CALIFORNIA INSTITUTE OF TECHNOLOGY

SIXTY-SEVENTH ANNUAL

COMMENCEMENT EXERCISES

FRIDAY AFTERNOON AT FOUR-THIRTY O'CLOCK
JUNE NINTH, NINETEEN SIXTY-ONE
ACADEMIC PROCESSION

Chief Marshal: HARVEY EAGLESON, Ph.D.
Assistant Marshals: DONALD S. CLARK, Ph.D.
                JAMES C. DAVIES, Ph.D.
                RODMAN W. PAUL, Ph.D.

Division I
CANDIDATES FOR THE DEGREE OF BACHELOR OF SCIENCE
CANDIDATES FOR THE DEGREE OF MASTER OF SCIENCE IN SCIENCE
CANDIDATES FOR THE DEGREE OF MASTER OF SCIENCE IN ENGINEERING
CANDIDATES FOR THE ENGINEER'S DEGREE
CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Division II
THE FACULTY OF THE CALIFORNIA INSTITUTE
THE CHAIRMEN OF DIVISIONS
AND DIRECTORS OF LABORATORIES
THE TRUSTEES OF THE CALIFORNIA INSTITUTE
THE REPRESENTATIVE OF THE UNITED STATES AIR FORCE
THE COMMENCEMENT CHAPLAIN
THE PRESIDENT OF THE CALIFORNIA INSTITUTE
THE COMMENCEMENT SPEAKER
THE HONORARY CHAIRMAN OF THE BOARD OF TRUSTEES

PROGRAM

Presiding: JAMES R. PAGE, LL.D.
Honorary Chairman of the Board of Trustees

Music by the Caltech Band

Prelude and Processional March
Organist: James H. Shearer, A.R.C.M., A.R.C.O.

Invocation
The Reverend John Baker, B.S., S.T.B.
The Neighborhood Church, Pasadena

Commencement Address
"Birds, Bionics and Beliefs"
John L. Burns, Sc.D.
President, Radio Corporation of America
ACADEMIC PROCESSION

Chief Marshal: Harvey Eagleson, Ph.D.
Assistant Marshals: Donald S. Clarke, Ph.D.
James C. Davies, Ph.D.
Rodman W. Paul, Ph.D.

Division I
CANDIDATES FOR THE DEGREE OF BACHELOR OF SCIENCE
CANDIDATES FOR THE DEGREE OF MASTER OF SCIENCE IN SCIENCE
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Invocation
The Reverend John Baker, B.S., S.T.B.
The Neighborhood Church, Pasadena

Commencement Address
"Birds, Bionics and Beliefs"
John L. Burns, Sc.D.
President, Radio Corporation of America
PROGRAM—continued

CONFERRING OF DEGREES
BY
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, by
PAUL CONANT EATON, A.M.
Dean of Students

For the degree of Master of Science in Science, by
LEVERETT DAVIS, JR., Ph.D.
Member of the Committee on the Course in Science

For the degree of Master of Science in Engineering, by
DAVID S. WOOD, Ph.D.
Chairman of the Committee on the Course in Engineering

For the Engineer's degree, by
FREDERIC BOHNENBLUST, Ph.D.
Dean of Graduate Studies

For the degree of Doctor in Philosophy, by
DEAN BOHNENBLUST

COMMISSIONING OF AIR FORCE RESERVE OFFICERS
Presentation of Cadets, by
MAJOR FRANCIS R. MACKENZIE, B.S., M.B.A.
Professor of Air Science

Oath of Office and award of Certificate of Commission as
Second Lieutenant in the Air Force Reserve, by
BRIGADIER GENERAL WILLIAM G. HIPPS
United States Air Force

CONCLUDING REMARKS
PRESIDENT DuBRIDGE

BENEDICTION
THE REVEREND MR. BAKER

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

RECESIONAL MARCH
CONFERRING OF DEGREES

BY

LEE A. DU BRIDGE. Ph.D., Sc.D.
President of the California Institute of Technology

PRESENTATION OF CANDIDATES FOR DEGREES

For the degree of Bachelor of Science, by
PAUL CONANT EATON, A.M.
Dean of Students

For the degree of Master of Science in Science, by
LEVERETT DAVIS, JR., Ph.D.
Member of the Committee on the Course in Science

For the degree of Master of Science in Engineering, by
DAVID S. WOOD, Ph.D.
Chairman of the Committee on the Course in Engineering

For the Engineer's degree, by
FREDERIC BOHNENBLUST, Ph.D.
Dean of Graduate Studies

For the degree of Doctor in Philosophy, by
DEAN BOHNENBLUST

COMMISSIONING OF AIR FORCE RESERVE OFFICERS

Presentation of Cadets, by
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Professor of Air Science

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United States Air Force

CONCLUDING REMARKS

PRESIDENT DU BRIDGE

BENEDICTION

THE REVEREND MR. BAKER

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

RECESSIONAL MARCH
Candidates for Degrees

BACHELOR OF SCIENCE IN SCIENCE


Richard Harold Drew, Junction City, Oregon. Physics.

Herman Edward Ebb, Santa Monica, California. Physics.

Ronald Edward Ergebnis, McCook, Nebraska. Chemistry.

Glenn Edward Ficke, Santa Monica, California. Physics.


William Henry Fair, Cincinnati, Ohio. Physics.

William Charles Ficht, Long Beach, California. Chemistry.


Stevens Edward Fitch, Oak Park, California. Physics.

Stanley Edward Fiske, Kansas City, Missouri. Mathematics.


Stevens Edward Fitch, Oak Park, California. Physics.


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Stevens Edward Fitch, Oak Park, California. Physics.


Stevens Edward Fitch, Oak Park, California. Physics.


Stevens Edward Fitch, Oak Park, California. Physics.


Candidates for Degrees

BACHELOR OF SCIENCE IN SCIENCE

Clark Taher Basso, Portland, Oregon. Mathematics.
Shelby Lee Brunette, Odessa, Texas. Mathematics.
Edward Thomas Evans, Oakland, California. Chemistry.
Ronald Wallace Gettledam, Orange, California. Mathematics.
Ronald Wallace Gettledam, Orange, California. Mathematics.
Thomas Lain Gordon, Los Angeles, California. Mathematics.
Leland Hamilton Hartwell, Glendale, California. Biology.
Stephen Herman Nielson, San Leandro, California. Mathematics.
Walter Richard Helms, Campbell, California. Chemistry.
Bret Hold, Monrovia, California. Physics.
Garrett Martin Hiler, Great Falls, Montana. Chemistry.
Ernest Geoffrey Jasien, Los Angeles, California. Mathematics.
Arnold Richard Jones, Manhattan, Kansas. Chemistry.
David Walter Kentl, Salina, Kansas. Chemical Engineering.
John James Kennedy, El Monte, California. Chemical Engineering.
James Seward Lindsey, Santa Monica, California. Physics.
Peter Iris Lippman, Los Angeles, California. Physics.
David Scott Leobba, Lima, Ohio. Physics.
John E. Lehman, Hillsdale, New Jersey. Chemistry.

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

BACHELOR OF SCIENCE IN SCIENCE

Ivo Lucchita, Pasadena, California. Geology.
Robert Edward Lubbeste, Ran Gallii, Florida. Chemical Engineering.
Peter Conrad Mayer, La Jolla, California. Physics.
Lawrence Wayne McCarthy, West, California. Geology.
Paul Daniel McCurrild, San Gabriel, California. Physics.
Miles W. McLeary, Dayton, Ohio. Astronomy.
Tabor Benson, Portland, Oregon. Chemistry.
Ira Lippman, Los Angeles, California. Physics.
Harrison Hartwell, Glendale, California. Chemistry.
Leandro DeCruz, California. Physics.
James Seward Lindsey, Santa Monica, California. Physics.

Students whose names appear in boldface type are being graduated in accordance with a vote of the Faculty.
BACHELOR OF SCIENCE IN ENGINEERING

Guy Joe Andrews, Clovis, New Mexico.
James B. Blackmon, Charlotte, North Carolina.
Ralph Eric Breidhobst, Los Angeles, California.
Kendall Francis Casey, Jr., Honolulu, Hawaii.
James Quinone Cox, Hartford, California.
DelMar Edwin Curtis, Scotia, California.
Kirk Montell Dawson, Los Angeles, California.
Rodney Devon Dokken, Sacramento, California.
Joel King Donnelly, Santa Monica, California.
Douglas Kenneth Fenwick, Sacramento, California.
Donald Bessell Forrest, Larchmont, New York.
John Michael Haworth, Reseda, California.
Lewis William Hemphill, Eugene, Oregon.
Anthony Itsui Iwata, Los Angeles, California.
Peter Kastan, New York, New York.
Malcolm Lee Kinter, Phoenix, Arizona.
Ronald Allan Kleban, Los Angeles, California.
Curtis Frederick Kuebler, Los Angeles, California.
Sidney Leibovich, Chicago, Illinois.
Milton Scott Lindner, Denver, Colorado.
John Lawrence Long, Cuyahoga Falls, Ohio.
Roy Hiroshi Makino, Honolulu, Hawaii.
Ian Daniel Marks, Los Angeles, California.
Wayne Albert Money, Glendale, California.
William George Laidlaw, University of Western Ontario, 1959.
Richard Steve Tunder, B.S., Case Institute of Technology, 1957.
Frederic Andrew Wallace, A.B., Harvard University, 1958.
Milton Scott Lindsay, Denver, Colorado.
John Lawrence Long, Cuyahoga Falls, Ohio.
Roy Hiroshi Makino, Honolulu, Hawaii.
Ian Daniel Marks, Los Angeles, California.
Wayne Albert Money, Glendale, California.
J. Frederick Bartlett, B.S., Yale University, 1958.
Lawrence Paul Oliver, B.A., Pomona College, 1960.
Howard Martin Stainton, B.S., Queens College of the City of New York, 1955.
Laurence Munro Trubben, B.S., California Institute of Technology, 1960.
Chemistry
William George Laidlaw, B.S., University of Western Ontario, 1959.
Ronald Norris Clazie, B.S., University of California, 1960.
Kwang-chou Hwang, B.S., National Taiwan University, 1955.
James Stephen Tyler, B.S., California Institute of Technology, 1953.
Geology
George Donald Garlick, B.S., University of the Witwatersrand, 1957.
Geophysics
Shawn Biehler, B.S., University of the Witwatersrand, 1957.
Andrew Honore Jazwinski, B.S., Pennsylvania State University, 1959.
Geochemistry
James Louis Aronson, B.A., Rice Institute, 1959.
BACHELOR OF SCIENCE IN ENGINEERING

Guy Joe Andrews, Clovis, New Mexico.
James B. Blackmon, Charlotte, North Carolina.
Ralph Eric Breederhorst, Los Angeles, California.
Kendall Francis Casey, Jr., Honolulu, Hawaii.
James Quinton Cox, Hartford, California.
DelMar Edwin Curtis, Scotia, California.
Kirk Montell Dawson, Los Angeles, California.
Rodney Devon Dokken, Sacramento, California.
Joel King Donnelly, Santa Monica, California.
Douglas Kenneth Fenwick, Sacramento, California.
John Michael Haworth, Reseda, California.
Lewis William Hemphill, Eugene, Oregon.
Anthony Itsu Iwata, Los Angeles, California.
Peter Kastan, New York, New York.
Malcolm Lee Kinter, Phoenix, Arizona.
Kirk Montell Dawson, Los Angeles, California.
Sidney Leibovich, Chicago, Illinois.
Milton Scott Lindner, Denver, Colorado.
Charles Allen Ray, San Gabriel, California.
Dwain Joe Reed, Woodburn, Oregon.
Robert Maher Ruby, Long Beach, California.
Michael Richard Ruecker, Phoenix, Arizona.
William Keith Shubert, Morenci, Arizona.
Charles Jared Siegel, Lake Forest, Illinois.
Stephan David Sholin, San Martin, California.
John Robert Smith, Los Angeles, California.
John Paul Stenbit, Palo Alto, California.
Kayauro George Sugahara, New Rochelle, New York.
Samuel Roy Suit, III, Charlotte, North Carolina.
Byron Fletcher Summers, Jr., El Centro, California.
Thomas Alfred Tisch, Chico, California.
David Price Turner, Berkeley, California.
Gary Orville Wats, San Diego, California.

MASTER OF SCIENCE IN SCIENCE

Astronomy

I. Frederick Bartlett, B.S., Yale University, 1958.
Lawrence Paul Oliver, B.A., Pomona College, 1960.
Lewis Lofty Smith, A.B., University of California, 1960.
Howard Martin Staehle, B.S., Queens College of the City of New York, 1955.
Lawrence Monroe Traften, B.S., California Institute of Technology, 1960.

Chemistry

William George Landau, B.S., University of Western Ontario, 1959.
Richard Steve Tundre, B.S., Case Institute of Technology, 1957.
Frederic Andrew Wallace, A.B., Harvard University, 1959.

Chemical Engineering

Ronald Norrie Calzat, B.S., University of California, 1960.
Kwang-chon Hwang, B.S., National Taiwan University, 1955.

Geology

George Donald Garlick, B.S., University of the Witwatersrand, 1957.
George August Sellers, B.S., Pennsylvania State University, 1959.
John Watson, B.S., M.S., University of Oklahoma, 1959.

Geochemistry

Michael Bentley Duke, B.S., California Institute of Technology, 1957.

Geophysics

Shawn Busheer, B.S.E., Princeton University, 1958.
Andrew Homonk Jarzinski, B.S., Pennsylvania State University, 1959.
Maung Sama Maung, B.Sc., University of Rangoon, 1958.
STUART BLACKTON SAVAGE.

ERIK JAAK SLACHMUYDERS.

FURMAN YATES SORRELL, JR.

WILLIAM WARREN DAVID SMITH.

VICTOR LU HSUNG YEN.

ARLEN WILLIAM BELL.

MATHEMATICS

RICHARD EM BALHAM. B.S., University of Illinois, 1959.

PHYSICS


JOSEPH MICHAEL CASLEY. B.S., California Institute of Technology, 1960.

ROBERT JOSEPH HINCH. B.S., Massachusetts Institute of Technology, 1958.

THOMAS KINTZING HINTI. B.A., Pomona College, 1959.

CHARLES GRAY MONTGOMERY. B.A., Yale University, 1959.

JOHN MARTIN POINDEXTER. B.S., United States Naval Academy, 1958.

WILLIAM LEE SIMMONS. B.S., Syracuse University, 1959.

GEORGE WARREN SIMON. A.B., Grinnell College, 1955.

FRANK THOMAS SIVELTY. B.S., Antioch College, 1959.


MARK HAY WAGNER. A.B., Miami University, 1958.

AERONAUTICS

TERRY LOUIS BABITZEN. B.S., Louisiana State University, 1959.

JOHN CURT CASEY. B.S., Purdue University, 1955.

RICHARD F. DEMPSEY. B.S., Carnegie Institute of Technology, 1956.

EDWARD MARTIN DUNYER. B.S., Tri-State College, 1960.

HAROLD LEE GIER. B.S., California Institute of Technology, 1960.

ARTHUR BENJAMIN GRIFFIN. Jr. B.S.E., Princeton University, 1960.

RICHARD JENSON. B.S., California Institute of Technology, 1960.

DOUGLAS STODDARD JOHNSON. B.S., United States Military Academy, 1956.

JAMES MILTON KALLIN. B.S.E.S., Johns Hopkins University, 1960.

WILLIAM EDWARD KIRCHER. B.S., University of California, 1956.

MICHAEL ERIC LORD. B.S., University of Oklahoma, 1959.


STUART BLACKTON SAVAGE. B.E., McGill University, 1960.

ERIK JAAK SUCHEMYSKIL. Cert., Training Center for Experimental Aerodynamics, 1960.

WARREN DAVID SMITH. B.S., Louisiana State University, 1960.


WILLIAM K. TABATA. B.S., Purdue University, 1958.

JAMES ALFRED WOODWARD. B.S., California Institute of Technology, 1960.

VICTOR LU HSUNG YEN. B.S., University of redlands, 1960.

CIVIL ENGINEERING

ARLEN WILLIAM BELL. B.S., California Institute of Technology, 1956.

CHARLES WILLIAM CARR. B.S., Loyola University of Los Angeles, 1960.

SHIN-KIEN CHOW. B.S.A., National Taiwan University, 1957.

MASTERS OF SCIENCE IN ENGINEERING

DONALD PAUL DUBOIS. B.S., State College of Washington, 1957.

MALVIN E. HOLLAND. B.S., California Institute of Technology, 1956.

PAUL HAMILTON KING. B.S., California Institute of Technology, 1957.

ROBERT CHING-YES KOH. B.S., California Institute of Technology, 1960.


RAYMOND MYLES THOMPSON. B.E., Auckland University, 1956; B.Sc., Wellington Univer-

ITY COLLEGE, 1960.

JOHN ZEITIK, Jr. B.C.E., City College of New York, 1960.

ELECTRICAL ENGINEERING

CHARLES A. ALLEN. B.S., University of Pittsburgh, 1956.


GEORGE WOOD BRADER, Jr. B.S.E., Princeton University, 1960.

DAVID JORDAN BLASION. B.S., California Institute of Technology, 1960.

DAVID WILLIAM BUTTFIELD. B.S., California Institute of Technology, 1960.

PETER OGOCODE CLARK. B.E., McGill University, 1960.

JOSEPH DELMA COULON. III. B.S., California Institute of Technology, 1960.


ALAN JEROME DEVILIN. B.S., Louisiana Polytechnic Institute, 1960.

RICHARD B. FRADILLA. B.S., University of California, 1957.

ALLAN BURTON FREEMAN. B.E.E., City College of New York, 1960.


S. B., S. M., Purdue University, 1960.


MASTEr OF SCIENCE IN SCIENCE

Mathematics
Richard Em Bahnem, B.S., University of Illinois, 1959.

Physics
Charles Gray Montgomery, B.A., Yale University, 1959.
John Marian Poindexter, B.S., United States Naval Academy, 1958.
Warren Lee Simmons, B.S., Syracuse University, 1959.
Frank Thomas Snively, B.S., Antioch College, 1959.
Mark Hoy Wagner, A.B., Miami University, 1958.

MASTEr OF SCIENCE IN ENGINEERING

Aeronautics
Terry Louis Babineaux, B.S., Louisiana State University, 1959.
John Carl Casey, B.S., Purdue University, 1955.
Ronald F. Draper, B.S., Carnegie Institute of Technology, 1956.
Arthur Benjamin Griffin, Jr., B.S.E., Princeton University, 1960.
Richard Jenson, B.S., California Institute of Technology, 1960.
Douglas Stoddard Johnson, B.S., United States Military Academy, 1956.
James Milton Kallin, B.S.E., Johns Hopkins University, 1960.
William Edward Kerisher, B.S., University of California, 1956.
Michael Eris Lord, B.S., University of Oklahoma, 1959.
Enri Jaak Stachymyslaw, Cert., Training Center for Experimental Aerodynamics, 1960.
Warren David Smith, B.S., Louisiana State University, 1960.
Furman Yates Sorrell, Jr., B.S., North Carolina State College of Agriculture and Engineer-
ing, 1950.
William K. Tabata, B.S., Purdue University, 1958.
Victor Lu Heng Yoo, B.S., University of Redlands, 1960.

Civil Engineering
Arlen William Bell, B.S., California Institute of Technology, 1956.
Shin-kien Chow, B.S.A., National Taiwan University, 1957.

MASTEr OF SCIENCE IN ENGINEERING

Donald Paul Dubois, B.S., State College of Washington, 1957.
Melvin E. Holland, B.S., California Institute of Technology, 1959.
Paul Hamilton King, B.S., California Institute of Technology, 1957.
Raymond Mylon Thompson, B.E., Auckland University, 1956; B.Sc., Wellington Univer-
sity College, 1960.
John Zlotnik, Jr., B.C.E., City College of New York, 1960.

Electrical Engineering
Charles A. Allen, B.S., University of Pittsburgh, 1956.
George Wood Bradley, Jr., B.S.E., Princeton University, 1960.
Alan Jerome Bivins, B.S., Louisiana Polytechnic Institute, 1956.
Richard F. Fradella, B.S., University of California, 1957.
Allan Burton Frenkel, B.S.E., City College of New York, 1960.
Peter A. Johansen, B.S., California Institute of Technology, 1960.
Vassilios Kardentzos, B.E., University of New Zealand, 1957.
Pierre Jean Krikelis, Ing., Physics, University of Liege, 1959.
Allan Laderman, B.S., California Institute of Technology, 1960.
Donald Ross Lampre, B.S., Johns Hopkins University, 1960.
Delano Rubin Lawin, B.S., Monash University, 1960.
Michael Martin Mann, B.S., California Institute of Technology, 1960.
Kevin Frederick O'Brien, B.E., National University of Ireland, 1959.
Alan S. Pine, B.S., University of California, 1960.
Herman Lee Renger, B.S., California Institute of Technology, 1959.
Steven Emanuel Schwartz, B.S., California Institute of Technology, 1959.
### Master of Science in Engineering—continued

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suryanarayana Rao Varanasi</td>
<td>California Institute of Technology, 1960</td>
</tr>
<tr>
<td>Louis Camille Rochelle</td>
<td>B.S., Pennsylvania State University, 1959</td>
</tr>
<tr>
<td>Martin Wolff</td>
<td>California Institute of Technology, 1960</td>
</tr>
<tr>
<td>Frank William</td>
<td>California Institute of Technology, 1960</td>
</tr>
<tr>
<td>Andre Jacques Tesnière</td>
<td>B.S., California Institute of Technology, 1960</td>
</tr>
<tr>
<td>K. Stanton Allen</td>
<td>California Institute of Technology, 1960</td>
</tr>
<tr>
<td>Etienne Macke</td>
<td>University of Detroit, 1959</td>
</tr>
<tr>
<td>Da vid Bennet Morse</td>
<td>California Institute of Technology, 1960</td>
</tr>
<tr>
<td>William Curson Rochelle</td>
<td>B.S., Notre Dame University, 1959</td>
</tr>
<tr>
<td>Sharat Chandra Rastogi</td>
<td>California Institute of Technology, 1960</td>
</tr>
<tr>
<td>Glenn Edwin Schweitzer</td>
<td>Pennsylvania State University, 1959</td>
</tr>
<tr>
<td>Thomas Eugene Bowman</td>
<td>California Institute of Technology, 1960</td>
</tr>
<tr>
<td>John Michael Kaflhe</td>
<td>United States Military Academy, 1956</td>
</tr>
<tr>
<td>Herman Gnuehr Hartung</td>
<td>California Institute of Technology, 1960</td>
</tr>
<tr>
<td>Edward Gerald Hauptmann</td>
<td>University of Alberta, 1960</td>
</tr>
<tr>
<td>John Charles Kallfelz</td>
<td>B.S., California Institute of Technology, 1956</td>
</tr>
<tr>
<td>Howard Wng</td>
<td>California Institute of Technology, 1957</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>University of Colorado, 1956</td>
</tr>
<tr>
<td>Mechanical Engineer</td>
<td>California Institute of Technology, 1958</td>
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### Civil Engineer

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<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Jean Maurice Mezitis</td>
<td>California Institute of Technology, 1957</td>
</tr>
<tr>
<td>Robert Hugh Taylor, Jr.</td>
<td>B.S., California Institute of Technology, 1958</td>
</tr>
<tr>
<td>Theodore Edmund Lang</td>
<td>California Institute of Technology, 1957</td>
</tr>
<tr>
<td>Civil Engineer</td>
<td>California Institute of Technology, 1958</td>
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</tbody>
</table>

### Mechanical Engineer

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<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Charles Albert Boden</td>
<td>B.S., California Institute of Technology, 1956</td>
</tr>
<tr>
<td>Harvey N. Kreitberg</td>
<td>B.E., Rensselaer Polytechnic Institute, 1958</td>
</tr>
<tr>
<td>Mechanical Engineer</td>
<td>California Institute of Technology, 1958</td>
</tr>
</tbody>
</table>

### Electrical Engineer

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<tr>
<th>Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Aeronautical Engineer</td>
<td>University of Minnesota, 1957</td>
</tr>
<tr>
<td>Delbert Harold Jacoby</td>
<td>U.S.A.F. B.S., United States Military Academy, 1955</td>
</tr>
<tr>
<td>Louis Kingsland, Jr.</td>
<td>B.S., California Institute of Technology, 1960</td>
</tr>
<tr>
<td>James Ovazz E.</td>
<td>U.S.A.F. B.S., United States Air Force Academy, 1959</td>
</tr>
<tr>
<td>Timothy Lay Sullivan</td>
<td>B.A.E., University of Detroit, 1959</td>
</tr>
<tr>
<td>Howard Wng</td>
<td>California Institute of Technology, 1957</td>
</tr>
<tr>
<td>Mechanical Engineer</td>
<td>California Institute of Technology, 1958</td>
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<td>John Alan Cooper</td>
<td>B.A.E., University of Minnesota, 1957</td>
</tr>
<tr>
<td>Delbert Harold Jacoby</td>
<td>U.S.A.F. B.S., United States Military Academy, 1955</td>
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<td>B.S., California Institute of Technology, 1960</td>
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<td>James Ovazz E.</td>
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<td>California Institute of Technology, 1958</td>
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### Engineer’s Degree

<table>
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<th>Name</th>
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<td>John Alan Cooper</td>
<td>B.A.E., University of Minnesota, 1957</td>
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<td>John Charles Kallfelz</td>
<td>B.S., California Institute of Technology, 1956</td>
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<td>Theodore Edmund Lang</td>
<td>California Institute of Technology, 1957</td>
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<td>Howard Wng</td>
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<td>Charles Albert Boden</td>
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</table>
### Electrical Engineering—continued

- John Frederick South, B.S., California Institute of Technology, 1960.
- Walter Albert Specht, Jr., B.S., California Institute of Technology, 1957.
- Keith Alan Taylor, B.S., California Institute of Technology, 1960.
- Donald Harvey Lamb, B.S., California Institute of Technology, 1960.
- Charles Benton Morse, B.S., Purdue University, 1958.

### Mechanical Engineering

- Suryanarayana Rao Varanasi, B.S., Banaras Hindu University, 1957.
- Louis Camille Roesch, B.S., University of California, 1959.
- Michael Elmer Slater, B.S., University of California, 1959.
- Philip Mwangi Githinji, B.S., University of California, 1960.

### Engineering Science

- Donald Harvey Lamb, B.A., Pomona College, 1959.
- Henry Luning, B.S., Purdue University, 1958.

### Chemical Engineering

- Martin Rafael Berkman, B.A., 1959; B.S., Rice Institute, 1960.
- Narain Mulchand Bhatia, B.E., Poona University, 1960.
- Donald Leslie Cronin, B.S., Rutgers University, 1960.
- Earl Leonard Deyo, B.S., Oklahoma State University, 1960.
- Joseph Carl Fees, B.E.S., Brigham Young University, 1958.
- Philip Mwangi Githinji, B.S., Purdue University, 1960.
- John Michael Kallibrec, B.S., United States Military Academy, 1956.
- Eric Demar Moore, B.S., Michigan State University, 1959.
- Shreerama Rangaswami, B.S., Banaras Hindu University, 1960.
- William Curran Rechelle, B.S., University of Texas, 1940.
- Glenn Edwin Schweitzer, B.S., United States Military Academy, 1953.
- Michael Elmser Slater, B.S., University of California, 1959.
DOCTOR OF PHILOSOPHY

II. Steric Requirements for Substrates of alpha-Chymotrypsin.

Daniel Kwok-yi Al (Aeronautics). B.S., Swarthmore College, 1953;
M.S., University of Wisconsin, 1954;
M.S., California Institute of Technology, 1956.
II. Small Perturbations in the Unsteady Flow of a Rared Gas Based on Grad's Thirteen Moment Approximation.

Norman Edward Albert (Chemistry and Biology). B.S., Polytechnic Institute of Brooklyn, 1954;

Harold Russell Almond, Jr. (Chemistry and Mathematics). B.S., Princeton University, 1956;
M.S., State University of Iowa, 1954.

Daniel Joseph Aron (Aeronautics and Mathematics). B.S., Polytechnic Institute of Brooklyn, 1954;
M.S., California Institute of Technology, 1956.
Thesis: Bandwidth Limitations and Variable Reactance Amplifiers.

B.S., State University of Iowa, 1954.

Thesis: Radiation of Seismic Surface-Waves from Finite Moving Sources.

Thesis: Photoproduction of Positive Pions from Hydrogen at Small Angles at Energies 700 to 1025 Mev.

Stuart Harris Bernstein (Genetics). M.S., University of Wisconsin, 1954.
II. The Asymptotic Expansion of Navier-Stokes Solutions in Three Dimensions for Large Distances.

Richard Michæl Aren (Electrical Engineering and Physics). B.S.E., Princeton University, 1956;
M.S., California Institute of Technology, 1957.

Peter Linton Crawley (Mathematics). B.S., California Institute of Technology, 1957;
M.S., 1958.
Thesis: A Decomposition Theory for Lattices without Chain Conditions.

John Kalman Dienes (Mechanical Engineering). B.A., Pomona College, 1957;
M.S., California Institute of Technology, 1958.

Daniel Joseph Collins (Engineering Sciences and Physics). B.A., Lehigh University, 1954;
M.S., California Institute of Technology, 1955.

James Harrison Boyden (Physics). B.S., Carnegie Institute of Technology, 1954;
M.S., 1955.
Thesis: Photoproduction of Positive Pions from Hydrogen at Small Angles at Energies 700 to 1025 Mev.

William Stephen Childress (Aeronautics and Mathematics). B.S.E., Princeton University, 1956;
M.S.E., 1958.

Gordon Lawrence Cann (Aeronautics and Physics). B.S., University of Toronto, 1949;
M.S., California Institute of Technology, 1956.
Thesis: Energy Transfer Processes in a Partially Ionized Gas.

Duane Floyd Dipprey (Mechanical Engineering and Physics). B.A., UCLA, 1956;
M.S., University of California, Los Angeles, 1956.
Thesis: Some Experimental and Theoretical Observations on a Configurational EMF.

Thesis: A Decomposition Theory for Lattices without Chain Conditions.

William Robert Dienes (Engineering Sciences and Physics). B.A., Lehigh University, 1954;
M.S., California Institute of Technology, 1955.

John Kalman Dienes (Mechanical Engineering). B.A., Pomona College, 1957;
M.S., California Institute of Technology, 1958.

Daniel Joseph Collins (Engineering Sciences and Physics). B.A., Lehigh University, 1954;
M.S., California Institute of Technology, 1955.

Peter Linton Crawley (Mathematics). B.S., California Institute of Technology, 1957;
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John Kalman Dienes (Mechanical Engineering). B.A., Pomona College, 1957;
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Duane Floyd Dipprey (Mechanical Engineering and Physics). B.A., UCLA, 1956;
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DOCTOR OF PHILOSOPHY

II. Steric Requirements for Substrates of alpha-Chymotrypsin.

Daniel Kwok (Aeronautics). B.S., Swarthmore College, 1953;
M.S., University of Wisconsin, 1954.
II. Small Perturbations in the Unsteady Flow of a Rarefied Gas Based on Grad's Thirteen Moment Approximation.

Norman Edward Albert (Chemistry and Biology). B.S., Polytechnic Institute of Brooklyn, 1954.

Harold Russell Almond, Jr. (Chemistry and Biology). B.S., Purdue University, 1944;
M.S., California Institute of Technology, 1946;
Ph.D., Indiana University, 1951.
II. L-Tyrosyl-L-Tyrosine Derivatives for the Detection of Transpeptidation in alpha-Chymotrypsin-Catalyzed Hydrolyses.
IV. The Apparent Ionization Constants of a Series of Phenylalanine Derivatives.


Richard Michael Aren (Electrical Engineering and Physics). B.S.E., Princeton University, 1956;
M.S., California Institute of Technology, 1957;
Ph.D., University of Wisconsin, 1959.

Thesis: Measurement of the f-P-Value of the Beta Decay of 64Cu.

Arl Ben-Menahem (Geophysics). M.Sc., The Hebrew University (Israel), 1954.
Thesis: Radiation of Seismic Surface-Waves from Finite Moving Sources.

Stuart Brook Bogor (Chemistry and Physics). B.A., Alfred University, 1956.
II. The Electron Paramagnetic Resonance Spectrum of Gas Phase O3(N2O5)3 and Its Pressure Dependence.

Harris Bernstein (Genetics). B.S., Purdue University, 1956.
II. Complementation Studies with Isotestic-Valine Mutants of Neurospora crassa.

Olaf Alexander Boedtker (Mechanical Engineering and Physics). Dipl. Ing., Zurich Institute of Technology, 1944;
M.S., California Institute of Technology, 1955.
Thesis: Delay Time in the Alphas to Gamma Transformation of Iron.
DOCTOR OF PHILOSOPHY


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I. A Study of the Tertiary Amine Precursors of Pyriline.


II. Rate of Electron Transfer between Vanadium (V) and Vanadium (IV) by Nuclear Magnetic Resonance.


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Douglas Wilson Shakel
Charles Jared Siegel
David Price Turner
Gary Orville Walla

*Distinguished Air Force Reserve Officers' Training Corps Graduate

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SIDNEY LEIBOVICH

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Established in 1946 by the late Samuel P. McKinney, M.D., as a memorial to his mother.

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Second Prize: RICHARD J. HARRIS
Third Prize: ROBERT W. LAWLER

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NEIL E. GRETSEY
ROBERT W. LAWLER
**Prizes and Awards—continued**

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Awarded annually to the graduating senior in engineering who best exemplifies excellence in scholarship.  
**Sidney Leibovich**

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**Robert W. Lawler**