

the weakest spot in the whole American educational system, namely, the lack of any sort of an apprenticeship system for providing the country with its own skilled workers rather than forcing us to import most of our skilled artisans from abroad, as we have done in the past.

I leave your imagination to fill out the picture. Great possibilities are certainly ahead. Will we have the intelligence to grasp and make the most of them? I should like to come back to this campus 20 years from today to find out.

### **Citrus Products**

*(Continued from Page 12)*

industrial research program either on the so-called fundamental or the so-called practical side.

Pectate pulp is a product that resulted from research discoveries; after discovery uses had to be found for it. Sodium pectate, made by neutralizing pectic acid, has been known since 1825, as has pectin. They had similar colloidal properties, the pectic acid being perhaps less satisfactory for most purposes than the now highly successful pectin. By a simple change of process the Exchange found a pectate having much higher molecular weight which makes film-forming, viscous solutions. Moreover, it was possible to process the material without separating the cellulose, and the finished low cost material, when dispersed at the point of use, embodies both a highly colloidal sodium pectate and very finely divided cellulose.

*But of what use is it? The uses are developing rapidly now, but at first considerable time was spent on some which did not materialize. One such was for quenching in heat-treating steels. Because of the low cost, controlled viscosity and non-inflammability, this appeared attractive and may yet be. However, oil well drilling mud treatment (to prevent water loss to porous strata) and paper coating (to prevent sticking of packaged synthetic rubber) have proven very much more practical than that young hopeful, the modified aqueous quenching medium.*

### **VITAMIN P**

An odd sequence of discovery occurred a few years ago regarding so-called Vitamin *P*. The Nobel Prize winner, Albert Szent-Gyorgyi, of Hungary, announced his discovery of this vitamin in lemons during 1936. Vitamin *P* was so named because it corrected excessive permeability of the capillaries and it alleviated hemorrhagic purpura. Several years earlier it had been discovered in California, in connection with spray drying of lemon juice (for cosmetic use), that an unknown constituent of the juice together with boric acid produced a brilliant yellow color. It was later found to be due to a certain group of flavones and of flavone derivatives, the same that are now considered the active materials in the Vitamin *P* substances. Here was a case of finding a color reaction for a vitamin years before the vitamin was discovered!

The research on citrus products has been accomplished in the aggregate by Government laboratories, State agencies, commercial firms, and the Exchange Research Department, which, as already stated, is the activity of a growers' cooperative and is guided by a Research Committee of grower-directors. Although the number of technically trained men employed in the Research Department has averaged about 12, and publication of results is not the objective of the work as it necessarily is in Federal and State laboratories, still the total number of publications refutes any notion that this is an

industry where secrecy may have limited the progress. The present total of technical papers, bulletins and patents published is 222, covering a wide variety of subjects. It would be difficult to prophesy the future of citrus products but it can be expected to feel the influence of the same technical and scientific advancement which will guide all postwar industry.

## **C. I. T. NEWS**

### **HERBERT HOOVER, JR., TRUSTEE**

The California Institute of Technology announces that *Herbert Hoover, Jr.*, has been elected to its board of trustees.

The son of Herbert Hoover and the late Lou Henry Hoover, Herbert, Jr., was born in London, England, and attended Stanford University, graduating in 1925 with a B.A. degree. In 1929 he won his M.B.A. degree at Harvard University. He was a member of the research staff of the Harvard Business School in 1928 and 1929, and from 1929 to 1931 he was communications engineer for the Western Air Express, followed by three years of service in the same position with Transcontinental and Western Air, Inc. In 1934 and 1935 Mr. Hoover was a Teaching Fellow at the California Institute of Technology.

Mr. Hoover is president of the Consolidated Engineering Corporation and the United Geophysical Company, both with offices in Pasadena, Calif. He is president of the United Engineering Company of New York and a director of the C. R. B. Educational Foundation. He also is a member of various professional societies, including the American Institute of Mining and Metallurgical Engineers, the Institute of Radio Engineers, and the Society of Exploration Geophysicists.

Mr. Hoover, a resident of San Marino, Calif., is married and has three children, Margaret Ann, Herbert, III, and Joan Leslie.

### **CHINA IN PEACE AND WAR**

*As related by E. Harrison King*

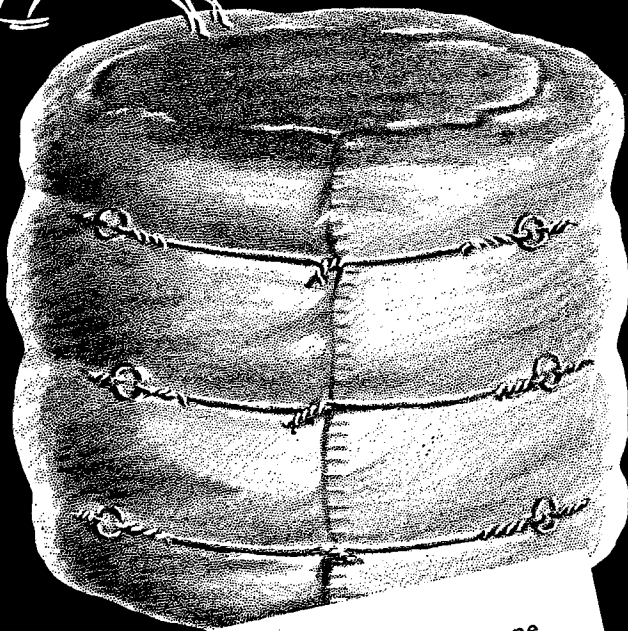
**T**HE alumni dinner meeting held at the Hotel Clark on the evening of March 8 had as its speaker E. Harrison King, instructor in hydraulics at the Institute. Mr. King vividly described China as he knew it while professor of civil engineering at St. John's University near Shanghai and as an internee in a Japanese internment camp following America's entry into the war in 1941.

Mr. King first told of the general Chinese background by comparing Chinese cities with Chicago, New York, and other American cities. The skyscrapers of Shanghai are high and numerous, reminding one of New York City. At the other extreme of comparison, Mr. King spoke of one city of 130,000 population near Shanghai which has no railroad or highway leading to or from it. The city has a wall and moat surrounding it, the moat joining with canals which permit small sailboats to reach the outskirts of the city. The only other means of transportation into the city is by cart and dirt path.

Mr. King commented that a few of the customs and methods of the Chinese are not understood and therefore not respected by many Americans. However, he stated, if these customs and methods were understood they would be recognized as effective and respectable. Mr. King explained that the attitude of the Chinese is that they can work their problems out in their own way

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regardless of misunderstanding by peoples of other nations. He expressed the thought that the Chinese have a tough, resilient spirit and little-recognized resources, as amply demonstrated by their long war against Japanese aggression, and that they merit great respect for their endurance.

Mr. King found that life in the internment camp near Shanghai could be made tolerable by resigning one's self to its rigors and trials and by keeping as busy as possible. To keep busy Mr. King spent two hours per day at hard labor and several additional hours each day at learning the Chinese language. As practice in learning the language he spent considerable time at translating a Chinese detective story to English.

### ATHLETICS

By H. Z. MUSSELMAN,  
Director of Physical Education

**W**ITH inclement weather retarding the men in their training and forcing the cancellation of numerous practice contests, the spring sport teams are entering league competition with untried ability. However, the outlook is bright.

Eight lettermen and a flock of promising recruits give Dr. Floyd Hanes a strong track squad with good balance in all events. The returning lettermen include Don Tillman, who established new Tech records last season in the shot and discus, Ken Shauer, Stuart Bates, Bob Taylor and Gene Bolster, a classy field of middle distance runners, George Gill and Bob Howe in the mile and two-mile and George Wilhelm, javelin. Tillman and Bolster are handicapped by pre-season injuries which may retard their competition until mid-season.

In the opening meet, U.C.L.A.-Caltech-Pomona finished in that order with 80½-65½-16 points respectively in a triangular meet on the Bruin field. In dual meet scoring, U.C.L.A. trimmed Caltech 68-63, while the Engineers trounced Pomona 102-27. Ken Shauer established a new Caltech record of 49.5 seconds in the quarter. George Gill captured both distance events, winning the mile in 4 minutes 40.9 seconds and the two-mile in 10 minutes 46.7 seconds. Other winners were Bob Grube in the high jump at six feet and Howell Tyson with a 42-foot three-inch mark in the shot.

The rainy weather was a distinct handicap to the baseball squad, for with only two veterans, John Anderson first baseman and Dale Austin outfielder, much time was lost in attempting to discover a starting lineup. The material appears better than last year's team, but the strength is spotty. Dick Roettger, pitcher, and John Schimenz, catcher, are valuable additions both in the field and at bat, while Bob Jones, who played at U.S.C. last year, has proved a real find at shortstop.

The Beavers had a field day in trimming Pepperdine 21-5 in the opening league game. Scoring seven runs the first inning, Tech hammered four Pepperdine hurlers for a total of 21 hits. Roettger pitched fine ball and limited the opposition to five blows. In pre-season games, Tech trounced L.A. City College 11-0 and bowed to Pepperdine 12-9.

Captain Stan Clark, Jack Cardall and Bob Bowers, a veteran trio, give the tennis squad a fine nucleus, but the balance of the squad is not so strong. Tech dropped matches to U.S.C. 7-2, and to U.C.L.A. 5-4, with Clark and Bowers winning their singles in both matches.

Golf and swimming are about to open their league season. With the appointment of Bud Lyndon of the Pasadena Athletic Club as swimming coach, interest in that sport has been revived greatly.

## SAN FRANCISCO ALUMNI MEET

THE San Francisco Chapter of the Alumni Association held a dinner meeting on Friday, February 23, at the Claremont Hotel in Berkeley. The meeting was attended by 35 Tech men who enjoyed an old-time get-together with old friends and classmates.

An excellent talk was presented by Kenneth E. Kingman ('29), superintendent of lube oil operations at the oleum refinery of the Union Oil Company. The subject was "Petroleum in the War," and Mr. Kingman covered a complicated subject in some detail and gave everyone a much better understanding of the part that petroleum plays in our war effort. The manufacture of 100-octane gasoline, toluene, and many other petroleum products was described with the aid of charts and moving pictures.

The following alumni were present:

Harold L. Albright.....	'23
Raymond E. Alderman.....	'25
Marshall A. Baldwin.....	'27
Ronald B. Connelly.....	'39
Thomas J. Deahl.....	'35
Herbert H. Deardorff.....	'30
S. C. Dorman.....	'31
Edward Dorresten.....	'24
Roy O. Elmore.....	'24
Louis H. Erb.....	'22
Virgil Erickson.....	'37
Howard Fisher.....	'27
Arnold L. Grossberg.....	'42
N. L. Hallanger.....	'34
James J. Halloran.....	'35
David G. Harries, Jr.....	'23
Alex J. Hazzard.....	'30
Lawrence P. Henderson.....	'25
William L. Holladay.....	'24
Maurice T. Jones.....	'26
Douglas W. Keech.....	'26
William F. Keyes.....	'35
Kenneth E. Kingman.....	'29
Hilmer E. Larson.....	'27
Elvin B. Lien.....	'34
Jules F. Mayer.....	'40
F. J. McClain.....	'34
Donald S. Nichols.....	'28
D. J. Pompeo.....	'26
Quido M. Shultise.....	'39
Eugene W. Smith.....	'24
Joseph A. Vargus, Jr.....	'39
Ted Vermeulen.....	'36
Edward A. Wilson.....	'24
Gordon K. Woods.....	'42

Our Monday noon luncheons continue to bring together a small group of Tech men each week. We invite all alumni working in or visiting San Francisco to join us for lunch at 12 o'clock on Mondays. Our meeting place is the Fraternity Club Dining Room, 345 Bush Street (between Montgomery and Kearney Streets), San Francisco.

*Maurice T. Jones, '26, Secretary*

## VICTIM OF PLANE CRASH

Lieutenant-Commander J. H. Brahtz was one of seven persons killed when a Naval Air Transport plane, carrying 23 persons, crashed 25 miles south of San Francisco in mid-March.

Commander Brahtz was awarded his Ph.D. degree at the California Institute of Technology in 1932 and made his home in Pasadena several years prior to that. While at the Institute, Commander Brahtz majored in aeronautics and minored in civil engineering. He made analytical studies in connection with Morris Dam and was with the U. S. Bureau of Reclamation at Denver, Colo. In 1941 he was called into active service as a Navy reserve officer. At the time of his death, he was

post engineer at the Seabee base at Camp Parks, near Oakland.

Commander Brahtz is survived by his wife, who lives at La Jolla, Calif., and one son, Lieutenant John F. Brahtz, of the Navy Bureau of Aeronautics.

## UNDERWATER DEFENSE

The underwater defense of the Australian coastline, at the time the Japanese were threatening an invasion of that continent, was the mission of Lynn H. Rumbaugh, Ph.D. '32, from the Naval Ordnance Laboratory. In carrying out this task, Dr. Rumbaugh worked with the U. S. Naval Attache, the Commander Allied Naval Forces Southwest Pacific, the Royal Australian Navy, and the Council of Scientific and Industrial Research.

Dr. Rumbaugh left for Pearl Harbor from Washington soon after December 7, 1941. There he was in charge of 32 engineers from Naval Ordnance Laboratory and various Bureau of Ordnance activities working on underwater ordnance and countermeasures, harbor defenses, and degaussing under the leadership of Captain T. S. Boyd. Dr. Rumbaugh was in Noumea during the crucial Battle of the Coral Sea, and for the next six months he was on a full seven-day-a-week schedule in the southwest and south Pacific areas.

Returning to Washington in the fall of 1942, Dr. Rumbaugh became head of the research unit of the Naval Ordnance Laboratory. At that time its principal work dealt with various phases of mine research and certain underwater ordnance problems, but in 1943 its activities began on torpedoes. Dr. Rumbaugh's division is also associated in research with the Bureau of Ships and Bureau of Aeronautics, as well as with the Naval Petroleum Reserve and various naval degaussing activities.

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## BLACKMAN, '98, REGAINS FREEDOM

Word has been received by way of the War Department that Roy B. Blackman, '98, has been liberated from Santo Tomas Camp in Manila.

Two months before the outbreak of the war, Mr. Blackman had been ill. His survival through terrific hardships in the internment camp, in addition to his ill health, is indeed a miracle. It is apparent that the rescue of individuals interned in Santo Tomas was particularly timely, as the last year's Japanese policy of slow starvation had just about broken their morale. During this period, Mr. Blackman had undergone a serious operation and lost some 40 pounds in weight. Information indicates that the death rate at this camp had risen to approximately 10 per day at the time of liberation. Mr. Blackman is slowly regaining his strength under the care of Army doctors and the Red Cross.

Mr. Blackman's family, who live in San Juan, while not interned apparently have not been permitted to

visit him very often. He is convalescing in the Santo Tomas Camp Hospital and expects to return to his home when he is able.

## LIBERATED FROM SANTO TOMAS

Rene Engel, Ph.D. '33, former instructor in geology at the Institute and a prisoner of the Japanese, has been liberated from Santo Tomas prison camp according to a letter received by his wife, who is living in Pasadena. Dr. Engel's physical condition has been impaired, although not critically.

During his three years of imprisonment, Dr. Engel was in charge of education of all the interned children, as well as being in charge of adult classes, directing the teaching of languages, engineering, chemistry, mathematics, and other courses.

Dr. Engel was an associate of Jan Marsman, owner of extensive mining properties in the Orient, and went to the Philippines in June, 1940, to make a survey of mineral resources of those islands.

## PERSONALS

**I**T WILL be helpful if readers will send personal items concerning themselves and others to the Alumni Office. Great interest has been shown in these columns, but more information is required. Do not hesitate to send in facts about yourself, such as change of position or location, present job, technical accomplishments, etc. Please help.

—Editor.

1921

HORTON H. HONSAKER announced the arrival of a son, Russell D. Honsaker, on March 1. The Honsaker family now has three sons and one daughter.

ERNEST H. MINTIE holds the position of manager and field engineer for the Air-Maze Corporation in Los Angeles, Calif.

1922

COLONEL AND MRS. DONALD F. SHUGART have sent out announcements heralding the arrival of Nancy Lynn on March 5.

LIEUTENANT-COLONEL GLEN M. WEBSTER, formerly traffic engineer with Pacific Telephone and Telegraph Company, is with the Corps of Engineers at Corvallis, Ore.

1923

HERBERT A. GALE was promoted to the rank of first lieutenant in the Army Transportation Corps, as announced at headquarters of the San Francisco Port of Embarkation, Fort Mason, where he is attached to the Ships Complement Branch of Troop Movement Division. In civilian life, he managed a blueprint-photostat business.

Ex-'23

LIEUTENANT-COLONEL VERNON P. JAEGER has been a chaplain in the regular army since 1932 and is now serving overseas.

1924

LOYS GRISWOLD, who has been General Electric Company's manager in Phoenix, Ariz., has joined The American Factors Ltd. and its subsidiary, W. A. Ramsay Ltd., Honolulu, General Electric sales agents in the Hawaiian Islands.

FRED J. GROAT has recently moved to Phoenix, Ariz., where he is with the Bureau of Reclamation. Pending the location of a home, his wife, Peggy, and two children are living with Mrs. Groat's parents, Professor and Mrs. Sorensen, in Pasadena.

1925

LIEUTENANT-COMMANDER CLAR-

ENCE A. BURMISTER completed a special mission for the Corps of Engineers, U. S. Army, at the end of 1943 and was working with the Navy during 1944 on special equipment. Lieutenant-Commander Burmister's new assignment will be western Alaska, on a project for Geodetic Survey.

1927

MAJOR EDWARD M. BROWDER, JR., U.S.A., is a senior structural engineer with the Corps of Engineers in the Canal Zone.

LIEUTENANT-COLONEL ALBERT C. BILICKE, U.S.A., is now stationed in Paris, France. He has a son in training at Las Vegas, Nev., as flight officer on a bomber.

1928

LIEUTENANT-COMMANDER KENNETH M. FENWICK, U.S.N., late of Pearl Harbor, was given a furlough after a serious illness and recuperated at his home in Hollywood before returning to his old position.

1929

LIEUTENANT-COLONEL THOMAS H. EVANS is in the U. S. Army Corps of Engineers with offices at the Pentagon, Washington, D. C.

ALPHONSE M. CRAMER holds the position of assistant general manager of the James Graham Manufacturing Company at Newark, Calif.

1930

J. R. LESTER BOYLE holds the position of city engineer for the city of Laguna Beach, Calif.

ORRIN M. ELLIOTT is a water conditioning engineer for the Sun Oil Company at Philadelphia, Pa.

1931

HOWARD E. SHIRLEY is plant manager of the Manistee Salt Works, Manistee, Mich.

EDWARD S. PEER holds the position of research chemist with the Filtrol Corporation in Los Angeles, Calif.

1932

COLONEL WILLIAM SHULER has been reassigned to Fort Lewis in command of the engineers' training section. A Purple Heart veteran of the Normandy invasion, Colonel Shuler was former commander of the 115th Engineers' Combat Division in the First Army.

1933

THOMAS S. TERRILL, who was liberated from Los Banos Camp in the Philippines, has arrived in the States and was greeted at a west coast Army base by

his wife. He was an employee of Consolidated Aircraft Corporation, delivering pre-Pearl Harbor planes to the Dutch via Manila, and was captured on Christmas Eve, 1941, when the Japs invaded the Philippine capital.

H. G. SMITS is vice-president of the Pacific Iron and Steel Company of Los Angeles, Calif.

JACK NORMAN SPARLING is chief structural engineer for J. Bordon Turnbull, Inc., Cleveland, Ohio.

RUSSELL N. DOESCHER is a research associate at the University of Southern California, Los Angeles, Calif.

LOUIS H. GOSS is employed by the U. S. Engineers' Office, Los Angeles, Calif., as an associate engineer.

1934

LIEUTENANT-COMMANDER LEE P. MORRIS has recently purchased a home at Manhattan Beach, Calif. He is now stationed at the naval repair dry docks at San Pedro, Calif.

GLENN W. WEAVER is an engineer (section chief) for the Western Electric Company, Kearny, N. J.

N. L. HALLANGER is assistant to division meteorologist for Pan American Airways, Mills Field, San Francisco.

1935

WILLIAM McLEAN is employed by the National Bureau of Standards at Washington, D. C.

DOCTOR LOUIS T. RADER is now head of the department of electrical engineering at the Illinois Institute of Technology, succeeding Dr. Jesse E. Hobson, who is now director of the Armour Research Foundation, Chicago, Ill.

1936

STAFF SERGEANT CHARLES W. BEST, in the signal service corps of the Army, is now on the island of Oahu.

PAUL H. HAMMOND announces the birth of a daughter, Janet Olena, on February 11. Paul is manager of Holly Heating and Manufacturing Company of South Pasadena, Calif.

1937

MAJOR RICHARD T. BRICE, U. S. Army, is an ordnance officer doing investigation and court martial work in the Philippines. Major Brice was stationed on the Russell Islands for over a year and has written an article on the bird life existing there which will appear in the New York Zoological Society magazine.

1938

ROBERT C. THOMAS passed away March 10. Interment was at Forest Lawn Cemetery, Glendale, Calif.

ENGINEERING AND SCIENCE MONTHLY