

CALIFORNIA INSTITUTE OF TECHNOLOGY

Seventy-First
Annual Commencement
June 11, 1965



CALIFORNIA INSTITUTE OF TECHNOLOGY

*Seventy-First
Annual
Commencement*

FRIDAY AFTERNOON AT FOUR-THIRTY O'CLOCK
JUNE ELEVENTH, NINETEEN SIXTY-FIVE

Academic Procession

Chief Marshal, David S. Wood, Ph.D.

Assistant Marshals

William H. Corcoran, Ph.D. Richard A. Dean, Ph.D.

Rodman W. Paul, Ph.D.

MARCHING ORDER

Division I

CANDIDATES FOR THE DEGREE OF BACHELOR OF SCIENCE

CANDIDATES FOR THE DEGREE OF MASTER OF SCIENCE

CANDIDATES FOR THE DEGREE OF ENGINEER

CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Division II

THE FACULTY

THE CHAIRMEN OF DIVISIONS

THE DEANS

THE PROVOST

THE TRUSTEES

THE COMMENCEMENT CHAPLAIN

THE PRESIDENT

THE COMMENCEMENT SPEAKER

THE CHAIRMAN OF THE BOARD OF TRUSTEES

Program

CALIFORNIA INSTITUTE OF TECHNOLOGY

SEVENTY-FIRST ANNUAL

COMMENCEMENT

PRESIDING: ARNOLD O. BECKMAN, Ph.D.

Chairman of the Board of Trustees

PRELUDE AND PROCESSIONAL The Caltech Band

INVOCATION The Reverend Harmon M. Gehr, D.D.

Throop Memorial Church, Unitarian Universalist, Pasadena

COMMENCEMENT ADDRESS Frank Stanton, Ph.D.

President of the Columbia Broadcasting System

Program—continued

CONFERRING OF DEGREES . . . Lee A. DuBridge, Ph.D., Sc.D.
President of the California Institute of Technology

PRESENTATION OF CANDIDATES FOR DEGREES

For the degree of Bachelor of Science . . . Paul C. Eaton, A.M.
Dean of Students

For the degree of Master of Science . . . W. Duncan Rannie, Ph.D.
Chairman of the Curriculum Committee

For the degree of Engineer . . . Ernest H. Swift, Ph.D., LL.D.
Chairman of the Faculty

For the degree of Doctor of Philosophy . . . Professor Swift

CONCLUDING REMARKS President DuBridge

BENEDICTION The Reverend Dr. Gehr

RECESSIONAL . . . *Organist: James H. Shearer, A.R.C.M., A.R.C.O.*

*The audience is requested to remain standing until
the end of the Recessional*

Candidates for Degrees

BACHELOR OF SCIENCE

Michael Stephen Ball, *Sarasota, Florida.* Engineering.
Robert Joseph Barro, *Los Angeles, California.* Physics.
Michael I. Baskes, *Chicago, Illinois.* Engineering.
Edward Stephen Bauer, *Pasadena, California.* Engineering.
John Harden Beamer, *Toronto, Ontario.* Chemical Engineering.
James Grant Blackinton, *Englewood, Colorado.* Engineering.
Vernon LeRoy Bliss, *Bakersfield, California.* Biology.
Edward Mark Bloomberg, *Swampscott, Massachusetts.* Mathematics.
Donald Lawrence Blumenthal, *Boston, Massachusetts.* Engineering.
Steven Lloyd Blumsack, *Garden Grove, California.* Mathematics.
George Conrad Brackett, *Carbondale, Illinois.* Physics.
Russell Martin Brill, *San Francisco, California.* Physics.
Steven Elliot Brown, *Little Neck, New York.* Mathematics.
Walter Kendall Brown, *Des Moines, Iowa.* Physics.
Robert Clifton Burket, *Sacramento, California.* Geology.
Randall Curtis Cassada, Jr., *San Antonio, Texas.* Biology.
I-Lok Chang, *Wooster, Ohio.* Mathematics.
Thomas Shelby Chapman III, *Lakewood, Colorado.* Chemistry.
John D. Chidley, *Butte, Montana.* Chemical Engineering.
Donald Ray Chivens, *Pasadena, California.* Engineering.
Stanley A. Christman, *San Francisco, California.* Chemical Engineering.
Peter King Clark, *Charleston, West Virginia.* Physics.
Glenn Gary Clinard, *Great Falls, Montana.* Engineering.
D. Louis Corl, *El Sobrante, California.* Physics.
Michael Joseph Cosgrove, *Phoenix, Arizona.* Engineering.
James Hansen Crabtree, *Redlands, California.* Chemistry.
James Christopher Dalton, *Corning, New York.* Chemistry.
Kris Davidson, *Harlem, Montana.* Physics.
Roger Carl Davisson, *Pueblo, Colorado.* Engineering.
Walter Jordan Deal, Jr., *Slidell, Louisiana.* Chemistry.
Leland Allen DePriest, *Mesa, Arizona.* Engineering.
John Crockett Diebel, *South Pasadena, California.* Engineering.
Barry William Dinius, *Seattle, Washington.* Engineering.
Nicholas I-Tsing Djeu, *Buenos Aires, Argentina.* Physics.
James Farnum Eder, Jr., *Canoga Park, California.* Biology.
Martin B. Einhorn, *Dayton, Ohio.* Physics.
Wladislaw Vladislavovitch Ellis, *Glendale, California.* Biology.
James M. Espinosa, *Mexico, D.F., Mexico.* Physics.

Students whose names appear in boldface type are being graduated with honor in accordance with a vote of the Faculty.

BACHELOR OF SCIENCE—continued

Richard Charles Essenberg, *Sacramento, California*. Chemistry.
Jon Kenner Evans, *Las Vegas, Nevada*. Geology.
David White Faulconer, *Rochester, Minnesota*. Engineering.
Gary Owen Fitzpatrick, *Eureka, California*. Physics.
Lewis Martin Fraas, *Manhattan Beach, California*. Physics.
W. Phelps Freeborn, *New Hope, Pennsylvania*. Geology.
Richard Skipp Frenk, *Vandenberg Air Force Base, California*. Engineering.
Stephen Hopkins Garrison, *Manila, Philippines*. Engineering.
Robert Edward Gillon, *Fairfield, Connecticut*. Geology.
Mark Gingold, *Syracuse, New York*. Mathematics.
Barry Lee Goldberg, *Beverly Hills, California*. Mathematics.
Gerald Dale Gowen, *Portland, Oregon*. Chemical Engineering.
Burton William Graves, *Alhambra, California*. Engineering.
Donald Webb Green, *Phoenix, Arizona*. Biology.
Thomas Kennedy Greenfield, *Bulawayo, Rhodesia*. Astronomy.
Lawrence Hinman Hall, *South Pasadena, California*. Chemistry.
Steven David Hall, *Brecksville, Ohio*. Geology.
John Barrett Long Harkness, *La Porte, Texas*. Chemical Engineering.
William Edward Hawk, *Elko, Nevada*. Engineering.
Roger Walden Hendrix, *Walnut Creek, California*. Biology.
William David Hixson, *San Angelo, Texas*. Engineering.
John Myrom Holte, *Mount Vernon, Washington*. Mathematics.
Richard Arthur House II, *Albuquerque, New Mexico*. Physics.
John N. C. Hsu, *Flushing, New York*. Chemistry.
Manuel Andrés Huerta, *Habana, Cuba*. Engineering.
Ronald Ernest Hutton, *Baldwin Park, California*. Physics.
Martin Isler, *New York, New York*. Mathematics.
David D. Jackson, *Pasadena, California*. Physics.
David Dixon Jarvis, *Santa Monica, California*. Engineering.
Robert Theodore Jenkins, *Houston, Texas*. Engineering.
Paul Douglas Josephson, *Omaha, Nebraska*. Physics.
Steven Kenneth Kauffmann, *Mexico, D.F., Mexico*. Physics.
James Robert Kercher, *San Pedro, California*. Physics.
Paul Craig Kochendorfer, *Portland, Oregon*. Engineering.
Kenneth Kunen, *Mount Vernon, New York*. Mathematics.
Edgar Kuplis, *Longview, Washington*. Engineering.
Richard Neil Lane, *Bethesda, Maryland*. Mathematics.
Amos Levin, *Ramat-Gan, Israel*. Engineering.
Robert David Levin, *Denver, Colorado*. Chemistry.
Del Eugene Levy, *Melba, Idaho*. Engineering.
Steven Ross Lipshie, *Van Nuys, California*. Geology.
Kenneth Raymond Ludwig, *Berkeley, California*. Chemistry.
Hugh Bardeen Maynard, *Littleton, Colorado*. Mathematics.
Rainer Franz McCown, *San Jose, California*. Engineering.
Dennis Lloyd McCreary, *North Hollywood, California*. Chemistry.

BACHELOR OF SCIENCE—continued

Charles Hosewell McGruder, *Bristol, Pennsylvania*. Astronomy.
Dallas J. Meggitt, *Scottsdale, Arizona*. Engineering.
Thomas More Menzies, *Santa Barbara, California*. Engineering.
Charles King Michener, *Idaho Falls, Idaho*. Engineering.
John Randolph Miller, *Annandale, Virginia*. Physics.
Michael Norman Misheloff, *Los Angeles, California*. Physics.
Harold D. Moeller, *Hinsdale, Illinois*. Engineering.
Stephen Elliott Morse, *Houston, Texas*. Physics.
Kenneth Kiyoshi Murata, *Sacramento, California*. Physics.
John Nady, *San Francisco, California*. Engineering.
Francis S. Nakamoto, *Kahului, Maui, Hawaii*. Engineering.
Lee Neidengard, *Palos Verdes Estates, California*. Biology.
Jerry Earl Nelson, *San Fernando, California*. Physics.
Arthur Edwin Niell, *Lubbock, Texas*. Physics.
Dennis Lowell Oberg, *Minneapolis, Minnesota*. Physics.
Lawrence Kermit Oliver, *Walker, Minnesota*. Chemistry.
Maynard Victor Olson, *Healdsburg, California*. Chemistry.
William Peter O'Neill, *Butte, Montana*. Engineering.
Dimitri A. Papanastassiou, *Athens, Greece*. Physics.
Gerhard Hans Parker, *Paso Robles, California*. Engineering.
Carlton Hutton Paul III, *Scottsdale, Arizona*. Biology.
DeWitt Allen Payne, *Santa Ana, California*. Chemistry.
Warren Joseph Peascoe, *San Pedro, California*. Chemistry.
William Michael Pence, *El Cajon, California*. Engineering.
David Thomas Price, *Blue Lake, California*. Mathematics.
Thomas Antone Pucik, *Portland, Oregon*. Physics.
J. Niles Puckett, Jr., *Phoenix, Arizona*. Engineering.
Ronald S. Rimmel, *Milwaukee, Wisconsin*. Physics.
George Andrew Repasy, *La Habra, California*. Engineering.
Robert Richard Roberts, *Arcadia, Indiana*. Mathematics.
Michael Morris Rosbash, *Newton, Massachusetts*. Chemistry.
Freeman Harding Rose, Jr., *Casa Grande, Arizona*. Engineering.
Hanan Rosenthal, *New York, New York*. Physics.
Stephen Alan Ross, *Brookline, Massachusetts*. Physics.
Jeffrey Paul Royer, *Vandalia, Ohio*. Physics.
Peter Michael Ryan, *Quincy, Massachusetts*. Mathematics.
Wayne Howard Ryback, *La Grange Park, Illinois*. Chemistry.
Benjamin Arden Saltzer, *Los Angeles, California*. Engineering.
William Franklin Satterthwaite, *Wellesley, Massachusetts*. Mathematics.
Gary Walter Scott, *Topeka, Kansas*. Chemistry.
Michael McCreary Scott, *Gainesville, Florida*. Physics.
Robert Benson Scott, *Hamilton, Montana*. Engineering.
Walter Alvin Scott, *Baker, Oregon*. Biology.
Samuel Murray Sherman, *Pittsburgh, Pennsylvania*. Biology.
Harry James Simpson, Jr., *Sullivan, Missouri*. Chemistry.

BACHELOR OF SCIENCE—*continued*

John Charles Simpson, Jr., *Alexandria, Virginia*. Chemical Engineering.
Terry Regg Simpson, *Billings, Montana*. Physics.
Victor Leon Sirelson, *Tujunga, California*. Mathematics.
Frank James Slaby, *Pasadena, California*. Biology.
Charles Monck Smythe, *Tulare, California*. Astronomy.
William Glen Spring, *Los Angeles, California*. Engineering.
Benjamin Stackler, *Chicago, Illinois*. Physics.
Melvin M. Stephens II, *Independence, Missouri*. Chemistry.
Edwin Paul Swatek III, *Sewickley, Pennsylvania*. Chemistry.
Robert Mahlon Sweet, *Mt. Morris, Illinois*. Chemistry.
Gary Edgar Thompson, *Inglewood, California*. Physics.
John J. Turechek, *Fresno, California*. Physics.
Richard Alan Vogel, *Miami, Florida*. Mathematics.
Arden Bruce Walters, *Pasadena, California*. Chemical Engineering.
Stuart Steve Watson, *Houston, Texas*. Chemistry.
Oliver Laurence Weaver, *Birmingham, Alabama*. Physics.
Rodger Fairfax Whitlock, *Hyattsville, Maryland*. Chemistry.
Anthony Brackett Williams, *Walpole, Massachusetts*. Geology.
Jefferson K. Wise, *Long Beach, California*. Engineering.
James Fong Yee, *Hughes, Arkansas*. Engineering.
Akira Yoshida, *Richmond Hill, New York*. Physics.
William Robin Zame, *Coral Gables, Florida*. Mathematics.

MASTER OF SCIENCE

AERONAUTICS

- Terry Allen Abell. B.S., *United States Naval Academy*, 1963.
Philip Robert Austin. B.Ae.E., *University of Detroit*, 1959.
Scott Williams Beckwith. B.S., *Texas A&M University*, 1964.
Elton Dean Bellinger. B.S.E., *University of Michigan*, 1964.
Jose Chirivella Casanova. Ing., *Escuela Tecnica Superior de Ingenieros Aeronauticos (Madrid)*, 1964.
Philippe Raymond Chalier. Ing., *Ecole Centrale des Arts et Manufactures (Paris)*, 1964.
Man-Cheong Cheung. B.S., *Taiwan Provincial Cheng Kung University*, 1964.
Antonio Crespo. Ing., *Escuela Tecnica Superior de Ingenieros Aeronauticos (Madrid)*, 1964.
Michael James Gilliom. B.S., *United States Air Force Academy*, 1964.
Guy Paul Lengellé. Ing., *Ecole Nationale Supérieure des Arts et Metiers (Paris)*, 1964.
Momtaz Nosshi Mansour. B.Ae.E., *Cairo University*, 1962.
Carlos Navarro. Ing., *Escuela Tecnica Superior de Ingenieros Aeronauticos (Madrid)*, 1964.
Nick Demetrios Panagiotacopoulos. Dipl., *University of Athens*, 1957; Dipl., *Training Center for Experimental Aerodynamics (Belgium)*, 1961.
Hugo de Oliveira Piva. B.Ae.E., *Instituto Tecnológico de Aeronautica (Brazil)*, 1958.
James Robert Rose. B.A.Sc., *University of Toronto*, 1964.
Samir Dimitri Sayegh. B.S., *Centre d'Etudes Mathématiques et Physiques (Lebanon)*, 1961; Ing., *Ecole Nationale Supérieure de l'Aéronautique (Paris)*, 1963.
John Vernon Schafer, Jr. B.S., *United States Military Academy*, 1957.
Richard A. Seebach. B.M.E., *Syracuse University*, 1964.
Arthur Torosian. B.S., *University of Illinois*, 1958.
Sachio Uehara. B.S., *University of Tokyo*, 1956.
Philippe Vidal. Ing., *Ecole Nationale Supérieure des Arts et Metiers (Paris)*, 1964.

APPLIED MATHEMATICS

- John Gillespie Hartnett. B.S.E., *Princeton University*, 1964.

APPLIED MECHANICS

- Richard J. Evershed. B.S., *Rochester Institute of Technology*, 1963.
Jean François Noël Guérmonprez. Ing., *Ecole Nationale Supérieure de Mécanique et d'Aérotechnique (Poitiers)*, 1964.
John Kent Koester. B.S., *University of Notre Dame*, 1964.
Sheng-rong Lin. B.S., *National Taiwan University*, 1961; M.S., 1964.
Hidehiko Mori. B.E., *Waseda University (Tokyo)*, 1963.

MASTER OF SCIENCE—continued

APPLIED MECHANICS—continued

- Timothy Owen Murray. B.A., *Rice University*, 1963; B.S.M.E., 1964.
Louis Edmond Rostand. B.S., *Polytechnic Institute of Brooklyn*, 1964.
Matias J. Turteltaub. Ing., *University of Chile*, 1961.
I-Min Yang. B.S., *National Taiwan University*, 1958; M.S., 1964.

ASTRONOMY

- Virginia Louise Trimble. B.A., *University of California (Los Angeles)*, 1964.

BIOLOGY

- Richard Jay Laurent Bondar. B.Sc., *McGill University*, 1962.

CHEMICAL ENGINEERING

- Raymond Paul Cej. B.E., *Royal Military College of Canada (Kingston)*, 1964.
Inder Singh Cheema. Pet.E., *Colorado School of Mines*, 1963.
Joseph Francis Cullen. B.S., *California Institute of Technology*, 1964.
Allyn Merrill Davis. B.S., *Clarkson College of Technology*, 1964.
Satish Vithal Desai. B.Tech., *Indian Institute of Technology (Bombay)*, 1964.
Terry Eugene Ernest. B.S., *California Institute of Technology*, 1963.
Stephen Chester Smelser. B.S., *University of Michigan*, 1964.
William George Smith. B.S., *California Institute of Technology*, 1964.
Richard King Teague. B.S., *Washington University (St. Louis)*, 1963.

CHEMISTRY

- Dana Lincoln Roth. B.S., *University of California (Los Angeles)*, 1962.

CIVIL ENGINEERING

- Gerassimos George Aperghis. B.A., *Cambridge University*, 1964.
Assadour Hagop Hadjian. B.S., *American University of Beirut (Lebanon)*, 1959;
M.S., *Illinois Institute of Technology*, 1963.
Robert Harry Harris. B.S., *West Virginia University*, 1963.
Lawrence Donald Hofmeister. B.S., *Carnegie Institute of Technology*, 1964.
Hugh Michael McAlear. B.S., *Valparaiso University*, 1964.
Michael Louis Neeser. B.S., *University of Idaho*, 1964.
Albert Bernard Pincince. B.S., *Northeastern University*, 1963.
Ignacio Rodriguez-Iturbe. Eng., *Universidad Del Zulia (Venezuela)*, 1963.
Stephen Ilott Taylor. B.A.Sc., *University of British Columbia (Vancouver)*, 1963.
Ansel Frederick Thompson, Jr. B.S., *Pennsylvania State University*, 1963.
Nien-chien Tsai. B.S., *National Taiwan University*, 1961.
Joe Clarence Willis. B.S., *Mississippi State University*, 1960.
Chen-shyong Young. B.S., *National Taiwan University*, 1961; M.S., 1964.

MASTER OF SCIENCE—continued

ELECTRICAL ENGINEERING

- Bernard Abel Aimelet. *Ing., Ecole Nationale Superieure de l'Aeronautique (Paris), 1964.*
- Raymond Arrathoon. *B.E.E., Cornell University, 1964.*
- Gerald Richard Ash. *B.S., Rutgers University, 1964.*
- Paul David Batelaan. *B.S., California State Polytechnic College, 1964.*
- Thomas Robert Bierma. *B.S.E., University of Michigan, 1964.*
- Milton Mow-Tack Chang. *B.S., University of Illinois, 1964.*
- Pierre-Yves Michel Comte. *Ing., Ecole Nationale Superieure des Telecommunications (Paris), 1964.*
- Wayne Franklin Covington. *B.S., California Institute of Technology, 1964.*
- Clark Allan Crane. *B.S., United States Air Force Academy, 1964.*
- Peter Nicholas Demopoulos. *B.S., University of California (Los Angeles), 1964.*
- Claude Jean Durand. *Ing., Ecole Centrale des Arts et Manufactures (Paris), 1964.*
- Clarence Sigmund Fuzak, Jr. *B.S., California Institute of Technology, 1964.*
- Richard Rutherford Green. *B.S., California Institute of Technology, 1964.*
- John Franklin Gunn. *B.S., Tufts University, 1964.*
- Howard Elliot Harry, Jr. *B.S., California Institute of Technology, 1964.*
- Alden Barry Johnson. *B.S., University of Denver, 1964.*
- James Thomas Kindle. *B.S., Rutgers University, 1964.*
- Richard Ira Klein. *B.E.E., Cornell University, 1964.*
- Michel Andre Lagorce. *Ing., Ecole Nationale Superieure de l'Aeronautique (Paris), 1964.*
- Jean-Pierre Laussade. *Ing., Ecole Superieure d'Electricite (Paris), 1964.*
- Pat Chiu Leung. *B.S., University of Pennsylvania, 1964.*
- John Michael Julius Madey. *B.S., California Institute of Technology, 1964.*
- Dominique René Jacques Marchand. *Ing., Ecole Superieure d'Electricite (Malakoff), 1964.*
- Thomas Conley McGill, Jr. *B.S., Lamar State College of Technology, 1964.*
- Roger Leon Minear. *B.S., California Institute of Technology, 1964.*
- Theodore Wallace Parry. *B.S., Northrop Institute of Technology, 1963.*
- David Lawrence Randall. *B.S.E., University of Michigan, 1963.*
- David Allen Rennels. *B.S., Rose Polytechnic Institute, 1964.*
- Robert R. R. Rodite. *B.S., Lafayette College, 1964.*
- Valentin Rodriguez. *B.E.E., Catholic University of America, 1964.*
- Jack Raymond Slager. *B.S., California Institute of Technology, 1963.*
- James W. Surhigh. *B.S., Wayne State University, 1964.*
- Athanasios Demetrius Varvatsis. *Dipl., National Technical University of Athens, 1960.*

ENGINEERING SCIENCE

- James Johnson Duderstadt. *B.E., Yale University, 1964.*
- Henrik Gustaf Gronroos. *Ing., Finland Institute of Technology, 1958.*
- Roger Allison Haas. *B.E.S., University of Florida, 1964.*

MASTER OF SCIENCE—continued

ENGINEERING SCIENCE—continued

- Alexander Chen-Che Liang. B.S.E., *University of Michigan*, 1963.
John Thomas McCrickerd. S.B., *Massachusetts Institute of Technology*, 1964.
Roger Selig Schlueter. B.S., *Purdue University*, 1964.
Steven James Sharp. B.S., *Southern Methodist University*, 1964.
Felix Shek Ho Wong. B.S., *Purdue University*, 1964.

GEOLOGY

- Bruce Alan Carter.

MATERIALS SCIENCE

- Steven Jonathan Goldner. B.S., *California Institute of Technology*, 1964.
Chung Hsiung Lin. B.S., *National Taiwan University*, 1963.
Martin Eric Weiner. B.S., *California Institute of Technology*, 1964.

MATHEMATICS

- Harold Charles Kurtz. B.S., *California Institute of Technology*, 1962.

MECHANICAL ENGINEERING

- Albert Charles Angelovich. B.S., *Worcester Polytechnic Institute*, 1964.
N. Ebbe Banstorp. Ing., *Royal Institute of Technology (Stockholm)*, 1963.
Thomas Richard Brussat. B.S., *University of Wisconsin*, 1964.
Robert William Conn. B.Ch.E., *Pratt Institute*, 1964.
Raymond Kay DeLong. B.S., *Kansas State University*, 1962.
James Thomas Early. S.B., *Massachusetts Institute of Technology*, 1964.
Jay Laurence Finkelstein. B.A., *Rice University*, 1960; B.S., 1961.
Robert Ridgeway Gilpin. B.Sc., *University of Alberta*, 1964.
Douglas Edwin Griffin. B.S., *University of Oklahoma*, 1964.
Denis R. Hayner. B.S., *Michigan College of Mining and Technology*, 1961.
Harry Douglas Hunter. B.Sc., *University of Alberta*, 1964.
William Masaru Matsukado. B.S., *University of Hawaii*, 1964.
Daniel Curtis Paxton, Jr. B.S., *California Institute of Technology*, 1964.
Terry Neil Rahmeier. B.S., *University of Pennsylvania*, 1964.
Bernard Claude Solelhac. Ing., *Ecole Centrale des Arts et Manufactures (Paris)*, 1964.
Alvah Thomas Strickland. B.S., *Washington State University*, 1964.
David Owen Swint. B.S., *University of Texas*, 1960.
Mohan Vachani. B.Sc., *Lucknow University*, 1959; B.Tech., *Indian Institute of Technology*, 1963.

MASTER OF SCIENCE—continued

MECHANICAL ENGINEERING—continued

- Richard William Weeks II. *B.S., Swarthmore College, 1964.*
Michel Wehrey. *Ing., Ecoles Nationales d'Ingenieurs Arts et Metiers (Paris), 1964.*
Robert Orville Winkler. *B.S., Bucknell University, 1964.*
David Ken Yoshikawa. *B.S., University of California (Berkeley), 1962.*

PHYSICS

- Martin G. Delson. *B.S., Queens College (New York), 1962.*
Melinda Ann Groom. *A.B., Byrn Mawr College, 1961.*
David Louis Kreinick. *B.A., Brandeis University, 1963.*
Harold Theodore Larson. *B.A., California State College (Los Angeles), 1963.*
Michael James Mahon. *B.S., St. Louis University, 1963.*
Thomas Charles Rindfleisch. *B.S., Purdue University, 1962.*
Phillip Howard Roberts, Jr. *B.S., University of Kansas, 1963.*
Edmund J. Weber. *B.E., McGill University, 1963.*

ENGINEER

AERONAUTICAL ENGINEER

- Nazeer Ahmed. *B.E., University of Mysore, 1961; M.S., California Institute of Technology, 1962.*
Glen Walter Hostetler, Lt., U.S.N. *B.S., University of Idaho, 1955; M.S., Chrysler Institute of Engineering, 1957; Ae.E., United States Naval Postgraduate School, 1964.*
Jark Chong Lau. *Dipl., Royal Melbourne Technical College, 1957; M.S., California Institute of Technology, 1963.*
Robert Edward Spitzer. *B.S., University of Illinois, 1961; M.S., 1962.*

MECHANICAL ENGINEER

- Jean-Michel Calle. *Dipl. Ing., Ecole Centrale des Arts et Manufactures (Paris), 1963; M.S., California Institute of Technology, 1964.*
Wayne Robert Cooper, Flight Lt., R.C.A.F. *B.Sc., University of Saskatchewan, 1961; M.S., California Institute of Technology, 1964.*
Marlyn Tony Jakub. *B.S., Carnegie Institute of Technology, 1958; M.S., California Institute of Technology, 1962.*
Richard Franklin Smisek. *B.S., California Institute of Technology, 1956; M.S., 1958.*

DOCTOR OF PHILOSOPHY

Kenneth Hoyt Adams (*Materials Science*). B.S., California Institute of Technology, 1959; M.S., 1960.

Thesis: Dislocation Mobility and Density in Zinc Single Crystals.

Charles Bruce Archambeau (*Geophysics*). B.S., University of Minnesota, 1955; M.S., 1959.

Thesis: Elastodynamic Source Theory.

George S. Argyropoulos (*Engineering Science, Physics and Economics*). Dipl. in M.E. and E.E., National Technical University of Athens, 1960; M.S., California Institute of Technology, 1961.

Thesis: Anisotropies and Interactions in Shear Flow of Macromolecular Suspensions.

John Fredrich Asmus (*Electrical Engineering and Physics*). B.S., California Institute of Technology, 1958; M.S., 1959.

Thesis: Analysis of Perturbed Confocal Resonators.

Luis Baez-Duarte (*Mathematics*). B.S., California Institute of Technology, 1959.

Thesis: Pointwise Abelian Ergodic Theorems.

James Maxwell Bardeen (*Physics*). A.B., Harvard College, 1960.

Thesis: Stability and Dynamics of Spherically Symmetric Masses in General Relativity.

Leonard Daniel Baumert (*Mathematics*). B.A., University of California (Los Angeles), 1952; M.A., 1959.

Thesis: Extreme Copositive Quadratic Forms.

Douglas Stanley Beder (*Physics*). B.Sc., McGill University, 1961.

Thesis: Two Studies of Dynamical Calculations in Two-Meson Systems.

George Wood Beeler, Jr. (*Electrical Engineering*). B.S.E., Princeton University, 1960; M.S., California Institute of Technology, 1961.

Thesis: Stochastic Processes in the Human Eye Movement Control System.

James M. Bell (*Civil Engineering*). B.S., Colorado State College of Agriculture and Mechanic Arts, 1954; M.S., California Institute of Technology, 1955.

Thesis: Stress-Strain Characteristics of Cohesionless Granular Materials Subjected to Statically Applied Homogeneous Loads in an Open System.

Glenn LeRoy Berge (*Astronomy*). B.A., Luther College, 1960; M.S., California Institute of Technology, 1962.

Thesis: An Interferometric Study of Jupiter's Decimeter Radio Emission.

DOCTOR OF PHILOSOPHY—*continued*

- Thomas Mark Bieniewski (*Physics*). B.S., University of Detroit, 1958; M.S., California Institute of Technology, 1960.
Thesis: The Measurements of Oscillator Strengths in the Presence of Resonance Self-Broadening.
- Robert Harold Bond (*Electrical Engineering and Physics*). B.S., Colorado State University, 1958; M.S., California Institute of Technology, 1959.
Thesis: Directed Electron Velocity Distributions in Rare Gas Discharges Using Guard-Ring Probes.
- Carl James Buczek (*Electrical Engineering and Physics*). B.E.E., Rensselaer Polytechnic Institute, 1956; M.S., California Institute of Technology, 1959.
Thesis: Spontaneously Radiating Atoms in Cavity Fields.
- Roger William Caputi (*Chemistry*). B.S., California Institute of Technology, 1957.
Thesis: Studies of Liquid Mercury and Liquid Mercury-Gallium Systems by X-Ray Diffraction.
- Chang-Chih Chao (*Engineering Science*). B.S., National Taiwan University, 1956; M.S., Virginia Polytechnic Institute, 1960.
Thesis: A Study of CsCl Type Intermediate Phases Involving Rare Earth Elements.
- Phillip John Chase (*Mathematics*). B.A., The College of Wooster, 1961.
Thesis: Sublattices of Partition Lattices.
- Arthur Noble Chester (*Physics*). B.S., University of Texas, 1961.
Thesis: Regge Poles in Field Theories and Elementarity.
- Armando Cisternas (*Geophysics and Mathematics*). Min. Eng., University of Chile, 1957; M.S., California Institute of Technology, 1960.
Thesis: I. The Radiation of Elastic Waves from a Spherical Cavity in a Half Space.
II. Precision Determination of Focal Depths and Epicenters of Earthquakes.
- Donald Henry Close (*Electrical Engineering and Physics*). B.S., University of Kansas, 1960; M.S., California Institute of Technology, 1962.
Thesis: Nonlinear Effects in Traveling Wave Laser Amplifiers.
- Jules Bernard Cohen (*Civil Engineering*). B.C.E., City College of New York, 1955; M.S., University of Colorado, 1958.
Thesis: Effects of Ionizing Radiation on Aqueous Solutions of the Detergent Alkylbenzenesulfonate and Several Lower Homologs.

DOCTOR OF PHILOSOPHY—*continued*

Terrill Alan Cool (*Mechanical Engineering and Physics*). B.S., University of California (Los Angeles), 1961; M.S., California Institute of Technology, 1962.

Thesis: Recombination, Ionization, and Nonequilibrium Electrical Conductivity in Seeded Plasmas.

Ronald Yvon Cusson (*Physics and Mathematics*). B.Sc., University of Montreal, 1960.

Thesis: A Study of the Elastic and Inelastic Scattering of Alpha Particles by Li⁷.

Lee Walker Davison (*Applied Mechanics*). B.S., University of Idaho, 1959; M.S., New York University, 1961.

Thesis: Propagation of Finite Amplitude Waves in Elastic Solids.

David Tilton Denhardt (*Biophysics and Physics*). B.A., Swarthmore College, 1960.

Thesis: A Biophysical Study of Bacteriophage ϕ X-174 Replication.

Robert Dewey de Pencier (*Mechanical Engineering*). B.Sc., Queen's University (Ontario), 1959; M.S., California Institute of Technology, 1960.

Thesis: Genesis of a Machine: A Production Paper Cutter.

Nicholas Anthony Derzko (*Mathematics and Physics*). B.Sc., University of Toronto, 1962.

Thesis: Wave Limits and Generalized Hilbert Transforms.

Theodore Neil Divine (*Astronomy and Physics*). S.B., Massachusetts Institute of Technology, 1959; M.S., University of Michigan, 1960.

Thesis: Structure and Evolution of Model Helium Stars.

David James Duchamp (*Chemistry*). B.S., University of Southwestern Louisiana, 1961.

Thesis: I. The Crystal Structure of Trimesic Acid.

II. Topics in Crystallographic Calculations.

David Ray Dyroff (*Chemistry and Chemical Engineering*). B.S., University of Illinois, 1962.

Thesis: The Crystal Structure of Sodium Triphosphate Hexahydrate.

Philip Filner (*Biochemistry*). B.A., Johns Hopkins University, 1960.

Thesis: Studies on Exponential Cultures of Plant Cells.

Michael Hamilton Fisch (*Chemistry*). A.B., Columbia College, 1960.

Thesis: The Photochemistry of Santonin in Aprotic Solvent:

I. Photo-products.

II. Mechanism.

DOCTOR OF PHILOSOPHY—*continued*

James Norman Foster (*Chemistry*). B.A., Occidental College, 1959.

Thesis: I. The Electrochemistry of Certain Metal Cations in Pyrophosphate Media.

II. A Theoretical Study of Chronopotentiometry and Chronoamperometry at Unshielded Electrodes.

III. Determination of Cobalt by Constant Current Coulometry.

Robert Peter Frosch (*Chemistry*). B.S., Union College, 1959.

Thesis: I. The Emission and Absorption Spectra of Some Simple Molecules Trapped in Solid Rare Gases.

II. Theory of Electronic Relaxation in the Solid Phase.

George Donald Garlick (*Geochemistry*). B.Sc., University of Witwatersrand, 1956; M.S., California Institute of Technology, 1961.

Thesis: Oxygen Isotope Ratios in Coexisting Minerals of Metamorphic Rocks.

Michael Saunders Gazzaniga (*Psychobiology and Immunology*). A.B., Dartmouth College, 1961.

Thesis: Some Effects of Cerebral Commissurotomy on Monkey and Man.

Robert Joseph Gerbracht (*Physics*). B.A., Reed College, 1960.

Thesis: A Multi-Channel Double Bootstrap for Rho and K^* .

William Andrew Goddard III (*Engineering Science and Physics*). B.S., University of California (Los Angeles), 1960.

Thesis: An Improved Many-Electron Theory for Atoms and Molecules Using Eigenfunctions of Total Spin.

Dennis Jerome Graue (*Chemical Engineering*). B.S., University of Colorado, 1961; M.S., California Institute of Technology, 1962.

Thesis: I. A Numerical Method for Smoothing Thermodynamic Data.

II. Diffusion Coefficients in Binary Hydrocarbon Liquids.

III. Correlation of Diffusion Coefficients of Liquid Hydrocarbons.

O. Hayes Griffith (*Chemistry*). A.B., University of California (Riverside), 1960.

Thesis: Electron Spin Resonance of Several Molecules in the Solid State.

Donald Eugene Groom (*Physics and Astronomy*). A.B., Princeton University, 1956.

Thesis: A Polarization at 90° in K^+ Λ Photoproduction.

Robert Duane Hanson (*Civil Engineering*). B.S., University of Minnesota, 1957; M.S.C.E., 1958.

Thesis: Post-Elastic Dynamic Response of Mild Steel Structures.

DOCTOR OF PHILOSOPHY—*continued*

William Morgan Hardham (*Chemistry*). B.S., Pennsylvania State University, 1961.

Thesis: Some Photochemistry of Maleic Anhydride: the Addition to Benzene and the Dimerization.

Robert Henry Hertel (*Electrical Engineering and Physics*). S.B., Massachusetts Institute of Technology, 1958; M.S., California Institute of Technology, 1959.

Thesis: An Experimental Study of the Hydromagnetic Waveguide.

John Arthur Rankin Holbrook (*Mathematics*). B.Sc., Queen's University (Ontario), 1961; M.A., 1962.

Thesis: The Egoroff Property and Related Properties in the Theory of Riesz Spaces.

John Leonard Honsaker (*Physics*). B.S., California Institute of Technology, 1955.

Thesis: Investigation of the $\text{Li}^6(\text{p},\text{n})\text{Be}^6$ Reaction by the Neutron Threshold Technique.

Roger LeBaron Hooke (*Geology and Hydraulics*). A.B., Harvard College, 1961.

Thesis: Alluvial Fans.

Kwang-chou Hwang (*Chemical Engineering*). B.S., Taiwan University, 1956. M.S., California Institute of Technology, 1961.

Thesis: A Mathematical Study of the Transient Behavior of a Fixed-Bed Catalytic Reactor.

Li-San Hwang (*Civil Engineering*). B.S., National Taiwan University, 1958; M.S., Michigan State University, 1962.

Thesis: Flow Resistance of Dunes in Alluvial Streams.

Ronald H. Jensen (*Chemistry*). B.S., Lawrence College, 1960.

Thesis: Complexes of Silver (I) with Nucleic Acids.

Jack Randolph Jokipii (*Physics*). B.S., University of Michigan, 1961.

Thesis: Two Topics in the Physics of the Solar Wind:

I. A Model of Fermi Acceleration at Shock Fronts.

II. Effects of Diffusion on the Composition of the Solar Corona and Solar Wind.

Gordon Ernest Keller (*Mathematics*). B.A., Houghton College, 1960; M.A., University of Buffalo, 1962.

Thesis: Groups with Only the Identity Fixing Three Letters.

DOCTOR OF PHILOSOPHY—*continued*

Arnold James Kelly (*Mechanical Engineering*). M.E., Stevens Institute of Technology, 1955; M.S., University of California (Los Angeles), 1958.

Thesis: Atom-Atom Ionization Mechanisms and Cross Sections in Noble Gases and Noble Gas Mixtures.

Leon Frank Keyser (*Chemistry*). B.S., University of Notre Dame, 1959.

Thesis: I. Infrared Spectra of Monomeric and Polymeric HCl and DCl in Solid Krypton and Xenon.
II. Infrared Spectra of NH_2 and ND_2 Produced by Photolysis and X-Radiolysis of Ammonia in Solid Krypton.
III. Ultraviolet Spectra of CH Produced by X-Radiolysis of Methane in Solid Argon.

Karl Kent Knapp (*Mechanical Engineering*). B.S., California Institute of Technology, 1959; M.S., 1960.

Thesis: An Experimental Investigation of Free Convection Heat Transfer to Carbon Dioxide in the Region of Its Critical Point.

Joel Ivan Krugler (*Physics*). B.E.E., The Cooper Union, 1959.

Thesis: Spin Absorption in Triplet Exciton Systems.

Joel Kwok (*Chemistry and Physics*). B.S., University of California, 1959.

Thesis: I. Spectroscopic Observations of Discrete Sites in Simple Liquids.
II. Infrared Intensity Perturbations of Hydrogen Halide Fundamentals in Liquid Xenon.
III. Molecular Motion of HCl in Solid Rare Gas Matrices.

Joseph Buckley Lambert (*Chemistry*). B.S., Yale University, 1962.

Thesis: I. Conformational Properties of Cyclobutanes.
II. Nitrogen-15 Magnetic Resonance Spectroscopy.

Angelo Anthony Lamola (*Chemistry*). S.B., Massachusetts Institute of Technology, 1961.

Thesis: I. Radiationless Transitions in Organic Systems: Determination of Intersystem Crossing in Fluid Solution.
II. Intramolecular Energy Transfer Between Non-Conjugated Chromophores in Some Model Compounds.

James Daniel Larson (*Physics*). S.B., Massachusetts Institute of Technology, 1957; M.S., California Institute of Technology, 1959.

Thesis: Gamma Radiation from the Alpha Particle Bombardment of C^{12} .

DOCTOR OF PHILOSOPHY—*continued*

Arnold Vincent Lesikar (*Physics*). B.A., Rice University, 1958.

Thesis: Magnetic Hyperfine Interactions of Sm^{149} in Ferromagnetic SmAl_2 .

Milton Irwin Levenberg (*Chemistry and Physics*). B.S., Illinois Institute of Technology, 1958.

Thesis: I. Preliminary Studies of the Chain-Transfer Constant of Methylferrocene.

II. Protonation of Metallocenes.

III. An Analysis of the N.M.R. Spectra of Substituted Ferrocenes.

IV. Experimental and Theoretical Studies of the Charge Distribution on the Ferrocenyl Carbanyl Carbonium Ion.

Gerald Richard Liebling (*Chemistry and Physics*). B.S., Polytechnic Institute of Brooklyn, 1959.

Thesis: I. Study of Molecular Orbital Degeneracy in C_5H_5 .

II. The Crystal and Molecular Structure of Cyclopentadiene.

Ericson John List (*Applied Mechanics and Mathematics*). B.E. (Hons), University of Auckland, 1961; B.Sc., 1962; M.E., 1962.

Thesis: The Stability and Mixing of a Density-Stratified Horizontal Flow in a Saturated Porous Medium.

Robert Shing-Hei Liu (*Chemistry*). B.S., Howard Payne College, 1961.

Thesis: Photosensitized Reactions of Conjugated Dienes.

Robert James Macek (*Physics*). B.S., South Dakota State College, 1958.

Thesis: A Search for the Process $\text{K}^+ \rightarrow \pi^+ + \pi^0 + \gamma$.

Rajeshwar Kumar Malhotra (*Applied Mechanics and Mathematics*). I.Sc., Ewing Christian College (Allahabad, India), 1956; B.S., Oregon State College, 1959; M.S., Cornell University, 1961.

Thesis: Free and Forced Oscillations of a Class of Self-Excited Oscillators.

J. Howard Marshall III (*Physics*). B.S., California Institute of Technology, 1957.

Thesis: $\text{K}^+ \Lambda$ Photoproduction from Hydrogen Near 90° in the Center of Mass.

Sami Faiz Masri (*Mechanical Engineering*). B.S., University of Texas, 1960; M.S., 1961; M.S., California Institute of Technology, 1962.

Thesis: Analytical and Experimental Studies of Impact Dampers.

Paul G. Mikolaj (*Chemical Engineering*). B.Ch.E., Fenn College, 1958; M.S., University of Rochester, 1960.

Thesis: An X-Ray Diffraction Study of the Structure of Fluid Argon.

DOCTOR OF PHILOSOPHY—*continued*

Robert Loomis Millette (*Biochemistry and Chemistry*). B.S., Oregon State College, 1954; M.S., 1959.

Thesis: Hemoglobin Synthesis in the Maturing Reticulocyte.

Charles Gray Montgomery (*Physics*). B.A., Yale University, 1959; M.S., California Institute of Technology, 1961.

Thesis: One-Dimensional Excitons in Organic Molecular Crystals.

Milton Edward Morrison (*Chemical Engineering*). B.S., Iowa State University, 1961; M.S., California Institute of Technology, 1962.

Thesis: I. The Rate and Mechanism of the Air Oxidation of Parts-per-Million Concentrations of Nitric Oxide.

II. The Quantitative Determination of Parts-per-Million Quantities of Nitrogen Dioxide in Nitrogen, Oxygen, and up to 75 p.p.m. of Nitric Oxide by Electron-Capture Detection in Gas Chromatography.

Werner Alfred Mukatis (*Chemistry*). B.S., Northwestern University, 1960.

Thesis: Variation of the Conformation of the Active Site of Alpha-Chymotrypsin:

I. Hydrogen Ion Concentration Studies.

II. Electrolyte Concentration Studies.

Eugene Byrd Nebeker (*Chemical Engineering and Nuclear Engineering*). B.S., Stanford University, 1959; M.S., California Institute of Technology, 1960.

Thesis: Thermodynamic Study of Coupled Chemical Reactions.

George Carroll Nieman (*Chemistry*). B.S., Carnegie Institute of Technology, 1961.

Thesis: Triplet Exciton Phenomena in Benzene Crystals.

Maurice Joseph Nugent, Jr. (*Chemistry and Economics*). B.A., University of Colorado, 1961.

Thesis: I. Beta-Ferrocenylalkyl Carbonium Ions.

II. The Stereospecific Syntheses of the *Exo* and *Endo* Isomers of Alpha-Hydroxymethyl-1, 2-Tetramethylene-ferrocene.

Robert Francis Pawula (*Electrical Engineering*). B.S., Illinois Institute of Technology, 1960; M.S., Massachusetts Institute of Technology, 1961.

Thesis: Generalizations and Extensions of the Fokker-Planck-Kolmogorov Equations.

Jerry Clifford Peck (*Aeronautics and Mathematics*). B.S., California Institute of Technology, 1957; M.S., 1958; Ae.E., 1959.

Thesis: Plane-Strain Diffraction of Transient Elastic Waves by a Circular Cavity.

DOCTOR OF PHILOSOPHY—*continued*

Roger L. Peterson (*Chemistry*). B.S., Northwestern University, 1960.

Thesis: The Alpha-Chymotrypsin-Catalyzed Hydrolyses of Derivatives of N-Acetyl-L-phenylalanine Methyl Ester and Methyl Hippurate.

Kenneth L. Servis (*Chemistry*). B.S., Purdue University, 1961.

Thesis: I. The Formolysis of AllylcarbinyI Tosylates.

II. Studies of Fluoroalkadienes by Nuclear Magnetic Resonance Spectroscopy.

III. The Dissociation Constants of Methyl Alkyl Ketone Cyanohydrins.

Robert Victor Sharp (*Geology and Paleontology*). B.S., California Institute of Technology, 1956; M.S., 1961.

Thesis: Geology of the San Jacinto Fault Zone in the Peninsular Ranges of Southern California.

Neil Rolfson Sheeley, Jr. (*Physics*). B.S., California Institute of Technology, 1960.

Thesis: Measurements of Solar Magnetic Fields.

Frank Thomas Snively (*Physics and Economics*). B.S., Antioch College, 1959; M.S., California Institute of Technology, 1961.

Thesis: Mössbauer Effect Investigations of the Magnetic Properties of Single Crystal Thulium Ethylsulphate.

Zoltán Géza Soos (*Chemistry and Physics*). A.B., Harvard College, 1962.

Thesis: I. Theory of the Linear Heisenberg Antiferromagnet.

II. Phonon Effects in Triplet Exciton Theory.

Walter Albert Specht, Jr. (*Electrical Engineering and Physics*). B.S., California Institute of Technology, 1957.

Thesis: I. Modes in Spherical-Mirror Resonators.

II. Dominant Mode Calculations in Output-Coupled Infinite Strip Mirror Resonators.

Jerold Lindsay Swedlow (*Aeronautics*). B.S., California Institute of Technology, 1957; M.S., Stanford University, 1960.

Thesis: The Thickness Effect and Plastic Flow in Cracked Plates.

Harry Warren Townes (*Mechanical Engineering*). B.S., Brown University, 1959; M.S., California Institute of Technology, 1960.

Thesis: Flow Over a Rough Surface.

DOCTOR OF PHILOSOPHY—*continued*

Laurence Munro Trafton (*Astronomy and Physics*). B.S., California Institute of Technology, 1960; M.S., 1961.

Thesis: A Study of the Energy Balance in the Atmospheres of the Major Planets.

Charles William Van Atta (*Aeronautics*). B.S.E., University of Michigan, 1957; M.S.E., 1958.

Thesis: Spiral Turbulence in Circular Couette Flow.

Giulio Venezian (*Engineering Science*). B. Eng. Phys., McGill University, 1960.

Thesis: I. Fluid Flow in a Precessing Spherical Cavity.

II. Electromagnetic Radiation from an Expanding Sphere in a Magnetic Field.

Richard Bernard Wade (*Mechanical Engineering*). B.Sc.Eng., University of Natal, 1958; M.Sc.Eng., 1960.

Thesis: Investigations on Cavitating Hydrofoils.

Donald Harris Webb (*Physics and Mathematics*). B.S., Michigan State College, 1953; M.S., University of California (Los Angeles), 1955.

Thesis: Multiple-Transition Effects in Superconducting Tin Whisker Crystals.

Donald Martin Wiberg (*Mechanical Engineering*). B.S., California Institute of Technology, 1959; M.S., 1960.

Thesis: Optimal Feedback Control of Spatial Xenon Oscillations in a Nuclear Reactor.

John Fergus Wilkinson (*Mathematics and Economics*). B.S., California Institute of Technology, 1961.

Thesis: A Coloring Problem Related to König's Theorem.

James Sai Wing Wong (*Mathematics*). B.S., Baylor University, 1960.

Thesis: Generalizations to the Converse of Contraction Mapping Principle.

Joe William Woodward (*Chemical Engineering*). B.S., Texas Agricultural and Mechanical College, 1960; M.S., California Institute of Technology, 1961.

Thesis: A Study of the Effects of Dislocation Density and Crystal Orientation on the Kinetics of the Catalyzed Oxidation of Ethylene over a Single Crystal of Silver.

Jain-Ming Wu (*Aeronautics*). B.S., National Taiwan University, 1955; M.S., California Institute of Technology, 1959.

Thesis: A Satellite Theory and Its Applications.

Prizes and Awards

DON BAXTER, INC., PRIZES

Awarded for outstanding undergraduate research in chemistry.

First prize: HARRY J. SIMPSON, JR.

Second prizes: MELVIN M. STEPHENS, ROBERT M. SWEET

Honorable mention: MAYNARD V. OLSON, GARY W. SCOTT

EASTMAN KODAK SCIENTIFIC AWARDS IN CHEMISTRY

Awarded to doctoral students on the basis of outstanding contributions and progress either in graduate studies and research or in teaching.

First prize: JOSEPH B. LAMBERT

Honorable mention: DAVID J. DUCHAMP,

WILLIAM G. HERKSTROETER, BALDOMERO M. OLIVERA

DAVID JOSEPH MACPHERSON PRIZE

Awarded to the graduating senior in engineering who best exemplifies excellence in scholarship.

MANUEL ANDRES HUERTA

GEORGE W. GREEN MEMORIAL AWARD

Awarded to the undergraduate student who, in the opinion of the Division Chairmen, has shown outstanding ability and achievement in the field of creative scholarship.

(Recipient to be announced)