

CALIFORNIA INSTITUTE OF TECHNOLOGY

ANNUAL COMMENCEMENT

June 5th, 1942 . . . 4:00 p. m.



PROGRAM

PROCESSIONAL MARCH

Pomp and Circumstance - - - - - *Elgar*
Triumphal March, Aida - - - - - *Verdi*

THE NATIONAL ANTHEM

THE CALIFORNIA INSTITUTE BAND

INVOCATION AND CHAPLAIN'S ADDRESS

THE REVEREND EUGENE CARSON BLAKE, D.D.

COMMENCEMENT ADDRESS

INDIA IN HER RELATION TO THE WAR AND THE POST-WAR WORLD

THE HONORABLE SIR GIR JA SHANKAR BAJPAI, K.B.E., C.I.E., C.B.E.

Agent General of the Government of India in the United States

CONFERRING OF DEGREES

Candidates presented by

FREDERIC W. HINRICHS, JR., A.M., *Dean of Upper Classmen*

WILLIAM N. LACEY, PH.D., *Member of the Committee on the Course in Science*

W. W. MICHAEL, B.S., *Chairman of the Committee on the Course in Engineering*

ROSCOE G. DICKINSON, PH.D., *Acting Dean of the Graduate School*

Degrees conferred on behalf of the

Trustees and Faculty by

ROBERT ANDREWS MILLIKAN, PH.D., LL.D., Sc.D., *Chairman of the Executive Council*

THE INSTITUTE IN WAR-TIME

DR. MILLIKAN

BENEDICTION

CANDIDATES FOR DEGREES

DOCTOR OF PHILOSOPHY

- SHERWIN PARKER AVANN (Mathematics), B.S., University of Washington, 1938; M.S., California Institute, 1940. *Thesis*: 1. Theory of the tau- and sigma-Functions to Semi-Modular Lattices. 2. Lattice Automorphisms.
- ANDREW ALM BENSON (Chemistry), B.S., University of California, 1939. *Thesis*: 1. Synthesis of Fluorinated Analogs of Thyroxine. 2. Oxidative Degradation of Sphingosine Analogs. 3. Inhibition in the Slow Muscle of Pecten.
- ROBERT ALONZO COOLEY, Lt. (j.g.), U. S. N. R.; (Chemistry), B.S., University of California, 1938. *Thesis*: Applications of Isotopes to Chemical Problems.
- CLARK WEBSTER GOULD, JR. (Chemistry), B.S., College of Puget Sound, 1938; M.S., California Institute, 1940. *Thesis*: 1. The Conversion of the 3-Chloro-2-butanols to 2, 3-Dichlorobutanes; Evidence for a Cyclic Chloronium Intermediate. 2. Brucine as a Reagent for Partially Resolving Mono- and Dibromoalkanes. 3. Alkylene Iodonium Ions.
- JOHN THOMAS HAYS, JR. (Chemistry), B.S., Montana State College, 1935; B.A., Oxford University, 1937; B.Sc., 1938. *Thesis*: 1. The Synthesis of the Three *dl*-beta-Pyridylalanines. 2. Studies on Substituted alpha-Hydroxy Amines. 3. Oxidations with Periodate. 4. Inhibition in the Slow Muscle of the Scallop.
- ERIK VILHELM HEEGAARD (Biology), B.S., Royal Polytechnic College, Copenhagen, 1936; M.S., California Institute, 1940. *Thesis*: Survey of the Specificity of Carboxylase.
- DONALD ELLIS HUDSON (Mechanical Engineering), B.S., California Institute, 1938; M.S., 1939. *Thesis*: Internal Friction in Metals.
- EDWARD B. LEWIS (Biology), B.A., University of Minnesota, 1939. *Thesis*: A Genetic and Cytological Analysis of a Tandem Duplication and Its Included Loci in *Drosophila Melanogaster*.
- JAMES FRANKLYN MEAD (Chemistry), A.B., Princeton University, 1938. *Thesis*: 1. The Benzoylation of Carbohydrates. 2. The Preparation of Fluorinated Analogues of Tyrosine and Thyronine. 3. The Preparation of Isomers and Analogues of Thyroxine with Relation to a Proposed Hypothesis of the Relationship between Structure and Thyroxine-like Activity. 4. A Carotenoid from Bovine Spinal Cord. 5. Studies on the Structure of Sphingosine. 6. The Length Muscles of the Holothurians (a Summary).
- WILLIAM FRANCIS NASH, JR. (Mechanical Engineering), B.S., California Institute, 1938; M.S., 1939. *Thesis*: An Investigation of Certain Phases of the Powder Metallurgy of Copper and of Silver Manganese Alloys.
- PETER LUKE NICHOLS, JR. (Chemistry), B.A., Texas Christian University, 1938. *Thesis*: 1. The Synthesis of D-Erythro and D-Threo-alpha-amino-beta, gamma-dihydroxy-n-butyric Acids. 2. The Resolution of *dl*-Amino Acids with Papain.
- EDWARD NOVITSKI (Biology), B.S., Purdue University, 1938. *Thesis*: Genetic and Cytological Studies on the Affinis Group of *Drosophila*.
- RICHARD MACY NOYES (Chemistry), A.B., Harvard College, 1939. *Thesis*: 1. The Gaseous Equilibrium of Dibromoethylene. 2. The Thermal and Photochemical Isomerization and Exchange of Iodine and Diiodoethylene.
- WOLFGANG KURT HERMANN PANOFKY (Physics), A.B., Princeton University, 1938. *Thesis*: A Measurement of the Value of h/e by the Determination of the Short Wavelength Limit of the Continuous X-ray Spectrum at 20 kV.
- EDMUND JOY PINNEY (Mathematics), B.S., California Institute, 1939. *Thesis*: Calculus of Variations in Abstract Spaces, and Related Topics.
- GEORGE THOMAS RUDKIN (Biology), B.S., California Institute, 1938; M.A., Stanford University, 1939. *Thesis*: On Factors Influencing Growth of Interspecific Ovary Transplants in *Drosophila*.
- PHILIP ANDERSON SHAFFER, JR. (Chemistry), B.S., Harvard College, 1937. *Thesis*: The Use of Punched Cards in Calculations of Molecular Structure.
- VICTOR WOUK (Electrical Engineering), B.A., Columbia University, 1939; M.S., California Institute, 1940. *Thesis*: Static Electricity Generated in the Distribution of Gasolene.

IN ABSENTIA:

- WILLIAM DALE LEECH (Biology), B.A., Union College, 1919; M.A., University of Southern California, 1926. *Thesis*: Concerning Auxin in Wheat.
- CHARLES BAKER METZ (Biology), A.B., Johns Hopkins University, 1939. *Thesis*: Egg and Sperm Agglutination in Invertebrates.
- CHARLES WILLIAM SEEKINS (Mathematics), A.B., Occidental College, 1938. *Thesis*: Lattice Multiplications and Residuations.
- CHARLES WILCOX SHEPPARD (Physics), B.S., California Institute, 1937; M.S., 1938. *Thesis*: Multiple Scattering of Fast Electrons.

- JACK CARLTON SMITH (Physics), B.S., Ohio State University, 1935; M.S., 1936. *Thesis*: The Electrical Conductivity of Aqueous Solutions of Sodium Chloride and Magnesium Sulphate at High Frequencies.
- JOHN SPIZZEN (Biology), B.A., University of Toronto, 1939. *Thesis*: A Micromethod for the Determination of Citrulline. 2. Rate Studies of the Inactivation of Bacteriophage by the Filtrate of the Susceptible Bacteria. 3. Studies on the Growth Mechanism of an anti-Escherichia Coli Bacteriophage.
- ROBERT ANTON SPURR (Chemistry), A.B., Rollins College, 1936; B.S., 1937; M.S., Harvard University, 1938. *Thesis*: Applications of the Electron Diffraction Method of Determining the Structure of Gas Molecules.
- EVERETT PARSONS TOMLINSON (Physics), B.S., Yale University, 1936. *Thesis*: Nuclear Electron Pairs from Excited Oxygen.
- HARRY DAVID BRUCE WILSON (Geology), B.S., University of Manitoba, 1936; M.S., California Institute, 1939. *Thesis*: 1. Geochemical Studies of the Epithermal Deposits at Goldfield, Nevada. 2. Stratigraphy of the Cretaceous and Eocene Rocks of the Santa Monica Mountains.
- SHAO WEN YUAN (Aeronautics), B.S., University of Michigan, 1936; M.S., California Institute, 1937; M.E., Stanford University, 1939. *Thesis*: Thin Cylindrical Shells Subjected to Various Types of Concentrated Loads.

AERONAUTICAL ENGINEER

- STANLEY CORRISIN, B.S., University of Pennsylvania, 1940; M.S., California Institute, 1942.
- JOHN EDWARD GOODE, JR., A.B., University of North Carolina, 1940; M.S., California Institute, 1941.
- JEAN CHRISTOPHE SCHWARZENBACH, Vordiplom in C.E., Eidgenössische Technische Hochschule, Zurich, 1939; M.S., California Institute, 1942.
- RICHARD S. SHEVELL, B.A., Columbia College, 1940; M.S., California Institute, 1941.
- EDGAR PURELL WILLIAMS, B.A., Oberlin College, 1940; M.S., California Institute, 1942.
- CARL BAKER OLSEN, Lt. Comdr., U. S. Coast Guard; U. S. Coast Guard Academy, 1928; U. S. Navy Post-Graduate School, 1941.
- SHELDON WILLIS BROWN, Lt., U. S. N.; B.S., U. S. Naval Academy, 1932.
- NOVA BABB KIERGAN, JR., Lt., U. S. N.; B.S., U. S. Naval Academy, 1933.
- JACK JONES TOMAMICHEL, Lt., U. S. N.; B.S., U. S. Naval Academy, 1933.
- ROBERT MARTIN GIBBONS, Lt., U. S. N.; B.S., U. S. Naval Academy, 1933.

CHEMICAL ENGINEER

- ROBERT HENRY DOURSON, B.S., California Institute, 1935; B.S. in ChE, California Institute, 1940.
- RAY VAN DEUSEN GERHART, B.S., California Institute, 1939; B.S. in ChE, California Institute, 1940.

CIVIL ENGINEER

- MEHMET FIKRET BEBE, B.S., Robert College, 1938; M.S., Massachusetts Institute of Technology, 1941.
- ORHAN M. EMRE, B.S., Robert College, 1934; M.S., University of Illinois, 1936.
- ENVER MEHMET MURATZADE, B.S., Massachusetts Institute of Technology, 1939; M.S., University of Iowa, 1940.

MASTER OF SCIENCE IN SCIENCE

BIOLOGY

- WILLIAM ROBERT VICTOR MARRIOTT, B.S., California Institute, 1940.

CHEMISTRY

- JOHN MICHAEL O'GORMAN, B.S., University of California, 1940.

CHEMICAL ENGINEERING

- GLENN WAGNER BILLMAN, B.S., California Institute, 1941.
- ROBERT RYLAND BOWLES, JR., B.S., California Institute, 1941.
- PAUL HERMAN CATE, B.S., California Institute, 1931.
- WILLIAM HARRISON CORCORAN, B.S., California Institute, 1941.
- QUENTIN ELLIOTT, B.S., California Institute, 1941.
- THOMAS LLOYD KIRTLEY, A.B., San Jose State College, 1940.
- THEODORE WEAVER, B.S., California Institute, 1940.
- ROBERT STRONG WORTHINGTON, A.B., Stanford University, 1941.

GEOLOGICAL SCIENCES

- WILLARD PERRIN FULLER, JR., A.B., Harvard College, 1940.

BENJAMIN FRANKLIN HOWELL, JR., B.A., Princeton University, 1939.
WALTER MASSEY TOVELL, B.A., University of Toronto, 1940.

MATHEMATICS

CLIFFORD AMBROSE TRUESDELL, III, B.S., California Institute, 1941.
ALBERT GEORGE WILSON, B.S., Rice Institute, 1941.

PHYSICS

LEO DAVIS, B.S., California Institute, 1940.
VERNON WILLARD HUGHES, A.B., Columbia College, 1941.
GENE WARNER MCDANIEL, B.Sc., University of Nevada, 1940.

MASTER OF SCIENCE IN ENGINEERING

AERONAUTICS

ROBERT DAVID ALTMAIER, B.S., Harvard College, 1941.
VENKATACHALAM CADAMBE, B.Sc., Central College, Bangalore, India, 1933.
ARTHUR STANFORD CHURCH, B.A.E., University of Minnesota, 1940.
STANLEY CORRIN, B.S., University of Pennsylvania, 1940.
CHARLES LEE DAILEY, B.S., California Institute, 1941.
DOUGLAS GORDON DILL, B.S., California Institute, 1941.
WILLIAM HENRY PETER DRUMMOND, B.S., University of Washington, 1940.
EDWIN REED FAY, B.S., Harvard College, 1941.
ROBERT EDWIN FISHER, B.S., California Institute, 1941.
ERNEST JAMES GENTLE, B.S., University of Washington, 1938.
CHONG-HU GO, B.S.M.E., University of the Philippines, 1937; B.S.E.E., Mapua Institute of Technology, 1939.
ARLO FRANKLIN JOHNSON, B.S., California Institute, 1942.
WILLIAM CLELAND JOHNSTON, B.S., Iowa State College, 1940.
EDWARD FREDERICK KELLEY, B.S., U. S. Naval Academy, 1926.
DANIEL HARRIS LEVIN, B.S.E., Princeton University, 1941.
PHIL TYSON MAHAFFEY, B.A., Texas University, 1941.
ROY EDWARD MARQUARDT, B.S., California Institute, 1940.
VICTOR HUGO MARTINEZ, Lt., A. R. A.; Argentine Naval Academy, 1932.
GEORGE CHITSUGI SAKAI, B.S., California Institute, 1941.
JEAN CHRISTOPHE SCHWARZENBACH, Vordiplom in C.E., Eidgenoessische Technische Hochschule, Zurich, Switzerland, 1939.
REUBEN SNODGRASS, B.S., California Institute, 1941.
OLIVER MARVIN SOKOLSKY, B.S., Louisiana State University, 1941.
LEO STOOLMAN, B.S., Armour Institute of Technology, 1941.
CHARLES VICTOR STURDEVANT, III, B.S., California Institute, 1941.
NORMAN F. SVENDSEN, B.S., California Institute, 1941.
ROBERT FRANCIS SWANCUTT, Eng. of Mines, Colorado School of Mines, 1937.
CHANG NEE TSU, B.S.E., University of Michigan, 1941.
ONICK VARTIKIAN, B.S., California Institute, 1941.
JOHN R. WHITE, B.S., California Institute, 1941.
EDGAR PURELL WILLIAMS, B.A., Oberlin College, 1940.
GEORGE KEIRN ZEBB, B.S., California Institute, 1941.

CIVIL ENGINEERING

ROBERT GOLDIN, B.S., University of Pennsylvania, 1941.
RICHARD FREDERICK SILBERSTEIN, B.S., California Institute, 1941.
EBENEZER VEY, B.S., California Institute, 1941.

ELECTRICAL ENGINEERING

JENNINGS ROY DAVID, B.S., University of Colorado, 1940.
ARDEN HUGO FREDRICK, B.S., California Institute, 1941.
BERL D. LEVENSON, B.S., California Institute, 1941.
JOSEPH FRANK MANILDI, B.S., California Institute, 1940.

MECHANICAL ENGINEERING

WALTER Z DAVIS, B.S., California Institute, 1941.
WILLIAM LEE INGERSOLL, B.S., California Institute, 1941.
CHING-U IP, B.Sc., Hong Kong University, China, 1941.

BACHELOR OF SCIENCE (Five year course)

METEOROLOGY (as of 1941)

RAYMOND CHARLES BAIRD, B.A., University of California at Los Angeles, 1938; M.S., California Institute, 1940.

BACHELOR OF SCIENCE IN SCIENCE

ROBERT EDWIN ANDERSON	* ARNOLD LEWIS GROSSBERG	PAUL MILLER MADER
ALDEN WHITTEMORE AYERS	HOWARD CARY HALL	GERSHOM REYNOLDS
HUGH ADAMSON BAIRD	* ROBERT N. HALL	MAKEPEACE
ALAN EDDY BELL	LAWRENCE ADOLPH HANSON,	ADRIAN S. MAYER
DAVE BRYON BERMAN	JR.	HENRY WILLIAM MENARD
WILLIAM DAVID BLUMENTHAL	WILLARD JAMES HENDRICKSON	ROBERT T. MERRICK
DWAIN BURNS BOWEN	* DAVID LAWRENCE HILL	LLOYD WILLIAM MERRYFIELD
†JOHN A. BROCKMAN, JR.	* WILLIAM THOMAS HOLSER	GEORGE FREDERICK MEYER
* DAVID HENRY BROWN	* GEORGE HOLZMAN	CHESTER DAVID MILLS, JR.
* FOREST MELROSE CLINGAN	* DAVID RONALD HOWTON	MYRON POLLYCOVE
ROBERT ERNEST CUNNINGHAM	†CARTER HUNT	* CARL HERTZ SAVIT
†ROBERT EARL DENSMORE, JR.	* JACK HOWARD IRVING	ORVILLE E. SCRIBNER
FRANK ANDREW FLECK	PETER HENRY KAFITZ	* IRVIN PHILLIP SEEGBMAN
ELDEN RAY GEIB	EMERSON L. KUMM	ROBERT ROSS STALEY
†WARREN GILLETTE	* RICHARD LATTER	LOUIS CHARLES THAYER
* ROBERT GREENWOOD	FRANCIS VIVIAN LYLE	LEIGHTON J. TRUE, JR.
* ALLAN LOUIS GROSSBERG	* ROBERT EARL MACKENZIE	EVERETT WILLARD VAN NESS

*Graduated with honor in accordance with a vote of the Faculty.

†Awarded the Honor Key by the Associated Student Body for participation in student activities.

BACHELOR OF SCIENCE IN ENGINEERING

†ALBERT PEARSON ALBRECHT	*†SYDNEY KENDALL GOLD	†ALBERT D. PAUL
JACK LELAND ALFORD	ELLIOTT ARON GREEN	CHARLES WILLIAM PEARSON
JOHN R. ALLAN	ROBERT FRANKLIN HALL	ALVIN R. PIATT
PAUL HODGES ALLEN, JR.	WARREN ACKER HALL	PICHEL WILSON PICHÉL
GEORGE WEBER ALMASSY	WENDELL W. HARTER	ARTHUR M. PICKLES
RICHARD ALLWORTH ANDREWS	ALFRED BENJAMIN HEAD	†HARRISON ALAN PRICE
FRED MULOCK ASHBROOK	RICHARD MOORE HEAD	*†WARREN GEORGE PROCTOR
THOMAS GEORGE ATKINSON	WALLACE E. HICKS	* RUSSELL FOOTE RHYNE
EDWARD RICE BARTLETT, JR.	†WILLIAM BERKELEY HICKS	HENRY VALENTINE ROESE
FREDERICK KLAUS BAUER	CLIFFORD CLINTON HOAGLAND	WILLIAM LESTER ROGERS
KENNETH HURST BEERS	JACK CHARLES HOAGLAND	*†JOHN H. W. RUBEL
PAUL SIGVARD BERGH	OTHNIEL HORNE	CHARLES E. RUTHEFORD
JOHN THOMAS BOWEN	* DONALD KENNETH JEPHCOTT	* ROLF HEINRICH SABERSKY
ROGER BRANDT	ALEXANDER STAPLER JERREMS	ERIC H. SCHAUER
CHARLES M. BROWN, JR.	ARLO FRANKLIN JOHNSON	†KENNETH DANFORTH
VICTOR GARDINER BRUCE	PHILIP ORD JOHNSON	SCHUREMAN, JR.
WILLIAM FRANKLIN	* WILLIAM GRADY KENNEDY	* CHARLES MCCUTCHEEN SEIBEL
CALLAWAY	HENRY EDWARD KREMERS	HASKELL SHAPIRO
EARLE ALBERT CARR	†ALFRED LANDAU	MELVIN JAMES SKINNER
JOHN ALEXANDER CHASTAIN	ERWIN RAYMOND LARSON	MERLE SMALLBERG
ROBERT JOHN CLARK	* MURRAY LEON LESSER	LAWRENCE W. SMITH
GEORGE IRVING COHN	†GEORGE WILLIAM LIND, JR.	* JOSEPH STERNBERG
RICHARD HORTON COX	PHILIP BROOKS LUTZ	MAYNARD STRADER, JR.
WILBUR DAVID CRATER	†WAYNE MACROSTIE	GEORGE P. SUTTON
THOMAS GREY CURTIS	* HARRY HUMPHREY MADLEY	†WILLIAM RUSSELL TURNER
GEORGE ROBERT DALL	*†BOYD THOMAS MARSHALL	KENNETH URBACH
STEWART DAVIS	HOWARD ERNEST MARTENS	ROY C. VAN ORDEN
ROBERT TENNEY DeVULT	†JOHN FRANKLIN MCCLAIN, JR.	PAUL NORMAN ANTON
JOHN KERNER DIXON	RICHARD WILLIAM	VEENHUYZEN
JOHN ARCHIBALD DRAKE	MCCORNACK	CAROL MCCAULEY VERONDA
THOMAS D. ELLIOTT	PAUL STILWELL MCKIBBEN, JR.	PAUL WINSTON WEBSTER
JOSEPH WALTER ELLIS	*†JOHN WILDER MILES	†LEROY ASHTON WELLER, JR.
FREDRICK HARTMAN FELBERG	WALTER PAGE MITCHEL	JOHN ADOLPH WIDENMANN
JOSEPH BERNARD FRANZINI, JR.	ROBERT LAYTON MOORE	FRANK WILLIAM WOOD
MARTIN ROGER GAYER	MEREDITH MCRAE NYBORG	†GORDON KEATON WOODS
FRANK GIVEN	HERBERT GEORGE OSBORNE	DAVID ARTHUR YOUNG

*Graduated with honor in accordance with a vote of the Faculty.

†Awarded the Honor Key by the Associated Student Body for participation in student activities.