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YEARBOOK



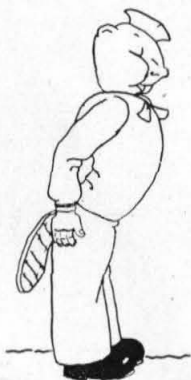
Millikan
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INTRODUCTORY NOTE

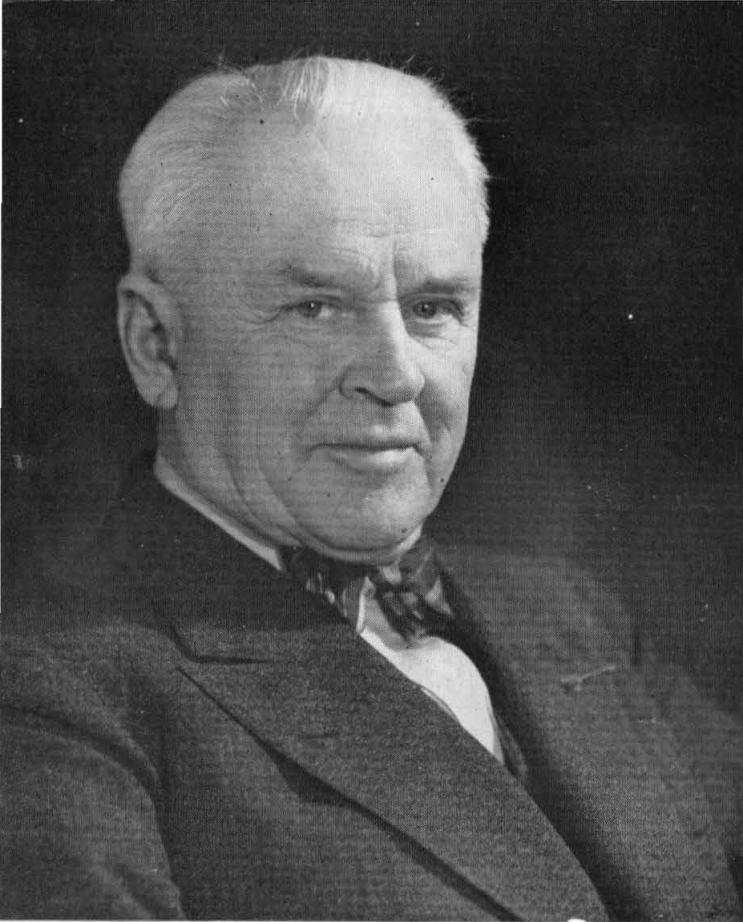
IN THE SPRING 1944 the Associated Student Body of the California Institute published a record, mainly pictorial, of the academic year which had just closed. In the belief that such a record will be of interest to prospective students, as showing what day-to-day life at the Institute is like under war-time conditions, the Institute has reprinted this Year Book. Some rearrangements of material have been made in order to include information about freshman admission requirements, expenses, and subjects of instruction for the first year. This information will be found on page 33 and the following pages.

Acknowledgment is made to the Student Body for permission to revise and reprint the Year Book; to the Editors, Tom Hudson and Dean Johnson, for the time and effort involved in producing the Year Book; to G. Whyte for the "eager beaver" cartoons; to Grant Dahlstrom of the Castle Press for invaluable advice on technical details; to Dee Allen for the picture on page 24; to Don Johnson for the Senior pictures; to John Sogorka and Bill Kohlhaas for miscellaneous pictures; and to all the students who helped in the work of printing, selecting, and layout of pictures.



CAL TECH
YEAR BOOK
1943 - 1944

EDITORS: TOM HUDSON - DEAN JOHNSON



F O R E W O R D

THIS CALIFORNIA INSTITUTE YEARBOOK is very unlike any of its predecessors. It is the outgrowth of a situation unique not only here but throughout the world. Never before in history has a generation of men been given such opportunities and such responsibilities, both terrifying and inspiring, as are upon our generation, particularly upon men of our interests, aptitudes, and training. For we are now in the greatest crisis in human history in which the freedom and the peace of mankind for long years to come depend upon how we do our part in the present struggle, for this struggle has rightly become known the world over as a war of scientists and engineers.

For the past quarter of a century the California Institute has striven to serve the needs of this modern world: first, by untiring efforts on the part of its faculty to push forward the bounds of man's scientific knowledge and its engineering applications; second, by intensively training a small group of highly selected young men to be fit to carry on the torch when it is passed on to them from the hands of the masters with whom they have been working and learning by the most effective of all methods, the power of example; third, by requiring every student who in peacetime goes through this institution to spend not less than one-quarter of his time in broadening studies in the history of the past, including the fundamentals of economics, government,

literature, ethics, and philosophy, i.e., *in acquiring for himself the accumulated wisdom and accomplishment of the past.*

That combination fits perfectly into the spirit, the atmosphere and the tradition of the United States Navy, which has also sought to produce men capable, on the one hand, of themselves handling every emergency that can arise on one of the new scientific wonders of the world, a modern battleship, and on the other hand of upholding the dignity and the finest ideals of the United States in the world contacts that every Navy man is destined to make. The intimate association that the California Institute and the Navy are having in this crisis is bound, I think, to leave something of permanent value with the Navy men, for they surely will catch while here something of the California Institute's spirit, of initiative, of application, of reasoning power and of accomplishment. On the other hand, the Navy's presence here is going, I hope, to add something of permanent value to the California Institute, especially through assisting in developing here permanently habits of greater orderliness, of greater discipline, and of tough physical training, not for a few gladiators as in the past, not only here but everywhere, but for every man who in the future comes to the California Institute to get the finest possible preparation of both body and mind for the strenuous life that lies ahead.

The California Institute gives its Navy students, whether graduates or undergraduates, an enthusiastic welcome to its campus and its halls, and hopes that the whole student body, whether in uniform or out of uniform, will become this year integrated into *a single, compact body of California Institute men.*

Robert A. Millikan





GRADUATION

AT THE Civic auditorium in the ceremonies generously attended by friends, relatives, and the entire V-12 unit at Cal Tech, one hundred and twenty-five men received their coveted certificates and degrees from the hands of Dr. Millikan on Friday afternoon, February 18, 1944. The ceremonies were begun with the Invocation and Chaplain's Address by the Reverend Lloyd C. Douglas, followed by the address, "The Nation's Accomplishments During Two Years of War in the Fields of Research, Production and Fighting," by Rear Admiral Wilson Brown, U.S.N., Naval Aide to the President. Then came the conferring of degrees, and last the address, "The Year's Progress," by Dr. Millikan.



V-12 REVIEW

BEFORE the Commencement exercises, the V-12 unit marched to the Pasadena Civic Center. There, in the plaza facing the City Hall, the unit was reviewed by Rear Admiral Wilson Brown, U.S.N.; Rear Admiral Ralston S. Holmes, U.S.N. (Ret.); Dr. Robert A. Millikan; and Lt. Comdr. E. W. Mantel, U.S.N. (Ret.).





WILLIAM G. KERCKHOFF
LABORATORIES OF THE
BIOLOGICAL SCIENCES

SENIORS

*Graduated With Honor by Vote of Faculty. †Awarded Honor Key by ASB. ‡Member Tau Beta Pi

A·E



Warren Amster
Joseph Bruman
Dean Chapman*‡



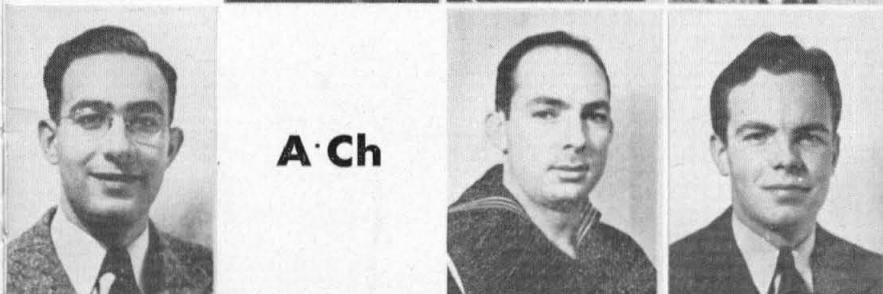
Franklin Knemeyer
John Morgan
Frank Smith†
Joe Solomon

Ch

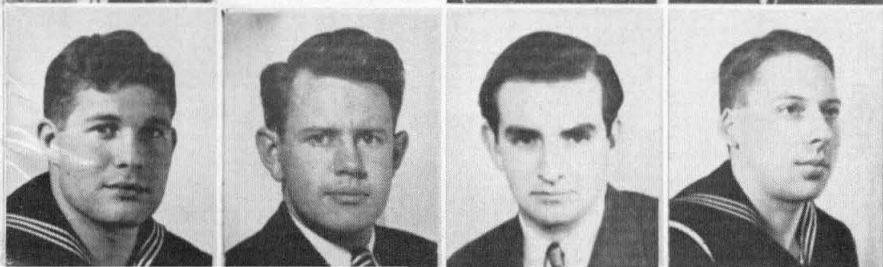


Frederick Ely
Willard Scott
Cornelius Steelink

A·Ch



Charles Trilling
Donald Keating
Carl Mattinson



Bruno Pilorz
Wesley Sandell‡
George Standard‡
James Tuedio

S E N I O R S

C·E



Hale Field
Alvin Galbreath
William Harland



Robert Mitchell*‡
Hans Nuetzel
John Wilson
Paul Winter

E·E



Frank Barnes*‡
Frank Booth
Jay Borden‡

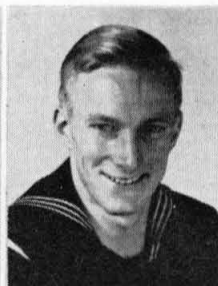
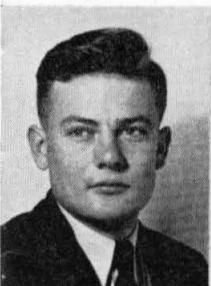


Herbert Cabral
Kenneth De Remer
Lewis Grimm
Elmer Hall

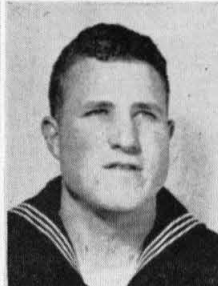


Winfield Hughes
Paul Labanauskas
Warren Kott
Fred Morris

S E N I O R S



Wheeler North
Owen Olds
Carl Olson
Robert Parks*‡



David Rutland
Leroy Sanders
George Stimson
Doyle Wilcox‡



Paul Wolf

Ge



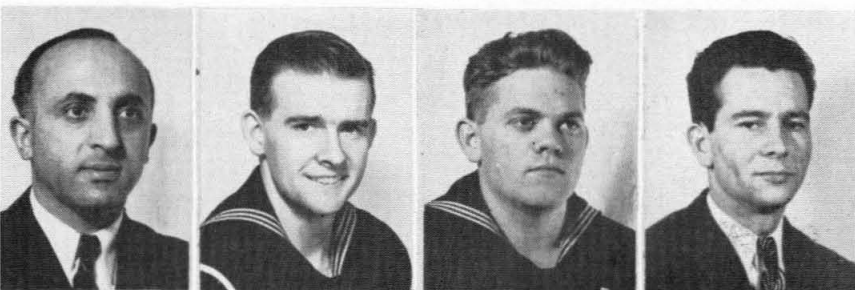
Stanley Day
Stewart Martin
Raymond Saplis

M·E



Charles Almquist
Rasit Alpan
Frederick Behrens

S E N I O R S



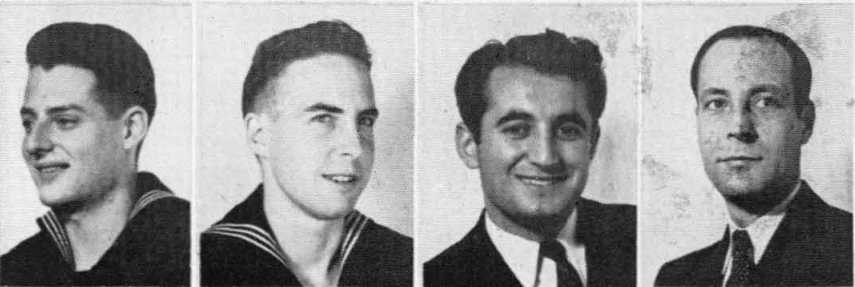
Ertugrul Birlik
William Bond
Ross Buchanan
Harold Curci



Edward Goldsmith
David Jones‡
John Nelson*‡
Herman Proctor



Rolf Protzent†
Stuart Rinker
Richard Seed
George Shor*



Richard Soike‡
Albert Spaulding
Sureyya Tanyildiz
Asim Unayral



John Warren
Hubert Witter

S E N I O R S

Ph



Cran Barrow
John Bauer
Arthur Carson



Howard Chang
Clifford Cummings
Forrest Gilmore*‡
Thomas Gilbert‡



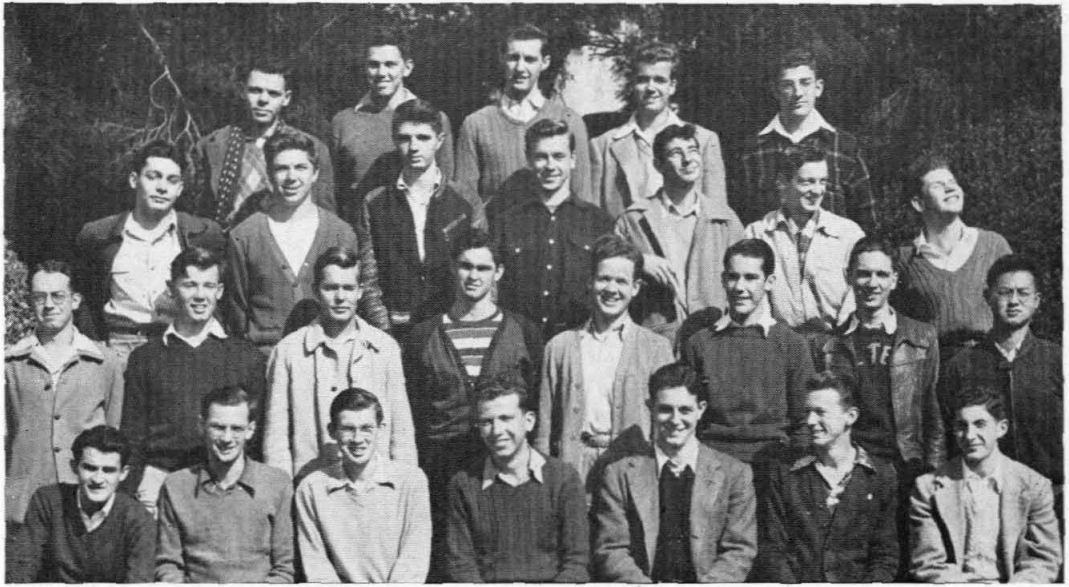
Louis Osborne*
Maurice Rattray
John Rempel*
Alois Schrad*‡

A·Ph



Willard Dodge
Jay Hammel
Robert Lester





JUNIORS & SOPHOMORES

Top row: Shenfil, Bower, Flynn, Bushong, Fein, Kuhn, B. Freeman, H. Schroeder, Talmadge, Darling, Kaplun. *Second row:* Weidman, Schlinger, Richeson, Robinson, G. F. Smith, Hunt, Reece, Yik. *Bottom row:* Mann, Eller, Kettler, Knopoff, Nicholas, Welliver, Newman.



SOPHOMORES

Top row: Bennett, Woodson, Jenson, Noon, Blumenthal, Robins, Herndon, Durst. *Second row:* Mounts, Metzler, D. Mueller, Ogler, Woodbury, Farmer, Tracy. *Bottom row:* Levy, Peterson, Meyers, Eimer, W. Dynes, Davis, Chinn.



NEW OFFICERS

Left to right: Doug Dethlefsen, First Representative; George Wilhelm, Treasurer; Stan Barnes, Second Representative; Don Tillman, Athletic Manager; Mac Atchison, Vice-President; Tom Norsworthy, Publicity Manager; Tommie Carter, President; Stan Clark, Secretary.

THE ASSOCIATED STUDENT BODY

THE ASB started the year in July with an overflowing treasury and a new low in membership. An assembly was given early in August to acquaint the new Navy men and incoming civilians with the student organization and the honor system. Led by Tway Andrews, President, and Bruno Pilorz, Vice-President, the Board of Directors, faced by an utterly new situation of guiding a student body composed partially of civilians and partially of Navy men, many of whom had come from other colleges and universities, successfully carried on the business of the student body during the year. On the Board were Tommie Carter, Secretary; Willis Bussard, Treasurer; Francis Odell and Don Tillman, Representatives at Large; Dick Seed, Publicity Manager; Mac Atchison and Jim Tuedio, Athletic Managers; Don Farmer and Frank Smith, Co-Editors of the *California Tech*; and Win Newell, Cheer Leader.

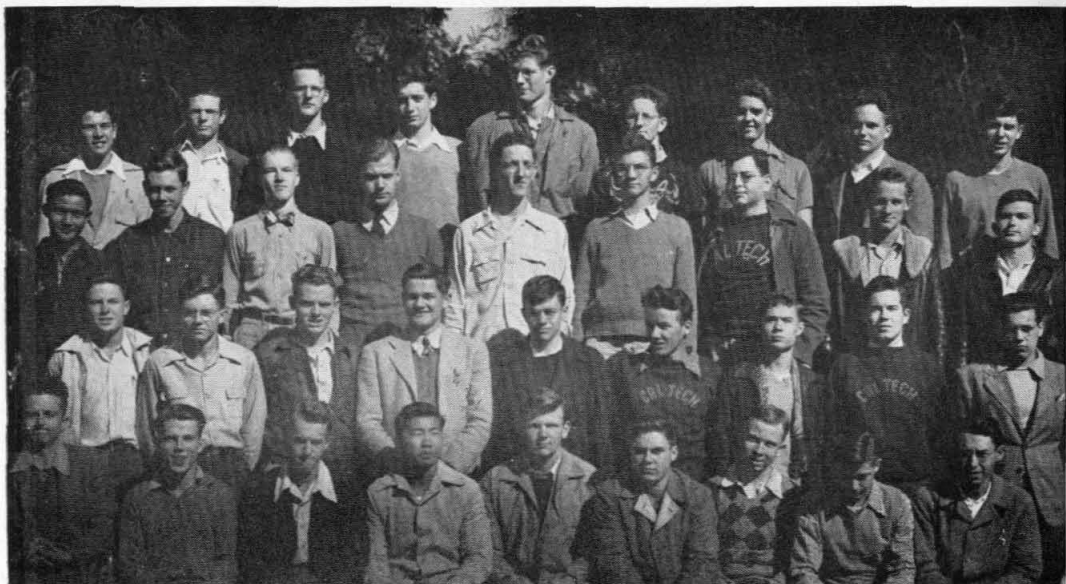
The Board exercised its authority in planning the budget, making awards and appointments, and supervising in general, student body activities. It did especially well in presenting two dances held at the Altadena Country Club, the first in November, featuring the very humorous songs of Nick Cochrane, and the second in January, with the smooth danceable music of Leighton Noble.

Among the still active groups of the student body was the Board of Control, combining with the Board of Directors on the Student-Faculty Committee and exercising its judiciary power in enforcing the honor system. Excellent jobs were also turned in by the Election and Publicity committees.



FRESHMEN

Top row: Mayta MacDonald, Moody, Gould, Gift, Cuthbert, Chaffee, Schmidt, Wade, Tietz. *Second row:* Brayford, Chapin, Horton, Lincoln, Gryder, Barnes, Peeler, Henigson, Turner. *Third row:* Ireland, Hammerlee, Youtz, Maillard, White, Hogness, Young, Wilford. *Bottom row:* Hufford, Anderson, McEwen, Woods, Bowen, Muntz, Dixon, Fagan.



FRESHMEN

Top row: Herzog, Sherwin, Westervelt, Beek, R. Smith, Burdg, Demuth, Barr, Cozens. *Second row:* Tang, Showell, Rasmussen, Sorem, Van Huston, Drury, Shaw, Moje, Roese. *Third row:* Keogh, P. Linam, Kirkendal, D. Stewart, Deardorf, King, Six, Gibbons, Golding. *Bottom row:* Stensgaard, Gardner, Lynn, J. Jones, W. Libbey, Bunnelle, Webber, Davis, Fisher.



Left to Right: Wesley Bunnelle, Treasurer; Bob Poolman, President; Don Farmer, Secretary; Stan Newman, Vice-President.

THROOP CLUB

WITH the Navy taking over the student houses, Throop Club was left the only civilian social organization on campus. Under Dr. Craig as faculty advisor, a Board of Directors was selected from men of former student house and Throop Club membership. A social program was immediately planned and the year was started with a stag party in the club house to acquaint the new fellows with the Club. Next came several exchange record dances to help the members meet local girls. The high point of the program was marked by an ice skating party, a bowling party, and a theatre party in quick succession. Following the example of Ricketts and Fleming in former years, a barn dance was held at Mountain Oaks. It was a roaring success, and was repeated later in the year.

Throop Club's social life reached a grand climax in December when its gala semi-formal dance was held at the Altadena Country Club. This affair was one of the most brilliant events of the school year and served as a superb end for a well planned social program. Jack Warren and Dave Jones, co-social chairmen, deserve most of the credit for planning these events.

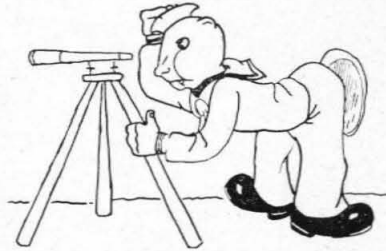
Since the draft board recently made it a policy to induct a Throop Club officer as soon as he is elected, the Club has had a busy time keeping its offices occupied. Elected at the beginning of the new school year were: Bob Poolman, President; Stan Newman, Vice-President; Wesley Bunnelle, Treasurer; and Don Farmer, Secretary. In spite of the ever diminishing number of civilian students and the consequent difficulties, Throop Club promises, for the coming year, a social program as entertaining and well diversified as ever.

SOCIETIES

A. S. C. E.

THE MOST ACTIVE of the engineering societies is the Cal Tech branch of the American Society of Civil Engineers. Under the guidance of Bill Harland, President; Bob Mitchell, Vice-President; Paul Winter, Secretary; and Neville Long, Treasurer, the society presented talks by several alumni, including one by Ken Schureman of the Sea Bees.

Since the election of its new officers, Ross Dana, President; Neville Long, Vice-President; Don Synder, Secretary; and Frank Clendenen, Treasurer, the society has increased its activities. A discussion of some pertinent engineering problems by important practicing engineers at its monthly meetings, and visits to the meetings of the organization's senior section in Los Angeles are among the society's recent doings.



S. A. E.

FULFILLING a long felt need for Tech men interested in automotive engineering, the Society of Automotive Engineers, youngest of student organizations at Cal Tech, received recognition early in the year as a Student chapter of the national Society. The year's activities included a visit to Vega Aircraft and a discussion of aircraft power plants by Mr. Carter of Wright Aeronautical Corporation. Officers of the S.A.E. were Glenn Lockwood, Chairman; Jack Kettler, Vice-Chairman; Doug Dethlefsen, Secretary.

A. I. E. E.

EACH MONTH two members have been guests of the Los Angeles Branch of the American Institute of Electrical Engineers for their dinner meetings. Arrangements are now being made for men distinguished in electrical engineering to give short talks at future meetings. Several members are now writing research papers to be read at the district convention being held this summer in Los Angeles.

The officers for the A.I.E.E. were Jay Borden, President; Bob Parks, Vice-President; Frank Lehan, Secretary. The new officers are Bob Lauterbach, President; Al Wolfe, Vice-President; and Al Robinson, Secretary.

Y. M. C. A.

THIS YEAR, Cal Tech's Y.M.C.A. continued and extended its service to the men on the campus. Under the leadership of Paul Ackerman, general secretary, the year began with a series of psychology lectures, followed by the dis-

cussion forum series in which experts in the fields of post-war planning, war marriages, labor questions, and race problems gave valuable information to groups of interested Navy and civilian men. The year's program of lectures, discussions, intercollegiate exchanges, and devotional meetings was climaxed by the Asilomar conference held at a camp near San Francisco.

The Y office and lounge in lower Dabney Hall are open to all Tech men, and the magazines, radio, and typewriters there are for their use. Personal and vocational counseling by Paul Ackerman has been of great help to many students. Officers for the year were: George Smith and Doug Dethlefsen, Co-Chairman; John Bushong, Treasurer; Merwyn Hodges, Secretary; Charles Cutler, Publicity.



A. S. M. E.

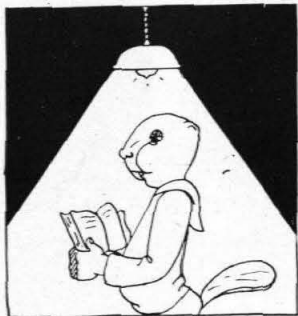
THE AMERICAN Society of Mechanical Engineers is the largest professional group on the campus. Activities during the past year consisted of presenting motion pictures and speakers, including an interesting talk on "High Frequency Radio" by Professor Pickering. First term officers were George Shor, Chairman; Ross Buchanan, Vice-Chairman; Dick Soike, Treasurer; and Jack Kettler, Secretary. Chosen for the second term by mailed ballots were Jack Kettler, Chairman; Don Greenwood, Vice-Chairman; and Birch Smith, Secretary-Treasurer. The officers were ably assisted by Professor Daugherty, faculty advisor.

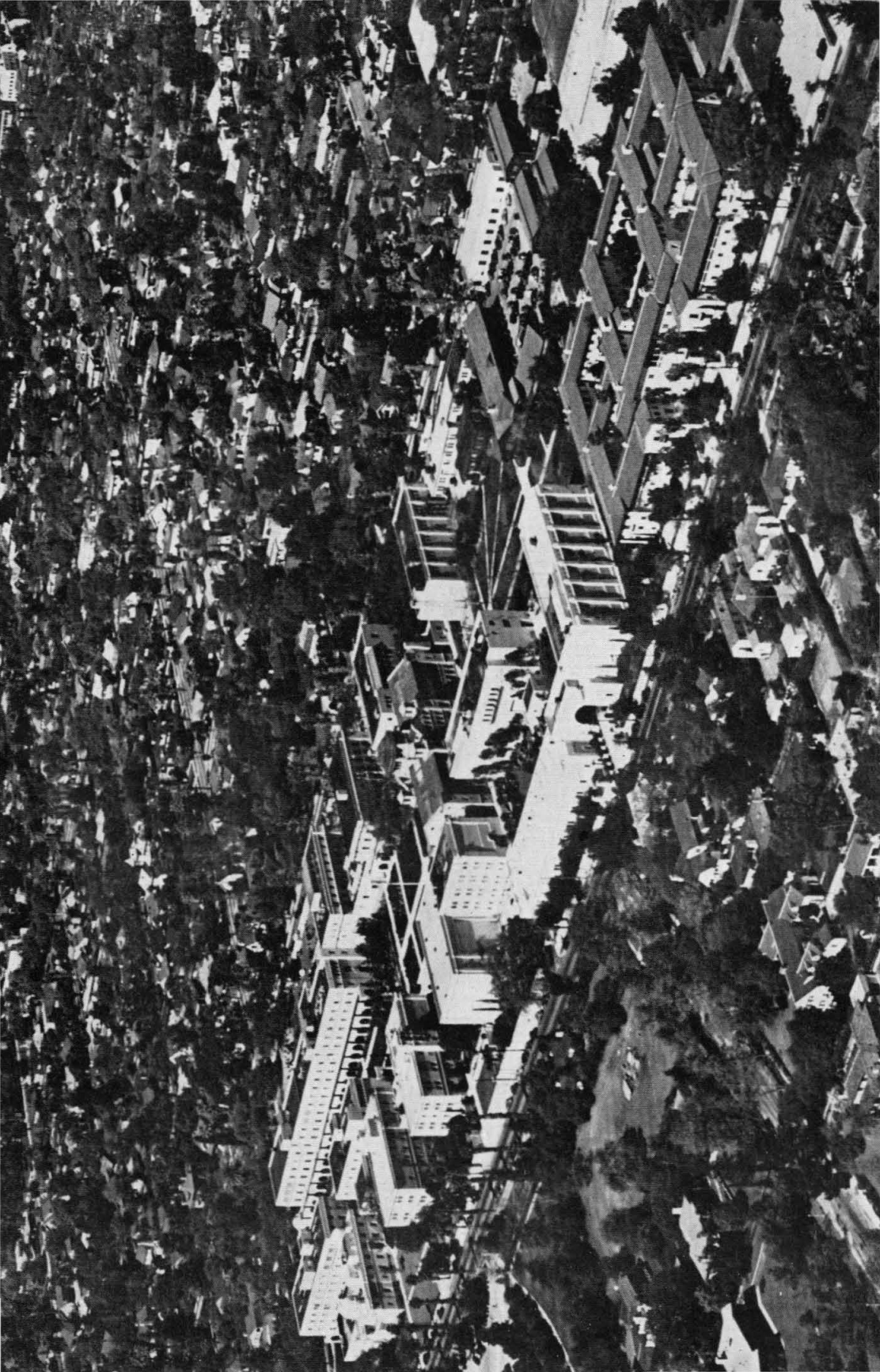
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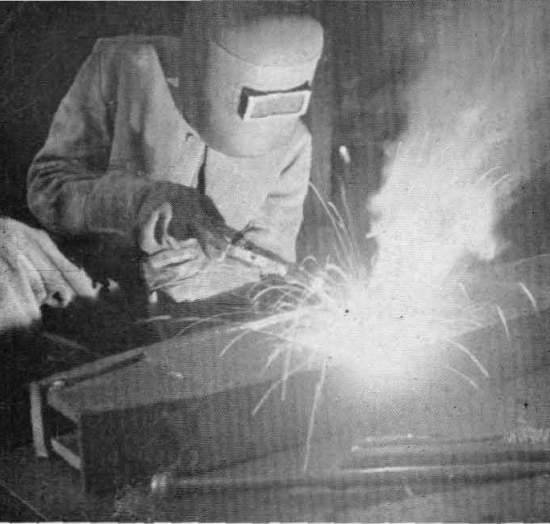
SELECTED FROM the scholastic upper fifth of the senior class and the upper eighth of the junior class, fall prospective pledges were entertained by the chapter at a picnic, which had as its outcome the election of seven seniors and three juniors. After the pledges had secured the autographs of all campus members and had finished wooden replicas of the Bent, their initiation was completed with a banquet at Pierre's. Dr. Bruce Sage, initiated as an honorary member that evening, was speaker for the occasion.

In the second semester was another election, followed by a banquet at the Athenaeum and the annual formal dance held in Dabney Loungs.

Officers for the year were: Jay Borden, President; John Nelson, Vice-President; Tom Gilbert, Recording Secretary; Dean Chapman, Corresponding Secretary; Robert Parks, Treasurer; and George Standart, cataloguer.







MONTH BY MONTH

JULY

The hectic, murderous four days of becoming sailors and students . . . registration . . . hours spent standing, sitting, sleeping in never-moving lines for issuing of uniforms and stores . . . the first addresses of Dr. Millikan and Lt. Comdr. Mantel given in the hot noonday sun . . . bitter rivalry temporarily forgotten at the Throop-Oxy exchange . . . groans of agony accompanying the stiff muscles of strength tests . . . the beginning of the popular series of USO dances on the campus . . . the narrow escapes of self-adopted "Murph" from Ma Wheeler's ration-conscious "kitchen" . . . the good ship RAM gets under way fitted out with a full brace of demerits and 0600 calisthenics.

AUGUST

The welcoming assembly when the student body got together to look itself over . . . the first ASB dance of the year at PJC . . . the Frosh intramuraling in softball, baseball, and basketball . . . Throop Club cleans house . . . popular Brighthouse analyzes figure-heads . . . interplatoon athletics begin with baseball.

SEPTEMBER

Graduation of Army and Navy aeronauticals and meteorologists . . . blood bank absconds with Tech's few remaining corpuscles . . . Mako and Budge give exhibition game on the Athenaeum courts . . . V-12 enjoys Bob Hope show at Civic . . . Mascot "Murph," claimed by his rightful owner, deserts the Navy . . . intramural football begins . . . epidemic of sore arms after persistent needling by medics . . . more strength tests for the Navy.

OCTOBER

Sophomore triumph over lowly frosh in the bloodiest Rodeo Day in years, followed by Rodeo Day Dance . . . finals week with bloodshot eyes and mid-night oil . . . vacation—ah! sweet sleep!



NOVEMBER

Most of us safely back after the departure of a few unfortunate ones on the San Diego Special . . . 30 new victims introduced to the carefully balanced diet of our lady of the purple hair . . . Army opens PX in Arms . . . Carter and mates elected in ASB voting . . . Saturday afternoon hikes for the Navy become popular substitute for the old nite watches . . . ASB dance at the Altadena Country Club.

DECEMBER

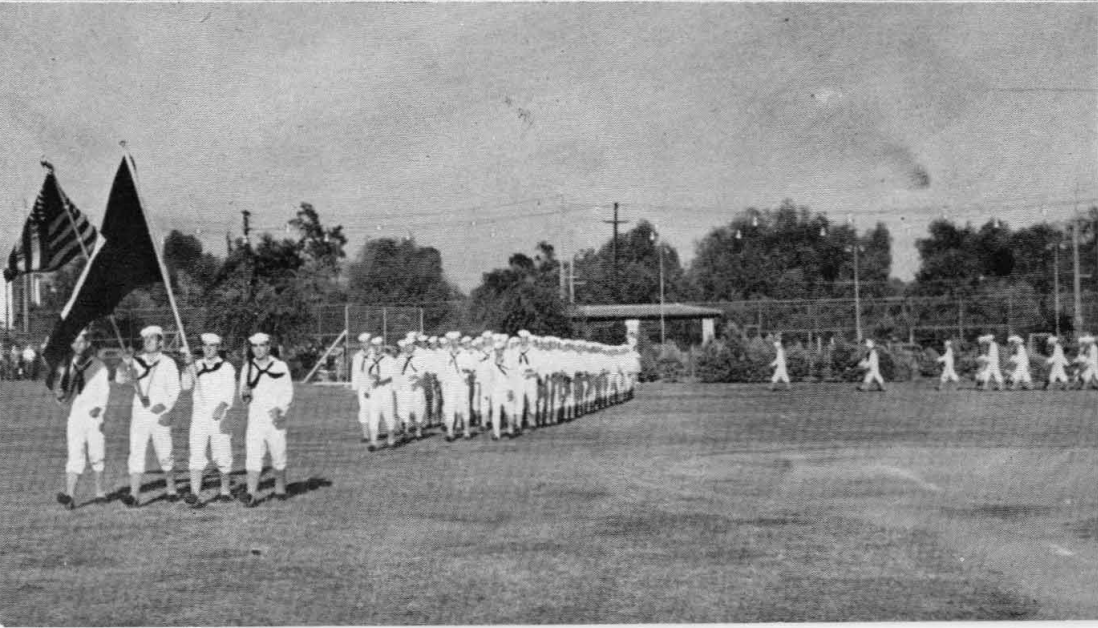
Gaiety flows in Throop Club Barn Dance . . . Tech basketball victory over USC . . . Navy aeronauticals graduated . . . Classes in elementary back-breaking begin at PJC gym . . . Tech CD covers campus with artistic network of hoses in bombless air raid . . . Blacker House explodes all day to the tune of nitrogen tri-iodide . . . Throop Club gives lavish formal . . . Interplatoon basketball begins.

JANUARY

Tech basketball victories over Redlands, USC, and UCLA . . . Civilians noting with interest the restrictions on draft deferments . . . another basketball win over Oxy . . . Frosh-sophs cut carpet at Altadena . . . year's final strength tests . . . Another ASB Dance at Altadena Country Club.

FEBRUARY

Plans made and carried out for highly successful V-12 Variety show . . . Millsaps wows Pasadena in one-night stand . . . Tech beats Redlands to win Conference basketball championship . . . Army PX folds under Army regulation . . . Seniors make annual pilgrimage to the Athenaeum as the guests of Dr. and Mrs. Millikan . . . V-12 throws a graduation dance with Boyer's orchestra at PAC . . . The "Tech" suspends publication . . . Nostalgia of the *Junior-Senior Prom the night before graduation, then finally the great day itself: the V-12 reviewed by Rear Admiral Wilson Brown, Commencement exercises at the Civic, marking the end of a college career for some, and the beginning of a naval career for others.*





Left to right: S. F. Murphy, Lt. (jg) U.S.N.R.; M. E. Morgan, Lt. U.S.N.R.; R. W. Lee, Lt. (jg) (DC) U.S.N.R.; E. W. Mantel, Lt. Comdr. U.S.N. (Ret.); E. B. McGregor, Lt. (MC) U.S.N. (Ret.).

V-12 COLLEGE TRAINING-PROGRAM

THE MEMBERS of the Naval V-12 College Training Unit here are indeed fortunate. Ordered to the California Institute of Technology for their engineering training means to them that they are in the hands of an eminent and scholarly faculty, many members of which are outstanding in their fields. The members of the Unit have available to them, excellent facilities, laboratories and equipment.

An attitude of welcome and a desire to help has been the outstanding characteristic of each and every member of the Institute staff. Navy has asked the Institute to perform a certain task; the Institute on its part has entered into its responsibilities whole-heartedly and is continuously striving to better prepare these young men for their future Naval assignments. The billets Navy expects to fill with these young men are, perhaps, best shown by an illustration.

Miss W. T. Door, so say the morning newspapers, has just sponsored the launching of the "U.S.S. HOMETOWN". Just what does that mean? Just this, that American shipyards have sent another vessel down the ways, thus adding another ship to the increasing might of American seapower. However, to make a "fighting ship" out of that newly launched hull a "fighting crew" must be put aboard. Navy is looking to the V-12 Program for the junior officers to lead such crews—young men, physically fit, properly trained academically, and above all, indoctrinated with the fighting traditions of the Service. To develop such young officers is the object of the Naval V-12 College Training Program.

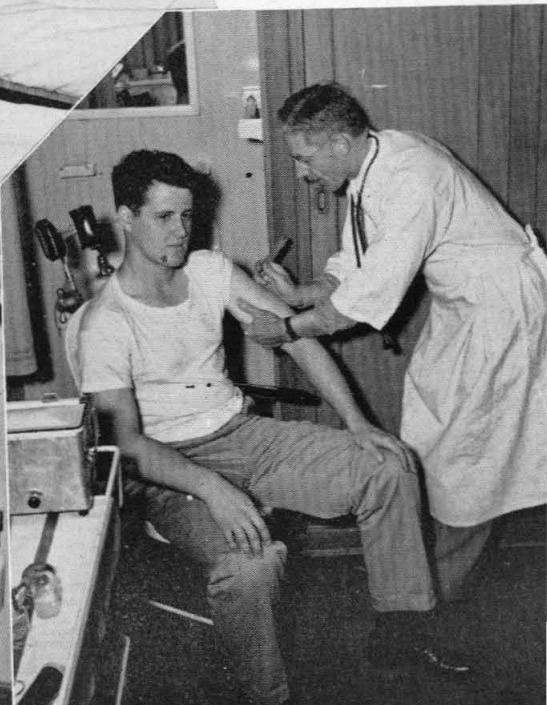
A Navy man belongs at sea; so, to all of us assigned to duties ashore, such duties will be well done only if, as a guiding star, we firmly keep in mind the idea that our job is to be of greatest service to, or to prepare ourselves for duty with, the crews and ships of "The Fleet."

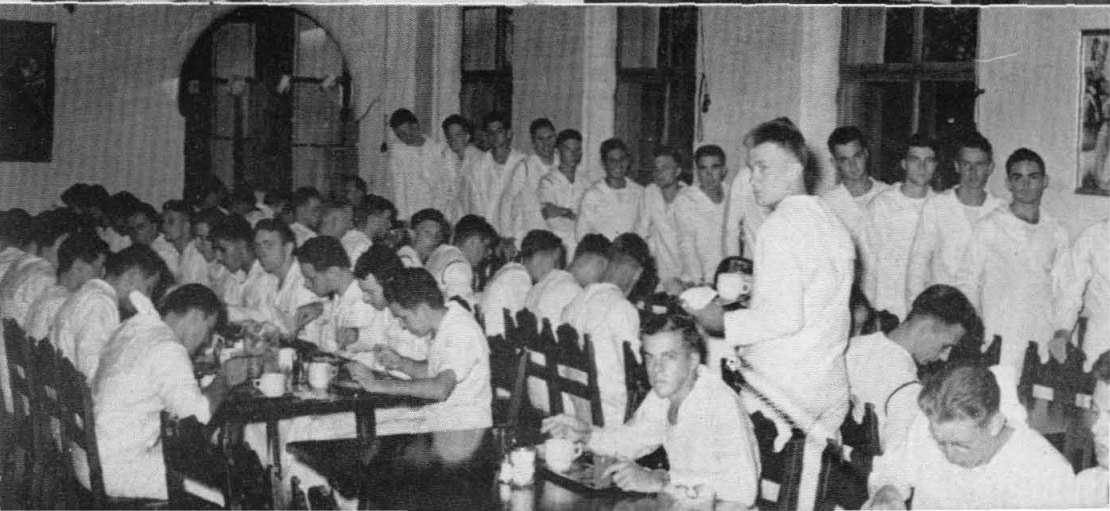
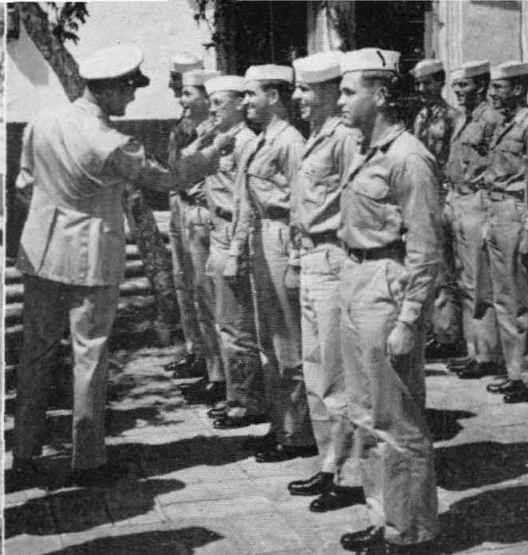
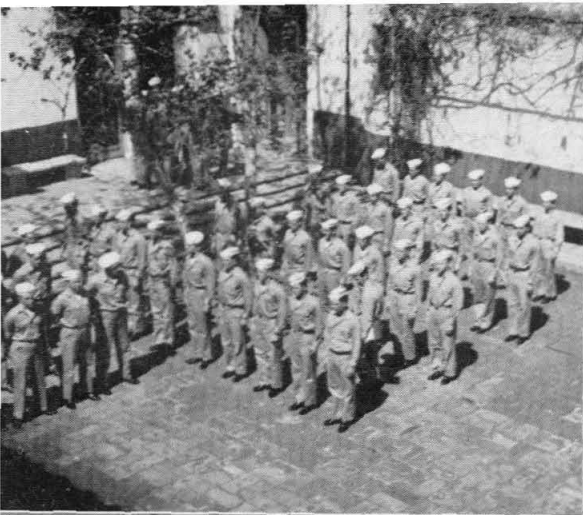
LT. COMDR. E. W. MANTEL, U.S.N. (RET.)

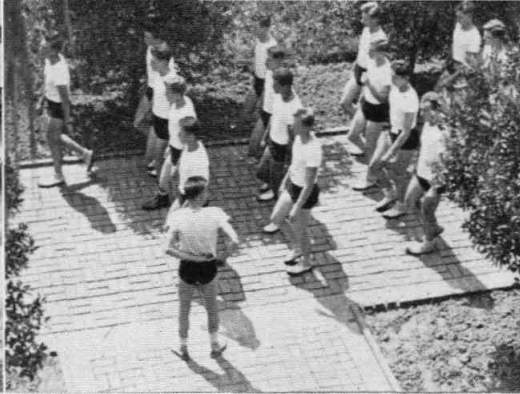
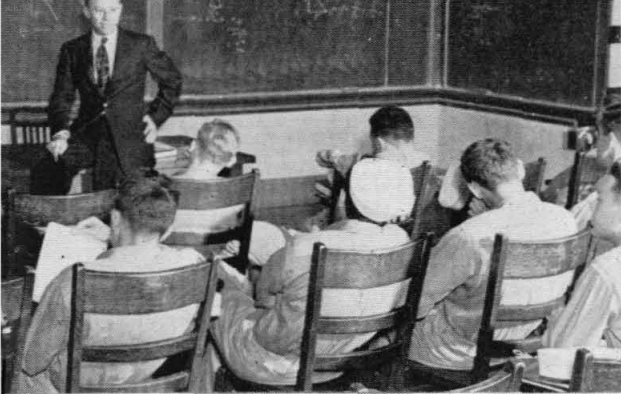


DAY'S

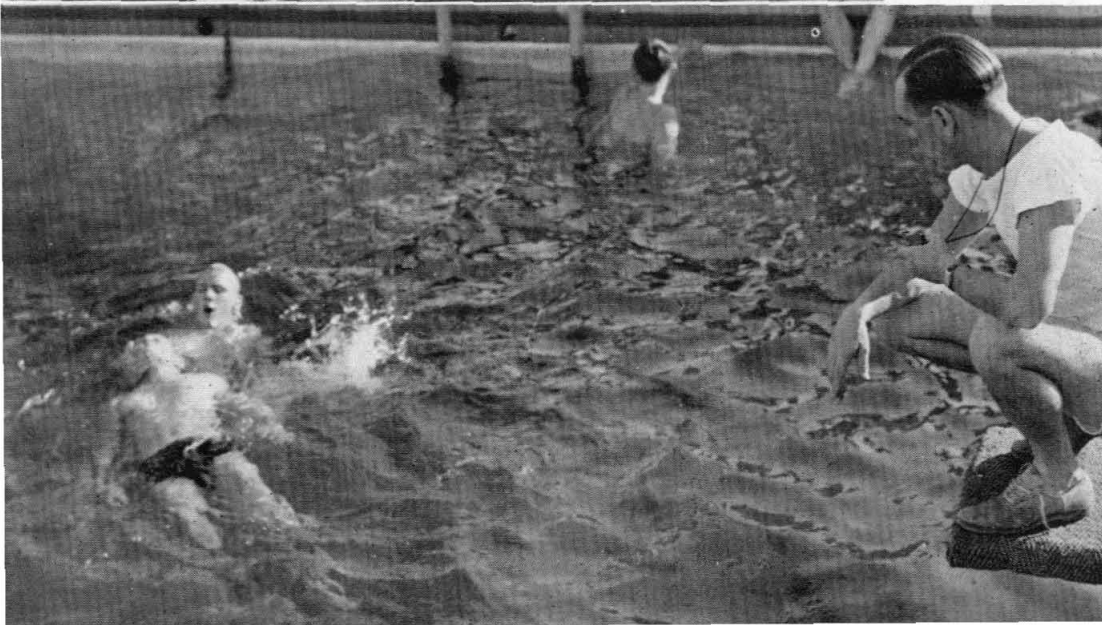
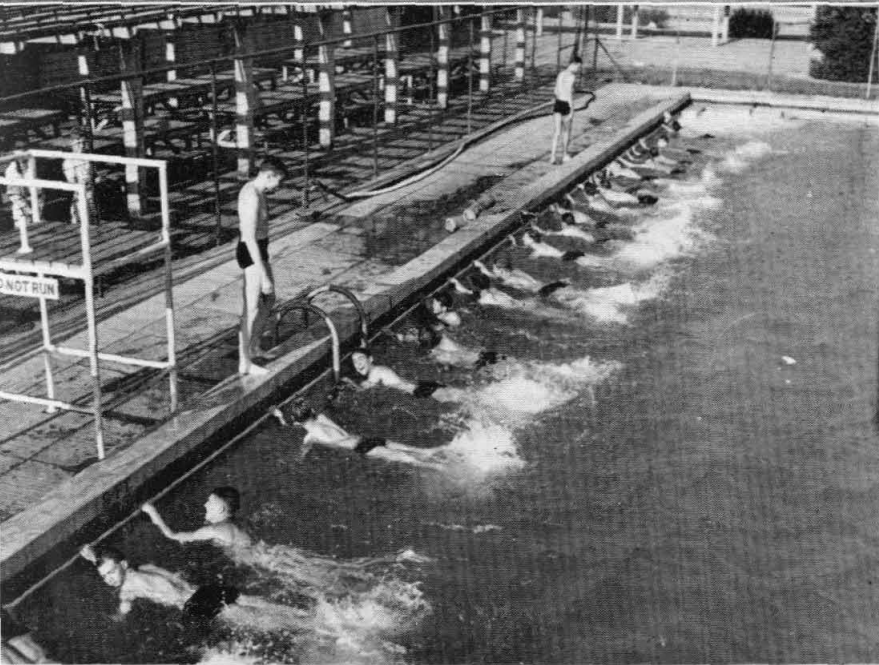
WORK





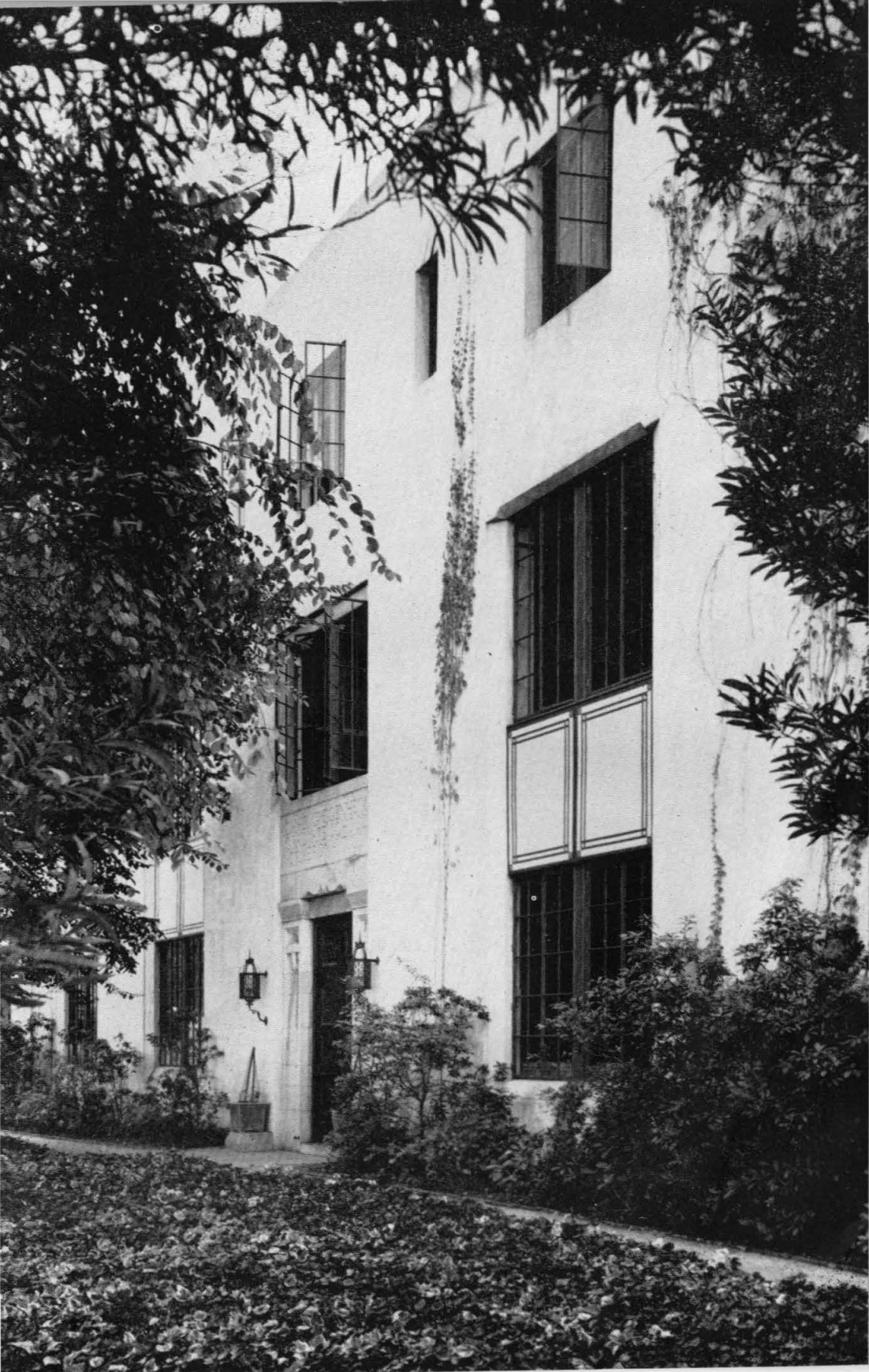












INFORMATION FOR PROSPECTIVE STUDENTS

THE CALIFORNIA INSTITUTE OF TECHNOLOGY is now operating on an accelerated instruction schedule comprising three sixteen-week semesters per calendar year. Civilian students who meet the entrance requirements for freshman admission will be admitted to the Institute at the beginning of each semester; that is, on March 1, July 1, and November 1. Since an academic year consists of two semesters, it is now possible to complete the regular four-year undergraduate course in two and two-thirds calendar years.

Courses of Instruction

The California Institute offers the following undergraduate courses of instruction: civil, electrical, and mechanical engineering; pre-aeronautics; biology; chemistry and chemical engineering; geology (including geophysics and paleontology); mathematics; meteorology; physics and applied physics*. Aeronautics and industrial design are offered only as graduate courses; students planning to study in either of these fields should prepare for them by taking an undergraduate course in engineering.

Requirements for Admission

Candidates for admission to the freshman class must offer the following high school units (one unit equals one year's work):

Group A: English, including Composition.....	3 units
Algebra	2 units
Plane Geometry.....	1 unit
Solid Geometry.....	1/2 unit
Trigonometry	1/2 unit
Physics (Kinetics and Mechanics)	1 unit
Chemistry	1 unit
United States History and Government.....	1 unit
Group B: Foreign Languages, Shop, additional English, Mathematics, Laboratory Science, History, Draw- ing, Commercial subjects, etc.....	5 units

Each applicant must offer all the units in Group A and at least 5 units in Group B. For the units in Group B the Admissions Committee recommends at

* Besides these regular civilian courses, the California Institute is conducting for the Navy V-12 College Training Program courses in Civil, Construction, Electrical, and Mechanical Engineering and in Physics. The Institute has no jurisdiction over the enlistment of students in the V-12 Program or their subsequent assignment to colleges participating in this program. For information about joining the V-12 Program consult the nearest Navy Recruiting Office.



least two years of foreign language (preferably Latin), a year of basic elementary shop, and as much extra work in English grammar and composition as possible.

In addition to offering the high school units just described, each candidate for admission to the freshman class must take a competitive entrance examination in each of the following subjects: chemistry, English, mathematics, and physics. Freshman admission is based not only on the results of these examinations but also on the candidate's high school record and the general recommendations of his teachers. The entrance examinations will be given at the California Institute for candidates living within a reasonable distance. Those who take the examinations at the Institute will be notified by the Registrar of the hour and place. Others may take the examinations in absentia under the supervision of a high school instructor who will signify in writing his willingness to administer them. Absentia examinations must be taken on the same dates as the examinations given at the Institute. These dates are specified in the next paragraph.

Dates for Admission Applications and Entrance Examinations

FOR ADMISSION NOVEMBER 1, 1944

Applications must be in the Registrar's hands by August 15, 1944.

Entrance examinations will be held September 9 and 16, 1944.

Notices of acceptance or rejection will be mailed October 7, 1944.

FOR ADMISSION MARCH 1, 1945

Applications must be in the Registrar's hand by January 1, 1945.

Entrance examinations will be held January 20 and 27, 1945.

Notices of acceptance or rejection will be mailed February 15, 1945.

FOR ADMISSION JULY 1, 1945

Applications must be in the Registrar's hands by April 15, 1945.

Entrance examinations will be held May 5 and 12, 1945.

Notices of acceptance or rejection will be mailed June 1, 1945.

Application forms can be obtained from the Registrar. When these are returned to him, they must be accompanied by an official transcript of the applicant's entire high school record to date, including a list of courses in progress.

Expenses

The following is a list of expenses, fixed and estimated, for 1944 and 1945:

Registration Fee (paid by applicants upon notification of their admission to the Institute, and credited toward the first semester's tuition fee)	\$ 10.00
Tuition Fee (per semester)	180.00



General Deposit (required of each student to cover possible loss and/or damage of Institute property used in connection with his work in regular courses of study; upon his graduation or withdrawal from the Institute, any remaining balance of the deposit will be refunded).....	25.00
Emergency Hospitalization Fee (paid with the tuition fee the first term of each academic year; the purpose of this fee is explained in the folder, <i>Health Service</i> , which is given to each student upon his first registration in the Institute).....	4.00
Books and Supplies (per semester, estimated).....	25.00
Locker rent, Dues, etc. (per semester, estimated).....	25.00
Room* (per month).....	15.00 to 30.00
Board (per day, in the Institute Cafeteria; July, 1944, rate; subject to increase if rising costs necessitate it).....	1.35

It is not advisable for a student to try to earn money by outside work during his first academic year at the Institute, inasmuch as adjustment to his new environment and keeping up with his studies are a large load in themselves. In the upperclass years there are various opportunities for student employment, loans, grants, etc.

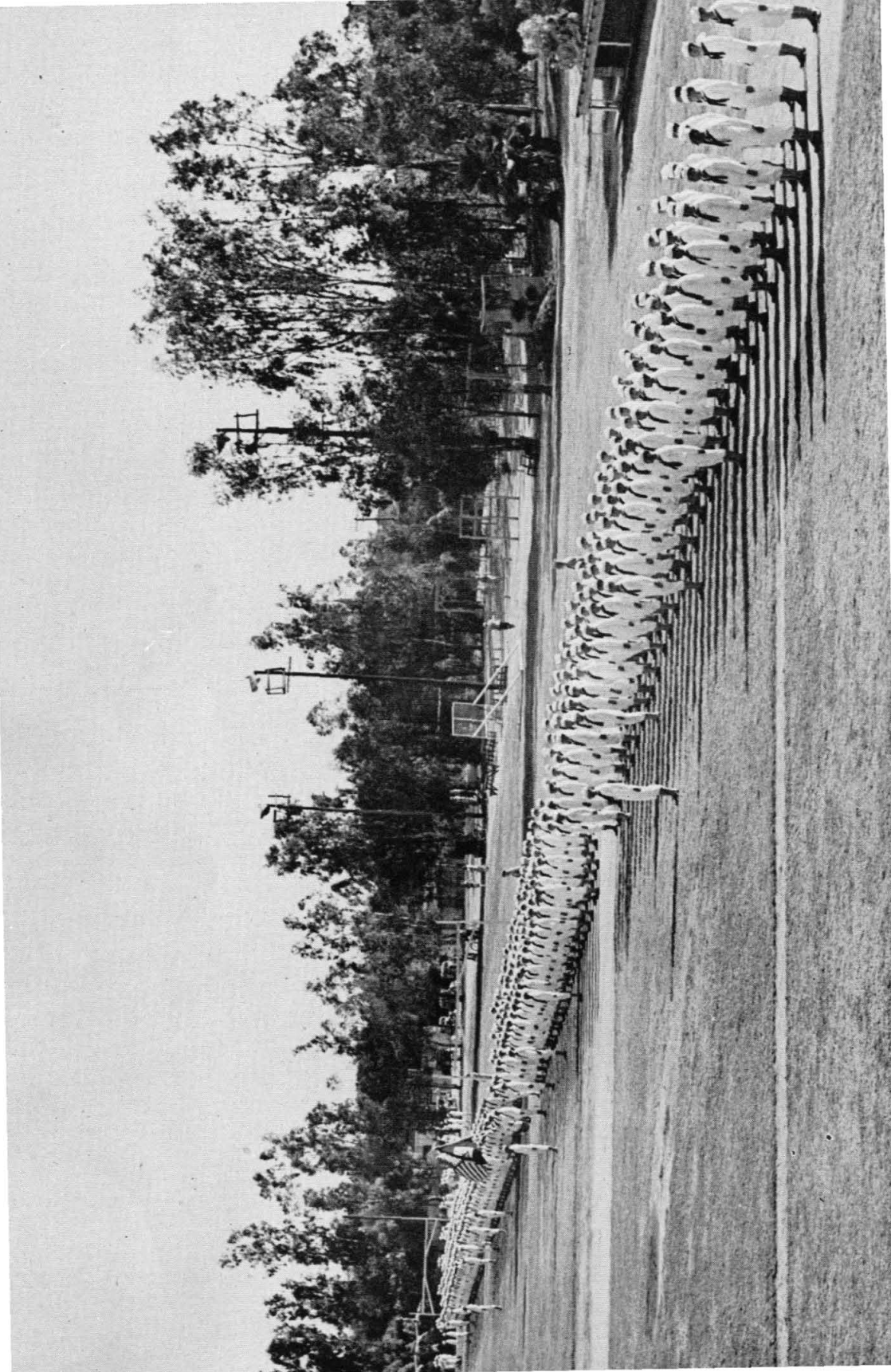
Scholarships

No formal application should be made for scholarships. These are awarded on the basis of the student's standing in the entrance examinations, as well as on his high school record and recommendations. Scholarships are for full tuition for two semesters (\$360) or half tuition (\$180), depending upon entrance examination grades and financial need. Similar scholarships are offered in the sophomore and junior years.

Subjects of Instruction in the Freshman Year

Since the educational policy of the California Institute calls for a thorough grounding in basic subjects before students begin to specialize in their chosen fields in science or engineering, all freshmen take the same course during their first academic year at the Institute. This course comprises the following subjects:

* The Institute dormitories have been taken over for Navy V-12 students. The Institute maintains a list of available rooms in boarding houses and private homes near the campus. This list is purely for the convenience of applicants, who assume all responsibility for finding rooms and making rental arrangements. This list is not for distribution. It may be consulted in the Housing Office (Room 210, Mudd Laboratory) by students upon their arrival or by friends or relatives who may be in this vicinity.



MATHEMATICS 1 a, b. The fundamentals of plane analytical geometry and an introduction to the differential and integral calculus (4 units, 1st and 2nd semesters).

PHYSICS 1 a, b. Mechanics, molecular physics, heat, and sound. An analytical course, in which the laboratory carries the thread of the work and the problem method is largely used. Bi-weekly demonstration lectures are given by various members of the Institute staff (4 units, 1st and 2nd semesters).

CHEMISTRY 1, a, b. Lectures, recitations, and laboratory exercises dealing with the general principles of chemistry. Subject matter includes the preparation and properties of substances, the fundamental laws and theories of chemistry, and qualitative analysis of the common metals (4 units, 1st and 2nd semesters).

ENGLISH 1 a, b. Composition and reading. This subject is designed to give the student a thorough review of the principles of composition, with much practice in writing and speaking, and a broad introduction to good reading (3 units, 1st and 2nd semesters).

HISTORY 1 a, b. Historical background of the present world war. A course in American history since Colonial times, with special emphasis on constitutional development and foreign relations (2 units, 1st and 2nd semesters).

DRAWING 1 a. Freehand drawing. The study of geometrical forms and their representation by means of free-hand perspective. Training in pencil rendering is given, and the fundamental principles of perspective are illustrated by simple architectural and engineering studies. The study of engineering drafting is begun during the last five weeks of the semester and is continued in Drawing 1 b, which is described below (1 unit, 1st semester).

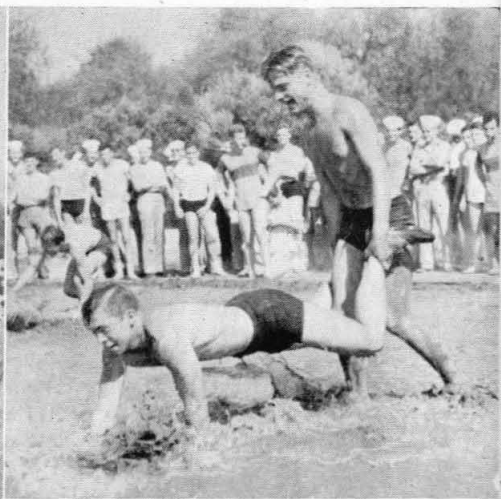
DRAWING 1 b. Engineering drafting. A course designed to give the student a general knowledge of the most important types of engineering drawings. Drafting problems involve orthographic projection and illustrate the accepted standards of machine drawing (1 unit, 2nd semester).

PHYSICAL EDUCATION. Every undergraduate student is required to participate regularly in some form of supervised physical education. While this work carries no credit toward graduation, it must be satisfactorily completed if the student is to qualify for a degree.

Note: the course of study for the freshman year totals 18 units for each semester. In general, 1 unit represents 1 hour of class work plus 2 hours of outside preparation; in the case of laboratory work, for which no outside preparation is required, 1 unit represents 3 laboratory hours.

Subjects of Instruction in the Sophomore, Junior and Senior Years

In the sophomore year the student elects the special field in science or engineering in which he plans to go on with his subsequent work. The options open to him are civil, electrical, or mechanical engineering; pre-aeronautics (substantially the same as mechanical engineering); biology, chemistry or chemical engineering; geology (including geophysics and paleontology); mathematics; meteorology; physics or applied physics. These options, with the subjects of instruction involved in each, are described in the catalogue of the California Institute.



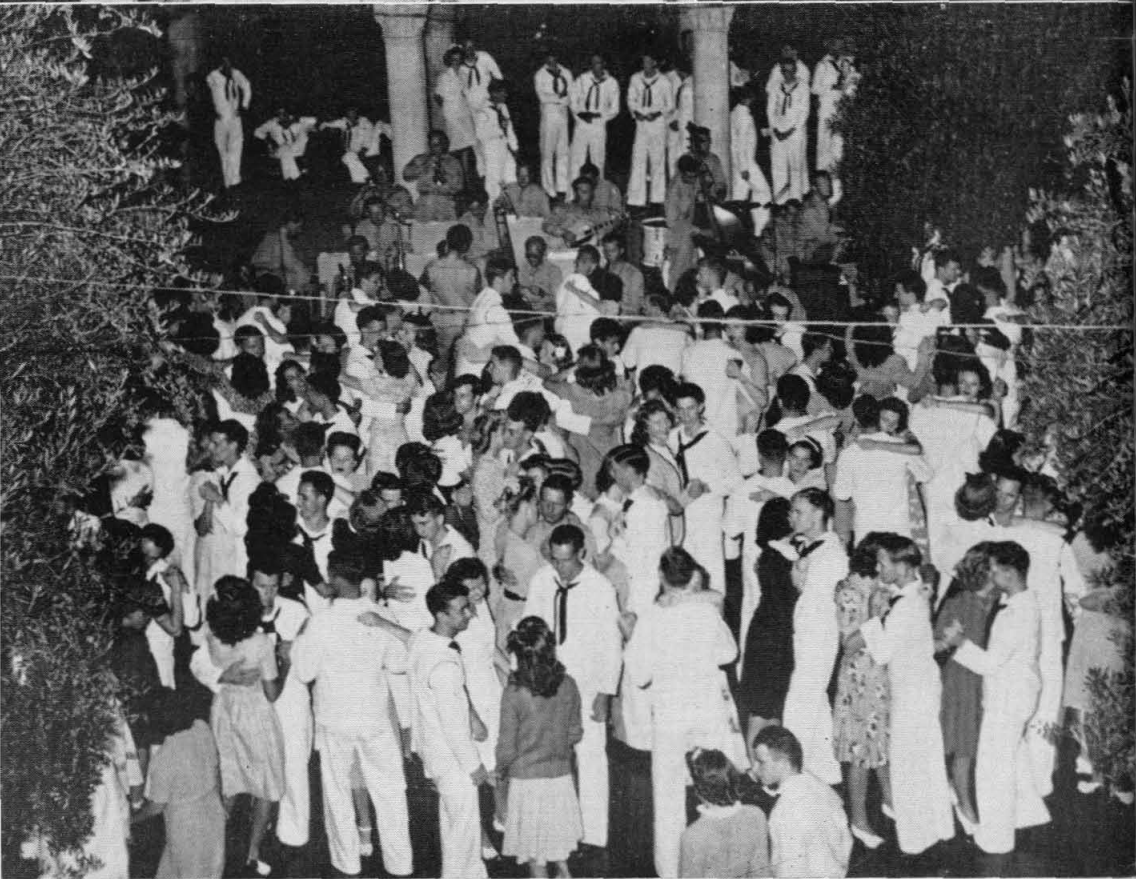


INSTITUTE LIBRARIES

ABOVE: LIBRARY of the Gates and Crellin Laboratories of Chemistry. There are also special libraries for physics, geology, biology, aeronautics, and the humanities, in addition to the General Library, which is housed in the Norman Bridge Laboratory of Physics.









DANCES are given frequently through the year by the Student Body, the V-12 unit, and the Throop Club.



Left to right, standing: Coach Shy, Wagner, Smith, Chapman, Lamb, Dana, Manager Cummings; *kneeling:* Bates, Cardall, Nieto, West, Ball.

SPORTS

BY NEVILLE LONG

OF DEFINITE ADVANTAGE to Tech's athletic program was the advent of the Navy V-12 unit, bringing athletes from several California colleges and universities. Additionally the Navy's physical training program has improved the general physical condition of the average student. This program has been conducted for the V-12 unit by an officer and five chief specialists: Lt. (j.g.) Stanley F. Murphy, Chief Specialists Dillenbeck, Lundstrom, Mako, Miranda, and Morris, the last of whom, on recently receiving his commission, was replaced by Chief Hill; all have been prominent in college athletics.

During the first sixteen weeks of school, the entire group of Navy men underwent an intensive basic training program consisting of conditioning work and instruction in wrestling, boxing, judo, and street fighting. After the first semester Navy men were allowed to participate in intercollegiate sports in place of their regular Navy calisthenics, and there were large turnouts in cross-country, water polo and basket-

ball. Plans for a regular football team were made, since there were a large number of men with good experience attending Tech, but these plans were vetoed by the authorities, who felt it would be detrimental to the war effort to have a team this year. However, a six-man football intramural program was carried on under the direction of Ben White.

CROSS COUNTRY

The cross-country team, led by George Gill, a V-12 freshman, had its usual successful season under the guidance of that genial mentor, "Doc" Floyd Hanes. Letter winners were: George Gill, Clyde Gerber, Francis Odell, Bill Harland, Jim Densmore, Dick Kuhns, and Bill Davis.

SCOREBOARD

UCLA—21; Tech—37
 UCLA—31; Tech—37; Oxy—59
 Tech—20; Compton J.C.—35
 UCLA—29; Tech—31; Oxy—84
 Tech—24; Compton J.C.—37

WATERPOLO

Under the able guidance of Chief Specialist Arthur Dillenbeck, the water polo squad was developed into the best team in the history of the Institute. The usual starting lineup consisted of goal-sinking Phil Adams, speedy Chuck Klaasen, and Eugene Bolster as forwards, Barton "Buster" Beek, Ralph Marshall, and Milo Gates as guards, and Bill Carpenter as the goalie. Capably supporting them were Bob Mounts, Jim Tuedio, Bruno Pilorz, and Les Levin.

SCOREBOARD

UCLA—7; Tech—6

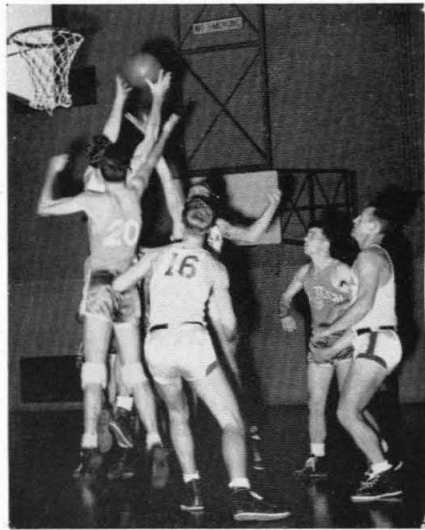
Tech—8; Whittier High—8

(Two overtimes)

Tech—22; No. American Aircraft—2

UCLA—9; Tech—5

Tech—23; No. American Aircraft—2



BASKETBALL

Coached by Carl Shy, the Beaver basketball squad had its biggest year in the basketball history of the Institute. A nominal conference championship was won, with wins over USC, UCLA, and Pepperdine highlighting the season. Captained by Dean Chapman, leading scorer and All Conference center for the past two years, and Paul Nieto, Frosh numeral winner from Stanford, the team fought its way through a flu epidemic, finals, and powerful opposing teams in chalking up its fine record. Chapman, of course, played center, where he was ably supported by Ball. Nieto, an excellent floor man and clever ball handler, shifted from forward to guard, although spending most of his time as forward. Small and extremely fast, Hugh West held down the other forward spot, specializing in one-handed shots from the corner. Willard Smith and Carl Wagner also saw action as forwards. Jerry Lamb, Stuart Bates and Ross Dana alternated as guards.



SCOREBOARD

"A" Team Basketball Scores

Tech—49; Camp Santa Anita—34
Tech—56; Los Alamitos—62
Tech—43; USC—35
Tech—41; UCLA—58
Tech—41; Camp Santa Anita—51
Tech—47; Occidental—66
Tech—58; Los Alamitos—65
Tech—36; USC—41
Tech—47; Pepperdine—48
Tech—55; Redlands—50
Tech—38; UCLA—36
Tech—56; March Field—66
Tech—48; Occidental—40
Tech—41; Redlands—39
Tech—50; Pepperdine—40

706

731

Under Chief Specialist Dan Miranda, the "B" team, playing preliminaries to the varsity games, had a very successful season. Members of the team were: Willard Smith, Don Snyder, Carl Wagner, Lou Koppen, Bob Rosecrance, Phil Jenson, Larry Fuller, John Anderson, Don Greenwood, and Larry Hudson.

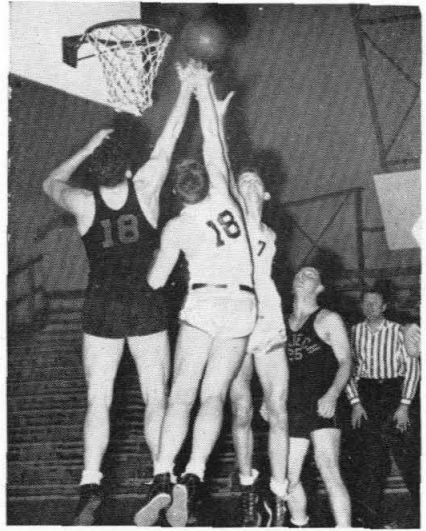
SCOREBOARD

"B" Team Basketball Scores

Tech—31; Pasadena J.C.—33
Tech—41; USC—48
Tech—36; UCLA—50
Tech—42; Occidental—32
Tech—33; Chiefs—44
Tech—35; USC—53
Tech—34; Douglas—50
Tech—50; Redlands—39
Tech—37; UCLA—59
Tech—33; Occidental—25
Tech—22; Redlands—33
Tech—60; Motion Picture Unit—30

454

496

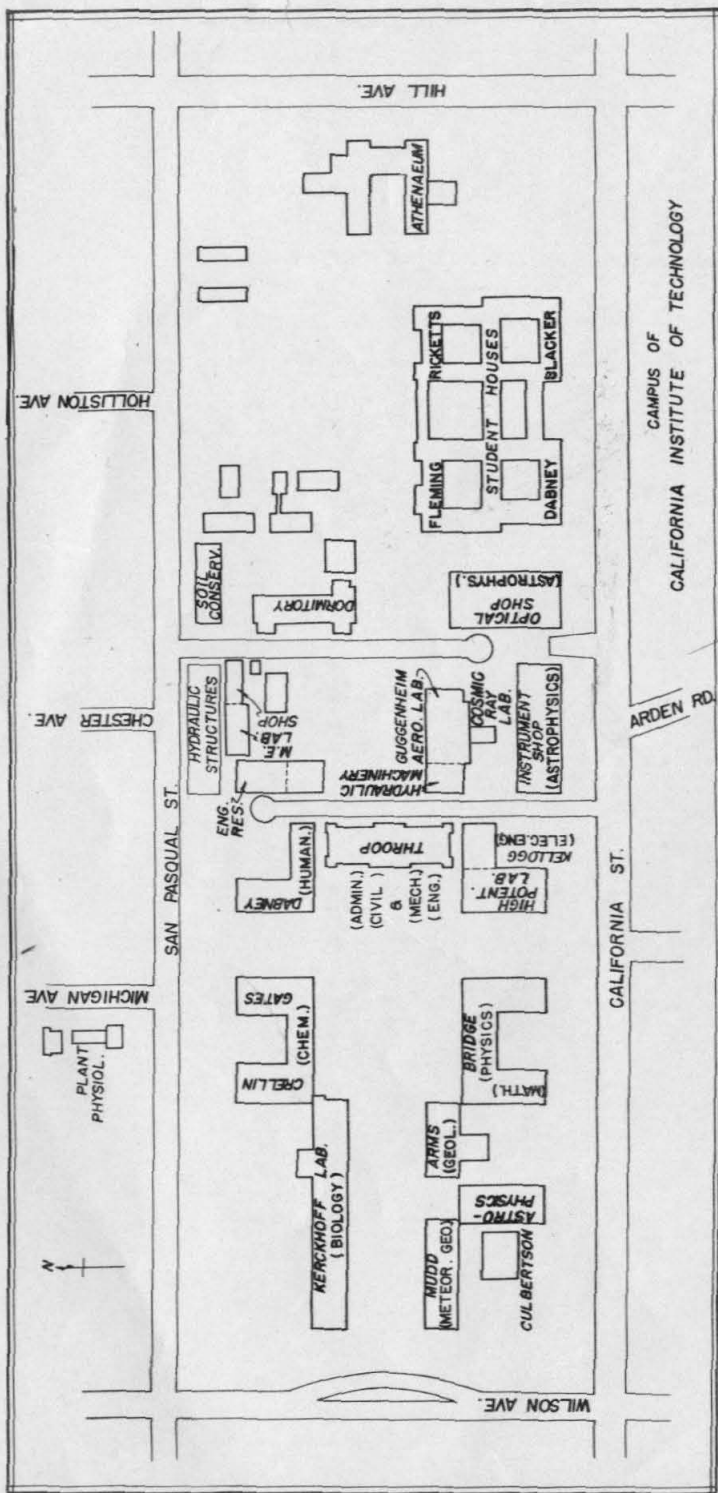


INTRAMURAL

During the summer, the interschool tennis tournament was won by diminutive Stan Clark. A week later Clark and the runner-up, Jack Cardall, took on world champions Don Budge and Gene Mako in an exhibition match, and as expected, were defeated.

In addition to the varsity athletics, intramural schedules in softball and basketball were run off by the Navy men. Platoon R-3 won the softball league. The Battalion was divided into the Atlantic and Pacific Leagues for the basketball tournament. Platoon F-1 was the Atlantic League, while the Salts of Platoon R-4 and the Water Fairies of Platoon B-1 tied for the championship of the Pacific League. In a play-off game between All Stars of both Leagues, the team from the Atlantic League won.

With large turnouts for track, baseball, and golf, the prospects for Tech athletics in the coming year appear to be, with the exception of football, highly promising.



THIS MAP OF THE INSTITUTE CAMPUS USED IN CONJUNCTION WITH THE AERIAL VIEW SHOWN IN THE 1943-1944 YEARBOOK WILL AID IN THE IDENTIFICATION OF ALL BUILDINGS EXCEPT THE ATHENAEUM WHICH IS JUST OUTSIDE THE RIGHT EDGE OF THE PICTURE. THE AERIAL VIEW WAS TAKEN LOOKING NORTHWEST. TOURNAMENT PARK OF THE CITY OF PASADENA LIES ON THE SOUTH SIDE OF CALIFORNIA STREET EAST OF WILSON AVENUE.

