

THE  
ORANGE & WHITE  
1919 — 1920



THE  
ORANGE  
AND WHITE

A HISTORY OF  
THE  
CALIFORNIA INSTITUTE  
OF  
TECHNOLOGY

1919 — 1920

PUBLISHED BY  
THE ASSOCIATED STUDENT BODY

## The Orange and White

In the sunshine floats a banner,  
In the early morning light;  
We greet the glowing colors,  
The Orange and the White;  
To this emblem we'll be faithful  
And to its precepts true,  
Its name we'll hail with pleasure,  
When with college days we're through.

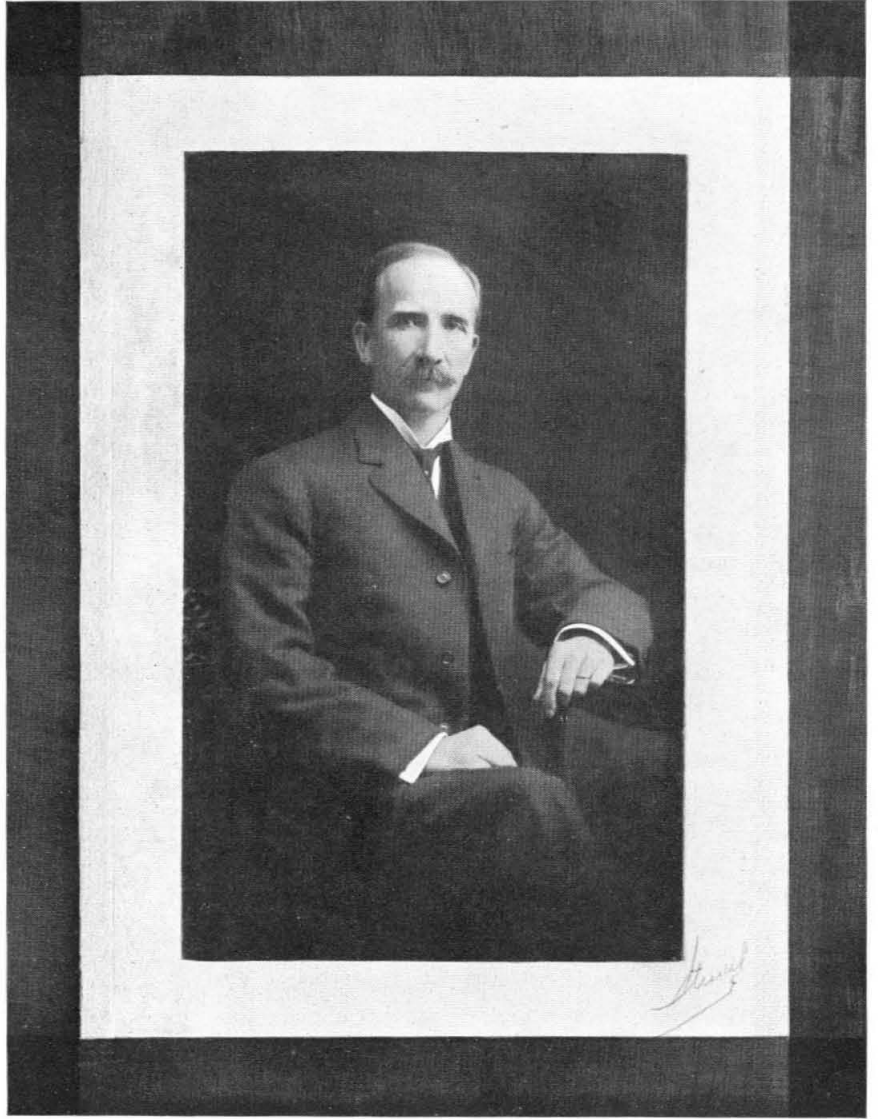


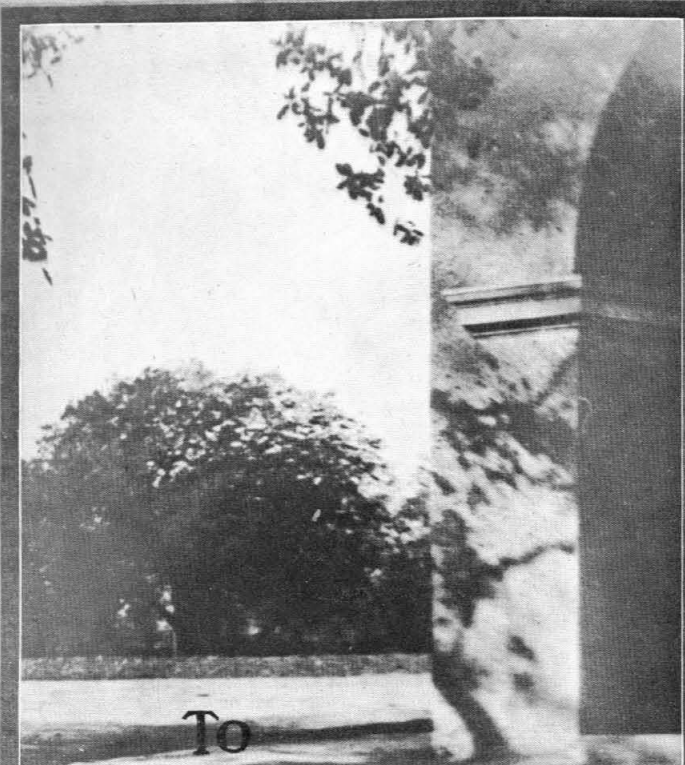


## Foreword

**I**N THEIR endeavor to present a chronicle of the serious and light moments that have occupied a year of the lives of the students at California Institute of Technology, the editors have neither hoped to please every reader, nor aspired to produce a faultless volume; their ideal was no more than the possible.

The volume is offered for whatever pleasure it may give you, and as a tribute to your interest in the affairs of California Institute of Technology.





To  
ARTHUR H FLEMING  
We Dedicate This Book  
In Appreciation Of His  
Unfailing Devotion To  
California Institute Of  
Technology

KONE



JAMES A. B. SCHERER

# California Institute of Technology

JAMES A. B. SCHERER, President

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## OFFICERS OF INSTRUCTION

JAMES A. B. SCHERER, PH.D., LL.D.

President

A.B., Roanoke College, 1890; A.M., Roanoke College, 1895; Ph.D., Pennsylvania College, 1897; LL.D., University of South Carolina, 1905. Teacher of English in the Imperial Government's Middle School at Saga, Japan, 1892-1897; President of Newberry College, S. C., 1904-1908.

ARTHUR AMOS NOYES, PH.D., LL.D., SC.D.

Director of Chemical Research

S.B., Massachusetts Institute of Technology, 1886; S.M., 1887; Ph.D., Leipsic, 1890; LL.D., University of Maine, 1908; Clark University, 1909; Sc. D., Harvard University, 1909; Yale University, 1913. Instructor, Assistant, and Associate Professor of Chemistry, Massachusetts Institute of Technology, 1890-1899; Professor of Theoretical Chemistry, 1899, and Director of Research Laboratory of Physical Chemistry, Massachusetts Institute of Technology, 1903—; Acting President, Massachusetts Institute of Technology, 1907-1909.

ROBERT ANDREWS MILLIKAN, PH.D., SC.D.

Director of Physical Research

A.B., Oberlin College, 1891, A.M., 1893; Ph.D., Columbia University, 1895; Universities of Berlin and Gottingen, 1895-1896; Sc.D., Oberlin College, 1911; Northwestern University, 1913; University of Pennsylvania, 1915. Tutor in Physics, Oberlin College, 1891-1893, Assistant, 1896, Associate, 1897; Instructor, 1899, Assistant Professor, 1901, Associate Professor, 1907-1910, and Professor of Physics, 1910—, University of Chicago.



**ROYAL W. SORENSEN, B.S. IN E.E.**

**Professor of Electrical Engineering**

B.S. in Electrical Engineering, University of Colorado, 1905. Associated with General Electric Co., Schenectady, N. Y., and Pittsfield, Mass., 1905-1910; Consulting Engineer, Pacific Light and Power Corporation, 1913-1917.

**ROBERT L. DAUGHERTY, A.B., M.E.**

**Professor of Mechanical and Hydraulic Engineering**

A.B. in Mechanical Engineering, Leland Stanford Junior University, 1909; M.E., 1914. Assistant in Mechanics, Leland Stanford Junior University, 1907-1908; Assistant in Hydraulics, 1908-1909; Instructor in Mechanical Engineering, 1909-1910; Assistant Professor of Hydraulics, Sibley College, Cornell University, 1910-1916; Professor of Hydraulic Engineering, Rensselaer Polytechnic Institute, 1916-1919.

**FRANKLIN THOMAS, C.E.**

**Professor of Civil Engineering**

B.E., University of Iowa, 1908; C.E., 1913. Graduate work at McGill University, Montreal. Instructor in Descriptive Geometry and Drawing, University of Michigan, 1910-1912. Mines Power Company, Cobalt, Ontario, 1909-1910; Designer, Alabama Power Company, Birmingham, Alabama, 1912-1913; Assistant Engineer, U. S. Reclamation Service, Denver, Colorado, 1919.

**LUCIEN HOWARD GILMORE, A.B.**

**Professor of Physics**

A.B., Leland Stanford Junior University, 1894. Acting Assistant, Department of Physics, Leland Stanford Junior University, 1894-1895; Graduate work at the University of Chicago.

**STUART JEFFERY BATES, PH.D.**

**Professor of Physical Chemistry**

B.A., McMaster University, Toronto, 1907; M.A., 1909; Ph.D., University of Illinois, 1912. Chemist, Comfort Soap Works, Toronto, 1907-1908; Research Assistant, McMaster University, 1909-1910; Fellow in Chemistry, University of Illinois, 1910-1912; Research Associate in Physical Chemistry, 1912-1913. Instructor in Analytical Chemistry, University of Illinois, 1913-1914.

**CLINTON KELLY JUDY, M.A.**

**Professor of the English Language and Literature**

A.B., University of California, 1903; M.A., 1907; B.A., Oxford University, 1909; M.A., 1913; M.A., Harvard University, 1917.

**HARRY CLARK VAN BUSKIRK, PH.B.**

**Professor of Mathematics**

Ph.B., Cornell University, 1897.

**HARRY BATEMAN, PH.D.**

**Professor of Aeronautical Research and Mathematical Physics**

B.A., Cambridge University, 1903; Universities of Gottingen and Paris, 1905-1906; M.A., Cambridge University, 1906; Ph.D., Johns Hopkins University, 1913. Lecturer in Mathematics, University of Liverpool, 1906-1907; Reader in Mathematical Physics, University of Manchester, 1907-1910; Lecturer in Mathematics, Bryn Mawr College, 1910-1912; Lecturer in Applied Mathematics, Johns Hopkins University, 1915-1917.

**W. HOWARD CLAPP, E.M.**

**Professor of Mechanism and Machine Design**

E.M., University of Minnesota, 1901. Instructor in Mathematics, Macalester College, 1897-1898. Superintendent and Designing Engineer, Sherman Engineering Company, Salt Lake City, 1905-1909; Superintendent, Nevada-Goldfield Reduction Company, Goldfield, Nevada, 1909-1910.

**JAMES EDGAR BELL, PH.D.**

**Professor of Chemistry**

S.B., University of Chicago, 1905; Ph.D., University of Illinois, 1913. Graduate student and fellow, University of Chicago, 1908-1910; graduate student and assistant, University of Illinois, 1911-1913; Instructor in Chemistry, University of Washington, 1910-1911, 1913-1916.

**PAUL PERIGORD, M.A.**

**Professor of Economics and French**

B.A., University of France, 1901; B.Ph., 1902; M.A., University of Chicago, 1911; French Army, 1914-1917; Military Instructor, Infantry, Camp Devens, Massachusetts, 1917; Member of French High Commission to the United States, 1918-1919.

**AUGUST MICHAEL ENGEL, B.S.C.E.**

**Captain (Engineers) U. S. Army**

**Professor of Military Science and Tactics**

B.S.C.E., Michigan Agricultural College, 1915; First Lieutenant, Engineers Reserve Corps, 1917, assigned to overseas service, March, 1918; Captain of Engineers, July, 1918; assigned to Camp Humphreys, August, 1918, as Instructor in Training Regiments of Engineer Officers Training School.

**HOWARD JOHNSON LUCAS, M.A.**

**Associate Professor of Organic Chemistry**

B.A., Ohio State University, 1907; M.A., 1908; Assistant in Organic Chemistry, Ohio State University, 1907-1909; Fellow in Chemistry, University of Chicago, 1909-1910; Chemist, Bureau of Chemistry, United States Department of Agriculture, 1910-1912. Chemist, Government of Porto Rico, 1912-1913.

**GEORGE RUPERT MACMINN, A.B.**

**Associate Professor of the English Language and Literature**

A.B., Brown University, 1905. Instructor in English, Brown University, 1907-1909; Instructor in English, Iowa State College, 1909-1910; Instructor in English, University of California, 1910-1918. Manager of the University of California Press, 1912-1913.

**LUTHER EWING WEAR, PH.D.**

**Associate Professor of Mathematics**

A.B., Cumberland University, 1902; Ph.D., Johns Hopkins University, 1913. Graduate student and fellow, Johns Hopkins University, 1908-1909, 1910-1913. Instructor in Mathematics, University of Washington, 1913-1918.

**WILLIAM WHIPPLE MICHAEL, B.S.**

**Associate Professor of Civil Engineering**

B.S. in Civil Engineering, Tufts College, 1909. With New York City, on topographic surveys, 1909-1911; with The J. G. White Engineering Corporation, 1912-1913 and 1915; Instructor, Department of Drawing and Design, Michigan Agricultural College, January to July, 1914; Office Engineer on construction of hydro-electric development for The Power Construction Company of Massachusetts, 1914-1915; Resident Engineer on construction of reinforced concrete bridge for Ulster County, New York, 1915-1916; in private practice, 1916-1918.

**WILLIAM NOBLE LACEY, PH.D.**

**Associate Professor of Chemical Engineering**

A.B. in Chemical Engineering, 1911, and Chemical Engineer, 1912, Leland Stanford Junior University; M.S., 1913, and Ph.D., 1915, University of California; Assistant in Chemistry, Leland Stanford Junior University, 1911-1912; Assistant in Chemistry, University of California, 1912-1915; Research Chemist for Giant Powder Co., San Francisco, 1915; Research Associate, Massachusetts Institute of Technology, 1916; 1st Lieutenant, Ordnance Department, United States Army, 1917-1919.

**JAMES HAWES ELLIS, PH.D.**

**Assistant Professor and Research Associate in Physical Chemistry**

B.S., Massachusetts Institute of Technology, 1912; Ph.D., 1916. Assistant in Electrical Laboratory, Massachusetts Institute of Technology, 1913-1914; Research Associate in Physical Chemistry, Research Laboratory of Physical Chemistry, Massachusetts Institute of Technology, 1914-1916.

**WARREN WEAVER, C.E.**

**Assistant Professor in Mathematics**

C.E., University of Wisconsin, 1917. Instructor in Surveying and Astronomy, University of Wisconsin, 1916-1917; Research Scholar in Mechanics, University of Wisconsin, 1917; Second Lieutenant, Science and Research Division, Air Service, 1918; Instructor in Mathematics, University of Wisconsin, 1919.

**EARNEST CHARLES WATSON, PH.B.**

**Assistant Professor in Physics**

Ph.B., Lafayette College, 1914; Scholar in Physics, University of Chicago, 1914-1915; Assistant in Physics, University of Chicago, 1915-1917; National Research Council, Sub-Committee on Submarine Detection, 1917-1918; Government research, Naval Experiment Station, 1918.

**ARMANDO THOMAS BISSIRI, J.D.**

**Assistant Professor in Modern Languages**

A.B., Terenzio Mamiani College, Rome, 1901; J. D., Royal University, Rome, 1905; Professor of Romance Languages, American International College, Springfield, Massachusetts, 1913-1917.

**DAVID H. RAY, SC.D.**

**Assistant Professor of Mechanics**

A.B., College of the City of New York, 1897; B.S., Columbia University, 1901; A.M., 1902; New York University, 1902; Sc.D., 1908; Assistant Engineer Baltimore and Ohio Railroad; Assistant Engineer New York Rapid Transit Railroad Commission, 1902-1903; Superintendent-Manager of Improvements for New York Institution for the Blind, 1903-1905; Instructor College of the City of New York, 1906-1910; Chief Engineer, Bureau of Buildings, New York City, 1910-1913; Director, Laboratory of the United States Signal Corps Army School, College of the City of New York, 1917-1918; United States Appraisal Officer, Aviation Section Aircraft Production New York District, Liquidating Engineering Equipment, Machinery and Supplies; Member representing United States on various Boards of Appraisal and Valuation of large industrial plants, 1918-1919.

**GEORGE FORSTER, E.E.**

**Assistant Professor in Electrical Engineering**

E.E., Lehigh University, 1914; Associated with General Electric Company, Schenectady, New York, and Pittsfield, Mass., 1914-1915; Assistant Electrical Engineer, Delaware and Hudson Co., Coal Department, 1915-1916; Engineering Assistant, Philadelphia Electric Company, 1918-1919.

**EDWARD CECIL BARRETT, B.A.**

**Lecturer in Business Law**

B.A., State University of Iowa, 1906. Assistant Secretary Board of Regents, 1906-1907; Registrar and Secretary to the President, State University of Iowa, 1907-1911.  
S.B., Massachusetts Institute of Technology, 1914. Architectural Designer in the office of Frank A. Bourne, Boston, 1912-1913; Assistant in Mechanical Drawing and Architectural Drawing, Massachusetts Institute of Technology, 1914-1915; Harvard Engineering Camp, 1915.

**RAYMOND FULLER CALL, B.S.**

**Physical Director and Instructor in Mechanical Engineering**

B.S., Throop College of Technology, 1915. Instructor, Ventura High School, 1915-1917.

**ROSCOE GILKEY DICKINSON, S.B.**

**Instructor in Inorganic Chemistry and Research Associate**

S.B., Massachusetts Institute of Technology, 1915. Assistant in Theoretical Chemistry, Massachusetts Institute of Technology, 1915-1916; Research Assistant in Physical Chemistry, Research Laboratory of Physical Chemistry, Massachusetts Institute of Technology, 1916-1917.

**ROMEO RAOUL MARTEL, S.B.**

**Instructor in Civil Engineering**

S.B., Brown University, 1912; Instructor in Civil Engineering, Rhode Island State College, 1913-1914; Instructor in Civil Engineering, Mechanics Institute, 1914-1915. With Sayles Finishing Plants, Saylesville, R. I., 1915-1918; with Atchison, Topeka and Santa Fe Railway, Amarillo, Texas, 1918.

**WILLIAM NOEL BIRCHBY, M.A.**

**Instructor in Mathematics**

A.B., Hope College, 1899; M.A., Colorado College, 1905. Instructor, Colorado College, 1905 and 1907; Instructor in Physics, University of Southern California, summer session, 1916.

**WILLIAM JACOB AUBURN, M.E.**

**Instructor in Mechanical Drawing**

M.E., Cornell University, 1897. With Westinghouse Machine Company, Pittsburg, Pennsylvania, 1898-1914; with United Engineering and Foundry Company, Pittsburg, Pennsylvania, 1914-1916.

**HOXSIE YOST SMITH, B.S.**

**Instructor in Mechanical Drawing**

B.S. in Electrical Engineering, George Washington University, 1910. Associated with the Northwestern Telephone Company, St. Paul, 1913-1916; with Arthur R. Kelley, Consulting Engineer, San Francisco, 1916-1918; California State Railroad Commission, 1918.

**WALTER TICKNOR WHITNEY, PH.D.**

**Instructor in Physics**

B.S., Pomona College, 1910; M.S., 1912; Ph.D., University of Chicago, 1916. Associate with Mount Wilson Solar Observatory, 1913 and 1917; Fellow in Physics, University of Chicago, 1914-1916.

**FRANCIS WILLIAM MAXSTADT, M.E., E.E.**

**Instructor in Mechanical Engineering**

M.E., Cornell University, 1916; Certificate of E.E., 1916; Draftsman and Designer, Otis Elevator Company, 1916-1917; Assistant in the Electrical Research Division, Interborough Rapid Transit Company, 1917-1919; Assistant in the Thomas A. Edison Laboratories, 1919.

**GEORGE SUTTON PARKS, PH.D.**

**Instructor in Chemistry**

B.S., University of Washington, 1915; M.S., 1916; Ph.D., University of California, 1919; Chemist with Hercules Powder Company, 1918; Assistant in Chemistry, University of California, 1916-1919.

**DELWIN HAROLD SILVIUS, JR., M.A.**

**Instructor in Scientific German**

B.A., Northwestern University, 1912; M.A., Harvard University, 1913; Professor of Modern Languages, Westminster College, 1913-1915; Interpreter and Translator, American Expeditionary Forces, 1918-1919.

**FRANK JOSEPH GILLOON, B.S.**

**Instructor in Civil Engineering**

B.S., in Civil Engineering, New York University, 1916; Construction Engineer with Riordon Company, Limited; Construction and Steam Plant Superintendent, Laurentide Company, Limited, 1916-1918; Mechanical Engineer, Bailey Meter Company, 1918; Ensign, United States Naval Reserve Force, 1918-1919; Combustion Engineer, H. L. Doherty Company, 1919.

**WALTER WILLIAM MARTIN**

**Instructor in Wood Working**

Graduate, Normal Arts Department, Throop Polytechnic Institute, 1900. With Stout Planing Mills, Pomona, California, 1891-1896.

**ARTHUR FREDERICK HALL**

**Instructor in Pattern Making and Machine Shop Practice**

With Sullivan Machine Company, Claremont, N. H., 1891-1894; B. F. Sturdevant Company, Jamaica Plain, Mass., 1894-1897; Union Gas Engine Company, San Francisco, 1898-1899; W. P. Kidder Machine Company, Jamaica Plain, Mass., 1899-1907.

**GEORGE DANIEL HENCK**

**Instructor in Pattern Making**

Graduate, Manual Arts Department, Throop Polytechnic Institute, 1908.

**OSCAR LESLIE HEALD**

**Instructor in Forging**

Graduate, Normal Arts Department, Throop Polytechnic Institute, 1903. Instructor in Manual Arts, California Polytechnic School, San Luis Obispo, 1903-1906; Superintendent, Construction of Buildings, University Farm, Davis, California, 1909-1910; Instructor Engineering-Mechanics Department, State Polytechnic School, San Luis Obispo, California, 1910-1918.

**ALBERT ADAMS MERRILL**

**Assistant in Aeronautics**

**MELVIN MOONEY, A.B.**

**Research Fellow in Physics**

A.B., University of Missouri, 1917.

**ARTHUR WELLS SINCLAIR**

**Laboratory Assistant in Physics**

Student in Mechanical Engineering, Cornell University, 1905-1909. Transportation and Maintenance Departments, Albuquerque Division, Atchison, Topeka and Santa Fe Railway, 1914. With Southern California Edison Company, Commercial Department, Redondo Beach, California, 1915-1916; Construction Department, 1917; Meter Department, 1918.



## Teaching Fellows

---

PAUL DAVID BARTON, B.S.

Teaching Fellow in Chemistry

B.S. in Chemistry, Oklahoma University, June, 1919.

RICHARD MILTON BOZORTH, A.B.

Teaching Fellow in Chemistry

A.B., Reed College, June, 1917.

ELBRIDGE ALVAH GOODHUE, A.B.

Teaching Fellow in Chemistry

A.B., Amherst College, June, 1917.

R. CARSON SMITH

ERNEST HAYWOOD SWIFT, B.S.

Teaching Fellow in Chemistry

B.S. in Chemistry, University of Virginia, 1918.

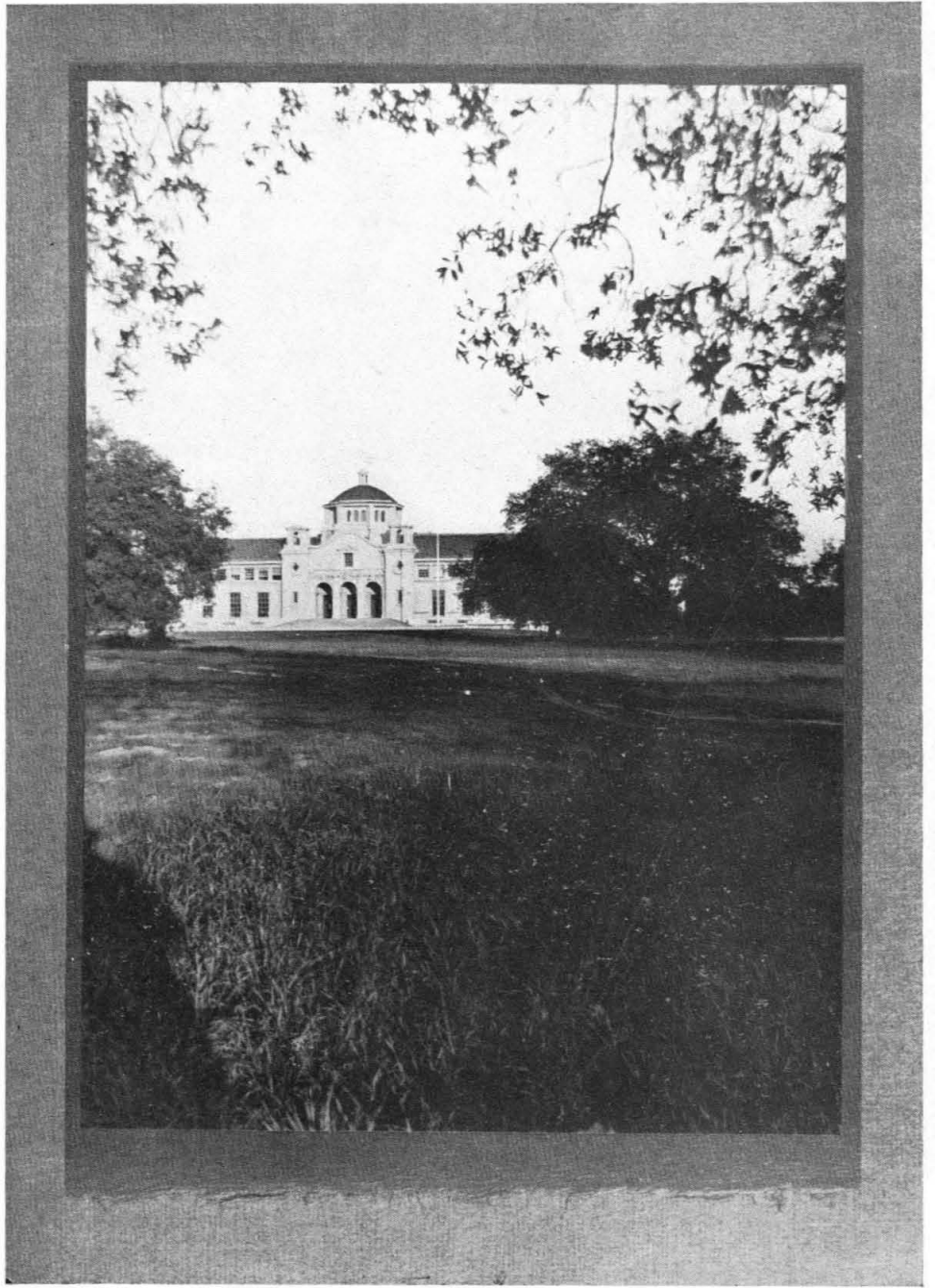
JAMES RAYMOND WILSON, A.B.

Teaching Fellow in Chemistry

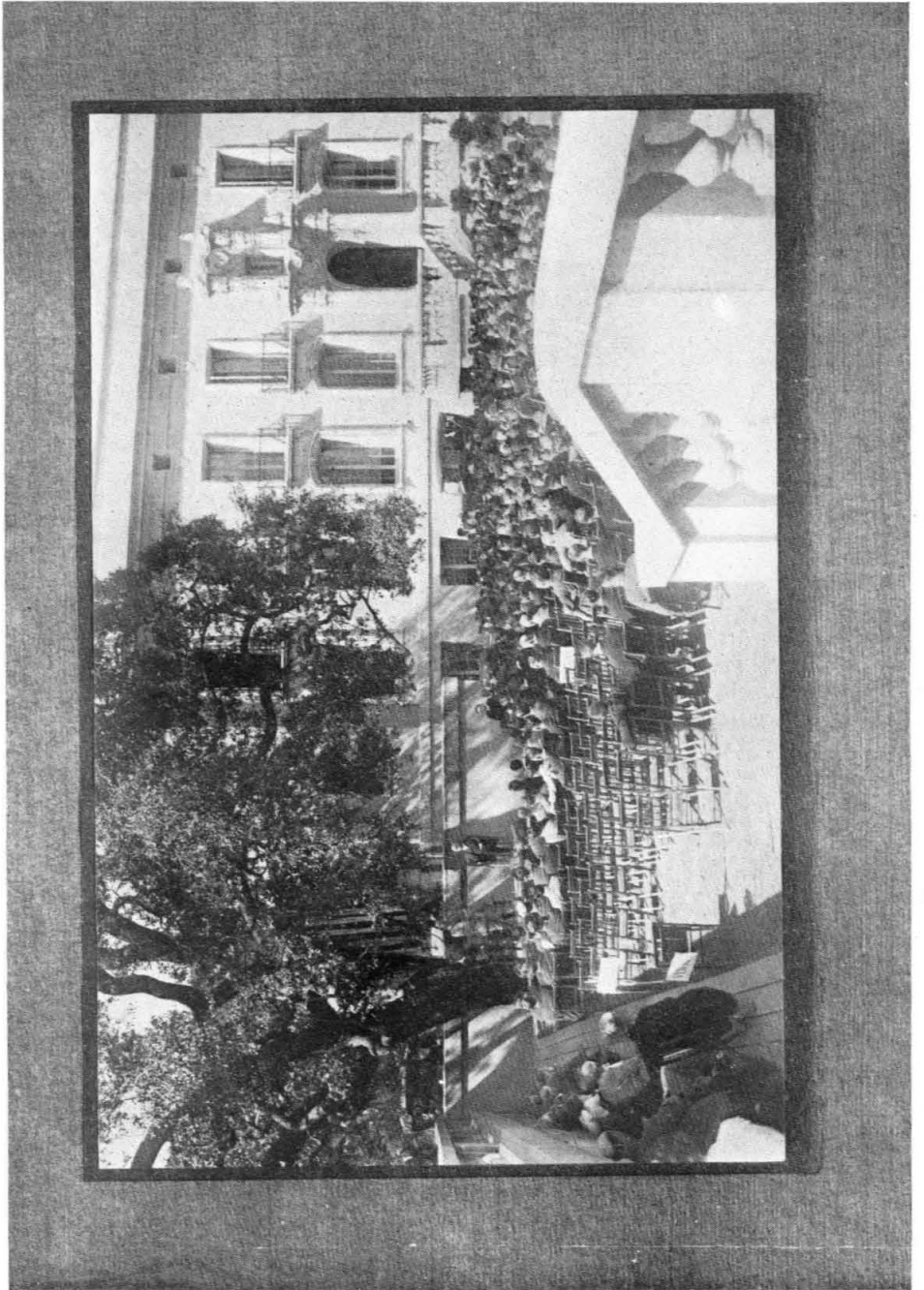
A.B., Reed College, June, 1919.

- 1919 (June 18) Third "War commencement".
- 1920 (January 5) Dr. Arthur A. Noyes comes to Throop permanently, and Dr. Millikan returns for a term.
- (January 6) Gift of \$1,000,000 announced for endowment.
- (January 12) Gift of \$150,000 announced for the Norman Bridge Physical Laboratory.
- (January 19) Immediate use of \$75,000 announced to build first unit of Music and Art Auditorium. Student campaign for Club-house undertaken.
- (January 26) Gift of \$50,000 announced, from Mr. and Mrs. R. R. Blacker. Coming of Dr. A. A. Michelson and Alfred Noyes announced for next school year.
- (January 29) Throop Battalion reviewed by General John J. Pershing.
- (February 9) Endowment of \$200,000 announced for chemical research, with setting aside of an equal amount for physics.
- (February 10) Name of "Pasadena Hall" changed perpetually to "Throop Hall", and institution renamed California Institute of Technology.

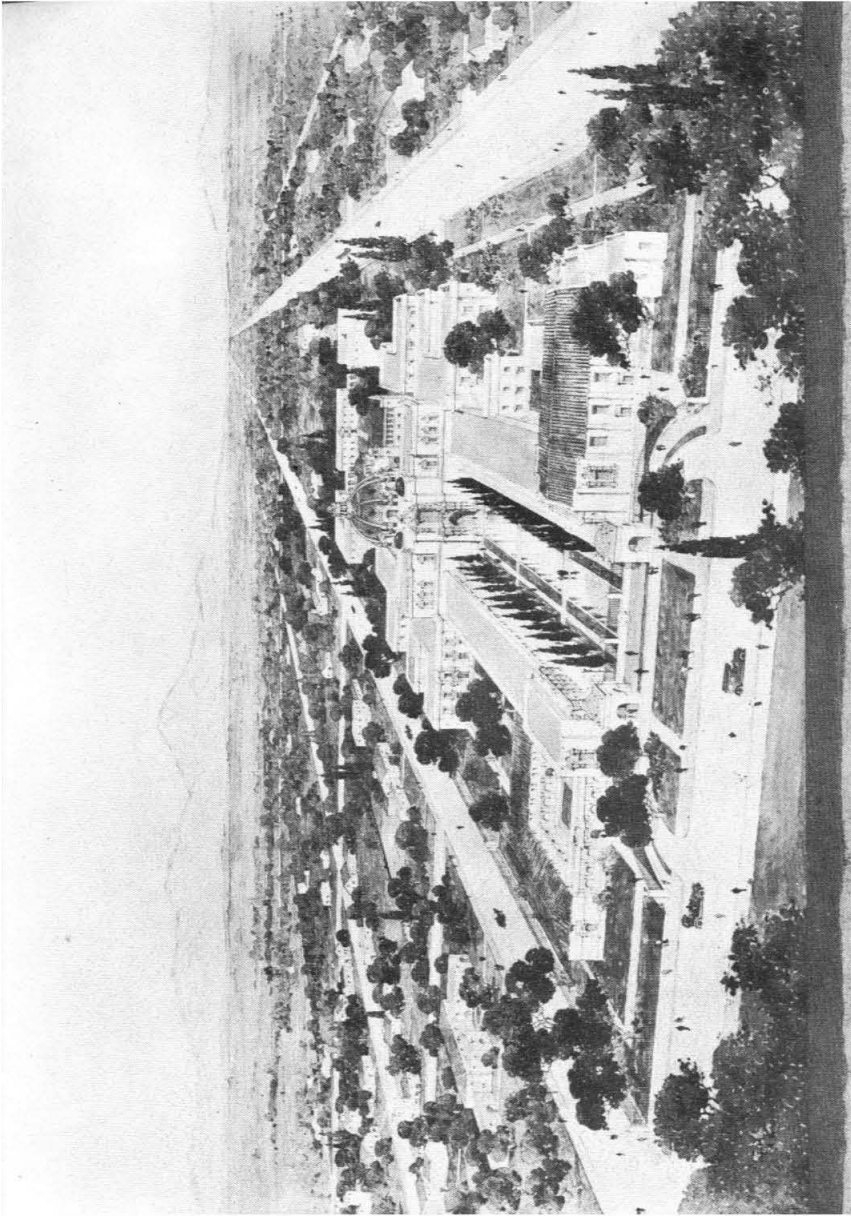


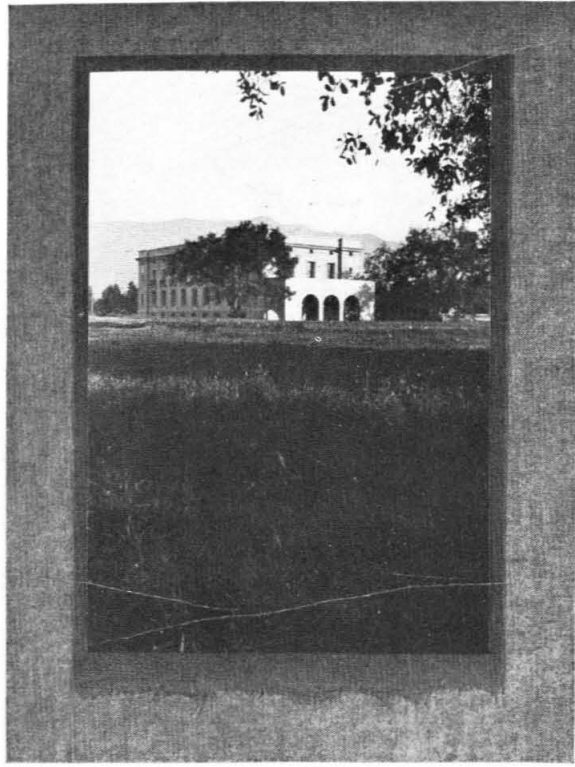












# CLASSES





**Senior  
Class Officers**

PRESIDENT

R. ERRETT WOODBURY

VICE-PRESIDENT

RUSSELL M. OTIS

SECRETARY-TREASURER

MARK A. SAWYER

**ROSCOE ERRETT WOODBURY**

Pasadena, California

**B.S. in Electrical Engineering**

Thesis: Design of Electric Furnace

Sigma Alpha Pi 1, 2, 3, 4

Class President 4

Athletic Manager 4

Board of Control 3

Executive Committee 4

Varsity Club 4



**RUSSELL M. OTIS**

Pasadena, California

**B.S. in Physics**

Thesis: Investigation of Supersonics

Baseball 2, 3, 4, Captain 3

Glee Club 2, 3, 4

A. I. E. E. 3, 4, Secretary 3, Chairman 4

Class Vice-President 4

Gnome Club 3, 4

Y. M. C. A. 4

Varsity Club 4



**MARK ALBERT SAWYER**

Whittier, California

**B.S. in Electrical Engineering**

Thesis: Electrical Power Plant Design

Treasurer A. S. B. 3

A. I. E. E. 3, 4, Chairman 3

Class Secretary-Treasurer 4

Gnome Club 2, 3, 4







**WILLIAM C. RENSHAW**

Berkeley, California

**B.S. in Civil Engineering**

Thesis: Design of Concrete Stadium

Football 2, 4, Captain 4

Track 3, 4

Representative-at-Large 3

Board of Control 3, 4

C. E. Society 3, Secretary-Treasurer 3

Sigma Alpha Pi 2, 3, 4

Dorm Club 1, 2, 3, 4

Varsity Club 4



**HARRY P. ST. CLAIR**

Pasadena, California

**B.S. in Electrical Engineering**

Thesis: Tertiary Windings in Transformers  
and Compensators

Conger Peace Prize 2

A. I. E. E. 3, 4

Glee Club 4

Gnome Club 2, 3, 4



**WALTER A. KEITH**

South Pasadena, California

**B.S. in Civil Engineering**

Thesis: Design of Concrete Stadium

Class Secretary-Treasurer 3

Advertising Manager Annual 3

Board of Control 4

Art Editor "Orange and White" 4

C. E. Society 3

Dorm Club 3

A. I. E. E. 4

Sigma Alpha Pi 3, 4

HARVEY W. HOUSE

Pasadena, California

B.S. in Chemical Engineering

Thesis: The Dehydrogenation of Vegetable  
Oils

Chem Club 3, 4

Glee Club 4

Manager Y. M. C. A. Handbook 4

Y. M. C. A. 1, 2, 3, 4



JOHN CLARK LEWIS

Los Angeles, California

B.S. in Mechanical Engineering

Thesis: Investigation of Hydraulic Turbine  
Theory

Dorm Club 2

A. S. M. E. 4, Vice-Chairman 4



ALFO BISSIRI

Los Angeles, California

B.S. in Electrical Engineering

Thesis: Design of Electric Furnace

A. I. E. E. 4





**IVAN L. PAYNE**

Los Angeles, California

B.S. in C.E. and Eng. and Econ.

Thesis: Modern Methods of Industrial Management

Glee Club 1

Track 2, 3, 4, Captain 2

Baseball 3, 4

Varsity Club 4



**EDWARD VICTOR HOUNSELL**

Los Angeles, California

B.S. in Electrical Engineering

Thesis: Electrical Power Plant Design

Dorm Club 3, 4

A. I. E. E. 3, 4



**VIRGIL HOLMES BEST**

Pasadena, California

B.S. in Electrical Engineering

Thesis: Electrical Power Plant Design

Y. M. C. A. 1, 2, 3, 4

Board of Control 3

A. I. E. E. 4

**JAMES ROBERT BLACK, JR.**

Pasadena, California

B.S. in Civil Engineering

Thesis: Design of Concrete Stadium

Football 2, 4

Board of Control 3

Joke Editor "Orange and White" 4

Glee Club 1, 2

C. E. Society 3, Vice-President

Y. M. C. A. 3

Sigma Alpha Pi 2, 3, 4

Varsity Club 4



**MAYNARD STUCKEY REYNOLDS**

Alhambra, California

Chemical Engineering

(Graduation December, 1920)

Baseball 1, 2, 3, 4

Chem Club 2, 3, 4



**HAROLD R. LINHOFF**

Pasadena, California

B.S. in Chemical Engineering

Thesis: Oxidation of Aromatic Compounds

Glee Club 1, 2

Class Secretary 2

Class President 3

Chem Club 3, 4, Secretary 3

Chairman Clubhouse Campaign Committee

Sigma Alpha Pi 1, 2, 3, 4





**GEORGE OTTO SUMAN, JR.**

Hollywood, California

**B.S. in Civil Engineering**

Thesis: Design of Concrete Stadium

Dorm Club 1, 3, Treasurer !

Tech Staff 3, 4

Editor-in-Chief "Orange and White" 4

Sigma Alpha Pi 3, 4

Press Club 4



**JAMES E. HILL**

Pasadena, California

**B.S. in Chemistry**

Graduation December, 1920

Chem Club 1, 2, 3, 4; President 3

Board of Control 3

Sigma Alpha Pi 3, 4



**PAUL RUSSELL AMES**

Los Angeles, California

**B.S. in Chemical Engineering**

(Graduation December, 1920)

Chem Club 1, 2, 3, 4

Athletic Manager 2

Track 2, 3, 4, Captain 3, 4

Football 2

President Student Body 4

Dorm Club 1, 2, 3, 4, President 4

Sigma Alpha Pi 1, 2, 3, 4

Varsity Club 4

ABRAHAM LINCOLN HOLLINGER,  
JR.

Altadena, California

B.S. in Electrical Engineering

Thesis: Electrical Power Plant Design

Glee Club 3, 4

A. I. E. E. 4

Football 4

Board of Control 3

Representative-at-Large 4

Y. M. C. A. 4

Gnome Club 3, 4

Varsity Club 4



THERON C. HOUNSELL

Los Angeles, California

B.S. in Electrical Engineering

Thesis: Electrical Power Plant Design

Dorm Club 3, 4

A. I. E. E. 3, 4



HARTWICK M. BARNES

San Diego, California

B.S. in Mechanical Engineering

Thesis: Investigation of Impeller Blades of  
Centrifugal Pumps

A. S. M. E. 3, 4, Chairman 4

Dorm Club 1, 2, 4





**PAUL N. CROSBY**

Hemet, California

**B.S. in Electrical Engineering**

Thesis: Electrical Power Plant Design

A. I. E. E. 3, 4



**ROSCOE ROLAND ROCKAFIELD**

Chino, California

**B.S. in Mechanical Engineering**

Thesis: Investigation of Common Formulae  
for the Determination of Critical Speeds

A. S. M. E. 2, 3, 4, Secretary-Treasurer 3



**DAVID F. SMITH**

Stamford, Connecticut

**B.S. in Chemical Engineering**

Chem Club 2, 3, 4, Vice-President 4

Junior Travel Prize

Dorm Club 2, 3, 4



**DONALD D. SMITH**

Los Angeles, California

**B.S. in Electrical Engineering**

Thesis: Tertiary Windings in Transformers and Compensators

- President Student Body 3
- Secretary Student Body 4
- Board of Control 2, 3, 4
- Associate Editor Tech 3, 4
- Annual Staff 2, 3
- Associate Editor "Orange and White" 4
- A. S. M. E. 3, Chairman 3
- A. I. E. E. 3, 4, Secretary 4
- Y. M. C. A. 3, 4
- Glee Club 2, 3
- Orchestra 3
- Dorm Club 1, 2, 3, 4, Secretary-Treasurer 2, Vice-President 3
- Chem Club 1
- Press Club 4
- Sigma Alpha Pi 2, 3, 4



**GERALD A. LAVAGNINO**

Pasadena, California

**B.S. in Mechanical Engineering**

- Football 1, 2, 4
- Basketball 3, 4
- Gnome Club 2, 3, 4
- A. S. M. E. 4
- Varsity Club 4



**GEORGE L. CORY**

South Pasadena, California

**B.S. in Electrical Engineering**

Thesis: Application of Electricity to the Oil Industry

- Y. M. C. A. 4
- A. I. E. E. 4
- A. S. M. E. 2





**BRUCE BURNS**

Alhambra, California

**B.S. in Engineering and Economics**

Debating 2, 3  
Tech Staff 1, 2, 3  
Secretary Student Body 3  
Class President 3  
A. S. M. E. 2, 4  
Gnome Club 2, 3, 4



**LLOYD ENSIGN TOWNE**

Corona, California

**B.S. in Mechanical Engineering**

Thesis: Centrifugal Pump Investigation

Dorm Club 2, 3  
A. S. M. E. 2, 3  
Assistant Athletic Manager 3

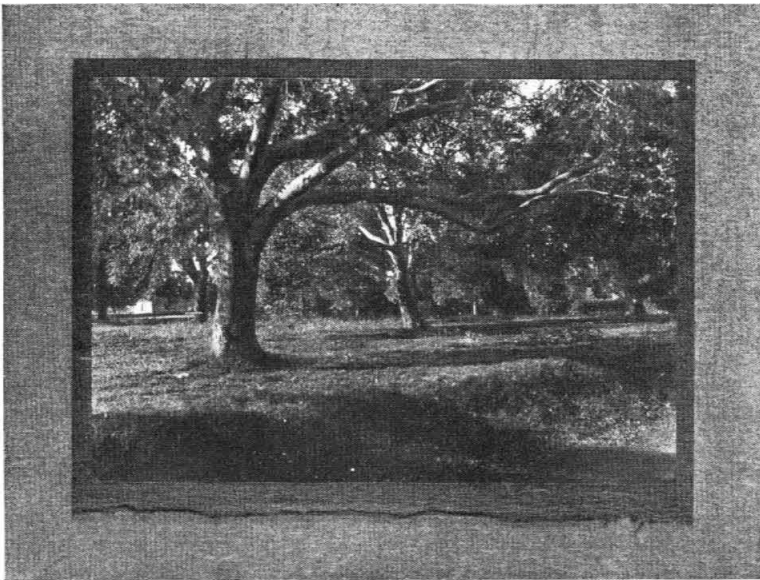


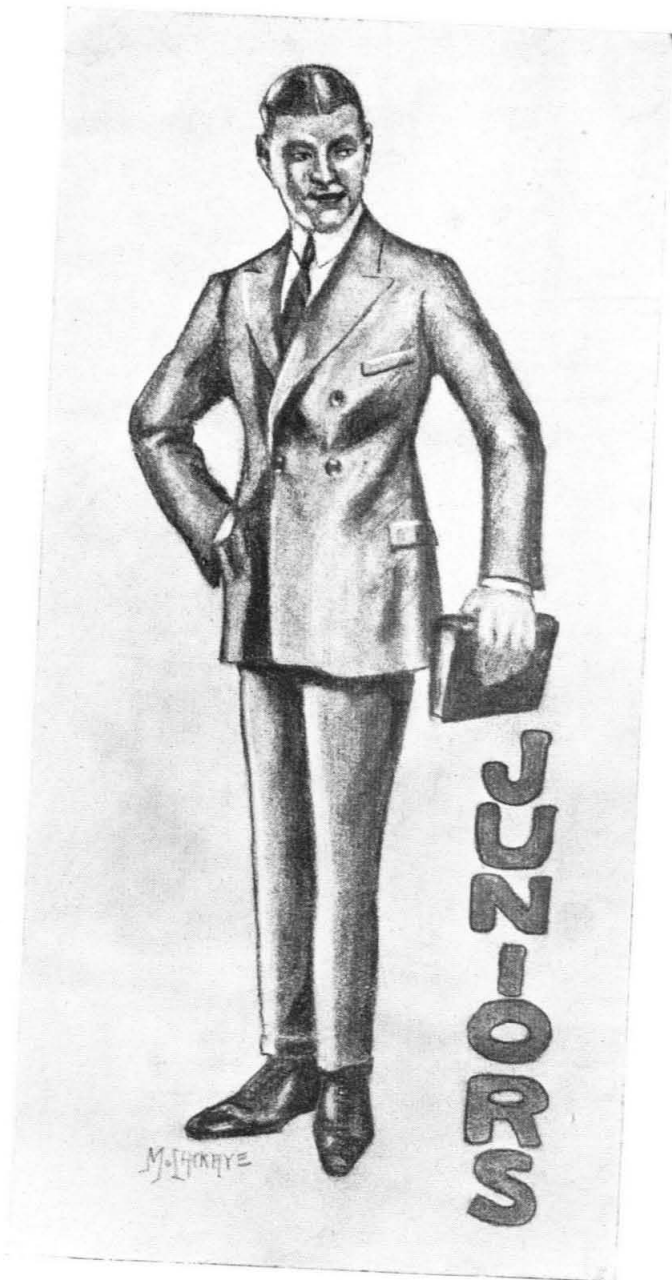
**FRANK R. MOSHER**

Glendale, California

**B.S. in Mechanical Engineering**

Gnome Club 1, 2, 3, 4  
Basketball 1  
Tech Staff 2  
Glee Club 2, 3, 4, Manager 4  
Executive Committee 3  
Football 3  
Board of Control 4  
Track 4  
Varsity Club 4

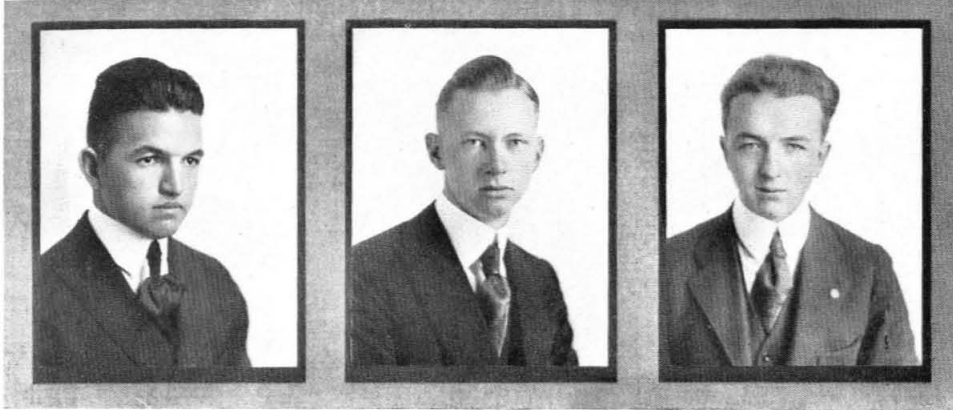




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M. H. K. H. Y. E.

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EDMUND LYMAN CHAFFEE  
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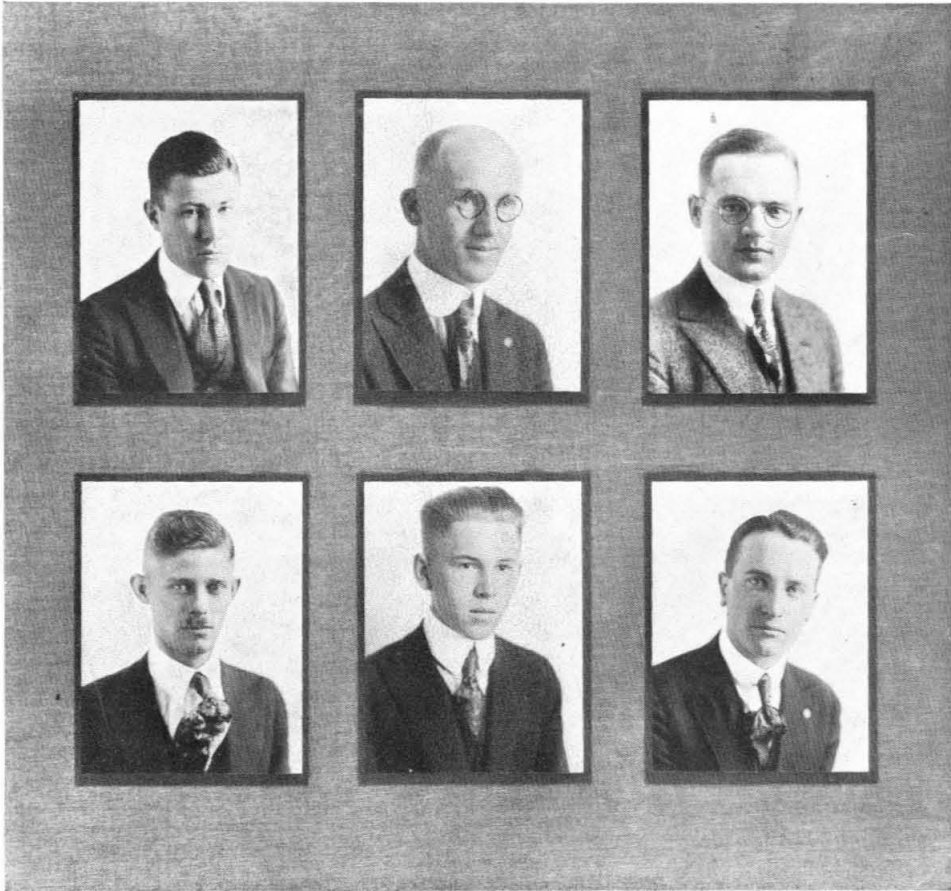
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Electrical Engineering  
Glendale, California

FRED ADELBERT MARSHALL  
General Course  
Pasadena, California

JOHN ELLIS DION  
Chemical Engineering  
Long Beach, California

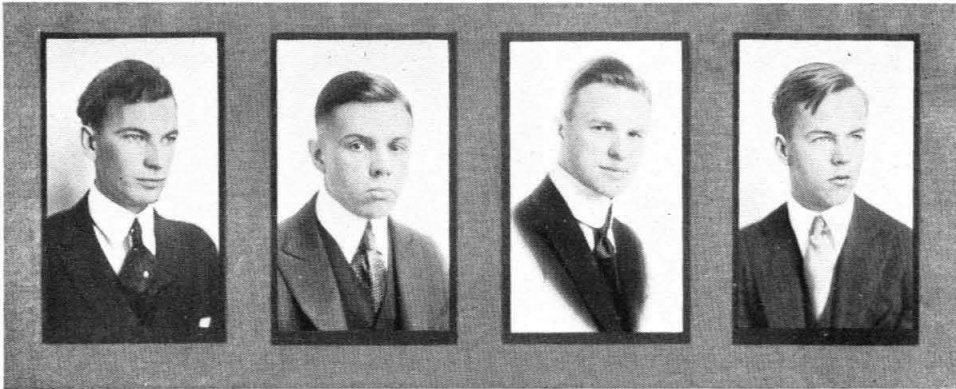
CHESTER ALBERT BOGGS  
Mechanical Engineering  
Pasadena, California







## Sophomore Class Officers

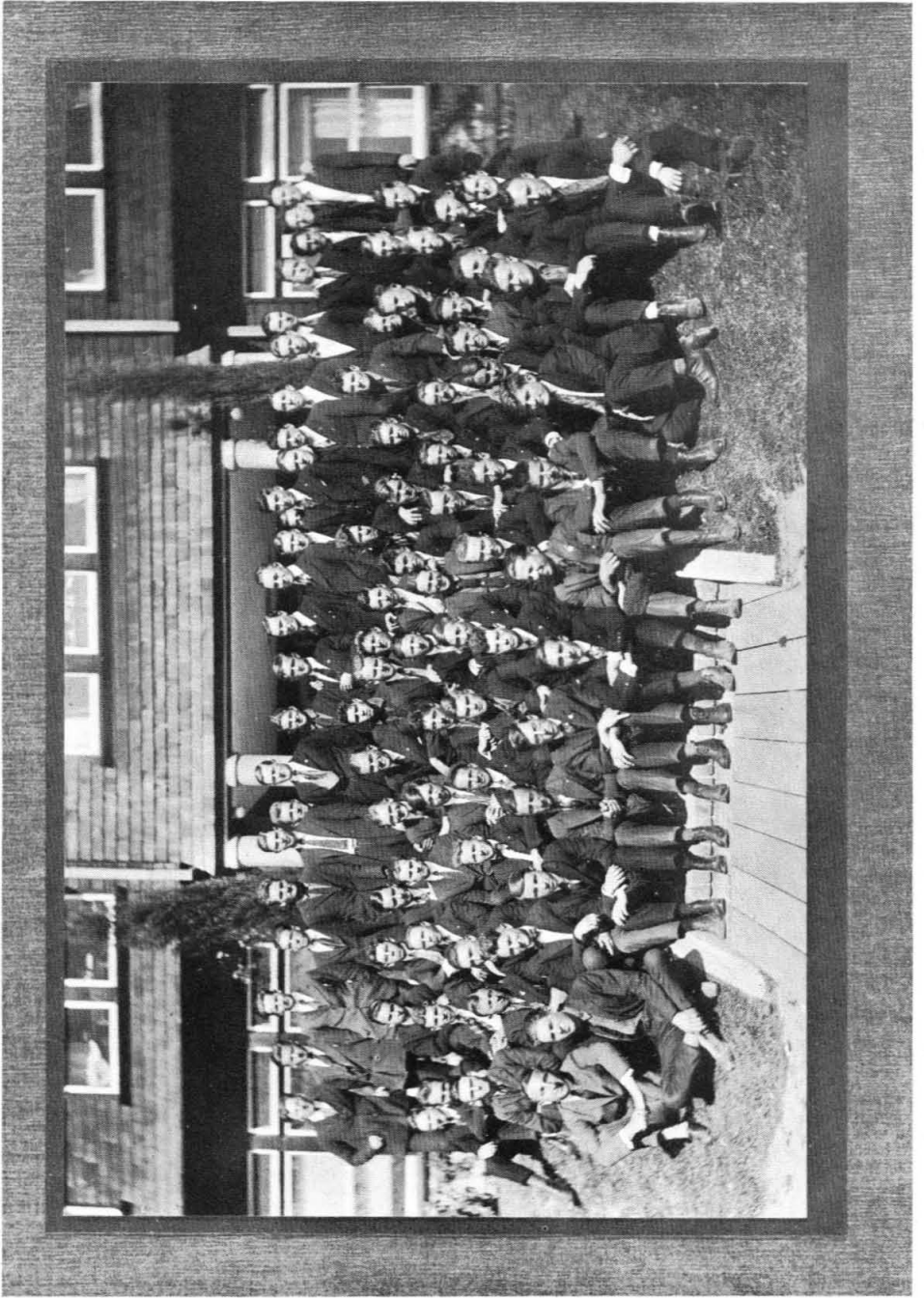


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Mechanical Engineering

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OLCOTT R. BULKLEY  
Electrical Engineering

JESS BURKS  
Chemical Engineering

ALFRED C. CATLAND  
Mechanical Engineering

LOUIS J. CLARKE  
Electrical Engineering

GEORGE H. CLEVER  
Civil Engineering

ROBERT J. CRISSMAN  
Electrical Engineering

HUESTON W. DAGG  
Electrical Engineering

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JOHN R. NORTH Electrical Engineering	LOREN G. SYMONS Mechanical Engineering

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WILLIAM T. TAYLOR  
Mechanical Engineering

HAIGALOIS TIMOURIAN  
Civil Engineering

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Mechanical Engineering

HOWARD G. VESPER  
Chemical Engineering

JOHN P. WALTER  
Chemical Engineering

FRED W. WALTERS  
Electrical Engineering

LESTER O. WARNER  
Chemical Engineering

GLEN M. WEBSTER  
Electrical Engineering

LEWIS J. WELLS  
Electrical Engineering

MARTIN J. WESSELER  
Civil Engineering

FARRAND WILSON  
Electrical Engineering

HOWARD M. WINEGARDEN  
Chemical Engineering

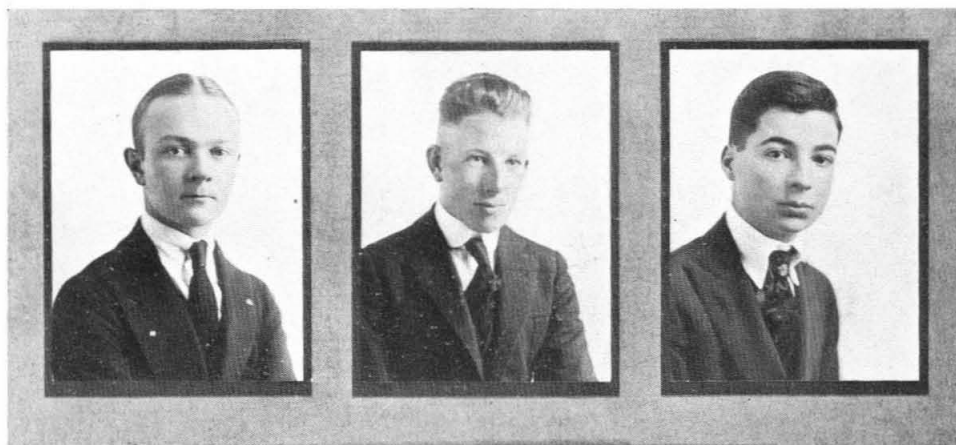


FORGIVE  
ME



M. L. K. H. E.

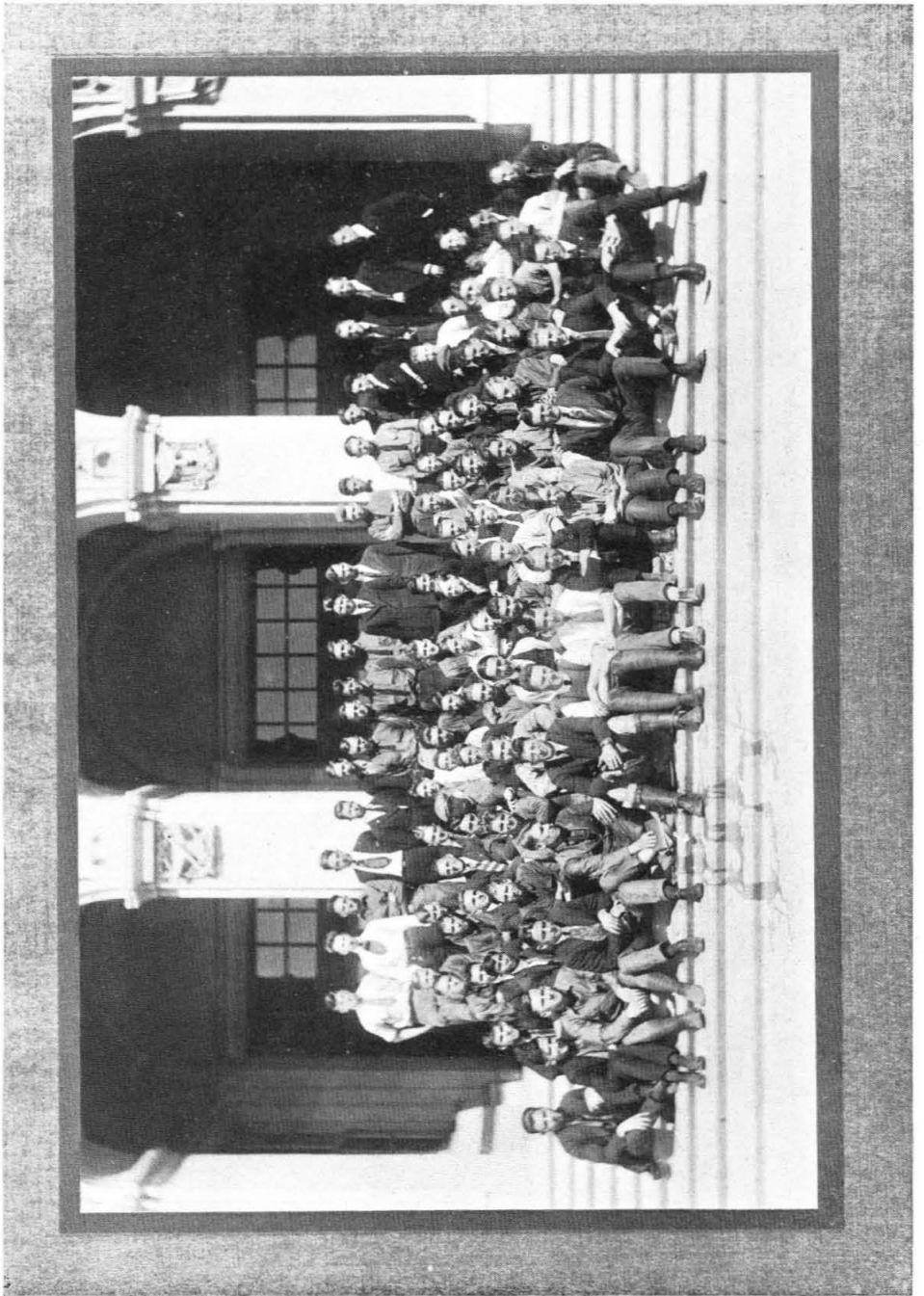
## Freshmen Class Officers



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Merle Kirkpatrick  
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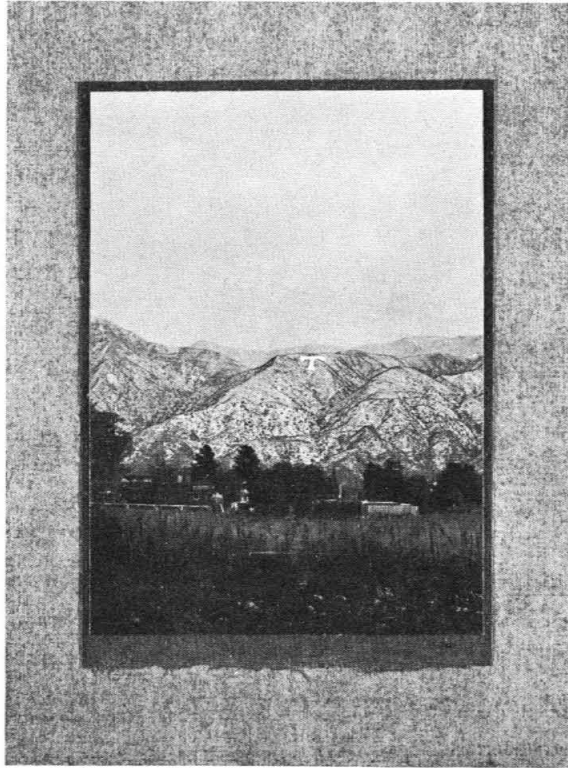


## Freshman Class

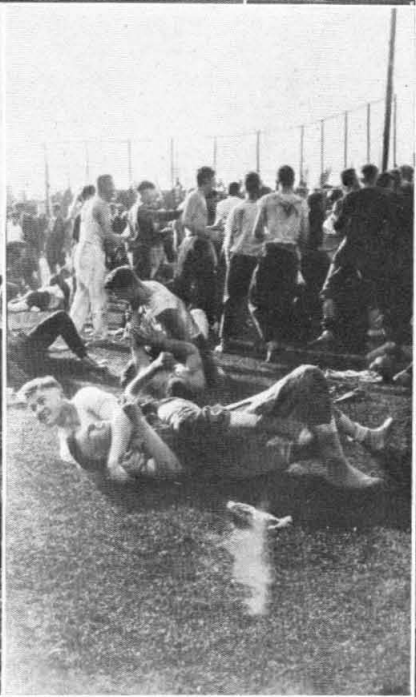
DELOS ABRAMS Chemical Engineering	LUCIUS B. COPELAND Chemistry
HAROLD L. ALBRIGHT Electrical Engineering	JACK COX Electrical Engineering
JOSEPH R. ALCOCK Chemical Engineering	RICHARD R. CRANDALL Mechanical Engineering
MAX ALCORN Mechanical Engineering	LAMBERT DE LA ROCHA Civil Engineering
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FRANK H. CLOUGH Civil Engineering	ARTHUR L. HERBERGER Electrical Engineering

ROBERT B. HEUER Engineering and Economics	WENDELL K. MILLAR Electrical Engineering
GEORGE I. HICKEY Electrical Engineering	GLEN I. MILLER Mechanical Engineering
OTTO A. HOLSTROM Electrical Engineering	WALTER T. MOORE Chemical Engineering
HARRY T. HONN Chemical Engineering	LEWIS M. MOTT SMITH Electrical Engineering
CHARLES S. HOWARD General Course	EDON W. MUDGETT Chemical Engineering
J. WAYNE HUTCHISON Chemical Engineering	HENRY T. NIES Chemical Engineering
S. JEPPSON Electrical Engineering	FRANCIS L. NORTH Mechanical Engineering
ARTHUR J. KEMP Mechanical Engineering	ALFRED J. ODMAN Electrical Engineering
ALBERT S. JOHNSON Electrical Engineering	R. GRAVES OSMUN Electrical Engineering
DOUGLAS G. KENDALL Electrical Engineering	CLARENCE R. OWENS Mechanical Engineering
OLIVER W. KILHAM Electrical Engineering	LEONARD B. PAYNE Electrical Engineering
MERLE KIRKPATRICK Chemical Engineering	JAMES B. PETTIT Chemical Engineering
CLARENCE B. KREAGER Civil Engineering	DUROC D. PRIAULX Chemical Engineering
GEORGE C. KUFFEL Chemical Engineering	RUSSELL J. PRIDY Electrical Engineering
MAX M. LACKAYE Chemical Engineering	BENNETT E. PUTERBAUGH Mechanical Engineering
PAUL J. LANGLIE Electrical Engineering	GEORGE N. RAMSEYER Civil Engineering
EDGAR N. LAYTON Electrical Engineering	JOHN H. RANSOM Chemistry
FRED G. LITTLE Electrical Engineering	HENRY C. RAPP Civil Engineering
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DONALD T. TARR Electrical Engineering	SANFORD J. WILLIAMS Electrical Engineering
WILFRED G. THOMPSON Mechanical Engineering	RAYMOND H. WILLIS Chemical Engineering
ALBERT F. THORMAN Electrical Engineering	A. WILSON Mechanical Engineering
COLIN W. TIMMONS General Course	RALPH C. WILSON Electrical Engineering
CHARLES H. TOLL, JR. Chemical Engineering	HERBERT WOODS Chemical Engineering
	ROBERT WOODS Civil Engineering



# ACTIVITIES



## THE POLE RUSH

The first big event of the year, the one most looked forward to by the Sophs and most dreaded by the Freshmen, is the annual Pole Rush. For the first time in the history of the Institute it was a walkaway for the second year men. Throughout the twenty minutes the one-by-six flag remained untouched, despite the valiant efforts of the youngsters.

With the Sophs formed in close order around the pole, the Frosh started things off by attempting to drive in two wedges, one from each side. The first rush was unsuccessful and after that it settled down to more or less personal struggles between the men on top and the men underneath. The big fight centered around the pole and time after time some youngster would start to climb on the shoulders of his fellow classmen only to be hauled down by the defenders. Green paint, black grease and tattered B. V. D.'s littered the field when the fracas was over. The Sophs were victors.

The men of '23 showed lots of fight in spite of the fact that the odds were against them and are determined to be the second Sophomore class to win the Pole Rush.

To add a little more incentive to the struggle it was agreed that the losers should give a dance in honor of the winners. The Freshmen gave a fine affair which was enjoyed by all, and it reflected a great deal of credit on the class.

## THE FROSH DANCE

The social season in the Institute was ushered in this year by a fine dance given by the class of '23. Tradition states that the class that loses the pole rush shall give the winning class a dance. The Freshmen lost, but they redeemed themselves by entertaining all the men in the Institute with a party at the South Pasadena Woman's Club. The evening of November 5th witnessed the largest gathering of Engineers in history. Many whom we thought had become permanent wall-flowers or stay-at-homes, burst forth in all their glory, borrowing the family car for the evening (and morning) and introducing their "best". Coming just after our football defeat by Oxy it was thought that a cloud of gloom might settle over the Engineers, but after one twang of the banjo and one sigh of the saxophone everybody's troubles disappeared. The Frosh proved themselves noble hosts, and everyone went home happy, 'n everything.

## THE FOOTBALL BANQUET

The final rites and ceremonies of the most successful season in football annals of the Institute were celebrated with eats, jazz and long black cigars, not to mention unusually interesting after-dinner speeches, at the Tea Cup Inn on December twelfth. This is the one event of the year when all the loyal men in the Institute turn out to show the Faculty how hard-boiled they really are.

The football banquet this year was attended by practically every man in the Institute. Long before the time scheduled for the feast a laughing group of men blocked the sidewalk in front of the place, impatient for the fun to begin, and when the gang was finally let in the eats disappeared in short order. A jazz band greeted the crowd and presided throughout the evening. The most important part of the program was the after-dinner speeches which were made enjoyable to everyone by the pleasant wit of Dr. Scherer, who acted as toastmaster. Speeches and reminiscences were given by the Coach and other football celebrities and were very well received by every one.

After this, letters were presented to the men winning them and the event passed into history with the singing, for the first time, of the new college song, written by Manton M. Barnes, '21, "Hail, C. I. T."

#### THE SOPHOMORE HOP

After a long rest (?) over the Christmas holidays most of the members of the Student Body were anxious to "up an' at 'em" again, so the Sophomore Hop proved to be the solution. Hotel Maryland was the scene of the dance. Even our Faculty members refused to settle down next to wall, but assisted in disposing of the punch and stepped around the floor with the best of them.

The ballroom was very prettily decorated, and the music was—well, wonderful. We were introduced to many new creations in the line of dress, and even Engineers can appreciate something good when they see it. Unfortunately C. I. T. is not a co-ed college and it is agreed that we cannot get along without the ladies occasionally, and then we cannot get along with them.

The Sophomore Class is to be congratulated on the success of the evening's entertainment.

#### THE "DORM" DANCES

Many men in the Institute, and their lady friends, are indebted to the fellows in the Dorm for two fine dances that were given this year. Contrary to the previous custom of allowing all to attend that cared to, and hence overcrowding the floor, a limited number of tickets for the dances was sold. Believing that the best sized crowd for the floor is sixty couples, about this number of tickets was sold each time. The funds derived proved ample to secure the best of music 'n everything.

The Dorm Club elects, at the beginning of each college year, several committees to handle its activities, and credit for the success of the social season this year is due to the Social Committee. The Freshmen in the Dorm have helped a great deal, and they have been responsible for the decorations and refreshments for the dances.

All four of the classes are represented by men living in the Dorm, but because of varied interests and different courses of study many do not become well acquainted. The dances have proved to be the means of "getting acquainted with your neighbor". The parties are always informal and have been very enjoyable.

## GNOME CLUB DANCE

On February twenty-sixth the Gnome Club gave an invitational dance at the Altadena Country Club. The party was one of the most successful of the season.

The ballroom of the clubhouse was beautifully decorated with the pennants and colors of the club. The big owl and crescent served its purpose well as illumination for the moonlight waltzes. It was noticed that these waltzes were always the most popular with some of our more sentimental Juniors.

The affair was made all the more enjoyable because of the presence of some of the old graduates of the Institute, who took the opportunity of making the party a reunion.

## THE T PARTY

One Saturday morning, about four years ago, a small group of men might have been seen starting out on the long toll road up Mt. Milson. After following it for five miles they turned off the trail, and made their way thru the underbrush until they emerged on the crest of a small peak overlooking Pasadena. Here they stopped and with the tools that they had brought with them began to make a clearing.

From the roof of Throop Hall the slowly growing space was carefully watched thru a transit, and from time to time telephone messages were sent out by the watcher to be wig-wagged to the workers on the hillside. The brush proved to be very tough and progress was slow but by evening quite a large opening had been made in the undergrowth to reward their efforts. After three more Saturdays spent in like manner the last stubborn shrub was cut down and the finished "T" stood out against the hillside a lasting emblem of the institution for which it stands.

The entire Student Body helped in the first cutting but since then it has grown to be the custom for the Freshmen, and other newcomers in the College, to see that the weeds are annually cut down. Following this tradition, the class of '23 made its pilgrimage early in the year. Almost the entire class took part in the "T" party which started from Pasadena early in the morning and before noon the work was finished. As usual some of the Freshmen got lost on the way up but they all managed to be around in time to eat lunch in Hennaca meadow. After a short rest the new men returned with a better understanding of that spirit which had actuated the men who first carved out the College emblem on the mountainside.

## ORANGE AND WHITE DANCE

In addition to putting out the most creditable annual publication in the history of the institution, the staff of the "Orange and White" gave one of the most popular dances of the season. The dance, given at the Hotel Maryland on April twenty-third, served as a means of obtaining additional funds for the publication of the yearbook.



About a hundred and twenty-five couples enjoyed the affair and many of the Tech men had invited friends from outside of the Institute. The Palm Room was very prettily decorated with orange and white streamers and ribbons, and the big "T" stood out prominently at the end of the ballroom. And talk about jazz! The orchestra simply eclipsed any that has favored the dances this season. For some time there were seven pieces on deck, and although the artists were Tech men who had donated their services, professional harmony was rendered until twelve-thirty.

The dance was a social success and a financial success, and everybody had a fine time.

#### SIGMA ALPHA PI DANCE

The social season at Tech was closed this year by the most brilliant dance of the season given at the Annandale Country Club on May twenty-eighth by Sigma Alpha Pi. The hosts had spared no pains in providing a wonderful setting for the affair. The Blue and Gold of the fraternity was represented by flowers around the ballroom; the floor was perfect; the music, excellent.

About two hundred guests were present, most of them being men from the Institute and their lady friends. For many of the men, it was the first visit to Annandale and it was unanimously agreed that the evening would be long remembered.

#### THE SURVEYING TRIP

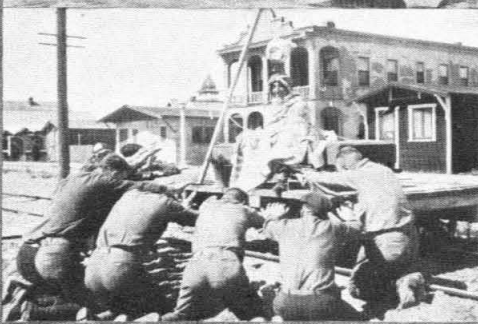
During the Spring vacation the Sophomore Civil Engineers journeyed to Balboa Beach and spent a profitable and enjoyable week surveying the bay and surrounding country.

The Corps of Engineers of the Army has made a thorough study of the Balboa Bay and Santa Ana River silt problem. The problem embraces triangulation survey of the entire country. Consequently, the embryo Civil Engineers had an excellent opportunity to put into practice some of the theories which they had been studying.

The entire time, however, was not spent in studying and working. The weather man was not kind and favored the boys with plenty of rain. Not being able to work in the rain, the men occupied their time in playing pranks on inhabitants and on each other. Ask Timourian, who was given a ride through the main streets of the metropolis on a hand car.

On Saturday night all the belles of the town assembled in the automatic dance hall seeking to entertain the eligibles. The entire party had a wonderful (?) time with the exception of Wynne Mullin, who could not induce a single member of the fair sex to dance with him. No doubt it was because of his resemblance to an Irish mortar dispenser. During the evening all the members of the party were forced to listen to several gems rendered by Mr. Mackenzie, our rising young genius of the musical world.

The trip had a happy ending despite the poor weather and we are sure that the residents of Balboa will long remember the visit of the college men.



## INSPECTION TRIPS

The purpose of inspection trips is two-fold: to enable the students to learn modern manufacturing and operating methods, and to acquaint them with work or problems that they may expect to encounter after graduation. The time spent in making trips is, of course, taken out of the regular schedule of courses but the men do not, by any means, lose anything thereby. The trips really are a supplement to the college work because the professors in charge usually arrange them so that they will be of particular interest and help at the particular time. The students are fortunate in having the guidance of men on the Faculty who have done considerable work here in the Southwest and who are acquainted with the heads of the various manufacturing and operating concerns. Ordinarily it is not until a student has reached his Junior year that he can fully appreciate the trips because it is in that year that he is introduced to the many phases of engineering and is given practical instruction in those branches. Inspection trips contribute considerably to the success of C. I. T. graduates.

### LLEWELLYN IRON WORKS

The first trip of the year was made by the Seniors in the Fall, and consisted of a visit to the Llewellyn Iron Works at Torrance. According to the usual custom, several machines were loaned for the occasion and the men were able to spend most of the afternoon in going through the plant. To many, most of the operations were novel in that they were done upon such a large scale. The method of heating, pouring and rolling metal was very interesting. The students from the electrical department were particularly interested in the electric furnaces; the chemists, in the composition of the metal in the furnaces.

The party had intended visiting the Union Tool works at Torrance but the Iron Works proved so interesting that most of the afternoon was spent there and sufficient time was not available to visit the former. The class is indebted to the Superintendent of the Llewellyn Company for the assistance he gave in explaining the method of making iron and steel products.

### EAGLE ROCK SUBSTATION

Accompanied by Professors Sorensen and Forster, the Senior Electricals visited the substation of the Southern California Edison Company at Eagle Rock on April 5th. The men were fortunate in having the guidance of Mr. H. H. Cox, Superintendent of the plant, who explained in detail the present and proposed work of the company. Mr. Sorensen has done considerable work in the station and on the Big Creek transmission line and was therefore able to accurately explain many of the details of the equipment.

The party was conducted through the whole plant, from roof to basement, and the E. E.'s were surprised to find that the substation is so large an

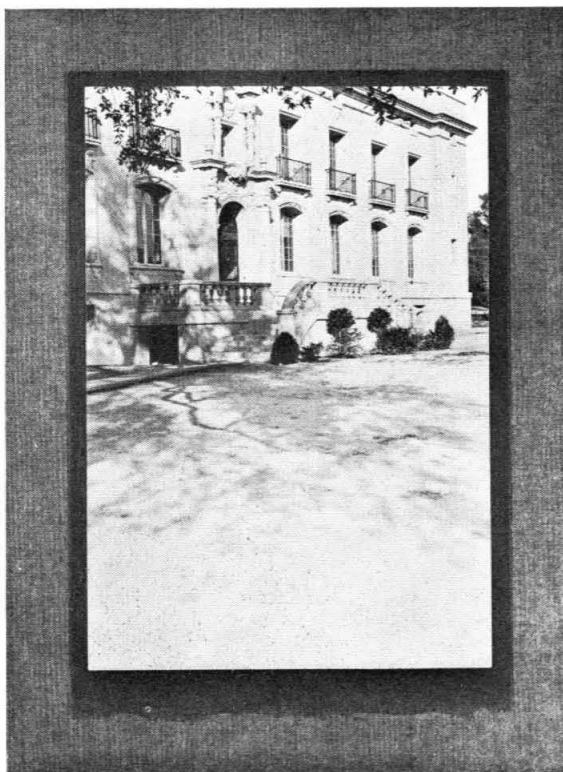
institution. Features of particular interest were the transmission lines, oil switches, transformers, lightning arresters, the two synchronous condensers, and the oiling and cooling systems. The station houses no generating equipment, but contains machinery for the distribution and regulation of the power from Big Creek.

### LONG BEACH TRIP

Apparently picking out the most disagreeable day possible, the Seniors, on April sixteenth, journeyed to Long Beach. The rain did rain and the wind did blow, but without mishap the party arrived at the Long Beach plant of the Southern California Edison Company soon after noon. A treat was in store for the students and soon they realized it. An inspection was first made of the three turbo-generators and the great surface condensers and equipment. The location of the plant affords the use of sea water for the condensation of exhaust steam. The generator-room also houses the exciters for the generators.

The boilers next occupied the attention of the students. It was surprising how few operators are needed for the operation of the oil-burners. All the boilers were in operation. The transformers and bus-bars were in another building and several different types of apparatus were noticed. The system feeds into the lines of The Edison Company in conjunction with the Big Creek line.

Later in the afternoon the Seniors visited the Long Beach Shipbuilding Company and became acquainted with the process of building a steel ship. The workmen had left, and all the usual noise also, so that the students were able to hear all the explanation that was so generously given by two officials of the plant. The visit included a trip through all the departments of the yard, from the office wherein the models and blueprints are made to the completed ship in the water. The method of launching a ship was very clearly explained. The most interesting feature was the method of putting the parts of the ship together after the parts had been assembled in the yards.



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# THE TECH

Published weekly by the Associated Student Body of California  
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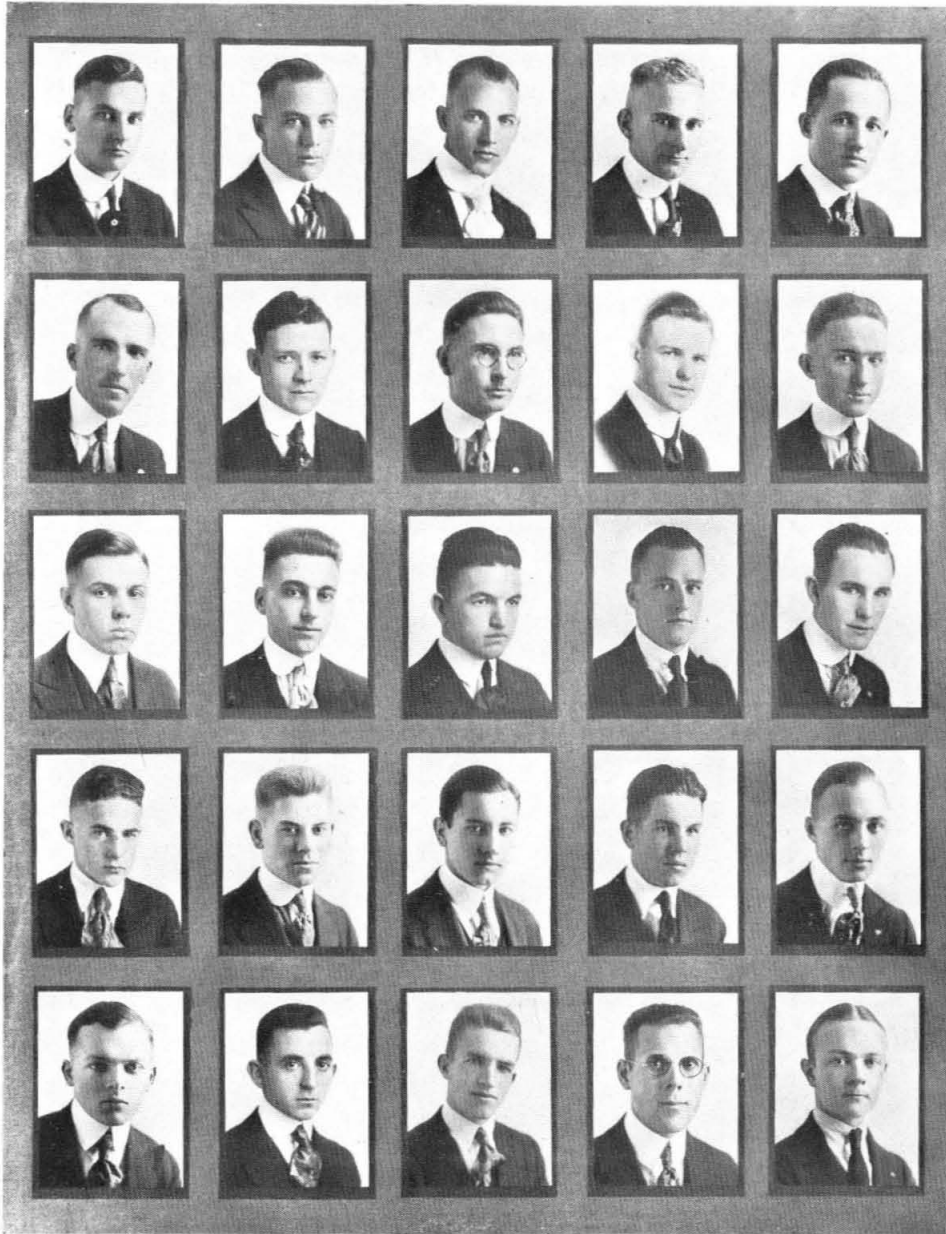
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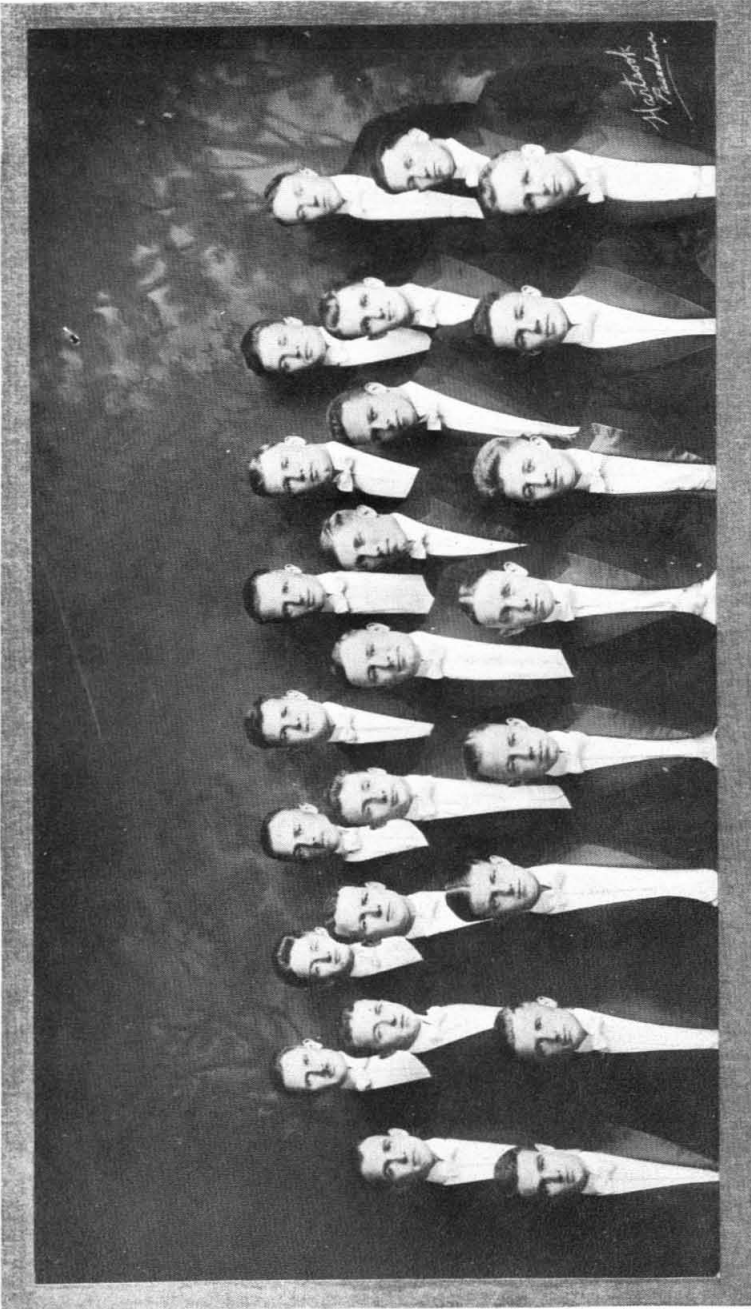
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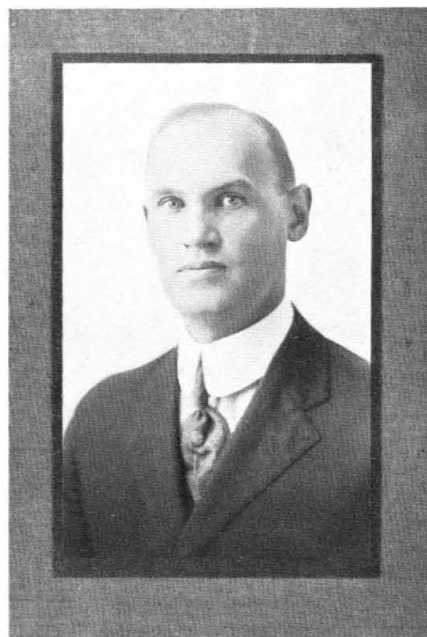


Preston	Varney	Erb	Catland	L. Larson	Hambrook	A. Hickey	Otis
Barbour	Morrison	Mosher	Lavagnino	Hollinger	Groat	Sawyer	Sears
Forgy	J. Larson	Vesper	Barnes	Moir	G. Hickey	Burns	St. Clair
							Towne

## Y. M. C. A.

### J. STANLEY ROBSON

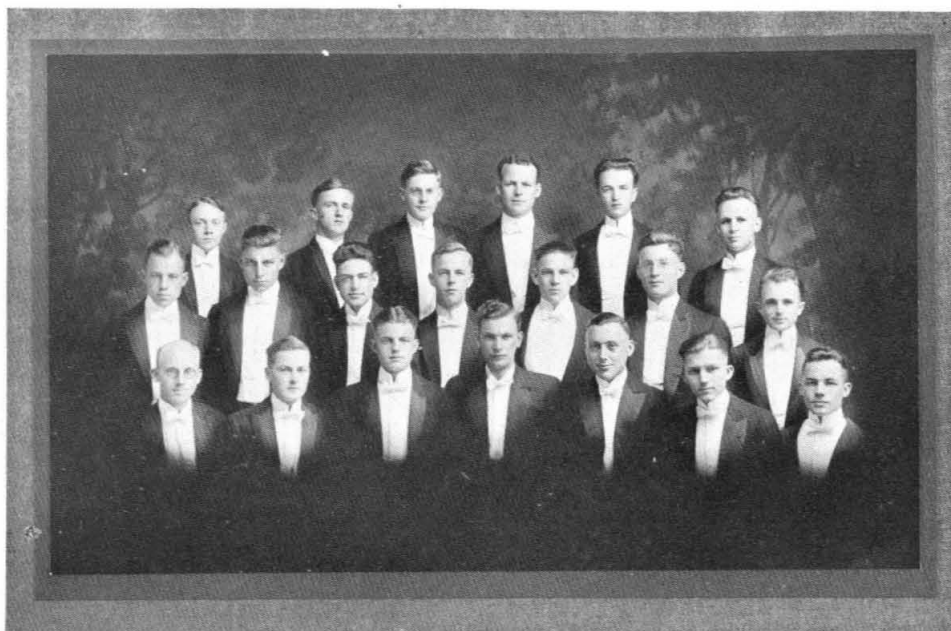
Mr. Robson came to us as a regular Y. M. C. A. Secretary at the first of the Institute year. He has been of great help in all the Student-Y. M. C. A. work and there are few, if any, of the students who have not benefited greatly by close association with him. He is a man of sterling qualities and world-wide experience, having been Physical Adviser in India for some three years. It is with great regret that we learn that he expects to return to India at the close of this term and resume his work in Physical Education at Lucknow Christian College, India.



This has been a banner year for the Student Y. M. C. A. The Association has been reorganized on the standard college basis and a general secretary has been employed to organize and direct the work. With a faithful band of officers and committeemen, elected and appointed by the members and their representatives, the Association has been able to greatly enlarge and extend its usefulness to the students.

Some of the features of this year's attainment are: Growth of membership from 26 to nearly 150; increase of budget from less than \$100.00 to over \$2,000.00; institution of an annual Reception the first week of the year and occasional banquets and socials; sending delegation to the Student Volunteer Convention at Des Moines; conducting popular mid-week meetings with good speakers; running employment and lost and found bureaus; conducting Bible Study classes suitable for college men; and the presentation to students and faculty of the first "Y" Handbook. Through these and other activities and its general spirit of loyalty to the college and helpfulness to all students the Y. M. C. A. has won a warm place for itself in this institution.





Otis	Macurda	H. Honsaker	Mosher	Morrison	St. Clair	
Barnes	Clever	C. Smith	Learned	Pettit	House	Bush
Chandler	J. Honsaker	Vesper	Mackenzie	Schneider	Herberger	Burns

### GLEE CLUB

This year has witnessed the uncovering of much talent in all lines of activity, but little did the men in the Institute realize how much musical talent was present until the Glee Club became active. Under the direction of Dr. Wear, the club was reorganized early in the year and has been the most active organization in the Institute.

The members have attended practice regularly, purchased new music, and under very able leadership have given several successful concerts. Like nearly all of the organizations, the club has worked out its own destiny and has been successful both musically and financially. A benefit concert was given, with the aid of the Institute orchestra, in behalf of the Student Y. M. C. A. the last of April, and proof was given the people of Pasadena that the men here are not only good engineers, but excellent entertainers. The club plans to take, in the future, an extensive tour, and if "quality counts" the trip will be a success.

## THE ORCHESTRA

The Orchestra, a new institution at C. I. T., was organized at the beginning of the term of 1919. Its first appearance was at a musical program presented before the entire student body, in which it was assisted by several outside artists as well as local talent. The second appearance was again before the student body where the orchestra played for fifteen minutes as a prelude to the speaker on the program.

Perhaps the most important event for the season was the appearance of the entire orchestra at a benefit program for the C. I. T. "Y". The orchestra opened and closed the program and was received with much applause.

The orchestra next year hopes to be placed on a firmer stand. Rehearsals this last year have been undertaken under many difficulties. The members have found it hard to be present at all of the rehearsals and those who were faithful in their endeavor to attend every rehearsal certainly deserve all the credit due them. The members are as follows:

Violins: Barnes, Hess, Whistler, Hutchinson, Baker, Maier, McClung, Robson, Hare and Merchant.

Cello: Prof. Dickinson.

Bass: Walters.

Oboe: Catlin.

Clarinets: Toll, Ramseyer.

Flute: Garfield.

Cornets: Vesper, Blakely.

Trombone: Bear.

Horn: C. R. Keith.

Drums: Chaffee.

Piano: Bush.

Leader: Macurda.

## ELECTRICAL ENGINEERING SOCIETY

RUSSELL M. OTIS  
Chairman

DONALD D. SMITH  
Secretary-Treasurer

### MEMBERS

T. C. Hounsell	M. A. Sawyer	H. H. Honsaker
G. L. Cory	R. E. Hambrook	H. Endicott
V. Best	E. G. Forgy	C. E. Fitch
D. D. Smith	E. H. Schreiber	A. L. Hollinger
R. M. Otis	R. W. Preston	R. Ager
E. V. Hounsell	H. L. Albright	W. A. Keith

The Electricals claim that they have had the most successful year in the history of the local societies. Not content with the somewhat limited scope of the Student Branch of the American Institute of Electrical Engineers, the members of that society in February organized an Electrical Engineering club that included the A. I. E. E. members and many others that were interested.

Its aims have been to provide interesting and instructive speakers on modern subjects, and to provide a means whereby the students could get some training in preparing and presenting a subject to an audience.

In this and other respects it has been very successful. The subjects have been many and varied, and all worth-while. Several Seniors have spoken on their thesis work, and in a short while have given the listeners the results of several months' research.

With the rapid growth of the Electrical Engineering department, this club will attain a position of great importance among the societies of the Institute.

## A. S. M. E. STUDENT BRANCH

Professor R. L. Daugherty, Honorary Chairman  
Hartwick M. Barnes, Chairman  
John C. Lewis, Vice-Chairman  
Chester Boggs, Secretary-Treasurer

R. M. Bruce  
B. Burns  
E. L. Champion  
W. R. Craig  
A. Gudmundsen  
J. Howard

J. H. Hood  
G. A. Lavagnino  
A. L. Klein  
F. R. Mosher  
R. R. Rockafeld  
L. E. Towne

The C. I. T. Student Branch of the American Society of Mechanical Engineers was nearly lost in the rush of work last year, but was reorganized and new officers elected early in 1920. The membership of the society is small, only Junior and Senior students of Mechanical Engineering being eligible. No attempt is made toward enlargement through choosing members who are not directly interested in the arts and sciences connected with Mechanical Engineering.

The members receive the Journal of the A. S. M. E. Members of the student branch are kept in touch with the parent society, and upon graduation retain, for two years, the privilege of attending meetings of the local sections, thus giving them an opportunity to meet the men actively engaged in their profession. They may also subscribe to the Journal of the society at membership rates, for the same period.

In addition to meetings for organization and business, an unusually successful meeting was held early in the spring, at which Professor Daugherty gave a lecture on Hydro-Electric power development in the United States, illustrated by slides from his collection showing details of many different plants throughout the country.

## THE MOLECULAR DETECTIVE SOCIETY

### OFFICERS

Chief Molecule	Harold Barnett
Atom	David Smith
Keeper of Valences	Howard Winegarden
Reducing Agent	Jess Burks

### MEMBERS

John F. Blackburn	Willard H. Tracy	Charles H. Toll, Jr.
Howard M. Winegarden	Raymond H. Willis	Walter T. Moore
Paul I. Noble	John H. Ransom	James E. Hill
Joseph R. Alcock	Wilard E. Baier	Harvey W. House
Phillip S. Clarke	A. C. Smith	Dr. Lucas
Jess Burks	Howard D. Hoenshel	Willard J. Brown
Harold A. Barnett	Richard R. Crandall	Donald Loughridge
Frederic A. Maurer	Charles F. Simpson	Karl A. Ferkel
David Smiley	Albert L. Raymond	Fred A. Marshall
Alfred J. Stamm	Charles Quirnbach	Lucius B. Copeland
	John E. Dion	

The association of chemistry students started its program this year with a lecture by Dr. Millikan on the Developments in Physical Science during the war. This was followed by a lecture on Citrus By-Products by Mr. C. P. Wilson, Chief Chemist of the Exchange By-Products Company of Corona, California. R. C. Smith and Bozarth were the speakers in a joint lecture on the investigation and manufacture of poison gases and some of their peace-time uses. Mr. E. M. Chase of the U. S. Bureau of Chemistry gave the club an interesting explanation of the organization and work of the government chemical service.

The annual Spring hike and one more lecture ended this year's activities. The main features of the hike were a visit to the Mt. Wilson Observatory and a camp in the Santa Anita Canyon. The trip lasted two days.

The insignia of the club is a shield with two retorts and the Institute "T" on it.

## THE RADIO CLUB

President, Hubert Woods

Secretary-Treasurer, Ralston Bear

### MEMBERS

Professor Forster  
Handley Fitzpatrick  
Lyle Dillon

Ralston Bear  
Paul Langlie  
Frederick McClung

Hubert Woods

At the beginning of this year several students who were interested in wireless telegraphy and telephony organized the Radio Club, and officers were elected. The purpose of this organization was to establish a station at the Institute and to promote interest in amateur telegraphy.

The Institute loaned the club several pieces of apparatus left by the Government but no financial aid was forthcoming. The members donated apparatus, and soon a receiving and sending set was completed. For some reason, however, the Government would not issue the club a license so the men were forced to use a range of 200 meters.

Despite these difficulties, the club has done considerable work and has had some interesting experiences. The men have heard Honolulu, Germany and other distant stations. Lately wireless telephone communication has been carried on with the Government station at Arcadia. It is hoped the Institute will further aid the club next year so that a well-equipped station can be maintained.

## THE VARSITY CLUB

### OFFICERS

President, Jess Burks  
Vice-President, Arthur Hickey  
Secretary-Treasurer, Linnie Larson

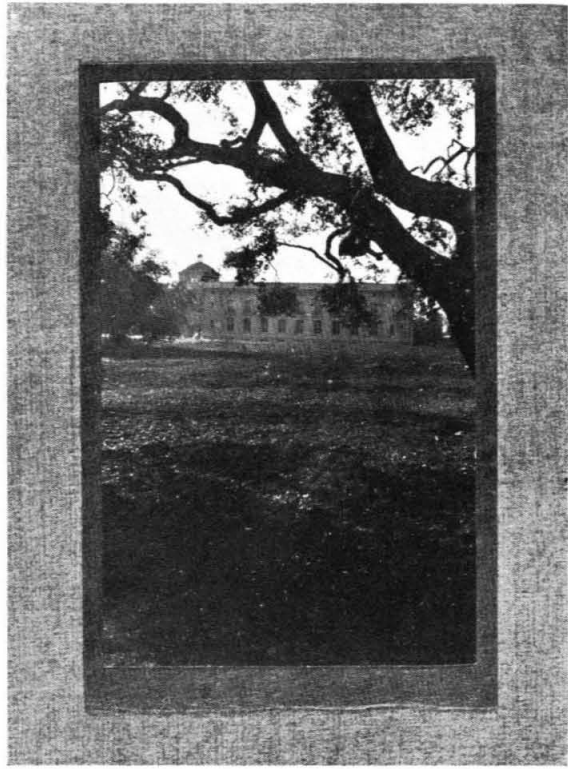
The graduating members of the Varsity Club are:

Otis	Reynolds
Payne	Ames
Renshaw	Hollinger
Black	Lavagnino
Moshier	

The necessity of an organization composed of men who take an active part in athletics has long been obvious at California Institute of Technology. Realizing this, it was agreed that such an organization should be formed, and several letter winners met with the Athletic Director and organized a Committee on Constitution. At a meeting held later in the year at which all letter men were present the Constitution was adopted and officers were elected.

The object of the Varsity Club is to shape the athletic policy of the Institute from the standpoint of the Student Body. The Constitution provides that a committee composed of the captains of the various teams shall meet with the Faculty Athletic Committee and decide to whom letters shall be awarded. The Club is further empowered to make recommendations to the Faculty in regard to the management of athletics.

It is hoped that the Varsity Club will continue to expand, for the influence of such an organization can hardly be estimated.



ALVMNI



## ALUMNI

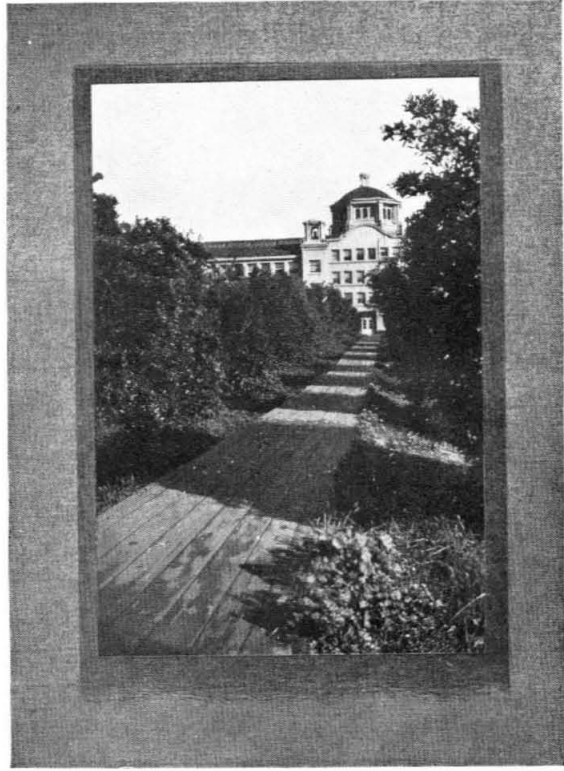
This Spring a number of Alumni of the Institute met and organized the C. I. T. Alumni Association. The following officers were elected: President, Ray F. Call, '15; Vice-President, Ben Ferguson, '12; Secretary-Treasurer, Earl A. Burt, '15.

Believing that it would be of much interest to the readers of the Orange and White to know what our graduates are now doing, the following list is published. It is by no means complete, as it was not possible to get in touch with all the old "Throopers".

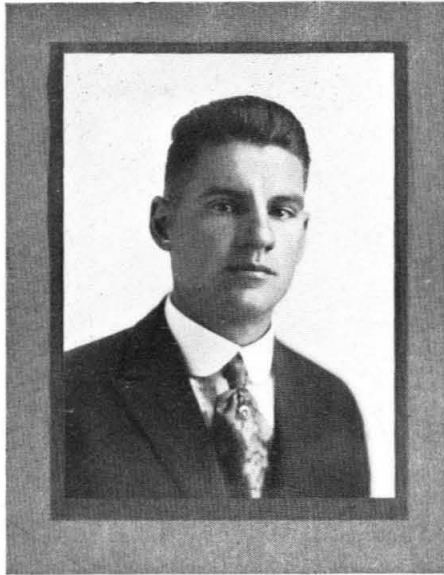
Kirk W. Dyer, '02, Secretary-Treasurer Frisbee Motor Co.  
James M. Gaylord, '02, Elect. Engr. U. S. Reclamation Service.  
R. W. Shoemaker, '03, Engr. of Distr., Great West. Power Co.  
H. C. McCutcheon, '04, Sales Engineer, Ohio Brass Co.  
John C. Gaylord, '06, Electrical Designer, S. C. Edison Co.  
Edgar S. Maxson, '06, Meterman, S. C. Edison Co.  
Frank E. Norton, '06, Utah Copper Co.  
Rafael Pimentel, '07, Consulting Engineer.  
Harold C. Hill, '11, Motor Specialist, I. G. E. Co.  
Stanley M. Lewis, '11, Test Dept., G. E. Co.  
Ben Ferguson, '12, Engr., Arizona Corporation Commission.  
Norman E. Humphrey, '12, Supt. Light and Water Dept., Azusa.  
John D. Merrifield, '12, Chief Engr., Reed Mfg. Co.  
Frank C. Miller, '12, City Engineer, Burbank, Cal.  
Ray Gerhart, '13, Sales Mgr., Worthington Co.  
Chester R. Hovey, '13, Engineer, Hovey-Baumann Co.  
Louis J. Koch, '13, Engineer, Thomas Haverty Co.  
Ralph W. Parkinson, '13, Electrical Engineer.  
Herbert S. Wood, '13, Local Supt., So. Sierras Power Co.  
William F. Ayars, '14, Treasurer, Ayars Machine Co.  
Herbert B. Gerckens, '14, Engineer, Llewellyn Iron Works.  
Walter L. Newton, '14, Consulting Engineer.  
Albert W. Wells, '14, Engineer, G. E. Co.  
Earl A. Burt, '15, District Engr., L. A. County.  
Ray F. Call, '15, Physical Director, C. I. T.  
Raymond O. Catland, '15, Chief Engineer.  
Verne D. Elliot, '15, Engineering Dept., S. C. Edison Co.  
Robert S. Ferguson, '15, Asst. E. E., Goodyear Rubber Co.  
William M. Holmes, '15, Chief of Inspection, Edward Mfg. Co.  
Charles H. Wilcox, '15, First Lieut. Aviation Corps.  
Max H. Carson, '16, Asst. Engr., U. S. Geological Survey.  
Bernard E. Chamberlin, '16, Calif. State Highway Com.  
Jesse DuMond, '16, Elect. Engr., Thompson Houston Co.  
Verdine E. Farmer, '16, Turbine Dept., G. E. Co.  
Tom J. Harris, '16, Pacific Telephone & Telegraph Co.  
Harold E. Shugart, '17, Civil Engineer, San Joaquin L. & P.  
Clark E. Baker, '17, Elect. Engr., G. E. Co.  
Joe A. Beattie, '17, Efficiency Engr., Standard Oil Co.  
Archie R. Kemp, '17, Chemist, Western Elect. Co.  
Harry P. Meyer, '17, Electrical Engineer.

Ezra D. Mosher, '17, Farming.  
 Fred L. Poole, '17, Lighting Specialist, G. E. Co.  
 Roy T. Richards, '17, Electrical Engineer.  
 Sidney R. Searl, '17, Asst. Engr., L. A. Bd. Public Utilities.  
 Claud W. Sopp, '17, Junior Engr., U. S. Geolog. Survey.  
 Arthur Stert, '17, Ford Motor Co.  
 Jesse P. Youtz, '17, Engineer, G. E. Co.  
 Clark F. Andrews, '18, Engr. Dept., S. C. Edison Co.  
 Sam J. Broadwell, '18, Student, U. of Chicago.  
 S. C. Carnahan, '18, Asst. Engr., L. A. Bd. of Public Util.  
 Louis F. Essick, '18, Test. Dept., G. E. Co.  
 W. R. Hainsworth, '18, Graduate Student, M. I. T.  
 K. J. Harrison, '18, Engineer, S. C. Edison Co.  
 Gene B. Heywood, '18, Civil Engr., S. C. Edison Co.  
 G. R. McDonald, '18, Test. Dept., G. E. Co.  
 Donovan Nutt, '18, Chemist, Standard Oil Co.  
 Francis M. Pease, '18, Western Electric Co.  
 Noel A. Pike, '18, Elect. Engr., So. Sierras Power Co.  
 Samuel Rasmussen, '18, Farming.  
 Carlyle H. Ridenour, '18, First Lieut. U. S. Aviation Corps.  
 Albert K. Smith, '18, Chipron Stamp Co.  
 Retla Alter, '18, Salesman, Anderson Meyer Co.  
 Corliss A. Bercaw, '18, Westinghouse E. & Mfg. Co.  
 Frank R. Capra, '18, Assistant Director.  
 Robert W. Flory, '18, Chem. Engr., American Trona Corpn.  
 Joe F. Hartley, '18, Chem. Engr., Brinistool Company.  
 Eugene H. Imler, '18, Asst. Engr., U. S. Engr. Corps.  
 Fritz W. Karge, '18, Engr. Dept. Union Oil Co.  
 H. D. Kirschman, '18, Asst. Dept. of Chem., U. of Calif.  
 Wm. A. Krouss, '18, Test Dept., G. E. Co.  
 Nevin R. Shade, '18, General Petroleum Co.  
 N. E. Silverthorn, '18, Electrician, S. C. Edison Co.  
 James P. Steele, '18, Poultry Farmer.  
 Wilber C. Thomas, '18, Standard Oil Co., China.  
 T. W. Torgerson, '18, Test Dept., G. E. Co.  
 Clarence N. Ward, '18, Draftsman, So. Pacific Co.  
 Milton W. Weldon, '18, Asst. Supt. Concrete Products Co.  
 Clarence M. Bjerke, '19, Engr. Draftsman, L. A. Co. Surveyor's Office.  
 J. Joe Huber, '19, Electrical Engineer.  
 Walter Ogier, '19, Signal Dept., Pacific Elect. Ry.

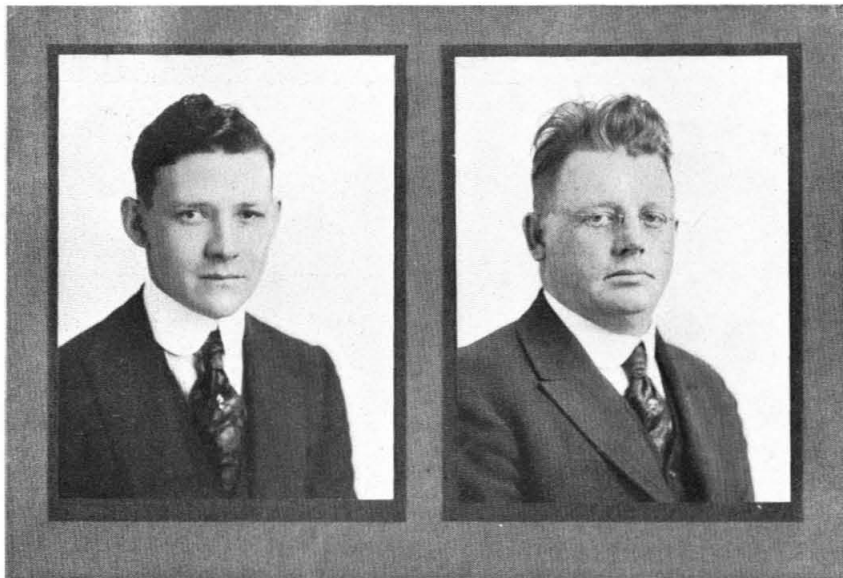
Soon after Commencement this year the Association is to have a reunion in which the men of '20 will also participate, and it is hoped that further activities of the Association will make it possible for all of our graduates to keep in touch with each other.



# ATHLETICS



RAY CALL  
Director of Athletics



R. ERRETT WOODBURY  
Student Manager of Athletics

PROFESSOR ROYAL W. SORENNEN  
Chairman of Athletic Committee

## ATHLETICS AT CALIFORNIA INSTITUTE OF TECHNOLOGY

Year after year, no doubt ever since the new foundation in 1910, the Faculty and Student Body of the California Institute of Technology have been confronted by that ever-disturbing and never-settled question, "Is it worth while to support athletic teams in a Technological College?" If it is not worth while, then we should drop all interest in athletics and be known as an old maid's home, where the students have their knitting circles, and play ring-around-the-rosy. On the other hand, if we are to support athletic teams, let there be a time provision made in the curriculum for such activities, and let the Student Body get whole-heartedly back of the movement and enter into some kind of athletics. "Whatever is worth doing at all is worth doing well!"

There is thus expressed in the above paragraph a condition which exists at the California Institute of Technology, and which is prevalent in all Engineering Institutions. There is so much knowledge of a technical and general character which must be crowded into a four-year Engineering course that athletics, being generally regarded by college authorities as unessential, are shoved aside and allow to languish.

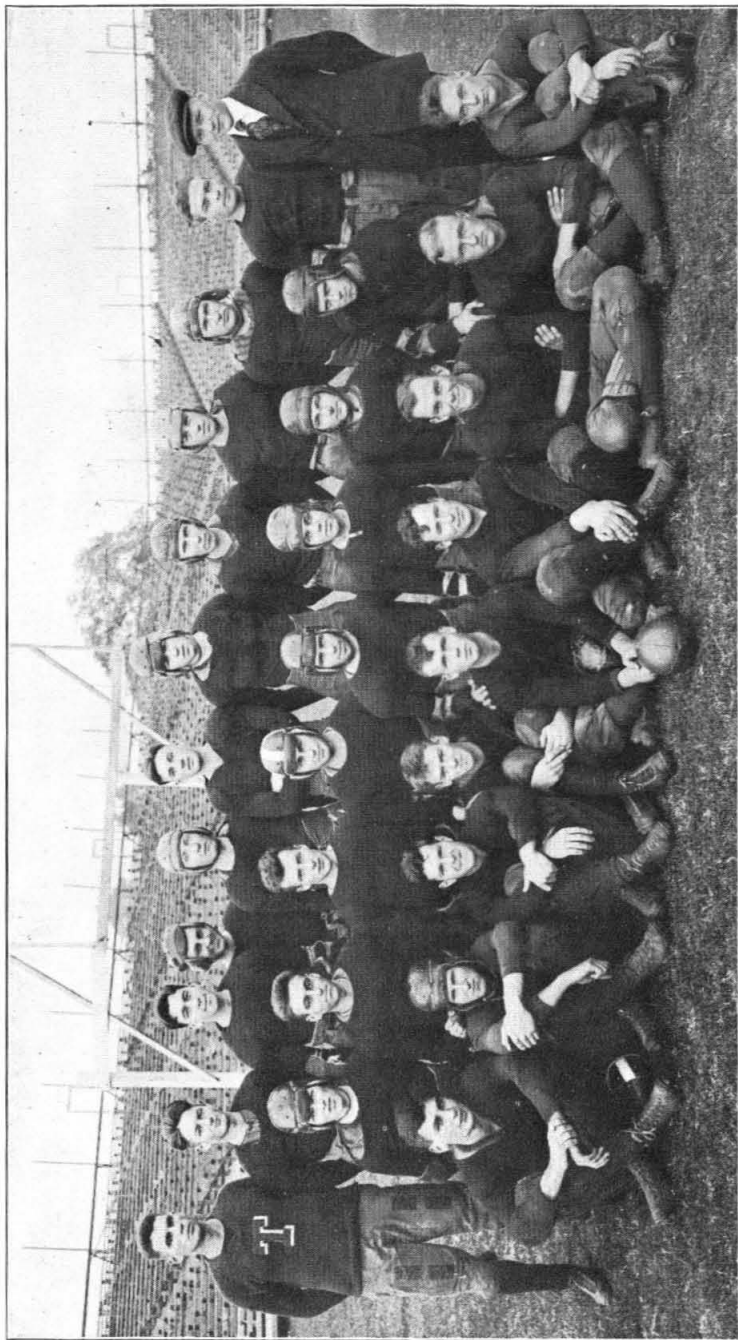
Now most of the men realize the value of athletics. They are trying, under very strenuous conditions, to foster and build up an athletic spirit, and are entering into athletics, despite the added tax it imposes on their college work, for the good of the Institute, if not for their own good. Now, when taken in connection with the proper amount of mental work, physical exercise is beneficial. But when added to an already lesson-burdened day, the amount of time necessary to the turning-out of a good football, basketball, or baseball team imposes too severe a strain on the average man. He cannot stand the pace. As a consequence the amount of time devoted to athletics at the Institute is a minimum. As a matter of fact, not enough time is spent to insure the perfect team-work we would like to see displayed. Consequently our teams almost invariably go down to defeat before other teams, when the deciding factor is the training of each one.

Therefore, O Gentle Reader, before you criticise an Institution of 350 men for not turning out record-making teams, consider the full facts of the case, and compare our record with that of any other similar Institution. It is our opinion that the California Institute of Technology will not suffer from the comparison. You will, and we do, concede vast credit to the athletes of C. I. T. for doing as well as they have in the face of almost insurmountable difficulties.



M. L. RAYE

FOOTBALL



Call (Coach)    Varney    Shields    Hounsell    House    Payne    Rico    Groat    Hood    Powers    Hickey    Woodbury (Manager)  
                     Garfield    Makosky    Lavagnino    Symons    Beeson    Kemp    Stenzel    Clough  
                     Black        Pierce       Catland       Mullin       Hambrook    Hollinger    Rohloff    Fletcher    Renshaw (Captain)

## FOOTBALL

Football traditions at C. I. T., as a result of the past year's indulgence in the great American game, have not only been preserved in full vigor and splendor, but have been greatly intensified and augmented. The year 1919-1920 has been, unquestionably, the most successful in the history of the California Institute of Technology. Its football squad, of its four Conference games, won two and lost two. It lost only one practice game, and this was its very first of the season. In the Conference standing at the end of the season, C. I. T. ranked third, with Pomona first and Occidental second.

In previous years it was almost impossible to turn out a good football team because of the small enrollment of the College. Last year, however, the enrollment was very greatly increased through the agency of the S. A. T. C. Freshmen were allowed on Varsity teams. Consequently, at the opening of school this year there was an abundance of good football material among the student body, and when first call was issued, some thirty or forty men responded. It was apparent from the first that a team of considerable strength would be developed. Captain Bill Renshaw headed the list of eight letter men—Catland, Fletcher, Black, Hollinger, Klein, Lavagnino, Stenzil and Renshaw—who reported. Besides these veterans the following men donned suits: Kemp, Hambrook, Webster, Rohloff, Beeson, Groat, Mullin, Symons, Clough, Shields, Shield, Garfield, Hickey, Powers, Pierce, Fagin, Makosky, Hood, Rico, Pattison, Hounsell, Reeves and House. A Freshman squad was formed from men who showed their spirit by turning out, even with the certainty of not being able to play in the big games.

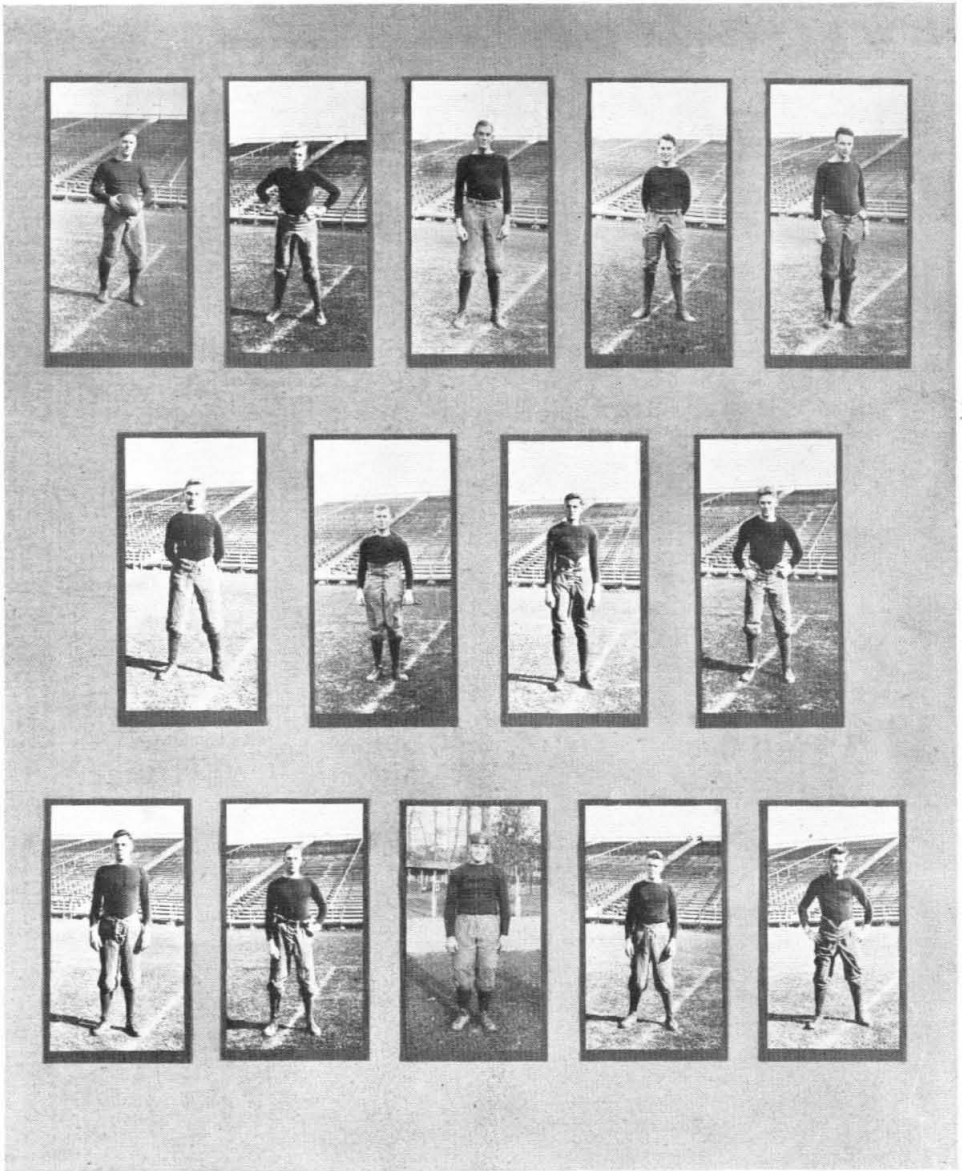
The first practice affair was with the Keel Club of Long Beach. As this aggregation had been organized longer, and, as shown later, was one of the strongest squads in this section, C. I. T. was beaten, 16-0. Next the team won an easy victory from the gobs of the U. S. S. Idaho. Other practice games were with Loyola College, U. S. S. New Mexico, and the Sherman Indians. As finally developed, the C. I. T. line was the heaviest in Southern California, averaging 180 pounds to the man.

Great credit is due the men who stuck throughout the season without getting into the lineup. The men on the bench make the team just as much as the men in the field. Without subs to practice with a football team would be a sorry affair. The men who, at the end of the season, were awarded letters, are: Renshaw (Captain), Hickey, Black, Catland (Captain-elect), Rohloff, Mullin, Hollinger, Groat, Lavagnino, Stenzel, Hambrook, Beeson, Kemp, and Symons.

### GAMES PLAYED

C. I. T. 0, Keel Club 16	C. I. T. 19, Whittier 0
C. I. T. 31, U. S. S. Idaho 0	C. I. T. 6, Occidental 19
C. I. T. 26, Loyola 6	C. I. T. 0, Pomona 21
C. I. T. 7, U. S. S. New Mexico 6	C. I. T. 7, Redlands 6
C. I. T. 4, Sherman Indians 0	





LETTER MEN

Hickey	Groat	Rohloff	Symons	Lavagnino
	Stenzel	Hambrook	Black	Mullin
Kemp	Renshaw (Captain)	Hollinger	Beeson	Catland

## WHITTIER

Our first Conference fracas was staged on the Whittier grid, October 25, 1919. This was a game looked forward to by the whole student body, because it would give a fair indication of how our grid squad "stacked up" with the squads of other colleges. It was generally expected that C. I. T. would trim the valiant, but light, Quaker team. Open play was the card up the Quakers' sleeve, while the Engineers' main reliance was also to be on the aerial attack and on end runs.

Neither team could get started in the first half, which was replete with poor passes, fumbles, and a general lack of team-work. While at first C. I. T. was the aggressor, when the whistle blew it looked as if the Poets had the edge on the Engineers. Not so the second half. Ray Call "called" down the players in a dozen ingenious ways and languages, reminding them that he hadn't kept them practicing at smearing passes all the past week for nothing, and sent them back into the game with a determination to win. In the first few seconds of play, Bill Renshaw snagged one of Whittier's passes and romped over the line for a touchdown. This started the fireworks, which only died away after Whittier had been hopelessly beaten. Other touchdowns were scored by Kemp, who took the ball over after Beeson had dragged half a dozen Quakers for several yards, and by Black, who intercepted a pass. The final score was C. I. T. 19-Whittier 0. The Poets showed lots of "sand" and class, but were outweighed as well as outplayed by the Engineers.

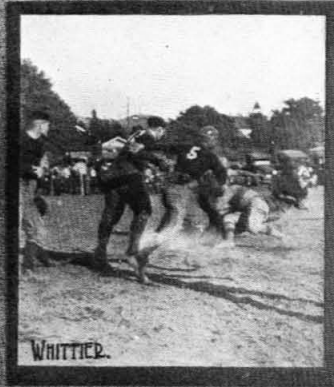
## OCCIDENTAL

Occidental had been playing a mighty stiff schedule previous to her encounter with C. I. T., and had been taking the real short end of some very large scores, which amounted to rubbing the Tiger's fur the wrong way. As a result Oxy was fighting mad when it came her turn to play the Engineers, and she was determined to win at all costs. The Tigers rushed into battle thirsting for blood, and for three quarters swept the Tech men off their feet. The flood of Orange and Black striped jerseys was finally checked, and in the fourth quarter Kemp got away for a long run for the only Tech tally. The final score was C. I. T. 6-Oxy 19.

The Eagle Rock grid was selected for the fray. For the first time in history C. I. T. had a band to represent her at the game. The band was a great asset, for together with the rooting section it managed at times to drown out the Oxy cheers, which were augmented by large numbers of fair co-eds in the grandstand. The fierce line plunges of Kirkpatrick, Smith, and Curtiss of Oxy were like a searing, devastating flame, which sweeps away everything in its path. Great holes were torn in the Engineers' line by the bitter Tigers, and through these holes hordes of Orange and Black jerseyed demons came



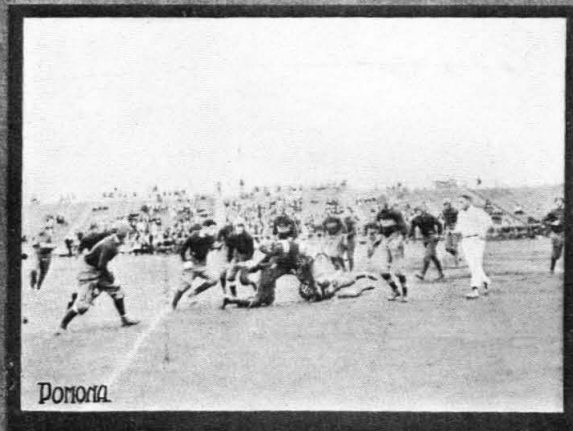
REDLANDS.



WHITTIER.



OCCIDENTAL.



DOMINA.

hurtling through. Even little Abie's 230 pounds were of no avail in filling the gaps. Our men did the best they knew how, but had to acknowledge defeat by a better team.

### POMONA

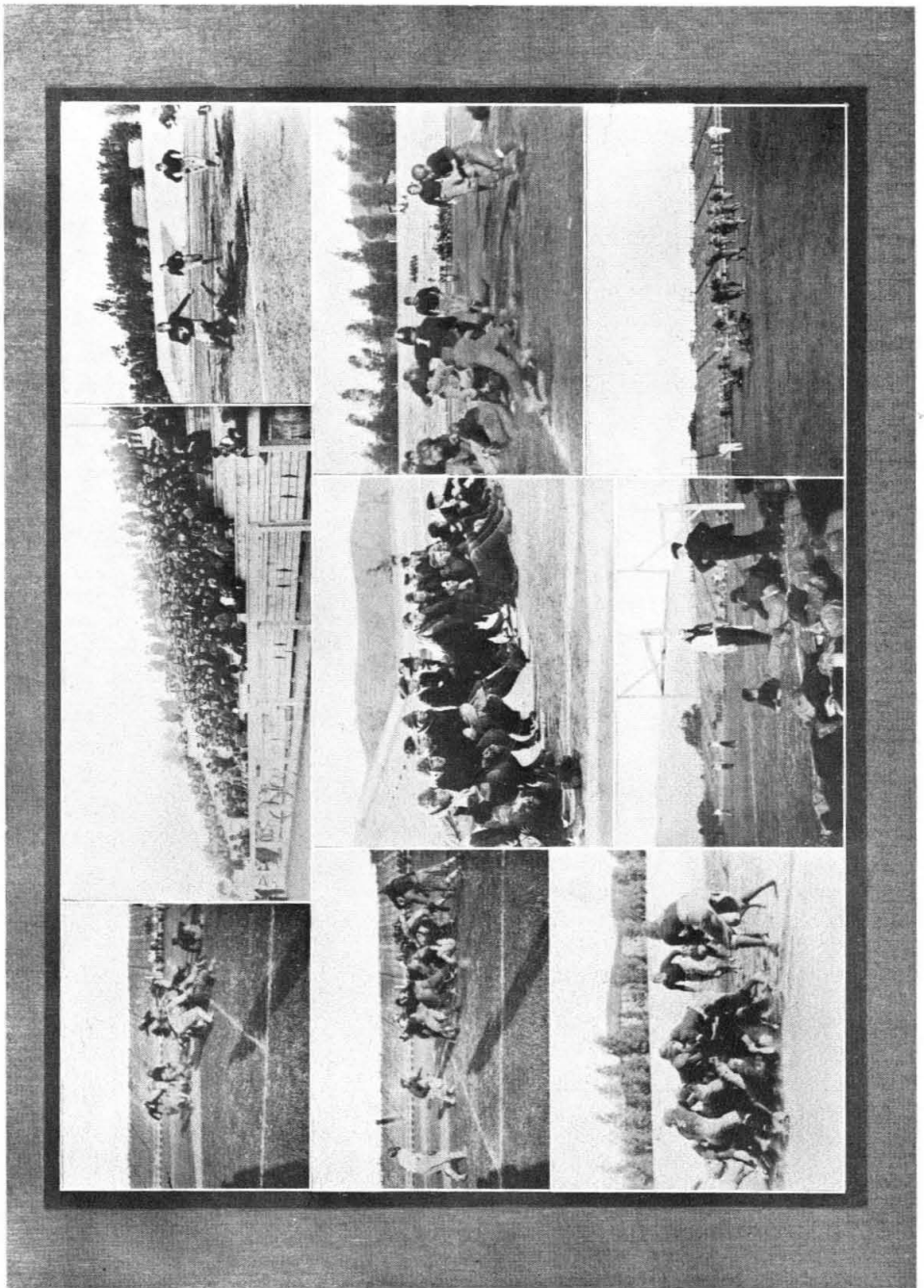
The C. I. T. tanbark aggregation undoubtedly showed its best form of the season in the Pomona game. There was not the nervousness and lack of co-ordination displayed in some of the previous games. The men were on their toes every minute of the time, and worked together perfectly. The score, C. I. T. 0-Pomona 21, shows that the Sagehens did indeed walk away with the game, but it indicates nothing as to the hard time they had in doing it.

Pomona started right in to make things lively. Ferocious line plunges, clever trick plays, and long punts brought the ball time and again into Engineer territory, only to have the Sagehens stopped at the critical time by a stone-wall defense. For two quarters Dick Hambrook's "Fight 'em, boys," acted like tonic to the defenders, when it seemed certain Pomona would score, and the line became as immovable as the Rock of Gibraltar. In the third and fourth quarters, however, the Sagehens scored, in almost identically the same place and manner. They had plunged and catapulted and crashed their way through the line, and with almost perfect interference made many end runs to the C. I. T. 20-yard line, when a husky Blue and White striped Sagehen detached himself from the main flock, and quick as a flash was behind and to the right of the Engineers' scrimmage line, where he snatched the pigskin from the air and romped over the line. The third tally came when Chambers ran 30 yards through a broken field of players to the goal line. Lavie and Symons made many excellent passes to Groat, which rarely failed to advance the ball, but despite these frequent spectacular plays, C. I. T. failed to score.

### REDLANDS

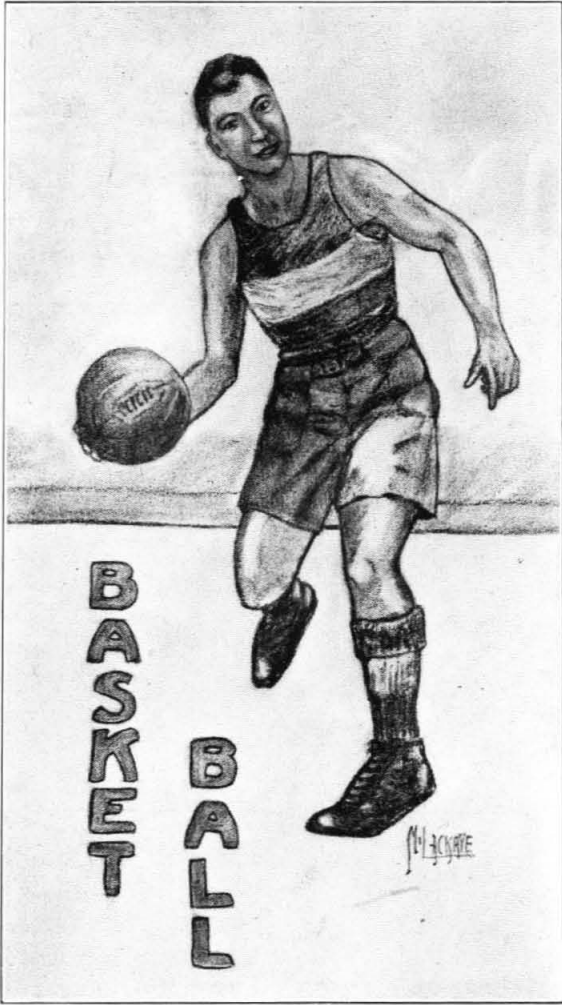
By vanquishing Redlands 7-6 the mighty Tech warriors covered themselves with glory, at the same time pulling both legs out of the Conference cellar. The defeat gave C. I. T. third place. The game was played on the home grid, and was, from first to last, the most exciting and uncertain contest of the season. "Wild Bill" Yount, the Bulldog's star halfback, absorbed most of the calcium light throughout the game, and threw a handsome scare into the C. I. T. rooting section, by scoring two drop kicks in the second frame and nearly making another in the fourth.

Representing C. I. T. in the lineup were four men—Renshaw, Hollinger, Black and Lavagnino—who were playing what was probably to be the last game of football in their lives. They certainly "came through." "Abe" was always right on his man, and one was generally not enough. Time and again he broke through and stopped the man with the ball. "Lavie" was doing

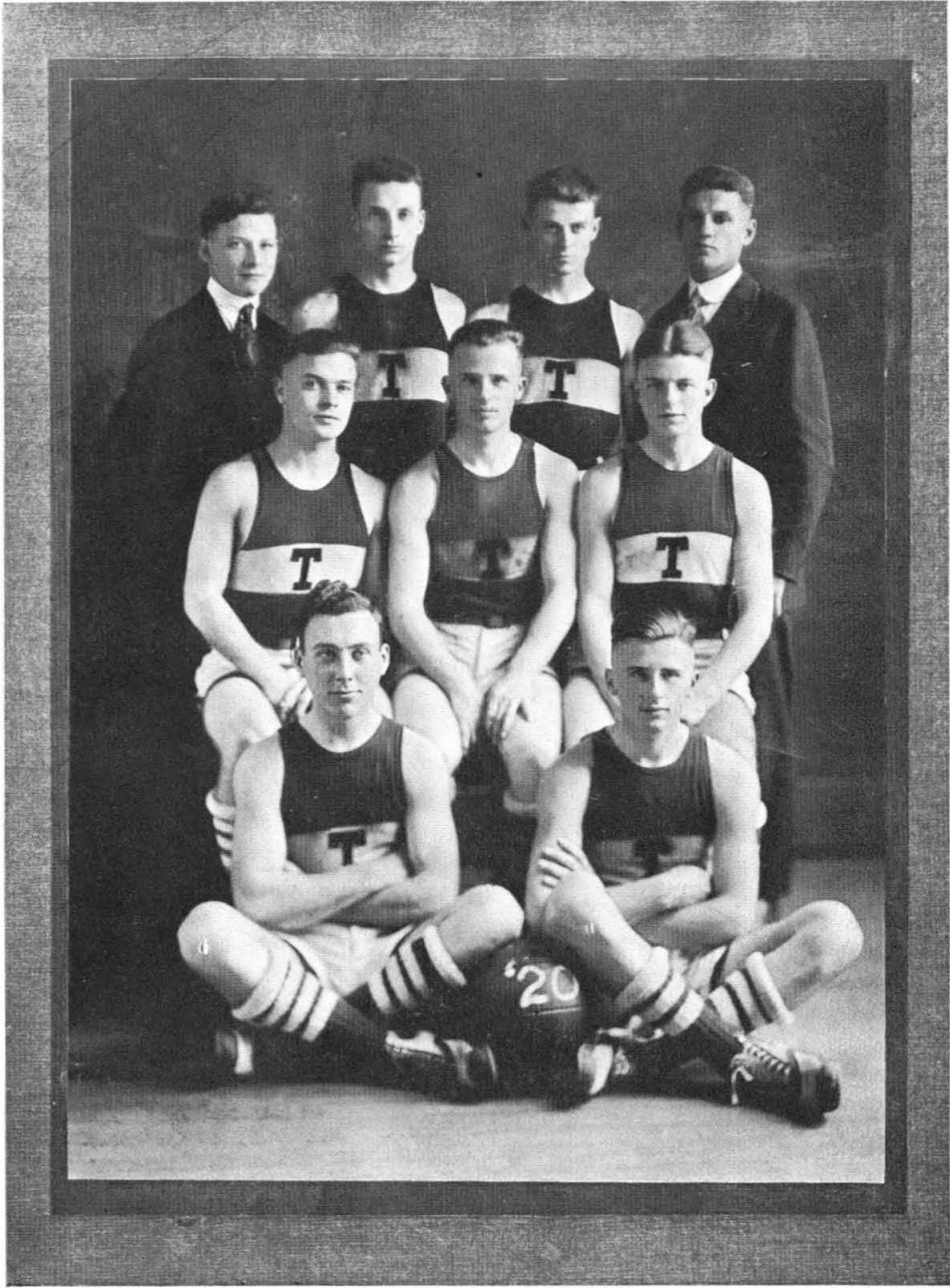


some of his best punting and passed the oval in fine style on the aerial attacks. Black subbed for Rohloff toward the end of the third quarter and tried his "darndest" to put the ball over. It was peculiarly fitting that Renshaw, as captain, should have made the touchdown that tied the score. Good old Bill was playing the game every minute of the time, and although the pass was almost smeared by a Bulldog, Bill snatched it from the air, romped over the line, and the score was tied. "Jitz's" educated toe functioned perfectly, as usual, and furnished the extra point which measured Tech's victory over Redlands.









Woodbury (Manager)  
Hickey  
Schneider

Lavagnino  
L. Larson (Captain)  
J. Larson

Mintie  
Call (Coach)  
Vesper



## BASKETBALL

The close of the 1920 basketball season found California Institute of Technology safely resting in third place. The dope sheets, made out by men who are supposed to know, conceded C. I. T. a sure place in the deepest cellar position. However, the Orange and White quintet refused to believe the predictions, and when the last basket had been tossed and the final standings made, the dope was found to have been sadly upset.

A poor start was made by dropping the first two games to Pomona and Whittier, respectively. These were each very close, and hard fought affairs, but our opponents had had more time in which to practice, and this proved to be enough of an advantage to win for them. California Tech is handicapped by the adverse conditions which now prevail at the Institute. A suitable Gymnasium has not as yet been built on the campus so the team was forced to use the Y. M. C. A. court, which is located at a considerable distance from the College, and much valuable time was lost in going back and forth. Class work lasts until four o'clock, so it was impossible to begin practicing until four-thirty or later. Since the floor had to be cleared by six o'clock only an hour and a half was left in which to coach the men.

Despite these obstacles Coach Call worked miracles with the available material and managed to turn out a fighting five that gave every other college in the Conference something to worry about. Under his leadership a steady improvement was made and by the end of the season the best College in Southern California with the possible exception of Redlands, was decisively beaten in one of the hardest fought battles of the year.

At the first call for men, four veterans turned out, and these formed the nucleus around which the team was built. The team was captained by Linnie Larson, who is an old hand, and had distinguished himself as a guard, in his prep school days. Larson played last year but this season he put up a better scrap than ever before. Although a guard he was continually running the length of the court, to throw a spectacular basket, and besides keeping his man well-covered, and tossing over sixty per cent of the fouls, he managed to throw more field goals than any other member of the quintet.

Another member of the House of Larson shot ringers from the other end of the court. Joe Larson, also a prep school star, held down a position as forward, and was responsible for a good many of C. I. T.'s points. He, together with Lavagnino, the other forward, formed a combination that was very hard to guard successfully, and once the ball was in their possession it was usually rushed to the basket, and the scorer was given some more work to do. Lavagnino is an experienced player, being on last year's five, and is one of the scrappiest members of this year's squad.

The other guard was played by Art Hickey, and there was never a play at his end of the court that he was not mixed up in. Guarding is a hard job, but Hickey certainly made a success of it, and followed his man around closer than the proverbial shadow. Mintie jumped center and was usually successful in directing the ball to the right person. Besides out jumping his opponents he was active all over the court, and made his share of the field goals.

The second team was composed of Schneider, Rohloff, Vesper, Ross, Kemp, and Rico. Some of these men gave the Varsity a tough struggle, and stand an excellent chance of making the first squad next season. A Freshman team was organized and several games played, a majority of which were won. There are two or three stars among the Frosh but the Freshman rule prevented them from being on the Varsity.

## POMONA

California Tech clashed with Pomona on the Sagehens' court in the first Conference game. It was a hard-fought game but the Engineers showed their lack of practice by losing by a narrow margin. Pomona succeeded in piling up a large lead in the initial period, but C. I. T. came back strong in the second half scoring more than twice as many points as their opponents, but not quite enough to make up for the first half.

## WHITTIER

The second game went to Whittier after a heart-breaking struggle, with the final outcome in doubt up to the last minute. The pass work of the Orange and White squad was excellent, but many easy shots went wide of the mark, and although "Tech" had the ball most of the time they could not seem to convert.

## OCCIDENTAL

After another week of hard practice, the team began to find their shooting eye and in the following scrap with Occidental, the Tigers were snowed under beneath the avalanche of Tech tallies. The good guarding of Oxy's forwards prevented them from making many points, while the Engineers' clever pass work made it possible for them to roll up a good-sized score. L. Larson was the individual star, shooting most of the goals.

## REDLANDS

Redlands demonstrated that they were real champions, in the next contest, when they outplayed Call's crew, and won by a handy lead. The first half was fairly even but in the last period the Baptists began to draw away and maintained their advantage to the end. The mainstay of the Redlands five was about 250 pounds of humanity, who possessed the happy faculty of being able to toss a basket from almost any position, and he went through his entire repertoire several times during the course of the evening.

## SOUTHERN BRANCH UNIVERSITY OF CALIFORNIA

The Southern Branch of the University of California, or the Cubs for short, took the next game after a hard fought battle in which both sides alternated in having the lead, the whistle cutting the pastime off when they possessed the advantage. As usual Linnie Larson made most of the points for the Engineers.

## POMONA

An affair that is often read of in books but seldom seen in real life re-vengeed the loss of the first game to Pomona. For forty minutes the ball danced around the brightly lighted court, while the crowded bleachers held their breath, or let it burst forth in wild yells, as the tide of battle swayed from one side to the other. For two thrilling periods, ten men struggled for the honor of their respective schools, and at last when the final whistle sounded it was found that neither side had any advantage, the scoreboard showing that each one had 26 points to their credit. This made an extra five minutes of play necessary, to decide the winner, and the team that made the most goals in the allotted time would be declared victorious. In the first minutes of renewed play, neither side could count, and then from a struggling

mass in the center of the court, Mintie's long arm shot out, and sent the ball in a long arching flight towards the distant basket. True to the mark it flew, and fell through the ring, a perfect shot. In the remaining minutes Pomona tried many times to even things up, but without success. The whistle sounded just as Larson sent the ball through the basket on a free throw for a third count, winning for California Tech.

### WHITTIER

The worst defeat of the year was suffered at the hands of Whittier in the return game. The Engineers seemed to have an off night and lost by a large score.

### OCCIDENTAL

A week later Occidental was again beaten by an even larger count than in the first contest. The Tigers were completely outclassed in every department of the game. The Tech quintet used fine pass work and also succeeded in converting on most of their tries at goal.

### REDLANDS

The return game with Redlands resulted in a second victory for the champions. This time, however, the score was closer and the C. I. T. five showed the good effects of the extra practice that they had had since the first encounter. Much better playing was done and although the battle went to the Bulldogs it was only after a hard fight.

### SOUTHERN BRANCH UNIVERSITY OF CALIFORNIA

The last scrap of the season found the Cubs and the Technicians fighting each other. The Cubs were fighting for a chance at the pennant, and the Engineers for third place. In the first half neither side had very much advantage, but Tech led by a few points. After the usual siesta was over the Orange and White band began to tear the Babes all to pieces. So fierce was the attack that S. B. U. C. only secured two goals the entire half, while the home product more than doubled their score, the Cubs being completely swept off their feet before the fast play of their opponents.

The usual lineup and the number of points made by each player was:

Player	Points Made	Position
L. Larson.....	183	.....Guard
J. Larson.....	64	.....Forward
Lavagnino.....	20	.....Forward
Mintie.....	16	.....Center
Hickey.....	2	.....Guard
Total.....	305	

L. Larson made 95 out of 155 free throws.

The result of the games were:

California Tech 27, Pomona 33	California Tech 28, Pomona 26
California Tech 25, Whittier 30	California Tech 7, Whittier 39
California Tech 33, Occidental 15	California Tech 40, Occidental 18
California Tech 18, Redlands 49	California Tech 20, Redlands 31
California Tech 25, S. B. U. C. 36	California Tech 41, S. B. U. C. 30





Woodbury (Manager	Preston	Mosher	Kemp	Call (Coach)
Clough	Payne	Ames (Captain)	Reeves	Symons
Crissman	Mintie	Jones		Renshaw

## TRACK

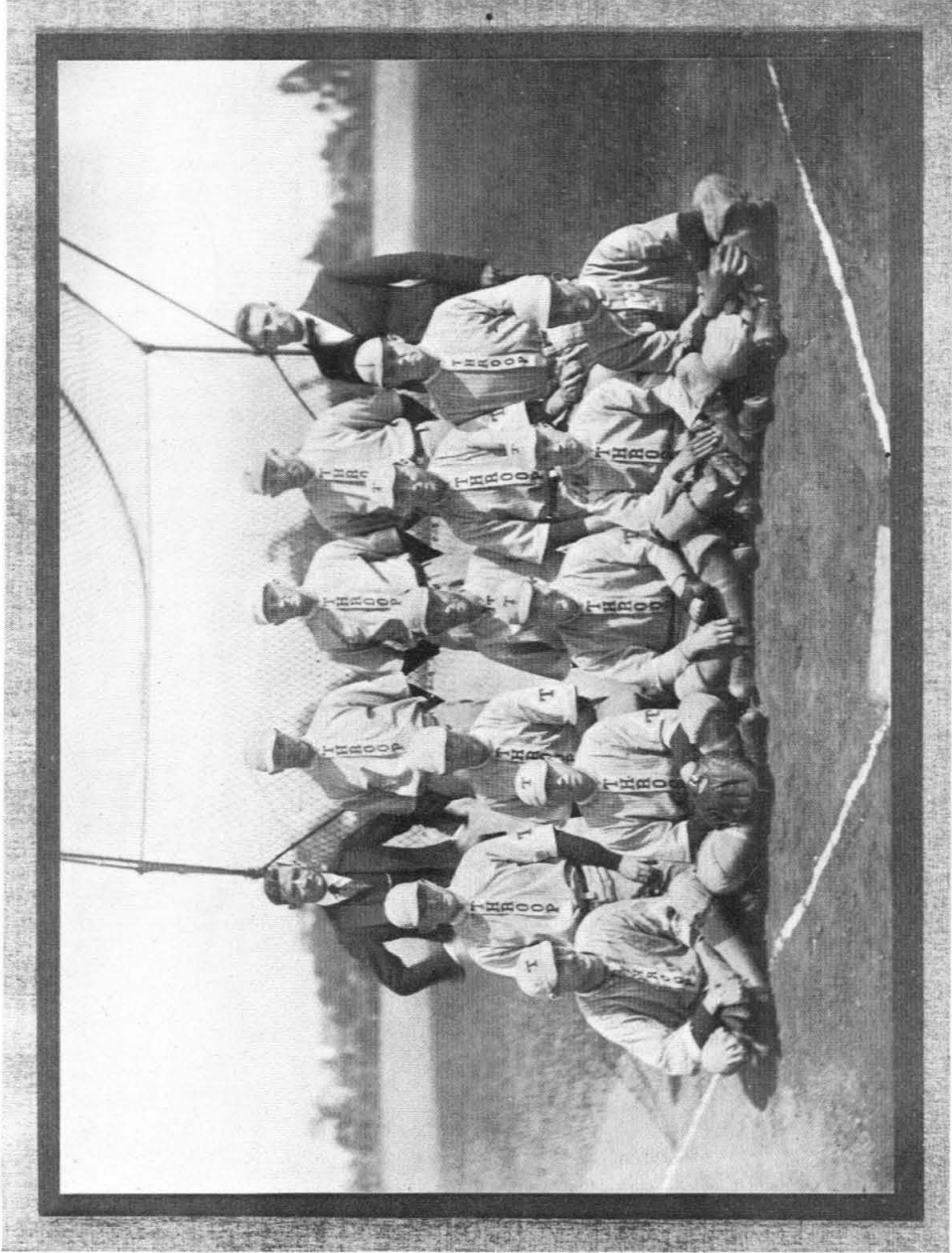
The track season at California Tech for the year just passed was as successful as was possible under existing conditions. When one considers the difficulties under which the winged squad labored, he wonders that the track men met with as much success as they did. Undaunted by the loss of last year's track, but practicing on the slow, temporary dirt track tardily constructed by the committee in charge to serve as a substitute until the cinder path for the Olympic trials should be completed, the men came out regularly every night to limber up their muscles and straighten out the kinks in their legs. Twelve men stuck faithfully to what looked like a losing proposition and at the end of the season were rewarded for their efforts with a letter. Their names are: Payne, Symons, Mintie, Clough, Ames, Renshaw, Kemp, Jones, Preston, Mosher, Crissman, and Reeves.

Payne was Tech's most versatile track star and largest point winner. His regular events are the high and low hurdles, but in the meet with S. B. U. C. he took first in both hurdles, first in the broad jump and second in the high jump and discus. Symons, specializing on the hammer, discus, and shot, was second in winning points. He took second in the Conference meet in the discus and hammer. Ames, captain of the squad, after winning the 100-yard dash in the Oxy meet, pulled a ligament, and was unable to finish the season, although he gamely tried to run in the Conference meet. Clough is a good 440 man, winning third in the Conference meet. Mintie was third greatest point winner, placing consistently in the mile, two-mile and high jump. Kemp, Crissman, and Renshaw proved speedy contenders for places in the sprints. Crissman was new to the squad this year, but has proven his right to a letter. Mosher, after six years' track inactivity, "came back" and proved to be a valuable man in the pole vault and high hurdles. Jones and Preston, middle distance men, didn't get a chance to really prove their ability. New to the squad, with a year's experience they should make valuable track men. Reeves heaved the shot with considerable force and skill, winning first in the Oxy meet and second in the S. B. U. C. meet.

Tech lost the Oxy meet, 75-56, simply because of so few men. The Engineers took as many firsts as did the Tigers, and with a few seconds and thirds would have won. The meet with Redlands was forfeited. Tech won from Southern Branch by a 79-52 score. Payne proved his versatility in this meet, and Symons took three firsts. Clough, Mintie, Payne, Symons, and Ames represented California Tech in the Annual Conference meet, and took third place. Pomona won, and Redlands took second. California Tech sent Payne and Mintie to the A. A. U. meet. Payne took two points, taking fourth place in the high and low hurdles.







Woodbury (Manager)	Reynolds	Payne	Groat	Call (Coach)
Potts	L. Larson	Burks (Captain)	Schneider	Kemp
Marshall	Preston	Moir	Otis	Benioff



## BASEBALL

With only four more games to play and at present tied for first place, the California Institute of Technology bids fair to repeat the victories of the last two years, by again winning the Conference title. Starting the season by dropping the first game to Occidental and later losing to Pomona, the Engineers made an inauspicious beginning, but since these defeats the team has been working hard and the good effects of this practice is being shown. The improvement has been especially noticeable in the hitting of the nine. In the Oxy game the batting was not very good, but in the games with S. B. U. C. Whittier, and Redlands a total of forty-four runs was amassed by Tech alone, mostly due to hard hitting.

The fielding of the men has also shown a big improvement in the last few weeks. The infield is probably the best in the South and is playing almost errorless ball while the outfield is handling everything that comes its way in an efficient manner. In the pitching end of the game equally good form is being shown by Reynolds and Groat, both of whom are veteran heavers.

The men who have already won their letters are Burks (Captain) 2b, Preston c, Schneider 1b, Moir ss, Kemp 3b, Reynolds p, Groat p, Potts, Payne and Otis. The second team men who have a chance are Marshall, Larson, Parmalee and Benioff.

## OCCIDENTAL

California Tech started the 1920 season by losing the first game to Occidental, 6 to 1. The chief reason for Oxy's victory was a person by the name of Alcock who delivered the ball in great style, eighteen Tech batters falling before his dazzling assortment of curves, drops and fast balls. Groat was going good and had the Tigers at his mercy until the seventh when they secured four runs before he again tightened up.

The lineup was changed somewhat because Kemp, the regular third sacker, could not play on account of an operation. Moir took his place at third and Potts played shortstop. This change did not seem to affect the usual smooth work of the infield as only one error was made.

Oxy got the first run on a combination of a walk, a poor throw and a clean single. C. I. T.'s chance came in the second when Alcock let down temporarily and passed a man with bases full. However, after this little exhibition of nerves he tightened up and struck out the next three men, despite the valiant efforts of the Tech batters to clear the bases with a mighty wallop. In their half of the seventh the Tigers managed to bunch a few hits and forced in four runs, the last tallies of the day.

Inning	1	2	3	4	5	6	7	8	9—Total
C. I. T. ....	0	1	0	0	0	0	0	0	— 1
Occidental .....	1	0	0	0	1	0	4	0	— 6

## SOUTHERN BRANCH OF UNIVERSITY OF CALIFORNIA

Fresh from their defeat of the preceding Saturday the Engineers turned on the S. B. U. C. and routed them 13 to 1. Reynolds worked for C. I. T. and let the Cubs get only one run and five hits. The Southern Branch hurler was not so fortunate, a total of thirteen runs and twelve hits being garnered by the local nine. The lopsided score was partly due to the airtight fielding of the Engineers and the rather loose work of the Cubs. A remarkable catch was made by Kemp who ran after an almost hopeless fly and gathered it in on the end of his glove.

Tech started off with three runs in the initial frame and at frequent intervals throught the afternoon Orange and White runners crossed the plate to add to the score. The Babes secured their only score in the first and except in the sixth when they had two on the bases, they never had another chance to cross the platter. In the last period the Engineers, not satisfied with the already large score, staged a rally that ended only after six more counts had been added, making the final total 13 to 1.

Inning	1	2	3	4	5	6	7	8	9—	Total
C. I. T. ....	3	0	2	0	0	1	1	0	6—	13
S. B. U. C. ....	1	0	0	0	0	0	0	0	0—	1

## WHITTIER

The batting averages were given another boost in the game with Whittier. This struggle bore a great resemblance to a track meet, the Tech players parading around th bases seventeen times and the Quakers completin geight trips during the afternoon. Many of these runs were caused by the "porous knit" support given by both nines. The entire play was filled with errors at the critical moments, but as most of these were chalked up against the Poets the C. I. T. rooters could not find much sorrow from this cause.

Groat pitched and only a few real hits were gotten from his delivery. In the eighth Marshall went in as a pinch hitter and hurled the last inning for California Tech. Tech got away to an early lead, getting one in the first and coming back for four more in the second. Whittier retaliated with five runs in the third tying the score, and forged into the lead in the next when an error let in another tally. Their advantage was short, however, as in the fifth frame the Quaker heaver was hit for a total of seven runs and five more were made before the game ended.

Inning	1	2	3	4	5	6	7	8	9—	Total
C. I. T. ....	1	4	0	0	7	2	0	3	x—	17
Whittier .....	0	0	5	1	0	0	0	1	1—	3

## POMONA

Last year the Pomona game was the most exciting of the year, C. I. T. pulling it out in the ninth. With the score 2 to 1 against them Groat knocked out a long fly that cleared the bases and won for California Tech. This year the Sagehens turned the tables winning the game in the eighth after they were two runs behind.

Reynolds hurled and with better support might have saved the game. Thompson relieved Taylor in the seventh after the Tech batters seemed to be

finding the ball and then losing it in the outfield, where the Sagehens couldn't find it soon enough to stop the runs from coming in.

The Technicians earned four in the seventh and one in the eighth that ought to have been sufficient, but in the Sagehens' half of the inning the fielding fell off temporarily and allowed four Pomona men to cross the plate. These proved enough as the Engineers were unable to score in the ninth.

Inning	1	2	3	4	5	6	7	8	9—Total
C. I. T. ....	0	0	0	0	0	0	4	1	0— 5
Pomona .....	0	2	0	0	0	0	1	4	x— 7

### REDLANDS

Another swatfest took place when the Redlands nine was defeated 14 to 6, C. I. T. doing most of the swatting. The runs came thick and fast and altho they were spread over several innings the home team managed to amass a total of seven runs all in one time at bat. During this outbreak of hitting the Baptists' pitcher was retired and a new one put in to try to stop the rally. California Tech likewise changed heavers in the third inning. Reynolds replaced Groat and held the visitors down to but one more run.

The lead changed back and forth in the first part of the battle, but towards the end the Baptists were hopelessly snowed under. Redlands took the lead in the first with two runs, lost in the next but regained it in the third when they clouted in three more tallies. By this time the Tech nine began to find its hitting eye and started to pound the opposing twirler pretty hard. Before they could be stopped fourteen men had crossed the plate and Redlands was forced to acknowledge defeat.

Inning	1	2	3	4	5	6	7	8	9—Total
C. I. T. ....	0	1	3	1	2	7	0	0	x— 14
Redlands .....	2	0	3	1	0	0	0	0	0— 6

### OCCIDENTAL

Revenge is always sweet and it tasted very good to the Engineers when they evened up the score with Occidental in the return game. The first battle went to Oxy mainly because of the inability of the Tech batters to hit "Bosco" Alcock, the Tiger pitcher, but no such unpleasantness occurred in the return affair. The Engineers hit him often and hard and in the last inning had him completely subdued.

The Tigers did not have the lead the entire game but were never far behind. In the second, the first scores were made by Tech when two men crossed the plate, but Oxy refused to be behind and in her half of the frame tied the count. California regained the lead in the 5th and held it till the eighth. In this period the Tigers again tied the score with two more runs, when the left fielder misjudged a ball and could not recover it in time to prevent the tallies. Neither side scored in the ninth, but in the tenth the rooting section began to get on Alcock's nerves and the Tech batters knocked in two runs. Reynolds retired his opponents in easy fashion in the last of the tenth inning adding the finishing touch by fanning "Bosco" for the last out.

Innings	1	2	3	4	5	6	7	8	9	10
C. I. T. ....	0	2	0	0	1	1	0	0	0	2—6
Occidental .....	0	2	0	0	0	0	0	2	0	0—4



WIZZ-S



KOHTZ  
HERNDON

CLARKE (Captain)  
J. HONSAKER

## TENNIS

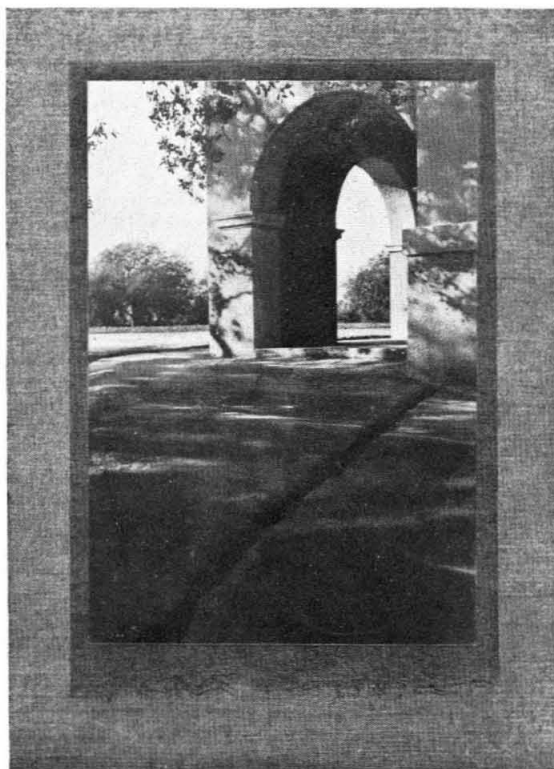
California Tech is fortunate in having the four fine oil courts at Tournament Park at the disposal of her tennis players. Scarcely an afternoon goes by but what the courts are full of future Engineers, tossing the little white sphere about, and fighting like grim death to "put it over" on the other fellow. Tennis is a game that does not require the steady persistent training so necessary to success in all the major sports. Once mastered, a few hours of play a week will keep a player in good trim, and at the same time afford him very good exercise. Hence it is that the sport is so popular with Tech men, most of whom have their time pretty well taken up, but realize the value of the exercise derived from an hour's play.

Early in the College year, a general tournament was organized for the purpose of lining up the tennis material in the college, and determining who the team might be composed of. A number of good players, it developed, were entered, and some keen competition was encountered by the men who were finally selected for the team. Herndon was winner of the tournament, Kohtz second best, Clarke third and Johnny Honsaker fourth. These four made up an aggregation that was very hard to beat. Herndon and Kohtz together made up the first doubles team, and out of the matches played lost not one. They were Tech's representatives at the annual Ojai tournament, and though they were eliminated, they both put up a good fight. They had the misfortune to be matched against the best men of the north early in the tournament. Both of these men play a smashing, driving game that is very hard to face. Phillip Clarke as third man of the Tech aggregation proved a hard nut for his opponents to crack. His game is not spectacular, but he is at all times cool and the steadiness of his playing is his greatest asset. Every shot he makes counts. Johnny Honsaker has a serve on his string that will generally win for him the match.

Several practice affairs were arranged to get the men in trim. One of the first of these was with the Dental College of Los Angeles. All the practice affairs were won by decisive scores.

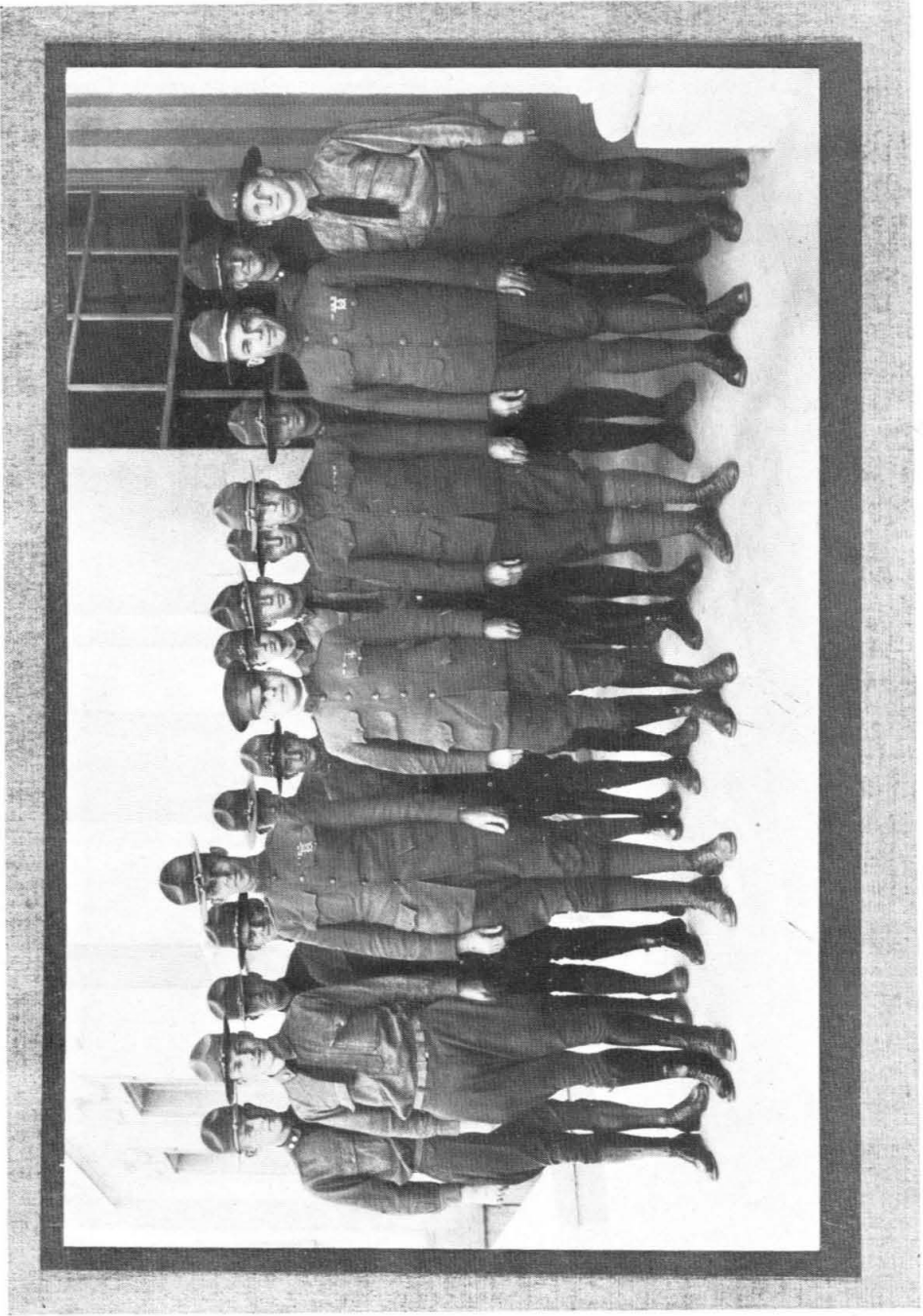
At the present writing, only two matches of great importance have been played, one with Whittier College, and the other with the visiting team from the University of Arizona. The Quakers were decisively defeated by the score of 5-1, the Engineers winning five matches to the Quaker's one. Some good tennis was displayed in the match between the first doubles teams. The Whittier men, Pickett and Kimber, took the first set 6-2, but Herndon and Kohtz steadied down in the second set and defeated Pickett and Kimber 6-0. They took the third set 6-3. Summary: Herndon (C. I. T.) vs. Pickett, 6-1, 6-4. Kimber (W.) vs. Kohtz, 8-6, 2-6, 6-3. Clarke (C. I. T.) vs. Kepple, 6-3, 6-3. Honsaker (C. I. T.) vs. Ward, 6-3, 6-4. Herndon and Kohtz (C. I. T.) vs. Pickett and Kimber, 2-6, 6-0, 6-3. Clarke and Honsaker (C. I. T.) vs. Ward and Kepple 6-0, 6-2.

The Arizona Wildcats were easily defeated, Tech winning every match except one. Honsaker had the bad luck to break his racket after winning the second set 8-6, consequently losing his match. Peppala and Stattord, two of the Arizona players, played for Tech last year. They received a hearty welcome from their old friends.



MILITARY





Webster, Hill, Cory, Maier, Barnsdale, Spence, Hambrook, Barnett, Wilson, Scribner, Lavagnino, Master Engineer Frazier, Captain Engel, Sergeant Bailey, Sergeant Pounds, Quirnbach



## MILITARY

With the abrupt ending of the war in the early Winter of 1918 interest in military affairs subsided and the necessity of military training seemed to be less urgent than it had been before.

Since, troubles arising from the dissatisfaction growing out of the peace negotiations and the ever-present Mexican and Asiatic problems, have again awakened the American people to the necessity of a stable military policy. Universal military training has been very widely advocated, and although no definite decision has resulted, the Reserve Officers Training Corps is a practical step in this direction.

The Reserve Officers unit, Senior Division, was organized in the Fall of 1916, under the Command of Captain, now Major, Louis R. Ball, U. S. A., Retired. The next year Major Ball was replaced by Captain, now Major, Charles T. Leeds, U. S. A., Retired. In the following Fall the Institution was placed on a war footing with all the students soldiers in Uncle Sam's Army, under the command of Captain Orville Norris Tyler, U. S. A., Retired. The record of the Corps during this period is one that the Institute will always be proud of, and by careful co-operation between the military and academic authorities the excellent standards of the Institute were maintained.

Captain Cecil A. Gorlelangton, U. S. Eng., who had seen considerable active service during the early part of the war, succeeded Captain Tyler in the Winter of 1919. During the short time that he was here Captain Gorlelangton did a great deal to inspire enthusiasm and interest in the Corps.

This year Captain August M. Engel was assigned as Commandant. Under his leadership the course of instruction was varied and made more interesting and popular than heretofore.

Many upper classmen have taken the advanced course, a few of them having had considerable Army experience, and have made very able Cadet Officers.

An exceptional opportunity to acquire practical experience in Military Engineering at Camp Humphreys, Virginia, has been offered to the students by the Government and many members of the R. O. T. C. at Tech plan to attend the camp this Summer.

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OFFICERS AND NON-COMMISSIONED OFFICERS ON DUTY

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Captain August M. Engel, U. S. Corps of Engineers

INSTRUCTORS

Master Engineer Senior Grade Frank Frazier, Engineers

Sergeant 1st Class Louis H. Bailey, Engineers

Sergeant William M. Pounds, Infantry

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ADJUTANT

Wilson, Farrand

SUPPLY OFFICER

Hili, James E.

SERGEANT MAJOR

Preston, Ray W.

SUPPLY SERGEANT

Reynolds, Maynard S.

SERGEANT BUGLER

Alexander, Walter S.

BAND SECTION

LIEUTENANT

Macurda, Malcolm

SERGEANTS

Patterson, Allen A.

Moir, Wallace L.

CORPORALS

Walter, John P.

Kohtz, Russell H.

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Batty, Blake E.

Blakeley, Loren G.

Bear, Rolston E.

Bush, Willis H.

Crandall, Richard E.

Garfield, Arthur J.

Hall, Alva C.

Layton, Edgar N.

Ramseyer, George N.

Rockafeld, George C.

Stoutenburg, Paul P.

Toll, Charles H.

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Erb, Louis H.

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Scribner, H. Irving, Jr.

Van Pelt, Richard A.

Lumms, Quimu J.

SERGEANTS

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Benioff, Ben

Biddle, Charles J.

Lewis, Howard B.

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Dillon, Lyle

Kemp, Edward G.

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Bushnell, Lyle E.

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Cox, Jack

Endicott, Harold S.

Fagin, Verne A.

Ferkel, Karl A.

Fitzpatrick, G. Handley

Harries, David G.

Heuer, Robert B.

Howe, Glenn E.

Lackaye, Max M.

Loughridge, Donald H.

McClung, Frederick J.

McKenzie, Paul C.

Merchant, Harold A.

Myers, Thomas G.

North, Francis L.

North, John R.

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Pettit, James B.

Richardson, Alexander O.

Riley, Edward M.

Reeves, Hubert A.

Schonborn, Robert J.

Sears, Richard U.

Stadt, William H.

Starr, Edward J.

Taggart, William M.

Tarr, Donald T.

Tracy, Willard H.

Walters, Fred W.

Whiting, Robert H.

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Quirnbach, Charles F.

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Barnsdale, Garnett H.

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Vesper, Howard G.  
DeVoe, Jay J.  
Howard, John H.

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Nethery, George R.  
Wells, Lewis J.  
Hitchcock, Gregory D.  
Wesseler, Martin J.  
Jones, W. Barton

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Alcock, Joseph R.  
Bangham, William L.  
Bravender, Norris F.  
Bugbee, James M.  
Clever, George H.  
Clough, Frank H.  
Crissman, Robert J.  
Darnell, Donald W.  
Dronberger, Hal H.  
Edgar, Pendleton  
Flick, Holland M.  
Getsinger, Benjamin J.  
Gillies, Robert

Greene, Henry D.  
Guest, Ralph L.  
Hastings, Robert C.  
Hickey, George I.  
Howard, Charles S.  
Hutchison, J. Wayne  
Kilham, Oliver W.  
Krebs, Kellog R.  
Kuffel, George C.  
Little, Fred G.  
Moore, Walter T.  
Mott-Smith, Lewis M.  
Owens, Clarence R.

Payne, Leonard B.  
Powers, C. Waldo  
Preston, Harold R.  
Puterbaugh, Bennett E.  
Roth, Lawrence P.  
Smiley, David E.  
Spencer, Gerald G.  
Taylor, William T.  
Thorman, Albert F.  
Wilson, Ralph C.  
Winegarden, Howard M.  
Woods, Hubert  
Woods, Robert

COMPANY "C"

CAPTAIN

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Barnett, Harold A.  
Maier, Joseph B.  
Varney, Charles W.

SERGEANTS

Smith, Delbert D.  
McCrea, Truman F.  
Whistler, Arthur M.  
Essick, Bryant

CORPORALS

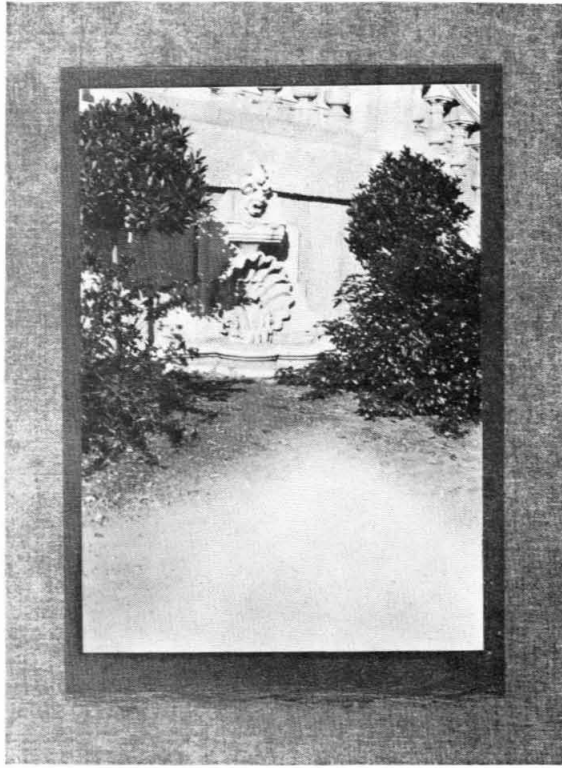
Schneider, Warren A.  
Hawley, George N.  
Larson, Joseph E.  
Symons, Loren G.  
Pctter, William D.  
McKee, George T.

PRIVATES

Albright, Harold L.  
Baker, Floyd A.  
Barhite, Harold S.  
Bennett, William D.  
Copeland, L. Bentley  
Dagg, Hueston W.  
Fleming, Thomas J.  
Forbes, Charles L.  
Groat, Edmund T.  
Hammond, Robert J.  
Heimberger, William L.  
Herberger, Arthur L.  
Hess, Edward R.  
Honsaker, John, Jr.

Hopper, Francis L.  
Hounsel, Therom C.  
Kendall, Douglas G.  
Kirkpatrick, Merle  
Langlie, Paul J.  
Learned, Kenneth A.  
Marsh, Hallan N.  
Maurer, Frederic A.  
Nies, Henry T.  
Norwood, Donald W.  
Osmun, R. Graves  
Priddy, Russell J.  
Rapp, H. Clinton  
Ritchie, Charles F.

Ross, Maurice B.  
Russell, Millard J.  
Schofield, Stanley  
Schreiber, Ernst H.  
Stout, Glenn M.  
Stratford, J. Paul  
Thompson, Wilfred G.  
Timmons, Colin W.  
Timourain, Haigalois  
Towers, John L.  
Tracy, Harold F.  
Smith, Carleton F.  
Watson, Howard H.



TECH·HUMOR



## BEAUTIFUL MAXIME

What a perfect summer night thought Clarence as he hurried to the home of the beautiful Maxime. Indeed it was a perfect evening. The moon cast a dim and silvery luster over the landscape. A gentle breeze rustled through the shrubs wafting the sweet fragrance of roses and violets to the passerby. What a perfect evening for love thought Clarence. Then the thoughts of Clarence drifted to the little secluded Derby Lane where he and beautiful Maxime would walk this evening. Beautiful Maxime and he alone knew of this secluded lane. Clarence quickened his footsteps. The thoughts of his coming pleasant evening made him press forward eagerly. He reached the home of the beautiful Maxime. He rang the bell. The maid answered the door. No, the beautiful Maxime was not in. She had gone out walking through the secluded lane with another suitor.

## FACULTY HAS DOMESTIC TROUBLES

A great Noyes was heard in the kitchen. Madame de la Martel rushed to the scene. "Desist," she cried, "I cannot Barrett any longer!"

Bridget Van Buskirk smiled a wicked smile. "Shut up, Madame," she said, "or I will Clapp my hand over your month."

Just then a Bell was heard. Count de Judy entered the kitchen. "Let me Scherer in your grief," he cried.

"This confusion will Wear me out," moaned the Madame.

"I will Call the policeman immediately," said the Count.

A Ray of hope shone in Bridget Van Buskirk's eyes. "I will kill you Auburn the house down!" she cried.

Just then officers Gilloon and Millikan entered direct from the Parks. "Millikan fix her!" shouted Gilloon. "Be Swift and give her some Perigord."

This was done. The great Noyes abated and peace reigned in the house once more.

---

SOME SHOW ! ! !

W. F. FILLUM PRESENTS

CLEOPATRIA

5000 people

4000 costumes

Mary had a little waist,

She wore it to the ball,

It caught upon her beau's frat pin,

Now she has no waist at all.

*Page One Hundred  
Fifty-one*

## AMONG OUR ILLUSTRIOUS SENIORS!

There is a young man named Paul,  
Who made all the young ladies fall,  
'Till cupid took aim,  
Now that young man is tame,  
And goes where e're Helen calls.

Though Walt is a good old scout,  
He oft keeps his professors in doubt,  
Sorenson in A. C.,  
Says what shall it be?  
A condition or should he flunk out?

A young man we all know as Abe,  
Is almost an elephant babe,  
When he gets up steam,  
On our football team,  
We consider admission well paid.

Errett Woodbury is quite a gent,  
On his athletic duties he's bent,  
But it isn't much fun,  
'Cause however they're done,  
He knows where the team wants him sent.

A fine young fellow of baseball fame,  
Is our left fielder Ivan Payne,  
He stands up at bat,  
Gives the ball a crack,  
And that's how we win most our games.

We have in our midst young Apollo,  
And if all you hear you will swallow,  
Why then Robert Black,  
Should be put in a sack,  
And be thrown into water not shallow.

Last is our friend D. D. S.,  
Of whom we think none the less,  
'Cause he has a girl,  
Who keeps him awlirl,  
And makes him work hard for a kiss.





GYM!  
MY GYM,  
MY ARMS,  
MY BACK,  
MY LEGS,  
Ache for you.

Father: Why, hang it, Helen, Paul only makes \$20 a week.

Helen: Yes, I know it, but a week passes so quickly when you are fond of each other.

In days of old,  
When knights were bold,  
Old Captain Kidd went sailing,  
He'd rob a guy,  
And black his eye,  
And chuck him over the railing.

The pirates range  
Now suffers change  
Dry shod he takes his payment.  
Devoid of fears  
He profiteers  
In rents or food or raiment.

#### FRED MARSHALL ORDERED OFF

A Voice: Katherine, what are you doing out there?

Katherine: I'm looking at the moon, mother.

A Voice: Well, tell the moon to go home, and come in off that porch; it's 12:30.

#### SOUP OR WHAT?

Wynne Mullin, Dorm Manager, is anxious to please all the inmates and asked if there were any complaints about the food.

Manton Barnes rose slowly and extended his cup.

Wynne took a sip and hesitated, then said scathingly:

"Very good soup, I call it."

"Yes, yes; but the matron says it's tea, and the cook's served it as coffee, and just now I found a toothbrush in it."

#### RATHER MOIST

Mother voted dry;

Pa not yet;

Brother undecided;

Baby wet.

## IF

If a sly little hand you're permitted to seize,  
With a velvety softness about it,  
Do you think you would drop it with never a squeeze?  
Well, maybe you would, but I doubt it.

When a meek little waist is in reach of your arm,  
With a wonderful plumpness about it,  
Do you argue 'twixt the right and the wrong?  
Well, maybe you do, but I doubt it.

When a pair of red lips are upturned to your own,  
With no one to gossip about it,  
Do you pray for endurance to let them alone?  
Well, maybe you do, but I doubt it.

And if by such means you should win a fair heart,  
With a wonderful coyness about it,  
Would you guard it, and keep it, and act the good part?  
Well, maybe you would, but I doubt it.

DON: Do you think I am good enough for you, Darling?

MARIAN: No, Don; but you are too good for any other girl.

## RESEARCH

Do you know that Darwin worked two years on a problem?

That's nothing. I know a man who has been working for the last ten years on a single sentence.

There are meters of accent,  
There are meters of tone,  
But the best of all meters  
Is to meet her alone.

There are letters of accent,  
There are letters of tone,  
But the best of all letters  
Is to letter alone.

## POSITIVELY INSULTING

Lady (addressing a bow-legged floorwalker in a department store):  
Where are the notions, please?

Walk this way, madam.

How dare you, sir!

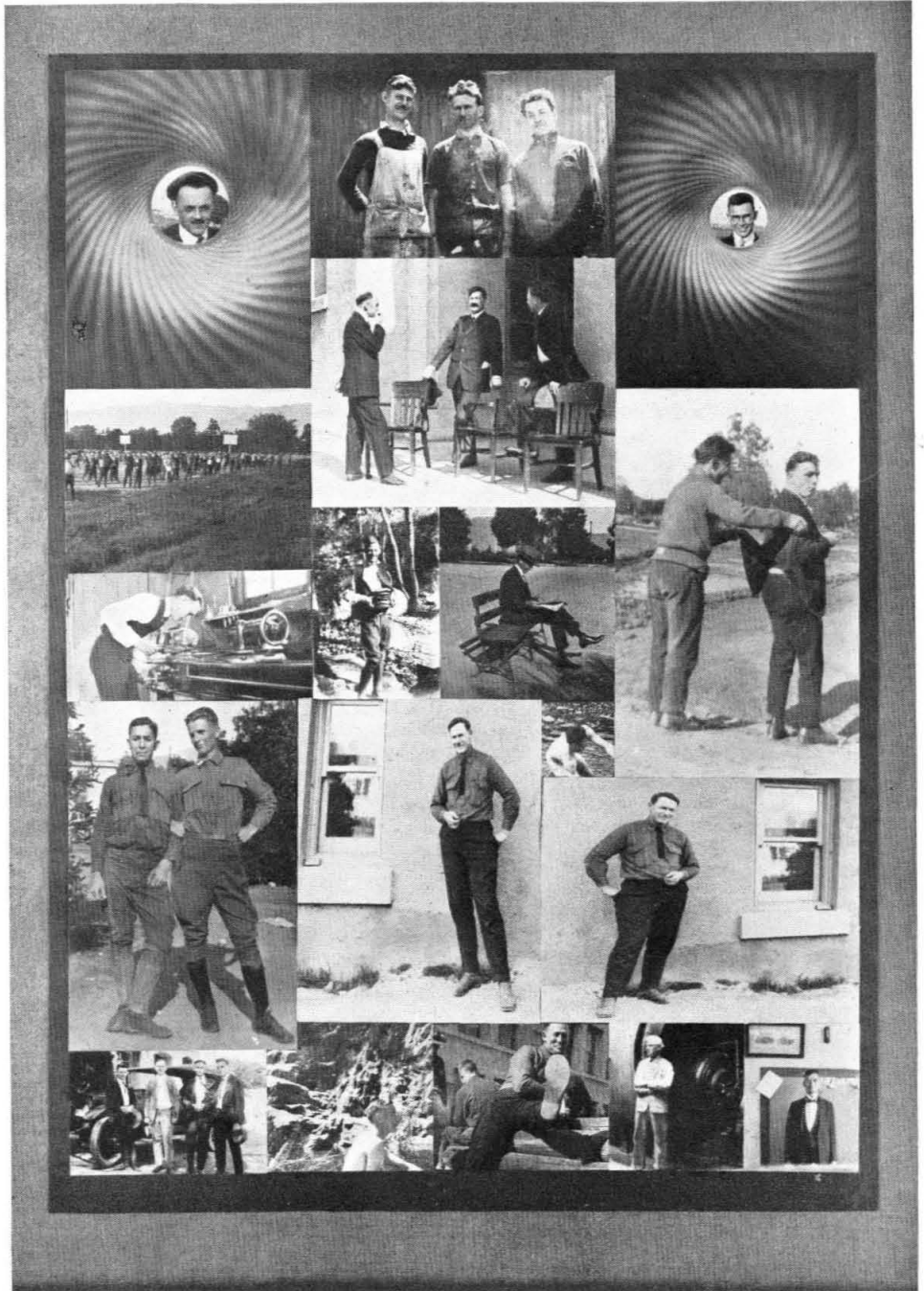
"Did the play have a happy ending?"

"Comparatively so. All the money was refunded after the second act."

## WHAT AN EDUCATION DOES

First Citizen—"That young fellow over there looks like a college man."

Second Citizen—"Why? What do you see that's wrong with him?"



### RESEARCH CHEMISTRY

Bill, in search of something new,  
Poured a pint of hydroflue,  
Into father's oxford shoe,  
Just to see what it would do.  
As research it wasn't bad,  
But 'twas rather hard on dad.

Johnnie, in his careless glee,  
Mixed up I in NH<sub>3</sub>  
When the stuff was dry and thick,  
Johnnie hit it with a brick.  
John's in heaven, now, they say,  
At least he surely went that way.

Little Hal was happy when,  
He found a lump of K C N,  
"Pa likes lots of sweets," said he,  
So he put it in his tea.  
Strange how died and suicide,  
Rhyme so well with cyanide.

### WAS IT OR WASN'T IT?

Is this this or is that that?

Well, I think if that is this, that that can't be that.

You are all wrong. This is this and that is that.

No, that can't be. If that is that, that must be this.

I think that that is this and that is that.

Well, you ————— @\$%O\*""c&! Let's ask the Prof. and find out.

No, this is not a conversation in an institution for the weakminded; it is a typical argument between Civil Engineers in the A. C. Lab. while trying to identify parts of an experiment on a drawing.

"Was her gown cut low?" she asked.

"Yes indeed. Low and behold," he answered.

### "THERE'S A REASON"

Often you laff and the world laffs with you,

Again you laff and you laff alone.

The first is when the joke's your professor's,

The second when the jest is your own.

### HE KNEW BETTER

"Why don't you get out and hustle?" remarked the gentleman to whom a tramp applied for a little charity. "Hard work never killed anybody."

"You're wrong there, boss," replied the tramp; "I've lost four wives that way now."

### RAY'S CLASS

A great amount of bluffing,

Lots of air quite hot,

Makes a recitation

Seem like what it's not.

### HOW SHE DOTHT!

How doth the gentle laundress

Search out the weakest joints,

And always scrape the buttons off

At most strategic points.

"A narrow man's comb?" asked the clerk.

"No," answered the girl. "I want a comb for a man with rubber teeth."

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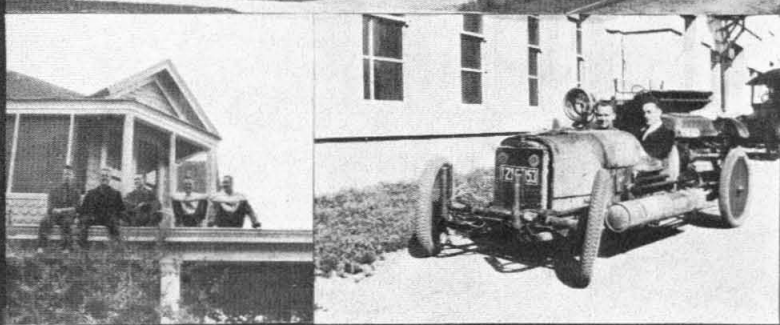
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A STUDENT comes to college knowing NOTHING and leaves college knowing almost EVERYTHING. During his stay at college his time is spent in one CONTINUOUS ROUND of CLASSES and WRANGLES with the profs and sub-profs. In his FROSH days he is a POOR FISH; in his SOPH days he has a bad case of the SWELL HEAD; in his JUNIOR days he is a QUEENER; in his SENIOR days he has GREAT PROSPECTS; the profs think he is an ASS; his best girl knows that he is WONDERFUL; his parents believe he is going to be PRESIDENT some day; if he is a BLOCKHEAD he cannot pass the exams and he is KICKED OUT; if he is BRILLIANT and gets the highest grades he is a GRIND and then none of the STEPPERS will have anything to do with him; if he FLUNKS OUT he is DISGRACED and everybody talks about him; if he does not flunk out he is considered a DAMN FOOL for loafing around in college; if he is elected to an office he is criticised for not PERFORMING its duties BETTER; if he is not elected he is considered to be an UNPOPULAR fellow and no one wants to know him; if he belongs to the Y. M. C. A. he is BATTY; if he belongs to a FRAT he is a GOOD SCOUT; if he is a GOOD dancer all the girls FALL for him; if he is a PUNK dancer he deteriorates into a LOUNGE LIZARD; if he is a good POKER player he WINS some kale; if he is a BONEHEAD poker player he has to write home to the OLD MAN for more KALE; if he makes the VARSITY he becomes FAMOUS; if he makes his EXAM PAPER resemble his neighbor's there is something rotten in Denmark and he is CANNED; if he pays his Associated Student Body dues he is doing his DUTY; if he fails to pay his A. S. B. dues he is a SLACKER and then the A. S. B. raises HELL with him; when he first comes to college everyone gets a SWAT at him; before he leaves he has made a NAME for himself and everyone wants to SWAT him HARDER or else VOTE for him. Just before he leaves college he has a GREAT FUTURE before him; two years later he has a GREAT PAST (in college) back of him and NOTHING in front of him; if he gets a RAISE he gets MARRIED; if he does not get a raise he TRUSTS to HEAVEN and gets married anyway hoping that it will TURN OUT all right. If he becomes a GREAT MAN every man who ever went to his college knew him and was his PERSONAL FRIEND; if he goes BROKE none of his former college friends REMEMBER him. COLLEGE is a funny place but we all like to be HERE just the same.

The gas was leaking in the lab.  
He lit a match to find it.  
The gas is leaking just the same,  
But now he doesn't mind it.

The lobster blushed a scarlet  
And said in tones distressing:  
"I really cannot help it,  
I see the salad dressing."

### CERTAINLY

"I can tell you," said a very accurate man, "how much water goes over Niagara Falls to a quart."

"How much?" asked his skeptical friend.

"Two pints."

### FAST OR FAT

Erb—"That girl is awful fast."

Hambrook—"Do you think so?"

Erb—"Yes; she covered five laps last nite."



## SUGGESTED HONOR KEYS



A farmer had come up to town for a few days. Before he started, he had promised to bring his daughter a present, so he went into a jeweler's shop and said to the assistant: "I want a pair of earrings, cheap, but pretty."  
 "Yes, sir," said the jeweler; "you want something loud, I suppose?"  
 "Well, I don't mind if one of them is a little loud," replied the farmer.  
 "My girl is a little deaf in one ear."

When is a sailor not a sailor?  
 Well, when is he not a sailor?  
 Easy, when he is at sea.  
 Yes, but how is that?  
 Well, when the ship is at sea he is aboard?

Court Attendants: "Hail the King! Hail the King!"  
 King (Charlie Murray): "Stop hailing while I'm reigning."

She frowned on him and called him Mr.,  
 Because in fun he merely kr.  
 And then in spite  
 The following nite  
 The naughty Mr. kr. sr.

Judge: The police say that you and your wife had some words.  
 Woodbury: I had some but I didn't get a chance to use them.

## A SECOND WOOLWORTH BUILDING

I was waiting on the corner for a car the other evening. There was nothing peculiar about the car or even the fact that I had to wait for it. There were, however, two men standing on the same corner waiting for the same car. There is nothing peculiar about this fact, as corners seem to be made to wait on and cars to wait for. But that is another story. These men were talking. Even this fact will not startle the gentle readers as men have been known to talk under even more trying circumstances than this. They were talking loudly and I could not help but hear them because I was listening.

They were exchanging stories. The story which one told was a masterpiece, but common decency forbids. The story which the other told was not so good but as it reminded me of some people I have met I will tell it here.

A man by the name of Duray, I think he called him, was out West from back East. He was quite a man and he knew it in fact he told people so. He had a way of exaggerating other things also. One of his western friends was greatly annoyed by his tales of mammoth proportions. He told him that if he started to tell anything that sounded too big he would punch him in the ribs or kick him under the table cloth or in some other way warn him and he could modify his statements.

It seems that the very next night this man, Duray, and his friend were out to dinner. His friend sat opposite him. After dinner they were sitting around the table talking. Duray began telling of the wonderful things he had seen and done. He told them of his wonderful government work, of his success in business and then started on New York. He told them of the towering skyscrapers. They seemed greatly impressed. He tried to make it even more impressive by the use of figures. He said, "There was one building that I worked on in New York that was 600 feet long and 900 feet high and—" here his friend kicked him under the table "and—and 4 feet wide," he finished.

### ME TOO

Bill Renshaw: "I'd like to be the census?"

Hal Dronberger: "Why?"

Bill Renshaw: "Because it embraces millions of women."

To his knees he dropped,  
And the question he popped.  
Wilt thou?  
She willed it.

He, to his inland friend: Did the water come up to your expectations last week when you were at the seashore?

She: No; it was low tide.

She—"Do you want to start the victrola?"

He—"Why?"

She—"It's about time you started something."



### Acknowledgement

The confidence of our advertisers, the leading business firms of Pasadena and Los Angeles, has been a large factor in the success of the Orange and White. Their experience has shown that our publication is a valuable means for their announcements. We feel sure that as our students take the book into their homes for the enjoyment of their parents and friends, and to add to their collection of college mementos, they will feel a renewed confidence and good will toward these our advertising friends.

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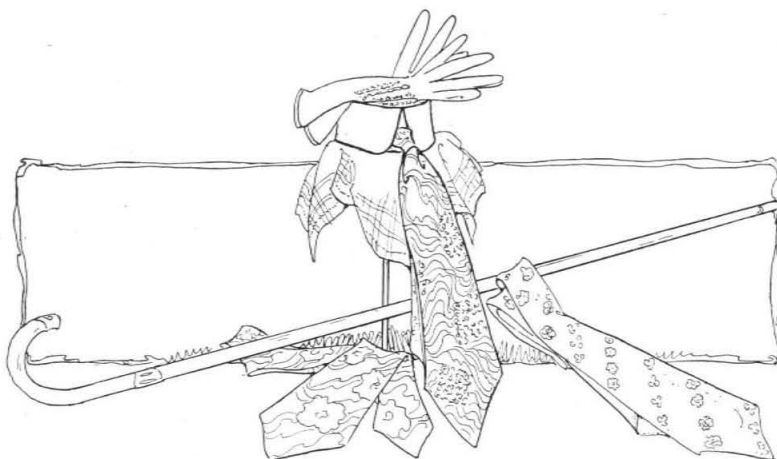
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### ACKNOWLEDGMENTS

For the excellent airplane view of the campus we are indebted to Lieut. Carlyle Ridenour, a former Tech man.

We are indebted to several publications such as Life, The Wampus, and The Pelican for several anecdotes and jokes.

To others, which space prevents our mentioning, we wish to state our appreciation of their support.

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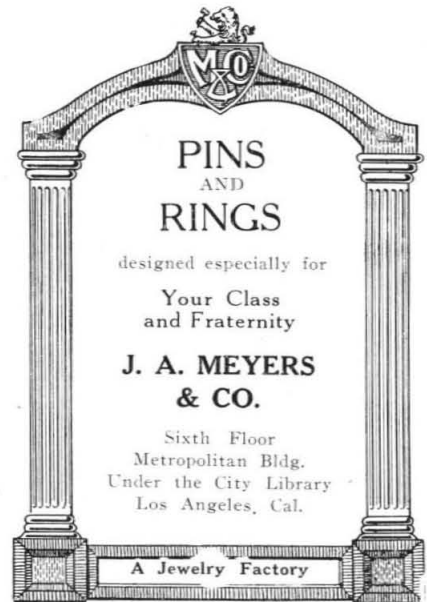
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She: "Yes."

Count: "And is not zat ze hand with which you write ze check?"

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