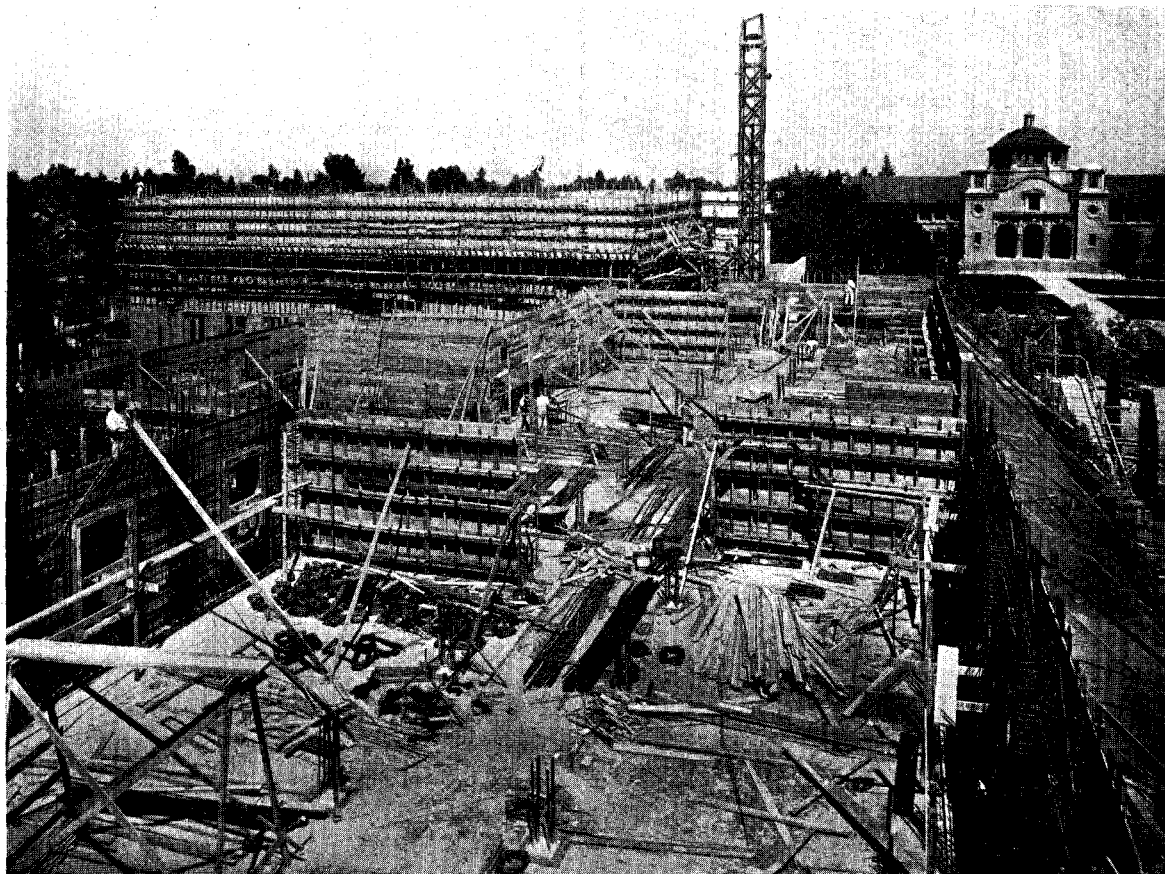


# ALUMNI REVIEW

CALIFORNIA INSTITUTE OF TECHNOLOGY



W. ALBERT MARTIN

**EXPANSION!**

No. 2

SEPTEMBER 1937

# ALUMNI REVIEW

CALIFORNIA INSTITUTE OF TECHNOLOGY

No. 2

September, 1937

Publisher four times a year—September, December, March, and June, by the Alumni Association, California Institute of Technology, 1201 East California Street, Pasadena, California. Subscription price included in annual dues of \$2.50.

## THE STAFF

ALBERT W. ATWOOD, JR., '32, *Editor*

FREDERICK S. SCOTT, '30

STUART L. SEYMOUR, '26

WILLIAM H. PICKERING, '32

ALBERT D. HALL, '22

## THE ALUMNI BOARD OF DIRECTORS

Ward D. Foster, '27	- - - - -	<i>President</i>
J. Edward Kinsey, '26	- - - - -	<i>Vice-President</i>
William T. Taylor, '27	- - - - -	<i>Treasurer</i>
Edward E. Tuttle, '28	- - - - -	<i>Secretary</i>
Harold Hill, '11		Philip Schoeller, '32
Allin Catlin, Jr. '21		W. D. Humason, '36
	H. F. Peterson, '27	

## CHAIRMEN STANDING COMMITTEES

J. Edward Kinsey, '26	- - - - -	<i>Membership</i>
Philip Schoeller, '32	- - - - -	<i>Social</i>
Albert W. Atwood, Jr. '32	- - - - -	<i>Publications</i>
Donald S. Clark, '29	- - - - -	<i>Placements</i>
Allin Catlin, Jr., '21	- - - - -	<i>Athletic</i>
Albert D. Hall, '22	- - - - -	<i>Finance</i>

## REGISTRATION OF ENGINEERS

*William H. Saylor '32*

The registration of engineers by the State of California has lagged behind the practice of other states. Today thirty-eight states have laws providing for and regulating the registration of professional engineers, which group includes civil, mechanical, mining, electrical and chemical engineers. California provides for the registration of civil engineers alone. Repeated efforts made by various groups to secure the agreement necessary to the passing of a registration law for the other branches of engineering have, to the present, been without success.

The civil engineer registration act was passed by the California legislature in 1929 and is fundamentally the same as the legislation proposed for the registration of other engineers. This act provides that "any person who practices or offers to practice civil engineering . . . in this state . . . shall be registered . . ." Provision is made for a governing board to judge the qualifications of applicants for registration, to issue certificates of registration, and to reprimand or revoke the certificates of registered civil engineers who do not live up to the terms of the act.

While the act provides that no one shall practice civil engineering in the state without being registered, the interpretation of what constitutes the practice of civil engineering is limited enough not to interfere with a civil engineer who works as a subordinate to a registered civil engineer. The act says "Nothing in the act shall be construed as prohibiting a civil engineer from practicing or offering to practice his profession through the medium of or as employe of a partnership or corporation, provided that the plans, specifications, and reports of such partnership or corporation be signed and be stamped with the seal of each registered civil engineer in specific responsible charge of the preparation

of the same." It is the civil engineer who wishes to do responsible work on his own right that must be registered.

The certificate of registration is obtained by written examination. The applicant for examination must be at least 24 years of age, of good character, and have been engaged in the practice of civil engineering for at least six years, one year of this practice being in responsible charge of engineering work as a subordinate to a civil engineer. Graduation from an engineering school or college approved by the board is counted as four years of practice. The written examination falls into two parts, first, a two-day examination in engineering fundamentals, which examination is waived for graduates of accredited engineering schools, and second, a two-day examination in engineering practice and design. Applicants successfully passing these examinations are issued a certificate of registration, authorizing the holder to practice civil engineering under the terms of the act.

At present there are about 4500 registered civil engineers in the State, about 80% of whom entered under the grandfather clause. It is interesting to note that due to the relative difficulty of passing the examination for registration—less than 50% of the applicants succeed—the total number of registered engineers in the State has slightly decreased.

Besides providing for the registration of civil engineers, the act also provides that the authority to use the title "Structural Engineer" may be given to registered civil engineers who are properly qualified. Qualification consists of holding a certificate of registration as civil engineer, of having had responsible charge of structural engineering work for at least three years, and of having satisfactorily passed a written examination given by the board.

# A MESSAGE TO ALL ALUMNI

WARD D. FOSTER

*President Alumni Association*

This is the beginning of a new year for the Alumni Association—one in which the directors and committeemen are determined to provide greater advantages to Association membership than ever before.

The management of the Placement Service, originated by the Alumni Association, will be continued by Dr. Don S. Clark, '29, Director of Placement, with the assistance of Miss Theresa Dierkes, Placement Secretary and Assistant Secretary of the Alumni Association.

Local members are assured of a year of splendid social activities by the plans for several most interesting events being made by Phil Schoeller, '32, Social Chairman. Announcements of the details of these events are to be found on another page of *The Alumni Review*.

It is planned to make the *Alumni Review* a quarterly publication and to present in it news of the Institute and of the Alumni that will be of interest to the membership. This quarterly publication will cost a very substantial share of the Association's income, but the Directors feel that the closer associations and contacts brought about through the pages of this magazine will more than repay the expense. Al Atwood, '32, Editor of the first issue of the *Review* and this, its second, issue, will continue as Editor of the publication this year, so that we may expect the future issues to comply with the high standard which he has set.

The advantages of membership in the Association for those men distant from Southern California will be enhanced this year by the Association (1) bringing them in closer contact with other non-resident alumni and the activities of the local alumni through the pages of the *Alumni Review*; (2) granting charters to each group of ten or more members who will schedule and attend meetings at least once in three months and comply with other conditions defined by the Association; and (3) remitting to the secretary-treasurer of each chartered chapter for each Tech man in the chapter's locality who becomes a member of the Association before a definite date, the sum of fifty cents. This amount, which represents the approximate sum per local member spent for events that the distant members cannot attend, will assist the chapters with the expense of their chapter meetings. Groups outside of Southern California interested in the benefits of this equitable arrangement may secure all details by writing H. Fred Peterson, '27, at the Alumni office.

The membership of the Association has, for the past few years, represented a very satisfactory percentage of the Cal-Tech graduates and ex-students, and has reached a number sufficient to permit such an undertaking as a quarterly mag-

azine. The efforts of Ed. Kinsey, '26, Membership Chairman, and his assistants will this year increase the size of the Association.

Plans for other activities will be announced in future issues of the *Alumni Review*.

If you are not now a member of the Association, we are confident that this issue of the *Alumni Review*, a sample of the work of the Association and the advantages of membership, will make you wish to become a member. By promptly mailing your annual dues of \$2.50 to the Alumni Office on the campus you will be certain of receiving the subsequent issues of the *Alumni Review*, and to share in all the other advantages of membership. If you are interested in the work of any of the standing committees of the Association you may communicate with the chairmen of such committees, listed in this issue, through the Alumni office. If you cannot perform such committee work, send news of yourself and the Tech men around you to the Editor of the *Alumni Review* so that the other members of the Association may know of your activities through this publication.

In this way you will participate in making this year the most successful year of the Association.



## FORMER CALTECH PRESIDENT HONORED BY JAPANESE GOV'T.

On July 23rd Japan's Imperial Order of the Sacred Treasure was presented in Los Angeles to Dr. James A. B. Scherer by Consul Tomokasu Hori in recognition of Dr. Scherer's invaluable service in behalf of international understanding and in appreciation of his devotion to the ideal of universal brotherhood.

Dr. Scherer is a former President of Caltech and a former director of the Southwest Museum. He is considered America's foremost authority on Far Eastern affairs and recently returned to Pasadena from a world tour. Dr. Scherer has been a student of Oriental affairs for forty years, going to Japan directly after his graduation from Roanoke College, Virginia, and remaining in the educational service of the Japanese Government for the next five years. After several interim visits Dr. Scherer remained in Japan from '32 to '36 when he wrote four books dealing with Japan's recent economic advance and its entrance into Manchuria.

# CINEMATOGRAPHY IN COLORS

S. ERIC HOWSE, '30

FROM the earliest times of human history of which there is any knowledge, we as a race, have been striving to record the sights and sounds of the surrounding world. Just why we have shown this predilection to recreate our environment is a matter for the philosophers to speculate upon, but the fact remains that through the stages of recording patterns, colors, perspective, and their combination with motion and sound, the progress has always been directed, with the aid of science, towards realism. Without fear of contradiction, it may be said that the production of a three color motion picture print with sound track draws more liberally upon the physical sciences than does any other form of art.

By means of photographic materials it is possible to record images of the visual world in gradations of the scale white-gray-black. With this much established, Clerk Maxwell and other pioneers of color photography must have asked themselves, how can the photographic process be made to repeat the functions of the eye in all respects including color? They demonstrated that lights of the three primary colors could be projected in varying proportions onto a screen to produce any color sensation, and this was the foundation of the so-called Additive Process. It appeared to offer the simplest solution to the reproducing problem.

Any process for making photographs in color consists of two aspects, namely recording and reproducing. The fundamentals of recording consist of making three photographic images of a scene, each taken through a glass or gelatin color filter of one of the three primary colors, red, green, and blue. Each of the negatives thus obtained bears a record of the color component of the scene which is transmitted by the filter used. These are known as color separation negatives. Thus the scene has been analysed into red, green, and blue components, but recorded in gradations of the neutral scale.

When black and white positives are made from these negatives, they may be projected by means of a source of white light onto a screen, each through a filter similar to the one used in recording, and if the images are accurately superimposed, the composite will reproduce the scene in colors. It is curious that the brain will synthesize various proportions of the three components into any color of the visible spectrum.

From the standpoint of commercial photography, this additive process had definite disadvantages owing to the fact that equipment for reproducing the black and white movie had become so standardized and widespread that radical modifications to permit the superposition of three pictures each in a different color was economically unjustified. It soon became evident, therefore, that a satisfactory reproducing process must consist of projecting a single pic-

ture containing all the colors on the film. Such a process is known as Subtractive because in reproducing, let us say, a red object, the film subtracts from the white projection light all but red from the spectrum.

It is recognized that under existing circumstances the ultimate goal for a successful motion picture process in color must be threefold: it must add a full range of colors to the black and white technic, it must involve no complications to theatre projection, and it must add a minimum of increased cost both in recording and in manufacturing prints. With these qualifications clearly in view, the Technicolor organization entered upon an extensive program of research and development. At the present time the color separation negatives are simultaneously exposed on three separate films through a single lens, so that space and time parallax are entirely avoided. These three negatives are then developed in essentially the same manner as the single negative of the familiar black and white film.

Following their development comes a printing operation which, however, is not the final step as in the black and white technic, but an intermediate one. This printing produces three color separation positive exposures, and by development and subsequent processing, the silver images are converted to relief images of hardened gelatin. These positives or matrices are now analogous to the etched zinc or copper plates used in photolithography, and are used to transfer dye images to previously blank film which is to become the end product of the process. As the thickness of the relief changes from point to point in delineating the image, so does its capacity for absorbing dye change. Thus the areas which are in greatest relief, transfer the greatest intensity of dye to the blank. This method of making prints in color is known as imbibition—the blank "imbibes" the dye from the matrix.

Transferring the three dyes successively is an extraordinarily delicate technic, as each dye image must be in exact register with the other two if color fringing is to be avoided. Some appreciation of the precision required may be gained by considering the magnification which any defect receives in being projected from a frame of motion picture film onto a theatre screen. Not only are requirements exacting from a mechanical standpoint, but also the factors controlling the transfer of the dyes must be under very close regulation to insure that the proper ratio between the colors be maintained. In spite of these rigorous operating conditions, the machines which perform this part of the process handle the film at a quantity rate.

It is evident by this time that a wide variety of technical aspects are embodied in this sequence of operations, and these have attracted a group of Tech men with a diversity of

interests. Physicists, chemists, and engineers cooperate at Technicolor to carry on the racial heritage of recording and reproducing the visible world.

Editor's Note: ERIC HOWSE, '30, who writes this interesting article on the production of colored motion pictures, is the Office Engineer for Technicolor in their large Hollywood plant on Cole Avenue. He mentions the following Caltech graduates who are members of the Technicolor organization which, as you may know, are the largest makers of colored motion pictures.

NELSON CORDES, '31, is an assistant in the camera department.

FRED DETMERS, '33, is a member of the camera department who has made a number of jaunts to out-of-the-way places for travelogue material for color shorts.

JOHN HAMILTON, '30, has been with the camera department for several years during which time he has toured Japan, Mexico, and Holland in search of travelogue material.

WINTON HOKE, '31, also associated with the camera department, has made many trips including one around the world.

HENRY IMUS, '30, is with the camera department of the British unit of Technicolor near London.

CARL OVERHAGE, '31, Ph.D. '37, has recently joined the research department of Technicolor.

WADSWORTH POHL, '29, who has been with the organization since graduation is now an assistant to the plant manager.

LEE PRENTICE, '25, who is in the production department is in charge of the Positive Assembly.

MERLIN THAYER, '30, is now a laboratory technician with Technicolor having formerly worked first for General Electric and later as refrigeration engineer with the United Fruit Steamship Line.

SIDNEY ZIPSER, '30, who likewise spent several years with the General Electric Company both at Schenectady and at Fort Wayne, has for some time now been a member of the camera department. In this capacity he has traveled to the Pacific Northwest and even to the South Sea Islands for travelogue material.



## CALTECH TEACHERS WILL SERVE ON FACULTY OF SCHOOL OF DESIGN

Appointment has been made of additional members to the faculty of the new Southern California School of Design, a graduate institution for industrial art to be opened in October at Carmelita Gardens.

The new faculty members will be associated with Dr.

Walter Baermann, noted industrial designer of New York and Massachusetts, whose selection as professor of design and faculty head was announced several weeks ago.

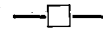
A course titled "Materials and Manufacturing Processes" is to be given by Dr. Donald S. Clark of the California Institute of Technology. This essential part of the modern designer's equipment will enable the student to create in terms of new materials and methods of production through an understanding of their inherent qualities and limitations.

"Economic Background" will be taught by Philip S. Fogg, assistant professor of economics at Caltech. This course will cover problems in marketing, production, credit, etc., with related sociology in studying the consumers for whom modern design creates.

The course in "History of Design" will be given by J. Donald Young, formerly of Columbia University, New York, and now assistant professor of art and archaeology at Occidental College, where he is acting chairman of the department of art.

Differing from the usual vocational training heretofore generally offered in the design field, the purpose of the new Pasadena institution is to train thinkers in terms of design; to base achievement on the creative, scientific and practical analysis of design problems rather than to produce mere technicians or handicraftsmen.

Secretary of the school will be Miss Mildred Varney, formerly executive secretary of the Bureau of Business Research at the Harvard Graduate School of Business Administration.



## ROBLEY D. EVANS WINS \$1000

The American Association for the Advancement of Science announced late in June the award of a \$1000 prize to a youthful scientist for medical discoveries. Dr. Robley D. Evans, '29, Ph.D. '32, won the award for his discovery of a method of detecting radium poisoning before its fatal stage and a treatment for extracting the radium from bones before it is too late. The award is based largely on work done for his thesis while studying for his doctorate at Caltech.

Dr. Evans who is entering his fourth year as assistant professor of Physics at Massachusetts Institute of Technology is the first person to receive this new award of the American Association for the Advancement of Science. The award carries a bronze medal with it.

Dr. and Mrs. Evans and their two youngsters; Richard, age 7 and Nadia Ann, age 4, have just returned to Cambridge after having spent a pleasant summer vacation in California. During his stay in the Southland Robley Evans visited the campus on several occasions.



*L. E. Woods and Anthony Easton  
attach 18 oz. transmitter to balloon.*

## RADIO SOUNDING BALLOONS

A new development from the Guggenheim Aeronautics Laboratory is an efficient, reliable radio-meteorograph. This instrument is designed for reporting weather conditions in the upper atmosphere by means of radio, and consists of a very small radio transmitter combined with instruments for measuring atmospheric temperature, pressure and humidity, the whole being sent aloft by means of a small balloon. The radio transmits signals to a ground station where, by means of a suitable receiving and recording apparatus, the signals are interpreted to give the desired information about the upper atmosphere.

The radio-meteorograph complete, weighs about 18 ounces and is carried to altitudes of 10 and 12 miles by means of a rubber balloon that is about 5 feet in diameter when released. The radio transmitter uses an acorn tube and transmits on a wave-length of 1.67 meters. The tube is operated by two small lead-acid storage batteries which weigh only 8 ounces and furnish 100 volts for the plate supply and 6 volts for the filament. While the instrument is in flight the transmitter is turned on and off intermittently by the meteorograph, which measures the pressure by an aneroid cell, the temperature by a bimetal thermometer and the humidity by specially treated human hair. A special clock movement turns an electric contact which alternately contacts the pressure, temperature and humidity measuring devices, and fixed reference contacts. Each time a contact is made, a signal is sent out by the radio. These signals are received on the ground by a super-regenerative receiver which in turn, through sensitive relays, operates a tape

recorder which thus shows each signal. The signals on the tape are readily interpreted in terms of the pressure, etc., by means of their spacing with reference to each other. A complete set of measurements is made each half minute.

This instrument has many advantages over airplane flights for weather recording. It can travel to at least three times the height the planes can reach, and it can be sent up in all kinds of weather. At present daily flights are being made from the Institute.

The development of the amazingly ingenious little device is due to Captain O. C. Maier, M.S. '36, and L. E. Woods, M. S. '35.



## CALTECH SAILOR WINS PRIZES

Sailing a 47-foot boat he built himself, Edmund G. Grant, a member of the 200-inch telescope engineering staff, has captured the famous Palisades trophy and the Forty-five Foot Sailing Association trophy.

Mr. Grant won the Palisades honor in the race from Catalina's Isthmus to Santa Monica, and the other prize in the race from Santa Monica to San Pedro. The boat, "Flyaway II," flew the Burgee of the Hi-n-Dri Yacht Club of which Mr. Grant is publicity chairman.



## DR. DONALD S. CLARK MAKES EXTENSIVE SUMMER TOUR

Leaving Pasadena on July 15th, Dr. Donald S. Clark of Caltech Mechanical Engineering staff, started on a three months tour to familiarize himself with the latest developments in metallurgical research. On his way to the Atlantic Coast he stopped off at various General Motors plants and research centers and at the Battell Institute, Columbus, Ohio.

After a few days at the Bureau of Standards in Washington, D.C., Dr. Clark viewed the impact testing experiments at the Watertown Arsenal and M.I.T. and while in New Jersey visited the International Nickel Co. and the U.S. Steel plant.

On August 4th Dr. Clark, accompanied by Dr. Gottfried Datwyler, research fellow at Caltech, sailed for Europe where they visited technical institutions in Berlin, Goettingen, Aachen, Dusseldorf and Frankfurt as well as in Zurich and Altorf, Dr. Datwyler's former home.

Dr. Datwyler remained in Altorf while Dr. Clark went on to England to spend some time in the National Physical Laboratories in London as well as in Sheffield and other centers. He expects to be in Pasadena again by September 20th.

# WHY WASTE TIME ON A BURRO?

By T. S. Terrill, '33

First, a note of warning. If you, gentle reader, are frigid toward matters Aeronautical, pray do not read further. Although the title of this literary miscarriage apparently gives no clue to its content, such is not the case. However, in order that those Techmen who abhor Aviation with all its flag waving and ballyhoo will not feel that they have been tricked into reading an article about it, I place my cards on the table, face up.

Since graduating from Tech in '33, I have carried on a one-man survey of the Aviation Industry, tasting of it here, nibbling on it there—attempting to find a foothold in it where a combination of an engineering education and a year and a half of military flying might find its most fruitful application. At times, I have become thoroughly disgusted with the picture, have attempted to quit it cold, have gone into other fields. But Aviation is like the Lorelei, like a dope. You cuss it, you berate it, you try to run away from it. But no matter where you go, sooner or later a transport is going to fly over. The throb of the engines, the gleam of the sun off the silver wings—it's no use. Back you go to try again.

At Tech I had it figured out that the smart thing to do would be to back up the engineering with practical flying experience. I reasoned that other things being equal, the man who could fly could build a better airplane than he whose experience was limited to paper and books.

With this thought in mind, I applied for an appointment to the Air Corps Flying School, was accepted, and reported for training at Randolph Field, Texas, in July 1934. Followed a year and a half of priceless experience, ranging from Dodo Days when a training plane offered seemingly insurmountable problems to the occasion on which I was forced to fly a five-ton, twin-engined Keystone Bomber solely by instruments when caught by the weather on a cross country hop.

Following the original plan of practicing engineering, using the flying as a background, I went to work in the nation's largest aircraft factory after having been told that the flying experience was of no value to the factory since it was engaged in the building of airplanes, not their flying. (Brilliant observation and very true.)

Six months of working at \$19.22 per week (less one day's pay whenever a holiday fell within the working week), finding the employment files glutted with applications from college and technical school graduates from all over the country who were willing to work for a song, riled at the ignorance and the utter indifference of the engineers toward the problems of the pilots who have to fly their monstrosities, and stymied by the factory's refusal to give any credit or recognition to flying experience, I fled the scene, tried another factory, found the same attitude.

At this writing, I have found a place where the combina-

tion of engineering education and flight experience is recognized and welcomed. I speak of Pan American Airways, an organization that needs no introduction. Pan American has introduced engineering methods into its flight procedure, has built an enviable record on its pilot-engineer policy. It has put to shame the record of domestic airlines that have failed to recognize the advent of engineering into flight problems.

Here you have a nice paradox. The domestic airlines are using flying equipment which is a maze of machinery within its sleek fuselage and smooth wings, and are thrusting the entire operation of these manifold units on two men—neither of whom is, in general, technically trained. Pan American, using equally complex equipment, breaks the equipment into units, and places from four to five men in its crews, each charged with one function. These men are, in general, engineering or science graduates, and are put through a good deal of training after they join the organization. When I report at Brownsville, I shall start work toward getting an Engine Mechanic's License, an Airplane Mechanic's License, and a Second Class Radio-Telegraph License.

The record tells the story. While the domestics drop planes all over the country, Pan Am has a relatively pure record. Yet the domestics operate with millions of dollars worth of ground aids, over relatively short distances.

Some might question my contention that the majority of domestic airline pilots are not technically trained. American Airlines issued a press release recently stating that 63 percent of its pilots come from the Military Services, 56 percent being from the Army. I know Army pilots. Few are technical graduates. They are anything you want to name—school teachers, doctors, lawyers, economics majors, etc., etc.

Others might question the necessity for technical men at the controls. I remind them of the record. And I invite their inspection of the pilots' compartment of the newer domestic landplanes. As soon as the engineers had cleaned up the external structure of the modern transport, they had to go to gadgets to increase performance. First they hung gadgets on the airplane—wing flaps, retractable landing gear. Then they started on the engines—superchargers, cooling vanes, carburetor heaters, mixture controls, controlled pitch propellers. They added automatic pilots, propeller de-icers, wing de-icers, transmitters, receivers. They added more tanks with more valves, gauges, meters, instruments, dump valves, fire extinguishers and what-nots.

What's the answer?

Since most pilots are not engineers, planes will have to be built to accommodate the available personnel. Ships must be de-gadgetized, and then there must be a break down of duty . . . such as Pan American and the Navy use. That means a pilot with nothing but the controls to worry over, a radio operator for the communications work, a flight me-

chanic—who does not have to be a pilot—but should be an engineer—to operate the mechanical controls—and possibly a copilot-navigator.

Let me appeal to engineers and the men who write specifications to consider the pilot, to consult him on the location of controls, to break down duties. A little less drafting board and a little more flying in dirty weather might convince these scholarly gentlemen of the necessity of simplification in the cockpit . . . if it's possible to get them off the ground.



## MACARTHUR RETIRES FROM DUTIES AS DEAN OF FRESHMEN

After fifteen years of service as Dean of Freshmen, our well loved Dean MacArthur has felt the weight of his advancing years and decided to lessen his troubles. Last June he resigned his position as Dean and this fall will teach classes in Foreign Languages.

Dr. MacArthur had been at Tech only two years, when in 1922, he was made Dean of Freshmen at the same time as Dean Hinrichs became Dean of Upperclassmen. Since then all entering Freshmen have passed through his friendly hands. Who does not remember Freshman history lectures and our surprise at finding that Dean Mac knew all our names after a few weeks of school? And probably many of us recall awakening with a start at hearing our name mentioned in the smooth flow of the lecture. Then there were the consultations in his office about grades and courses and most everything else, even occasionally about discipline. For instance there was the occasion at the end of one year when the old dorm was the Freshman dorm and the residents celebrated with sufficient gusto to arouse the citizens of Pasadena living for blocks around . . .

In addition to his teaching and his work as Dean, another of Dr. MacArthur's real enthusiasms was his interest in Europe and the Travel Prize. From 1926, when Carl Anderson was awarded the prize until it was discontinued in 1933, he conducted a seminar for the benefit of the contestants on what to see and what not to see in Europe.

Dr. Untereiner, who is known to many Caltech graduates, is to succeed Dr. MacArthur as Dean of Freshmen.

## SCALE MODEL OF THE 200" TELESCOPE COMPLETED

In connection with the development of the Palomar observatory and the 200" telescope, it was felt that the best way to ensure success with the mechanical problems to be surmounted in building the vast instrument, was to construct a scale model on which tests could be made. Accordingly the Astrophysics shop has built such a model to a tenth scale. It is accurate in every mechanical detail, and, as a result of the tests carried out on this model, it has been found necessary to make a few changes in the design of the big telescope. The chief problems studied were the design of the actual telescope tube, and the design of the yoke at the north end of the polar axis. In each case the difficulty lay in ensuring smooth and accurate operation of the instrument, no matter in what direction the observer should happen to be looking.

At the completion of these tests, it was thought that it would be highly desirable to get some further use from the model, and hence a 20" mirror has been ground, and the whole mounted in the north dome on the Astrophysics building. Of course a few minor changes were necessary to fit the instrument for actual visual observation. Unfortunately no tenth scale observers are on hand, so that the observer's chamber in the upper end of the tube cannot be used, and so an eyepiece has been fitted to the lower end of the tube. A drive similar to that to be used on the big telescope has been incorporated into the setup. This drive is all electric and has some interesting features. It consists essentially of an electric oscillator whose frequency can be adjusted from the telescope control board. The output of the oscillator is fed to the telescope through a synchronous motor. In addition to the manual control there is an automatic adjustment of the frequency to compensate for the effects of refraction when the telescope is operating near the horizon. A further refinement is the automatic operation of the dome. The position of the telescope is communicated through a selsyn connection to a robot instrument which, through a contact system, always keeps the slot in the dome directly in front of the telescope. Still another convenience for the operator is an indicator on the control board giving him directly the right ascension and declination of the telescope at all times.

All these features will be incorporated into the big telescope at Palomar, and, in the meantime, the model on the roof of the Astrophysics building is going to help get the bugs out of these devices and hence help to make the 200" an immediate success.



# ALUMNI YOU SHOULD KNOW

## ELECTRICAL ENGINEER

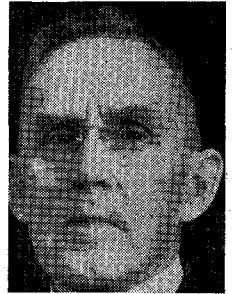
Last June was the thirty-fifth reunion for J. M. Gaylord who graduated from Throop Polytechnic Institute in 1902. After several years with the old Edison Electric Company he decided he needed more education than Throop had been able to give him and went to M.I.T. where in 1907 he received an S.B. in electrical engineering.

At this time Mr. Gaylord joined the U. S. Reclamation Service starting as a mechanic on the erection of hydraulic turbines at Roosevelt Dam. He rose rapidly in the service becoming in 1909 Superintendent of Construction of the power system of the 50,000 acre irrigation project at Minidoka, Idaho. This project, then the country's largest pumping system, involved a 10,000 H.P. power plant, a transmission line,

and a pumping plant. From 1915 until 1925 he was Chief Electrical Engineer of the Reclamation Service.

In 1924 Mr. Gaylord became Superintendent of Hydrogeneration for the Southern California Edison Company and was responsible for the operation of the company's 24 hydroelectric plants aggregating 657,000 H.P.; the sixth largest power system in the United States.

Since 1931 Mr. Gaylord has been Chief Electrical Engineer of the Metropolitan Water District of Southern California, a position wherein he has active charge of the design and construction of the 230 kv. transmission line and the five pumping plants which will eventually consume 36% of the energy generated at Boulder Dam.



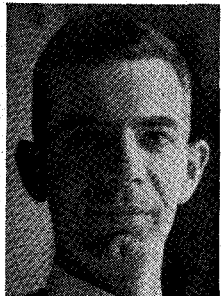
J. M. GAYLORD

## PHYSICIST

H. R. Crane received a B.S. in Physics in the spring of 1930 after the customary four years of undergraduate work. Then came several months of travel in Europe which terminated in time for his enrollment in the graduate school at the beginning of the Spring term 1931. At this time a program of research on high voltage X-ray apparatus and technic, using the facilities of the million volt testing laboratory, was getting under way in the Physics Department. This offered an attractive field to Dick Crane and he joined forces with Dr. Lauritsen as research assistant. This work culminated in the design

and erection of equipment for the Kellogg Radiation Laboratory on the Tech campus. There followed as a related development the study of light elements under bombardment by high energy particles, and the phenomenon of induced radioactivity was produced.

With this work as a background, Crane received the degree of Ph.D. Magna Cum Laude in 1934, and subsequently accepted a post at the University of Michigan as instructor and research associate in Physics. His work in this capacity has earned for him a rank among the nation's "atom smashers."



H. R. CRANE

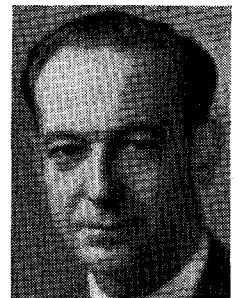
## PATENT ATTORNEY

Ward Foster, President of the Alumni Association for the current year, is remembered by his Tech contemporaries for his numerous and varied undergraduate activities, including the Student Body presidency in his senior year. To older graduates, he is known through his alumni activities since graduating in '27.

Immediately deserting the field of pure engineering, Ward became interested in the practice of patent law. He says a Tech education is an excellent background for a legal training. Incidentally, he proved it by his enviable record at U.S.C. Law School. Now admitted to practice in the State and Federal Courts, he finds his forensic and scientific training at Tech a valuable adjunct to the practice of his chosen profession. Thus, from winning awards in debating

and extemporaneous speaking, Ward has turned to judicial awards and, from all we hear, his number of wins for his clients is enviable. He has been associated with the same law office since graduation and now devotes his entire time to litigation in the Federal Courts of California and the East. As we would have expected, his executive, legal and technical abilities have elevated him to a partnership basis, and we find him in association with other Tech men in an office in the Chamber of Commerce Building behind doors bearing the name, Harris, Kiech, Foster and Harris.

We look forward to his leadership for the ensuing year, knowing that his talents and ambitions will lead us to new successes in Association activities.



W. D. FOSTER

# REPORT OF PLACEMENT ACTIVITIES

July, 1936, to July, 1937

DONALD S. CLARK, *Director of Placements*

THE year 1936-'37 has been a successful period for the Alumni Placement Service of the California Institute of Technology. This has been made possible through the wholehearted cooperation of the Faculty and Alumni of the Institute. Not only has it been a successful year for the Placement Service, but those men who received degrees on June 11, 1937 and who sought positions, also fared well. The records indicate that at least 85% of the men who received degrees this year had made arrangements for employment by about the first of July. In the compilation of such data it is difficult to be accurate, since continued contact between departments and their graduates is, in many cases, impossible. The figures given in the report should be used only as an indication of existing conditions. Employment may be higher than that reported.

All departments have reported their placement situation as far as is possible and the results have been tabulated on a separate sheet appearing at the end of this report. The table is divided into two parts, science and engineering.

In the Division of Science the figures for all degrees are as follows: (The first number gives the number of degrees conferred, and the second the per cent reported employed or returning for graduate study.)

	1937	1936
Geology	19—100%	8—100%
Applied Chemistry	12— 83%	17— 76%
Chemistry	10— 80%	17— 94%
Physics	34— 68%	26— 81%
Mathematics	2— 50%	5— 60%
Biology	8— 25%	9—100%
All Science	85— 74%	81— 84%

As indicated, this may not be a true picture of the situation. The Biology Department did not know what most of their graduates were doing; hence the low record. Some may be employed.

In the Division of Engineering the results are as follows:

	1937	1936
Aeronautical Engineering	4—100%	26— 85%
Meteorology	6—100%	
Civil Engineering	31— 97%	23—100%
Mechanical Engineering	27— 93%	28— 75%
Mechanical Engineering (Aeronautics Option)	28— 93%	
Electrical Engineering	33— 79%	38— 61%
All Engineering	129— 91%	115— 78%

These figures do not include officers of the United States Army and Navy who are detailed to the Institute for study.

Examination of the figures shows that of the 214 men receiving degrees, 32 were unemployed. However, definite

knowledge of these men is not available. The departments definitely reported the following number of men as unemployed:

Physics	Ph.D. 3
	B.S. 2
Civil Eng.	B.S. 1
Mechanical Eng.	B.S. 2

At the present time only one of these men is registered with the Placement Service.

Considering the employment situation according to the degrees conferred, the results show the following:

	1937	1936
Ph.D. Science	21— 67%	24— 92%
Engineering	5—100%	10— 80%
All Departments	26— 73%	34— 88%
M.S. Science	24— 88%	19— 84%
Engineering	51— 94%	36— 89%
All Departments	75— 92%	55— 87%
B.S. Science	40— 70%	39— 80%
Engineering	73— 88%	69— 71%
All Departments	113— 82%	108— 74%

It is particularly interesting to see what the men receiving degrees do after graduation. In the table at the end of this report is given the data showing the general distribution. In the Science group 38% of those who received the Ph.D. degrees went into teaching; 28% went into industry; the balance are unemployed or their whereabouts is not known. In Engineering, all of those who received the Ph.D. degree went into industry. Thus 31% per cent of all men receiving the Ph.D. degree went into teaching; 42% into industry, and the distribution of the balance is unknown.

A large portion of the men who received the M.S. degree are planning to return to the Institute for further work; namely, 46% in Science and 39% in Engineering. About 16% of the science students planned to go elsewhere for further graduate work, while only about 5% of the engineers will go elsewhere.

Of those receiving the B.S. degree, only 10% of the scientists have designated their intention of returning to the Institute for graduate work, while about 20% of the engineers have signified their intention of returning. Twenty per cent of the scientists are going elsewhere for graduate work, while only about 4% of the engineers will do this.

The distribution of employment according to types and location is very wide. Of the positions reported, probably about 75% of them are in California.

During the period July 1, 1936, to July 1, 1937, 508 requests for men were received from employers: 152 men, or an average of about 3 per week, were placed. Placements may be divided as follows; 75 from the ranks of the un-

employed, 13 to better jobs, and 64 for student temporary employment.

This year the Director of Placements worked with the student body in an attempt to increase the number of summer placements of undergraduates. Some contact work was attempted, but without great success. Probably about 50 or 75 men were placed in temporary positions through

the efforts of this Committee on Student Employment.

During the Spring questionnaires were sent out to 2866 men who had attended the Institute prior to 1937. Up to the present time 1111 of these questionnaires have been returned. They will be studied during the current year to show the type of work, salaries, etc. by classes and departments.

TABLE II  
GENERAL TYPE OF EMPLOYMENT—Degrees Conferred June 11, 1937

Department	No.	Ph. D. Teach	Ind.	Unkn.	No.	M. S. Ind.	Re- turn C.I.T.	Ret. Other Col- leges	Unkn.	No.	B. S. Ind.	Re- turn C.I.T.	Ret. Other Col- leges	Unkn.
Biology.....	3			3						5	1			4
Chemistry.....					2				2	8	2	1	4	1
Chem. Eng.....					1	1				11	7	2		2
Geology.....	6	4	2		7		4	3		6	2		4	
Mathematics.....	2	1		1										
Physics.....	10	3	4	3	14	4	7	1	2*	10	3	1		6
Total.....	21	8	6	7	24	5	11	4	4*	40	15	4	8	13
%.....		38	27.5	33.4		20.8	46	16.7	11.5		37.5	10	20	32.5
Aero. Eng.....	2		2		2	2								
Civil Eng.....					11	8			3	20	17	1	1	1
Electrical Eng.....	3		3		10	5	4		1	20	11	2		7
Mech. Eng.....					5	1	3	(1 Tch.)		22	15	4	1	2
Mech. Eng. Aero. Option.....					17	4	10		3	11	3	7	1	
Meteorology.....					6	3	3							
Total.....	5		5		51	23	20		7	73	46	14	3	10
%.....			100			45	39.2		13.7		64.2	19.6	4.2	14
GRAND TOTAL.....	26	8	11	7	75	28	31	4	11*	113	61	18	11	23
%.....		30.6	42.4	26.8		37.4	41.3	5.3	13.3		54	15.9	9.7	20.3

\* 1 Deceased

### DR. VON KARMAN CIRCLES GLOBE

Dr. von Karman returned to Pasadena the middle of August from a five months lecture tour which had taken him around the world. In France he lectured at the Sorbonne and the Aero Club de France. In Belgium he lectured before the American Belgium Foundation and several of the universities; at Brussels he received an honorary Doctor's degree.

Visiting England, Dr. von Karman delivered the Wilbur Wright memorial address at London and also lectured at Cambridge. He traveled to Italy where he made a tour of the Fiat airplane plant and later in Germany he visited the Junkers airplane plant.

Going next to Russia Dr. von Karman gave several lectures in Moscow and visited the Aeronautical Airplane factory. Traveling on to China he lectured at Nanking and Peiping, and visited Frank Wattendorf, Ph.D. '33, who has been engaged in building wind tunnels in China. Dr. von Karman

was invited to dine with Generalissimo Chiang Kai-shek, whose wife is General Secretary of Aviation.

Accompanied by Wattendorf he visited Japan and lectured at the Aeronautical Institute, Imperial University, Tokio. From Japan he returned to the United States to resume his duties as Director of the Guggenheim Aerodynamic Laboratory at Caltech.

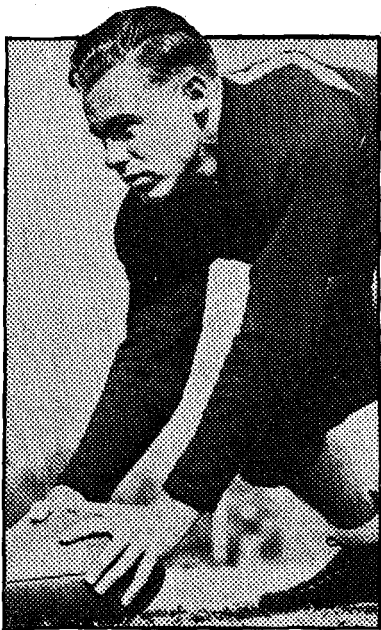


### HARVARD PRES. VISITS CALTECH

Dr. James Bryant Conant, President of Harvard University, recently visited our campus. Dr. Conant, who is an organic chemist, is not a stranger to Caltech, for some ten years ago he was carrying on research work in the Gates Chemical Laboratory.

During his stay in Southern California he was the guest of Dr. William B. Munroe.

# THE FOOTBALL SEASON



CLAUDE BROWN-CENTER

Caltech's Varsity Football machine will open its 1937 fall campaign in the usual manner. Loyola will have ample opportunity to try out their small army on the willing Beavers. If the preseason dope is to be depended upon it looks as though Tech will score first and give Loyola a run for their money in the first half. The final outcome is the difference in reserves and no doubt Loyola will win by several touchdowns.

Not since 1931 and the days of "Red" Watson and "Bill" Shuler has Caltech opposed Arizona State at Flagstaff. It was thought then that the high altitude would beat the boys but they turned the trick and came home with the decision. Maybe one of the boys will repeat the jail house act of Ed Foss who was caught putting torpedos on the track of the Santa Fe and spent the night in the Needles jail for his felony.

The Oxy game this year starts a new ODD and EVEN series since the ten year tradition was broken last year with a 7-7 tie. Whatever else may be said about Tech football teams it can always be said that they will fight to the last ditch in an Oxy game. Any alumnus who misses this classic is bound to miss some of the best Football in Southern California. There is never a dull moment in this annual scrap and 1937 will be no exception.

A newcomer to the schedule is Pasadena J. C. Local interest should give this game a big gate. Last year P. J. C. built up a large following in Pasadena. Some natural rivalry exists between the two teams which should lend much color to the game.

Northern California members of the Alumni Association should get an opportunity to see Tech Football this

year. On October 22 there is a game scheduled with San Jose State. The only opportunity for a rooting section is for the Bay Area Chapter to attend and do the yelling. How about it San Francisco?

What about the team? Claude Brown, this year's Captain will be back to play center and back up the line. His playing is very consistent and should have a good effect on the morale of the team. Jack McLean and Clay Smith, halfbacks, will be on hand to get the razzle-dazzle Foxy Stanton Football going. These two boys are plenty fast and will give Alumni fans plenty of entertainment this fall. Dick Rowell and Frank Jewett will battle it out for first string Fullback. Frank is the son of our famous Alumnus Frank Jewett Sr., President of the Bell Labs. Tackles look better this year than for several years. Running guards are at a premium and none has yet appeared that has a cinch on the job. The best Tackle prospects are Jim Balsley and Edgar Griswold with Bailey and Biddison giving them plenty of competition. Jack Baker is the only returning letterman with experience at End. This position is going to cause considerable trouble during the year as the number of good prospects are few. The team will be light and fast and should give a good exhibition in the wide open style of football.

Coach Stanton will again mentor the Football situation at Tech. His system of outwitting the opponents in at least one game is still in vogue and he always causes opposing Coaches with better material to scratch their heads and wonder what he will pull next.

"Stu" Seymour, '26, is coaching the line and is very pleased at having more than one set of Tackles to play with. "Stu" started playing Frosh Football the first year Coach Stanton came to Tech in 1921, and after playing three years Varsity has been connected with the Caltech Coaching Staff either as Frosh Football coach or, as he is at present, Line Coach.

## CALIFORNIA INSTITUTE OF TECHNOLOGY

### Football Schedule 1937

*Sept. 24—Loyola	- - -	At Gilmore Stadium
Oct. 2—Arizona State	- - -	At Flagstaff, Arizona
*Oct. 8—Marines	- - -	At San Diego
Oct. 16—Pomona	- - -	At Claremont
*Oct. 22—San Jose State	- - -	At San Jose
*Oct. 30—Occidental	- - -	At Rose Bowl
*Nov. 24—Pasadena J. C.	- - -	At Rose Bowl
*Nov. 12—Pomona	- - -	At Rose Bowl
*Night Games.		

# NEWS OF CLASSES

## CLASS OF 1916

**ROBERT N. ALLEN**, who has been in charge of constructing the 230 kv. transmission line from Boulder Dam to the Aqueduct Pumping Plants, reports that it is practically 100 percent complete.

**KENNETH RICH** is a teacher in Bakersfield High School and Junior College.

## CLASS OF 1918

**A. E. DAVISON** has been with the U.S.B.R. since 1933 in the electrical division as a checker on the designs of high voltage equipment for the Boulder Dam Power Plant. Just returned from Midway Island, where he served as a reserve deck officer aboard the destroyer U.S.S. Long, during the annual fleet maneuvers.

## CLASS OF 1920

**GEORGE SUMAN** is superintendent of the San Joaquin Valley area for the Associated Oil Company.

## CLASS OF 1922

**HOWARD VESPER** who is with the Standard Oil Company of California has recently been transferred to their San Francisco office.

## CLASS OF 1924

**ED LAYTON** is with the sales department of the Lufkin Pump Company in Bakersfield.

## CLASS OF 1926

**HAROLD LORD** who is employed by the General Electric Company at Schnectady was granted on June 1, 1937, a patent on an Electric Valve Translating Circuit.

## CLASS OF 1927

**ARCHIE KING** was a visitor to our rapidly growing campus during the summer. He hails from far off New York.

**JAMES BOYD** is Assistant Professor in Geology at the Colorado School of Mines. On the side he does consulting work in connection with mining properties. He is the proud father of a two and a half months old son.

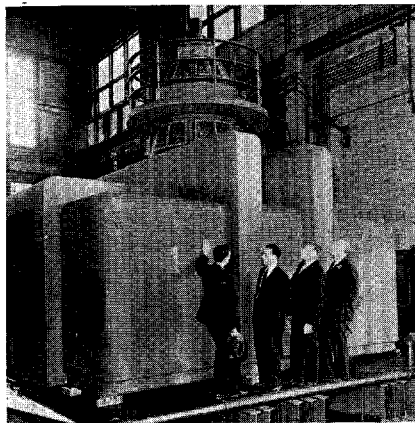
**F. M. NICKELL**, Ph.D. '31, is a geologist for the U.S.B.R. and recently returned to the Denver office from a year and a half spent investigating various dam sites on the Central Valley Project in California.

**EUGENE RIGGS** who writes the specifications for materials and equipment going into the huge pumping plants of the Colorado River Aqueduct, has just moved into a new home which he and his wife have built in Pasadena.

**AUBREY UPWARD** who has been in the insurance business in Bakersfield

for the past ten years is now secretary of the Bakersfield Alumni chapter.

**LEE RALSTON** is a teacher at Coalinga High School and Junior College.



*Al Capon '27, second from left examining 9,000 H.P. Motor*

**AL CAPON** has just returned to Los Angeles after six months spent in the East inspecting the huge motors being made by various manufacturers for the Colorado River Aqueduct Pumping Plants. After graduation, Al spent four years with the Westinghouse Electric and Manufacturing Company, and since 1931 has been a member of the Electrical Engineering Division of the Metropolitan Water District.

Progress on the Aqueduct has reached such a stage that at the present time some of the pumps and motors are being installed in the pumping plants.

**LAYTON STANTON** is a geologist for the Union Oil Company at Bakersfield where he has been for two and a half years. Layton is married and has two fine girls, ages two and four.

## CLASS OF 1928

**DR. GEORGE HARNESS** who is now an instructor at Columbia University, was a visitor to our campus during the summer.

**GUNNER GRAMATKY**, formerly with the U. S. Engineers, now has an excellent position in the Sales Division of the Consolidated Steel Company.

**EDWARD E. TUTTLE**, at present Secretary of the Alumni Association, is engaged in the general practice of law in Los Angeles. After graduating from law school, he joined the excellent firm of Farrand and Slosson, from which office he handles all types of law cases.

**ED JOUJON-ROCHE** is in charge of core drilling for the Shell Oil Company in the San Joaquin Valley. Ed is married and has a year old son, who is almost as big as his dad.

## CLASS OF 1929

**WADSWORTH EGMONT POHL** and Miss Nancy Jean Hoover were married at the Episcopal church in Redlands, California, on July 14th. Among the ushers were Eric Howse, '30, and Lee B. Prentice, '25. Mrs. Pohl studied at Scripps College and is a past president of the Junior Clubwomen of California. Wadsworth is assistant to the Plant Manager of the Technicolor plant in Hollywood.

**WILLIAM HENRY MOHR** was married on August 21, 1937, to Jean Marie Biscailuz daughter of Sheriff and Mrs. Eugene Biscailuz. Ted Coombs, '27 was best man and among the ushers were Kenneth Robinson, '28, and Robert Heilbron, '27.

Bill, as he was known to his classmates, is a civil engineer with the State Highway Department. During the past year Miss Biscailuz was president of the Spinners' Club of Santa Monica. The couple who have been neighbors in Santa Monica have known each other for some eight years. They expect to settle there when they return from a three weeks honeymoon spent at beautiful Lake Louise and Banff in western Canada.

**THOMAS H. EVANS** who is Professor of Mechanics at the University of Virginia spent his summer vacation working for the Griffith Construction Company on Conchas Dam in New Mexico.

**AL CRAMER** who is employed by the Southern California Gas Company was recently married to a San Bernardino girl.

**KARL GANNISLE** has built a new house near Annandale.

**FRED CLINE** was a visitor to the campus during the early part of the summer when he came on to attend his sisters wedding. Fred works in the Hydraulic Laboratory of the U.S.B.R. and is engaged in the design of various types of outlet works, spillways, canals, etc., through the use of scale models of these structures.

**TOM NOLAND** is in the Materials Testing and Control Division of the U.S.B.R. at Denver. His task is analyzing data from the testing laboratories and writing reports on the results of experiments. At the present time he is assisting in the editing of a manual for the control of concrete construction. He is still eluding the opposite sex.

## CLASS OF 1930

**ORRIN ELLIOTT** who is with the Sun Oil Company in Philadelphia, Pennsylvania, was a recent visitor to our campus. He and Mrs. Elliott made the

round trip by air. Elliott travels all over the East inspecting boilers and calls himself a "Boiler Doctor."

DEAN CARBERRY, M.S. '31, is an assistant engineer in the Denver office of the U.S.B.R. He is in the concrete dam design section and his work includes design studies, estimates, purchasing of materials and laying out of detail work. Most recently he has been engaged in the preparation of the specifications for the Grand Coulee high dam on the Columbia River.

D. P. BARNES, M.S. '30, reports that his family includes a wife, three boys and a woolly dog. His transfer from being in charge of the open channel model work of the Denver Laboratory of the Bureau of Reclamation to Resident Engineer on the Grand Coulee pump test at Cal Tech is expected to become effective the early part of September.

ED KOEHM has just been transferred to the Los Angeles office of the U. S. Engineers. It will be the first time his wife and two children have lived in California.

FRED SCOTT is resident engineer for union Oil Company on their contract with the Army to pave Hamilton Airfield. Fred will be away from San Pedro Research Laboratories for several months while completing this paving job in San Francisco.

### CLASS OF 1931

GLENN CHAMBERLAIN is now a junior engineer with the California State Bridge Department and is working in the office at Sacramento. Glenn reports that after years of bachelorhood he finally succumbed to those feminine wiles and last spring joined the ranks of married men.

WALTER DICKEY is now in Los Angeles after many months spent on the construction of Sun Valley Lodge, Idaho.

JEFF WINELAND is an associate engineer for the U.S.B.R. and is engaged in laying out and designing timber, concrete and steel bridges. Being in Denver, his summer recreation is mountain climbing with an occasional game of soft ball thrown in. After the first snowfall his prime interest in life becomes skiing. He is not married and is in no immediate danger.

OLIVER FOLSOM, ex '31, who has been an inspector at the Iron Mountain Pumping Plant, recently left the M.W.D. to join the Bureau of Reclamation on the construction of Parker Dam.

T. ROBERT WHITE has a teaching fellowship in Pathological Surgery under Dr. Geschlechter at Johns Hopkins for the coming year.

LESTER FRICK, ex '31, is a prominent cotton farmer at Arvin.

JOHNNY McMILLAN is land man for Barnsdale Oil Company in the San Joaquin Valley. Married. Collie dog.

### CLASS OF 1932

BOB FREEMAN is the proud papa of a baby girl born last June. Bob is assistant Metallurgist with the Columbia Steel Company and lives in Torrance.

CLARK GOODMAN, after several years in the commercial world has returned to the academic life and is now studying for a doctor's degree in physics at the Massachusetts Institute of Technology. Incidentally, under the guidance of Dr. Robley D. Evans, he is doing important research work on the determination of the Geological Age of Rocks by radio-active methods. Clark's beautiful wife is a popular fashion model in nearby Boston.

FRED HAMLIN is with the California State Bridge Department. He is in that division which investigates bridges for which the State assumed responsibility when it took over some old county routes.

TETSUO IWASAKI, in California for the summer, will return to M. I. T. this fall to continue his studies towards an M. S. in electrical engineering. Power distribution is the particular branch in which he specializes.

BRUCE H. RULE is now an electrical engineer with the astrophysical observatory of the Institute. He was formerly a meter and test engineer with the Department of Light and Power of the City of Vernon, California.

BILL SCHULTZ is still with the Precooling Department of the Santa Fe Railway. Bill was married last June to Kathleen Zimmerman and they live in San Bernardino.

M. V. BARTON has charge of the mathematical studies in the gates and valves division of the Mechanical Engineering Department of the Bureau of Reclamation, Denver. His work includes stress analysis, derivation of design data, and research pertaining to large gates and valves. He received his M.S. degree in Civil Engineering from the University of Colorado this past June. He is to be an instructor in the Department of Machine Design at Cornell University during the coming year.

DR. J. H. A. BRAHTZ, Ph.D. '32, is Director of the Photo-elastic Laboratory of the U.S.B.R. at Denver. Under his direction difficult and unusual engineering problems that arise in the design of dams and related structures are solved by experimental and analytical methods based on the theory of elasticity.

Care of: Panair do Brasil  
Aeroporto Santos Dumont  
Rio de Janeiro, Brasil  
July 13, 1937

Treasurer, or something:  
Dear Sir:

Sorry to delay the enclosed check, but the business of being transferred to Rio de Janeiro rather upset the routine.

This particular alumnus is now engaged in settling down into a rut; it's a pretty big rut at that: Rio to Buenos Aires, Buenos Aires to Rio. Then to make it interesting, we alternate that with Rio to Para, Para to Rio. Am copilot on the Pan American Airways Clippers, flying this section of the South American run from Miami to Buenos Aires. It's quite a change from Physicist at Tech to airline pilot in Brasil, but there's rarely a dull moment, Uncle "Pan" sees to that. Pan Am has an involved program of training that we all have to go through before being checked out as first pilot. It takes about three years, requires the acquisition of Airplane and Engine Mechanic's Licenses, Second Class Radiotelegraph License, and the passing of two sets of examinations for advancement first to Junior Pilot, and second, to Senior (First) Pilot. The ex's are comparable in scope and length to semester finals, cover a variety of subjects such as General Engineering, Science and Mathematics, Aerial and Celestial Navigation, Radio Theory and Practice, Foreign Language, etc. And I thought I was through with exams when I left Tech!!

While I am only down here for about six months (due then for transfer to Alameda, Pacific run), would like to meet any Tech men that are down here or coming through. We stop at the following places: Buenos Aires, Montevideo, Porto Alegre, Santos, Rio de Janeiro (based here), Bahia de Todos os Santos (also called San Salvador), Recife (or Pernambuco), Para (or Belem), Camocim. Will appreciate your dropping me a line regarding any Tech people in this part of the world. Regards,

Brian Sparks.

### CLASS OF 1933

TOM TERRILL has just accepted a position as Apprentice Pilot with Pan American Airways. He left Pasadena September ninth for Brownsville, Texas, where he will take up his duties.

SAM JOHNSON has been in the Southland this summer having completed the first of a two years course in Business Administration at the Harvard School of Business.

ROBERT SMALLMAN spent his summer vacation in Los Angeles. He is with the General Electric Company in Schenectady.

FRANCIS HUNTER showed up in California this summer with his bride. "Fran" played a lot of football at Tech and after graduation went east to Princeton. After obtaining a Ph.D. at Princeton he took a position last spring at Rhode Island State College to teach Physiology.

BOB GROSSMAN is married and living in Visalia where he works for the Southern California Gas Company. Thinks the Valley a swell place to live, except when the mercury goes over 120°.

GROVER SECORD recently joined the engineering department of the J. G. Boswell Company located at Corcoran, California.

PAT HOGAN has been with the Goodyear Tire and Rubber Company since graduation.

ART MATHEWSON is sales manager for the Solar Aircraft Company in San Diego. Art is married but has no family as yet.

JOHN K. AYERS is at Denver helping make specification drawings of the high dam at Grand Coulee for the U.S.-B.R. Johnnie writes that he is still roaming around unattached but with intentions of getting married in 1940—lucky girl unknown.

CHARLES B. SPICER is a junior engineer for the U.S.B.R. in the Outlet Works section for earth dams, checking computations and drawings. Married but no added responsibilities.

F. B. BOWMAN, M.S. '33, is assistant engineer with the U. S. Bureau of Reclamation in Denver and is employed on the design of concrete structures for the All-American Canal. His family now includes two girls, ages respectively two and one-half years and two months.

W. S. LARSEN, M.S. '33, is assistant engineer with the U. S. Bureau of Reclamation in Denver. His work embodies investigation of design of diversion dam and desilting works for Dixie Project in Southern Utah, also the major design of 110 foot roller gates for the Yakima Project, Washington. His one and one-third year old son requires all of his available leisure time.

W. L. NEWMAYER, M.S. '33, associate engineer U. S. Bureau of Reclamation, Denver, is in the electrical division and his work includes design of power plant control and station service equipment, principally on Boulder Dam Power Plant.

### CLASS OF 1934

ROBERT P. SHARP who has been attending Harvard was recently awarded the Woodworth Fellowship. This is the highest honor given by that institution to a geologist.

JOE GRIMES who is employed on the Imperial Dam at Yuma was a recent visitor to the campus.

A. E. THOMPSON is working for the General Petroleum Oil Company in Vernon. Unmarried, lives at home and sports a new car.

### CLASS OF 1935

JAMES ALLMAN DAVIES who is with the Texas Oil Company in New York, spent his vacation in the Southland.

MAX FRANKLIN MILLIKAN, ex '35, Yale '36, son of Dr. and Mrs. Robert A. Millikan, was married to Miss Jeanne MacBeath Thomson of Pasadena in the gardens of his parents home in San Marino, on July 14th. Dr. Glenn Allen Millikan, recently returned from Trinity College, Cambridge, England, acted as one of his brother's ushers, as did the third brother, Dr. Clark Millikan of Caltech. Mrs. Millikan is a graduate of the University of California at Berkeley and until recently has been a technician in the Chemistry Department of Caltech. Max, who spent two of his undergraduate years at Caltech, plans to obtain his Ph.D. in Economics from Yale next year.

### CLASS OF 1936

VICTOR VEYSEY who is continuing his studies at the Harvard Business School has been spending his summer vacation back in good old California.

BOB ELLIOTT is now working for Eastern Airlines in Atlanta, Georgia. Bob played guard on the 1935 football team.

BILL HUMASON is living in Long Beach and helping to make soap at Proctor and Gamble's Long Beach plant.

LEO MILAN was married this summer and is now with the Associated Oil Company in Ventura, California.

PETER SERRELL is an Exchange Fellow to Germany. He is at the University of Berlin under Deutschen Akademischen Austauschdienst.

F. V. FRASER is working in the Denver office of the U.S.B.R. and at present is in the design studies division in connection with arch dams and bridges.

AL CREAL is located at Taft with the Southern California Gas Company.

LOYAL NELSON is a geologist for the Texas Oil Company at Bakersfield.

### CLASS OF 1937

HOYT AUSTIN has gone to Venezuela to work with the Mine Grand Oil Company which is a division of the Shell Oil Company.

FREMONT RADCLIFFE was recently married to Frances Parker in Yuma.

## MISCELLANEOUS NEWS

FRANCIS HETTINGER CLAUSER, Ph.D. in Aeronautics '37, and his twin brother, MILTON URE CLAUSER, also Ph.D. in Aeronautics '37, were married in a double wedding ceremony at the First Congregational Church in Pasadena on July 30th. The brides were Miss Catherine Helen McMillan and Miss Virginia Randall, both of Pasadena.

Dr. Theodore G. Soares, pastor of the Neighborhood Church and a member of the Caltech faculty, performed the marriage with a service which he arranged especially for the occasion. The ritual led up to the pronouncement which at the same time made each couple man and wife.

The brides wore identical gowns and veils and their flowers also were alike. To complete the double picture, each bridegroom had as his best man the brother of his bride. The ushers, Eugene G. Mattison and William Sears for Dr. Francis Clauser, and M. A. Biery with Leonard Eugene Root for Dr. Milton Clauser, Dr. Edwin McMillan and Ralph B. Randall stood at the altar as groomsmen.

The Clausers are associated with the Douglas Aircraft Company, and will take their brides to Santa Monica to live.

CHARLES SCHWIESO, JR., formerly Y.M.C.A. Secretary at Caltech, is shortly moving to Topeka, Kansas, where he will become General Secretary of the Y.M.C.A. for that region.

The Bakersfield Alumni Chapter held its first meeting on September 8, 1937. There was an excellent turnout for this meeting as there are quite a bunch of Tech men in the Valley region. Layton Stanton is president of this lively alumni group, and Aubrey Upward is secretary. Any Tech alumnus in this region, who has not attended an Alumni meeting and wishes to do so, should get in touch with Aubrey Upward, whose address is Kern County Land Building, Bakersfield.

On August 19th about ten fellows gathered for an informal Alumni dinner in Denver. They report that there are quite a lot of alumni in Denver but that they have no regular organization. However, they occasionally get together for a dinner. This particular meeting was to honor D. P. Barnes, M.S. '30, who leaves to take charge of the Grand Coulee pump tests at Caltech, M. V. Barton, '32, who shortly goes to Cornell to become instructor in machine design, and John K. Ayers, '33, who goes to California to work on the Central Valley Water Project.

# LOS ANGELES CHAPTER PLANS 1937-38 ACTIVITIES

## Social Chairman Phil Schoeller describes program

In spite of the pessimists, the past year ended the most successful year the Association has had. Successful in that the Association has taken on a definite character. A character which indicates that the future of the Association will be one of which all members will be justly proud. Each member has gained by participation and pleasant association with a group of men having the common bond of being "Tech" men.

### General Meetings

In presenting the Calendar of the year 1937-38, it is proposed to hold three general meetings at which special effort will be made to get as large a group of Alumni, Faculty, and Administration members as possible to attend. These meetings will provide an opportunity to acquaint these people, who are interested above all others in the California Institute, with the problems which are yet to be solved. The fullest cooperation of the Alumni, Faculty and Administration is necessary in order that these problems may be satisfactorily solved and the purposes of the California Institute accomplished.

In addition, the General Meetings will provide an opportunity for enlarging the scope of interest of the group whose highly technical standard tends to narrow those interests which are becoming of increasing importance. It is essential that persons technically trained, devote more time and energy to the study of social, economic and governmental problems, both national and international.

A committee on Alumni Education is planning a program for the coming year which will provide an opportunity for extending and continuing the necessarily limited discussions of the subjects presented at the General Meetings.

This committee plans a group of seminars to be held at the Institute during the year, including economics, government, and business, as well as the technical fields which are so well represented. Notices of these seminars will be mailed to the members of the Association. The character and extent of the seminars will depend largely on the demand.

### Home Coming and Oxy Game

This "Old Place" has changed even for those who have most recently graduated, and for those who have not been closely associated even for a year or so, the changes are quite fantastic. Saturday afternoon will be "Open House" to the Alumni with an opportunity to visit almost anything desired and some one there to attempt to answer any question there may be.

A buffet supper will be served to those making reservation. The supper will give the wife, the best girl, and even one's self an opportunity to "get set" for "the game."

The Oxy game is always unusual and this year promises to be no exception. The game will undoubtedly wear some down, but the rest will, under the excitement of being victorious (we hope) be ready for an informal sport dance which will climax the day.

Notices and details will be mailed to the members of the Association.

### Annual Dance

It is proposed to pay off the weather man and top the party which last year proved to be one of the high points.

### Stag and Field Day

The Stag and Field Day will be conducted along the same lines which was another "Kinsey" success of this last year. A little golf, baseball, tennis, swimming and a big steak seems to get the vote.

### June General Meeting

The June meeting will be held at the Athenaeum at Commencement and special effort will be made to make the meeting as complimentary to the organization as the meeting of the past year.



## CALENDAR 1937-38

October 8, 1937 . . . . .	<i>General Meeting</i>
October 30, 1937 . . . . .	<i>Home Coming and Oxy Game</i>
January 21, 1938 . . . . .	<i>General Meeting</i>
February 26, 1938 . . . . .	<i>Annual Alumni Dance</i>
April 30, 1938 . . . . .	<i>Stag and Field Day</i>
June 10, 1938 . . . . .	<i>General Meeting and Commencement</i>



## DR. BENIOFF INVENTS NEW INSTRUMENT FOR QUAKE STUDY

A new earthquake recording instrument, invented by Dr. Hugo Benioff, Caltech and Carnegie Seismology Laboratory expert, has been shipped to San Francisco for extensive tests.

The instrument, the only one of its kind in the world, is designed to be set on different floors of a building after a major quake to record the intensities of after-shocks.

Data to be gathered in this manner will greatly aid in the diagnosis of the nature of earthquake, it is said.

The instruments recently were inspected by Captain N. H. Heck, chief of the division of terrestrial magnetism and seismology, United States Coast and Geodetic Survey of the Department of Commerce, who evinced considerable interest in them.

— Please notify Alumni Office of Change of Address —