

about any technical subject with the sole aid of properly prepared books of instruction. That is certainly one of the reasons why we can learn so quickly and accomplish so much in such a short time.

The world has known for many centuries that men cannot hope to defeat an armed foe with bare hands. It has also been recognized for centuries that antiquated weapons are pretty helpless before their modern successors. During this war, however, new weapons have developed so rapidly that one of the basic struggles has been to keep ahead of the enemy in research and development as well as to keep ahead in quantity and quality of arms and men. Fortunately for our survival and for the survival of our faith and customs and manner of living, we have never been content merely to copy weapons and methods from others. We have always done our full share in invention and development. Today, however, thanks again to our colleges and to the large number of eager, energetic, young scientists, we have set a new record that is doing so much to shorten and to win the war. Many of our war inventions will be of inestimable value to civilization in peace. All research being marked "Secret and Confidential," you have probably been greatly mystified by the mysterious comings and goings of the members of your own Research Department. I am, of course, not at liberty to disclose any secrets; but I can reveal to you what you all probably already know, that when the history of war inventions is written, the name of California Institute of Technology will stand high on the Roll of Honor. As one who has been privileged to see for himself some of the early work of your scientists, and also to follow ever since with deepest interest the use to which your inventions have been put, I tender my homage to the vision, leadership, knowledge, and sustained effort that have done so much to provide our fighting forces with some of their very best weapons. The country will hail your accomplishments when the veil of secrecy is lifted.

When we attempt to evaluate the factors that will lead to victory, we are, perhaps, apt to overrate material resources, war production capacity and total population; and to lose sight of the even greater importance of the fighting qualities of the race. There can be no question that the number of planes, ships, guns and all of the other instruments of war that we are pouring out in such vast quantities are playing, and will continue to play, a decisive part. But our greatest strength lies in the fact that we are head and shoulders above all other nations in the vast number of young people whose basic education enables them to master every technical detail of modern, scientific war and who, in addition, have the will to fight and the will to win. Our colleges throughout the nation have transformed themselves into huge training centers for our armies and navies. Other countries have some extremely intelligent, well-educated people; but among the nations at war the production of educated, fighting men and women is far below ours.

It would be fooling ourselves to suppose for an instant that you gentlemen will become competent, well-rounded officers overnight; but I say to you with all earnestness that each and every one of you can master some phase or specialty of the profession of war in a very short period of time so as to make each one of you a highly useful member of the service. College men who joined the services only a few months ago are already experienced veterans, living up fully to all of their obligations and making us all thrill with pride in their accomplishments. What they have done you can do. You have every right to

approach your new duties with confidence. However, in order to lead, and in order to command the respect of your subordinates, you must master thoroughly every detail of the particular duty to which you may be assigned. You must learn quickly more about your own job than anybody who looks to you for orders. You can do this by virtue of your previous education and training; and by the continuance of the energy and industry that has brought you to your present position. You must strike at the heart of whatever duty may be assigned you, to learn the essentials and to apply what you learn to increase the fighting efficiency of your unit. Do not allow yourselves to be confused by "red tape" or by tradition, which appears to divert you from essentials to matters of form that impede progress. Traditions and ceremony have their value and importance in time of peace. In time of war nothing must obstruct offensive and decisive action. We must always do the commonsense thing in the most direct manner possible. We must keep in mind the importance of the time element in everything that lies ahead of us. We must hasten our mobilization, our education in war, the part each one must play in our war machinery. The success of a battle, to say nothing of self-preservation, requires that reaction to emergency shall be correct, precise and immediate. It is, therefore, of paramount importance that you train yourselves and your subordinates to preserve constant alertness and immediate readiness for offensive action. War in the air, on the sea and on the land still requires the same cool nerve as was required for the winning of the west. You have got to draw first and shoot straighter than the other fellow. Our score to date shows that we can still do it. I wish you good luck, good hunting, and happy landings.

COMMENCEMENT EXERCISES

THE commencement exercises closing the Institute Academic year 1943-44 were held at 4:00 P.M. on Friday, February 18, at the Civic Auditorium in Pasadena. The season and the setting were quite different from those with which previous graduating classes have been familiar. The candidates for degrees entered the auditorium to martial music provided by the Navy V-12 band. The candidates were followed as usual by the faculty, trustees, and special guests who took their places on the stage. Besides those participating in the exercises, the guests included Rear Admirals I. C. Johnson and Joseph R. Defrees.

The invocation and chaplain's address were given by the Reverend Lloyd C. Douglas, author of "The Robe." The principal address was presented by Rear Admiral Wilson Brown, U.S.N., Naval Aide to the President. His subject was "The Nation's Achievements During Two Years of War in Research," (see page 18).

Following Admiral Brown's address 10 certificates were awarded for the completion of the Navy Engineering Specialists requirements. The Bachelor of Science degree was conferred upon 94 men, 13 men received the M.S. degree, and nine men received the Ph.D. degree.

Dr. Millikan presented "The Progress of the Institute" starting with its founding in 1891 by Amos Throop and carrying through its development to the present. He extrapolated the curve of the Institute's development into the future, proclaiming that the Institute would be helpful in meeting the problems which will be associated with the industrial advancement of the Pacific Coast area.

CALTECH FRESHMAN ADMISSION DATES REVISED

THE Institute faculty, at its March meeting, approved a revision of freshman admission schedules which will henceforth permit entrance of new students at the beginning of each semester. Since the present accelerated program of instruction calls for three semesters a year, a new group of freshmen will be admitted every July 1, November 1, and March 1. As in the past, admission will be based on the results of competitive examinations plus the candidates' high school records.

In announcing this change, Dean L. W. Jones, Institute Registrar, called attention to the schedule of dates involved in the next two admission periods:

FOR ADMISSION JULY 1, 1944

Applications must be received by the Registrar by April 24, 1944.

Examinations will be held May 6 and 13, 1944.

Notice of acceptance or rejection will be mailed by June 7, 1944.

FOR ADMISSION NOVEMBER 1, 1944

Applications must be received by the Registrar by August 1, 1944.

Examinations will be held September 9 and 16, 1944.

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

A limited number of scholarships will be awarded to entering freshmen each semester. These are awarded on a competitive basis to the most promising students admitted to the Institute, as judged by all information available, without reference to financial need. Such scholarships carry full or half tuition, depending upon individual circumstances. In addition, half-tuition grants are awarded to other students of superior ability who otherwise might be prevented from attending the Institute.

SPRING SPORTS

By HAROLD Z. MUSSELMAN*

THE six colleges and universities in the Los Angeles area who are carrying on an intercollegiate sports program have drawn up a schedule of spring sports with each other. Five of these schools, U.S.C., U.C.L.A., Occidental, Redlands, and Caltech, are Navy V-12 schools and will be represented by strong teams in all sports. Pepperdine, with only a civilian enrollment, expects to be represented in most sports.

All schools will meet each other in home and home baseball games, while all but Pepperdine have a complete track schedule. Schedules in tennis, golf and swimming have not been completed, but the date for championship events has been named.

Caltech has only three home track meets this year, but all of them are feature meets. U.C.L.A. appears at Tournament Park on April 1 in the first dual meet of the season. On April 15 the Beavers play host to the U.S.C. Trojans, while the Pasadena Games, a large open meet on June 10, closes the schedule.

TRACK SCHEDULE

Sat. April 1	.....U.C.L.A.	.....at Caltech
Sat. April 8	.....College Relays	.....at Occidental
Sat. April 15	.....U.S.C.	.....at Caltech
Sat. April 22	.....Open College Meet	.....at Coliseum
Sat. April 29	.....Caltech	.....at Occidental
Sat. May 6	.....Caltech	.....at Redlands
Sat. May 20	.....Southern California Conference Meet	.....at Occidental
Sat. May 27	.....Southern California Invitational	.....at Coliseum
Sat. June 3Caltech, Redlands, Pepperdine, Occidentalat U.C.L.A.

*Acting director of physical education.

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(General Practice)

Edward E. Tuttle, '28

411 W. 5th St.
Los Angeles 13
MADison 7837

Sat. June 10Pasadena Gamesat Caltech

BASEBALL SCHEDULE

Sat. April 8	.....Pepperdine	.....at Caltech
Sat. April 15	.....Caltech	.....at U.C.L.A.
Sat. April 22	.....Occidental	.....at Caltech
Sat. April 29	.....Caltech	.....at U.S.C.
Sat. May 6	.....Caltech	.....at Redlands
Sat. May 13	.....U.C.L.A.	.....at Caltech
Sat. May 20	.....Redlands	.....at Caltech
Sat. May 27	.....Caltech	.....at Pepperdine

Sat. June 3 Caltech at Occidental
Sat. June 10 U.S.C. at Caltech

SWIMMING

Sat. May 13 Intercollegiate
Championships at U.C.L.A.

TENNIS

Sat. May 20 Intercollegiate
Championships at U.C.L.A.

GOLF

Sat. May 20 Intercollegiate
Championships at U.C.L.A.

TECH ALUMNI IN WASHINGTON MEET

ON THE evening of January 13, 44 Tech alumni who are now living in the Washington area met at Schneider's Cafe in Washington for dinner. Most of the evening was spent in getting acquainted with the other fellow and the occasion promised to be the first in a series of dinner meetings to be held at intervals of about three months.

The idea of the meeting originated with Fred Groat, '24, who realized that there are now many Tech men in and around Washington. At a short business session at the close of the dinner, Mr. Groat was elected temporary chairman of the group to plan future meetings. Major Paul Engelder, U.S.M.C., '38, has consented to be the speaker for the March meeting.

Dr. Royal W. Sorensen and Frank Streit, '26, both now at Columbia University, New York, were guests. Dr. Sorensen gave an interesting summary of affairs at the Institute during the past academic year.

Any alumni in the Washington area may contact the group by calling any of the following:

Fred Groat — Home: EMerson 0295; Office: REpublic 7500, Ext. 2425.

Doug Tellwright—Home: ORdway 4662; Office: REpublic 6700, Ext. 71348.

Wayne Rodgers—Home: REpublic 0461, Apt. 201; Office, REpublic 6700, Ext. 3649.

Bob Vaile—Home: FRanklin 8300, Ext. 420; Office: FRanklin 5700, Ext. 2326.

Those present and their business or military connection were Lucas A. Alden, '31, War Production Board; Maurice A. Biot, '32, Lieutenant, U.S.N.R.; David R. Arnold, '43, Ensign, U.S.N.R.; James Boyd, '27, Colonel, C.E.; Wayne H. Brown, '43, Ensign, U.S.N.R.; Michael C. Brunner, '25, Lieutenant Colonel, C.E.; Everett F. Cox, '33, Navy Department; Harry E. Cunningham, '26, Public Roads Administration; Thomas Evans, '29, Major, C.E.; Al B. Focke, '32, Navy Department; Mark G. Foster, '39, Navy Department; C. Lewis Gazin, '27, Captain A.C.; Martin J. Gould, '41, Navy Department; Albert P. Green, '39,

Navy Department; Lowell F. Green, '31, Navy Department; Fred J. Groat, '24, War Production Board; Ben C. Haynes, '32, Weather Bureau; John K. Hiss, '33, Navy Department; John W. Jackson, '40, University of Maryland; J. Edward Joujon-Roche, '28; Peter H. Kafitz, '42, Navy Department; Ray F. Labory, '31, Lieutenant, U.S.N.R.; Albert E. Lombard, Jr., '28, Aircraft Resources; Laurence E. Lynn, '29, Lieutenant Colonel, C.E.; Robert E. MacKenzie, '42, Navy Department; William B. McLean, '35, Bureau of Standards; James T. Mercereau, '24, Lieutenant Colonel; Clinton T. Newby, '40, Lieutenant, U.S.N.R.; Norman P. Oldson, '40, Navy Department; John S. Rinehart, '37, National Defense Research Committee; V. Wayne Rodgers, '27, Major, C.E.; L. H. Rumbaugh, '32, Navy Department; Carl G. Schrader, '40, Navy Department; David Sheffet, '30, Navy Department; E. W. Silvertooth, '40, Navy Department; Zaka I. Slawsky, '35, Navy Department; Milton M. Slawsky, '35, Navy Department; Thomas S. Southwick, '27, Captain, C.E.; Cedric W. Stirling, '43, Lieutenant Commander, U.S.N.; Frank Streit, '26, Columbia University; F. Douglas Tellwright, '24, Army and Navy Electronics Production Agency; Robert B. Vaile, '27, Navy Department; M. Van Reed, '32, First Lieutenant, C.E.; Baker Wingfield, '28, Public Buildings Administration.

PERSONALS

1923

LOREN BLAKELEY is recuperating from an attack of infantile paralysis which has kept him from his work since last July. As secretary of the class of 1923, he is anxious to complete the roll call of the class which was begun in an earlier issue of Engineering and Science.

1926

A. M. BALL was a recent visitor to the campus and to southern California war plants in connection with his duties as technical director of the Hercules Powder Company.

W. A. LEWIS, formerly director of the School of Electrical Engineering at Cornell University, has resigned to return to the field of engineering research. He has been named consulting electrical engineer to the Armour Research Foundation at the Illinois Institute of Technology, Chicago, and is also a research professor in the electrical engineering department.

1927

EDWARD M. BROWDER is structural engineer for the department of operations and maintenance of the Panama Canal and is serving as president of the Panama section of the American Society of Civil Engineers.

1928

DR. ALBERT E. LOMBARD, JR., is a special assistant to the director of the Aircraft Resources Control Office at the Pentagon Building, Washington, D. C.

1929

FRANK W. THOMPSON was commissioned a lieutenant senior grade, U.S.N.R., in May, 1942. He received his training at Newport, R. I., and at the naval gun factory at Washington, D. C. He was sta-

tioned in the planning section of the Bureau of Ordnance but was later transferred to his present position in the industrial manager's office of the department of design for the repair and conversion of ships, at the 11th Naval District in San Diego.

ALBERT C. REED has moved to Pasadena after having been chief test pilot for Boeing Aircraft in Seattle.

1930

AL VOAOK is in the industrial engineering department of Firestone in Los Angeles.

ERNEST LEVINE is project manager for Contracting Engineers Company in charge of the completion of the \$5,000,000 Aliso Street Viaduct over the Los Angeles River.

LIEUTENANT F. T. SWIFT is a radio officer in the Navy and is stationed at a Pacific base.

1934

SID SMITH is in the South Pacific, employed by Submarine Signal Company as a United States technician, doing work for the United States Navy. He is married and has two small sons.

1936

WASSON NESTLER was recently promoted to captain in the Army Signal Corps. He visited his family recently in San Mariu, and they returned with him to Florida where he is stationed at Drew Field.

1937

ERNEST MONCRIEF is a process engineer at the Fluor Corporation.

FREDERIC DION, JR., is with the engineering department of Joseph E. Seagram and Sons, Inc., at Louisville, Ky., where his present activities are centered on a program of expanding alcohol production. In October he married Miss V. Elizabeth Myers of Clifton, Va.

MAJOR JOHN H. BLUE, U.S.M.C., returned recently from an overseas assignment of 21 months.