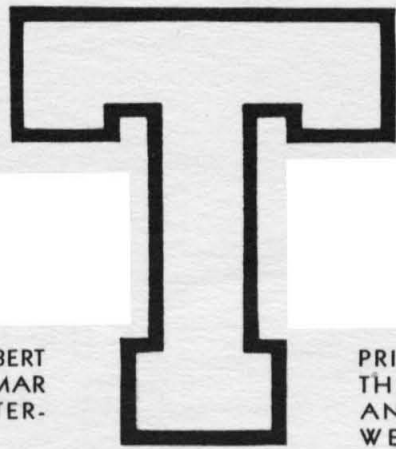




T

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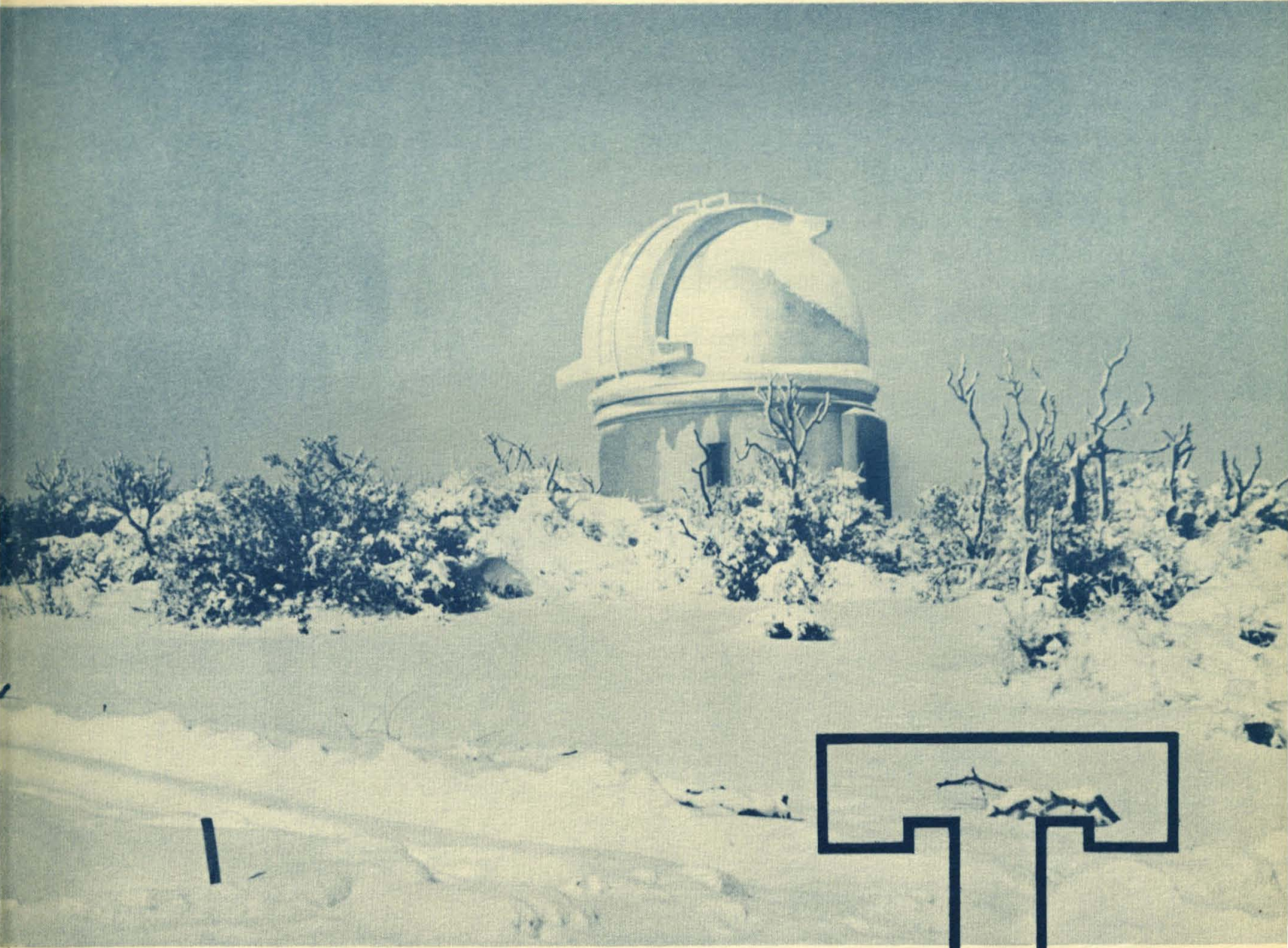


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MARTIN STUDIO . . . MT. PALOMAR  
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SON, JR. . . .

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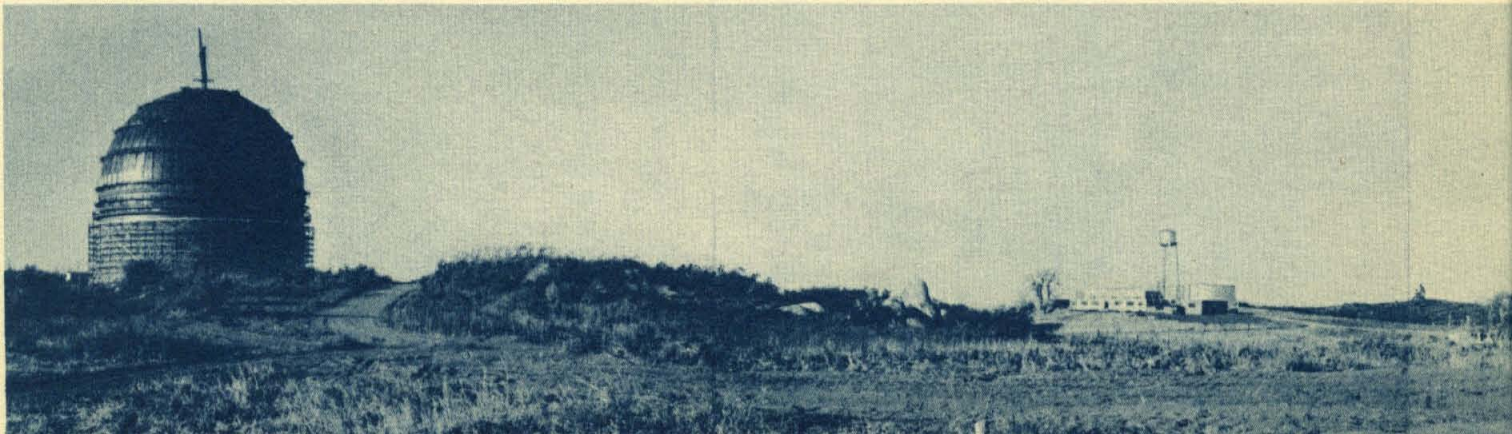
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THE ASSOCIATED STUDENTS  
OF THE CALIFORNIA INSTI-  
TUTE OF TECHNOLOGY,  
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## FOREWORD

From the time that the first Big T was published the Institute has come a long way. This school in co-operation with the Carnegie Institute of Washington is building a two-hundred inch reflector telescope—this is progress. We have seen rising on the campus during the last year four new buildings—this also is progress. Our research students have won scholarships and prizes, and we are justly proud of them. But we will not stop here and brag about what already has been achieved, we will continue to progress until the ideal is a reality. Plans for additional student houses, for a gymnasium and swimming pool are now but a step from being set into execution. Hail to a future Caltech!



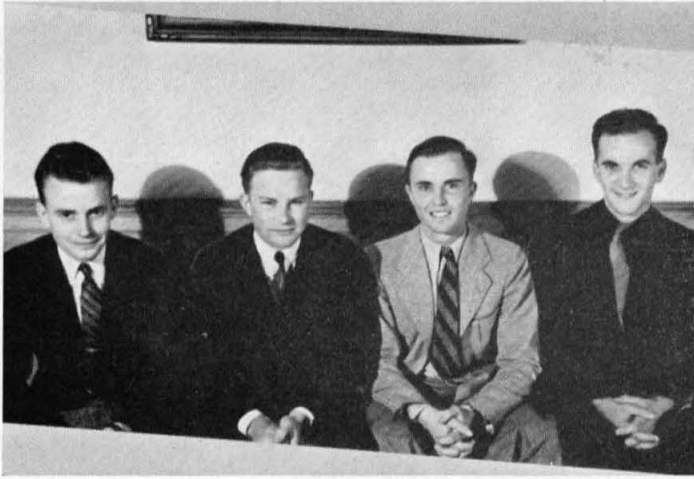


## DEDICATION

To build Mount Palomar, men looked ten years into the future. To build this Institute, a group of men looked a generation into the future. It is to the memory of two members of this forward striding group of men who from Throop Institute developed this school into the world renowned California Institute of Technology that we reverently dedicate this Annual—George Ellery Hale and Henry M. Robinson, members of the Executive Council and of the Board of Trustees.







Clarke, Johnson, Nash, Jewett.

## THE SENIOR CLASS

As the class of '38 filed into Dabney Hall to be distributed into the various sections of the Freshman class, little did the existing Sophomores realize that this bewildered group of students would give them the closest pushball contest ever witnessed at Tech, the Sophomores winning by one goal.

As a result of the Rodeo the class of '38 entered the social field with the Rodeo dance, which was held in Dabney Lounge with music furnished by Hank Evans' orchestra.

The men who so successfully led the class through its first year at Tech were Davidson, Woodrich, Elliott, and Ropp holding offices of President, Vice-President, Secretary, and Treasurer respectively.

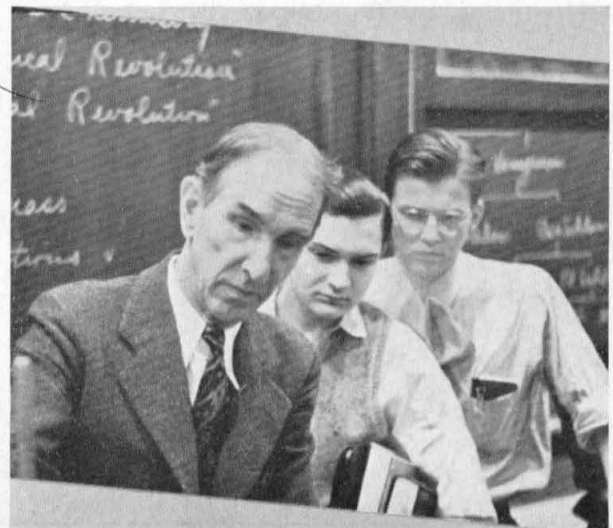
At the start of the Sophomore year the class continued to be efficiently managed with McLean, Balsley, Ropp, and Elliott as officers. The class extended its reputation for being well organized and highly spirited by showing Tech how to kidnap Freshmen on a large scale. The Freshmen lost the Rodeo of that year by an overwhelming score of 8 to 0!

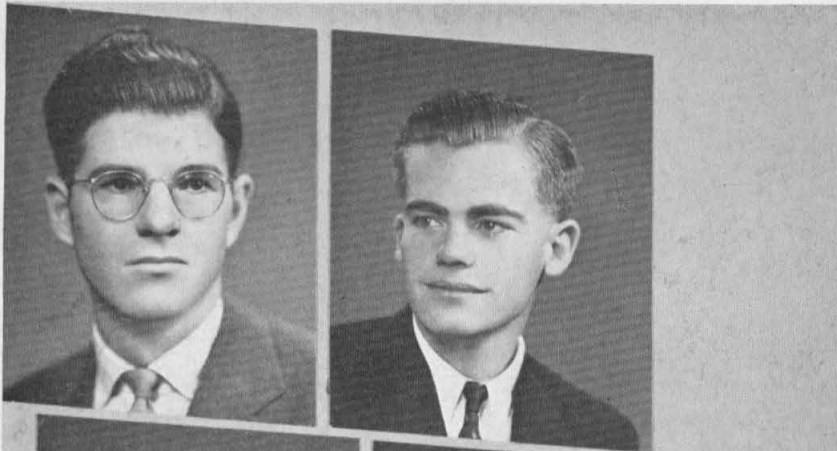
The men selected Don Davidson, President; William Ropp, Vice-President; Charles Clarke, Secretary; and Bruce Elliott, Treasurer to lead the class through the Junior year. The first duty of the class as

Juniors was to organize the contest for the Soph-Frosh Rodeo, which was expanded into a field day including four events instead of the usual one event. The events scheduled that year were a tug of war, a pushball contest, a cane spree, and a tire race.

To lead them through the last year at Tech the class selected Frank Jewett, President; Evan Johnson, Vice-President; Charles Clarke, Secretary; and William Nash, Treasurer. Besides the class officers many committees were appointed to handle the problems which usually come up before the Senior Class such as announcements, class gift, etc.

The crowning social events were the Garden Party and the Junior-Senior Prom. The Seniors were assisted in the organization of both affairs by the Junior Class.





**CARL W. AHLROTH, JR.**

One of the Ricketts geologists. Comes to Tech from Hollywood. Member of the Photo Club.

**RICHARD H. ALLEN**

Honor Key, Beavers, president of Pi Kappa Delta and Drama Club, debate, and rugby are a few of the honors and activities of this Ricketts geologist.



**WILLIAM S. ALTHOUSE**

Mechanical engineer from Glendale, California. Member of Beavers, Ricketts House and class officer. Track and House football.

**MICHEL AMBROFF**

Linguistic mechanical engineer from Los Angeles. Member of A.S.M.E.

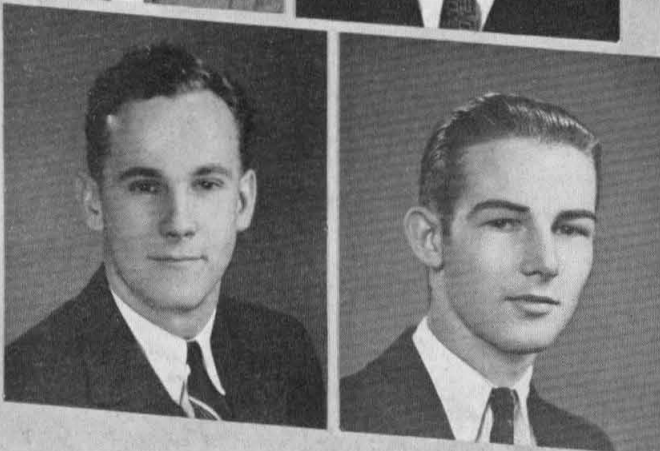


**JOHN R. BAKER**

Football, track, and basketball. Student body secretary, president of Throop Club, treasurer of Varsity Club were included in this M.E.'s extra-curriculum.

**JAMES ROBINSON BALSLEY**

Honor Key, president Tau Beta Pi, Pi Kappa Delta, vice-president Varsity Club, three years football, Wheaton Trophy, debate, Beavers. President of class in sophomore year, two years B. of C., "Big T" staff. Chairman Court of Traditions. A Ricketts geologist from Stamford, Conn.



**ROBERT JOSEPH BARRY**

Fleming mechanical engineer from Los Angeles. A.S.B. publicity chairman. House sports.

**DAVID K. BEAVON**

Tau Beta Pi and Pi Kappa Delta from Blacker. A Los Angeles bred chem engineer; won a frosh baseball numeral. Three years of debating.

**T. A. BERTNESS**

Vice-president and athletic manager of Fleming. Comes to Tech from La Mesa, California. Majoring in applied chemistry.

**SIDNEY BERTRAM**

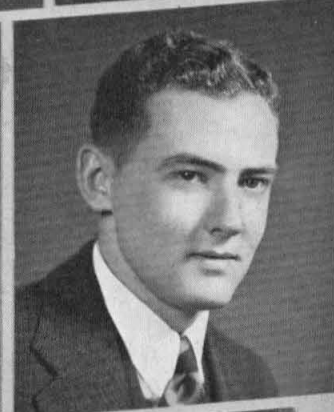
Member of Ricketts. Tau Beta Pi, electrical engineer, from Los Angeles. Demon with radios.

**HARRY B. BOLLER**

Alhambra is the home of M. E. Boller. Is interested in metal working.

**WILLIAM CARL BRENNER**

Throop Clubber from Pasadena. Member of A.I.E.E., Chess Club, and Y. M. C. A. An E.E.

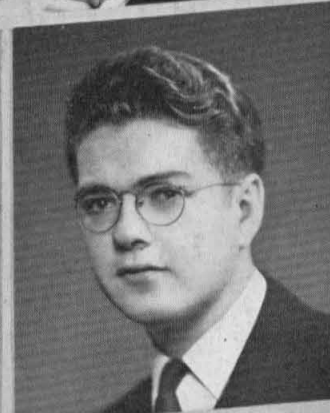


**JOHN JAKE BROWNE**

Football and Varsity Club. Transfer from Annapolis. A Ricketts mechanical engineer from Clovis, California.

**WILLIAM T. CARDWELL**

Applied chemist from Pasadena. Member of Tau Beta Pi. A Throop Clubber and band member. Orchestra president.



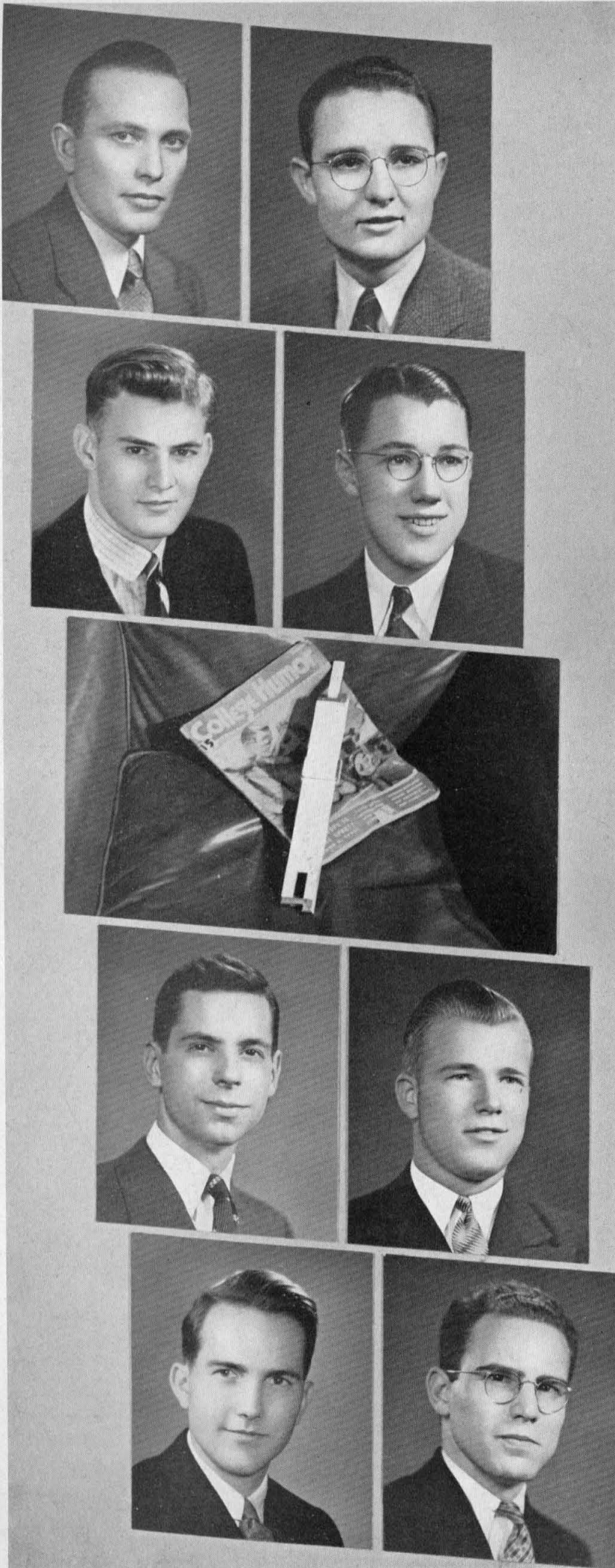
**ROBERT E. CARR**

Member of Throop Club from Rosemead, California. Mechanical engineer and member of A.S.M.E.

**CHARLES W. CLARKE**

Member of Tau Beta Pi. Chairman of Fleming's Upper Class Committee. Secretary of A.S.M.E. From Los Angeles.





**ELLIOT P. BENNETT**

Hails from Pasadena. Is a civil engineer. Two years varsity football; also frosh football and track.

**ROBERT S. CUSTER**

Applied chemist from Blacker. Member of Pi Kappa Delta. President of Chem. Club. Comes from Glendale. Debater.

**DONALD DOUGLAS DAVIDSON**

President of Dabney, three years on Board of Control. Class president in frosh and junior years. Applied chemist and member of Tau Beta Pi.

**ROBERT DAVIDSON**

Applied chemist and member of Fleming House. Was vice-president of the Press Club, treasurer of Fleming, and editor of the California Tech. Comes from Pleasant Ridge, Detroit, Michigan.

**PAUL A. DENNIS**

Applied physicist from Los Angeles. Member and secretary of the Glee Club. Member of the A.I.E.E.

**BLAINE A. DIXON, JR.**

Throop Clubber from Glendale. Tennis playing member of the Varsity Club. Officer of Throop. Member of the California Tech staff.

**MUNSON W. DOWD**

Fleming House member from El Centro. Civil engineer who made Tau Beta Pi. Played three years of tennis.

**ARMAND F. DuFRESNE**

Tau Beta Pi, Varsity Club, Honor Key, track, and cross-country. Member of the orchestra and band manager. Comes to Tech from San Diego. Dabney man.

**ARTHUR CLEMENT ELLINGS**

Applied chemist and member of Blacker House. Comes from Santa Barbara. Social and Upperclass committees in Blacker. Member of the American Chemical Society.

**BRUCE CASS ELLIOT**

President of Ricketts. Press Club, Beavers, tennis letterman. Class secretary and treasurer. House vice-president. Is an M.E. from Los Angeles. Business manager of '37 "Big T."

**HERBERT B. ELLIS**

Tau Beta Pi, Beavers, and Honor Key. Was active in the Y.M.C.A., was on the election committee, treasurer of the A.S.M.E. Track and cross-country. Business staff of the California Tech. M.E. and comes from Los Angeles. Member of Ricketts.

**PAUL ENGELDER**

Electrical engineer from Douglas, Arizona. Member of the Varsity Club and the Beavers. Baseball, basketball, football, and rugby. Member of Ricketts.



**HENRY KING EVANS**

Member of Tau Beta Pi. Student body treasurer and rally committee chairman. Honor Key and member of Beavers. Blacker C.E. from Santa Maria. Band, orchestra, and Glee Club.

**JOHN D. FARNEMAN**

Business manager of the California Tech. Member of Fleming House from Los Angeles. Member of the band and the orchestra. Electrical engineer.

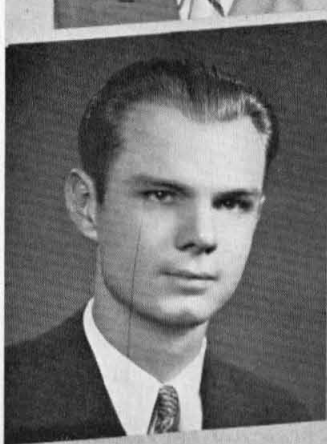


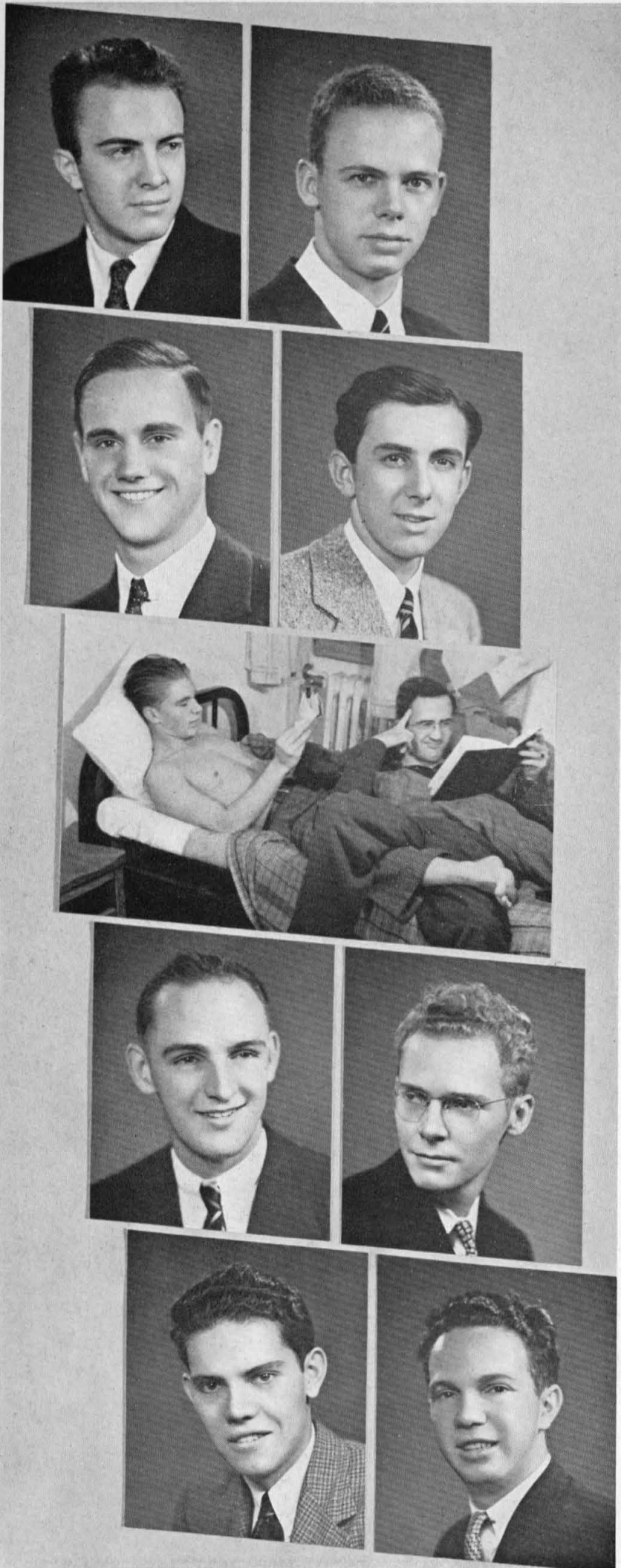
**RICHARD WILSON FOLKINS**

Dabney House basketball player. Civil engineer from Redlands.

**RICHARD B. FORWARD**

Mechanical engineer from Santa Barbara, Calif. Senior football manager. Band and publicity committee. California Tech staff. Member of Blacker.





**WILLIAM J. FREEDE**

Chemical engineer member of Fleming. Comes from Oklahoma City, Oklahoma. Varsity track man. Interested in the Y.M.C.A. and the Caltech Chem. Club.

**CARL FREDERICK FRIEND**

An aeronautical engineer from Los Angeles.

**EDWARD NATHANIEL FRISIUS**

Civil engineer from Hollywood.

**PETER CLAYTON GOFF**

An E.E. from Beverly Hills. Cross-country

**BOYNE GRAINGER**

An M.E. from Redondo Beach. Was band manager and member of the A.S.C.E. Fleming House cross-country man.

**CLYDE W. HARRIS**

Member of Tau Beta Pi. Mathematics major from Lakewood, Ohio. Chief interest lies in optics.

**GEORGE B. HOLMES**

E.E. member of Fleming. Comes from Santa Ana. Tech staff, publicity committee, stage crew. Member of the A.I.E.E.

**CARLTON L. HORINE**

Dabney man from Cristobal, Canal Zone. Is an applied chemist. Band member, participated in interhouse sports, scrub football, band, and orchestra. "Big T" staff. Vice-president of the Chem. Club.

**GEORGE MARION HOTZ**

A Dabney M.E. from Los Angeles.

**DONALD E. HUDSON**

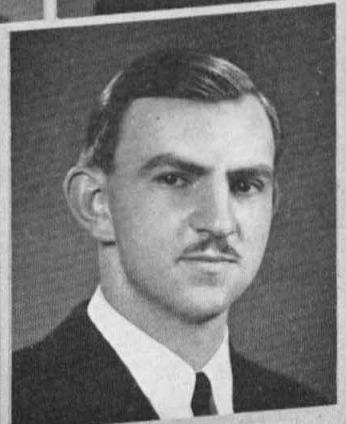
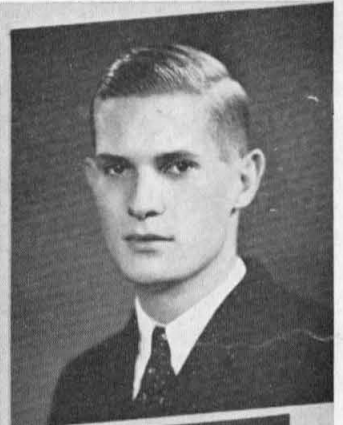
Mechanical engineer who comes from Pasadena. Was a member of the A.S.M.E.

**LOWELL H. HULBIRT**

Applied physics was his major. Election committee chairman, Varsity Club, Honor Key, Board of Control.

**NICKOLAS G. IVANOFF**

Aeronautical engineer from Los Angeles. Participated in track, debating and Glee Club.

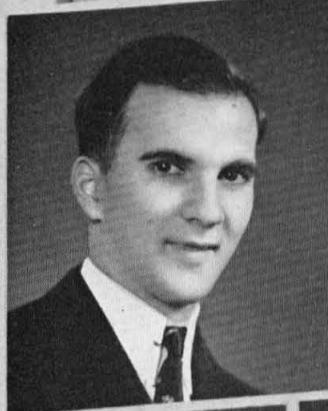


**FRANK B. JEWETT, JR.**

Vice-president of A.S.B., president of Senior Class, Board of Control. Football, track, baseball, and rugby. Was president of Beavers. M.E. member of Ricketts from Short Hills, N. J. Honor Key. Gnome Club.

**JACK JOHANNESSEN**

An electrical engineer from Pasadena. Was a member of Throop Club. Interested in photography.



**EVAN A. JOHNSON**

Pi Kappa Delta, Beavers, Honor Key. Was vice-president of Senior Class. A.S.B. Rally Committee chairman. Debater. An M.E. member of Blacker. Comes from La Habra, California.

**RALPH W. JONES, JR.**

Mechanical from Pasadena. Member of Throop Club. Gained Tau Beta Pi. Glee Club, band, "Big T," Drama Club. Honor Key.





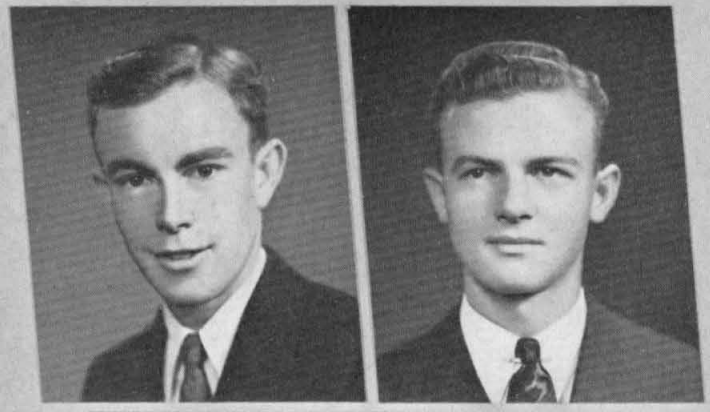
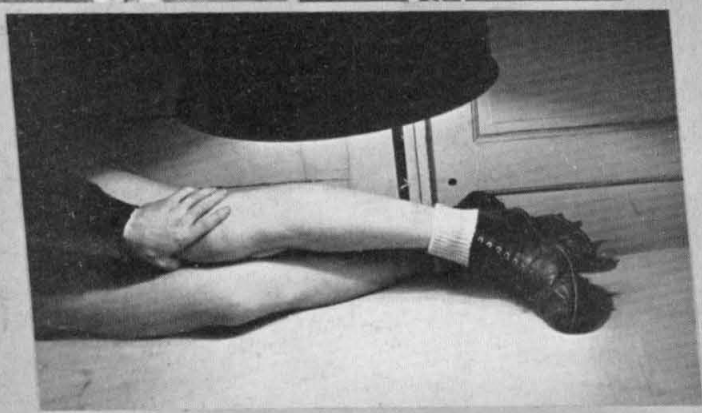
**WILSON B. JONES**  
A civil engineer from Alhambra. Played three years of baseball. Member of Throop Club.

**ALBERT E. JURs, JR.**  
Member of Ricketts from Piedmont, California. An electrical engineer who made Tau Beta Pi.



**BENJAMIN KAZAN**  
Took the course in physics. Was a member of Dabney House from New York City. Orchestra concertmaster. Made Tau Beta Pi.

**SAMUEL HARRIS KELLER**  
A civil from Glendale. Member of Throop Club. Played tennis for four years. Was treasurer of Varsity Club and of A.S.C.E.



**L. BRUCE KELLY**  
An M.E. from Alhambra. In the band for three years. Member of A.S.M.E. and Throop Club.

**JACK W. KNIGHT**  
A Ricketts geologist. Came to Tech from Glendale. Participated in football, golf, track. Member of orchestra.



**H. M. LAVENDER**  
One of the editors of this book. An applied chemist from Douglas, Arizona. Was a Ricketts House member. Tau Beta Pi and Press Club. Baseball and football.

**JOHN JACOB LENTZ**  
Tau Beta Pi. An E.E. from Los Angeles.



**FRED E. LLEWELLYN**

Fleming House president. An electrical from Glendale. Member of Tau Beta Pi and Beavers. Board of Control, Publicity Comm., Calif. Tech. staff. Officer of A.I.E.E.

**DAVID BROWN LUCKENBILL**

Applied chemist from Redlands. Editor of California Tech. Frosh baseball. A Blacker man.

**JOHN G. McLEAN**

President of the A.S.B. Varsity Club, Beavers, Pi Kappa Delta, debater, four years of football and track. Honor Key for three years. Member of Blacker who came from Santa Barbara to take applied physics. Secretary of A.S.B. in junior year.

**JOHN L. MERRIAM**

Came to Ricketts from San Bernardino. Was A.S.C.E. vice-president. Interested in Y.M.C.A. Played tennis.



**ROBERT G. METZNER**

Electrical engineering member of Blacker. Came from Los Angeles. Was program chairman of Caltech Musicale.

**WILLIAM E. MILBURN**

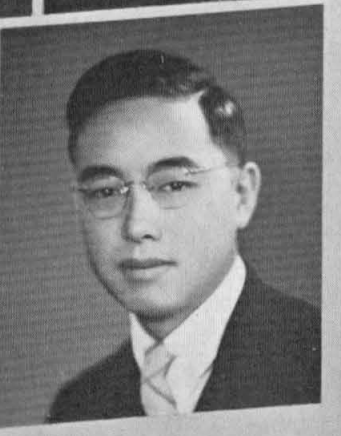
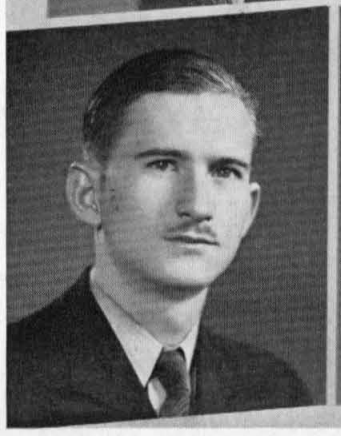
A civil from Redondo Beach. Member of Fleming House. Participated in House football and swimming.

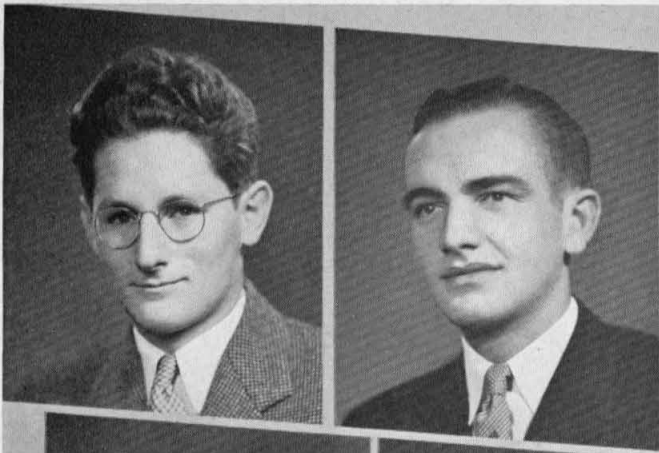
**FREDERICK H. MOORE**

An applied chemist from Hollywood. Was a member of Throop. Active in Tech drama. Officer of Chem. and Glee Clubs.

**HENRY TAKESHI NAGAMATSU**

An aeronautical engineer who transferred from the University of California at Berkeley. Lives in Huntington Beach. Member of Tau Beta Pi. Fleming man.





**JOHN C. LILLY**

Biology, premedical, was this Blacker man's course. Came from St. Paul, Minn. President of Ski Club, California Tech staff, Drama Club. Chief interest: son, John, Jr.

**HARPER NORTH**

Applied physicist from Hollywood who lived in Dabney. Member of the Glee Club.



**ROBERT H. OLDS**

Theoretical physicist. Came from Los Angeles.

**GEORGE HAVICE OSBORN**

Varsity Club, football. Fleming mechanical engineer from Azusa.

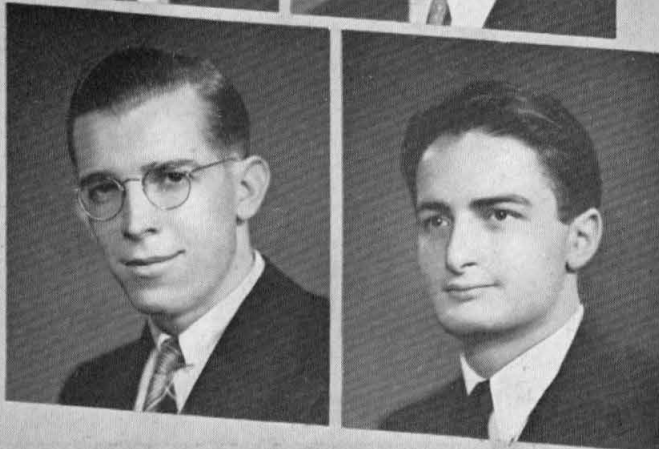


**JOHN E. PARKER**

A Throop Club member from Pasadena. An applied chemist who made Tau Beta Pi. Glee Club, Drama, Exhibit Day, Chem. Club.

**JOSEPH FRANK PIRO**

An E.E. who lived in Ricketts. Came from Los Angeles. Was a member of the band and A.I.E.E. House tennis.



**EDWIN J. PORTER**

Mechanical engineer who was a member of Throop Club. Came from Whittier. Orchestra and band. Water polo.

**RICHARD ROSENCRANZ, JR.**

Member of Ricketts. An applied chemist from Evansville, Indiana. Tau Beta Pi, Varsity Club, Press Club, Honor Key. Football, Beavers, orchestra, chorus. Student body publicity manager. Class president in sophomore year.

**RICHARD MERRILL ROWELL**

Varsity Club, Beavers, three years football, baseball. Ricketts House treasurer. A mechanical from Lancaster.

**GEORGE T. RUDKIN**

Biologist from San Marino. Was a member of Throop. Cross-country and track. Treasurer of Throop.

**GARN ARTHUR RYNEARSON**

Fleming geologist from Van Nuys. Beaver, member of "Big T" staff.

**PHILLIP E. SAURENMAN**

Came to Tech from Pasadena. A mechanical. Member of Throop Club. Interested in fencing.

**EDMOND F. SHANAHAN**

An electrical engineer. Came from Hollywood. Spent frosh year in Fleming.

**HAROLD W. SHARP**

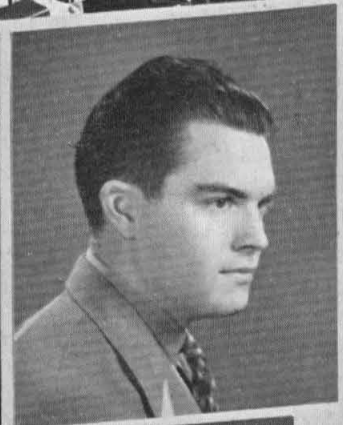
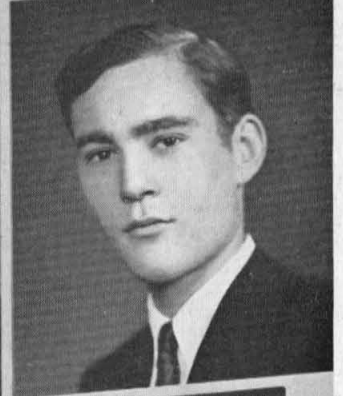
Three years of football. Beavers. A mechanical who lived in Dabney; came from Santa Paula.

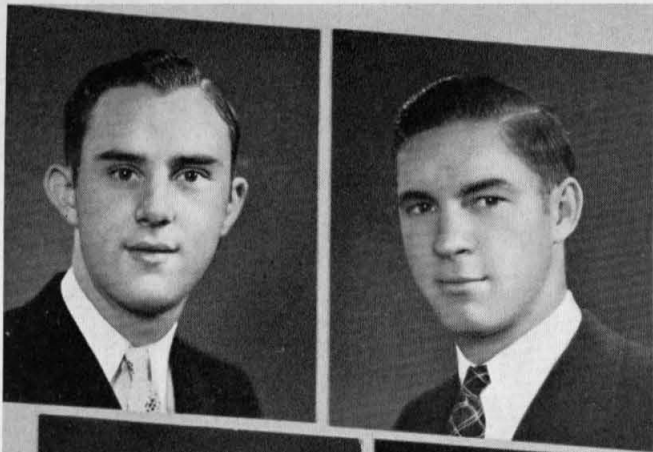
**PHILLIP F. SHEPHERD**

M.E. from Altadena. Member of Ricketts. Business manager of the "Little T." "Big T," Calif. Tech, Publicity Committee.

**ARTHUR WILLIAM SIDLER**

Member of Dabney. A civil engineer; came to Tech from San Bernardino. Played interhouse handball.





**PAUL C. SIECHERT**

A Fleming applied chemist. Comes from Fillmore. Press Club, orchestra, Honor Key. Cross-country.

**CLAY T. SMITH**

Another Ricketts geologist. Comes from Glendale. Four years of football, three years of track. Orchestra. Varsity Club and Beavers. Honor Key.

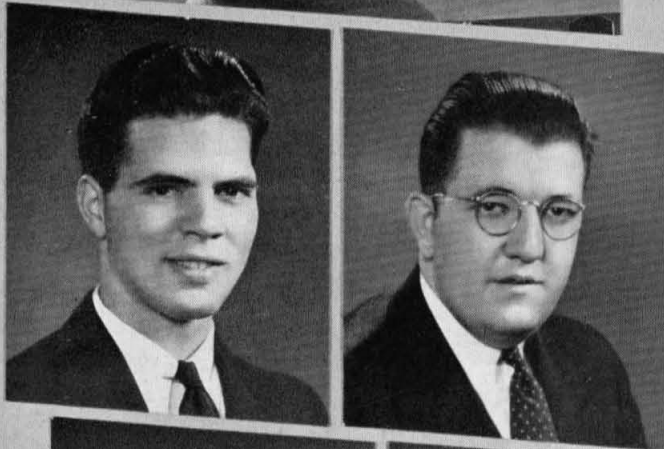


**J. FARREN STEVENS**

An electrical engineer from Phoenix Junior College, Phoenix, Arizona.

**ROLAND C. STONE**

Vice-president of the A.S.B. Vice-president, then president, of Blacker, Debate, Beavers, Pi Kappa Delta, Board of Control, Tech staff, two Honor Keys. All house football team. Came from Ogden, Utah.

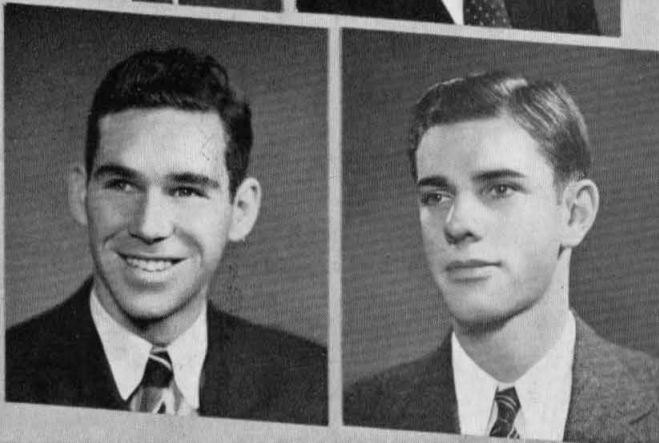


**J. EUGENE STONES**

An applied physicist. Member of Throop and Dabney. Came from Bakersfield, California. Y.M.C.A. cabinet member.

**LUIS HERNAN TEJADA**

Member of Dabney House. An electrical engineer from La Paz, Brazil. Member of Photo and Ski Clubs.



**ROBERT C. THOMAS**

An aeronaut. Member of Blacker from Hollywood. Pi Kappa Delta. Beavers. Honor Key. Debater.

**PAUL O. TILKER**

A civil from Los Angeles. Was a member of the A.S.C.E.

**WILLIAM E. TWISS**

Throop Club mechanical engineer from Los Angeles.

**JOHN R. van FLEET, JR.**

A civil from Santa Barbara. Member of Ricketts. The business manager of this book. Beavers, Press Club. Varsity football and debate.

**JAMES W. VAN HORN**

An electrical engineer. Two-year football letterman. Member of Fleming and Throop.

**J. L. VELAZQUEZ**

Member of Blacker from Mexico City. An aeronautical engineer. Exhibit Day Committee.

**STANLEY V. VORHEES**

Dabney mechanical engineer from Hollywood. Track and cross-country captain. Varsity Club. Secretary A.S.M.E.

**GEORGE WALD**

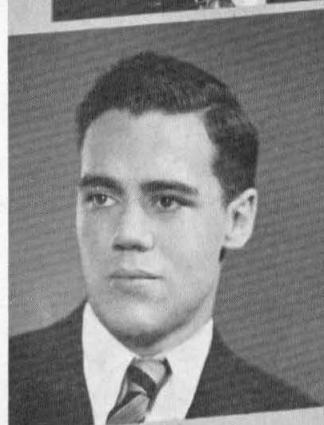
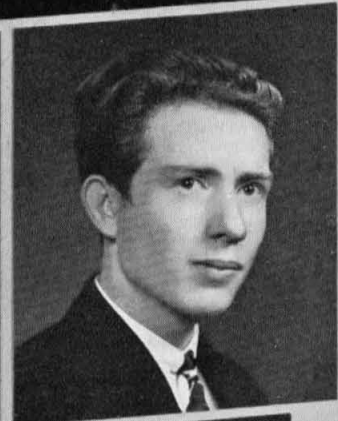
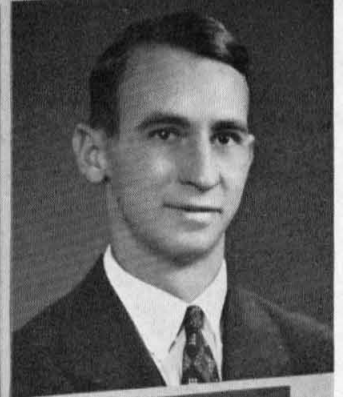
Applied chemist from Alhambra.

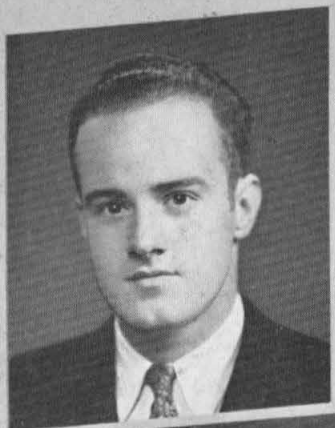
**ALBERT C. WALKER**

A chemist. Member of Fleming from Fresno.

**EDWARD LEE WEINBERGER**

Applied chemist from Los Angeles. Basketball manager.





**LUPTON A. WILKINSON**

A Ricketts House aeronautical engineer. Comes from Walla Walla, Wash. California Tech staff.

**GARDNER WILSON**

Fleming House electrical engineer from Fresno, California. Beavers, Varsity Club and Rally Committee. Treasurer and secretary of Fleming. Varsity track.



**EMANUEL WINDSOR**

Throop Club biologist from Los Angeles. President of the Walrus Club. Feature editor of the California Tech.

**STANLEY WOLFBERG**

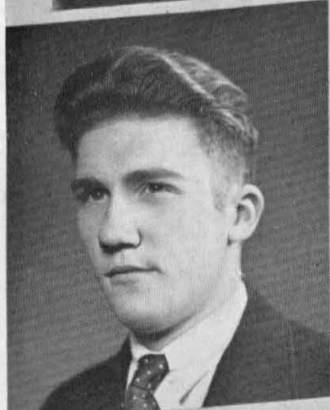
Dabney House mechanical engineer from Los Angeles. A.S.B. athletic manager, Varsity Club president, Beavers. Varsity basketball and baseball. Won Rawlings Trophy.

**HOMER J. WOOD**

A Blacker man from Porterville, California. A mechanical engineer member of Tau Beta Pi. Exhibit Day Committee.

**HOMER S. YOUNGS**

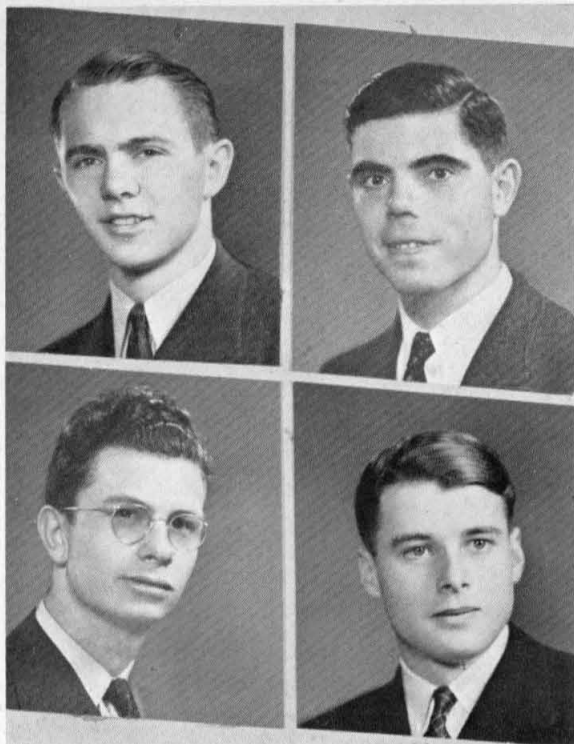
A Fleming chemist from Glendale. Wrestler. Chem. Club.





*Art Pickles*

# LOWER CLASSES



Osborn  
Anderson

Sullivan  
Guillou



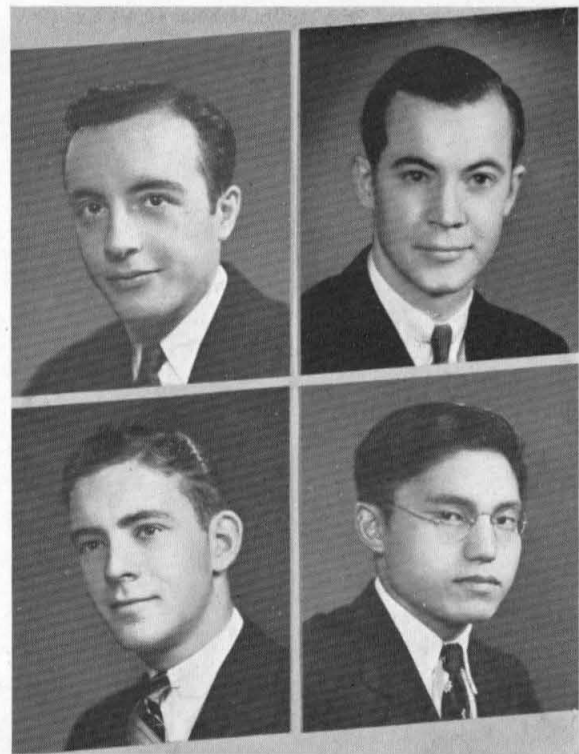
## JUNIORS

Junior activities include the prom and garden party with the seniors and management of Frosh-Soph rodeo.

**First row:** Zukerman, Snider, Matthew, Black, Tangren, Smith, Beard, Haussler, Pond, Lawrie, Asakawa; **second row:** Osborn, McClung, Gale, McKinley, Braithwaite, Kimball, Hali, Smith, Hoff, Smith, Lee; **third row:** Paul, Fraser, Carstarphen, Merrick, Ingalls, Frampton, Crozier, Goodell, Lawson, Sviminoff, Davis, Beck; **fourth row:** Robinson, Kraft, Gerhart, Devirian, Ropp, Norton, Sullivan, Richards, Strong, White, Anderson, Brown, McCreery; **fifth row:** Mills, Hofeller, Gassoway, Bragg, Diehm, Goodin, Meyer, Degnan, Anderson, Blackington, Robertson, Oakley, Longfelder, Chung.







Manildi  
Payne

Reynolds  
Nakada

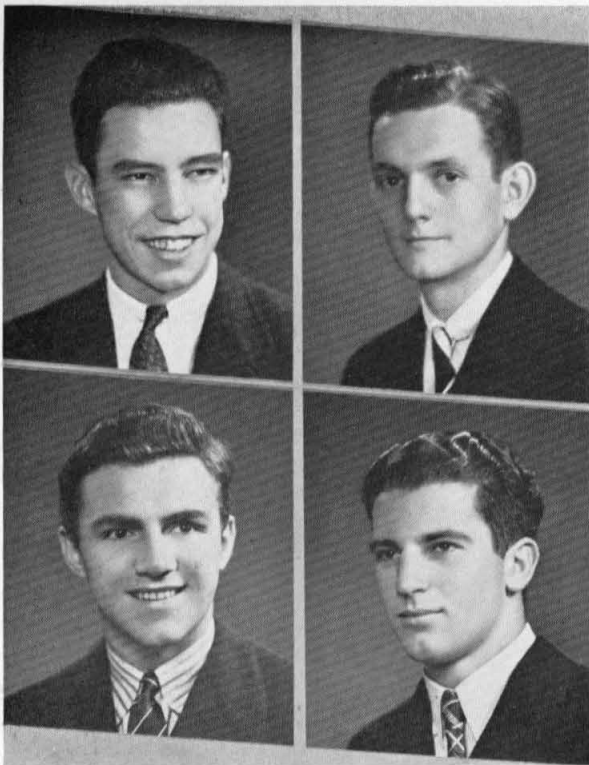
## SOPHOMORE

First to win a Rodeo Day by legal tactics were the present Sophomores, the "Roaring Forties," who also offered their student body dance.



**First row:** Nakada, Kluge, Wilbur, Mickley, Ray, Spooner, Weir, Paul, Abbey, Crane, Daly, Davis, Tielrooy, Brunner, Oder, Walter; **second row:** Williamson, Kemp, Young, Green, Statz, Worcester, Sullivan, Baumgarten, Goodmanson, Stone, Mayer, Reynolds, Walker, Brose, Palmer, Alonso; **third row:** White, Deniston, Love, Loeffler, Acker, Oakes, Haugen, Harlan, Billheimer, Harper, Foster, Howard, Lehm, Laue, Todd, German; **fourth row:** Janssen, Main, Lolmaugh, Campbell, Biddison, Davis, Kupfer, Sandiford, Marriott, Skaling, Staatz, Hankey, Keyser, Skalecky, Anderson, Steinmetz, Scarborough; **fifth row:** MacKay, Manildi, Bennett, Maleev, Freehafer, Brewer, Watkins, Palmer, Smith, Crawford, Payne, Adams, Epstein, Kohl, Wald, Flemings, Vetter, Schrader, VanDyke; **sixth row:** Daams, Grigg, Berlot, Baker, Hayes, Longwell, Richardson, Bergmann, Day, Barber, Weaver, Alcock, Brewer, France, Stevens, Whittlesey, Whittlesey, Meyer, Oldson, Spielberger, Carey.

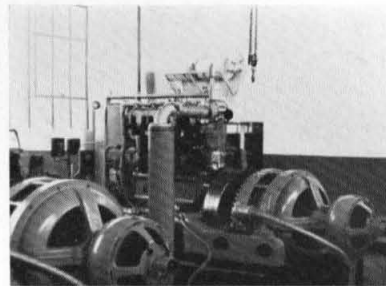




Meyer  
Snodgrass

Farrington  
Lakos

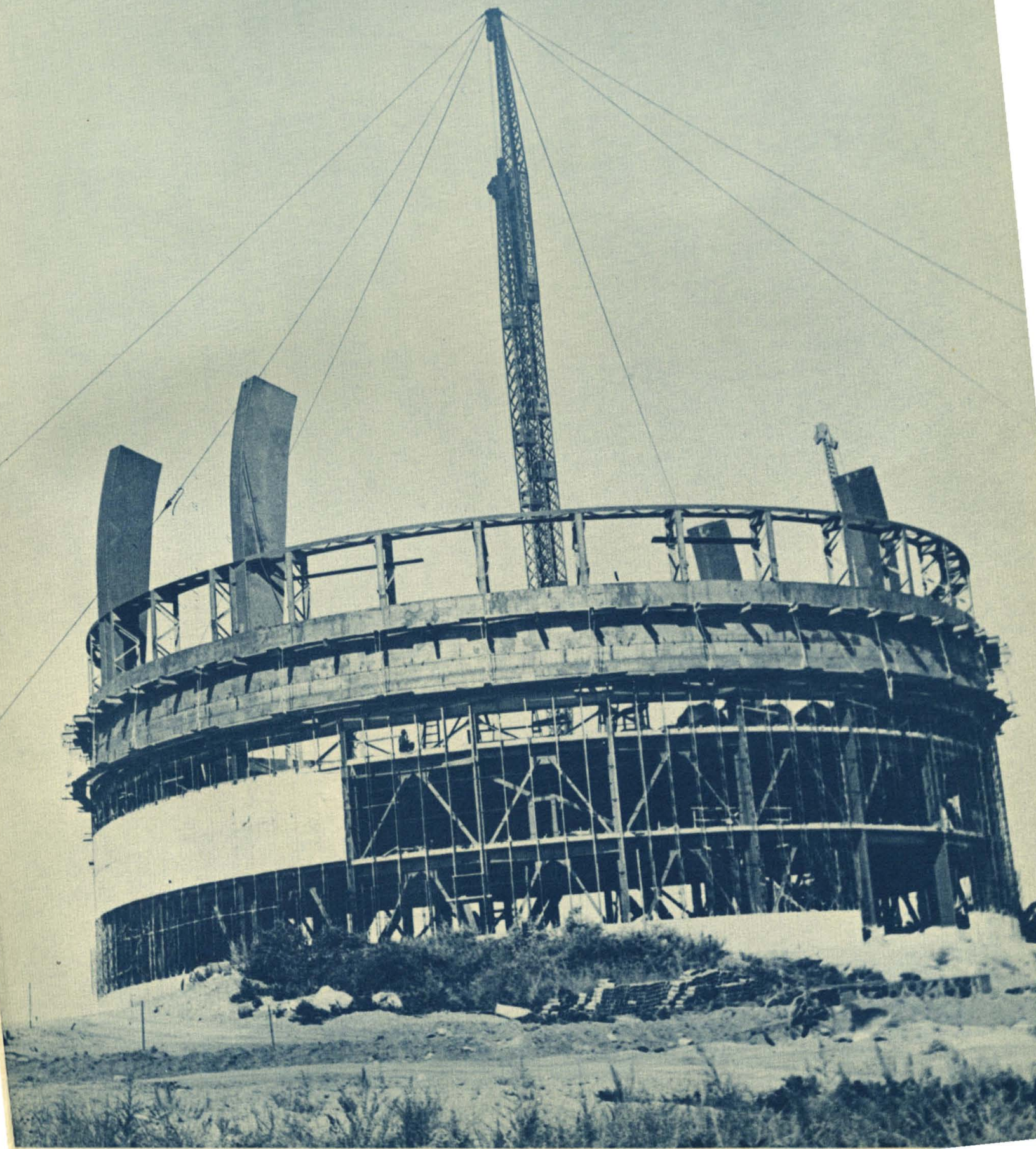
## FRESHMEN

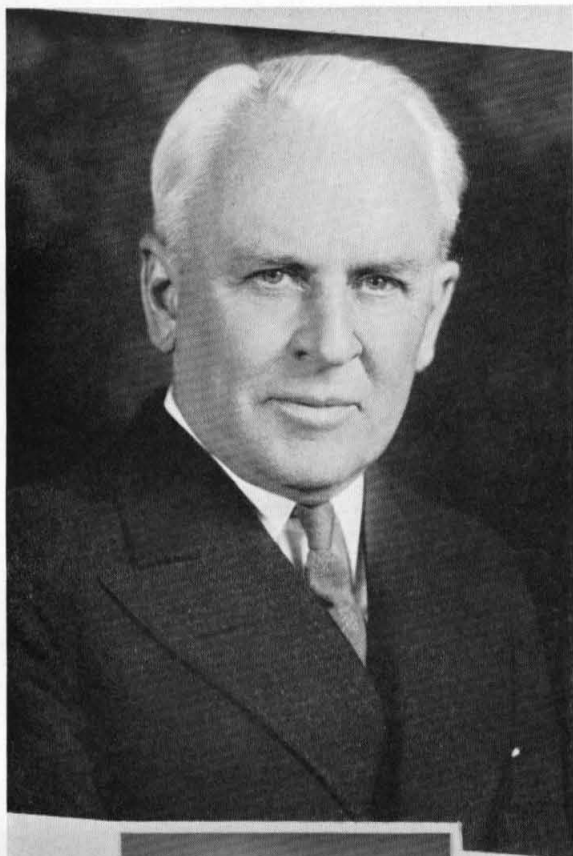


**First row:** Greenhalgh, Vartikian, Sakai, Kingsmill, Brandt, Trauerman, Dawson, Cooper, Forrest, Robinson, Shubert, Stewart, Yett, Warhaftig, Snodgrass, Davis; **second row:** Trindle, Chapin, Rominger, Berman, Given, McIntosh, Tyler, Gold, Wagner, Harr, Rockdale, Frank-Jones, Barber, Farrington, Abraham, Ikawa, Priest, Lewis; **third row:** Pollycove, Partlow, Sohler, Small, White, Bowlus, Hardin, Jones, Meyer, Hill, Lyle, Jones, Hall, Brooks, Spikes, LaBombard, Tilbury, Rice, Murr, Noble; **fourth row:** Nyborg, Smallberg, Critchlow, Hicks, Stroud, Billman, Stadum, Widdoes, Beers, Weiss, Fahs, Bramhall, Diniston, Zebb, Bolles, Greene, Noland, Hall; **fifth row:** Vaughn, McClaine, Schaft, Hassard, Rutherford, Terry, Clark, Erickson, Taylor, Weller, VanKamp, Thayer, Lakos, Anderson; **sixth row:** Buchzig, Mitchell, Clarke, Doheny, Harris, Sandkuhle, Wallace, Corcoran, Turner, Edwards, Reimers, Bowles, Ingersoll, Dorr, Porter, Carr, Sturdevant; **seventh row:** Vag, Roen, Edmund, Kennedy, Billmeyer, Lawrence, Geitz, Levensen, Fisher, White, Horne, Benson, Galeski, Capron, Kashiwabara, Murtaugh, Rinker, Myers, Eusey.



**M**T. PALOMAR is a peak located in the northern portion of San Diego County, southernmost county in the State of California. The mountain is over five thousand feet in height; it is covered with forest growth on the northern slopes, and desert flora on the southern. By 1940 there will be completed, on a site on top of Palomar Mountain, the largest telescope in the world. This instrument, of the reflector type, has a mirror whose diameter of two hundred inches will double that of any other telescope eye now in existence. While the mirror itself is being ground in a specially constructed building on the Caltech campus, a crew is continuously laboring to complete the dome to house the glass; it is about this dome that the pictorial work of the annual has been woven.





Millikan

*Copyright by Harris and Ewing*

Balch

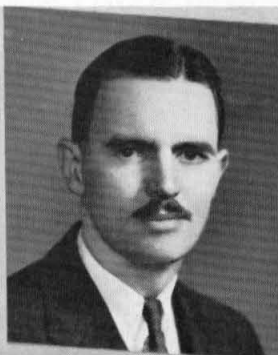
## FACULTY

Credit for the scholastic success of the California Institute of Technology must go to a superb, well-rounded faculty. Chairman of divisions are: Robert A. Millikan, physics, mathematics, and electrical engineering; Linus Pauling, chemistry and chemical engineering; Franklin Thomas, civil and mechanical engineering; John P. Buwalda, geological sciences; Thomas H. Morgan, biology; Clinton K. Judy, humanities; Royal W. Sorenson, physical education.

Richard C. Tolman is dean of the graduate school, Frederick W. Hinrichs, Jr., dean of upperclassmen, and Ray E. Untereiner, freshman dean. Edward C. Barrett is comptroller, Phillip S. Fogg, registrar, and Allan C. Balch, president of the Board of Trustees.



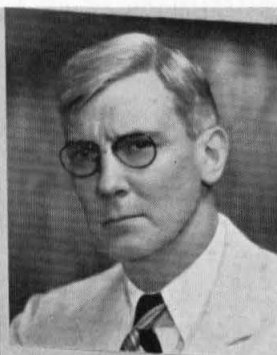
Barrett



Fogg



Tolman



Hinrichs

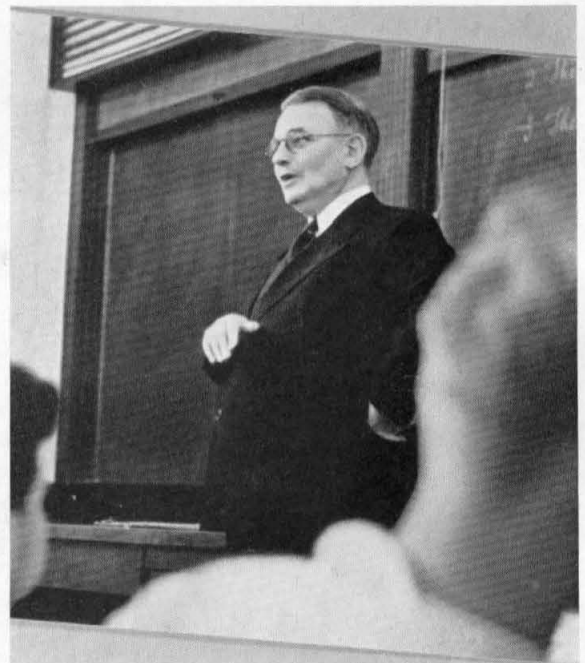


Untereiner



Robert Andrews Millikan, Ph.D., LL.D., Sc.D., Nobel Laureate, Professor of Physics, Director of the Norman Bridge Laboratory of Physics, Chairman of the Executive Council.

William Bennett Munro, Ph.D., LL.D., Litt.D., Professor of History and Government, Member of the Executive Council.







## STUDENT BODY OFFICERS

The Board of Directors, consisting of the elected general officers of the student body, experienced a most successful year. With commendable efficiency the board handled the business of the student body, and the codification of the student body by-laws was a hard job well done.

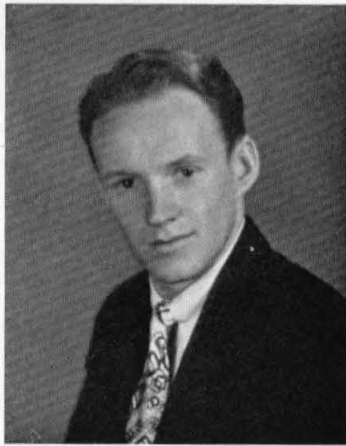
Those directing the campus activities during the year were: Jack McLean, president; Roland Stone, vice-president; Jack Baker, secretary; Hank Evans, treasurer; Stan Wolfberg, athletic manager; Bob Barry, publicity manager; Evan Johnson, rally committee chairman; and Jack Osborn and Jack White, representatives-at-large.

Meeting each Tuesday evening in the A.S.B. offices in lower Fleming, the directors diligently applied themselves to the many student body problems that arose during the year.

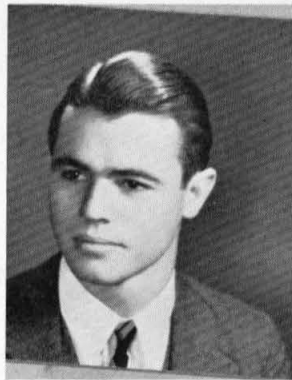


Roland Stone, Vice-President; John McLean, President.





Jack McLean  
President



John R. Baker



Hank Evans



Stanley Wolfberg

Evan A. Johnson

John E. Osborn



## BOARD OF DIRECTORS



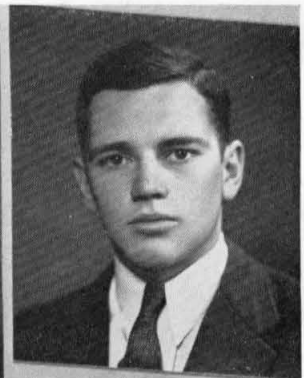
Roland Stone  
Vice-President



George J. Todd



Carl H. Paul



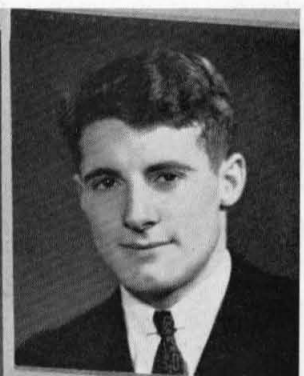
Robert W. White

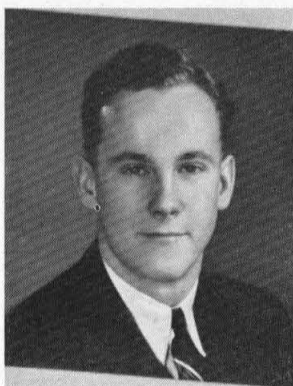
Duane W. Beck

Fred Llewellyn

James R. Balsley

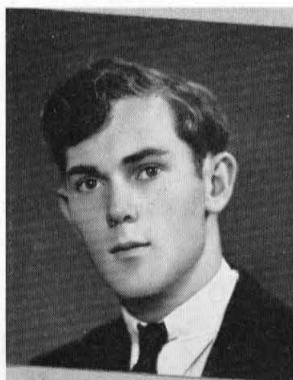
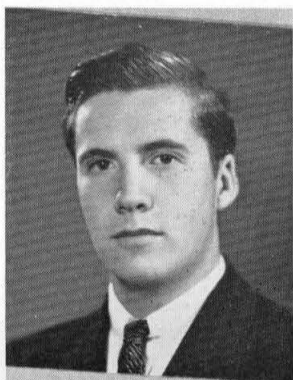
## BOARD OF CONTROL





Robert Barry

H. Jack White



Cydnor Biddison

Donald Davidson



## BOARD OF DIRECTORS

Under the leadership of Jack McLean the Board of Directors had a very successful year. Biggest task accomplished was the editing and the codifying of the by-laws of the student body.

The Board of Directors is empowered to authorize all expenditures, to make awards and appointments, and to exercise all other needed powers. Meetings of the Board are held at least once a week, allowing the members the opportunity of keeping in close touch with all student body affairs.

Officers for this year were: Jack McLean, President; Roland Stone, vice-president; Jack Baker, secretary; Hank Evans, treasurer; Stan Wolfberg, athletic manager; Bob Barry, publicity manager; Evan Johnson, rally chairman; Jack Osborn, first representative; Jack White, second representative.

## BOARD OF CONTROL

The Board of Control, under the leadership of student body vice-president Roland Stone, had a most successful year. Violations of the honor system brought before the Board were few.

The Board exists to enforce the honor system at Tech. This year, the policy of preventing violations rather than punishing them was adopted.

Working hand in hand with the Board is the Court of Traditions. All cases pertaining to Tech's traditions and to rules governing Frosh are handled by the Court.

Members this year were: Chairman Roland Stone; John McLean, ex-officio; Donald Davidson; Fred Llewellyn; James Balsley; Duane Beck; Carl Paul; Robert White; Cydnor Biddison; George Todd; and Charles Moore.



Rynearson, Goodmanson, Johnson, Ingalls, Dessel

## RALLY COMMITTEE

The purpose of the Rally Committee is to provide entertainment and game preparations for the A.S.B. This year's chairman, Evan Johnson, with the co-operation of an excellent committee, organized for Caltech the best pajamarino yet witnessed here. Main attractions of the pajamarino were a theatre party and an open air barbecue, not to mention the huge bonfire and parade.

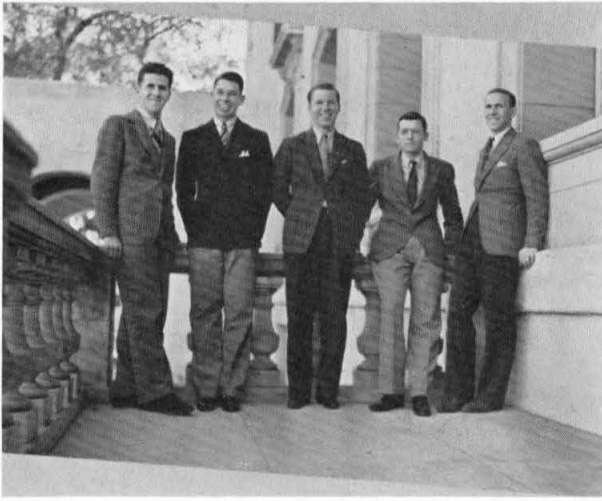
The Friday assemblies this year were characterized by women, which made most of the Tech students quite happy. The committee also presented very successful athletic rallies.

## NEW A. S. B. OFFICERS

The new officers of the student body, elected at the close of the second term to direct campus affairs during third term and the first two terms of the next school year, were; Jack Osborn, president; Duane Beck, vice-president; Jack White, secretary; George J. Todd, treasurer; Mark Mills, athletic manager; Keith Anderson, publicity manager; Lloyd Goodmanson, rally chairman; Cyd Biddison and Bob Myers, representatives-at-large; Roderick McClung, California Tech editor; and Don Dawson, yell leader. The editor of the "Big T" was elected in the latter part of the third term.



**First row:** Duane Beck, John Osborn, Jack White, Keith Anderson, Bob Myers; **second row:** George Todd, Donald Dawson, Lloyd Goodmanson.



Longfelder, Thomas, Hulbirt, Campbell, Llewellyn

## ELECTION COMMITTEE

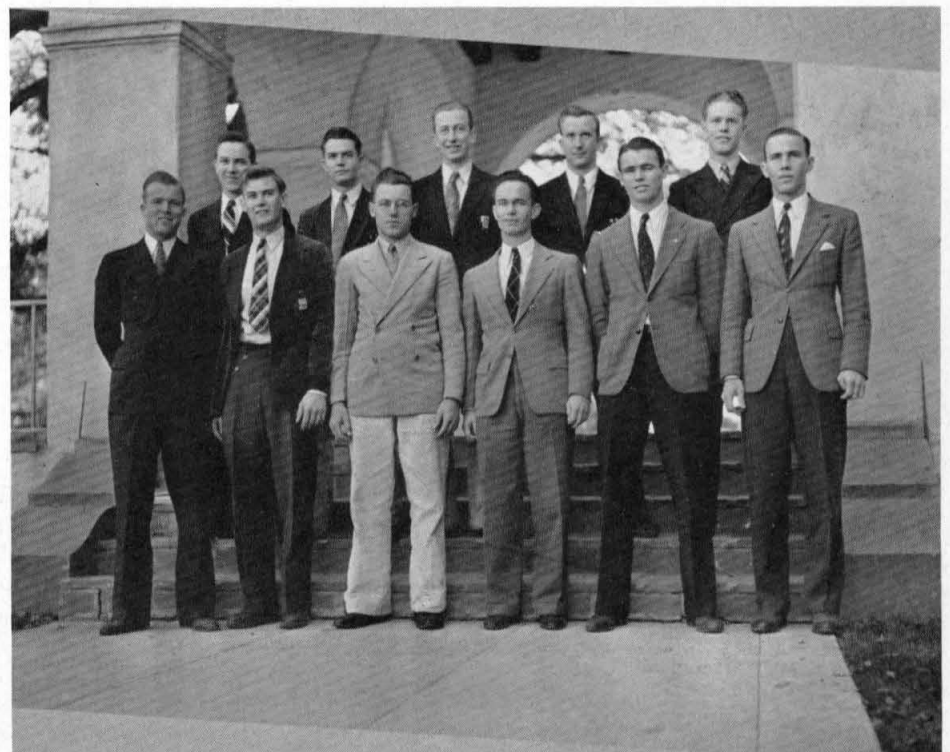
One of the most important, and yet least conspicuous, phases of student body administration is embodied in the work of the Election Committee. To this group is entrusted the complete mechanism of all school elections, and through their hands pass the deciding votes for every elective office or constitutional amendment.

Chairman this year has been Lowell Hulbirt, heading a Committee composed of Keith Anderson, Wallace MacKay, Lupton Wilkinson, Don Campbell, Fred Llewellyn, Bill Norton, Harlowe Longfelder, Neal Thomas, Marcus Hall and Herb Strong.

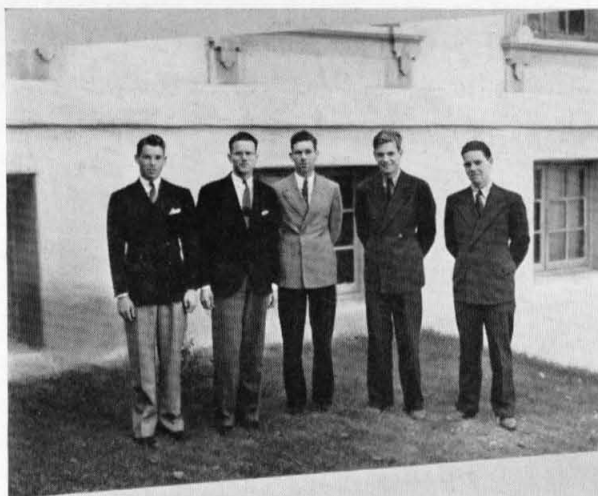
## INTERHOUSE COMMITTEE

For the past year Bruce Elliott has served as chairman, presiding at the meetings each Tuesday noon in the training table dining room. The successful culmination of the committee's work is due largely to his influence.

The Interhouse Committee is composed of the presidents and vice-presidents of the houses: Stone and Richards, Blacker; Davidson and Sharp, Dabney; Llewellyn and Bertness, Fleming; Elliott and Althouse, Ricketts; Baker and Brown, Throop. Dixon of Throop was appointed non-voting secretary of the committee.



**First row:** Dixon, Davidson, Brown, Elliott, Baker, Llewellyn; **second row:** Bertness, Sharp, Richards, Stone, Althouse.



Neal Thomas, DuFresne, Bob Thomas, Steinmetz, Holmes

## EXHIBIT DAY CHAIRMEN

The 1938 Exhibit Committee, under the direction of Chairmen Robert Thomas and Armand DuFresne, produced the most successful exhibit day program ever viewed at Caltech. Record crowds thronged the campus for the two day period.

A new idea was put in effect this year as the Friday presentation was made a preview showing, arranged especially for organized groups of observers. Admission was charged on Friday, with the proceeds swelling the swimming pool and athletic fund started by the class of '37.

## PUBLICITY COMMITTEE

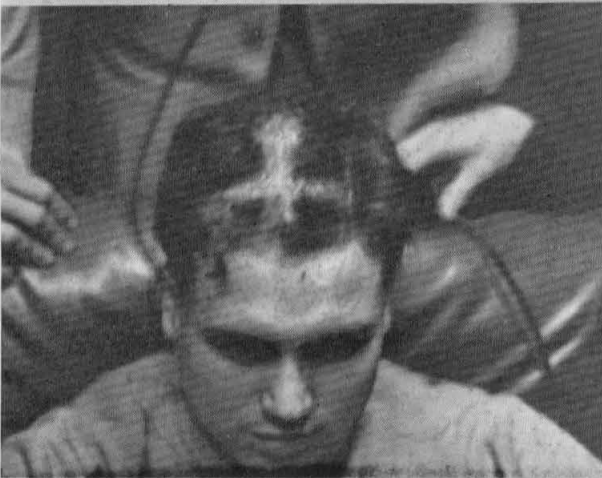
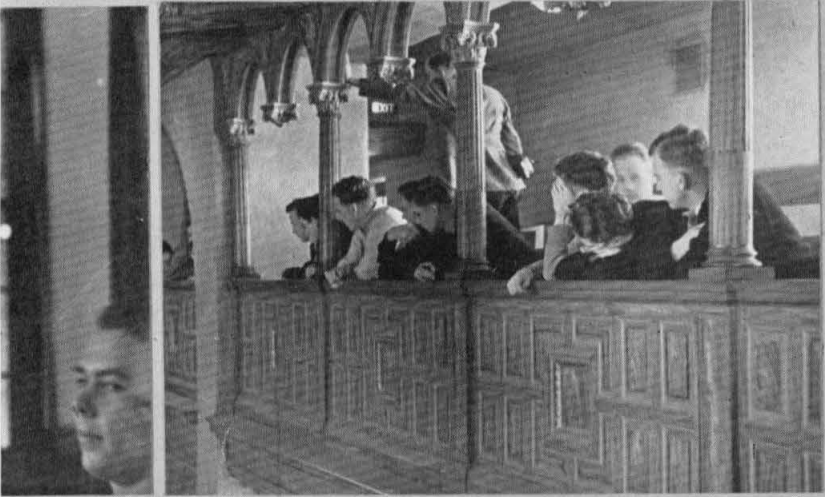
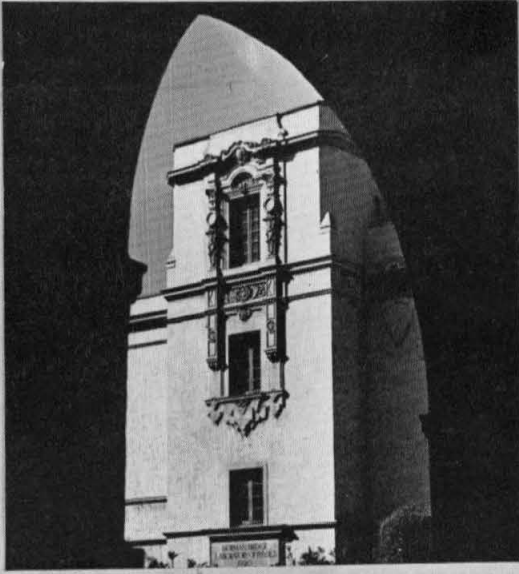
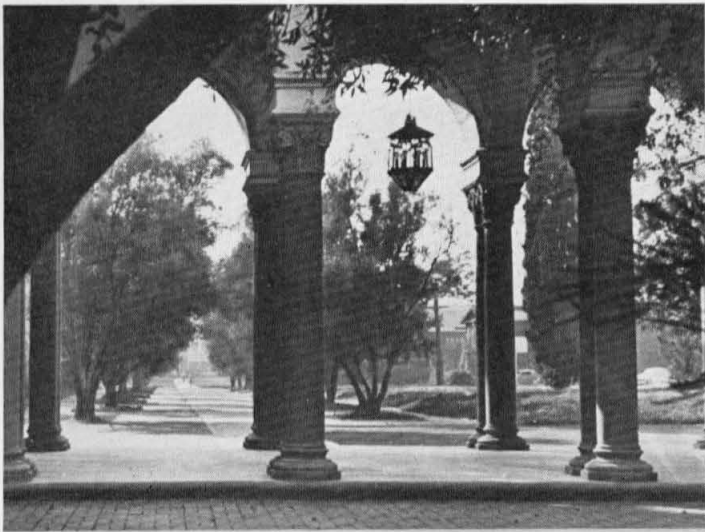
The publicity committee under the direction of Robert Barry had charge of student publicity. This important part of the student body administration carries out the advertising of athletic contests and other activities both on the campus and in foreign places.



**First row:** Campbell, N. Thomas, Llewellyn, Barry, Forward, Holmes; **second row:** Woolson, Oder, Clarke, Shepherd, Pullen, Rice.

A GREAT increase in telescope size necessitates a long study of the best methods for making the paraboloidal mirrors which are used. Not only must all methods for grinding these mirrors be tested, but the type of glass itself must be decided upon. After attempts with fused quartz had failed, many experiments showed a new form of pyrex glass to have the desired properties. The mirror was cast in the Corning glass works, and after a long period of controlled cooling it was brought to California in a specially constructed railroad car. The glass is now being ground in the optical shop of the California Institute of Technology, the building having been erected primarily for this purpose. The shop in which the mirror is being worked on is thermostatically controlled; it has in every way possible been made scientifically suitable for the preparation of such a huge optical system.









## BLACKER HOUSE

Blacker House members have completed a year of extensive participation in diversified school and house activities. The social program under the direction of Elliot Bonham and his assistants included a house formal, the couples dancing in Blacker Lounge decorated to simulate a Chinese street scene. There were also winter and spring formals, a treasure hunt, several informal dances, a beach party, two stag bowling parties, and a "49'ers" dance given by the freshmen. Highlight of the year's program was a party planned and executed by Dr. Harvey Eagleson, Blacker resident associate.

The house continued its policy of indulging in interhouse athletics. Although Blacker has had no chance to capture the interhouse trophy, the members have derived considerable benefit from the competition, and consider participation a necessary part of the house program. Conspicuous in Blacker athletics was the winning of Discobolus from Throop Club, the challenge

Baker  
Geib  
Longwell  
Noble

Beavon  
Green  
Makepeace  
Rinker

Caldwell  
Hines  
Maleev  
Segelhorst

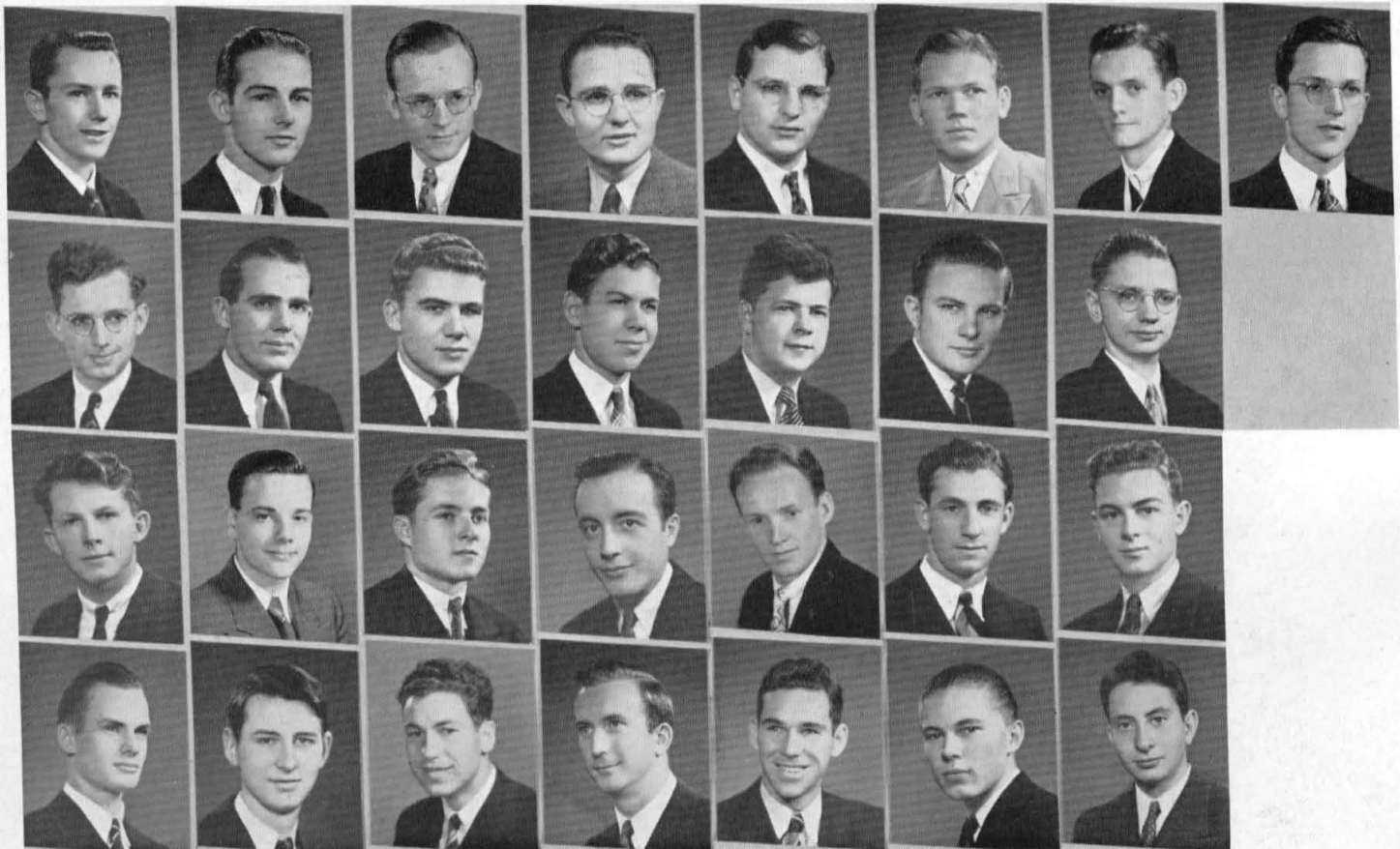
Custer  
Ingalls  
Manildi  
Stone

Dickerson  
Janssen  
McLean  
Thomas

Evans  
Johnson  
Munk  
Todd

Farrington  
Kluge  
Newby  
Trauerman

Macleish





## BLACKER HOUSE

having been made in badminton, a game which has practically become the house sport. The trophy was soon lost to Ricketts in a basketball game.

Blacker as usual had many men participating in journalism and dramatics. In both "The Braggart Warrior" and "Amphytrion", the fall and spring plays, Blacker men were cast in four parts, a larger number than was drawn from any other house.

Not challenged for this year was Abe Lincoln, the forensic trophy which has uninterruptedly made its home on Blacker's mantel for over two years.

Blacker during the last year was politically the strongest of the four houses, Blacker men holding the offices of president, vice-president, treasurer, and rally committee chairman of the corporation. The last student body election saw only one office go to Blacker, that of treasurer.

Acker  
Golson  
Luckenbill  
Smith

Carey  
Green  
McKee  
Smith

Cowie  
Hall  
Metzner  
Spalding

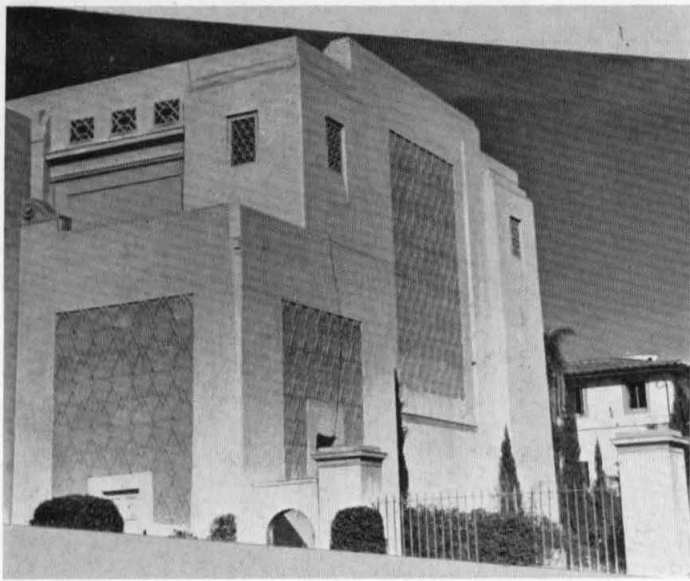
Crane  
Hannon  
Palmer  
Spikes

Dougherty  
Harris  
Richards  
Velasquez

Ellings  
Hayes  
Rupert  
Vetter

Forward  
La Bombard  
Scarborough  
Wood





## DABNEY HOUSE

Extremely extensive this year was the social program of Dabney House. Included in the bright spots of the social season were the "three house dance" with Ricketts and Throop, a formal at the Mayfair Hotel, and the annual formal given by Dr. and Mrs. Munro. Record dances, snow parties, exchange dances with Scripps, and many smokers rounded out a full program. Inter-alley and individual contests were encouraged, and cash prizes awarded to the various winners.

Dabney had men participating in all varsity sports. Although the house is now in third place in the inter-house contests, it is not in a hopeless position. Dabney could be called the "dark horse" of the athletic race. The wrestling championship was won by Dabney, and Discobolus was in its possession at the first of the year.

Alcock  
Edwards  
Noland  
Taylor

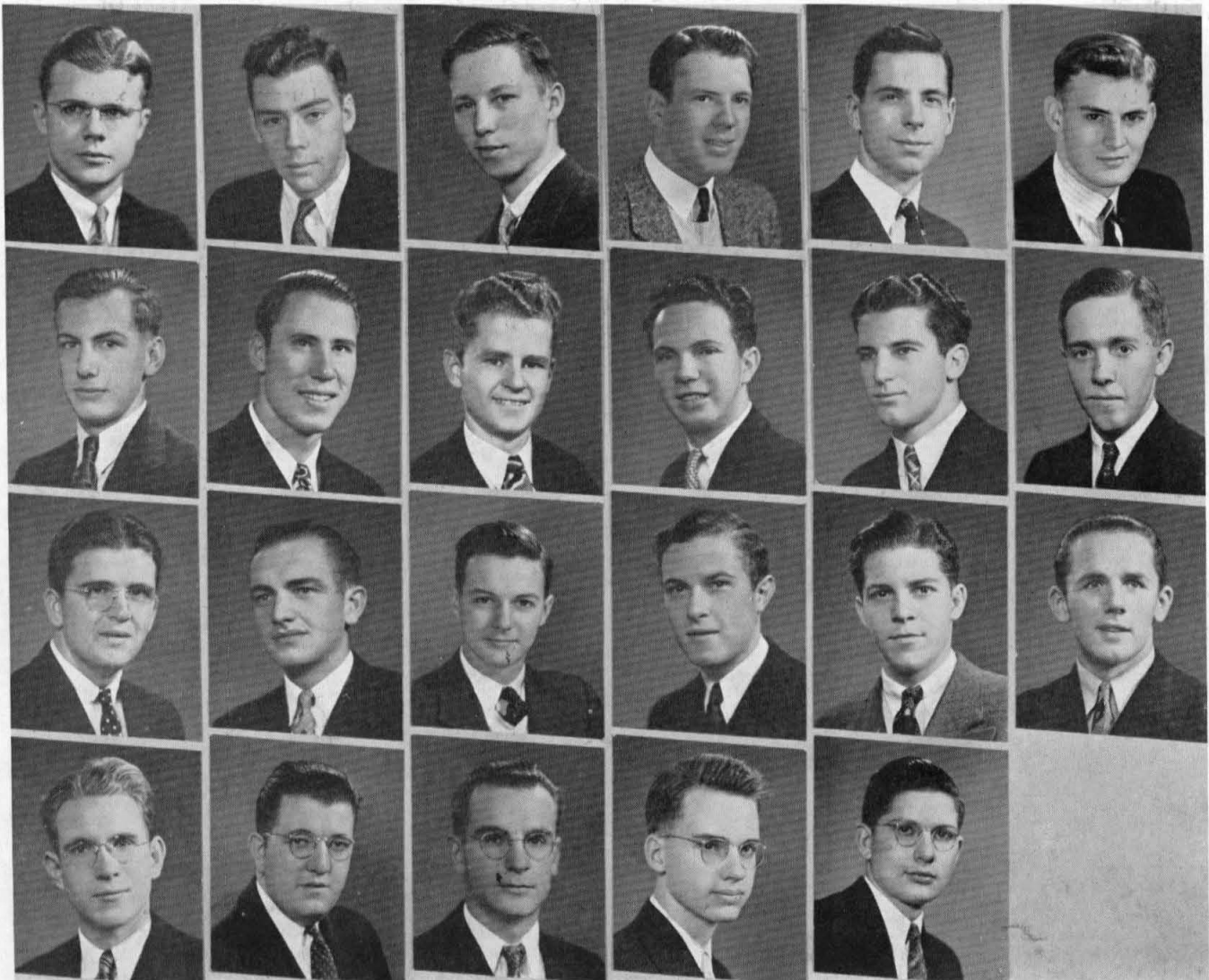
Bauer  
Fraser  
North  
Tejada

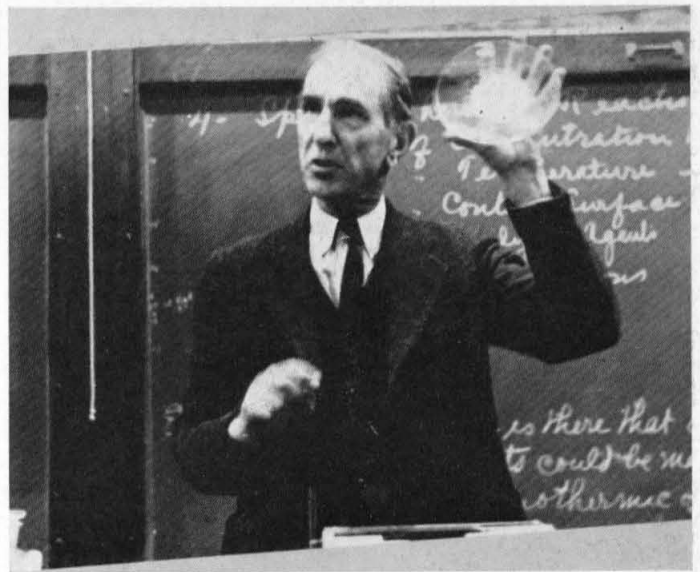
Brose  
Given  
Paul  
Voorhees

Carstarphen  
Horine  
Rouff  
Wallace

Dennis  
Lakos  
Schaff  
Yett

Davidson  
Lomaugh  
Sohler





## DABNEY HOUSE

Politically Dabney had men on the Board of Control, Board of Directors, and Court of Traditions. Members also held down important positions in the "Y", and their respective classes. Dabney men also exercised their musical talents in the band, orchestra, and glee club.

Of all the houses on the campus, Dabney is the smallest. The members, however, always seem to participate in all phases of student life on the campus. The men who led the house through the last year were: Donald Davidson, president; Harold Sharp, vice-president; Stanley Wolfberg, secretary; Bill House, treasurer; and Mark Mills, athletic manager. The resident associate is Dr. Donald S. Clark.

Arvin  
Elliot  
Hotz  
Sharp

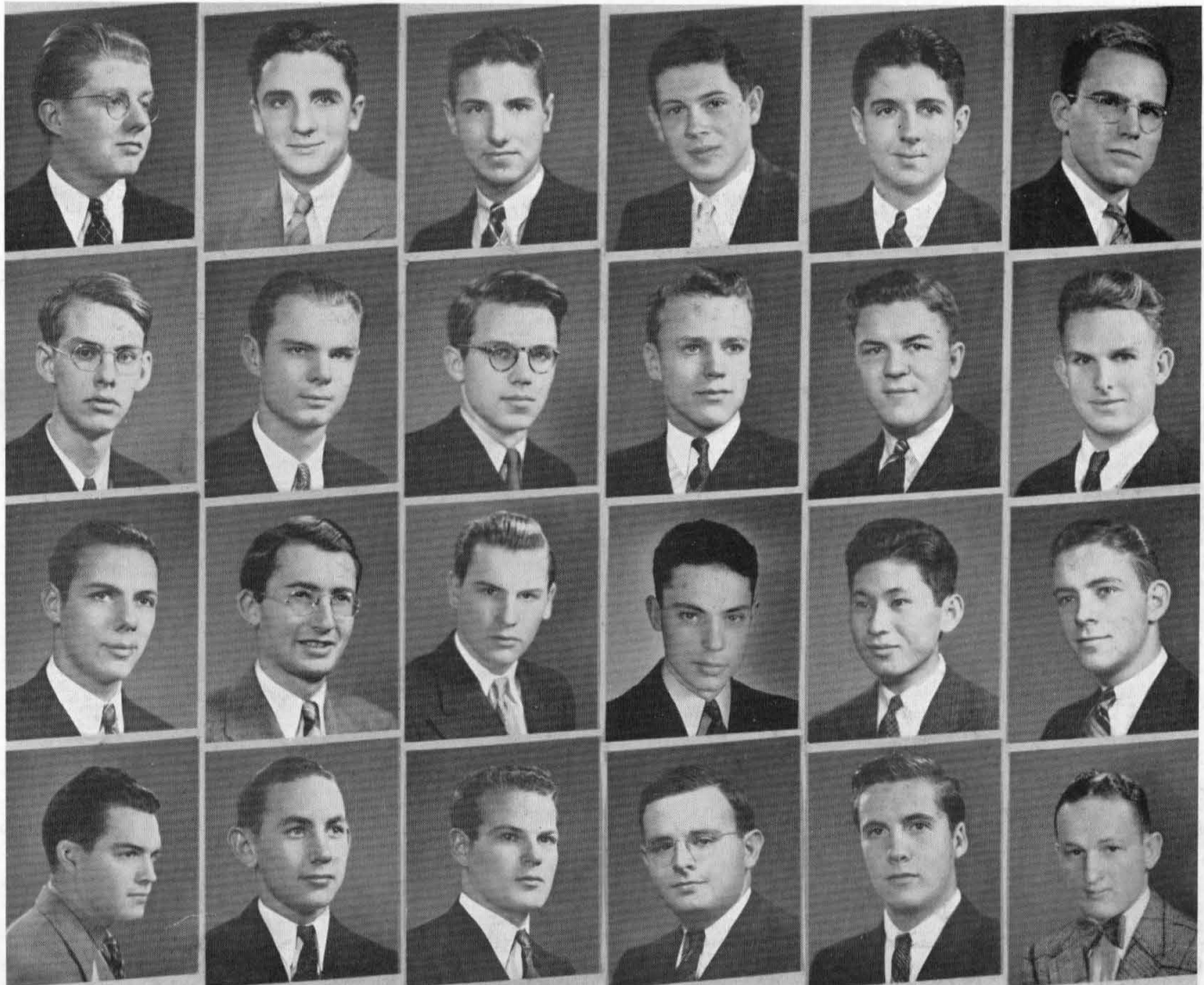
Barber  
Folkins  
Kazan  
Shubert

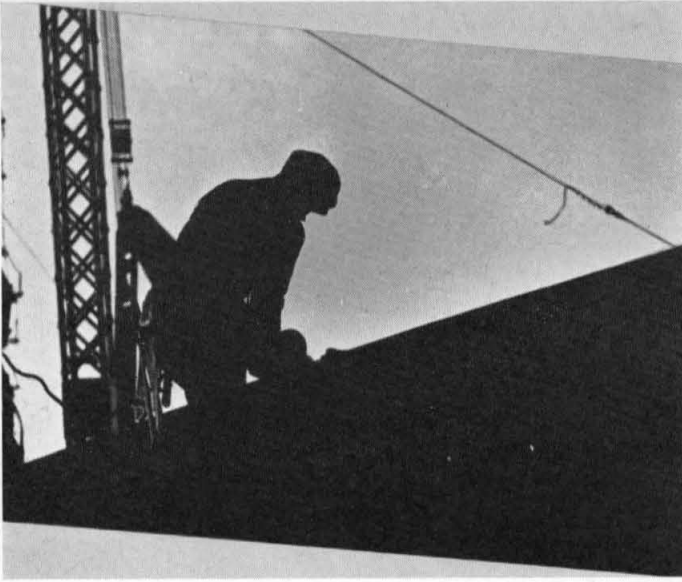
Berg  
Greene  
Kimball  
Sidler

Brewer  
Harper  
Levit  
Weinberger

Corcoran  
House  
Morikawa  
White

DuFresne  
Howenstein  
Payne  
Wolfberg





## FLEMING HOUSE

Fleming House has long been noted for its athletic ability and good fellowship, this year proving no exception in the life of the House. The fall term of 1937 found Fleming in possession of the coveted Interhouse Athletic Trophy, which has for four consecutive years graced the mantel in symbol of her athletic prowess, which is in part due to the fact that at the beginning of each term Fleming makes a point of interesting her freshmen in House and school sports.

Fleming House proves her spirit of good-fellowship in her Inter-alley Contests. The trophy is a shining brass cuspidor, which the winning alley in the bizarre and amusing contests receives as prize. Fleming's smokers and stag parties have always been very successful and this year she gave

Barry  
Freede  
Larson  
Siechert

Beck  
Friend  
Lawson  
Skalecky

Biddison  
Grainger  
Main  
Thayer

Billman  
Guillou  
McClaine  
Van Dyke

Bowles  
Hall  
Lawson  
Weller

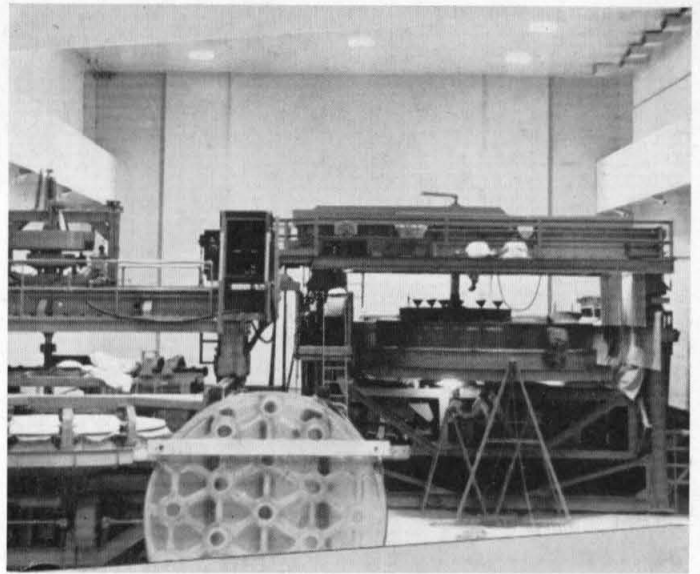
Clarke  
Howeisner  
Osborn  
White

Davis  
Holmes  
Pickles  
Whittlesey

Dowd  
Horne  
Schneider  
Winchell

Evvard  
Jongeneel





## FLEMING HOUSE

several fine smokers, roller-skating parties, and a snow party. The men of the House fully recognize the value of friendship and companionship and make the most of their opportunities to enjoy themselves by these associations.

Fleming has always had a well-rounded social program, as shown by the high degree of success accompanying her social functions. Among the highlights of this year's affairs were a number of informal dances, a smoker-dance and several formal dances.

Fleming is recognized on the campus because of her interest in outside activities. The members of this House realize that their development into well-rounded men depends upon a balance between social activities and the narrowing engineering and science education.

Abraham  
Hicks  
McIntosh  
Turner

Anderson  
Haffner  
Milburn  
Van Dusen

Bertness  
Ikawa  
Murtaugh  
Warhaftig

Bramhall  
Ingersoll  
Nagamatsu  
Walker

Brewer  
Kemp  
Priest  
Widdoes

Capron  
Lawrie  
Pullen  
Wilson

Farneman  
Lee  
Rynearson  
Whittlesey

Fisher  
Llewellyn  
Stevens  
Woolson

Hossard  
McCreery  
Stroud  
Youngs





## RICKETTS HOUSE

Ricketts House is completing one of the most successful years, athletically and socially, in its history. Under the very able direction of its officers—Bruce Elliott, President; William Althouse, vice-president; Richard Rowell, treasurer; Frank Dessel, secretary; and Harrison Lavender, athletic manager—the House sponsored a traditionally well-rounded program.

As usual, the Ricketts House formal was "the" formal of the year. Held at the exclusive (and expensive) Trocadero, the party both broke and satisfied the members. Important in the social program was a series of radio dances sponsored by the various classes within the House. A spring dance, several House dances, exchange dances with Scripps, and several stags completed a year of

Abbey  
Brown  
Kingsmill  
Smith

Ahlroth  
Chapin  
Knight  
Snodgrass

Allen  
Frampton  
Meyer  
Spielberger

Althouse  
Goodmanson  
Myers  
Staatz

Balsley  
Greenhalgh  
Nakada  
Stone

Benson  
Hagen  
Piro  
Stowell

Bergmann  
Jurs  
Rominger  
Trindle

Bertram  
Kashiwabara  
Rosencranz  
Weir

Bolles  
Keyser  
Rowell  
White





## RICKETTS HOUSE

intense social activity. Those that did not take part in the social program were in the minority, the dances being very well attended.

Athletically Ricketts excelled. At the present the House is in an extremely auspicious position to win the coveted inter-house trophy. Won this year from Blacker, through a basketball game, "Discobolus" was successfully defended against challenging Fleming, who used practically the entire first string varsity basketball team. Participating in inter-collegiate athletics was a very high percentage of the members. Football and basketball took the greatest numbers.

Ricketts was more or less left out in the "cold" politically for the last year. Cries of "Ricketts Machine" defeated all of the House's candidates for student body offices in the spring of '37. However, this year two seats on the Board of Directors went to House members.

Bennett  
Foster  
Nyborg  
Spooner

Brooks  
Harr  
Partlow  
Staatz

Browne  
Hulbirt  
Reimers  
Strong

Crozier  
Jewett  
Reynolds  
Sullivan

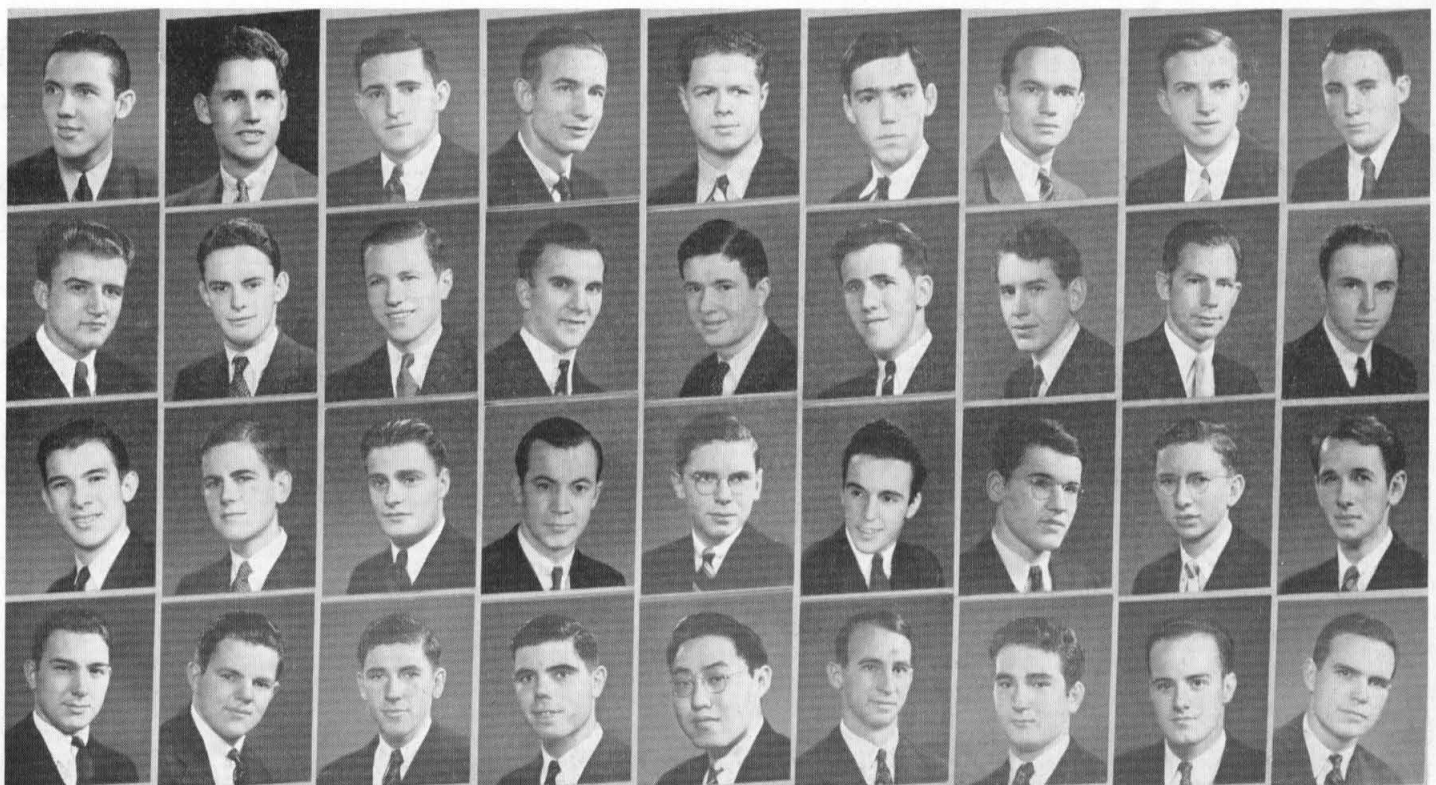
Dessel  
Lavender  
Root  
Tomiyasu

Dorr  
Longfelder  
Ropp  
van Fleet

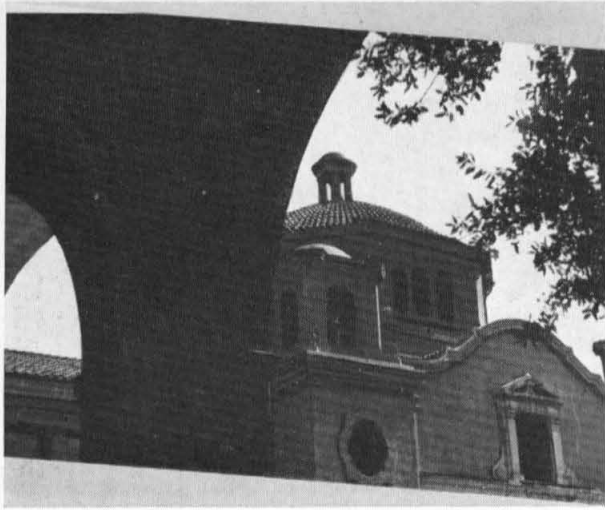
Elliott  
MacKay  
Rutherford  
Vartikian

Ellis  
Merriam  
Sandiford  
Wilkinson

Engelder  
Nash  
Schrader  
Young







## THROOP CLUB

The Throop Club has grown in the last few years from a loosely knit association to a well organized body which holds an enviable position in campus activities.

The facilities of the Throop Club have grown along with the activity of the club upon the campus. Two years ago, with the gracious assistance of Mrs. Robert A. Millikan, Mr. Myron Hunt, and members of the faculty and Board of Trustees, the interior of the club was entirely redecorated, transforming it into the new lounge. This lounge with its comfortable furniture, radio-phonograph, and various games provides a comfortable place for the members to meet during luncheon periods, to relax, and to hold the numerous dances which are given on the campus during the year. This year improvements were made upon the outside of the lounge with a new coat of paint and new walks done by the members during Christmas vacation.

Baker  
Mitchell  
Smallberg  
Wilbur

Dixon  
Moore  
Thiele  
Williamson

Jones  
Oder  
Thomas  
Wilmoth

Love  
Oldson  
Tielrooy  
Wimpress

Lyle  
Palmer  
Van Camp  
Wood

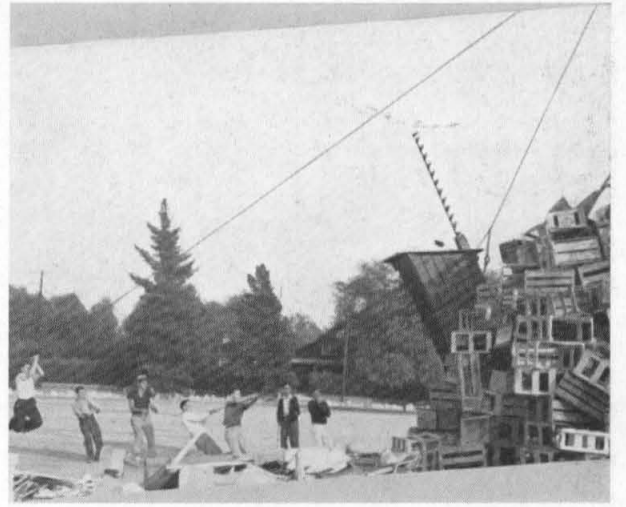
Marriott  
Parker  
Vey  
Young

Mayer  
Partch  
Walker  
Young

Meyer  
Roen  
Weiss  
Zebb

Meyer  
Rogers  
White





## THROOP CLUB

The social season was started with two stag parties and a dinner to acquaint the new members with the club, followed by a sport and a semi-formal dance. As the football season progressed informal after-game dances were held.

This year the Throop Club held its place in athletic activities. For the major part of the first two terms, the "Discobolus" was successfully kept in the possession of the Throop Club against the challenging houses.

The officers for the year were Jack Baker, President; Claude Brown, Vice-President; Blaine Dixon, Secretary; George Rudkin, Treasurer; Grice Axtman, Social Chairman; Delos Flint, Athletic Chairman; Gilbert Hofeller, Publicity Chairman; George Barber, Sophomore Chairman; and Charles Palmer, Lounge Chairman.

Anderson  
Brown  
Degnan  
Hiatt

Anderson  
Campbell  
Deniston  
Hill

Anderson  
Cardwell  
Diehm  
Hofman

Axtman  
Casserly  
Elmer  
Howard

Barber  
Cooke  
Faust  
Jacobs

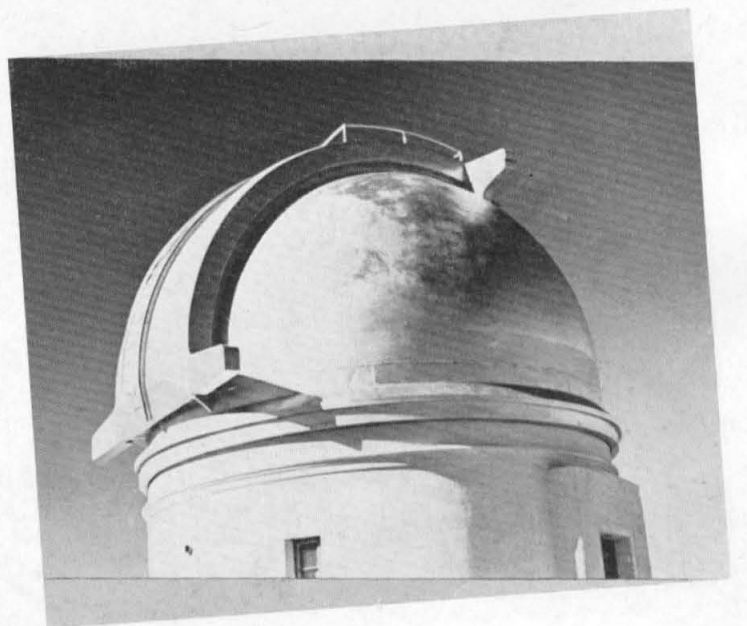
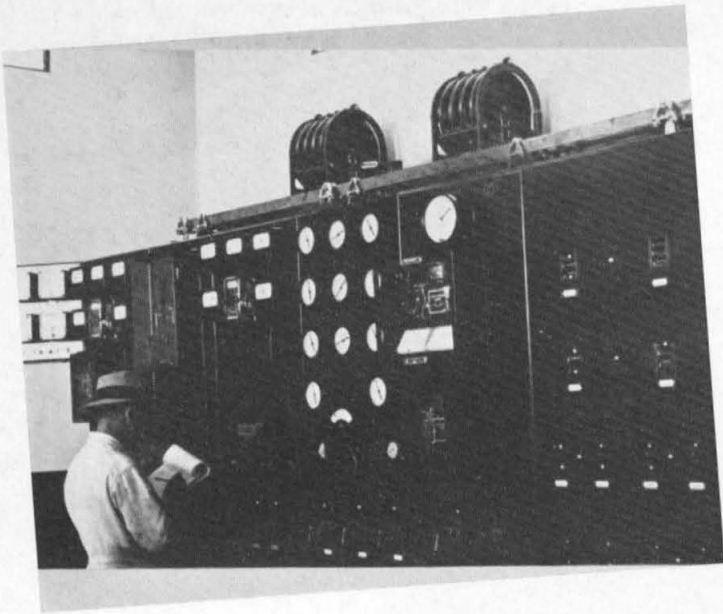
Bezdeck  
Cruft  
Frank-Jones  
Jones

Brandt  
Daams  
Gold  
Kohl

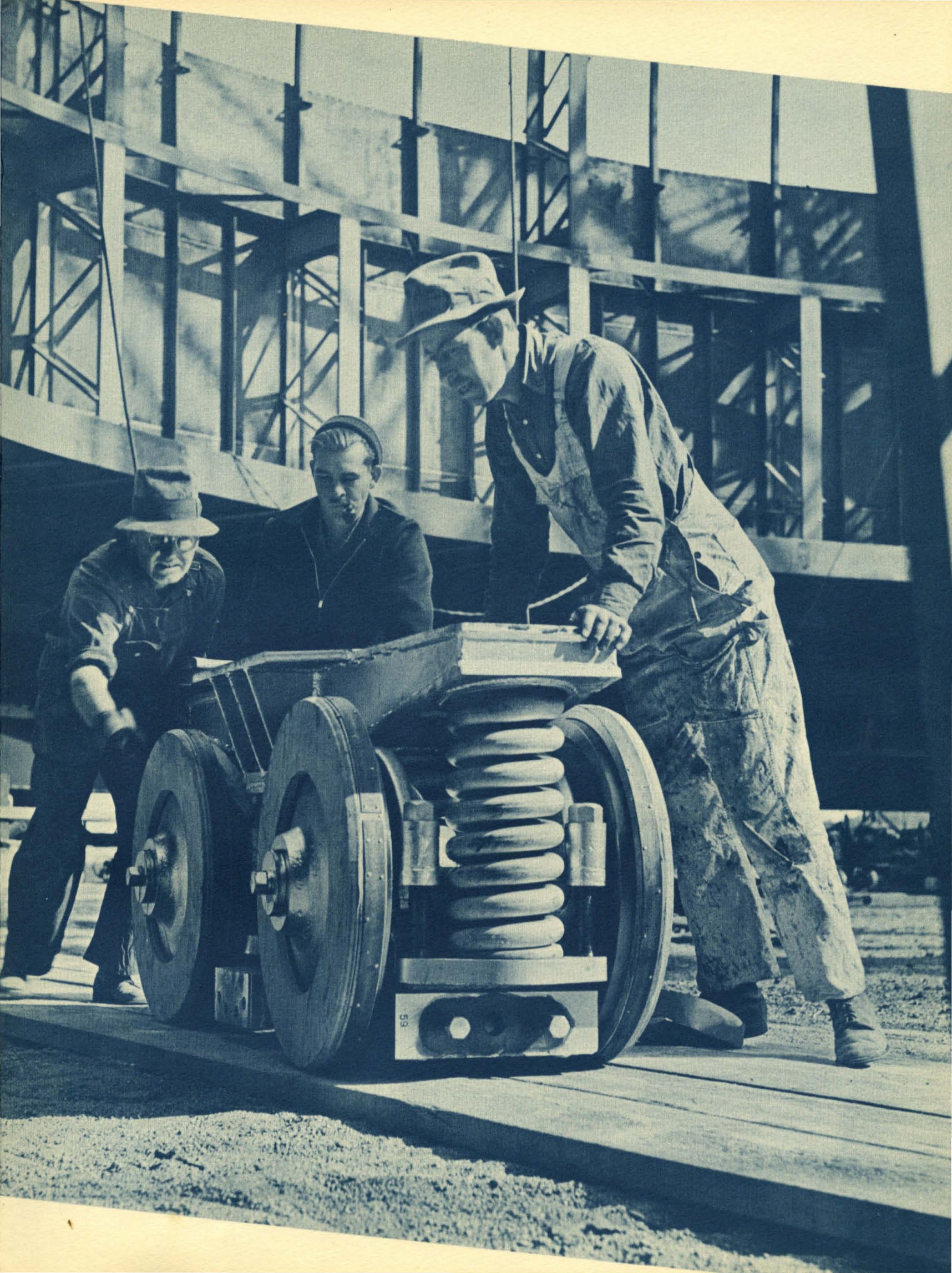
Brooks  
Dawson  
Goodin  
Lawrence

Brown  
Day  
Grigg  
Lewis





IN CHARGE of the construction of Palomar Mountain Observatory is a council consisting of Dr. Walter S. Adams and four members of the Institute staff. Dr. Adams has been placed in full charge of the design, construction, and operation of the Astrophysical Observatory. Dr. John A. Anderson of the Mt. Wilson Observatory has been made the executive officer of the construction, while Captain C. S. McDowell, U. S. N. (retired), is the supervising engineer of the project. An advisory committee consisting of the council and many other important men of science aid in determining the observatory policy. Through the experience and ability of these men it is expected that the Palomar Mountain Observatory will give results worthy of the most modern of observatories.



## THE COACHES

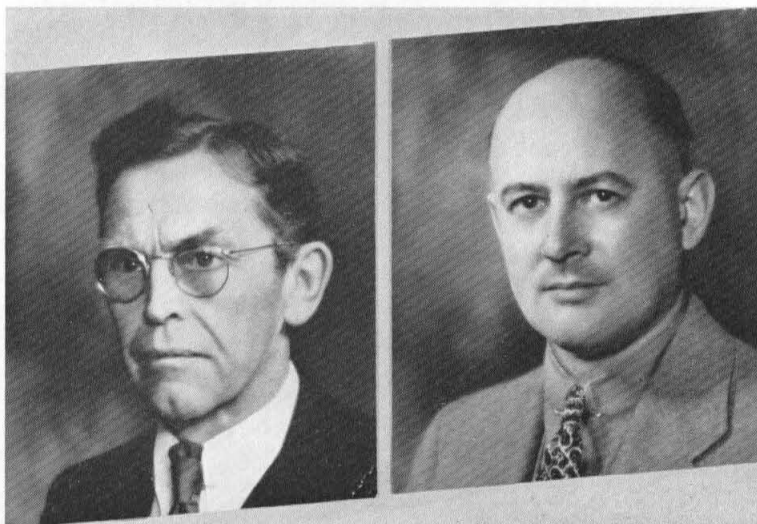
At Caltech the coaches have a tougher job than at any other institution you may mention. Not only do the coaches have inadequate material from which to build athletic teams, but the equipment itself is lacking. The basketball teams and indoor sports have no gymnasium in which to practice, also the locker and shower equipment for the other teams is terrible. Against such insurmountable odds our coaches strive to produce teams which are representative of what we would like Caltech to be in athletic prowess and in sportsmanship.

Coaching our track and varsity football teams is "Fox" Stanton. Director of athletics Hal Z. Musselman coaches varsity baseball, and John Nollan has the frosh. Frosh football and basketball are coached by George Mellinger and varsity basketball by "Eddy" Kienholtz. Helping with varsity football is "Stu" Seymour. Two students, Bill Brumfield and Mark Mills, coach boxing and wrestling, respectively. The teams' trainer is "Doc" Hanes.



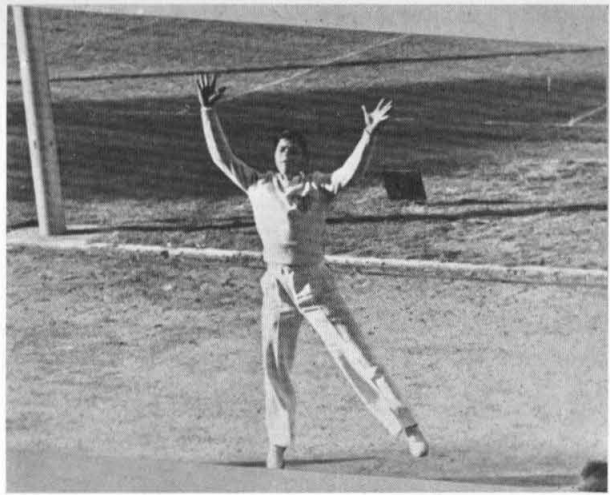
Mellinger  
Seymour

Kienholtz  
Nollan



Stanton

Musselman



## YELL LEADERS

The yell leader of a student body performs a definite service in attempting to urge on our athletic teams by infusing in them some of his own and the students' spirit.

At a technical school like the Institute the job of yell leader is not an easy one. It is hard to get the students to loosen their grip on a sliderule and yell themselves hoarse at athletic contests. The spirit of the student body this year was better than in many years past. Credit for this must go to head yell leader Lloyd Goodmanson, and to his two assistants, Jack Barber and Don Dawson. Dawson will carry on as head yell leader next year.

Goodmanson will long be remembered for his tremendous enthusiasm, unquenchable spirit, and inspired yell leading.









Jack McLean, J. Osborn, F. Jewett, C. Smith

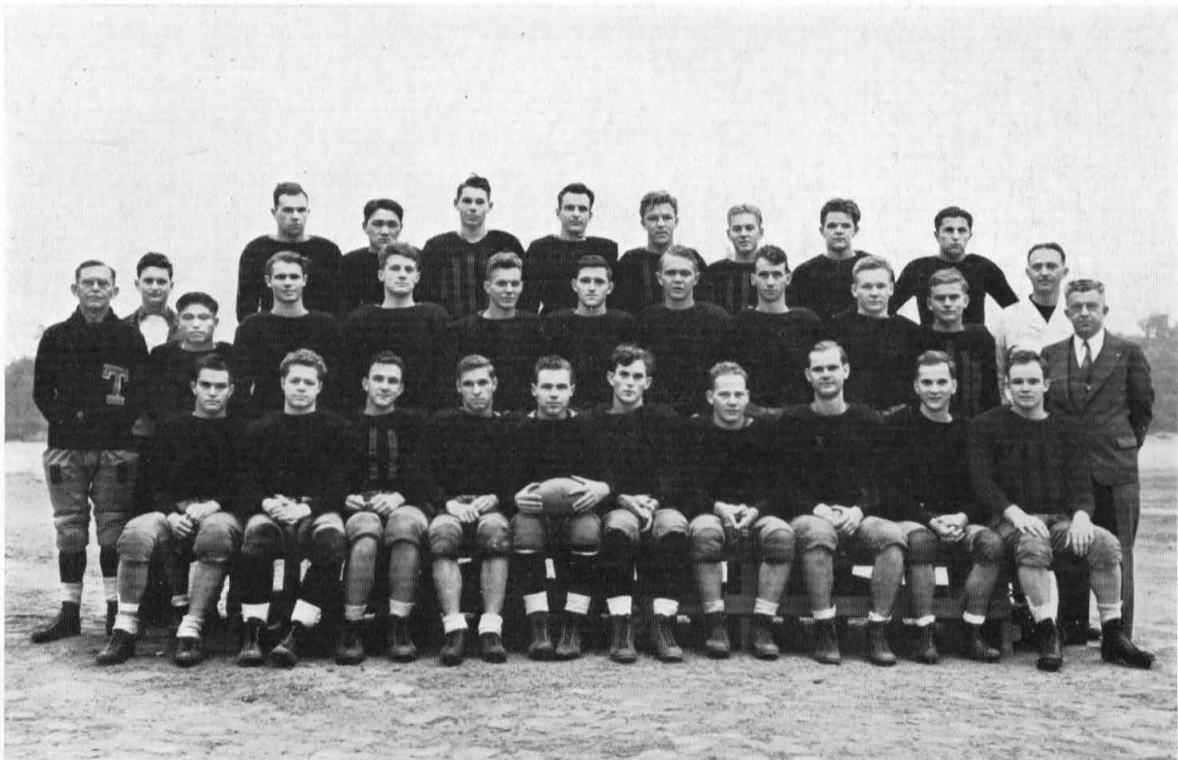
## LOYOLA

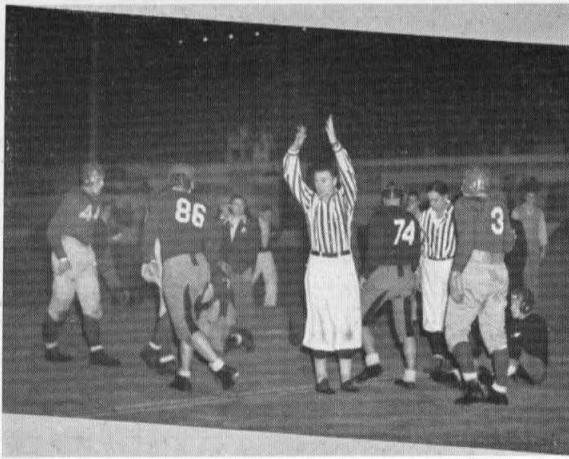
The 1937 season opened with the almost traditional game played against the powerful Loyola Lions. In the first half the Techmen performed well, their deceptive plays bewildering the Loyola Bruisers. The score at the end of the half stood at 13 to 7. However, the lack of substitutes proved disastrous in the second half for Tech, and the Lions on power plays succeeded in completely subduing the Beavers—winning 26 to 7.

## ARIZONA

On October 2 the Engineers made the much anticipated trip to Flagstaff, only to be greatly disappointed by the outcome of the game. The first half was a massacre with the Beavers running plays averaging a minus yardage, and the Lumberjacks chopping their way through the Tech defense on numerous occasions. In the latter part of the game, however, the Engineers made a much better showing. The game ended 26 to 7, favoring Arizona.

**First row:** Sharp, Dessel, Van Horn, Smith, Capt. Brown, Biddison, Osborn, Griswold, Jewett, Lawson; **second row:** Coach Stanton, Forward, Nakada, Baker, Balsley, Kemp, Browne, Osborn, van Fleet, Walters, Flint, Doc Hanes; **third row:** Rowell, Tajima, Thomas, Rogers, House, Beck, Staatz, Sviminoff.

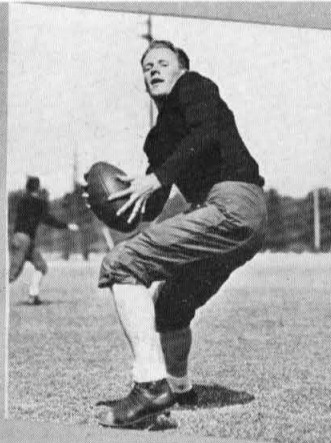




Jim Balsley



"Beebo" Lawson



Jack McLean



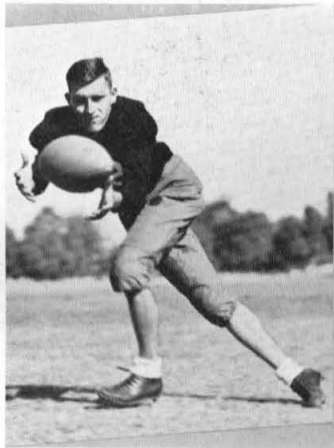
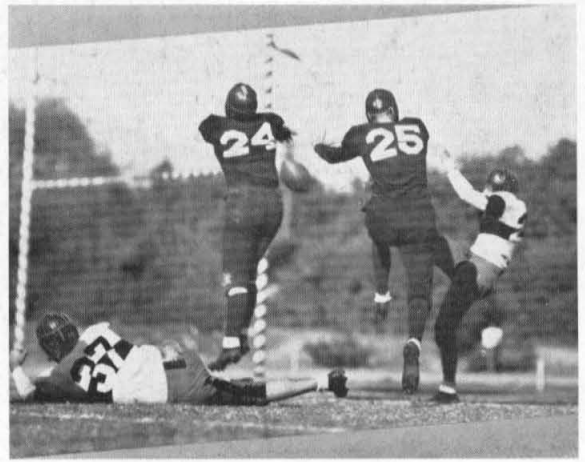
Cydnor Biddison



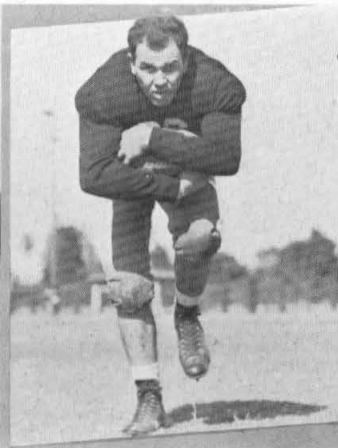
"Fox" Stanton and Capt. Claude Brown

## SAN DIEGO MARINES

October 8 was the date of the entanglement with the San Diego Marines. Again the last half proved disastrous for the Orange and White team. Averaging only 165 pounds per man, our men could not stand up under the Marine power attack. At the end of the game the scoreboard showed Tech trailing 32 to 6. In this game the Tech team first showed that it had potentialities.



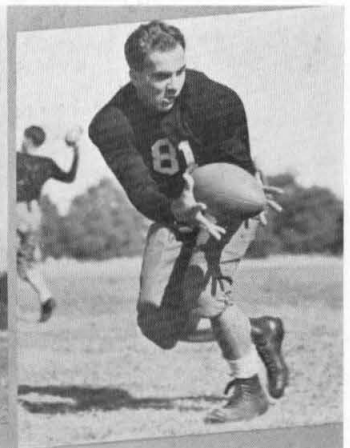
Jake Brown



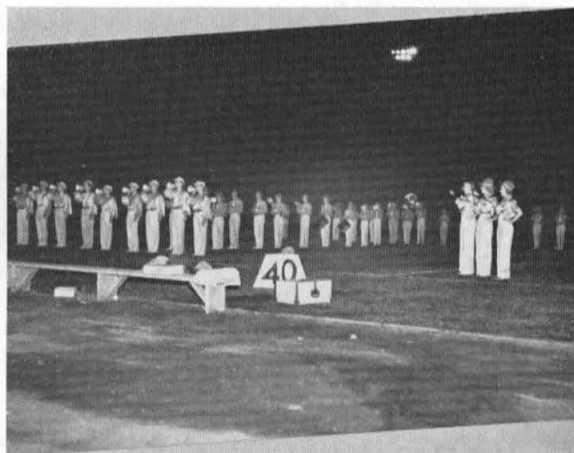
Dick Rowell



Jack Osborn

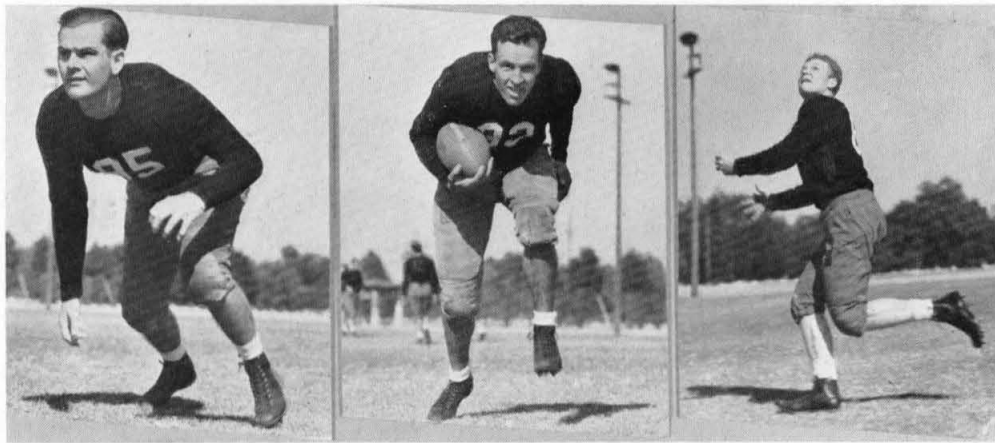
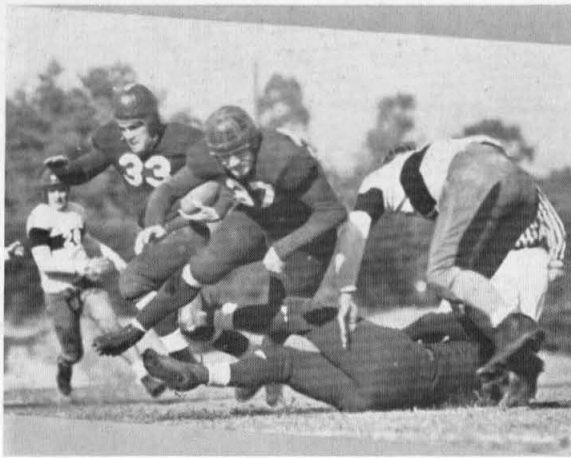


Frank Jewett



## POMONA

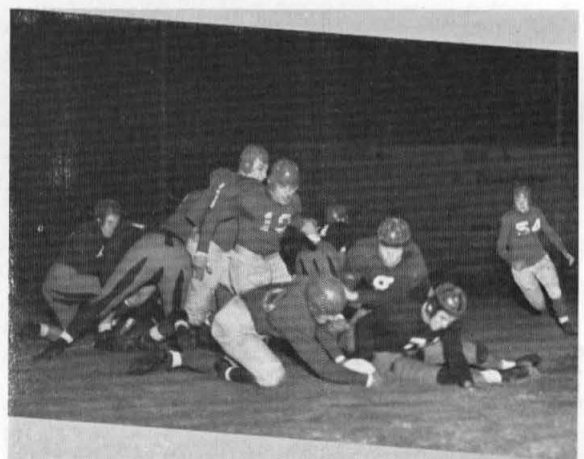
Tech went to Pomona on October 16 with high hopes for a victory over a team which would be more our match than any met before. The spirit of both team and rooters was seriously impaired when, during a down-field march, Jack McLean, star triple threat man, was taken from the game with a badly wrenched knee. The game, despite the impregnable defense of the Beaver forward wall, went to Pomona 15 to 0.



Griswold

Rogers

Walter

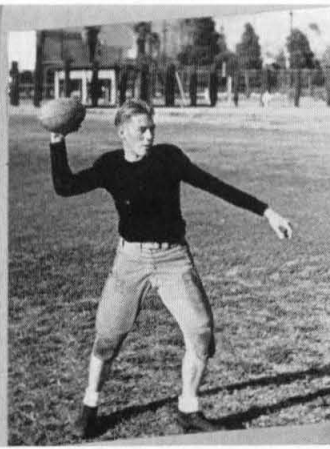


## SAN JOSE

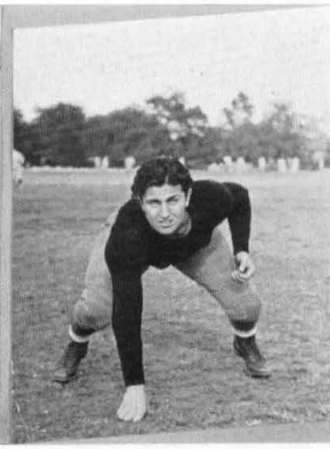
In the game at San Jose on October 22 the Beavers met one of the strongest small school squads in the country. Both the first and second teams saw much service during the encounter. Although the score at the end of the game was lop-sided, 48 to 6, the Beavers had the honor of being one of the two teams in the country to score on San Jose during the season.



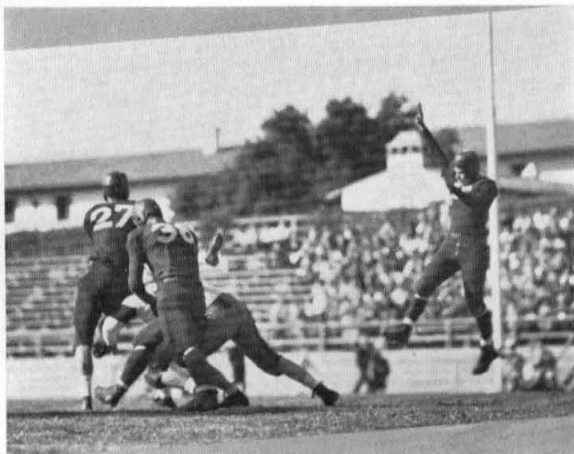
Flint



Beck

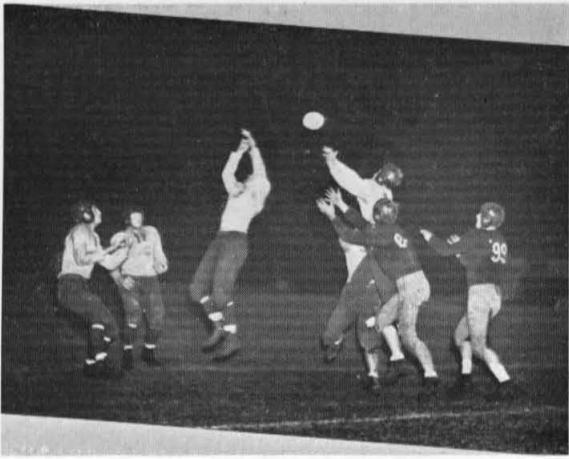


Sviminoff



## OCCIDENTAL

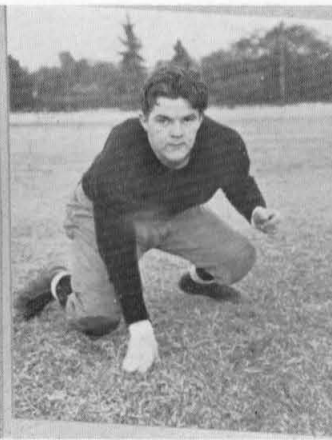
Friday, October 29, saw Occidental drop a game to Tech through a moral victory; one of the hardest fought games seen in any league, ending 0 to 0. Despite the absence of Jack McLean the Beavers pushed the Tiger team all over the field, amassing fourteen first downs to Oxy's four, and threatening to score twice. This game evened up the even-odd tradition, and next year is Tech's.



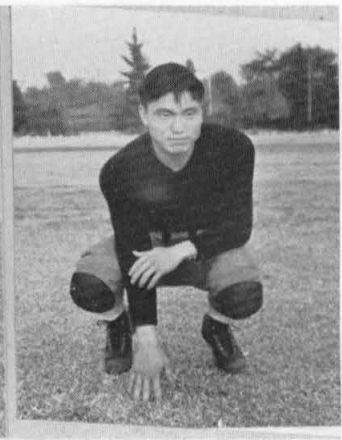
Osborn



Tajima



Staatz

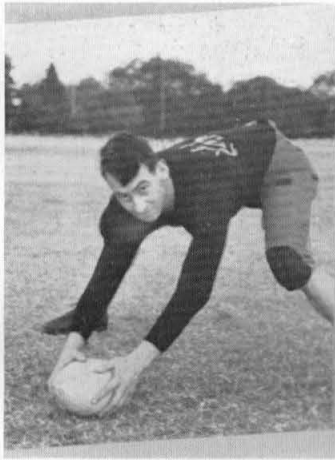


Nakada



## POMONA

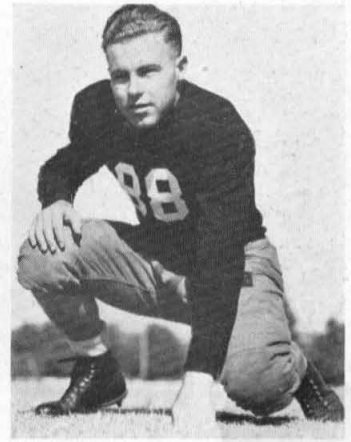
November 13 saw the same, but more determined, Beaver team meet Pomona for the second time of the season. The game was played in the Rose Bowl. Pomona was confident due to its early season victory, but its confidence was unfounded. The game was an exciting one, featuring goal line stands by both teams; however, the final score stood at 0 to 0.



van Fleet



Kemp

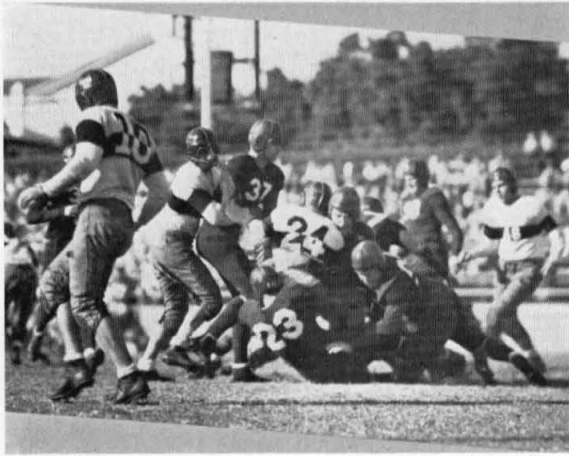


Capt. Brown



## PASADENA J. C.

After tying both Occidental and Pomona, the Orange and White boys were confident that they would score an easy victory over the Pasadena J.C. Bulldogs. Rated by the sport's writers as odds on favorite, Tech lost to the J.C. boys 12 to 0, P.J.C. making both scores on long runs.



## FROSH FOOTBALL

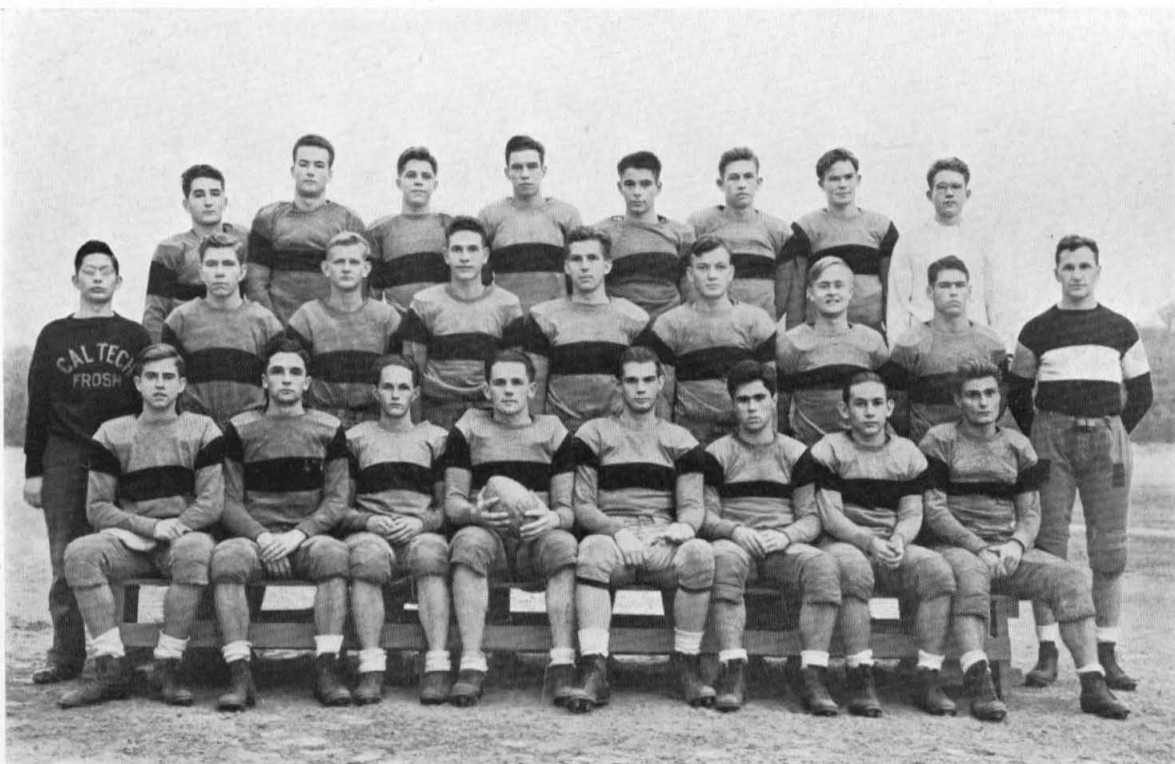
The turnout for frosh football at the beginning of the season was the largest in many years. Unlike previous years, most of the material at hand this year was experienced—all but two "first-stringers" having had previous football experience. This was one of the aids in producing one of the most successful Caltech frosh football teams.

The Techbabes started the season with a 6-6 tie with the Pasadena Settlement team, a group of experienced players. This was followed by a close 20-19 victory over Webb School.

Captained by hard-plunging fullback Stan Sohler, the Tech yearlings played a great game against the Oxy frosh, but lost to the count of 14-6. Rodeo Day saw the Caltech frosh taking their worst loss of the season, being beaten by the Pomona Sagechicks to the tune of 21-0. But the Techmen returned to form in their next game and tied the strong Redlands frosh team, 6-6, closing a hard schedule.

Coached by George Mellinger, the squad had nineteen numeral winners this year.

**First row:** Priest, Barber, Cooper, Sohler, Clarke, Small, Schubert, Reimers; **second row:** Yett, Galeski, Horne, Gallaher, Ingersoll, Stroud, Clark, McClain, Coach Mellinger; **third row:** Vartikian, Hicks, Schaff, Meyer, Widdoes, Eusey, Critchlow, Taylor.









## VARSITY BASKETBALL

With four returning lettermen the Beaver basketball team of sixteen players began its regular practice early in December as a member of the Pasadena Commercial League in which it won the six games played.

Practice facilities were decidedly improved this year when the Athletic Department secured the use of the Eagle Rock High School gym. The Engineers were also fortunate in being able to play two home games in the Pasadena Armory.

Through their own efforts, the players purchased some very colorful game and warmup suits which improved the team's appearance considerably. A severe loss was felt by the team when Captain Wolfberg was forced to drop from the squad because of a heavy scholastic program.

In the season's opener, Tech scared Redlands by leading 14-7 at half time, but dropped the tilt 31-26. Osborn was high man with 9 points.

In the first Oxy Game, the Tigers had a "hot" night and doubled Tech's score to win 84-42. Ryneanson paced the Engineers with twelve digits.

The first home game found Pomona winning 50-29. The dismayed Beavers saw the Sagehens sink phenomenal angle-shots. Skalecky scored thirteen points for Tech.

The Beavers scored their only regular season win over Hollywood Y, 46-44. Jack Osborn led the attack of the locals with 15 tallies.

**First row:** Jacobs, Bergmann, Goodmanson, Ryneanson, Wolfberg, Beck, Nash, Folkins, Coach Kienholtz; **second row:** Schrader, Mayer, Foster, Walters, Diehm, Goodin, Skalecky, Osborn, Sullivan, Weinberger.





Pomona barely won the second encounter 45-38. Don Walter led a last half rally, just falling short of a Tech victory.

Occidental's Tigers overcame a rally by Beck and Rynearson in the second period to win a close return match 54-43. This was the second home game for Tech.

A tricky and speedy Chapman quintet took the measure of a bewildered Beaver team to the tune of 78-31. Skalecky led Tech with eight points.

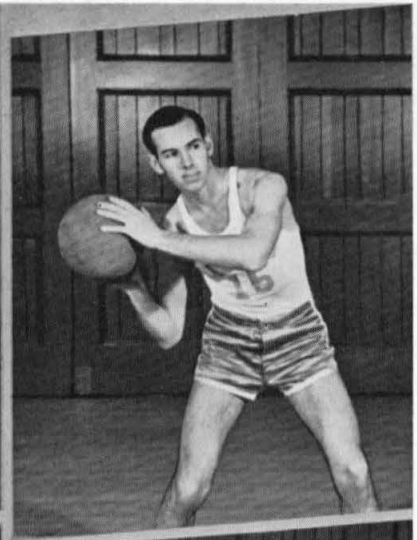
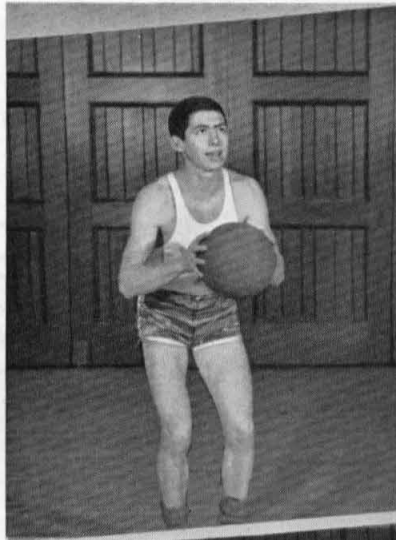
The game with the San Diego Marines resulted in an unexpected setback, the "leathernecks" winning 46-30. Duane Beck was high-point man with sixteen digits.

In the last game of the season, Tech held Chapman to a 39-32 half-time score, but the Panthers scored at will to wind up with a 74-44 lead. Beck was again the pace-setter with 14 marks.

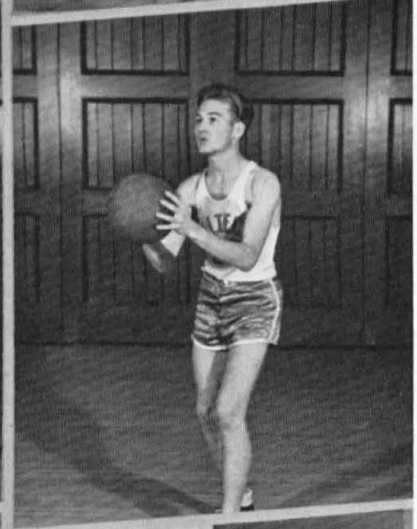
With six returning lettermen, captain-elect Duane Beck hopes for a promising 1939 season.



Goodmanson

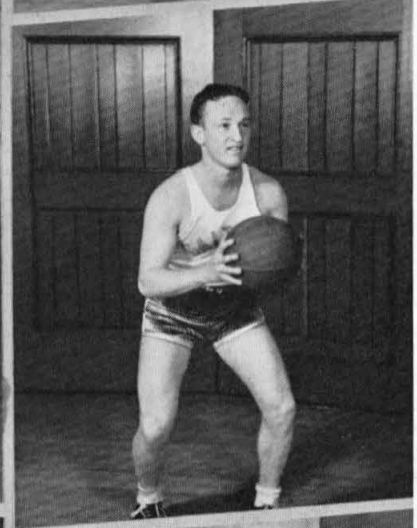
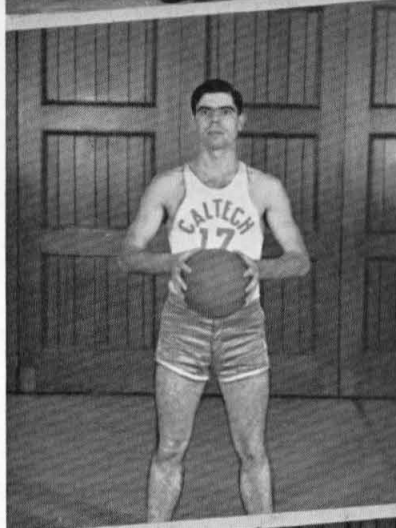


Goodin



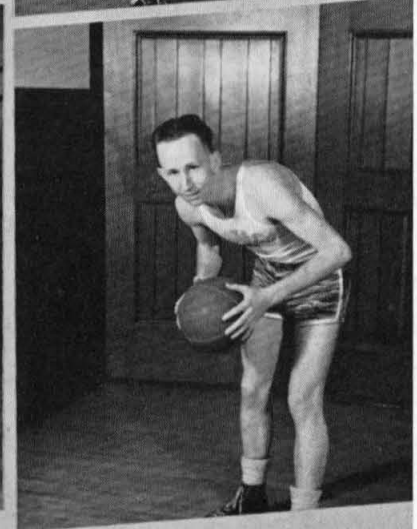
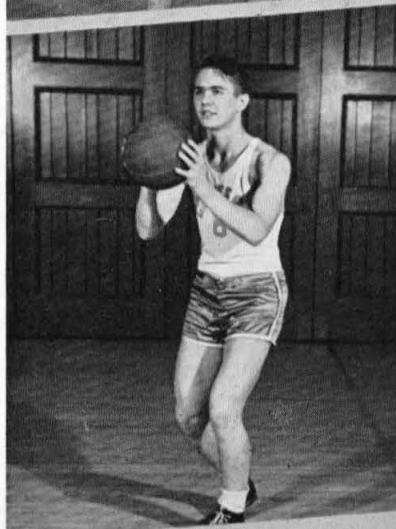
Skalecky

Beck



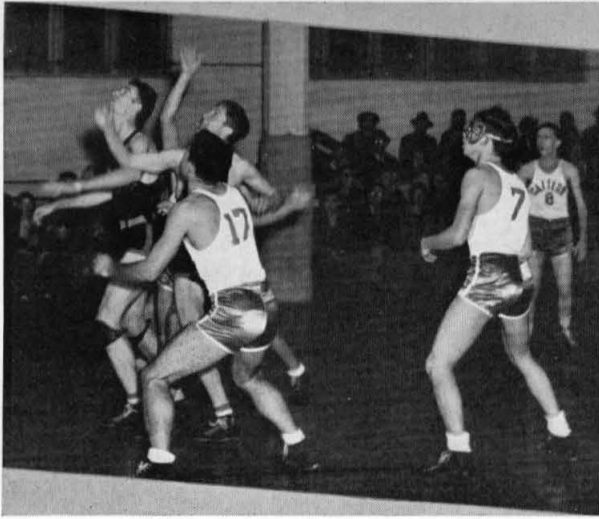
Sullivan

Hon. Capt. Wolfberg



Osborn

Rynearson



## FROSH BASKETBALL

The 1938 edition of the frosh basketball squad proved one of the most successful in recent Caltech history. Led by Captain Bob Myers, high-scoring center, the yearlings presented a fast, scrappy quintet.

In their first encounter they met defeat at the hands of the Occidental frosh, losing 68-46. But the next week they emerged victorious over the Pepperdine Varsity, 28-23. The frosh dropped their third struggle, in the last thirty seconds of play, to Webb School, 21-19; and the next week bowed to the Pomona frosh, 55-38.

The highlight of the season came with a 48-41 triumph over the Oxy five, the first time this feat had been accomplished by a Beaver frosh cage squad in several years. This was followed by two close losses to the Chapman quintet, 33-27 and 51-41, and two victories over Pepperdine, 35-27, and University School, 42-29.

Those receiving numerals were Bob Myers, Bill Chapin, George Meyer, Art Bolles, George Reimers, Bruce Lawrence, Bob Bowles, Bill Edmund, and Oliver Sullivan. George Mellinger acted as coach for the yearlings again this year.

**First row:** Gold, Meyer, Chapin, Bowles, Reimers; **second row:** Coach Mellinger, Wagner, Edmund, Meyers, Lawrence, Bolles, Billmeyer.





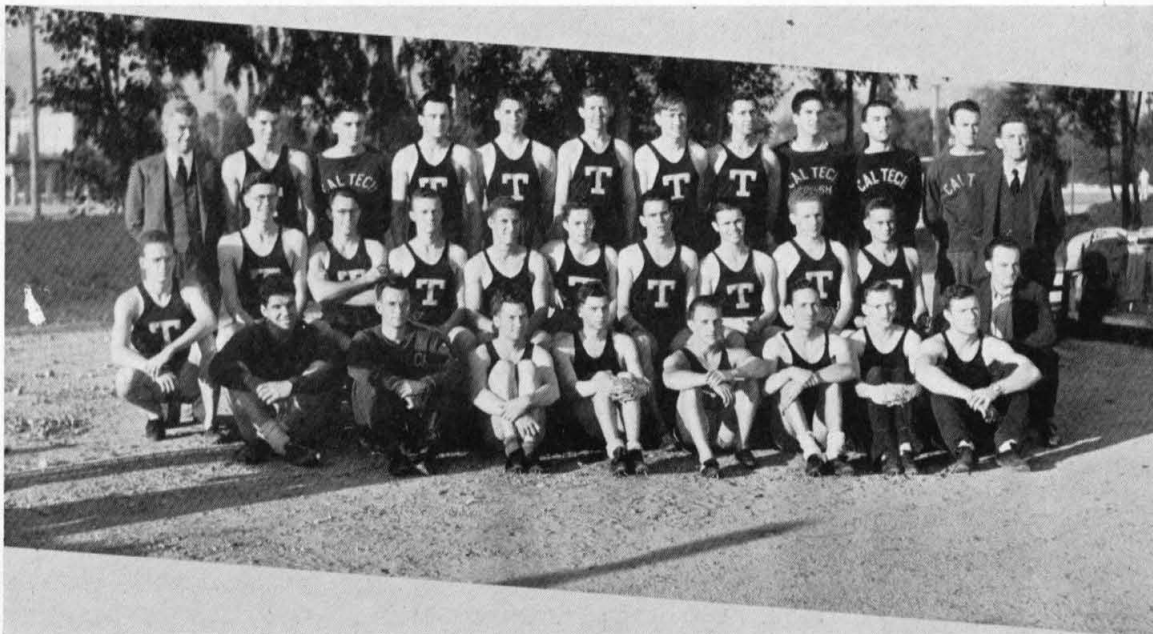


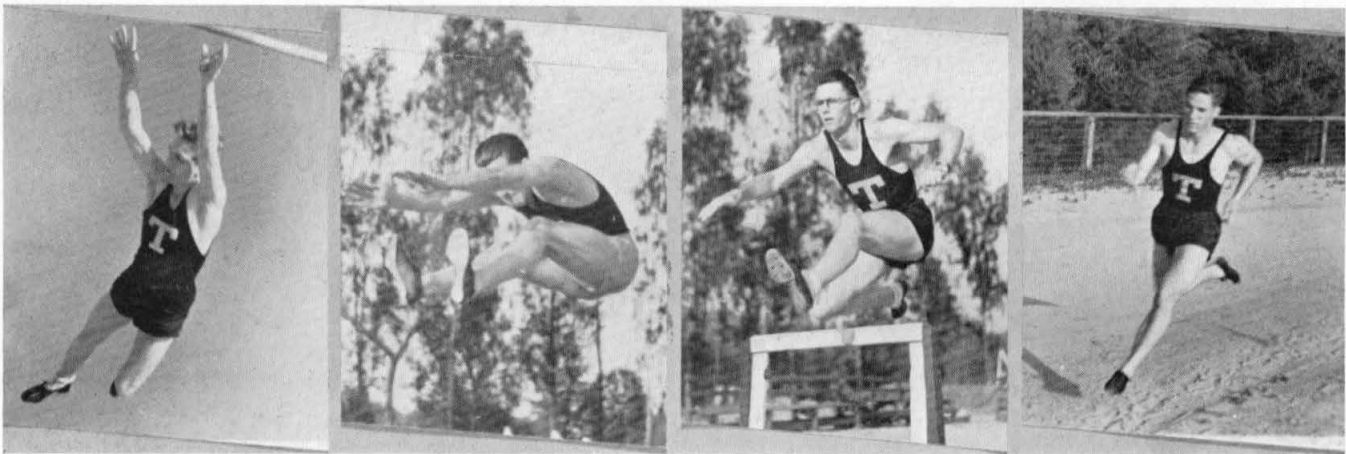
## VARSITY TRACK

Finally on April 8, right in the midst of Exhibit Day, the boys dashed over to Tournament Park and broke into the win column at the expense of Redlands. The lead changed hands many times during the meet but the Engineers finally came out on top by a 67 to 64 score. Six Caltech men won seven first places. Kenny Bragg was the double winner—taking both sprints in fast time; DuFresne clipped his 440 time to 50.5s; Smith took the 880; Herb Ellis led a Caltech clean sweep in the highs, and Friend Baker won the lows; Tyler Matthew took first in the high jump. The honor of clinching the meet for the home team was left to Garner Wilson in the last event on the program, the javelin. His mighty heave of the spear gave him second, and Caltech the victory.

The final meet, a triangular affair, held at Compton resulted in a second place for Tech. Compton J. C. took first with 88 points, Caltech 42½, and Santa Barbara State 31½. Although the Beavers performed well they had to be contented with second and third places, for the strong Compton team gathered all but two of the firsts and the two remaining were won by Santa Barbara.

**First row:** Jurs, Vorhees, Smith, Baumgarten, McCreery, Downing, Braithwaite, Bragg; **second row:** Friend, Anderson, Baker, Knight, Smith, Mickley, DuFresne, Baker, Walters, Worcester, Wilkinson; **third row:** Doc Hanes, Grigg, Whittlesey, Rogers, Thomas, Sullivan, Brown, Hankey, Parker, Wilson, Freede, Coach Stanton.



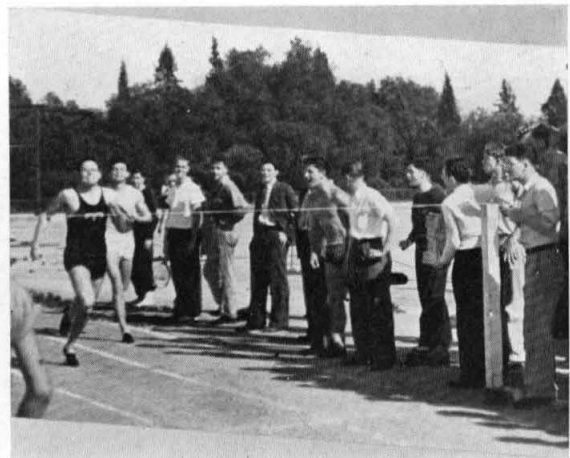


Matthew

McCreery

Baker

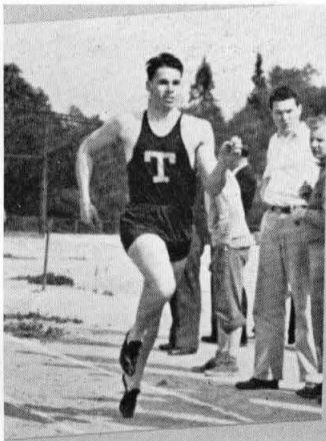
Smtih



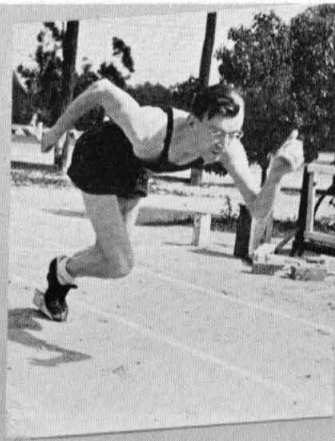
In the A.A.U. Relays at Long Beach, a second place in the 440 yard relay had to content the Engineers.

Because of the flood which, among other things, swept across Pomona's athletic field, the track meet with that school was held at Tech. The Pomona team whose workouts for the past week had been shoveling mud proved their newly acquired muscles by thumping the Beavers 76 to 55. No less than six first places were won by the Beavers, however, most





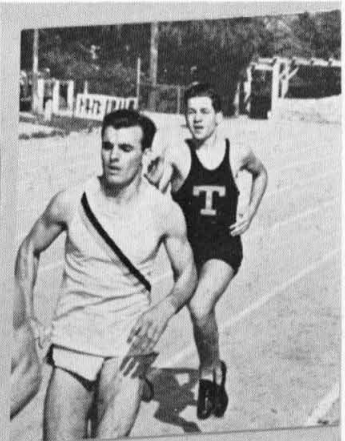
Thomas



Braithwaite



Parker

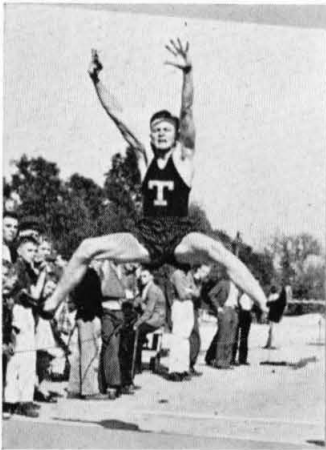


Hall



notable of which was McCreery's 22' 3 $\frac{1}{4}$ " leap in the broad jump. Jack Baker, Friend Baker, Parker, Matthew, and DuFresne were the other winners.

Against Occidental, alias Kilday and pals, the Beavers did not fare so well. Armand DuFresne's 50.6s 440 together with a Caltech win in the relay helped ease the pain of the 103 to 28 shellacking administered by the Terrible Tigers. Kilday's 14 points gave him high honors for the meet.



Knight



DuFresne



Baker



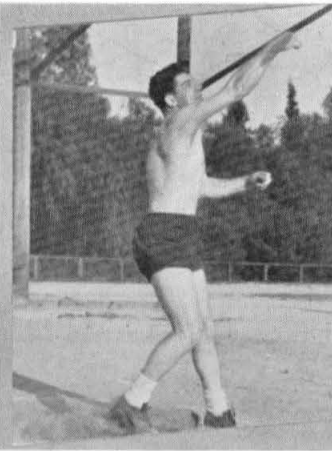
Ellis



At the end of the 1937 Track season, prospects for a strong 1938 squad were exceptionally bright with 10 of the 16 lettermen due for at least another year of competition. But by the time the new year rolled around, the aspect had changed considerably. George Wallace's untimely death last summer left a weak spot in the distances, Jack McLean's football injury prevented him from running the sprints, and Orrin Bowers, last year's sensational high jumper, dropped out of school for a year.



Anderson



Jurs



Downing  
Walter



Hankey  
Voorhees



All was not gloom and dejection, however, when Coach Stanton's stalwarts unwound themselves in a three way meet with Pasadena J. C. and Glendale J. C. The final score: Pasadena 70, Glendale 63, and Caltech 31 was somewhat offset by the fine quarter mile run by Armand DuFresne whose 51.8s in that race was the only Beaver win of the day.

Competing in the Southern California Conference Relays for the first time in several years, the Beavers were able to garner a second, a third, and a fourth in relay events together with a fifth by Jack Baker in the open pole vault. No official score was kept but our showing was quite acceptable.



## FROSH TRACK

Although the Frosh track squad was not exceptionally strong, it had several performers who will undoubtedly become varsity stars. Handicapped by a rather small turnout, the Tech babes nevertheless gave a good account of themselves.

The first meet of the season was a nip-and-tuck battle with Cathedral High, the Beaverettes ending up behind, 54-49. This was followed by another high school meet which ended disastrously for Tech. El Monte took the Frosh, 62-29.

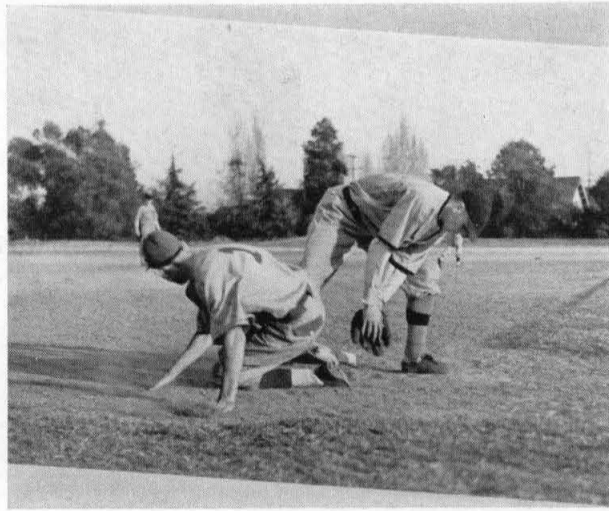
The yearling spikemen then met defeat at the hands of the Pomona frosh, losing 82-27. Although bowing to Occidental in the next meet, the Tech boys showed surprising strength, 83½-47½. The powerful Redlands freshmen ran and jumped out a win over the Caltech frosh, winning 97-34.

The outstanding performance of the season was the setting of a new Frosh record of 39 feet 9 inches in the shot-put by Eusey. Consistent point winners on the squad were: Billman, Harr, McClain, Fahs, Lakos, Stewart, Bezdecheck, Rupert, Widdoes, Hicks, Ingersoll, and Spikes.

**First row:** Rupert, Given, Stewart, Harr, Widdoes, Bezdecheck, McClain; **second row:** Smallberg, Ingersoll, LaBombard, Spikes, Fahs, Lakos, Coach Stanton.







## VARSITY BASEBALL

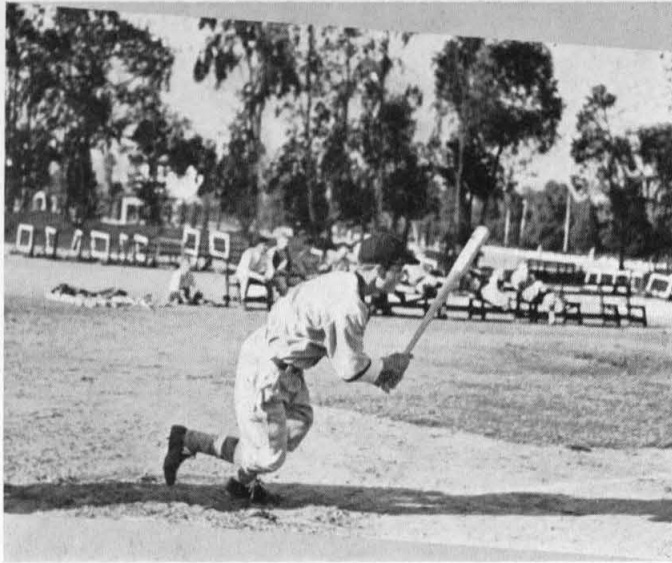
With three returning lettermen, Capt. Mel Levet, Wolfberg, and Crozier, backed by a squad of about twenty men, including many veterans from last year's varsity squad, Coach Hal Musselman held the first varsity baseball practice on March 7. Although slow in starting, this team has made great improvement and is showing more promise each day.

Practice games, the first on March 21, were played with Pasadena J.C., Glendale J.C., Citrus J.C., Woodbury, and Pomona J.C.

The first conference game was played against Chapman College on their diamond. Although losing, 2-0, in a tight game, the Beavers played a fine game. Lavender, pitcher, was nicked for four hits while the Engineers garnered only two.

**First row:** Lee, White, Levet, Jones, Meyer, Schneider, Oldson; **second row:** Hyatt, Rowell, Kemp, Crozier, Lavender, Main, Winchell, Watson, Coach Musselman.



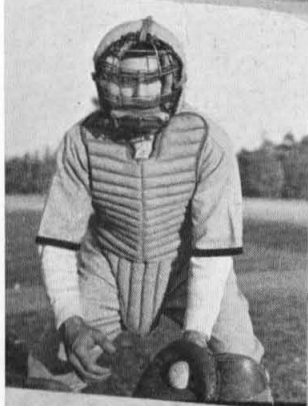
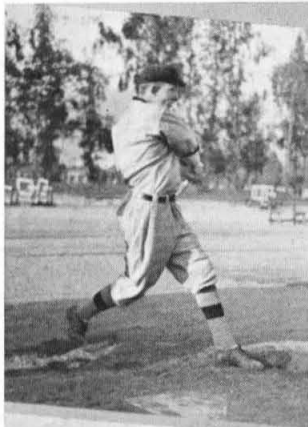


## VARSIITY BASEBALL

The following Saturday the baseballers bowed to Occidental, 8-2. Three home runs early in the game led to the Engineers' downfall. The Oxy pitcher held the locals to five scattered hits.

Tech, at the hands of its next opponent, Woodbury, was the victim of a severe drubbing. The Engineers laid down a barrage of hits to send enough men home for 5 runs, but Tech's defense allowed the visitors a total of 10 runs.

Jones  
Rowell



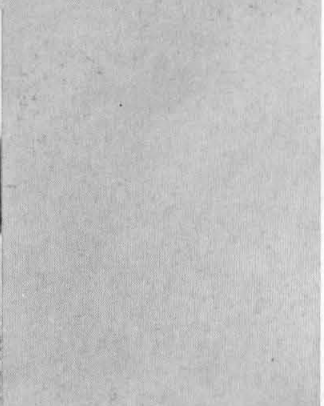
Schneider  
Lee



Meyer  
Levet



White



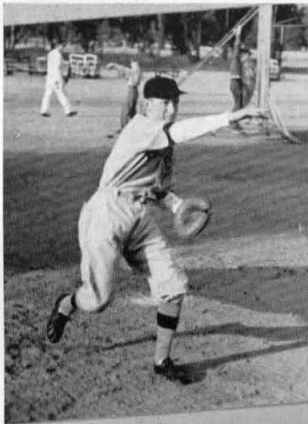


## VARSIITY BASEBALL

Games remaining for Tech are Occidental and Chapman, and two against Pomona. The morale of the team is high and the material available for the team is adequate, making possibility of Tech's having a successful baseball season not unlikely.

At present the starting lineup consists of Wolfberg, catcher; Lavender, pitcher and first base; Kemp, pitcher and first base; Levet, second base; Crozier, short stop; White, third base; Nash, left field; Lee, center field; and Jones, right field.

Wolfberg



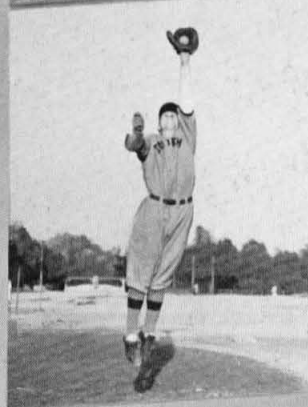
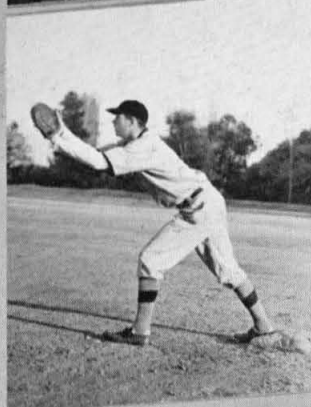
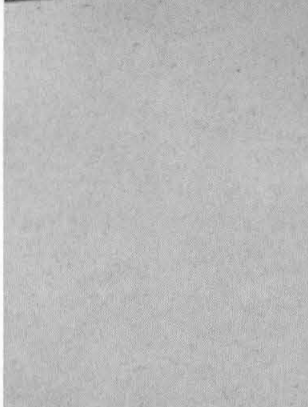
Crozier  
Lavender



Bertness  
Kemp



Jones  
Nash







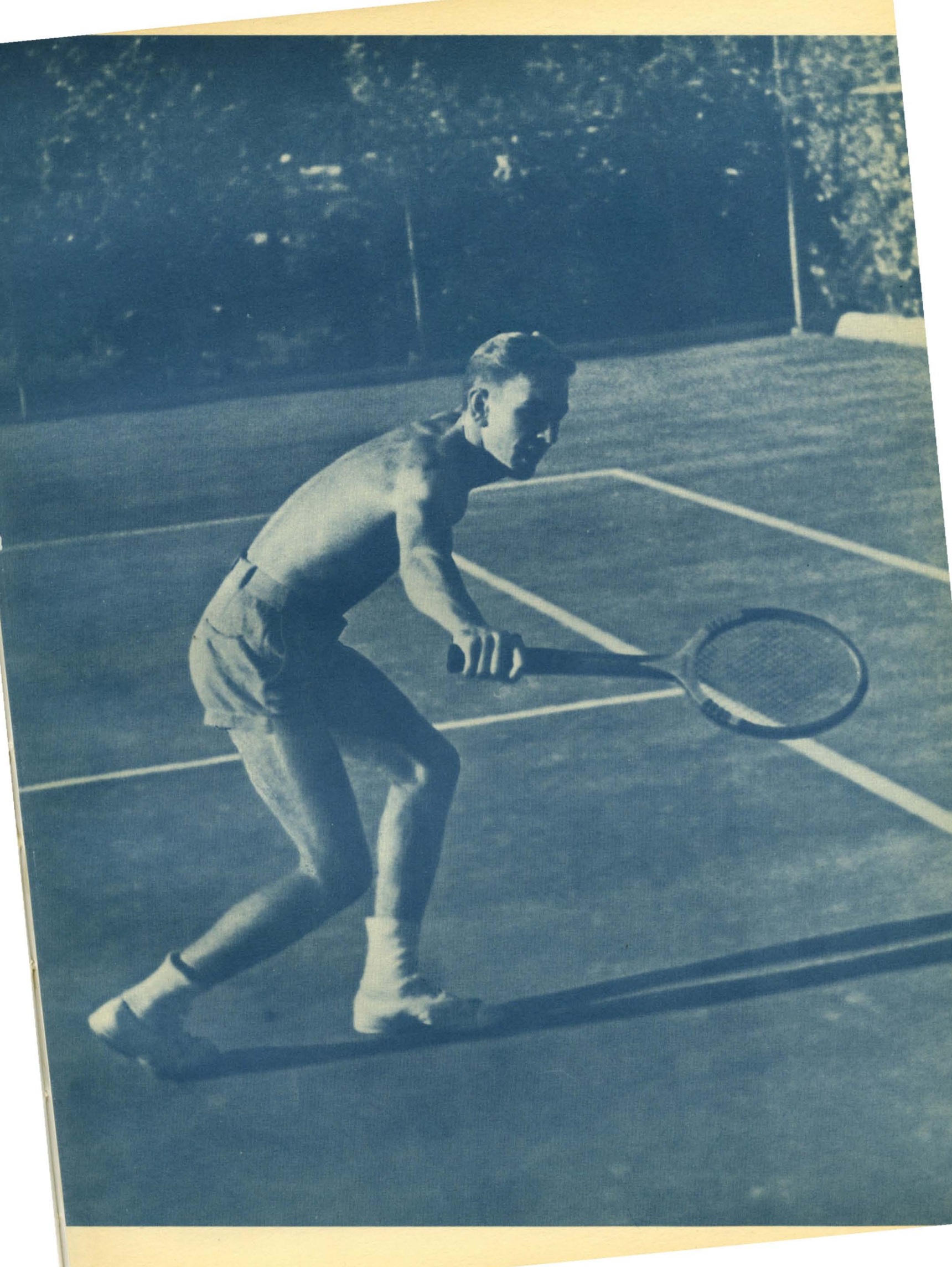
## FROSH BASEBALL

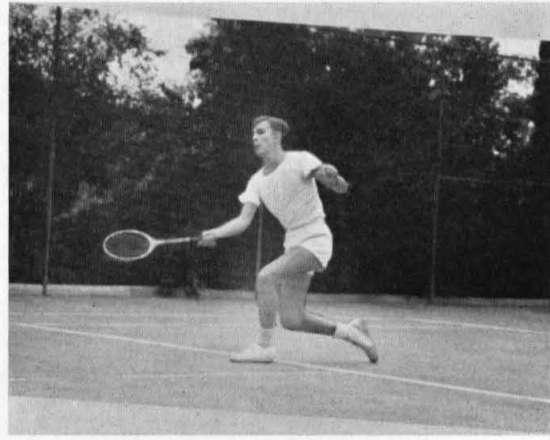
For the first time within the memory of Caltech men the school has a good Freshman baseball team. The Frosh have everything necessary to complete a very successful season. At the time of writing the team has completed but one regular game, the pitching is excellent, and powerful batters and high-percentage fields complete a well-rounded squad. Excellent coaching is being done by John Nollan.

First game was played against the second string varsity; and the Frosh massacred the upper class players. First and probably the most prized victory of the year was over the Oxy frosh. Behind the pitching of Bob Myers the Tech babes rolled up a tremendous total of twenty runs while Occidental scored none.

**First row:** Murtaugh, Meyer, Reimers, Brandt, Benson; **second row:** Davis, Billman, Clarke, Porter, Yett, Schubert, Nollan. **third row:** Bramhalgh, Bowles, Hall, Myers, Denniston, Hicks, White, Thayer, Doheny, Corcoran, Berman, Hassard.







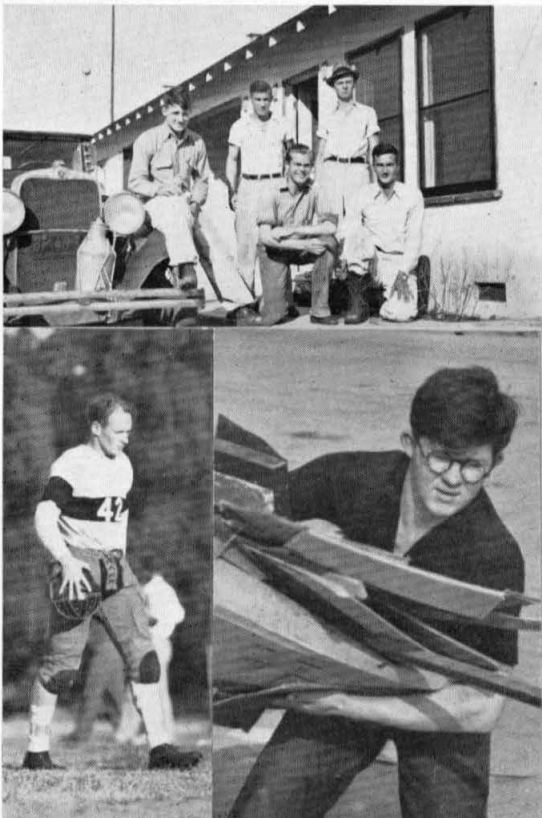
## VARSITY TENNIS

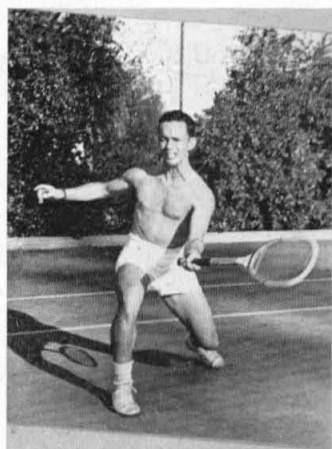
With four matches left to go, the Caltech Varsity Tennis Team is going great guns. Of the seven matches already played the Beavers have won five and lost two. One of the losses has been avenged by a victory.

The season got under way with a practice match in the latter part of February. Pomona Junior College received a 10½ to 1½ setback at the hands of the still rusty Tech netsters.

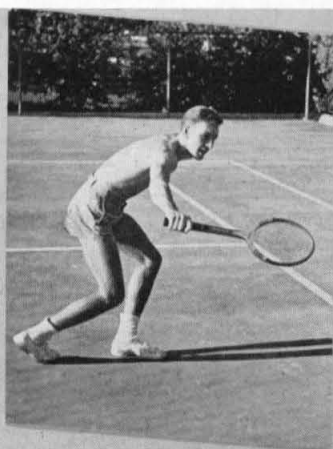
The next week the tables were completely turned when the UCLA varsity very efficiently mopped up on Tech without the loss of a single match. Several of the Beavers forced their opponents to three sets, so the 9-0 score is not quite as bad as it sounds.

Fullerton J. C. proved easy meat for the Techmen, but their match with Oxy several days later was very hotly contested, Caltech finally winning 5 to 4. The six singles matches were split at three all, but the doubles men won two of the three doubles matches giving Tech the victory over her traditional rival.





Elliott



Brunner



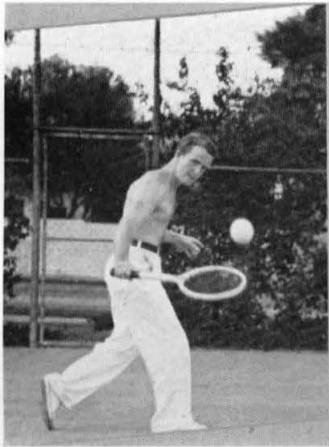
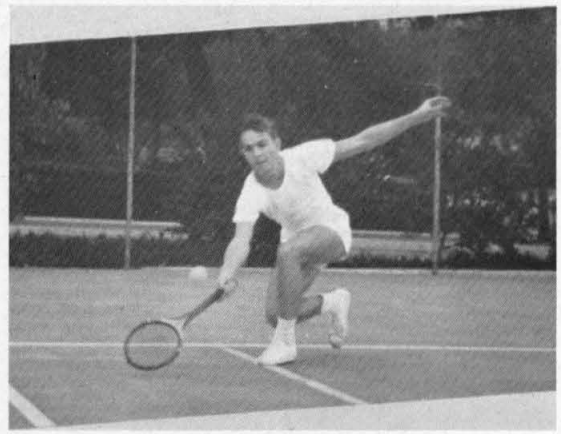
Keller



Skalecky



Whittier was taken in stride without the loss of a single match, 9-0 being the final score. The Beavers were rudely stopped by Pomona the next week however. The only Tech win was registered by Robinson playing in the 4th singles position. Score: 1 to 8 against the Beavers. Only four days later the same Caltech team defeated the same Pomona bunch playing on the Caltech courts this time. The score of 7 to 2 completely avenged the earlier defeat.



Robinson



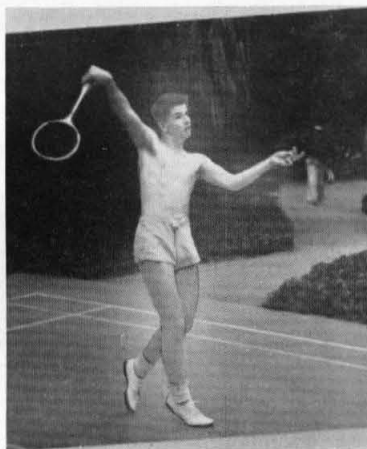
Dixon



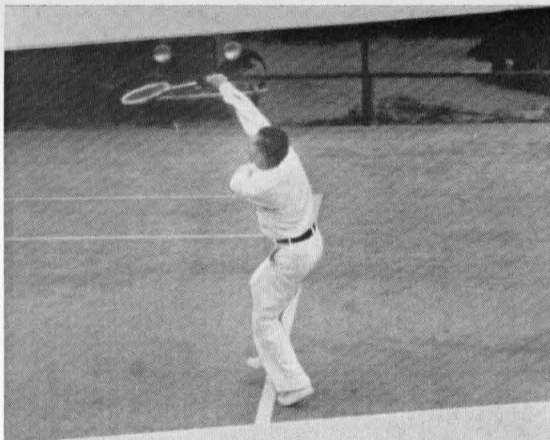
Brooks



Hulbirt



Three of last year's Frosh came up to the varsity this year and greatly helped the veterans maintain Caltech's high tennis records. The three men are Fred Brunner, first singles man and winner of the Scott Tennis Trophy; Marshal Brooks, third singles; and Frank Skalecky, sixth singles. The other singles positions were played by Keller, Robinson, Hulbirt, Elliott, and Dixon in that order. The doubles were taken care of by Keller and Brunner, Brooks and Hurlbirt, and Elliott and Dixon.



## FROSH TENNIS

The Frosh tennis squad showed great promise that it would complete a successful season. With an exceptionally well-balanced team, all six men having almost equal ability, the Beaver Babes were a strong net unit.

The first encounter of the schedule saw the Tech Frosh defeat the Oxy Frosh, winning 6-3. In this match three of the nine matches went to three sets, but they were eventually won by Techmen.

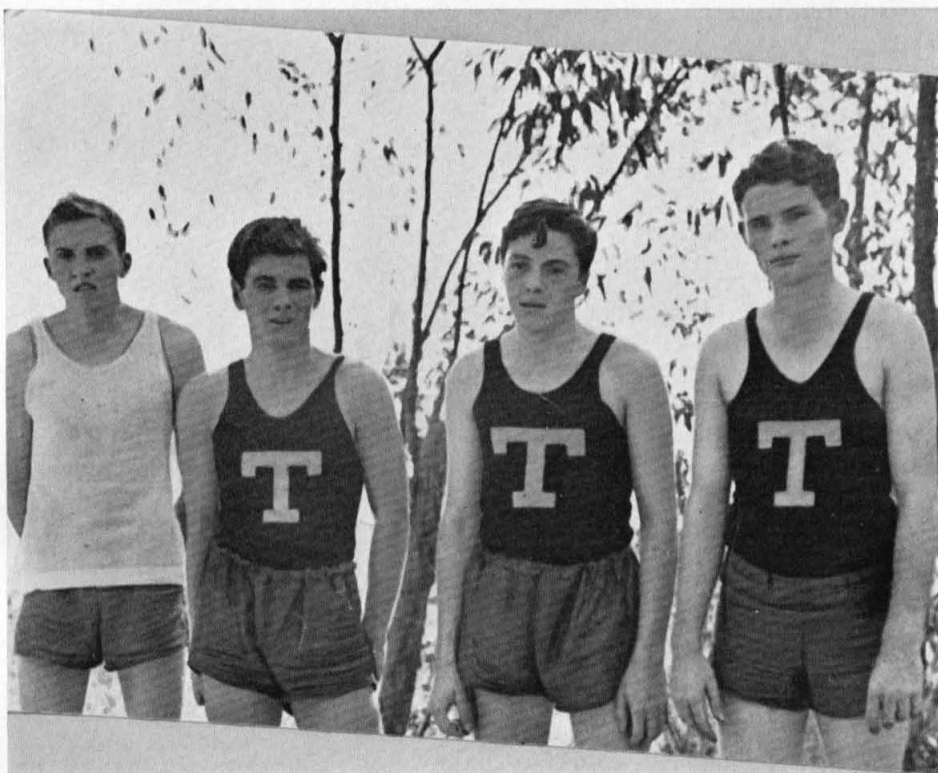
A practice match with Cathedral High was easily won by the yearlings, 5-2. This was followed by an extremely close struggle with the Pomona Sagechicks, with Tech being on the short end of the final score, 5-4.

Left on the incomplected schedule were matches with Webb School, Redlands Frosh, and Oxy. The squad consisted of Rominger, Capt. Fisher, Turner, Lewis, Horne, and Brooks, playing singles in the order named. Rominger and Turner teamed up in first doubles, with Fisher and Lewis second doubles, and Horne and Brooks third doubles.

**Kneeling:** Rominger, Lewis; **rear:** Brooks, Horne, Jones.







Ellis, Marriott, Brewer, Acker.

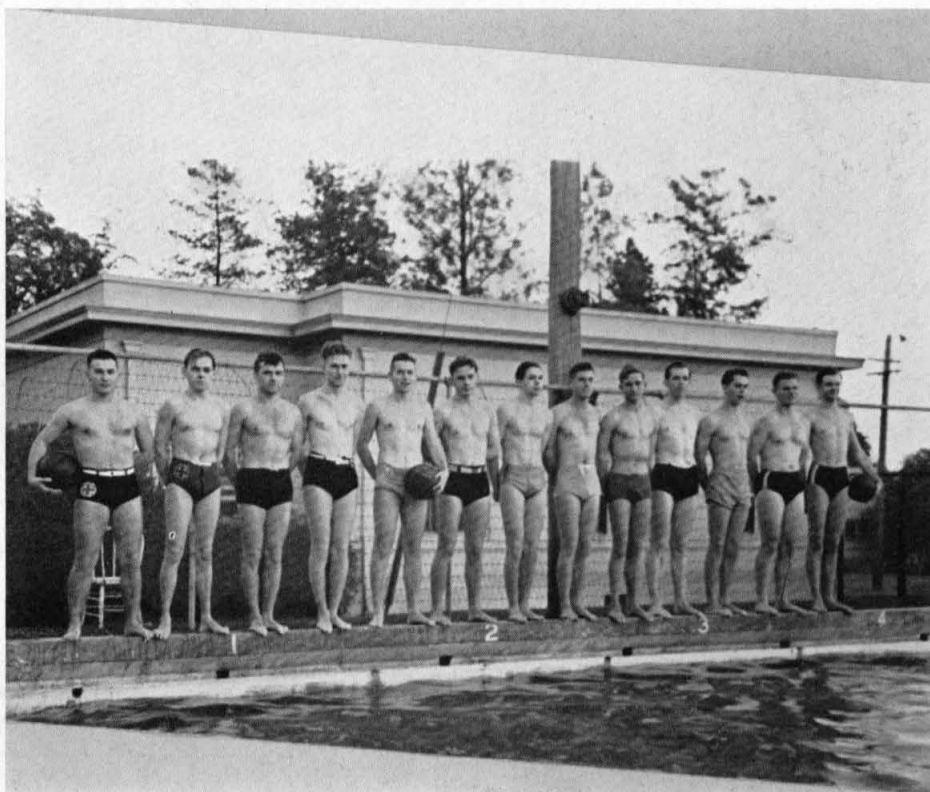
## CROSS COUNTRY

The 1937 cross country team experienced an unusually large turn-out, and the varsity team captained by Stan Voorhees was chosen after the interhouse meets of two, three, and four mile runs.

Although not as successful as last year's varsity, the team made a fine showing in the Pomona Invitational Run. One home meet was held against Redlands on the course at the top of Allen Avenue.

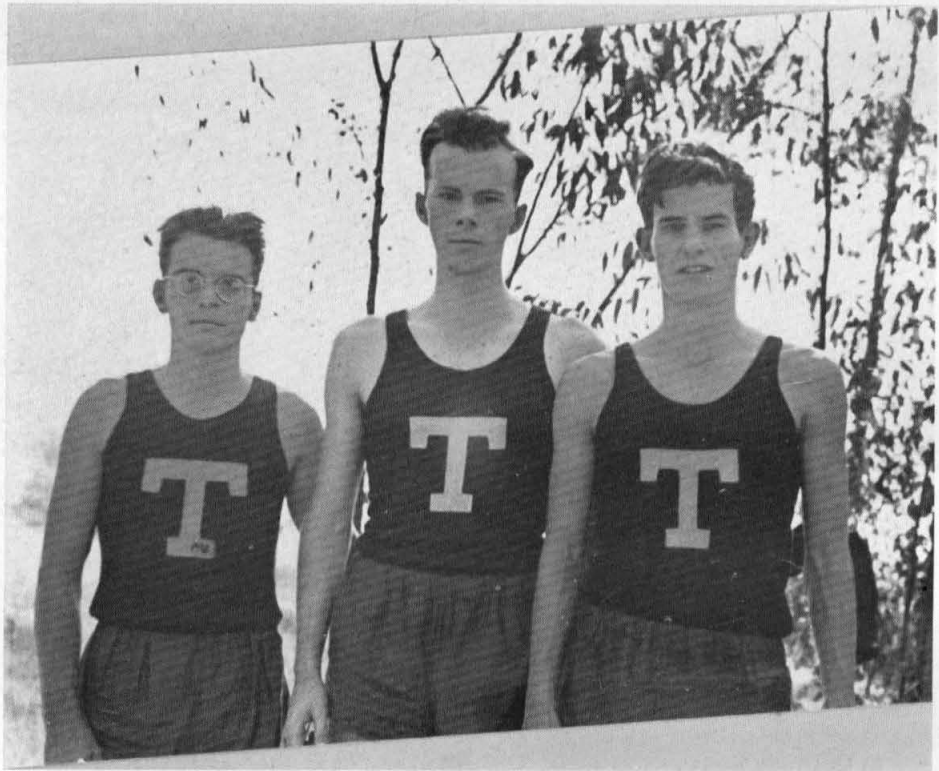
Much credit must be given to Capt. Stan Voorhees and Carter Lowell for the fine showing of the team. Lee Springer was elected next year's captain at a banquet closing the season. Lettermen: Acker, Brewer, Grigg, Lowell, Marriott, Springer, and Voorhees.

The Frosh developed a very successful team, again winning the trophy at the Pomona Invitational Run. Stanley Rupert, who was elected captain, was the outstanding runner. Numeral winners: Capron, Carey, Bezdecheck, Kashiwabara, Peters, Pickles, and Rupert.



Davis, Buss, Snodgrass, Jones, Campbell, Oder, Bolles, Partch, Sturdevant, Porter, Alexander, Sherwood, Hayes.





Voorhees, Springer, Lowell.

## WATER POLO

Water polo, for years an outcast from the Caltech athletic program, found its way into the minor sports as inexperienced varsity and freshman teams completed a tough nine game schedule with meagre success. Competing with teams which are listed among the world's champions, the Beavers showed outstanding improvement and are expected to develop into one of Tech's outstanding teams.

Only two members of the varsity team will be lost due to graduation: Dave Sherwood and Edwin Porter. Returning lettermen: Capt. Don Campbell, Darragh Nagle, Wallace Hayes, Fred Oder, Newell Partch, Walt Larson, and Don Kupfer.



Lawson, Winchell, Sherwood, Knight, Roudebush.



**First row:** Harrison, Lavatelli, Lily, Munk, Head, Payme, Thiele; **second row:** Parker, Langerud, Garner, Bowlus, Denis, Tejada, Hall, Sherwood, Wilson, Fraser, Alsaker.

## SKI CLUB

At the time of writing the Tech golf team was anticipating a very successful season. The team was captained by Sherwood.

Newly organized on the Tech campus is the Ski Club. This organization participated in several of the ski meets throughout California, and in doing so started the building of Caltech's athletic reputation in this branch of sports.

## SWIMMING

A freshman victory of 51 to 24 over a strong Pasadena freshman team ushered in Caltech's first swimming team in many years. Although a small team, the freshmen natators are one of the finest groups to ever represent Tech.

As the "Big T" goes to press, the varsity is still an unknown quantity, many meets have been scheduled with the hope of a successful season.





Nash, Althouse, Balsley, Parker, Harr, Jurs, Rosencranz, Rowell, Crozier.

## INTERHOUSE SPORTS

This year competition for the coveted Interhouse Trophy, awarded to the Student House whose athletic teams accumulate the greatest number of points in interhouse athletics, centers around two houses — Fleming and Ricketts. Fleming, winner of the trophy for the last four years, is determined to keep the "Old Lady", as it is affectionately called, on her mantel, while Ricketts is fighting hard to smash her runner-up jinx and break into the win column. At the date this was written Fleming leads with a score of  $179\frac{1}{4}$  to  $176\frac{1}{4}$  with Dabney (128), Throop ( $122\frac{3}{4}$ ) and Blacker ( $50\frac{1}{2}$ ) following.

High light of the first term competition was the round robin football matches. Fleming, tied by Ricketts last year, ended a brilliant season, undefeated, to win, followed by Ricketts, Dabney, Throop, and Blacker.

The leather lungers from Throop set too fast a pace in the cross country races, and swept the field. Dabney, Fleming, Ricketts, and Blacker trailed the leaders. The remaining first term sport, indoor baseball, was a tie between Fleming and Ricketts. Dabney was a close third.



**First row:** Turner, Billman, Van Dyke, Kemp, Beck, McCreery, Dowd, Rynearson; **second row:** White, Lee, Fisher, Sullivan, Davidson, Oakes, Anderson, Hirons, Lawrie, Bertness.



## INTERHOUSE SPORTS

Points are also given to the house having the greatest number of men out for varsity or frosh collegiate sports. As these men are barred from competition, compensation is made to their house for the loss. Football, only major fall sport, was headed by Fleming, then came Ricketts, Throop, Dabney, and Blacker.

The opening of the second term found the houses vying for basketball wins. All of the basketball games were exciting, but Fleming showed a superiority that gave them first place. Again Ricketts was second, followed by Dabney, Throop, and Blacker.

The opening of the interhouse track meet found Fleming, last year's champions, the favorite. Typical of the hard fought interhouse meets, however, pre-meet predictions were upset, and Ricketts emerged the winner. Fleming managed to take second, Dabney third, and Throop and Blacker tied for fourth.

Dabney, home of the grunt and groan artists, again captured high honors in wrestling. Led by Mills, Carstarphen, and Asakawa they turned in several thrilling mat victories to garner coveted points. Ricketts, Fleming, and Throop followed, with Blacker out due to lack of men.



Larson, White.



## INTERHOUSE SPORTS

Handball, last contest played at this date, finds Fleming first, Blacker second, Dabney third, Throop fourth, and Ricketts fifth.

Still remaining are tennis, baseball, and swimming. Blacker netmen are given a slight edge over their opponents, while Fleming seems likely to capture both baseball and swimming.

In points for varsity rating in basketball, Ricketts emerged victorious leading Throop, Fleming, Dabney, and Blacker.

This is the seventh year of competition for the trophy, presented by the class of 1932 to the Associated Student Body. The first two years it was won by the Non-Resident Club, now Throop Club; but for the past four years Fleming has had possession of the trophy and seems likely to make it five straight.

One other athletic award is fought for among the houses: Discobulus, a bronze miniature of the famed Greek discus thrower. It passes from house to house by means of challenge victories in any sport.



THE Astrophysical Observatory on Palomar Mountain was provided for in 1928. It will have, besides the two-hundred-inch reflector, numerous auxiliary equipment. The observatory will have available the knowledge and experience of not only the staff members of the Institute, but also that of the staff members of the Mount Wilson Observatory of the Carnegie Institute. The work of the new Astrophysical Observatory will not duplicate that at Mt. Wilson, but will serve to supplement and confirm it. The increased light-gathering power of the telescope will permit further studies in all the regular branches of astronomy; its use will provide additional information about the primary construction of matter.





## THE CALTECH HONOR KEY

The highest honor that the Corporation can bestow upon a member for extra-curricular service is the Caltech Honor Key. This year the award is made under a system differing slightly from that followed in years past. To win a Key one must make a total of thirty honor points in the last term of a school year and in the first two terms of the next year; a special dispensation being made for seniors. By the making of this change it is hoped that the Key will increase in value as an honor.

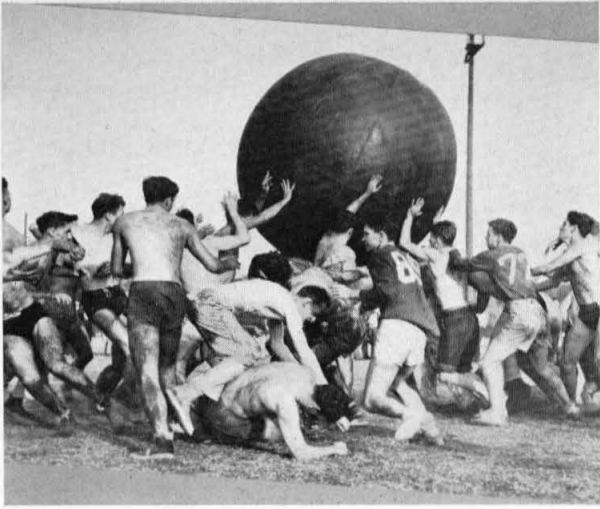
Honor points are gained by participating in some student body activity. The number of points given for any one activity is based on an arbitrary scale built up by the Honor Point Committee.

Recipients of Honor Keys were: Allen, Anderson, Baker, Balsley, Barry, Beck, Biddison, Campbell, Davidson, DuFresne, Evans, Goodmanson, Holmes, Hulbirt, Jewett, Jones, Llewellyn, MacKay, McLean, Nash, Osborn, Richards, Rowell, Smith, Stone, Todd, van Fleet, Walters, Wilkinson, Wolfberg; and George Osborn for heroism in saving the life of a fellow student.



*By Don Downey*





## TAU BETA PI

The members of Tau Beta Pi are chosen from the upper fourth scholastically of the senior class and upper eighth of the junior class on the basis of exemplary character, and outstanding personality. This honorary engineering fraternity is composed of more than 30,000 leading engineers throughout the country and election to membership is recognized as a signal honor.

The California Beta Chapter, here at Tech, has had an active and successful year under the leadership of James Balsley. The other officers assisting him were: Harrison Lavender, vice-president; David Sherwood, corresponding secretary; Orin Graybeal, recording secretary; William Cardwell, treasurer; and Herbert Ellis, cataloger.

Lavender  
Graybeal

White  
Kazan

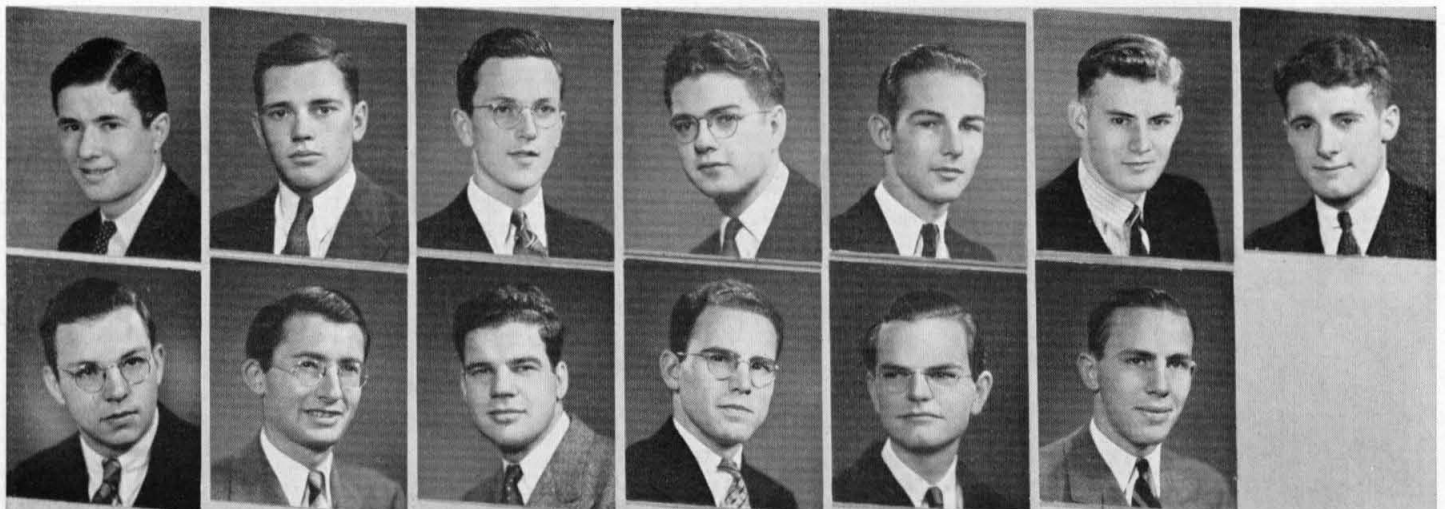
Macleish  
Jurs

Cardwell  
DuFresne

Beavon  
Parker

Davidson  
Llewellyn

Balsley





## TAU BETA PI

The first term initiation banquet, in the Athenaeum, was featured by an address by Dr. William B. Munro, "The Next Fifty Years in the Light of the Last Fifty"; and a humorous burlesque of "The March of Time", presented by the twelve incoming pledges. The principal speaker at the second term initiation banquet was Dr. L. D. Ricketts on "Mining Engineering", the pledges presenting a skit entitled "Exhibit Day". Activities planned for the third term include a formal dance, to be held on campus, and later in the term a beach party. Under the leadership of the new officers, Robert White, president; Mark Mills, vice-president; Charles Carstarphen, corresponding secretary; Chandler Ingalls, recording secretary; Phil Smith, treasurer; and Al Green, cataloger, an equally successful year is expected in 1939.

Smith  
Moore

Jones  
Nagamatsu

Voorhees  
Dowd

Evans  
Ingalls

Bertram  
Wood

Clarke  
Wimpress

Lentz  
Ellis





## VARSIITY CLUB

The Varsity Club is an organization selected from the men who have won varsity letters. The object of the club is to further athletics on the Tech campus and to afford a group in which athletically inclined men may meet socially.

One of the most important of the group's yearly activities is the pledging of new members. These men are required to go through a period of vigorous discipline, during which time they are not allowed to smile and are required to perform numerous odd jobs. The final initiation is followed by an "outing" of some kind.

During the year the group meets socially in "smokers" and other affairs, which are followed by the club attending some type of athletic match.

One of the oldest organizations on the campus, the Varsity Club is making its bid to become one of the most prominent.

Officers for the year were: Stanley Wolfberg, president; James Balsley, vice-president; Sam Keller, secretary-treasurer.



**First row:** Biddison, Balsley, Baker, Dixon, Osborn; **second row:** Browne, Wolfberg, Rynearson, Rosencranz, Brown; **third row:** Forward, Brown, Keller, Engelder, Goodin, Wilson; **fourth row:** Smith, Hulbirt, McLean, Jewett, DuFresne.



## BEAVERS

Caltech's Beavers form an honorary service organization of fifty men. Its aims are to stimulate all student body activities, to promote friendly relations between colleges, and to extend all possible courtesies to visitors.

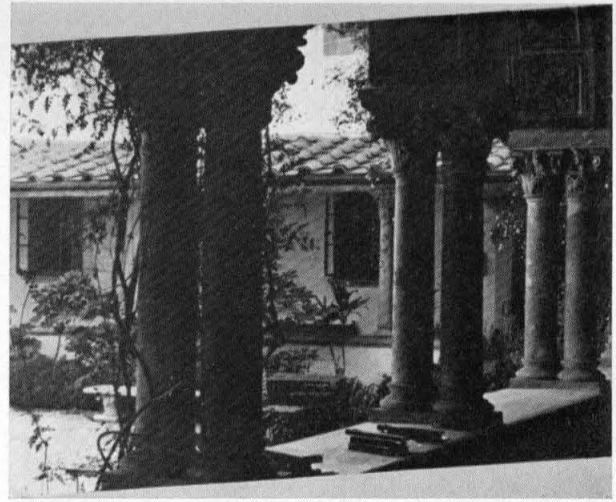
The organization has been largely responsible for the attendance at the football games and other inter-collegiate activities. In addition they provide transportation for the football players, to and from the train, when the games are away from home. One of the most outstanding contributions was the Oxy Bonfire which was carried out in conjunction with the Rally Committee.

An activity campaign for a swimming pool and gymnasium was started, a committee composed of faculty, trustee, and undergraduate members having been formed to meet in the near future to seriously consider the subject. The Beavers have also attempted to keep the "California Tech" advertisers before the student body, and with this in mind distributed a list of such advertisers printed on a social and athletic calendar.

The officers for the year were Frank Jewett, President; Duane Beck, Vice-President; and Bill Althouse, Secretary-Treasurer.



**First row:** Rowell, Evans, Ropp, Elliott, Palmer, Beck; **second row:** van Fleet, Lawson, Althouse, Smith, Jewett, White, Wolfberg, Luckenbill, Johnson; **third row:** Balsley, Nash, Davidson, Ellis, Baker, Richards; **fourth row:** Anderson, Osborn, Kemp, Rosencranz, Barry, White, McLean; **fifth row:** Stone, Anderson, Biddison, Bonham, Goodmanson; **sixth row:** Mills, Ingalls, Rynearson; **seventh row:** Flint, Paul, Sullivan, Wilson, Lavender, Brown, Clarke.



## DRAMA CLUB

The principal function of the Drama Club is the production of a play during the spring term. Chosen for this year's edition of the show was "Amphitryon". Dr. Eagleson and Dr. Stanton directed the annual play to a very successful presentation. The show was well enacted and provided enjoyable entertainment for the audience.

The Drama Club membership consists of Techmen who have shown their ability in some form of dramatic endeavor, including stage work and electrical work. The club has meetings at which plays are read and discussed. Membership in this active thespian organization is to be envied.

The proceeds from the play are used to improve the equipment of the club. The officers of the Drama Club for this year were: Dick Allen, president; Fred Smith, vice-president; and Ralph Jones, secretary-treasurer. Members: Ray Richards, Leo Lavatelli, Phil Smith, Charles Miller, Elliot Bonham, Fred Moore, Joe Manildi, John Carey, and Gordon Weir.

Smith  
Weir

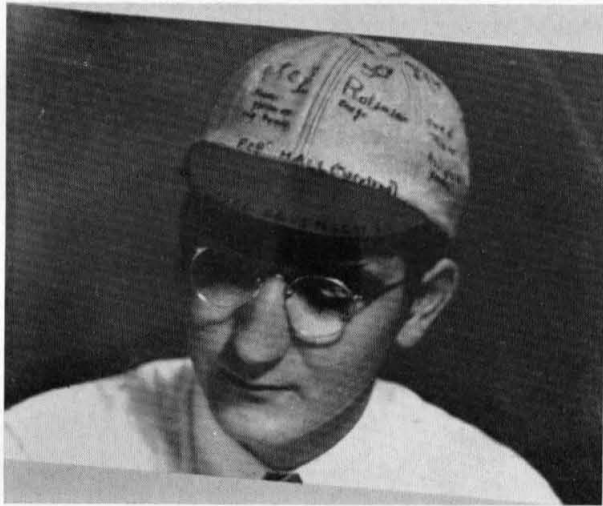
Jones  
Manildi

Richards  
Moore

Allen  
Bonham

Smith  
Lavatelli





## THE PRESS CLUB

The Press Club is an honorary organization to recognize those men who have been outstanding in the field of journalism on the Tech campus. Men are selected from the staffs of The California Tech, the Big T, and The Little T.

The club, limited to twenty members, initiated nine new men at the beginning of the second term. The week-long initiation was climaxed by a slumming party in downtown Los Angeles.

Outstanding contribution of the Press Club to Techmen was the publication of the "red-hot" edition during the second term. This year's issue was titled "The Bull Bugle" and was one of the best seen on the campus in many years.

Credit for the club's success goes to Fred Smith, president; Bob Davidson, vice-president; Duane Beck, secretary; and Paul Siechert, treasurer.

van Fleet  
Wilkinson  
Luckenbill

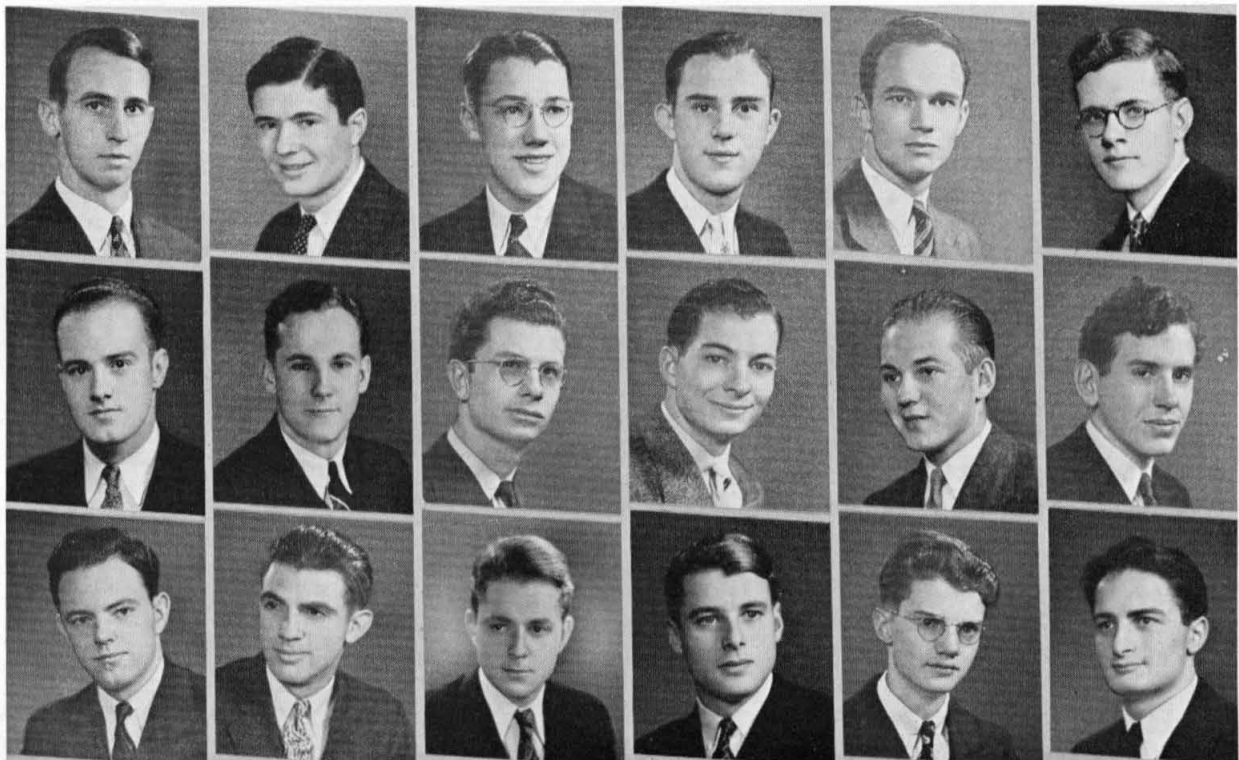
Lavender  
Barry  
Lavatelli

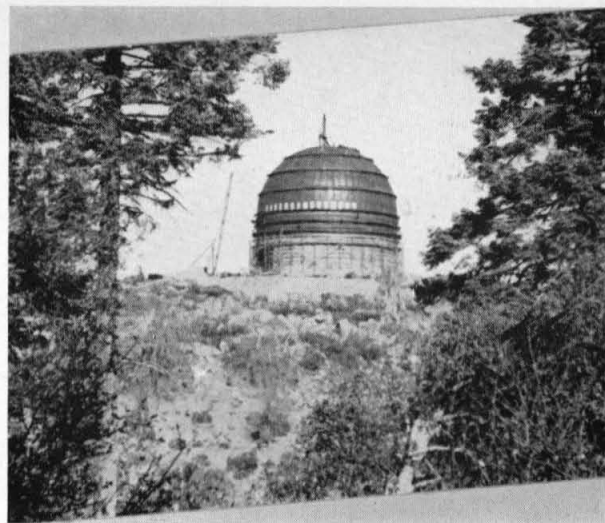
Davidson  
Anderson  
Smith

Siechert  
Farneman  
Guillou

Elliott  
Beck  
McClung

Anderson  
MacKay  
Rosencranz





## PI KAPPA DELTA

Pi Kappa Delta has for its membership those who have proven their interest and ability in forensics. The Caltech branch of this national forensic honor society, which plays a prominent part in campus activities, is its California Gamma Chapter. The chapter was again represented at the national convention.

The Pi Kappa Delta sponsored classical play in the fall term proved an outstanding success, this year "The Braggart Warrior" being presented. The proceeds from these annual plays are used as funds to make debate trips possible.

The annual initiation week was featured by the traditional pledge orations in the Los Angeles Plaza.

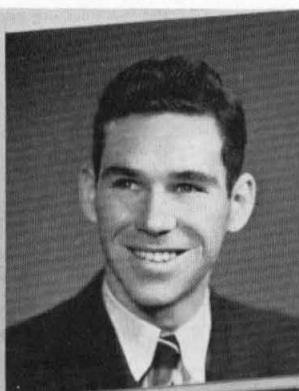
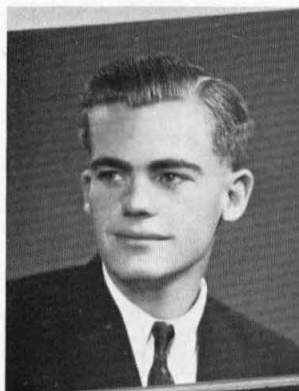
Pi Kappa Delta is guided by Dean Unter-einer. The officers for this year were: Dick Allen, president; Jack McLean, vice-president; David Beavon, secretary-treasurer; and Jack Osborn, publicity manager.

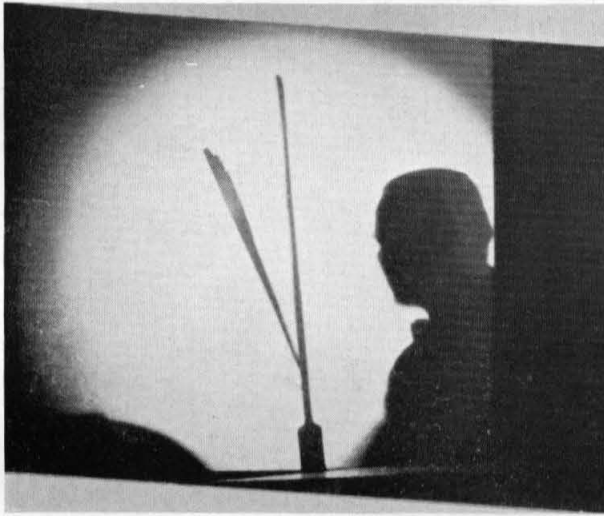
Allen  
Johnson

Osborn  
McLean

Thomas  
Stone

Balsley  
Beavon





## CALTECH Y.M.C.A.

The Caltech Y. M. C. A. began the year with John Price, its first full-time secretary in three years, and a three day reorganization conference.

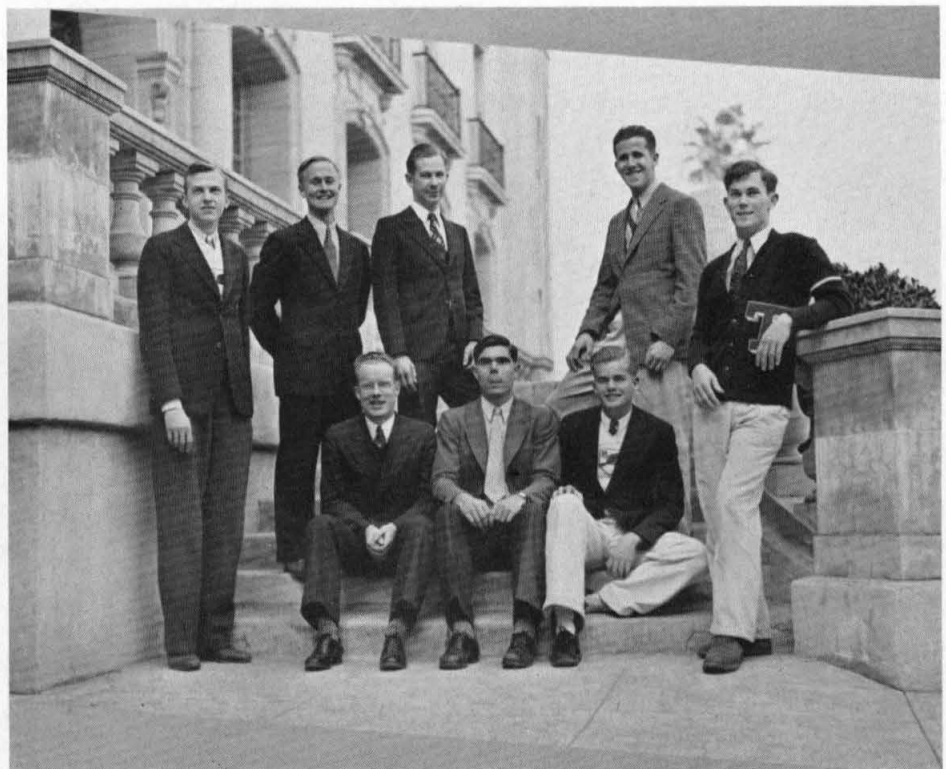
Major extensions during the year consisted of a change of the Walrus Club into the active "Y" forum and an enlargement of the religious phase of the Y. M. C. A.

Under the new secretary, the traditional services of the "Y" in the used text-book exchange, student employment, "Y" lounge, luncheons, typewriter service, and library were carried on more efficiently than had been possible in the past.

Edwin Sullivan, the president, attended the National Assembly, a delegation of eleven was sent to Asilomar, and another large group attended the Foothill Conference.

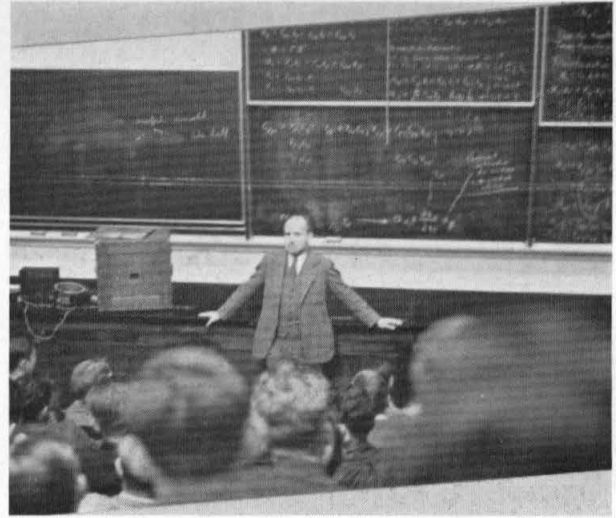
The Y. M. C. A. was able to secure the services of Dr. Albert Day, prominent minister; Kirby Page, noted author and lecturer; and Mr. Arthur Rugh, "Y" worker in China, as campus speakers.

Officers were: Franklin Page and Edwin Sullivan, presidents; Richard Allen, vice-president; Edwin Sullivan, Harlowe Longfelder, and Donald Loeffler, secretaries; and Herbert Ellis, treasurer.



**First row:** Ellis, Secretary Price, Sullivan, Allen, Biddison; **second row:** Clark, Merriam, Longfelder.





## AMERICAN SOCIETY OF MECHANICAL ENGINEERS

The American Society of Mechanical Engineers, or ASME as it is more popularly known on campus, is a student branch of the national organization of mechanical engineers. Membership in the Caltech branch is limited to junior and senior students in that division.

One of the largest of the professional organizations, the group holds regular bi-weekly meetings, hearing speakers from the profession on their problems and other topics of interest. The group participates in many inspection tours of plants in the vicinity, offering the members an opportunity to get first-hand information regarding many processes.

In addition, a division convention of student branches on the Pacific coast is held, at which time several of the men attend. Dr. Donald S. Clark is the faculty adviser, and student officers for the year were: Charles Clarke, chairman; Ralph Jones, vice-chairman; Stan Vorhees, secretary; and Herbert Ellis, treasurer.



**First row:** Fraser, Velazquez, Anderson, Carr, Devirian, Ambroff, Grainger, Johnson, Longfelder, Browne; **second row:** Hotz, Paul, Saurenman, Kelly, Lawrie, Beck, Ellis, Jones, Clark, Clarke, Voohees, Barry, Lawson, Jewett, Althouse, Osborn, Strong, Brown; **third row:** Gassoway, Bauer, Crozier, Konecnik, Wood, Twiss, Downing, Hudson, Boller, Mason, Lee, Wilkinson, Degnan, Nagamatsu, Oakley, Anderson, Richards, Norton, Rowell, Baker, Nash, Carstarphen, Friend.



## AMERICAN SOCIETY OF CIVIL ENGINEERS

At most technical colleges in the United States the American Society of Civil Engineers, the first organization of its kind formed in this country, sponsors a student chapter. This year, the enrollment of the Caltech chapter totalled twenty-five men, both graduate and under-graduate students.

The aim of the chapter has been to familiarize its members with current civil engineering practice. In pursuit of this objective, the chapter in the first term, visited the Los Angeles Union Terminal, now nearing completion.

During the second term, the members made a trip to a Los Angeles plant where some of the largest pre-cast concrete pipe is manufactured. Shortly afterward, the chapter had as its guest, the president of the A.S.C.E., Dr. Riggs.

Spring recess found the civil engineers on their annual field trip, and an inspection of the San Pedro harbor was made in the third term.

Officers for the past year were Munson Dowd, president; John Merriam, vice-president; John van Fleet, secretary; and Sam Keller, treasurer.





## AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Outstanding among the activities of the American Institute of Electrical Engineers this year, were two events—the field trip to Boulder Dam and the annual U.S.C.-Caltech joint meeting.

The journey to Boulder Dam was made during Thanksgiving recess. More than thirty members and guests saw the entire flood-control and power project, through special arrangements made by Professor Sorensen. The party was shown through many sections of the Dam closed to the casual sightseer.

The U.S.C.-Caltech branch session was held at U.S.C. early in April with many Tech members attending, and leaders in the profession in this area as guests.

Other features of the year's program were inspection trips to the Western Union office in Los Angeles, the Vernon Diesel power station, and other plants.

Guest speakers were obtained for many meetings, thus enabling the students to acquaint themselves with prominent engineers.

Organization officers for the year were: Bruce Morgan, chairman; Fred Llewellyn, vice-chairman; George Holmes, secretary-treasurer. Professor F. C. Lindvall again acted as counselor.



**First row:** Harrison, Hadley, Gates, Browne, Winchell; **second row:** Goff, Stevens, Farneman, Wilson, Llewellyn, Morgan, Holmes, DuFresne, Schneider, Kimball; **third row:** Meyer, Root, Piro, Diehm, Bennett, Brenner, McKinley, Pullen, Lindvall, Maxstadt.



## THE CHEM CLUB

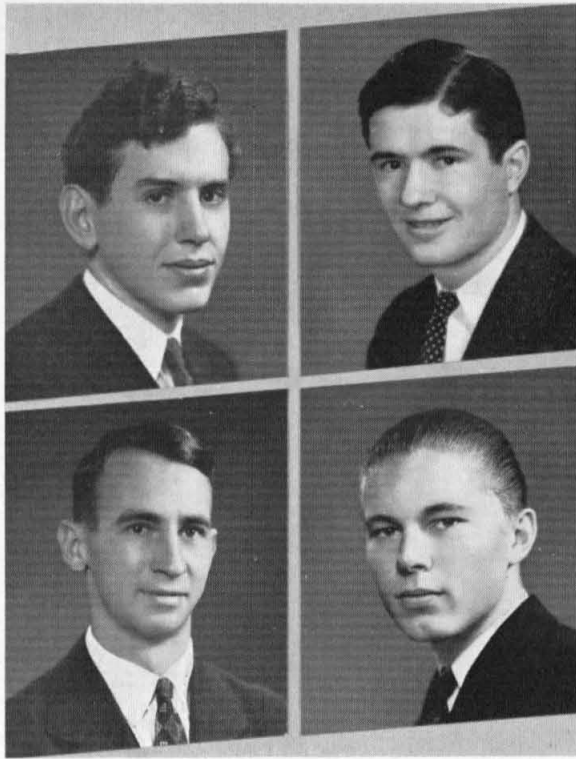
The Chem Club, organized on the Caltech campus for the benefit of majors in that department of the curriculum, is composed primarily of upper-classmen. Activities of the organization throughout the year include meetings with visiting speakers from the chemical industry, and numerous field inspection trips. Each year the club makes one of these trips to Trona, near Death Valley, to inspect the borax and potash plant there.

This year the society has secured approval of the American Chemical Society and is now registered as a Student Affiliate group, each man belonging being registered as an Affiliate of the national organization.

An annual banquet climaxes the activities of the year for the busy group. Heading the society so capably this past year was Robert Custer, president.



**First row:** Davidson, Freede, Smith, Moore, Custer, Horine, Luckenbill, Cardwell, Beavon, **second row:** Weinberger, Ingalls, Walker, Kyte, Longwell, Hayes, Wimpres, Billheimer, Siechert, Youngs, Ellings.



MacKay  
van Fleet

Lavender  
Todd

## THE BIG T

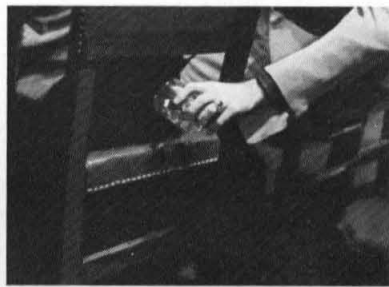
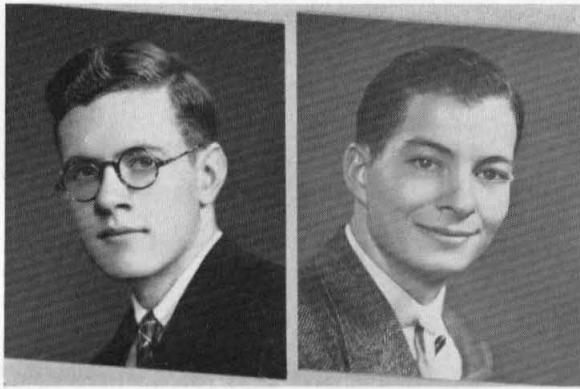
Probably by the time that most of you read this article your Caltech days will be but memories, for Annual copy is to fill up space where there are no pictures, so if we, the Editors, are addressing you, the recipients of this Big T, who are reading through the book to recall some nostalgic moments, think kindly of us for wordily putting the credit for this Annual in its proper place.

More than any other person, whose co-operation made possible the 1938 Big T, we cite George Todd, who, although Treasurer of the Student Body with his own office to fulfill, worked unceasingly on the production of the book. To Keith Anderson (who wrote much of the copy), Charles Rutherford (much of the photography is his work), Howard Reynolds, Bill Chapin we give our thanks.

The editing of this book has been a headache, but an experience which we will always remember. Our aim has been to please you, the members of the corporation. If this has been achieved, that headache is a forgotten factor.



**First row:** Tielrooy, Anderson, van Fleet, MacKay, Lavender, Todd, Widdoes; **second row:** Chapin, Rutherford, Wilbur.



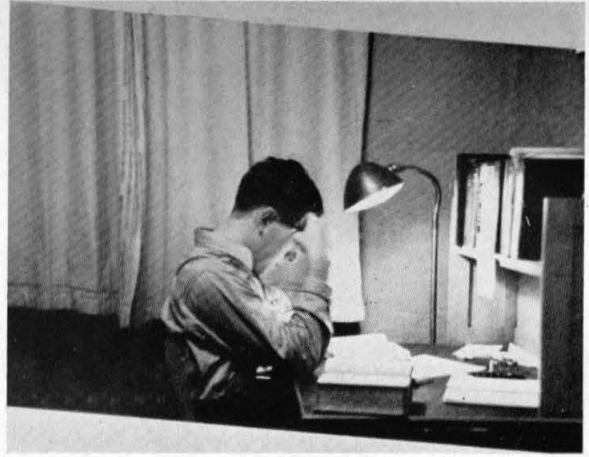
## CALIFORNIA TECH

The California Tech, weekly newspaper, allows campus expression of journalistic talent.

Keith Anderson and John Farneman have handled the editing and business work.

**First row:** Hoff, Gold, Wilkinson, Mickley, Weir, Wilbur, McClung, Buss, Brewer, Goff; **second row:** Lawrie, Schisler, Axtman, Weaver, Anderson, Trindle, Stevens, Golson, Forward; **third row:** Anderson, Brewer, Rynearson, Beck, Davis, Guillou, Root, Strong, Shepard, Holmes; **fourth row:** Oder, Marriott, Barber, Moore, Flint, Skalecky, Longfelder, McClaine, Bramhall.





## THE LITTLE T

The Little T, one of the three student publications on the Caltech campus, is issued once a year at the fall term registration time to the entire student body. Its specific purpose is to act as a Frosh "bible" or guidebook to the campus and student body activities during his first few bewildering moments at Tech.

Furthermore, it provides an accurate and complete directory of all registered students with their addresses and student house affiliation, and also furnishes a rather complete "buyer's guide" in the form of indexed advertisers.

Editor and business manager for the publication of the handbook are selected annually by the Board of Directors, and the work of soliciting advertising and editing the articles is carried on during the summer months. Of late, a map of the city of Pasadena has been provided in the back cover for the benefit of newcomers from towns outside of this area.

Co-editors and managers this past year were Bob Barry and Phil Shepherd.





**First row:** Snodgrass, Lewis, Moore, Buss, Cooper; **second row:** Hardin, Brooks, Collision, Jones, Bowlus, Pollycove.

## CALTECH DEBATE

The Caltech Debate squad again carried out its program of participation in meets and contests with several other Southern California colleges. Although the team was not one of superb calibre, the development of ability to speak in public and maintain conversation proved invaluable to those on the squad. The experience and training received in this field also aids poise, not only in speaking but in daily life. Individual coaching is given to members of the team.

Coached by Dean Ray Untereiner, the squad consisted of ten men, the first team being McLean and Beavon. One team, composed of Osborn and Ingalls, was sent north to the Stockton meet, held in the first part of April. This year the squad was managed by Delos Flint.

The freshman debate squad, coached by David Beavon, was made up largely of fellows who had never previously participated in active debate. The freshmen debate course is offered in a special class during second and third terms, in which valuable fundamental training is gained.



**First row:** P. Smith, Marriott, Ingalls, Beavon, Scarborough; **second row:** Custer, Stone, McLean, Osborn, Flint.





## THE BRAGGART WARRIOR

The Fall play "The Braggart Warrior", a comedy by Plautus, was given to capacity matinee and evening audiences.

"The Braggart Warrior" is the story of a soldier who carries off a courtesan from Athens. A servant attempts to bring this news to her lover, but is captured at sea and sold as a slave, coincidentally, to the same soldier. Much duplicity is practiced when the courtesan's lover moves into the house next door and visits the girl. The slave induces the soldier to give up this woman for the wife of an old gentleman. He is caught in the old gentleman's house, and flogged as an adulterer.

The play, directed by Doctors Stanton and Eagleson, had in the cast: Weir, Stewart, Allen, Jones, Richards, Farrington, Lavatelli, Hassard, Manildi, Smith, Trauerman, Hayes, and Trindle.



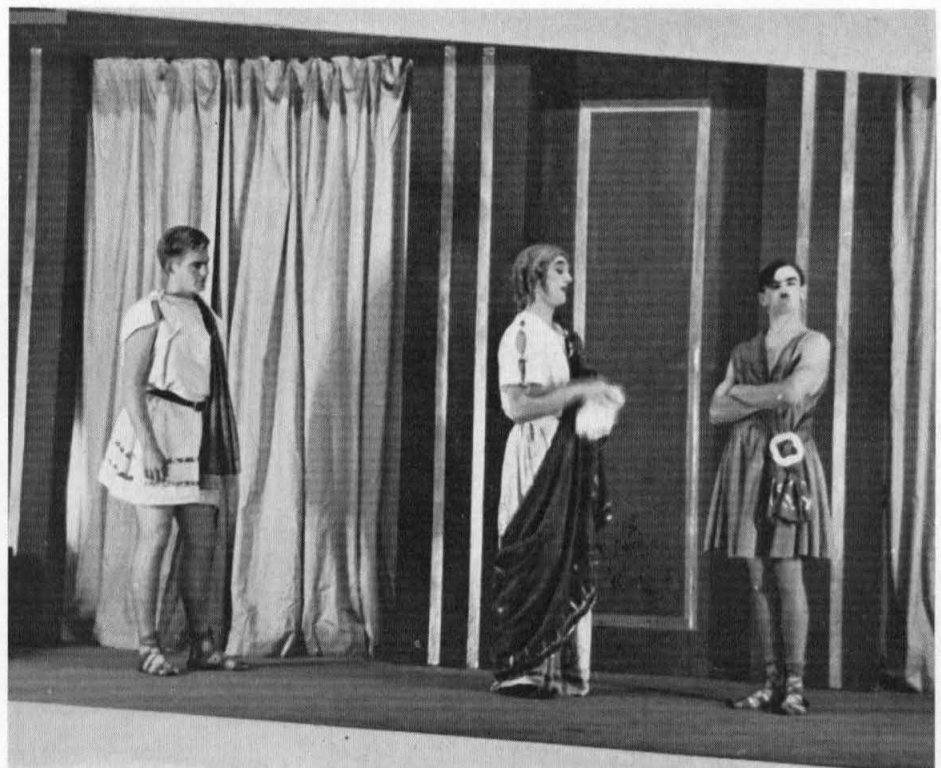


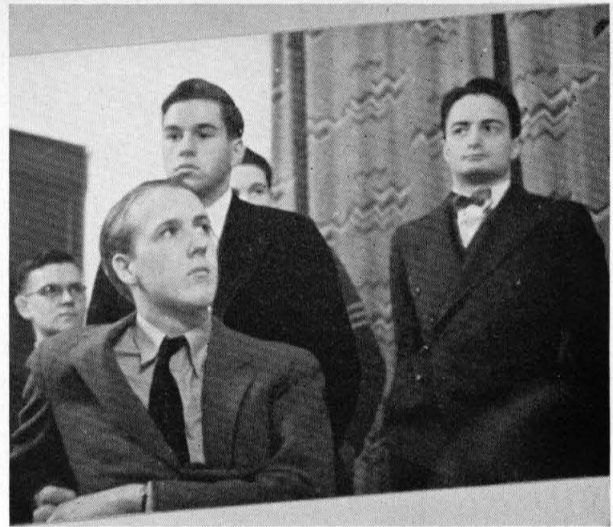
## AMPHITRYON

At the date of publication of this book the Spring play "Amphitryon" had not been presented. For this reason we could include in the book only pictures of the Fall play.

"Amphitryon" concerns itself with the love of the god Jupiter for an earthly woman. When the girl's husband is away, he assumes his shape and with Mercury, disguised as the husband's servant, lives in the house. When the husband returns, he accuses his wife of being unfaithful, and the ensuing quarrel is settled only by Jupiter himself admitting his guilt.

As all Tech plays, this is directed by Dr. Harvey Eagleson and Dr. Roger Stanton. The cast includes: Lavatelli, Farrington, Stewart, Jones, Weir, Trauerman, Foster, Theile, Smith, Manildi, and Rupert.





## THE ORCHESTRA

Work with the Institute orchestra, under Mr. Audre L. Stong as director, has progressed rapidly during the past year. A special practice room was arranged for the group in the Old Dormitory to provide adequate space for their weekly rehearsals.

As a part of the activities each year, the orchestra at Caltech presents a regular assembly concert program which is annually given a high rating by attending students.

Included in the year's list of activities are outside concerts by the group including a usual performance at the Pasadena Civic auditorium. These public concerts have always been well attended and appreciated by residents in the community.

The group, consisting of about thirty men, is this year headed in its organization by Armond Dufresne, student leader.



**First row:** Golson Hulbirt, DuFresne, Dickerson; **second row:** Noble, Richards, Foster, White, Smith.



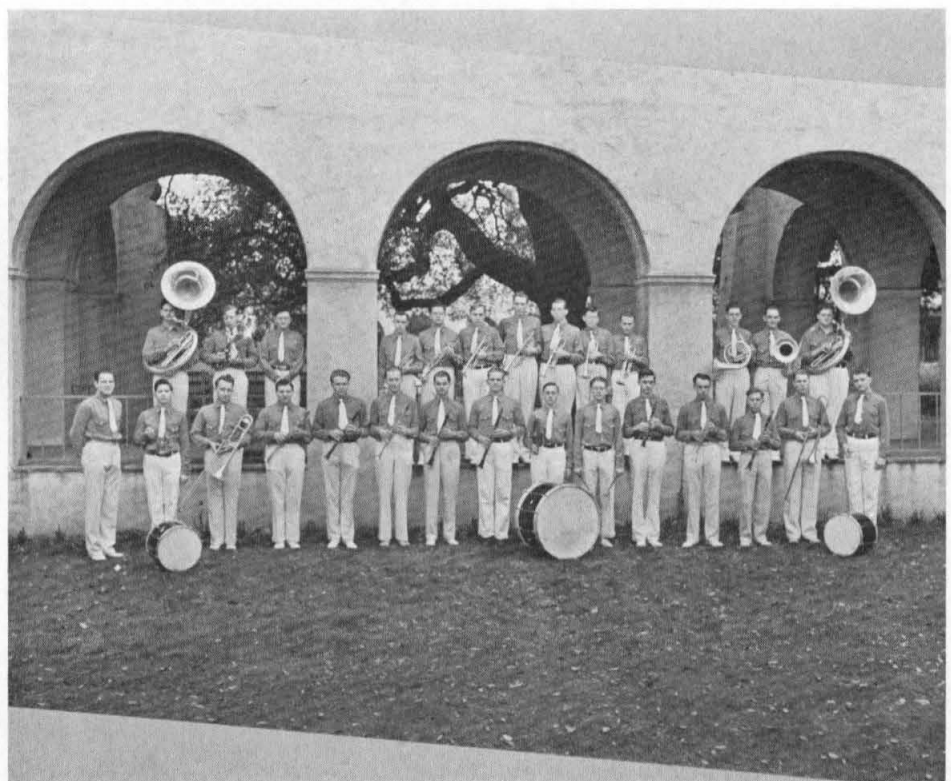
## THE CALTECH BAND

The Caltech Band, with its colorful, orange-shirted "musicleers," is one of the most active organizations both on and off our campus. This year, with increased membership and scope of activities, it was more prominent than ever.

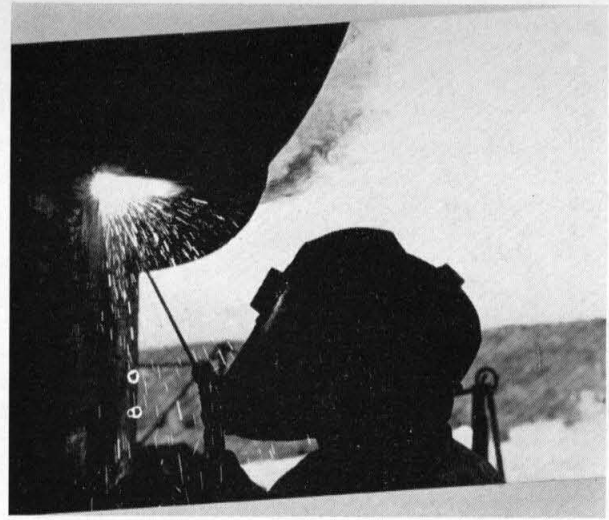
The football season took the band to Pomona and San Jose; also to the Rose Bowl on several occasions. At the Caltech-PJC game the Caltech and Bulldog bandsmen united to present a mass preview drill of the 1938 Tournament of Roses Band. The year's climax was their participation in the Tournament of Roses parade and the stunt at the football game that afternoon.

The Spring season did not bring a curtailment of activities as the bandsmen appeared at basketball games and track meets, as well as provide well received programs at the Annual Exhibit Days. The late Spring featured one of the colorful band assemblies.

With Audre Stong at the baton, Armand DuFresne as Manager, Boyne Grainger as Assistant Manager and Clyde Murtaugh as Librarian, the band continued to perform smoothly and efficiently.



**First row:** DuFresne, Yett, Harlan, Dickerson, Schneider, Richards, Axtman, Loeffler, Robinson, Taylor, Schitzig, Capron, Lolmaugh, Fraser, Foster; **second row:** Forward, Trindle, Piro, Kelly, Cardwell, Scarborough, Wimpres, Hulbirt, Freehafer, German, Grainger, Terry.



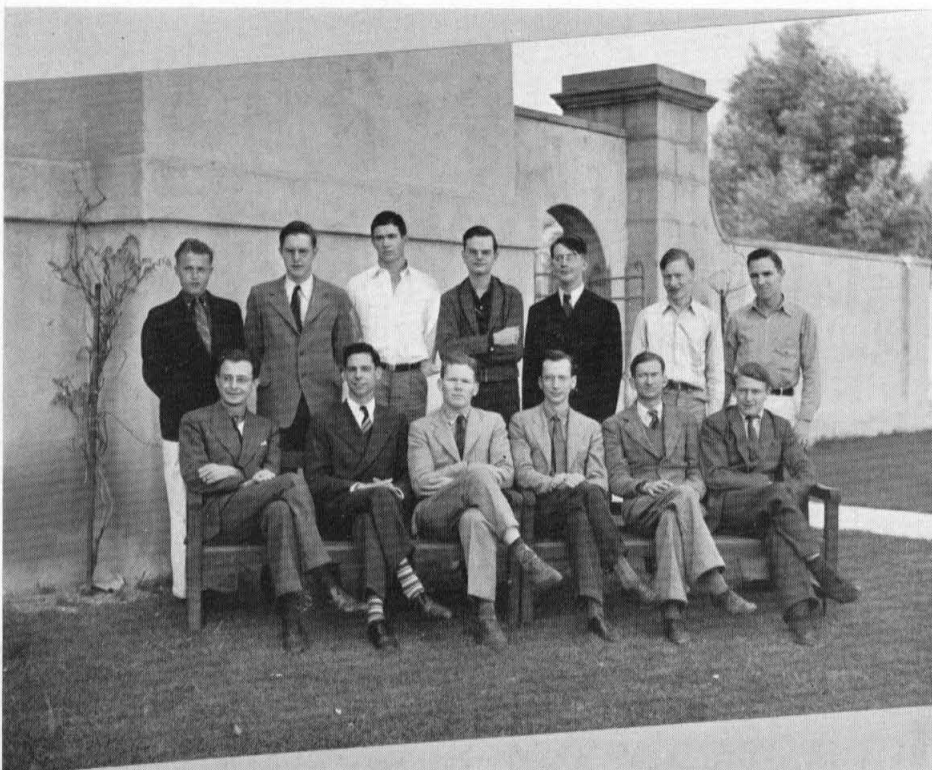
## THE GLEE CLUB

Meeting once a week under student management and supervision, the Caltech Glee Club or Men's Chorus forms a group of about two dozen men who get together to enjoy the vocal art. An appearance in Culbertson Hall sometime during the term at a regular assembly, and several outside performances are scheduled for the year's work of the organization.

Recently, participation in the annual Tournament of Roses and aiding the Tech band at athletic rallies and contests has been added to the activities of the chorus, and in the past, several radio performances have been included in the list of concerts. Occasionally the Glee Club will travel to other neighboring colleges to present concerts to their students.

The splendid work of the organization has been carried on during the past year by student officers of the chorus.

Other active organizations on the Tech campus include the Newman Club, a group of Catholic students; the Episcopalian Group; a Chess Club; a Geo-Paleo Club; and an Aero Club. Organized this year was the Caltech Musicale, an organization which gives weekly recorded concerts of the best in music.



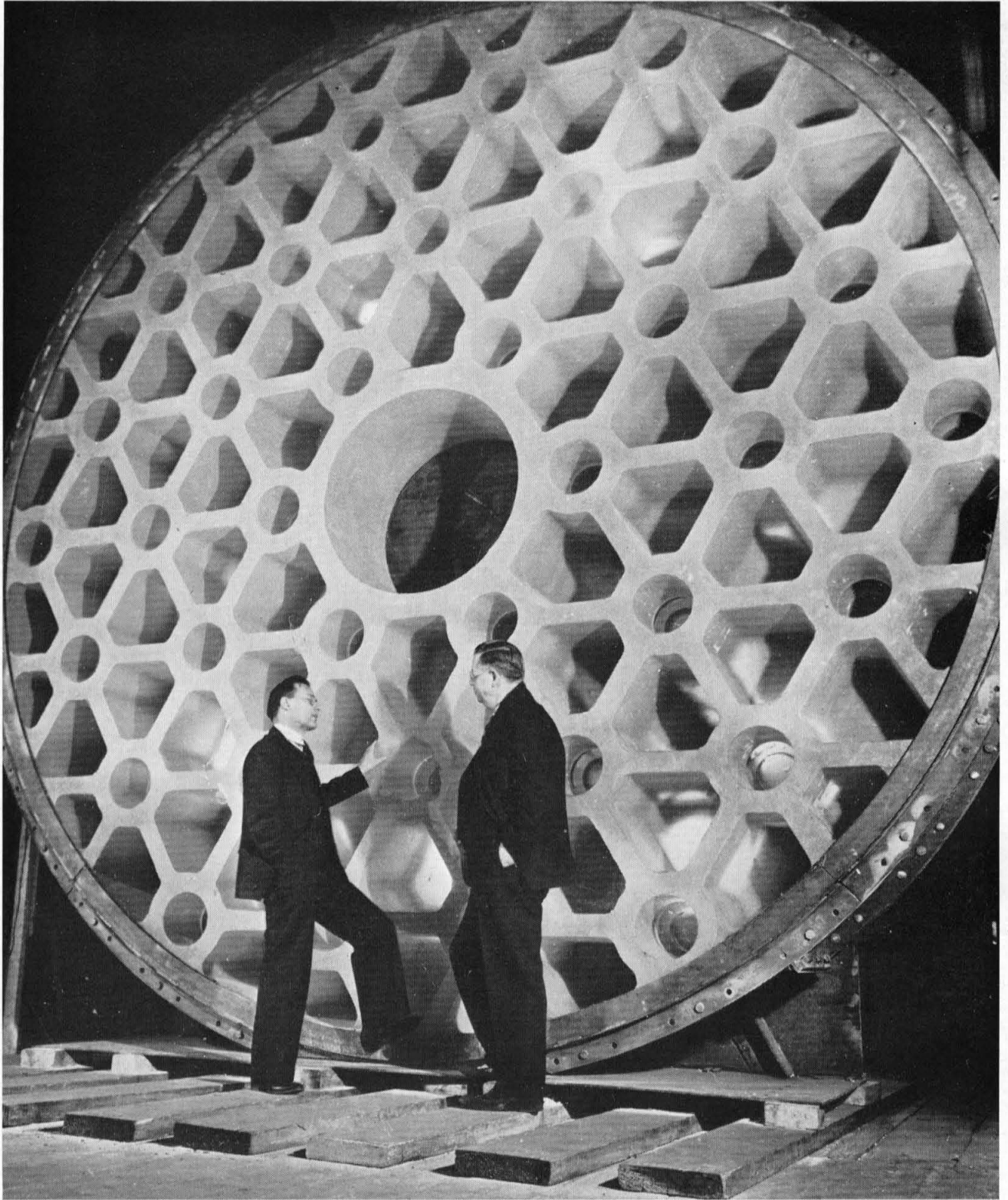
**First row:** Baldwin, Dennis, Evans, Jones, Moore, Wilbur; **second row:** German, Lee, Lavender, Parker, Harris, Trindle, Bertness.

THIS book is dedicated to the new Mt. Palomar Telescope, a monumental work of modern science and engineering. This great accomplishment has inspired the Mt. Palomar theme, interweaving the pages of this book.

It is to great accomplishments that we devote the following pages. Only through the industry of the organizations here represented were the innumerable practical difficulties, separating a dream from a reality, overcome.

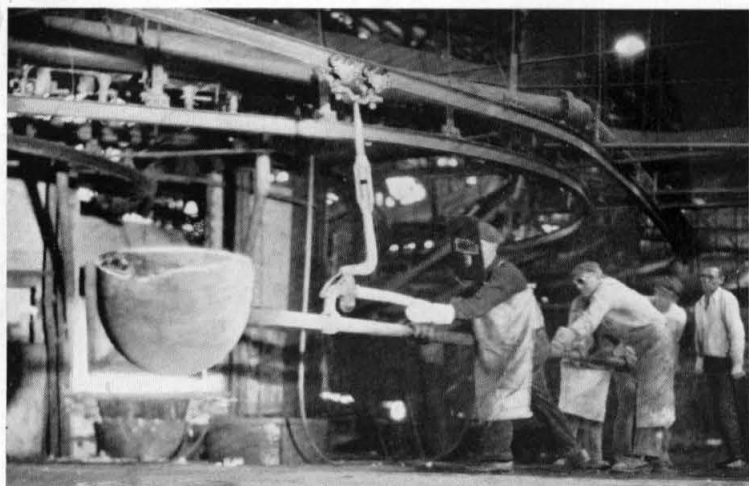
These are the organizations to which Caltech men may look for past accomplishment. These are the organizations to which men may look for future achievement.

# MAKERS OF THE WO

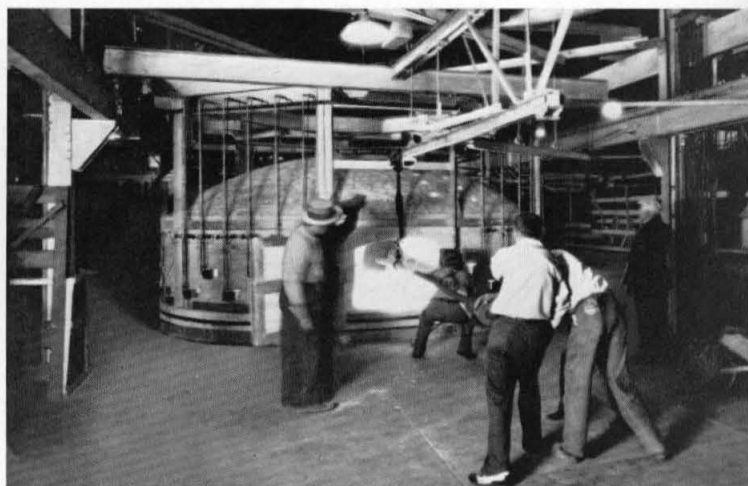


**CORNING**  
*means*  
Research in Glass

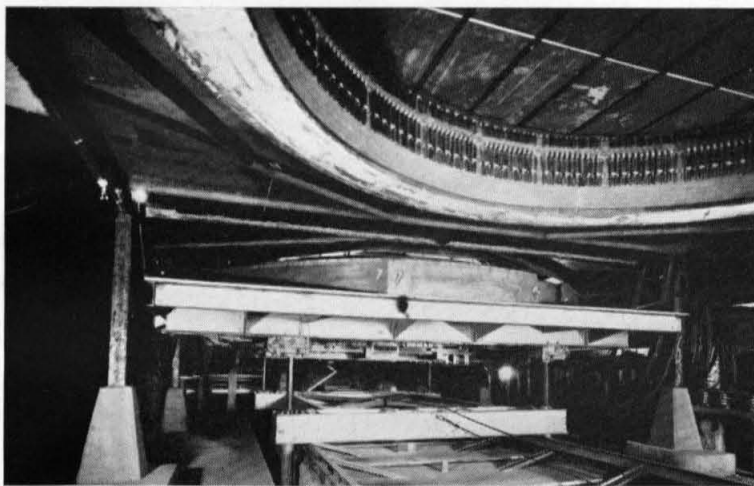
# WORLD'S LARGEST EYE!



1. Ladle of molten glass on way to "bee-hive."



2. As the door of the "bee-hive" swings open the molten glass is poured in the mold.



3. Upper foreground shows inside of annealing oven with electrical heating units.



4. Out of the annealer, the mold which formed ribbed structure was removed before shipment.

**T**WO important considerations led to the commissioning of Corning Glass Works to make the world's largest telescope mirror disc—the company's established manufacture of low-expansion borosilicate glasses, known under the trade-mark PYREX, which would not distort images under temperature changes, and a long tradition of painstaking research in glass.

Corning enthusiastically undertook the Herculean assignment, and one by one overcame the obstacles. A glass mirror 200 inches wide ordinarily would have had to be 34 inches thick—a mass of 40 tons, too heavy for delicate maneuvering. But by means of a geometrically designed mold, a ribbed underside was constructed which provided essential rigidity, yet cut the weight in half!

Pouring the batch was another big job. After extensive experimentation, the old-time method of hand lading finally was adopted. One hundred and four ladles were poured.

Then came annealing, which required 11 months of gradually reducing the temperature of the disc in an electrically controlled oven—often by as little as one degree a day. Only by this slow process of cooling could cracks and strains, which would distort light reflections, be prevented.

The finished product represented several years of research and manufacture, yet it was the seventh in a series of increasingly larger discs cast by Corning. Truly a remarkable tale of research in glass!

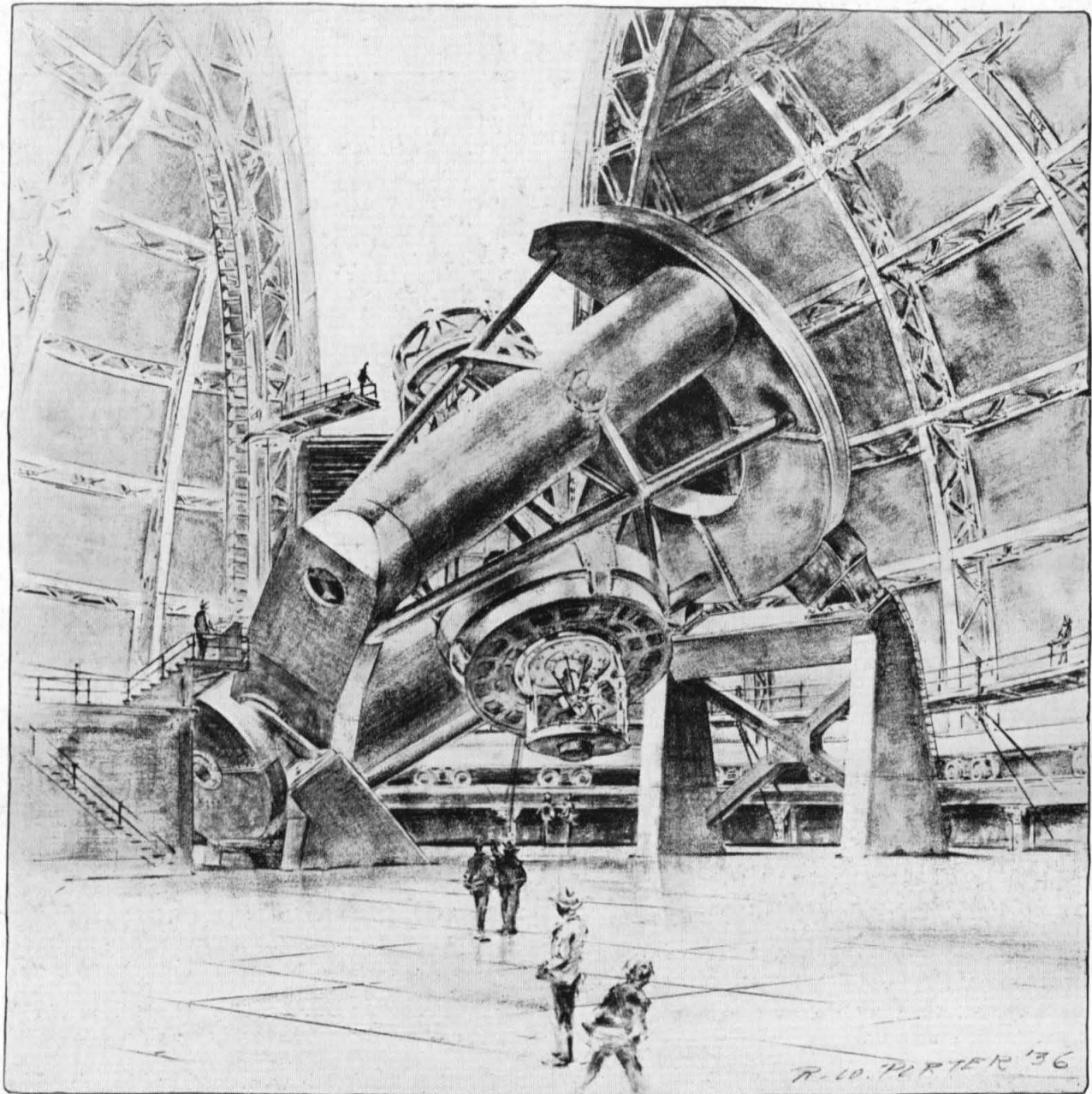
## CORNING GLASS WORKS

Corning



New York





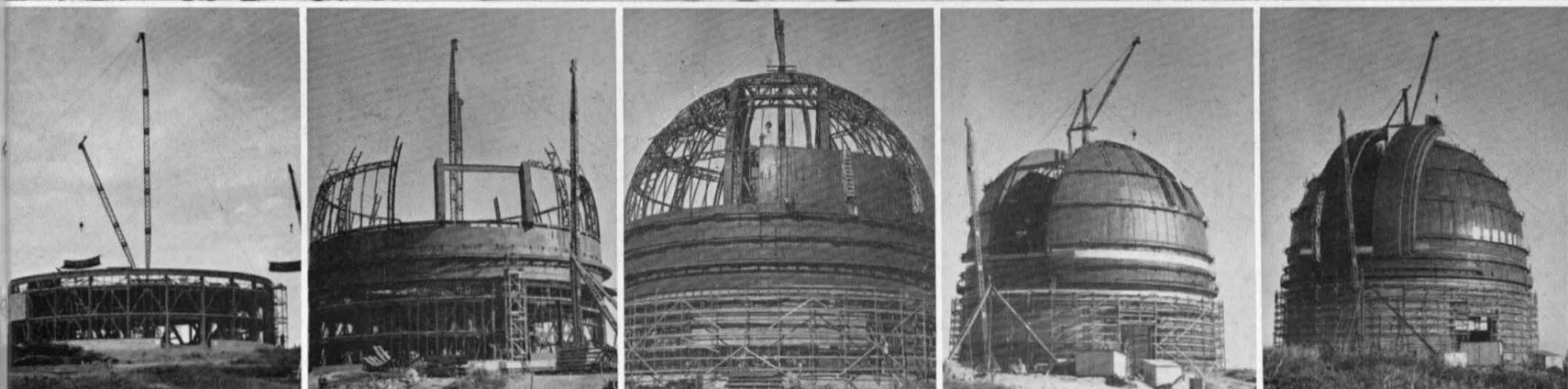
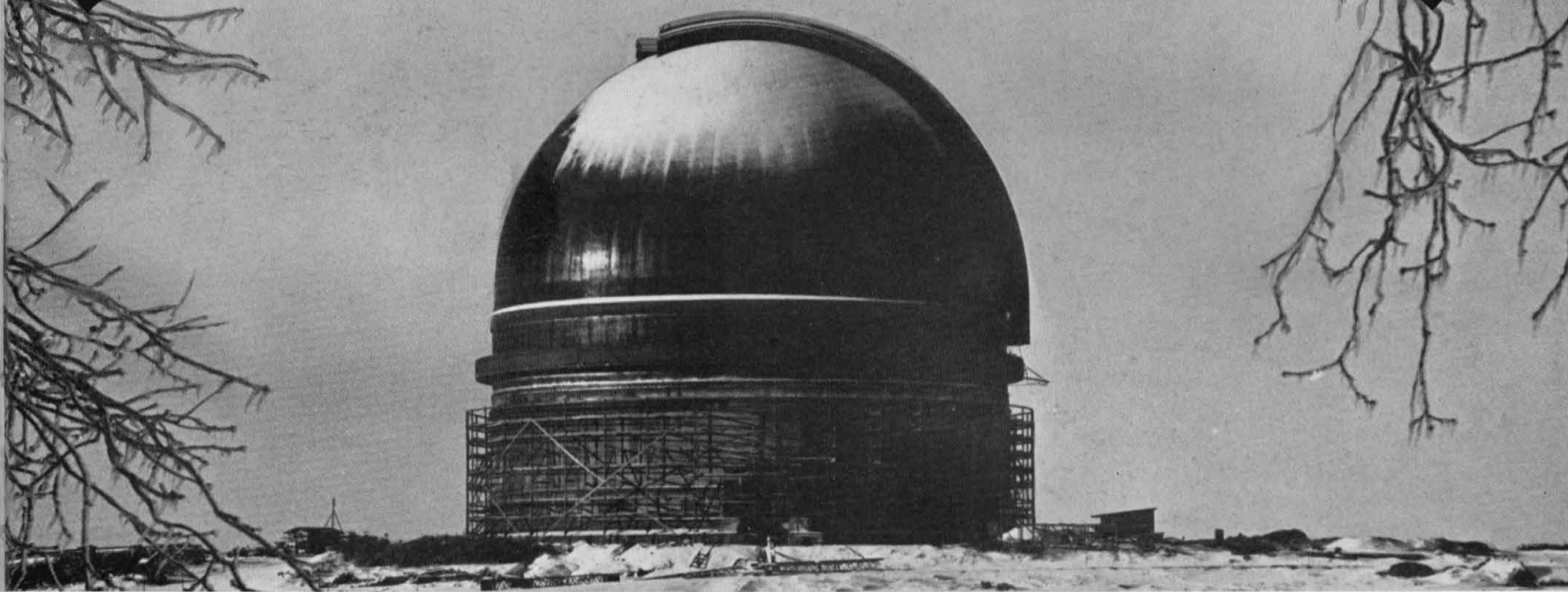
## MOUNTING THE PALOMAR

### A 75-Ton—75 Foot High Steel Frame—Delicately Balanced

But the great mirror would be useless without a supporting structure. So, at the South Philadelphia plant, the Westinghouse Electric & Manufacturing Company built the mounting which consists primarily of the mirror tube and the yoke. The tube alone is 22 ft. in diameter by 65 ft. long. The giant horseshoe member of the yoke is 46 ft. in diameter and 54 inches thick. The entire mounting is of hollow tubular and box structure fabri-

cated by electric welding. It is carefully designed to give maximum rigidity with minimum weight. Even so, the complete structure weighs about 500 tons, and yet, it is so accurately balanced that only 50 ft. lbs. (about 1/165,000 horsepower) is necessary to rotate the telescope in operation. Only the most scientific manufacturing facilities such as Westinghouse offers, could build such precision into so large a structure.

# AN ACHIEVEMENT IN STEEL



PHOTOGRAPHS BY T. V. WATTERSON

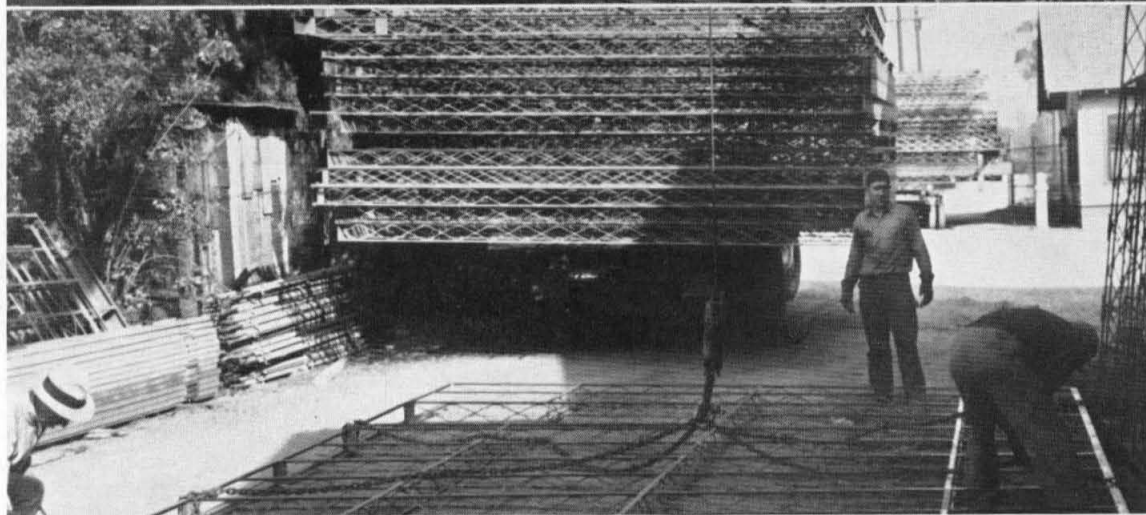
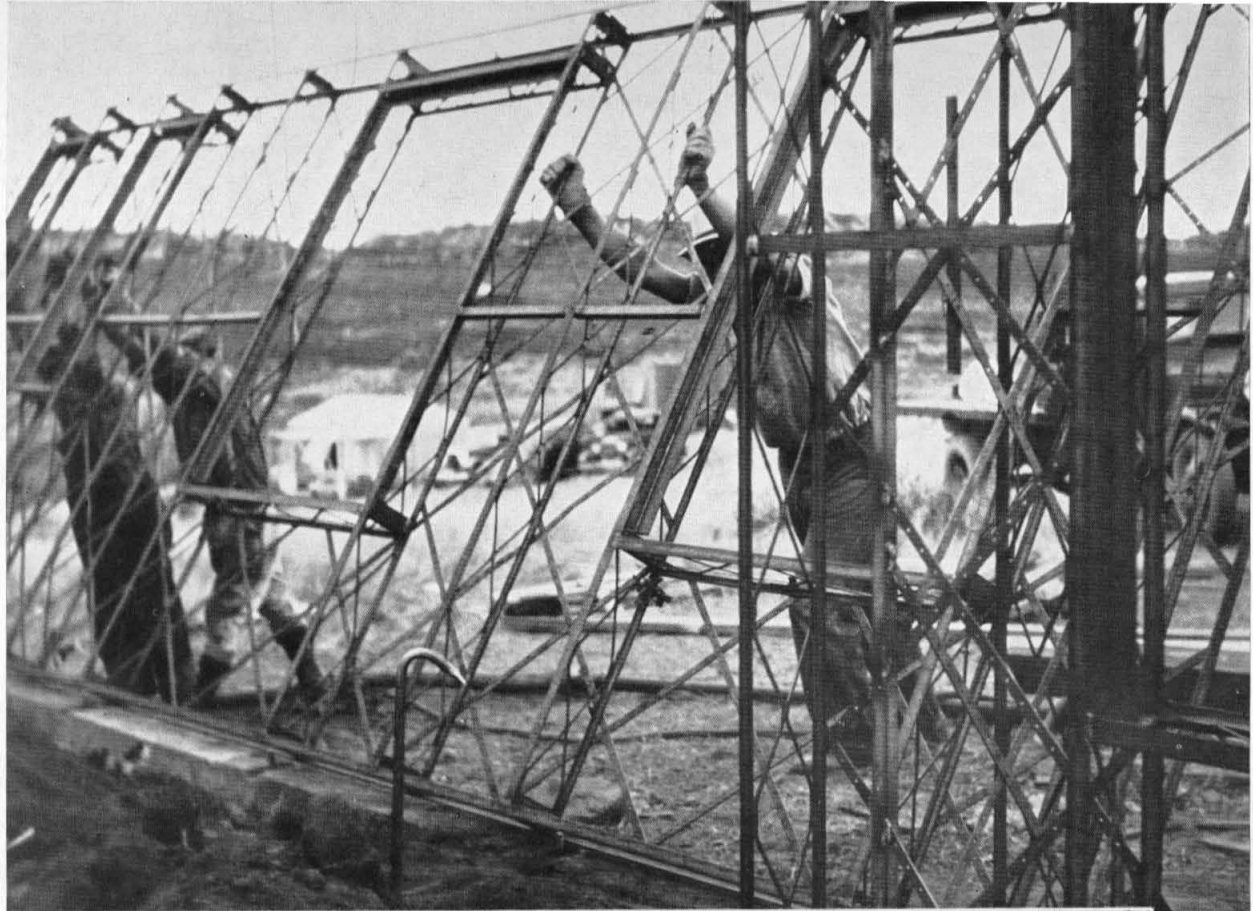
## THE 200 INCH TELESCOPE DOME

A Tribute to the California Institute of Technology, a Demonstration of Progressive Engineering and Industry and a Monument to Scientific Venture.

### CONSOLIDATED STEEL CORPORATION

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Using

# LATISTEEL FRAMING

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Construction to Many Types of Buildings

**LATISTEEL CORPORATION**

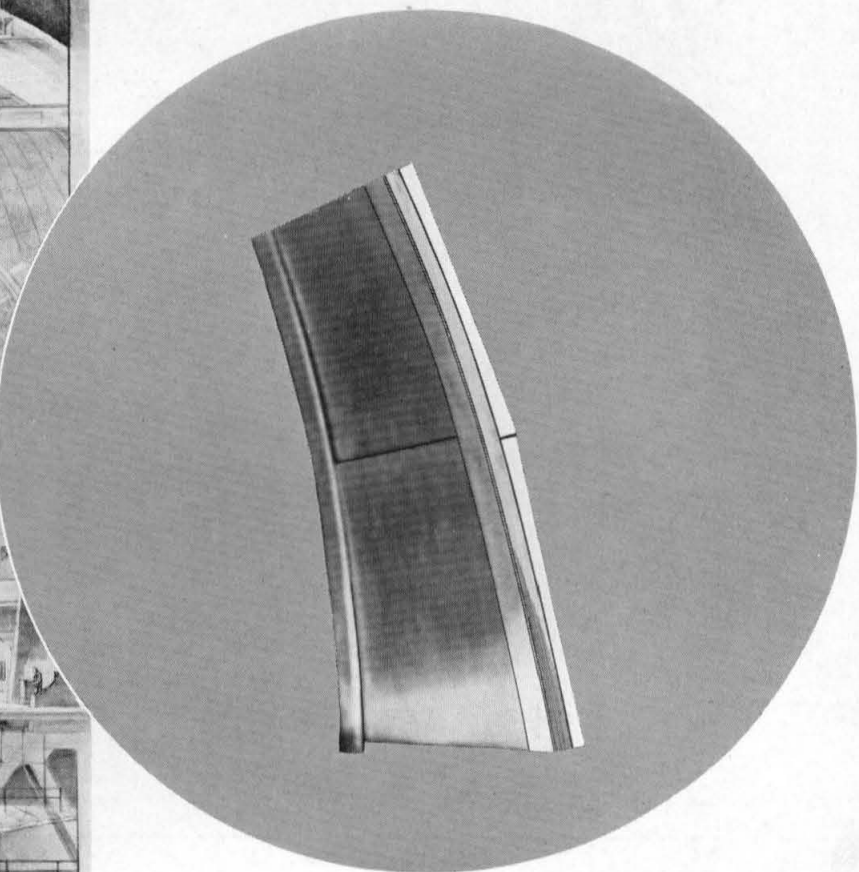
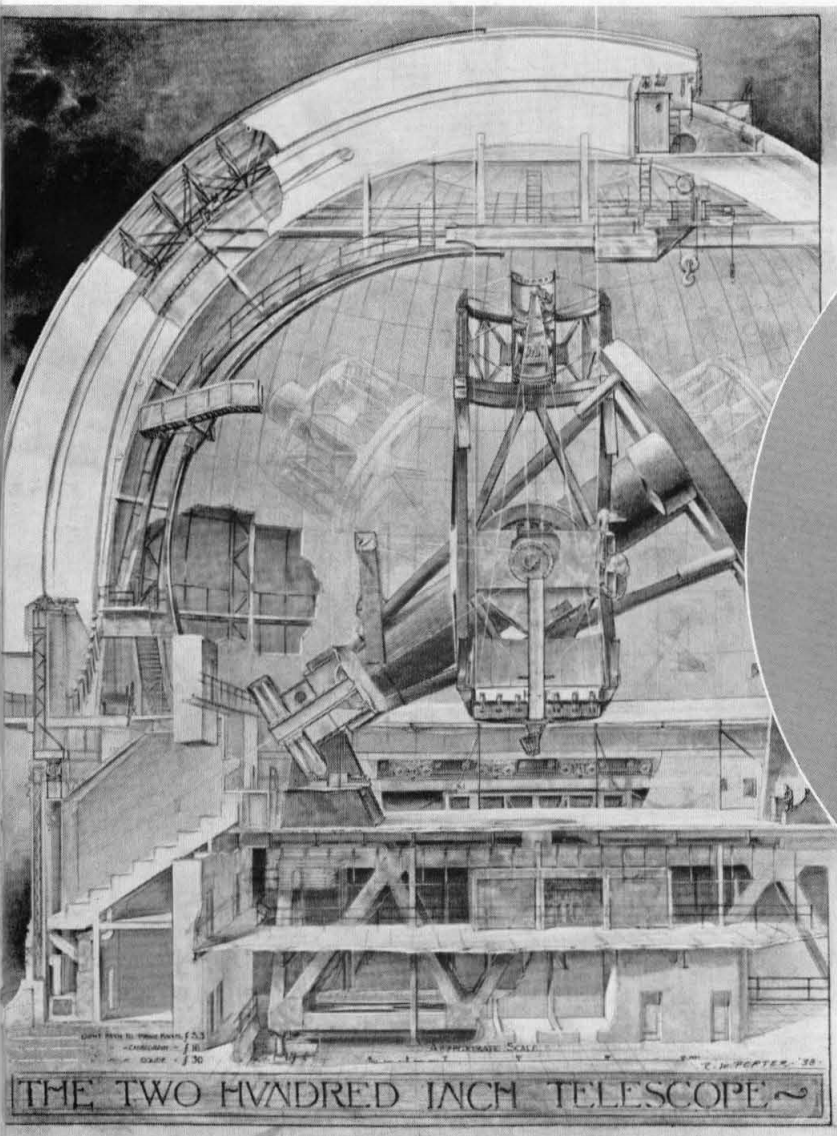
OF CALIFORNIA

3110 EAST FOOTHILL BLVD.

PASADENA, CALIFORNIA

# Palomar Dome

*is Insulated to Protect the 200-inch Telescope From Wide Variations of 120° (Daytime) to -5° Nighttime Climate*



Cool night air enters the dome from sunset to dawn through the huge dome opening. This low temperature is maintained throughout the day by insulation, so when the shutters over the opening are again rolled back at sunset, the air temperature inside and outside the dome are substantially the same. Insulation makes it possible to maintain a uniform temperature level during each 24-hour period throughout the year—the level depending on the probable evening temperature.

The all-metal Alfol insulating panels used are fabricated to the contour of the dome and they


form part of its structure. Pan shaped 5-inch thick trays of light steel hold the 12 layers of aluminum foil insulation which protects the telescope against temperature changes. The sheet aluminum face surface of these panels form the modern architectural finish of the inside dome surface.

Outside walls and inside walls and ceilings of the concrete dome building are also insulated with Alfol, in loose form. Alfol will insulate, also, the giant shutter and diaphragm of the 200-inch reflector.

## ALFOL INSULATION CO., INC.

155 E. 44th Street

New York City



*Thank You...  
California Tech*

**FOR YOUR SELECTION OF  
SKF BEARINGS FOR THE  
LONG GRIND OF THE NEW 200-  
INCH TELESCOPE MIRROR!**

*Two giant SKF Bearings, produced for California Institute of Technology to be used on the grinding table on which the 200-inch mirror is to go through the five-year finishing process. They are the most accurate giant anti-friction bearings ever produced. BELOW: The giant mirror after casting by Corning Glass Works, Corning, N.Y.*

● You are planning, California Tech, the longest grind in the world... a five-year job of grinding the famous 200-inch telescope mirror now cooling at Corning, N.Y., to a new high in accuracy. It will be within one millionth of an inch from the true!

Lay minds are staggered by mammoth mechanical or astronomical things that are so uncannily close to perfection. But to SKF men all over the world, trained to thinking in terms of precision manufacturing, news of your selection of SKF Bearings for this delicate grinding

operation brought a definite feeling of pride.

Let us tell you about the two giant SKF Bearings that have been delivered to you. They are almost as tall as a man. They are the world's closest twins. The difference in the diameters of the two bearings is exactly three ten thousandths of an inch. The roundness of the bearings is within half a human hair's breadth of sheer perfection.

Nowhere else on earth... and quite likely nowhere on the millions of planets that will be scanned through the great telescope, will giant anti-friction bearings be found that are comparable in accuracy with these.

\* \* \*



**SKF**  
**BALL & ROLLER BEARINGS**



SKF Industries Inc., Front Street  
and Erie Avenue, Philadelphia, Pa.

# Hauling the 20-ton Mirror

Since the beginning of the Palomar project Belyea has transported the major units

From the day in April, 1934, when we unloaded the 102-inch checking mirror in Los Angeles and moved it to Cal-Tech, we have handled most of the material and heavy telescope pieces both in the region of Pasadena and up the Palomar Mountain. There was the heavy steel mirror case for the big 200-inch mirror, steel for water tanks and structures, and finally the valuable 200-inch mirror glass . . . Each of these was quickly and safely handled by experienced men and modern equipment.

Top Left: Transferring the 200-inch mirror from railroad car to Belyea truck. Below: Enroute from rail to school with the big glass.



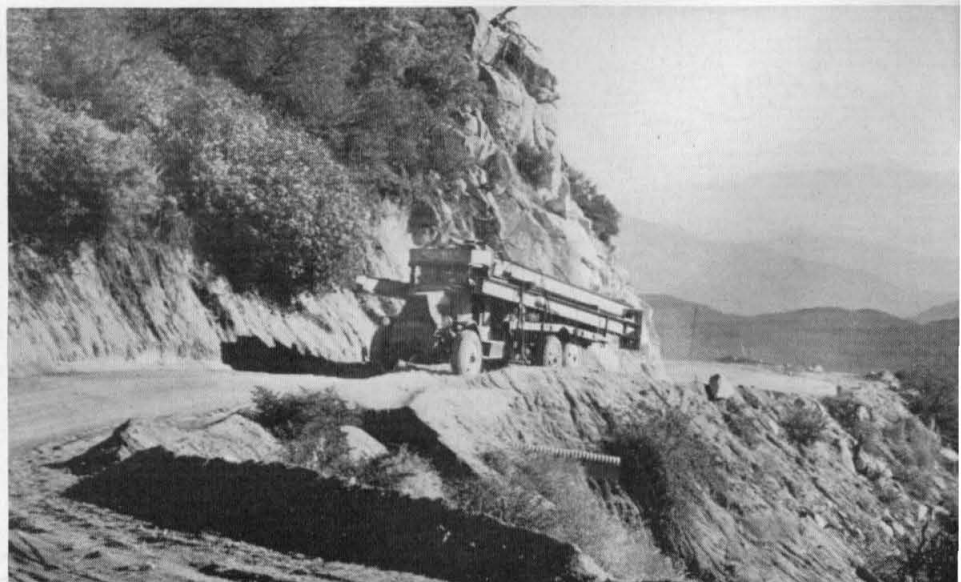
Lower Right: Trucking steel up Palomar Mountain.

Over tortuous, mountain wagon-roads we hauled the first big loads to the telescope site. We blazed the trail for science to follow. Belyea goes forward everywhere in the West leading the vanguard of progress.

## BELYEA TRUCK COMPANY

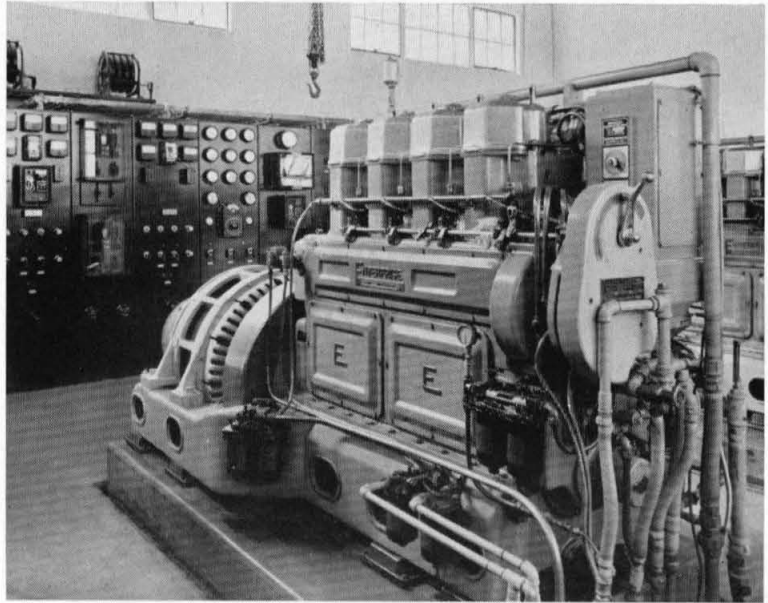
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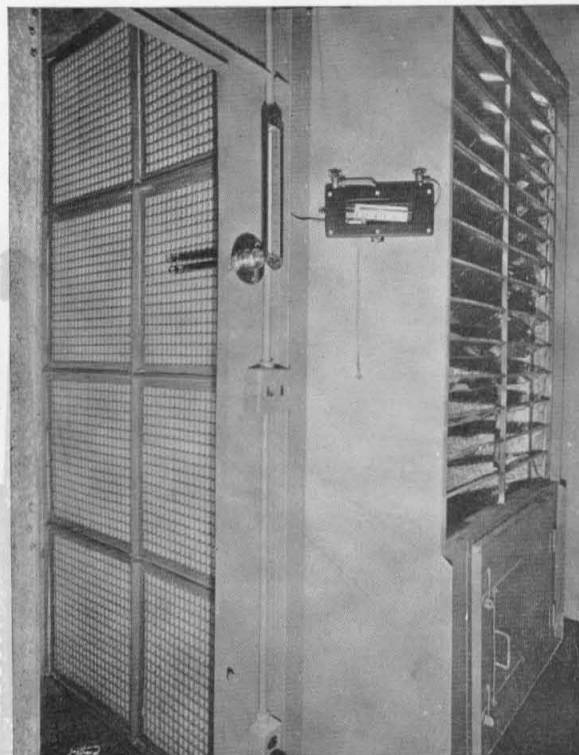
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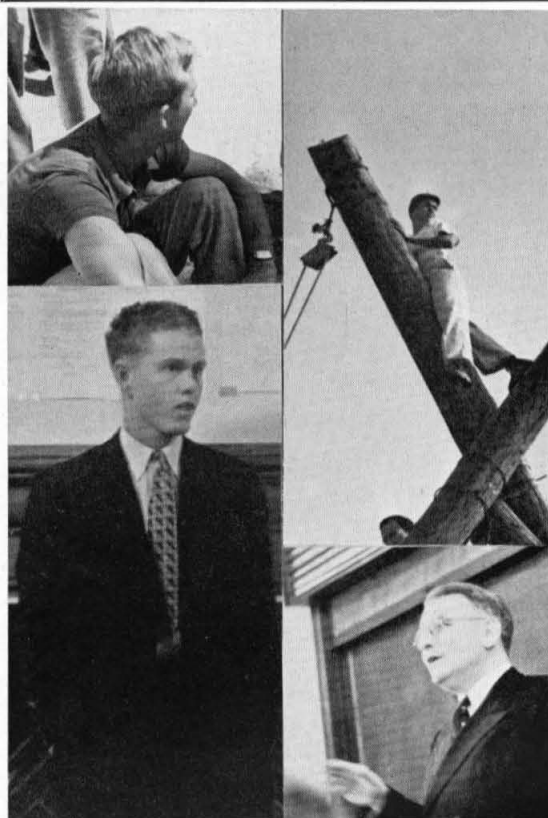
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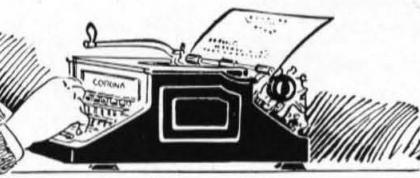
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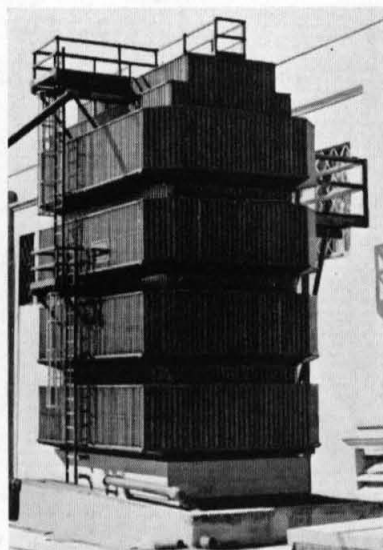
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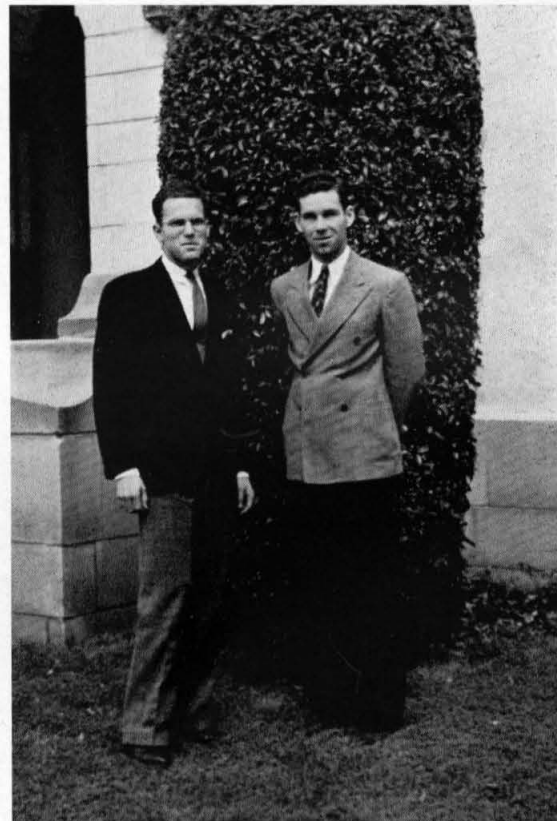


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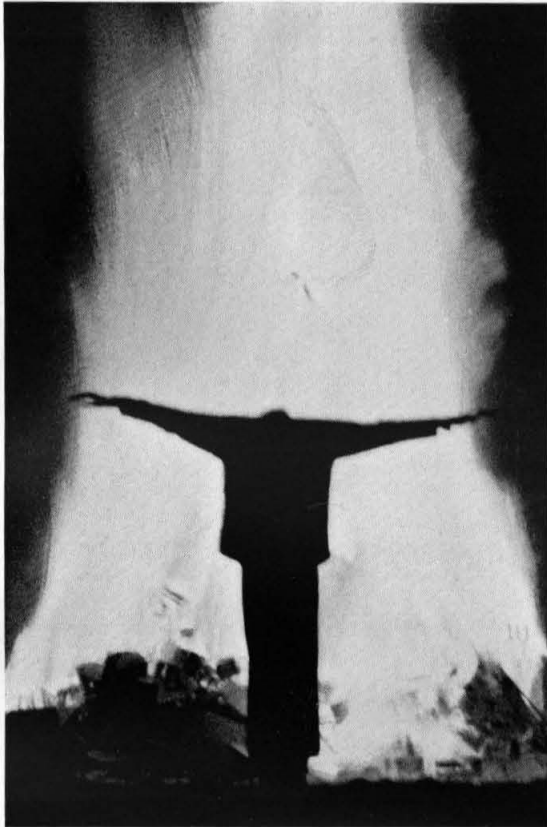
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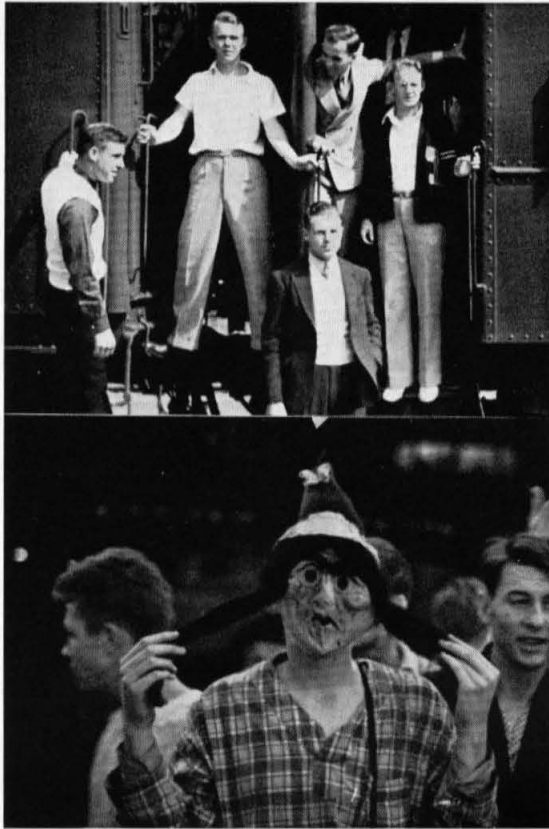

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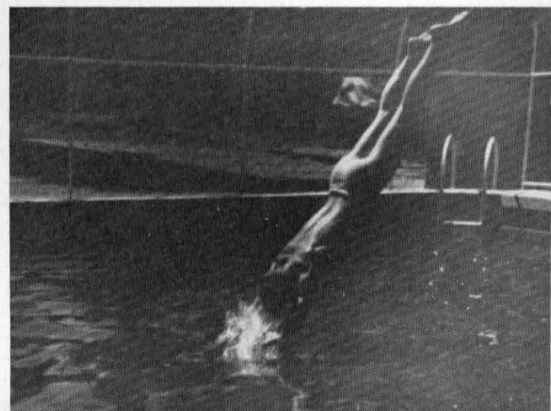
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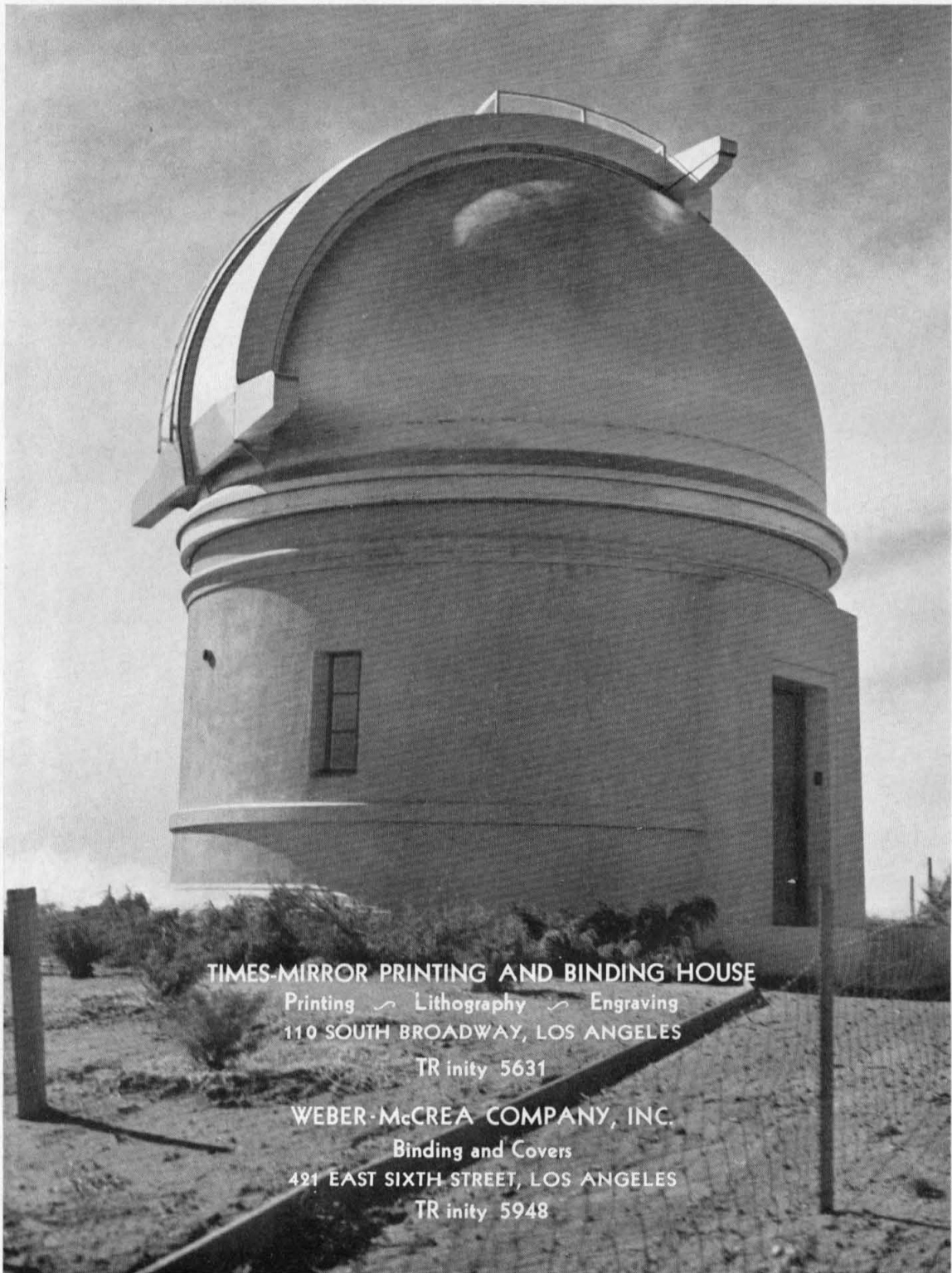
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