONA COLLEGE, Claremont, Calif.; Morton Orvan Beckner; *Philosophy of Psychology*; 2 years; \$11,800

RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.; Frederic Schick; *Inductive Consistency*; 1 year; \$10,700

SYRACUSE UNIVERSITY RESEARCH INSTITUTE, Syracuse, N.Y.; Albert D. Menut; *Critical Edition of Oresme's Scientific Works*; 1 year; \$7,500

TUFTS UNIVERSITY, Medford, Mass.; Mary B. Miller; *Logical Systems and Quantum Mechanics*; 1 year; \$7,000

UNIVERSITY OF CALIFORNIA, Berkeley; Benson Mates; *History of Formal Logic*; 2 years; \$13,100

UNIVERSITY OF MARYLAND, College Park; Raymond N. Doetsch; *American Contributions to the Germ Theory of Disease*; 1 year; \$4,800

UNIVERSITY OF NOTRE DAME, Ind.; Kenneth M. Sayre; *Stimulation of Mental Processes*; 2 years; \$35,700

UNIVERSITY OF WISCONSIN, Madison; Aaron J. Ihde; *Development of Biochemistry in America*; 3 years; \$30,600

WASHINGTON UNIVERSITY, St. Louis, Mo.; Thomas S. Hall; *Ideas of Life and Matter*; 1 year; \$18,700

YALE UNIVERSITY, New Haven, Conn.; Asger Aaboe; *Astronomical Cuneiform Tablets*; 1 year; \$5,300

Alan Ross Anderson; *Mathematical Logic*; 2 years; \$23,200

Thomas R. Forbes; *John Hunter's Contributions to Reproductive Physiology*; 2 years; \$2,100

### SOCIOLOGICAL SCIENCES

ALAMEDA COUNTY STATE COLLEGE FOUNDATION, INC., Hayward, Calif.; Cletus J. Burke; *Two-Person Interactions From the Standpoint of Stochastic Learning Theory*; 4 years; \$34,350

AMERICAN MOUNT EVEREST EXPEDITION 1963, Santa Monica, Calif.; Richard M. Emerson, U. of Cincinnati; *Communication Feedback Under Stress*; 3 years; \$24,700

BUCKNELL UNIVERSITY, Lewisburg, Pa.; David Chaplin; *Analysis of a Peruvian Census*; 1 year; \$3,200

COLUMBIA UNIVERSITY, New York, N.Y.; Richard Christie; *Instrumentalist Tendencies in Interpersonal Relations*; 18 months; \$36,900

Herbert H. Hyman; *Communication, Perception and Social Behavior*; 18 months; \$68,000

Henry L. Lednard; *Family Communication and Child-Rearing*; 1 year; \$18,200

SOCIAL SCIENCES

- Robert K. Merton; *Patterns of Scientific Collaboration*; 1 year; \$5,000
- CORNELL UNIVERSITY, Ithaca, N.Y.; Howard B. Adelman; *Malpighi's Correspondence and Protocols*; 3 years; \$68,600
- William W. Lambert; *Bio-Chemical Correlates of Aggressiveness*; 6 months; \$3,660
- DUKE UNIVERSITY, Durham, N.C.; Alan C. Kerckhoff; *Conflict Resolution in an Industrial Setting*; 2 years; \$36,100
- FREDERIC BURK FOUNDATION FOR EDUCATION, San Francisco, Calif.; Philburn Rattoosh; *Cognition in Organizational Decision-Making*; 2 years; \$32,900
- HARVARD UNIVERSITY, Cambridge, Mass.; Robert F. Bales and Phillip J. Stone; *The General Inquirer System for Content Analysis*; 3 years; \$220,400
- Alex Inkeles; *Social and Cultural Aspects of Modernization*; 3 years; \$173,250
- Stanley Milgram; *Obedience to Authority*; 2 years; \$24,500
- George A. Miller and Jerome S. Bruner; *Human Cognition and Communication*; 3 years; \$139,700
- Robert Rosenthal; *Mediation of Experimenter Bias*; 18 months; \$36,700
- Era F. Vogel; *Family Functions in Contemporary China*; 30 months; \$54,700
- Harrison C. White; *Models of Social Mobility*; 15 months; \$10,600
- HAVERFORD COLLEGE, Haverford, Pa.; Sidney I. Perloe; *Judgment of Social Stimuli*; \$1,065
- INDIANA UNIVERSITY FOUNDATION, Bloomington; Fred W. Householder, Jr.; *Syntactic and Semantic Structure of English*; 2 years; \$120,000
- Rudolph J. Rummel; *Dimensionality of Nations*; 1 year; \$14,900
- INSTITUTE FOR RESEARCH, State College, Pa.; Emir H. Shuford, Jr.; *Heuristic Models of Human Behavior*; 7 months; \$23,100
- JOHNS HOPKINS UNIVERSITY, Baltimore, Md.; Arthur L. Stinchcombe; *Comparative Rural Social Structure*; 2 years; \$24,600
- KANSAS STATE UNIVERSITY, Manhattan; E. Jerry Phares; *Expectancy Changes*; 2 years; \$19,500
- MIAMI UNIVERSITY, Oxford, Ohio; Fred Cottrell; *The Impact of Technological Change*; 2 years; \$15,700
- MICHIGAN STATE UNIVERSITY, East Lansing; William H. Form; *Patterns of Social Integration*; 1 year; \$3,400
- NATIONAL OPINION RESEARCH CENTER, Chicago, Ill.; Peter H. Rossi, James A. Davis and Jacob J. Feldman; *Occupations and Social Stratification*; 3 years; \$186,000
- NEW MEXICO HIGHLANDS UNIVERSITY, Las Vegas; Alan H. Roberts and Joel B. Greene; *Cultural Differences in Time Perspective*; 15 months; \$11,200
- NEW YORK UNIVERSITY, New York; Arthur R. Cohen; *Consequences of Commitment to Motive Deprivation*; 3 years; \$83,400
- Stuart W. Cook; *Conceptualization and Measurement of Attitude*; 2 years; \$57,300
- OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; Ilse Lehist; *General Acoustic Phonetics*; 30 months; \$42,100
- RUTGERS, THE STATE UNIVERSITY, New Brunswick, N.J.; Bertram D. Cohen; *Verbal Behavior as Interpersonal Communication*; 18 months; \$28,200
- SAN DIEGO STATE COLLEGE FOUNDATION, San Diego, Calif.; William Paul Smith; *Dependency in Small Groups*; 1 year; \$9,700
- STANFORD RESEARCH INSTITUTE, Stanford, Calif.; William G. Madow; *Estimating Sampling and Non-Sampling Error*; 2 years; \$48,700
- STANFORD UNIVERSITY, Stanford, Calif.; Jonathan L. Freeman; *Psychological Mechanisms for Resisting Persuasion*; 3 years; \$30,500
- STATE UNIVERSITY OF IOWA, Iowa City; Milton E. Rosenbaum; *Observational Learning*; 3 years; \$3,800
- TUFTS UNIVERSITY, Medford, Mass.; Thornton B. Roby; *Behavioral Factors in Decision-Making*; 2 years; \$31,200
- UNIVERSITY OF CALIFORNIA, Berkeley; Charles Y. Glock; *International Archive of Survey Materials Collected in the Developing Nations*; 3 years; \$136,100
- Erving Goffman; *Study of Individual-Group Interactions*; 2 years; \$12,250
- C. West Churchman; *Cognition in Organizational Decision-Making*; 2 years; \$34,600
- Ralph H. Turner, Los Angeles; *Mobility Ideologies in the United States and England*; 2 years; \$24,900
- Oscar Grusky and Lindsey Churchill, Los Angeles; *Succession and Effectiveness in Organizations*; 2 years; \$70,800
- David O. Sears, Los Angeles; *The Effects of Adversary Proceedings on Audience Opinions*; 3 years; \$38,500
- Harold B. Gerard, Riverside; *Attitudinal Residues of Social Interaction*; 1 year; \$30,600
- Petitions and Motivating Mechanisms*; 3 years; \$52,900
- Duncan MacRae; *Computer Studies of Representation*; \$5,000
- UNIVERSITY OF COLORADO, Boulder; Kenneth R. Hammond and Frederick J. Todd; *Two-Person Conflict and Differential Training*; 2 years; \$67,600
- William N. McPhee; *Formal Models of Mass Social Processes*; 3 years; \$53,200
- UNIVERSITY OF ILLINOIS, Urbana; Charles E. Osgood and Murray S. Miron; *Comparative Psycholinguistics*; 5 years; \$228,100
- UNIVERSITY OF KANSAS, Lawrence; Roger G. Barker; *Environmental Change in an American and an English Town*; 3 years; \$67,400
- UNIVERSITY OF MICHIGAN, Ann Arbor; Ronald Lippitt; *Orientations to Work Among Teenagers*; 1 year; \$6,100
- Warren E. Miller; *Data Repository for the Inter-University Consortium*; 18 months; \$95,000
- Donald C. Pelz; *Factors in Scientific Performance*; 6 months; \$21,200
- Marc Pillsuk and Anatol Rapoport; *Psychology of Conflict*; 2 years; \$25,800
- Anatol Rapoport; *Psycholinguistic Models*; 3 years; \$95,900

## SOCIAL SCIENCE FACILITIES

Stanley E. Seashore; *Assessment of Organizational Performance*; 2 years; \$64,700  
 Albert J. Reiss, Jr.; *Evaluations, Expectations and Transactions in a Formal Organization*; 5 years; \$245,800

UNIVERSITY OF MINNESOTA, Minneapolis; Elliot Aronson; *Antecedents of Personal Esteem*; 3 years; \$44,300

Murray A. Straus; *Family Support and Power Structure in Experimentally-Induced Crises*; 18 months; \$15,200

UNIVERSITY OF NORTH CAROLINA, Chapel Hill; John Schopler; *Influence and Dependence*; 2 years; \$17,600

Harry S. Upshaw; *Principles of Scale Formation*; 2 years; \$37,000

UNIVERSITY OF PENNSYLVANIA, Philadelphia; Dorothy S. Thomas and Vincent H. Whitney; *Correlates of Migration and Urbanization*; 3 years; \$157,000

UNIVERSITY OF PITTSBURGH, Pa.; C. K. Yang; *Community Analysis of Foshan*; 2 years; \$17,500

UNIVERSITY OF ROCHESTER, N.Y.; Vera P. John; *Development of Cognitive Skills*; 2 years; \$36,600

UNIVERSITY OF WISCONSIN, Madison; Leonard Berkowitz; *Responsible Behavior in Dependency Relations*; 2 years; \$10,800

WASHINGTON UNIVERSITY, St. Louis, Mo.; Gilbert Shapiro; *Quantitative Analysis of the 'Cahiers de Doléances' of 1789*; 2 years; \$22,800

YALE UNIVERSITY, New Haven, Conn.; Robert P. Abelson; *Field Study of a Computer Simulation Model*; 2 years; \$109,300

Stanley H. Udy, Jr.; *Technology and Administration in Industry*; 2 years; \$17,500

### SOCIAL SCIENCE FACILITIES

HARVARD UNIVERSITY, Cambridge, Mass.; Jerome S. Bruner; *Mobile Laboratory for Studies of Cognitive Processes*; 1 year; \$17,250

UNIVERSITY OF MINNESOTA, Minneapolis; Robert F. Spencer; *Minnesota-Pakistan Research Facility*; 5 years; \$15,000

UNIVERSITY OF MISSOURI, Columbia; Carl H. Chapman; *Construction of the Van Meter State Park Archaeological Research Center*; 2 years; \$73,300

STANFORD UNIVERSITY, Stanford, Calif.; Eleanor E. Maccoby; *Mobile Laboratory for Research in Child Development*; 1 year; \$4,000

Patrick Suppes; *Construction of a Computer-Based Learning and Teaching Laboratory*; 1 year; \$50,000

### ANTARCTIC RESEARCH

ARCTIC INSTITUTE OF NORTH AMERICA, Washington, D.C.; Robert C. Faylor; *Chief Scientist, U.S. Antarctic Research Program*; 1 year; \$3,868

Edwin A. McDonald; *A Special Study to Determine Suitable Sites for a Scientific Station in the Palmer Peninsula Area, Antarctica*; 9 months; \$17,000

AUSTRALIAN NATIONAL UNIVERSITY, Canberra, Australia; B. M. Gunn, Otago University,

Dunedin, New Zealand; *Differentiation of Ferrar Dolerites of the McMurdo Sound Area, Antarctica*; 18 months; \$13,200

BARTOL RESEARCH FOUNDATION OF THE FRANKLIN INSTITUTE, Philadelphia, Pa.; Martin A. Pomerantz; *USNS "Eltanin" Cosmic Ray Station*; 1 year; \$21,200

Martin A. Pomerantz; *Investigations of Time Variations of The Primary Cosmic Radiation at the Geographic South Pole*; 1 year; \$31,200

Martin A. Pomerantz, Swarthmore; *Time Variations of Primary Cosmic Radiation Near the South Geomagnetic Pole*; 18 months; \$48,100

BERNICE P. BISHOP MUSEUM, Honolulu, Hawaii; J. Linsley Gressitt; *Entomological Research in Antarctic Regions, with Emphasis on Natural Dispersal*; 1 year; \$14,600

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena; Heinz A. Lowenstam; *A Biogeochemical Study of the Skeletal Carbonates of the Benthic Organisms in the Antarctic Seas*; 1 year; \$36,300

CLARK UNIVERSITY, Worcester, Mass.; Vernon Ahmadjian; *Cultural Study of Antarctic Lichen Fungi*; 1 year; \$9,100

COLORADO SCHOOL OF MINES, Golden; Hans Meinardus; *Graduate Studies in Geophysics*; 1 year; \$4,800

COLUMBIA UNIVERSITY, New York, N.Y.; Maurice Ewing; *Systematic Oceanographic Survey in the Drake Passage and in the South Antillean Sea (Scotia Sea)*; 1 year; \$156,300

Paul R. Burkholder, Palisades; *Microbiological Investigations Aboard the "Eltanin"*; 1 year \$47,400

Jack Oliver, Palisades; *Continued Conduct of Station Seismology Program—1963*; 1 year; \$1,800

DE PAUL UNIVERSITY, Chicago, Ill.; Mary A. McWhinnie and J. R. Cortelyou; *The Relation of Water Temperature to the Physiology of Molting in Marine Crustaceans*; 1 year; \$15,300

FLORIDA STATE UNIVERSITY, Tallahassee; H. G. Goodell and J. K. Osmond; *Marine Geologic Field Work in Antarctica Aboard the "Eltanin" in the South Antilles Basin*; 1 year; \$47,900

H. G. Goodell and J. K. Osmond; *Analysis of Antarctic Bottom Sediments, 1962-63*; 1 year; \$19,100

H. G. Goodell and J. K. Osmond; *Marine Geology Aboard the USNS "Eltanin"*; 1 year; \$77,100

GEOLOGICAL SURVEY, U.S. DEPARTMENT OF THE INTERIOR, Washington, D.C.; Thomas B. Nolan; *Antarctic Mapping Operations 1962-63*; 1 year; \$339,600

HARVARD UNIVERSITY, Cambridge, Mass.; I Mackenzie Lamb; *Botanical Survey in West Antarctica*; \$455

LIBRARY OF CONGRESS, Washington, D.C.; David H. Kraus; *Abstracting and Indexing Service for Current Antarctic Literature*; 1 year; \$63,000

NATIONAL ACADEMY OF SCIENCES-NATIONAL RESEARCH COUNCIL, Washington, D.C.; Ross

## ANTARCTIC RESEARCH

- C. Peavey; *Support of Committee on Polar Research Activities*; 1 year; \$75,100
- NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, Washington, D.C.; D. K. Bailey, Boulder, Colo.; *Forward Scatter Observations in the Antarctic During IQSY—PHASE I: Instrumentation and Activation*; 1 year; \$150,000
- C. Gordon Little, Boulder, Colo.; *The High Latitude Ionosphere at Magnetically Conjugate Points*; \$149,300
- R. B. Scott, Boulder Laboratories, Colo.; *Radio Noise Measurements—Floating Antarctic Research Station*; 9 months; \$18,150
- NEW YORK BOTANICAL GARDEN, New York, N.Y.; William C. Steere; *Identification of Antarctic Bryophytes*; 1 year; \$8,600
- NEW YORK ZOOLOGICAL SOCIETY, Bronx; Carleton Ray; *Physiological Ecology and Parasitology of Antarctic Seals, Tribe Lobodontini*; 1 year; \$7,600
- OHIO STATE UNIVERSITY RESEARCH FOUNDATION, Columbus; Richard L. Cameron; *Byrd Station Glaciology, 1963-64*; 15 months; \$28,200
- Richard P. Goldthwait; *Support of the Institute of Polar Studies 1963-64*; 1 year; \$25,000
- William E. Long; *Geology of Central Queen Maud Range, Antarctica*; 1 year; \$32,200
- E. D. Rudolph; *Ecology and Floristic Investigations of Antarctic Lichens*; 1 year; \$17,900
- OLD DOMINION COLLEGE, Norfolk, Va.; Jacques S. Zaneveld; *The Benthic Algal Vegetation of Antarctica*; 1 year; \$19,900
- SMITHSONIAN INSTITUTION, Washington, D.C.; David L. Correll; *Pelagic Phosphorus Metabolism; Phosphorus-containing Compounds in Plankton*; 6 months; \$3,400
- STANFORD UNIVERSITY, Stanford, Calif.; Robert A. Hellwell; *Radioscience Research Aboard the USNS "Eltanin"*; 1 year; \$88,500
- Robert A. Hellwell; *VLF Phenomena in the Antarctic, 1963-64*; 1 year; \$102,100
- Donald E. Wohlschlag; *Ecological and Physiological Studies of McMurdo Sound Marine Animals*; \$900
- Donald E. Wohlschlag; *Growth and Metabolic Characteristics of McMurdo Sound Fishes*; 1 year; \$41,600
- TEXAS AGRICULTURAL AND MECHANICAL RESEARCH FOUNDATION, College Station; Sayed Z. El-Sayed; *Primary Productivity in Drake Passage (Southern Ocean)*; 1 year; \$38,500
- Guy A. Franceschini; *Effective Radiation Temperature of Surface Waters and Associated Energy Losses (Antarctic Ocean, 0-100 Degrees East Longitude)*; 11 months; \$28,400
- Donald W. Hood; *Calcium Carbonate Saturation Level of the Ocean from Latitudes of North America to Antarctica*; 16 months; \$7,200
- Donald W. Hood; *Chemical Oceanography of the Antarctic Ocean*; 6 months; \$20,100
- U.S. ARMY COLD REGIONS RESEARCH AND ENGINEERING LABORATORY, Hanover, N.H.; James A. Bender; *Snow and Ice Deformation and Analysis of Deep Ice Cores*; 1 year; \$54,900
- James A. Bender; *Snow and Ice Deformation and Analysis of Deep Ice Cores*; 1 year; \$39,900
- U.S. DEPARTMENT OF COMMERCE, COAST AND GEODETIC SURVEY, Washington, D.C.; H. Arnold Karo; *Station Magnetic Observations, 1963-64*; 22 months; \$107,800
- H. Arnold Karo; *Seismological Observations, 1963-64*; 22 months; \$8,800
- C. Gordon Little, Boulder, Colo.; *The High Latitude Ionosphere at Magnetically Conjugate Points*; \$40,200
- U.S. DEPARTMENT OF COMMERCE, WEATHER BUREAU, Washington, D.C.; F. W. Reichelderfer; *Antarctic Meteorological Research Program Aboard the USNS "Eltanin"*; 1 year; \$58,400
- F. W. Reichelderfer; *Atmospheric-Oceanic Glaciological Interaction in Antarctica*; 1 year; \$235,900
- F. W. Reichelderfer; *International Antarctic Analysis Center, United States Participation*; 16 months; \$31,800
- F. W. Reichelderfer; *Meteorological Research Program in Antarctica, 1962-63*; \$278,400
- F. W. Reichelderfer; *Meteorological Research Program in Antarctica, 1963-64*; 37 months; \$435,500
- F. W. Reichelderfer, USARP Field Operations; 20 months; \$171,100
- U.S. NAVAL OCEANOGRAPHIC OFFICE, Washington, D.C.; E. C. Stephan; *Ship-based Oceanography in the Antarctic and Subantarctic*; 1 year; \$64,600
- UNIVERSITY OF ALASKA, College; T. Neil Davis; *Analysis of USNS "Eltanin" Photometer Data*; 9 months; \$21,500
- Keith B. Mather; *Conjugate Ionospheric Phenomena (USNS "Eltanin")*; 1 year; \$67,200
- Keith B. Mather; *Quantitative Studies of the Katabatic Wind and Related Glaciological Phenomena*; 1 year; \$19,500
- UNIVERSITY OF ARIZONA, Tucson; Albert R. Mead; *Diving Behavior and Physiology of the Weddell Seal, Leptonychotes Weddelli (Lesson)*; 1 year; \$5,700
- UNIVERSITY OF BRUSSELS, Belgium; E. E. Piccolotto; *Snow Samples Collection at the South Pole Station for Geochemical and Cosmic Dust Investigation*; 1 year; \$8,000
- UNIVERSITY OF CALIFORNIA, Berkeley; George M. Briggs; *Nutrition and Ecology of Antarctic Micrometazoa (Fresh Water)*; 4 months; \$1,900
- Robert R. Brown; *Conjugate Point Measurements of High Altitude Radiation Effects in the Geomagnetic Field*; 1 year; \$92,900
- Hellmuth A. Sievers; *Graduate Studies in Oceanography*; 1 year; \$4,200
- UNIVERSITY OF COLORADO, Boulder; Manfred H. Rees; *Diurnal Motion of Auroral Hydrogen Emission at Byrd Station*; 1 year; \$3,700
- UNIVERSITY OF KANSAS, Lawrence; Kenneth B. Armitage; *A Limnological and Geo-*



## ANTARCTIC RESEARCH

- Chemical Investigation of Lakes Bonney and Vanda, Antarctica*; 6 months; \$1,800
- UNIVERSITY OF MARYLAND, College Park; S. F. Singer; *Cosmic Ray Monitoring at Hallett Station, Antarctica*; 18 months; \$32,700
- UNIVERSITY OF MASSACHUSETTS, Amherst; H. T. U. Smith; *Feasibility Study for Photogeologic Mapping of Ice-free Areas in Antarctica*; 1 year; \$5,900
- UNIVERSITY OF MICHIGAN, Ann Arbor; D. F. Eschman; *Genesis of Macro- and Microforms in a Polar Glaciated Landscape*; 14 months; \$14,000
- UNIVERSITY OF MINNESOTA, Minneapolis; Campbell Craddock; *Geology of the Ellsworth Mountains*; 1 year; \$63,300
- UNIVERSITY OF SOUTHERN CALIFORNIA, Los Angeles; John L. Mohr and Leslie A. Chambers; *Biological Oceanology in the Antarctic Seas*; 1 year; \$248,800
- UNIVERSITY OF TEXAS, Austin; Thomas G. Barnes; *Meteorological Rocket Probes of the Upper Atmosphere in the Antarctic*; 11 months; \$207,800
- Orville Wyss; *Bacteria, Fungi, and Other Biota in Air, Soil, Snow and Melt Pools in Antarctica*; 1 year; \$24,200
- UNIVERSITY OF WASHINGTON, Seattle; Donald K. Reynolds; *Antenna Feasibility Study*; 1 year; \$23,300
- UNIVERSITY OF WISCONSIN, Madison; Charles R. Bentley; *Preparation of Antarctic Maps*; 6 months; \$1,075
- Charles R. Bentley; *Oversnow Traverse Program*; 1 year; \$65,200
- Charles R. Bentley and John C. Behrendt; *Aeromagnetic Measurements in Antarctica*; 1 year; \$24,400
- Robert F. Black; *Patterned Ground in Antarctica*; 1 year; \$22,100
- Robert H. Dott, Jr.; *Sedimentological and Stratigraphic Studies in the Antarctic Peninsula and Southern Chile*; 1 year; \$30,900
- Robert A. Ragotzke; *Physical Limnology of Antarctic Lakes*; \$2,100
- George P. Woollard; *Support of the Geophysical and Polar Research Center*; 1 year; \$65,500
- VIRGINIA INSTITUTION OF MARINE SCIENCE, Gloucester Point; William J. Hargis, Jr.; *Parasites of Antarctic Vertebrates and Invertebrates*; \$1,884
- William J. Hargis, Jr.; *Certain Parasites of Antarctic Vertebrates and Invertebrates*; 1 year; \$11,200