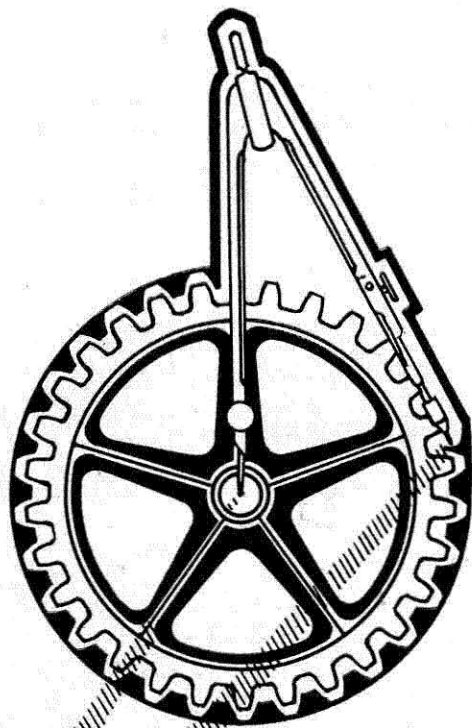


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CALTECH  
ALUMNI  
REVIEW

# CALTECH ALUMNI REVIEW

VOLUME I

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of Technology,*

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Acknowledgment is here made to numerous contributors



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## FOREWORD

As this, the first issue of the Caltech Alumni Review goes to press we feel like the frosh who has just purchased a bright new beanie and is trying it on in front of his mirror. Admiring his reflection he is happy at the thought that he is now old enough to be a college man and proud of his new colors—when the terrible thought occurs to him that as soon as he steps from the privacy of his room he will be laughed at, criticised, and paddled by the sophs, ignored by the upperclassmen.

We too feel happy that the Alumni Association is now old enough to have a magazine of its own, and are proud to present this the first issue to you, but we also realize that there will be criticism, comment, and worse yet, those who ignore us. Unlike the frosh we welcome your bouquets and brickbats for we fully realize that it is through your comments, criticism, and still better, your contributions of news, that this newborn magazine will grow and mature to more perfectly express the opinions, ideals, fellowship, and news of the Alumni.

Al Atwood, '32

NOTE: Address all communications to Editor Caltech Alumni Review,  
California Institute of Technology, Pasadena, California.

# PRESIDENT'S MESSAGE

A glance over the past year will indicate that the Alumni Association has written another page of interesting history in its steady progress and development. History is said to repeat itself and this can be seen in the fact that "impossible" achievements again have been accomplished.

In preceding years the chief energies of the organization were applied to increasing the active membership, bringing it from 225 in 1933-34 to the present total of 850. Less effort was required to reach that membership this last year, permitting greater activity in other departments. Life memberships have reached a total of 88, as more and more alumni take this means of expressing their confidence in the future of the Association.

Due to the enthusiasm of "Ed" Kinsey, '26, the entertainment offered to the alumni has been unusual, interesting and well received. The Alumni dance held in February at the Annandale Golf Club was attended by some 400 couples. Such a venture had never before been attempted, in fact it was considered "impossible." Consequently the success of the dance in spite of a heavy rain on the scheduled evening is a great tribute to the energy and organizing ability of Kinsey. The Alumni Stag on May 1st at Girard Country Club at which about 100 Tech men enjoyed themselves immensely was another outstanding event to be credited to Kinsey's ingenuity.

A forward step being watched with great interest is the publication of this first copy of the Alumni Review. The Board of Directors of the Association have decided to dispense with the California Tech as a medium for Alumni news and expect to publish a magazine, this being the initial and experimental issue. While we look ahead with pleasure to the possibilities of this new publication, we pause to express gratitude to Loren Blakeley, '23, whose untiring devotion to a thankless job has provided us with the Alumni news which has appeared monthly in the California Tech.

Efforts of many Alumni for several years have been directed towards the development of the Placement Service. This year, under the management of Donald S. Clark, '29, a member of the Institute staff, and with the assistance of Miss Theresa Dierkes, Placement Secretary and Assistant Secretary of the Alumni Association, the service has increased in scope and value. Since June, 1936, 147 Tech men have been placed, averaging almost three per week. The statement of such figures is sufficient proof of the value of the service, and the Board of Directors voices the appreciation of all alumni to Dr. Clark and Miss Dierkes for their efforts on our behalf.

Many alumni have given valuable assistance to the Association by performing various duties too numerous to mention. With the continued interest of these and other alumni, future administrations face a brilliant future, and the Association will undoubtedly develop, becoming stronger and stronger and of greater value and pleasure to all alumni.

H. Fred Peterson, '27

# CALTECH AND THE CONFERENCE

W. L. (FOX) STANTON



Some of our alumni seem to be wondering why Caltech is playing but two or three of the Conference Colleges and why we have two football games with Pomona, one dual relay meet and one track meet.

To clear up those who are puzzled, I will state these facts:

(1) Caltech and Pomona withdrew from the Conference two years ago. The reason for withdrawal was a change in the Conference of eligibility standards, especially entrance requirements for freshmen. Of the Conference members, some of the colleges refused to keep Tech and Pomona in their regular positions on their schedules. We were offered the open dates after the Conference schedule was completed.

Tech this year was offered the same date in football by three of the colleges, but this date had already been filled with another team which we customarily play at this time.

(2) In track we are hit the hardest, as no one this year would meet us except Oxy, and then we were asked to go in with Whittier in a three-way meet.

We are shut out of the Conference relays. As a result, Tech and Pomona hold a dual relay on the same date as the Conference relays, and of course, we can not enter the Conference track meet.

Competition with junior colleges, to which we are chiefly confined, does not arouse the interest of the athletes. In this type of meet there are always three or four boys who find reasons for not showing up.

In football we are offered plenty of games outside of the Conference, but in every instance, we compete out of our class. We play the game the best we can, but can not expect to win against colleges whose athletic facilities are so much better than Tech's.

Will we go back into the Conference? Hardly likely unless there is a strong demand for it in the student body or by the alumni.

Will a new Conference be formed which will include Caltech and Pomona? I can not say.

# GEOPHYSICAL EXPLORATION— AN OPPORTUNITY

DAVID SHEFFET, '30

One of the more recent outlets for Tech men has been in the field of applied geophysics, particularly in reflection seismograph work. During the past few years this work has played an important part in the exploration programs of all the major oil companies. Although reflection seismic surveying has been practiced since about 1926, it is only in the past five or six years that the method has found wide acceptance by the major oil companies. Reflection shooting is an expensive undertaking, but one that has more than justified its existence by furnishing information that has led to the discovery and development of new oil fields. It is practically the only method for accurately mapping subsurface beds and plotting the underlying geologic structure to a considerable depth with a fair degree of accuracy.

Of course the method in itself does not show the presence or absence of oil. It does however give the best available map of subsurface geology from which geologists must determine the probability of there being an oil deposit. This, oil company geologists do by combining the knowledge they already have of surface indications with quantitative subsurface data turned over to them in the form of maps by geophysical crews.

Since 1933 a good many Caltech graduates have found employment with geophysical companies or with large oil companies operating their own geophysical departments. It is highly probable that none of these men during their undergraduate years had the faintest idea that they would enter this type of work, since the industry, if it may be called such, was barely in its infancy. Strictly speaking no Tech man found himself particularly trained for this field, but the electrical engineer and the physicist had the best qualifications. What was actually needed was the combination of a seismologist and an audio frequency circuit engineer. This would be a rare combination indeed.

Practically all employment opportunities in reflection seismograph work are to be found on field crews. These crews do a good deal of traveling, and for this reason the job is not an ideal one from the standpoint of a married man or for a man who dislikes out of the way places in Texas, Louisiana, Kansas, Oklahoma and California.

Each field crew is roughly divided into two parts. One part goes out on location and does the actual recording work. Dynamite blasts are set off electrically and the seismic vibrations in the earth plus the much wanted reflections from the various subsurface strata are picked up by special multiple arrangements of "geophones" or "seismometers" strung out over the ground at predetermined spacings. Cables leading from these pickup devices enter the main recording truck and connect to control panels and thence to amplifiers and a multiple channel oscillograph. In the field crew there are also surveyors and drillers who lay out and prepare the shot holes in advance of the recording trucks arrival.

The other part of the crew consists of computers and a party chief, who work in an office somewhere near the shooting location examining the oscillograms turned in by the chief observer who handles all the recording equipment and is in charge of operations at the shooting location. The party chief directs the computers in their calculations and is in general charge of the whole crew.

Most geophysical companies also have a laboratory where research and development work is carried on.



David Sheffet '30 who is a research engineer in the Los Angeles laboratory of the Western Geophysical Company sends in a list of some Caltech men who are with his organization. Incidentally the Western Geophysical Company is a subsidiary of Standard Oil of Indiana and is one of the largest reflection seismograph companies operating in California, Mid-Continent, and Gulf Coast territories.

Charles C. Lash, '28 is party chief of a crew that has been operating mostly in Kansas, Texas and Louisiana, but was recently transferred to California.

Merrill D. Tucker, '30 is party chief of a crew operating in Texas.

Charles E. Buffum, '31 is party chief of a crew operating in both Texas and Louisiana.

George W. Read, '30 formerly in Texas but now chief observer with a crew operating in California.

Jack Desmond, '34 is a computer with a crew operating in the San Joaquin Valley, California.

Moses B. Widess, '33, Ph.D. '36, is also computer with a crew in the San Joaquin Valley.

Louis Sexton, '34 is computer with a crew in Texas.

Joe Grimm M.S., '35 is a junior observer with a crew in the San Joaquin Valley.

Paul Hawley M.S., '33 is a research engineer in the Los Angeles laboratory.

Other men in geophysical work include the following:

Michael C. Brunner, '25 is in charge of all geophysical crews for the Shell Oil Company.

E. D. Alcock, M.S., '33, Ph.D., '35 is doing geophysical field work with the Shell Oil Company.

David Scharf, '30 is with the Independent Exploration Company as a geophysicist in the Mississippi Delta region.

Gordon E. Bowler, '32 is with a Texas Company field party in the San Joaquin Valley.

# CRELLIN LABORATORY OF CHEMISTRY DESCRIBED

The new Crellin Laboratory will be a five story structure with a floor plan of approximately 60x129 ft. The construction is of earthquake-proof and fire-proof reinforced concrete. The exterior architecture will be similar to that of the present chemistry units.

The Crellin Laboratory will communicate with the existing units through three passage ways. The first floor will communicate directly with the first floor of the present chemistry annex. The basement floor of the new unit will communicate with the present Seminar room. The sub-basement floor will communicate with the basement floor of Gates by a long ramp. This is provided primarily for the purpose of transporting supplies from one building to the other.

The sub-basement floor will be devoted to the study of spectroscopy, X-rays, electron diffraction, and proton diffraction. The basement floor will be devoted to physical chemical research including photochemistry. A laboratory for micro-analysis is also included on this floor. The first floor will contain a lecture hall with 65 seats and class room for 25 students. In addition there will be physical chemical laboratories and studies for members of the staff. The second and third floors will be devoted entirely to organic chemistry.

Particular attention has been paid to providing special facilities for research. All laboratories will be generously equipped with water, gas, and compressed air, A.C. and D.C. outlets. A large bank of storage batteries and several electrical generators will provide a wide variety of direct current voltages. Many photographic dark rooms are provided. The chemical vault for the storage of inflammable solvents is equipped with automatic fire extinguishing system and explosion panels designed to prevent damage to the building in case an explosion should occur. The organic laboratories are equipped with a large refrigerated room in which low temperature experiments may be performed. On the roof of the building special organic laboratories are provided in a pent house. In these laboratories experiments involving dangerous chemicals or offensive odors may be performed.

One important feature of the design is the provision for future rearrangement of laboratory facilities. Experience has shown that it is impossible to predict the future trends of research and for this reason, the laboratories are not designed for a specific function, but are designed to be generally useful for almost any type of research. The distribution of the plumbing and electrical services is such that connections may be made easily at any time in the future.

The ventilating system will deliver cleaned and washed air at constant temperature of 68°. Each room is provided with an individual hot water radiator so that the occupant may adjust the temperature to suit his own desires.

# NEW GEOLOGY BUILDINGS

Two steel and concrete buildings are to be constructed to house the geological sciences, which include geology, paleontology and physics.

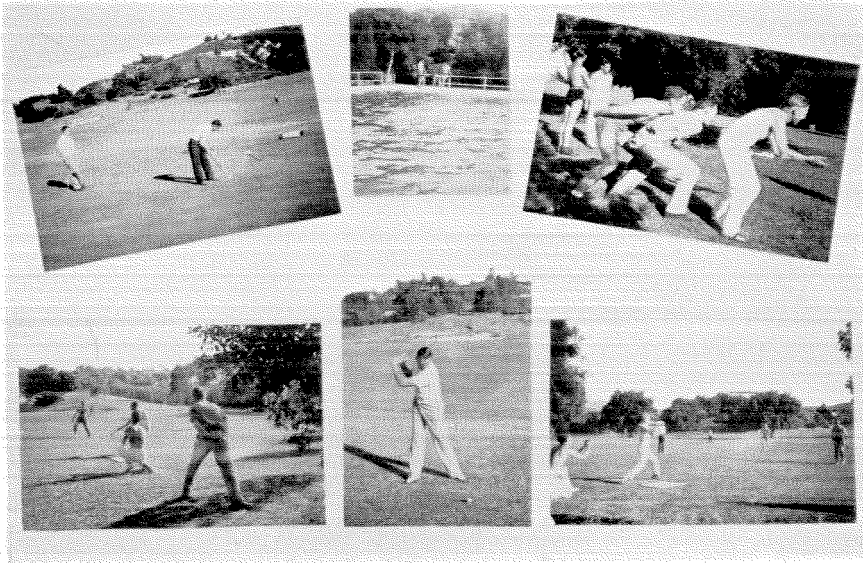
One of these will be known as the Seeley W. Mudd Laboratory of the Geological Sciences, and was presented by Mrs. Seeley W. Mudd of Los Angeles as a memorial to her late husband, the well known mining engineer. The other building will be the Charles Dayton Arms Laboratory of the Geological Sciences and is the gift of Mrs. Henry M. Robinson of Pasadena in memory of her father, long engaged in the successful operation of mining properties.

The Charles Dayton Arms Laboratory will be located northwest of the Norman Bridge Laboratory of Physics, while the Seeley W. Mudd Laboratory will stand northwest of the Astrophysical Laboratory and will face the Kerckhoff Biological Laboratory. The two geological structures will be of approximately equal size, about 166 by 56 feet, but of somewhat different shape, the Charles Dayton Arms Laboratory having a wing about 40 by 40 feet projecting southward between the Bridge and Astrophysical Laboratories; this wing will be used as a museum. Both buildings will be five floors in height, of which three floors will be above ground and a basement and sub-basement below. The space in the two buildings has been largely divided into suites of rooms, each suite planned for the needs of one of the divisions of the geological sciences. Each suite will embrace teaching and research laboratories appropriately equipped, a professor's office and his research room, and rooms for graduate students specializing in that phase of the geological sciences to which that suite is to be devoted. Various other rooms not included in any suites such as seminar, class, and lecture rooms will be used in common by all students and staff members.

The top floors of both buildings will be devoted largely to paleontology, to afford the more ample display space available in the sky-lighted hallways. Vertebrate paleontology will occupy the third floor of the Mudd laboratory, while invertebrate paleontology will be housed on the third floor of the Arms Laboratory. On the second floor of the Arms Laboratory will be located rooms to be used for petrology and non-metalliferous economic geology. The first floor will contain the main lecture room, accommodating about 200 persons, several class rooms and a museum intended more for teaching than for general display purposes. The basement will be utilized for additional graduate student offices and some class rooms; while the sub-basement will be devoted to storage.

The second floor of the Mudd Laboratory will contain the geological library; Division office; offices, grinding rooms, chemical and teaching laboratories; and graduate student rooms for advanced mineralogy, mineragraphy and metalliferous economic geology; and the structural geology teaching and research laboratory. The first floor will contain the teaching laboratories and class rooms for the introductory course in general geology, taken by all sophomores in the Institute, teaching and research laboratory for physiography, and graduate student offices. The basement, which in both buildings will be





## ALUMNI FROLIC

### FIELD DAY

On May first more than one hundred Tech alumni assembled at Girard Country Club for what proved to be one of the most unique and enjoyable gatherings yet held by the Association. By three the golf course was packed, the tennis courts filled, and a baseball game was well under way. Later almost everyone present investigated the cool depths of a first class swimming pool. As evening fell on those pleasant hills the gang sat on the wide veranda, swapping yarns and renewing old friendships.

Appetites whetted, an excellent steak dinner was enjoyed by all, following which athletic awards were made. Outstanding among these was the awarding of the high score golf prize to Elmer Muff, famed Tech athlete and Rawlings Trophy winner, for his amazing 195. The remainder of the evening was spent playing bridge, poker, or just visiting. Many expressed the thought that an event of this kind wherein cords are the proper attire, and beer is the chief thirst quencher, should become an annual affair.

### GEOLOGISTS TRAVEL FAR AND WIDE

It has been reported that Johnie Maxon, '27 has completed his work as Consulting Geologist to the Government of Turkey and that he is doing Europe this summer before returning to Caltech in the fall. On the first of August Dr. Maxon expects to attend the International Geology Congress in Moscow.

Francis D. Bode, '29 is a consulting geologist for the Italian Government in Italy and Ethiopia. While from the other side of the world comes the report that Dr. Donald D. MacLellan is in the Philippines as chief geologist in charge of production for a gold mining concern. Donald Smythe, brother of Norman Bridge's Dr. Smythe, has left the Philippines and is now in charge of a mining enterprise in Kenya Colony South Africa.

Ignacio Bonillas, '33 is in charge of a party in the jungles of Mexico. Also reported in Mexico is J. Wilford Patterson.

# '37 JOINS ALUMNI

PAUL C. SIECHERT

Kneeling nightly in solemn prayer that they might some day be among the favored few to climb across the steps of Gates to eligibility for Alumni membership, over 600\* undergrads, the highest enrollment on record, spent the past year compromising between their consciences, faculty demands, and desirable activities.

The graduation of the class of '37 will indeed be a great loss to the student body, and will be felt in every phase of student life; however, contrary to popular belief among the Seniors, the school will not have to close up. Jack McLean has capably stepped into the work of Student Body President so effectively handled by Robert Mahoney. Roland Stone, as Vice President, has the Honor system efficiently controlled and points toward ambitious undertakings. Bob Parry is giving the Institute unprecedented publicity in his position of Publicity Manager. Keith Anderson, a Freshman of no mean ability and experience, has been editing a first class CALIFORNIA TECH since elections, and apparently isn't going to flunk out doing it. The Big T editor and publications Business Managers have not yet been elected.

No outstanding records of success came in the past season's athletics, though all the teams fairly well held their own and were generally above the Tech average. Football losses this year include Benton, Horkey, Larson, Townsend, Mann, Capt. Wetmore, Wielman and Zimmerman. Captain-elect Claude Brown will, however, lead a fairly experienced team. Captain-elect Stan Wolfberg's 1938 basketball squad will sorely miss Horkey, Harper, Capt. Harold Smith and Walley, but they promise a great deal in varsity experience, and the addition of the Frosh team should afford one of the best basketball seasons in a long time.

The track team didn't send a relay team East, but the spectacular high jumping of Sophomore Bowers brought as many headlines. The team brought home its share of the proverbial pork, and after winning the Pomona Relay trophy, thumbs down, had to take the Pomona team to a surprise cleaning in a regular track meet to prove their rating. Captain Snelling, Hoyt Austin, Benton, Horkey and Wileman will leave a fairly complete squad to run the Orange and White colors next year.

Baseball, tennis, and other teams will have normal sized vacancies to fill, but this year's Frosh class seems a bit more promising than last year's, so that the school is not in the last stages of decline.

Enthusiasm for a gym is entering another of its peak years, and who knows but perhaps the hammer might hit the gong?

The student body was in good attendance at the Alumni Dance and welcomes any opportunities for closer association between alumni and undergrads, hoping that such relations may be appreciably extended this coming year.

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\*Figure quoted for the first term; after combatting such difficulties as further registrations in ensuing terms, the faculty has only succeeded, by the salting out process, in getting the enrollment down from 612 to around 570—a low batting average, indeed, but the pitching was first rate.

# HONORS

## 1936 — 1937

CARL D. ANDERSON, B.S. 1927, Ph. D. 1930

Nobel Prize in Physics

*For his discovery of the positron*

Cresson Medal of the Franklin Institute

*For his work on the positron*

FRANK R. CAPRA, B.S. 1918

Best Picture Director - Academy of Motion Picture Arts and Sciences

*For his direction of Mr. Deeds Goes To Town*

LINUS C. PAULING, Ph.D. 1925

Appointed Chairman of the Division of Chemistry and Chemical Engineering, California Institute of Technology

*For his outstanding work in the field of chemistry  
and his administrative ability*

WILLIAM C. ROCKEFELLER, B.S. 1932, M.S. 1934

Lawrence Sperry Award

*For his work in determining optimum flight paths for transports*

EDGAR B. WILSON, JR., Ph.D. 1933

American Chemical Society Prize

*in recognition of outstanding research in pure chemistry*

# PLACEMENT SERVICE ACTIVE

FREDERICK S. SCOTT, '30

The alumni Placement Service reports that from June 1936 to May 1937 it has secured employment for 147 men and that the average placement salaries are increasing steadily. Employer calls for skilled technical men in specialized lines are becoming more frequent. Due partially to lack of "experience cards" on file with the Placement Service many of the alumni are losing opportunities to better their positions.

Starting in a small way a few years ago, the Placement Service was coordinated and established by Stuart Seymour, '26. "Stu" laid the groundwork of cordial relationships with large industrial employers and throughout the depression was of inestimable value to both old and new graduates in finding suitable employment. During Seymour's tour of duty records were brought up to date thus making possible the present permanent records.

It became evident that this work required too much of any one man's time, and arrangements were made by the Board of Directors of the Alumni Association with the Institute so that Miss Theresa Dierkes, formerly of the Registrar's office was available to carry on this work as a full time job under the direction of Donald Clark, '29, who as a member of the faculty handles all alumni affairs for the Institute. Miss Dierkes coordinates and relays to interested alumni calls from employers which come directly to the placement office or through the faculty or alumni.

The mechanism of placement is as follows: The requirements of the employer are carefully analyzed with reference to education, experience, age, salary, and the like and a list of suitable alumni are submitted by the secretary to the faculty member who is most familiar with the type of work required by the employer. The faculty member selects from the list the most promising candidates for the position and these men are notified immediately by letter, telephone, or telegraph, as conditions dictate. In this way, alumni are not recommended to positions for which they are not qualified or in fields in which they are not interested. It is evident, therefore, that complete and up-to-date records should be submitted by alumni desiring change of employment.

Although attention has been focussed upon the placement of the more recent graduates who have not found a permanent place in the industrial scheme, it is understood that the Placement Service is now finding some difficulty in getting men to fill positions offered for experienced personnel for service not only in the West but in the Middle West and the East. Perhaps this will help to promote the enlargement of alumni chapters in other parts of the country, but more important still, it seems to show the high regard in which our alumni are held throughout the country.

Attention is also being directed toward obtaining summer employment for undergraduates and although noteworthy success has been obtained, alumni offering positions of this type are urged to communicate with the Placement Service.

## SELECTION OF APPLICANTS RATIONALIZED

This spring over 400 applicants for admission to the class of 1941 have taken the entrance examinations. Of these, about 180 came from schools outside the Los Angeles area, an increase of 65% over last year. While this increase is gratifying as a proof of the growing reputation of the Institute, it has presented an important problem to the Freshmen Registration Committee.

The Committee has felt for a number of years that the wisest choice among applicants for admission can be made only if the entrance examinations are supplemented by personal interviews. As long as the great majority of applicants came from the Los Angeles area, these interviews could be managed fairly easily in the spare time of the Committee members. But with the great increase recently in applications from all over the United States, a more extended system of interviewing became obviously necessary.

Consequently, early in May the Executive Council provided the funds to send three faculty members to all those schools having pupils who have passed the examinations for admission to the Institute. Professor Fogg is covering the west coast as far north as Vancouver; Professor Earnest Watson will cover the mountain states and the middle west as far as Minnesota; and Professor Carl Anderson will cover the trans-Mississippi and eastern area when he goes to Philadelphia to receive the Cresson Medal of the Franklin Institute.

In addition to interviewing applicants, these representatives will establish contacts with principals and teachers in cities where the Institute is known perhaps by reputation, but where there is little knowledge of its aims and ideals, especially with regard to maintaining a strong undergraduate school in science and engineering.

While there has not been sufficient time this year to arrange for meetings with the alumni, in the future the interviewers will also do all they can to meet with alumni groups in the cities they visit and encourage alumni cooperation in interesting the right type of student to enter the Institute.

## COVER DESIGN

Our cover is by Harold Graham, ex '24, who has left the ranks of pure science and engineering to achieve note in the field of industrial design. After leaving Tech, Graham completed an art course at the Chouinard School of Art in Los Angeles, and studied for a year at Schule Reimann in Berlin under Carl Heubler. For the past two years, he has been on the art faculty at Scripps and is now associated with Millard Sheets, internationally known artist. From their Claremont studio have come many designs earning national recognition. A proponent of modern art, Graham's designs repeatedly add interest and charm to seasonal decorations at Bullocks, and the windows and interior displays designed and constructed for a national perfumer by the Graham-Sheets combine have toured the entire country and been widely acclaimed. All thanks to a busy Tech man who has whole-heartedly cooperated in making this first issue artistically successful.

# ENGINEERING RESEARCH

A. W. ATWOOD, JR., '32

Unfamiliar to the older alumni but accepted as a matter of course by today's students a new activity which might be termed "commercial research" has appeared on the campus during recent years. This development has come largely unheralded and unsung—quietly settling down in various nooks and corners of the campus to the slow task of ferreting out valuable bits of engineering and technical information.

The U. S. Soil Conservation Service has recently completed an exceedingly well equipped laboratory for the study of soil mechanics and erosion. At the present time there is an extensive research program being carried on under the direction of Dr. Robert T. Knapp, Ph.D., '29 and Vito Vanoni B.S., '26, M.S., '32.

Several years ago engineers of the Los Angeles County Flood-Control District found themselves faced with problems on high velocity flow in curved channels arising from drainage of the La Canada and La Crescenta districts. No quantitative information on this subject being available a research program was undertaken under the direction of Dr. Knapp. Arthur T. Ippen Ph.D., '36 carried out preliminary work last year and established definite relations on the effect of curves for high velocity flow channels of rectangular cross section. These proved of such value that the research is being extended this summer with more refined equipment and with channels of various cross sections.

From Douglas, Northrup, and many other large aircraft manufacturing companies comes an almost continuous stream of models for testing in the wind tunnel. The Institute has the only large wind tunnel in the west and information gained from these tests is not only of value to the companies, but is of great value to the young science of aeronautics. At the present time the Aeronautics Department is engaged in publishing a series of monographs giving the results of wind tunnel tests to date.

The American Petroleum Institute carries on various studies under the direction of Dr. Lacey, and the Asphalt Institute is investigating various problems under the guidance of Dr. Beckman. The Metropolitan Water District carried out extensive pump tests under the direction of Professors Von Karman, Daugherty, and Knapp, as well as electrical studies under Professor Sorensen. These are but a partial list of the many and varied problems being investigated on the campus. It must be pointed out here that Caltech is not just a testing laboratory, because no research is undertaken unless it is felt that it will contribute to general scientific or engineering knowledge.

These research programs are a great boon to many Tech men, for not only does work on these programs furnish financial support to the men, but the problems investigated have furnished much material in the work for advanced degrees. These programs have also been a stepping stone by which many an alumnus has obtained a valued position in industry.

Research is a costly undertaking but one that often richly rewards its backers. This is pointed out by Professor Daugherty in an article on the hydraulic laboratory sponsored by the Metropolitan Water District in which he indicates that the District invested some 150,000 dollars and as a result of information gained will eventually save between one and two million dollars.



# ATOMS AND COSMIC RAYS

WM. H. PICKERING, '32, PH.D., '36

At the present time physicists the world over are directing their efforts to study phenomena occurring inside the atom, or rather inside the nucleus of the atom. At Tech there are groups working on the problem from two directions. In the high voltage laboratory there are two huge porcelain vacuum tubes in which particles can be speeded up electrically until they have energies of nearly a million volts. These high speed particles are then used to bombard atoms and occasionally a direct hit is scored and an atomic nucleus broken up. The pieces of the nucleus are observed by photographing their tracks in a cloud chamber placed just below the target. Study of these photographs thus yields valuable clues to the construction of the original nucleus.

The other general line of attack on the problem is to study the cosmic rays. These rays are essentially a natural source of high speed particles having energies much larger than any that can be produced artificially. Their effects on atoms have been studied by Dr. Anderson, '27 and Dr. Neddermeyer in a cloud chamber placed between the poles of an immense magnet. Their appara-

tus is automatic so that the passage of a ray through the chamber causes a photograph to be taken. By placing plates of various materials across the chamber they are able to investigate the interaction between the high speed particles and the atoms of the plate.

As part of the cosmic ray program under way Dr. H. V. Neher undertook an expedition to India. The purpose of the expedition was to investigate the variation of the cosmic rays with latitude, particularly at very high altitudes. This is done by means of electroscopes carried up by free balloons. The instrument consists of a clockwork mechanism that moves a film on which a record is made of the position of the electroscope fiber, the height of the barometer, and the temperature. To operate the electroscope, a charged condenser is carried along and connected to the fiber at regular intervals. These condensers have been made so that they lose their charge at the incredibly low rate of about 1/10% per hour.

Last summer, observations were made with these instruments in Texas, and they were found to be very satisfactory. Good records were obtained at 80,000 feet and higher. Through the co-operation of the Indian Meteorological Service, arrangements were made for flights from Madras, and last August Dr. and Mrs. Neher set sail for India via Japan and the East Indies.

They found conditions in Madras almost ideal for the experiments, and eleven flights were made. Seven of these have been returned and again the balloons reached heights of over 80,000 feet and good records were made up to the top of the flights.

To carry up the electroscopes used in this work four or five rubber balloons about three feet in diameter are used. After a period of three hours, when the films run out, a release mechanism cuts the instrument loose and it floats to earth on a parachute. In the Indian flights the instruments usually traveled about 60 miles horizontally, but in one case the release apparently failed to work and the electroscope was found over 300 miles away.

#### DOMES, Hg AND BATHTUBS

E. E. Sechler '28 has been using the heaviest bathtub in Southern California for the past few months. The tub is strange in another respect, it was not built for water but for mercury. Ernie's old friends who have lost track of the schoolboy of yesteryear, should not assume that he has grown to the proportions indicated by the size of his tub. Actually Ernie puts his dome in the tub. This statement should not be confused with the old custom of soaking one's head, for the dome, it should be explained, is a three-foot model of the telescope dome of the future Palomar Mountain Telescope.

The actual dome for the future telescope is to be 135 feet in diameter, and will be fabricated from  $\frac{3}{8}$ " welded steel plate. Actually these dimensions place the structure in a class with the modern stressed skin airplane. It might be called a thin skin structure. Since Ernie knows as much about this type of airplane structure as anyone in the country, it became his problem to work the bugs out of the dome.

To solve the problem, an ingenious method was devised by the learned doctor. A model of the dome was spun from a sheet of copper (approx. 0.020"). This model is inverted in a concrete tub which clears the dome by about a half inch. The dome is bolted in place and then mercury is poured into the clearance space. This gives a loading similar to that actually expected. It is then a simple matter to measure the deformations in the dome. The actual design loads on the dome consist of, dead weight, snow load of 60 pounds per square foot, and wind load which is figured at 30 pounds per square foot.



# WHAT THEY ARE DOING

## **Twenty-five Years After Graduation Class of 1912**

- Ferguson, B.—Member of the firm of Headman and Ferguson, Engineers, Phoenix, Arizona.
- Merrifield, J. D.—Master Mechanic, American Crystal Sugar Company, Rocky Ford, Colorado.
- Soyster, M. H.—Consulting Petroleum Engineer and Geologist, Los Angeles.

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## **Twenty Years After Graduation Class of 1917**

- Richards, R. T.—Operating Superintendent, Central Arizona Light and Power Company, Phoenix, Arizona.
- Sopp, C. W.—Assistant Chief Engineer, Pasadena Water Department, Pasadena, California.

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## **Fifteen Years After Graduation Class of 1922**

- Ager, R. W.—Assistant Professor of Electrical Engineering, University of California, Berkeley.
- Barkite, H. S.—Assistant District Engineer, Los Angeles County Road Department, Los Angeles.
- Bear, H. F.—Salesman for the General Electric Company, Los Angeles.
- Beman, W. J.—Chief Analyst, Monolith Portland Cement Company, Tehachapi, California.
- Benioff, B.—Is with the Department of Building and Safety, Los Angeles, California.
- Bridgeford, F. R.—Production Manager, American Potash and Chemical Co., Trona, California.
- Bruce, R. M.—Is in the Patent Department of the General Electric Co., Schenectady, New York.
- Bulkley, O. R.—Chief Electrician, Long Beach Steam Plant, Southern California Edison Co.

- Crissman, R. J.—Traffic Department, Southern California Telephone Company.
- Fleming, T. J.—Southern California Telephone Company, Long Beach.
- Groat, E. T.—Sales Engineer, General Electric Company, Chicago, Ill.
- Hall, A. D.—Traffic Department, Southern California Telephone Company, Los Angeles.
- Hess, E. R.—Attorney, Los Angeles.
- Hill, J. E.—Assistant Superintendent of Cracking Operations, Union Oil Co., Wilmington, California.
- Honsaker, J., Jr.—Administration, Southern California Telephone Company, Los Angeles.
- Hopper, F. L.—Design Engineer, Electrical Research Products, Los Angeles.
- Howard, J. H.—With Globe Oil Tool Company, Los Angeles.
- Larson, L. C.—Assistant Engineer with the Metropolitan Water District, Los Angeles.
- Learned, K. A.—Plant Department, Southern California Telephone Co., San Diego.
- Marsh, H. M.—With General Petroleum Company, Los Angeles.
- Potter, W. D.—Hydraulic Engineer, Soil Conservation Service, Washington, D.C.
- Reynolds, M. S.—Research Chemist, Union Oil Company, Wilmington, California.
- Ritchie, C. F.—Assistant Director of Research, American Potash and Chemical Company, Trona, California.
- Schild, J. E.—Board of Fire Underwriters, Los Angeles, California.
- Shugart, D. F.—Structural Engineer, Los Angeles.
- Smith, G. K.—Pacific Telephone and Telegraph Company, San Francisco.

Taggart, W. M.—Structural Engineer with the City of Los Angeles.  
 Taylor, W. T.—Traffic Department, Southern California Telephone Company, Los Angeles.  
 Vesper, H. G.—Assistant Manager, New York office, Standard Oil Company of California.  
 Webster, G. M.—Traffic Department, Southern California Telephone Company.  
 Whistler, A. M.—C. F. Braun and Company, Alhambra.

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### Ten Years After Graduation Class of 1927

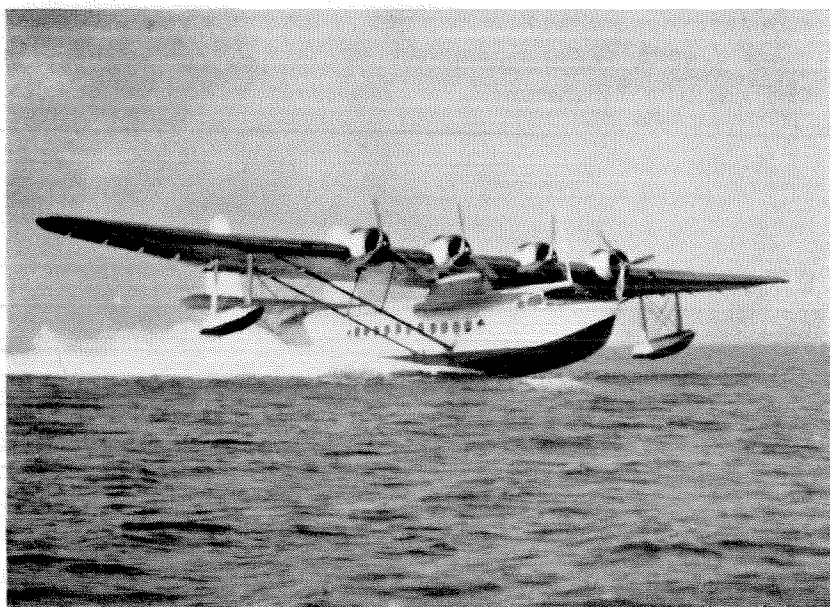
Anderson, Carl D.—Assistant Professor of Physics, California Institute of Technology, Pasadena.  
 Aultman, W. W.—Assistant Hydraulic Engineer, Metropolitan Water District, Los Angeles.  
 Belknap, K. A.—Insurance Business, Los Angeles, California.  
 Boyd, James—Instructor, Colorado School of Mines.  
 Capon, A. E.—Electrical Engineer with the Metropolitan Water District, Los Angeles.  
 Combs, T.—Field Engineer for Western Timber Structures, Los Angeles.  
 Creveling, R.—Shell Oil Company, Wasco, California.  
 Darling, M. D.—Surveyor, Los Angeles County.  
 Ewing, F. J.—Patent Department, Union Oil Company, Los Angeles.  
 Farrar, H. K.—Bell Telephone Laboratories, New York City.  
 Foster, W. D.—Patent Attorney, Los Angeles.  
 Gazin, C. L.—National Museum, Washington, D.C.  
 Gilliland, T. R.—Radio Section, Bureau of Standards, Washington, D.C.  
 Gottier, T. L.—Television Engineer, Radio Corporation of America, Camden, N. J.  
 Heilbron, R. F.—Treasurer, Heilbron Electric Company, San Diego.

Jones, E. P. Jr.—Right of Way Agent, California Highway Division, San Bernardino.  
 Maxson, J. H.—Consulting Geologist for the Government of Turkey.  
 Medlin, L. E.—Technical Adviser, Audiphone Company, San Francisco.  
 Mesenknop, L. H.—Sound Department, M.G.M., Los Angeles.  
 Montgomery, C. T.—Bartol Research Foundation, Swarthmore, Pa.  
 Nickell, F. A.—U. S. Reclamation Service, Denver, Colorado.  
 Peterson, Frank—Instructor, Santa Ana Junior College, Santa Ana, California.  
 Peterson, H. F.—Shell Oil Company, Los Angeles.  
 Reynolds, R. W.—Riverside Cement Co., Riverside.  
 Rogers, V. W.—Attorney, Los Angeles.  
 Ross, R. T.—Department of Physiology, Stanford University, Palo Alto, California.  
 Schuster, D.—Design Engineer, Bethlehem Shipbuilding Company, Mass.  
 Weisel, J. L.—Project Engineer, Kinner Airplane Motor Corp., Glendale.  
 Wiegand, F. H.—Plant Department, Southern California Telephone Company.

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### Five Years After Graduation Class of 1932

Anderson, T. F.—Instructor, University of Chicago, Chicago, Ill.  
 Arnerich, Paul—Recently returned to this country after having spent some time as instructor at Collegio Americano, Buenos Aires, Arg. Now with C. C. Moore as sales engineer, San Francisco.  
 Arnold, E. J.—Gas Testing, General Petroleum Company, Santa Fe Springs.  
 Atwood, A. W.—Junior Engineer on design of Pumping Plants, Metropolitan Water District.  
 Barton, M. V.—Bureau of Reclamation, Denver.



### Clipper Ship Flown by Brian Sparks '32 Between Miami and Buenos Aires

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| Behlow, L. B.—Air Conditioning Company, Manila, P. I.                        | Griest, R. H.—Bell Laboratories, New York City.   |
| Bell, T. W.—Production Department, Texas Company, Santa Paula, California.   | Haynes, B. C.—Instructor in Metrology, Boeing School of Aeronautics, Oakland.             |
| Bowler, G. E.—Geophysicist, Texas Company, Bakersfield.                      | Hutchison, J. A.—With U. S. Motors in Los Angeles.  |
| Bradburn, J. R.—General Electric Company, Schenectady, N. Y.                 | Jones, C. W.—Assistant Engineer, Standard Steel Company, Los Angeles.                     |
| Bruderlin, H. H.—Soundproof Engineer, Douglas Aircraft Corp., Santa Monica.  | Lipp, J. C.—Engineering Department, Douglas Aircraft Corp., Santa Monica.                 |
| Carey, R. V.—Banks-Huntley, Los Angeles.                                     | Killgore, C. L.—U. S. Bureau of Reclamation, Denver.                                      |
| Claussen, W. H.—Chemistry Department, University of California, Berkeley.    | Mathews, T. E.—Commercial Department, Southern California Telephone Company, Los Angeles. |
| Finney, H. W.—Investment Counselor, Los Angeles.                             | Miller, Glen — Adjuster, Southern Counties Gas Co.  |
| Freeman, R. B.—Metallographer, Columbia Steel Company, Los Angeles.          | Myers, G.—Accountant, State of California, Los Angeles.                                   |
| Graff, D. B.—Inspector, Iron Mt. Pumping Plant, Metropolitan Water District. | Pickering, W. H.—Instructor and Research Assistant, California Institute of Technology.   |

Pownall, H. B.—York Ice Machine Company, York, Pa.

Prudames, E. M.—Engineering work with Schoeller and Duell, Los Angeles.

Pruden, W. F.—Engineering Department, Consolidated Steel Co., Los Angeles.

Roach, H.—Engineering Department, Bethlehem Steel Co., Los Angeles.

Rockerfeller, C.—Aeronautics Department, California Institute of Technology.

Rule, B. H.—Vernon Light and Power Company, Vernon, California.

Schaafsma, J. C.—With General Petroleum Corp., Los Angeles.

Schoeller, Phil—Duell and Schoeller, Engineers, Los Angeles.

Sherman, R. L.—American Potash and Chemical Company, Trona, California.

Skoo, F. K.—National Research Fellow, University of California, Berkeley.

Sparks, B. O.—Brian is co-pilot on Pan American clipper ships flying between Miami and Buenos Aires. (See above picture.)

Tickner, A. J.—Sound Engineer M.G.M., Culver City, California.

Watson, G. G.—George is in the contracting business for himself.

Wolf, H.—Research Engineer, Petroleum Rectifying Company.

Zuckerman, H. S.—Teaching Assistant in Mathematics, University of California, Berkeley.

### GREETINGS FROM PROFESSOR SORESENSEN

My numerous ramblings over the United States this year in connection with the affairs of the American Institute of Electrical Engineers and the Engineers Council for Professional Development have caused me to meet Tech graduates in many parts of the country. On each occasion I have found that these men have an interest

in their Alma Mater unexcelled by alumni of any college with which I am acquainted. Many times I have met only one or two individuals, but in New York City, Schenectady, Phoenix, San Francisco, and Denver I had the pleasure of talking with groups of considerable size.

I congratulate the Alumni Association on the event of having a Magazine of its own. The knowledge of such a magazine gives me the same thrill I had when Joe Beek issued the first Tech!

R. W. Sorensen.

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### NEWS OF SOME ALUMNI WITH TECHNICOLOR

Nelson Cordes, '31 is an assistant in the camera department.

Fred Detmers, '33 is a member of the camera department who has made several jaunts to out-of-the-way places for travelog material.

John Hamilton, '30. For three years after leaving Tech was with the Dupont Corp. in Wilmington, Del., but is now connected with the camera department and in his present capacity has toured Mexico, Japan, and Holland on travelog expeditions.

Winton Hoke, '31. Associated with the camera department of Technicolor since graduation and has made one trip around the world and many others to remote parts in quest of travelog picture material.

Eric Howse, '30 is in the engineering department of Technicolor.

Henry Imus, '30 is a member of the camera department and at present is stationed with the British unit at the plant recently completed near London.

Wadsworth E. Pohl, '29. Has been with Technicolor since graduation and at the present time is Superintendent of the processing plant in Hollywood.

## PROFESSIONAL ANNOUNCEMENTS

It is through the generosity and loyalty of the following alumni that the publication of this magazine has largely been made possible. May we suggest your patronage of these friends of the Association.

**James H. Keeley '31**

HILLMAN-KELLEY INC.

*Oil Well Supplies*

2439 Hunter St.  
Los Angeles

VA 2286

**Stuart L. Seymour '26**

NEW YORK LIFE INSURANCE  
COMPANY

315 W. 9th Street  
Phone TR 8251 Los Angeles, Calif.

**C. Philip Schoeller '32**

C. DEUEL

*Structural Engineer*

MA 2794

257 S. Spring St.  
Los Angeles

**Howard G. Smits '31**

GENERAL CONTRACTOR

2835 Gilroy St.  
Los Angeles

OL 2968  
MO 13974



## THE ATHENAEUM SCENE OF ANNUAL ALUMNI BANQUET

### COME ONE—COME ALL

Be sure to save the evening of Friday June eleventh for that is the date of the annual Alumni Banquet and Reunion, to be held as usual at the Athenaeum. All alumni and graduating seniors are not only invited but are urged to attend for an excellent program has been planned by the social committee. How May I Supplement My Education, is the topic that will be discussed in several short snappy talks by prominent speakers. Other functions include the customary Coronation of the new Alumni King, fifth year class reunions, some excellent music, and the general exchange of good fellowship.

### FIFTH YEAR REUNIONS

In conjunction with the annual Alumni Banquet are held the fifth year reunion of classes. This year the classes of '12, '17, '22, '27, and '32 will hold their reunions and the graduating class of 1937 will be inaugurated into the Association. Prior to the meeting at the Athenaeum all members of the above classes are invited to congregate at the Pasadena Athletic Club from 5:30 to 6:30 in order to have a little more time to talk and renew old friendships. Chief greeters, class secretaries to you, are as follows:

- 1917—Carl W. Sopp
- 1922—Al Knight
- 1927—Kenney Belknap
- 1932—Phil Schoeller