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ALUMNI REVIEW

CALIFORNIA INSTITUTE OF TECHNOLOGY

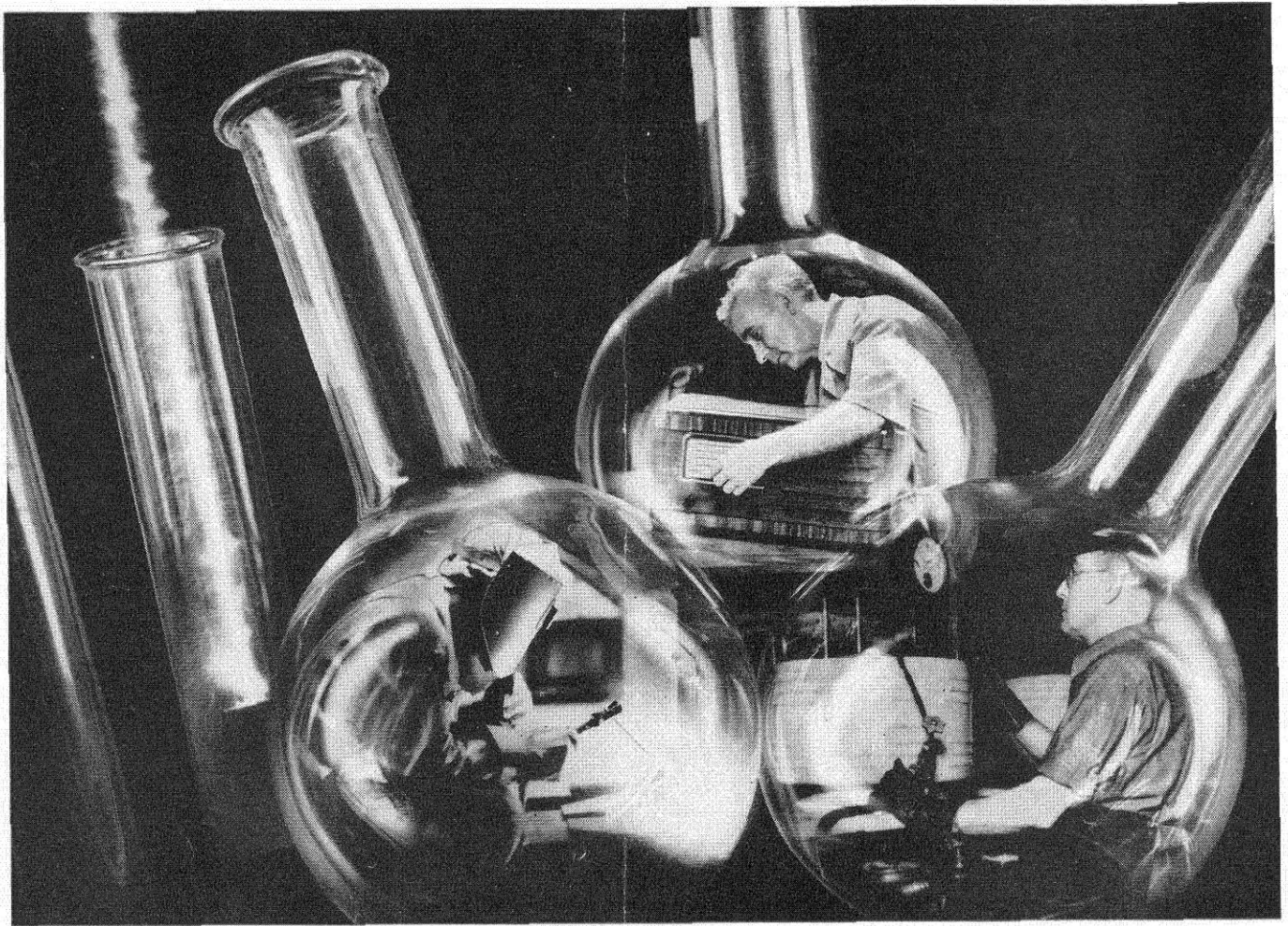


Dr. J. H. Maxson

THROUGH THE GRAND CANYON

No. 4

MARCH 1938



TEST-TUBE BABIES

FROM the test tubes of industry have come many of the jobs that keep America busy. Fifteen million American men and women are at work today in jobs that did not exist in 1900. These jobs do exist today because, through research, industry has been able to develop hundreds of new products. And it has been able to make them so inexpensive that millions of people have been able to buy them.

These jobs are "test-tube babies," created in the modern research laboratories of industry. As a result, millions of people are employed today in welding, in making and selling radios, electric refrigerators, lamp bulbs, automobiles, and

hundreds of other manufactured products invented within the memory of many now living.

General Electric engineers and research scientists have contributed greatly to this progress. From the G-E Research Laboratory, in Schenectady, has come the modern electric lamp, which uses less electricity and gives more light, thereby saving the public \$5,000,000 a night. From it have come the modern x-ray tube which is helping the physician save lives, and conquer disease and suffering; the high-vacuum tube which makes radiobroadcasting possible; and many other developments which have created new jobs.

G-E research and engineering have saved the public from ten to one hundred dollars for every dollar they have earned for General Electric

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ALUMNI REVIEW

No. 4

March, 1938

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GEORGE ELLERY HALE

As it must to all men, death came to Dr. George Ellery Hale on February 21, 1938, at Los Encinas Sanitarium in Pasadena. Jointly with Doctors Millikan and Noyes, Doctor Hale is recognized as a founder of the California Institute in its present form. As one of the most outstanding astronomers of the present generation he was intimately connected with the Yerkes and Mount Wilson Observatories, and at the time of his death was Chairman of the Institute's Observatory Council, the body which has charge of the erection of the Palomar Observatory.

Quoting from Doctor Millikan's public statement shortly after Doctor Hale's death, we find that by 1913 the noted astronomer "had already, by his energy and initiative, made the Mount Wilson Observatory the world's most notable center of astronomical progress, but in the following years, while not forsaking its astronomical pioneering, he turned his great organizing and promoting gifts to the far-reaching national undertaking of establishing the National Research Council, and at the same time he assisted mightily in the

distinctive Southern California enterprises of creating and fostering the California Institute of Technology, the Huntington Library and Art Gallery — on both of whose boards of trustees he was a most active member — the Pasadena Planning Commission, and the 200-inch telescope project.

"He gave unstintingly of his time and talents, his very life blood, to all these enterprises even when he knew full well that his frail physique was well nigh certain to break under the strain.

"This it did in the early summer of 1936, when he had a stroke from which he never recovered and from the effects of which he died at 1:30 o'clock on the afternoon of February 21, 1938, at the age of 69 years.

"Very few men, indeed, have ever been so great an asset to Southern California and very few Californians have had a national and international significance comparable to that of George Ellery Hale.

"His death removes from our midst one of America's most illustrious, most lovable, and most useful of citizens."

THE CARNEGIE INSTITUTION CALIFORNIA INSTITUTE OF TECHNOLOGY GRAND CANYON EXPEDITION

By Dr. John H. Maxson, '27

The Grand Canyon has long been known as one of the most spectacular and geologically important areas in the entire world. Since Major J. W. Powell made the first trip down the Colorado River in 1869, geologists have wished to decipher the history written in its thick sections of four great geologic eras. Some studies have been made by members of the United States Geological Survey, but these are either of reconnaissance nature or have been restricted to very limited areas. The great work of making detailed studies of the entire Grand Canyon remains to be done because many parts of the Canyon are virtually inaccessible. Field work is very expensive and few independent observers have been able to undertake research in the district. Several years ago Dr. John C. Merriam, President of the Carnegie Institute of Washington, decided to promote the detailed study. In 1932 and subsequently, portions of the work were undertaken by groups from various institutions supported by Carnegie grants.

The study of the Archean era represented in the Grand Canyon by the metamorphic schists of the Inner Gorge was begun by Doctors Ian Campbell and John H. Maxson ('27) in the fall of 1932. In subsequent field seasons they continued investigations at several localities of the more accessible portion of the Canyon, but the study of the crystalline rocks was greatly handicapped by difficulty in reaching their outcrop along the river. It was found necessary to make camps along the Tonto Platform, the great bench which lies some 3500 feet below the upper plateau and which forms the floor of the main or outer canyon. In this bench is cut the

smaller, narrower and steeper Inner Gorge, with the river at the bottom, some 1000 to 1500 feet below the bench of the Tonto platform. These camps were reached by mule trains and were located at the infrequent places where water appears. To these camps it was not only necessary to pack supplies for the men, but also grain for the pack animals. From these camps, descents were made down tributary canyons to the river but forbidding cliffs made impossible any extensive studies along the river itself. Therefore, it became necessary to consider a river trip to enable the completion of the studies.

Planning the details of river navigation was very much simplified for the geologists through the fortunate circumstance that the lower part of the Grand Canyon was surveyed in 1935-36 by Fairchild Aerial Surveys, Inc. This survey was made for the United States Reclamation Service in connection with the Lake Mead reservoir. The river work was necessitated by ground control for the airplane photographic survey. Under the direction of Mr. E. C. La Rue of the United States Geological Survey Colorado River Expedition of 1923, boats were constructed at the Pierce Boat Shop in Pasadena. They were constructed closely in accordance with the design worked out by the Kolbs and other early navigators of the Colorado River. They are made of Phillipine mahogany, are seventeen feet in length, four feet across the thwart and decked over fore and aft. This type of construction is necessary in order to keep provisions dry and to prevent swamping in rapids. A very sturdy construction is needed if boats are to withstand sharp impacts against boulders in swift water. During flood stages, velocities of thirty feet per second have been recorded. It is a tribute to the construction of these boats and to the skill of the boatmen that after two trips through the lower portion of the Grand Canyon and one trip through the entire length of the Marble Canyon and Grand Canyon they are still in good condition and could make the trip again.

It was decided to make the trip during the fall when there is an intermediate stage of water. Several factors influenced this choice. During high water it is often easier to run boats through rapids with less danger of striking submerged rocks; but boats are never controllable to any degree in excessively fast water and during floods a great deal of luck is required in getting through the worst rapids. On the other hand in very low water there is not a good channel between the rocks and portaging supplies and boats is necessary almost every mile. In intermediate water, not only is navigation best, but also camp sites are more easily found on the tributary deltas and good supplies of drift wood are available for



Dr. J. H. Maxson

Loading the boats at Lee's Ferry, Arizona, for the start of the trip. Vermillion Cliffs in the background.

fires. Intermediate water comes in fall when climatic conditions are best for geologic work. The weather is not excessively hot as in the summer and very few rains occur. However, the water of the river supplied from the high mountains of Colorado becomes progressively colder and the daily, sometimes hourly, duckings are not nearly as pleasant as they might be in summer.

Careful calculations were made of the amount of provisions required to maintain eight men isolated from all sources of supply over a period of two months. A portion of these were taken directly to Lee's Ferry, Arizona, the official starting point, and the remainder were deposited in warehouses of the United States National Park Service at Grand Canyon Village whence it could be brought by pack train to meet the expedition at Bright Angel Creek. During the first week of October, 1937, the boats were placed in the river, tested and prepared for the journey. The chief boatman was Frank B. Dodge, who has had much experience on the river. The other boatmen were Owen Clark and M. F. Spencer, both of whom were on the Fairchild Expedition. Doctors Campbell and Maxson were assisted in their geological study by Dr. J. T. Stark of Northwestern and Bob Sharp, class of '35. On October 11 the party set out from Lee's Ferry and by the end of the first day had had many memorable experiences. Badger Creek Rapids were reached about noon and since no navigable channel was to be found the boats were all unloaded and the supplies carried over the delta to below the swift water. The boats themselves were lined, that is, pulled and pushed over the rocks and through small channels adjacent to the bank. In this procedure all men had to participate, usually three on the bow line, three on the stern line, and two on the boat itself. The boats were awkward to handle, even when unloaded. They had weighed nine hundred pounds dry, and doubtless had increased to about one thousand pounds. When it was necessary to pull the boats directly over boulders, a block and tackle was used. So on the first day it was found that the descent down the Colorado River involved not only thrills and adventures, but also heavy physical labor in the hot sun.

As usual routine throughout the trip, camp was made at four o'clock in the afternoon and preparation for dinner begun. At five o'clock a portable shortwave broadcasting set was rigged by erecting an aerial over a drift wood pole. Considerable difficulty was experienced in making contacts because of the closely-hemming, nearly vertical walls of the Canyon. The central station was KNDO operated by the National Park Service at Grand Canyon Village, and on nearly every night satisfactory communications were established. These were useful in getting weather reports for the estimation of river conditions. In the past, expeditions have frequently lost boats and supplies through the water rising fifteen or twenty feet in one night.

Marble Canyon which was first traversed is cut in Paleozoic sandstones and limestones and in many places has a



Dr. Ian Campbell

Chief Boatman Frank Dodge starts through some rapids.

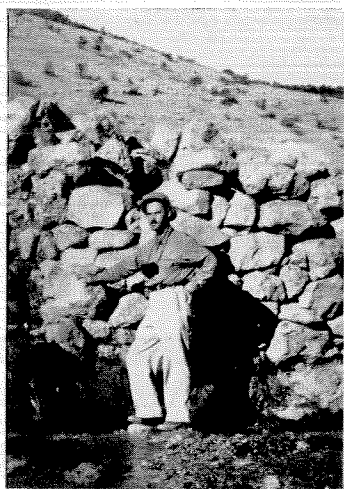
spectacular beauty. Numerous difficult rapids were encountered of which Soap Creek was perhaps the worst. Here one boat and the supplies were portaged. The remaining two boats were run through by Chief Boatman Dodge, the first time this has been done during a stage of intermediate water.

After a week the Grand Canyon itself was reached, and in it the first exposures of Archean rocks were encountered. Thenceforth the progress was slow because of the geological observations and mapping of the walls of the inner gorge. The mapping of rock types in the Archean was greatly facilitated by a series of overlapping vertical airplane photographs on a scale of six hundred feet to the inch made at an earlier date by Dr. Maxson. These enabled careful plotting of faults and contacts between rock types. Camps were usually made on tributary deltas within the narrow Granite Gorge and explorations extended up the tributary canyons. No great difficulties were encountered and a routine of study and work was developed. The expedition stopped over a day at the Suspension Bridge at the foot of the Yaki Trail below the Village of Grand Canyon while supplies were being packed down. On October 28 the expedition again started down stream and soon reached Horn Creek Rapids which has taken a toll of several lives. Two of the three boats were nearly swamped in shooting the rapids, but avoided collision with the huge rocks. The expedition proceeded, now and then lining around a particularly difficult or dangerous stretch of swift water, without accident. Many new geological data were obtained. At Upset Rapids the first boat was almost swamped by a wave near the top and became unmanageable as it was carried directly into a trough with a depth of about five feet. Chief boatman Dodge jumped overboard in the rapids and after some expert swimming caught up with the boat below and brought it safely to shore. This episode forms one of the most exciting sequences in the movies taken

of the trip. One or two other narrow escapes occurred when boats were thrown upon rocks in rapids. It could be easily seen that large flat boats with about a ton of weight apiece were much more difficult to handle in water flowing at six feet per second than a canoe on a quiet lake. At Separation Rapids, where three of Powell's men left his expedition to be subsequently murdered by Indians on the plateau, some understanding was gained for the fears and suspense prevailing during the first expedition when it seemed that the river was one continuous series of rapids and when there was no assurance that the next rapids might not be very much worse than any encountered theretofore.

After successfully running dangerous Spencer Creek Rapids which is now the last in the river, although it too will ultimately be covered by the rising water of Lake Mead, a certain amount of relief was felt by all members of the party and especially by chief boatman Dodge, whose responsibility it was to complete the navigation without mishap. It was, however, a letdown inasmuch as rowing the heavy boats through quiet water became somewhat monotonous. About sixteen miles from Pierce's Ferry, the motor boat belonging to the Grand Canyon Airlines gave the Institute group a tow, and on the evening of Thanksgiving Day the long river trip was officially terminated. The trip had been altogether pleasant and enjoyable, and the entire group immediately began to consider the pros and cons of again going down the Colorado River at another season.

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A snapshot of Dr. John H. Maxson, author of the preceding article, taken last summer at a spring near Hermis, S. E. Turkey, when he was employed as a petroleum geologist by the government of Turkey.

CALTECH GEOLOGISTS ABROAD

Former students of the California Institute have in the past five years travelled over much of the world. Geology is a science which has world wide applications, and searches for petroleum and ores which have been in progress have required the services of numerous Caltech men.

Willard A. Findlay, '29, left the Institute three years ago to work for Oil Search, Limited, in Australia. After spending an interesting year and a half studying the strata of this continent he was transferred to Portuguese East Africa and worked there for a considerable time. Subsequently he went to South Africa to continue the exploration for oil. He is now in London and expects to return for further work at the Institute the first of March, after having visited many countries and encircled the globe.

J. Clark Sutherland, '29, during a part of 1936, carried on mining investigations in Alaska, where he met many adventures including burial under an avalanche.

Francis D. Bode, '30, has spent the last year doing petroleum explorations in Italy and various Italian territories.

Burt Beverly, '26, is engaged in Standard Oil Company work out of Batavia, Sumatra. Ygnacio Bonillas, '33, for the past two years has been working for the Standard Oil Company in various parts of Mexico. Bernard Moore, '27, is going to Venezuela for petroleum work with Sinclair Oil. Willis P. Popenoe, Curator of Invertebrate Paleontology, has just returned from a five months petroleum investigation in the Philippine Islands. Nelson Harshman, '32, is now actively engaged in working for a mining corporation in the Philippines and has offices in Manila.

John Maxson, '27, spent 1936 and part of 1937 as petroleum geologist for the government of Turkey and made various explorations in Asia Minor. He subsequently attended the 17th International Geological Congress in Moscow and crossed through Siberia with the Siberian Excursion to Vladivostok. He returned via Japan and the Hawaiian Islands to Pasadena, where he has resumed his position on the staff of the Geological Sciences.

The great importance of petroleum and mineral resources in our modern civilization, together with the diminishing supplies, have brought about a great deal of exploration activity not only in the United States but also in the great undeveloped areas of the world. Many requests for Caltech geologists to enter foreign service are coming in to the Division of the Geological Sciences, and according to the best information available all men who have graduated in this department are employed.

LINDVALL DESIGNS A NEW TRAIN

Professor F. C. Lindvall of the Electrical Engineering Dept. is one of a group working under Cortlandt T. Hill, a grandson of the late James J. Hill the "Empire Builder," in the design of a new type of train with better riding qualities at high speeds, and capable of more economical operation than the present passenger trains. According to Lindvall, a marked degree of success is being obtained. A full scale model of two units of these "Hill" trains have been subjected to running tests on Santa Fe lines around Southern California. In recent trials, at speeds up to 94 miles an hour, a remarkably smooth ride, with absence of shocks and jars at crossings and switches, was obtained. The faster the train operates, the smoother the ride seems to become.

The outstanding features of the new train, as described by Dr. Lindvall, are as follows: The springing has been re-designed so that the springs support the car above its center of gravity. This has the interesting effect that the car banks itself the correct way in going around a curve. Furthermore, the springing is made much lighter than in the conventional railroad car. The body of the car is built so that the "skin" of the car itself shares the stresses, leading to a light and very strong construction of the type used in airplanes.

Trials of the new train are being continued so as to include a wide variety of track conditions. One of the most important advantages expected of the new train is that it will bring great improvement in riding comfort on present track-age.



NOTED SCHOLARS VISIT CALTECH

This year a number of outstanding scholars have been visiting and lecturing at the Institute. Professor Allan Nevins of Columbia served as visiting professor of American History during the earlier part of the current academic year.

For the past two months Philip Guedella, well-known English historian and publicist has been drawing an exceptionally large audience to his lectures on the Methods of Biography, which are given at the Athenaeum. Mr. Guedella is probably the most outstanding living biographer in England having published quite a number of books during the past dozen years. Among his best known works are: "The Duke of Wellington," "Queen Victoria and Mr. Gladstone," "Life of Lord Palmerston," and his most recent volume which is entitled "The Hundred Years."

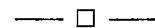
The income from an endowment fund that was given anonymously to the Institute for the promotion of work in the humanities, about a year ago, is being used to bring these, and in the future many another famed scholar, to lecture and teach at Caltech.

R. W. PALMER HEADS VULTEE CO.

Richard W. Palmer, '25, who has been assistant chief engineer of the Vultee Aircraft Company since its organization in 1931, has just been appointed chief engineer, to succeed the late G. F. Vultee. Palmer has been associated with Vultee in the design of many successful military and transport planes. In particular they have designed a single engined long range bombing plane, which is said to be the equal of the best twin engined bombers. Two years ago Palmer became temporarily associated with Howard Hughes in order to design a high speed land plane for him. This plane, with Hughes at the controls, was able to break the record for the flight from Los Angeles to New York. His time was just under seven and a half hours, giving an average speed of 332 miles per hour.

Although Palmer took his B.S. at Tech, he went back to the University of Minnesota for his graduate work. At that time, of course, the Guggenheim aeronautical laboratory was not yet built and Tech could not offer any graduate aeronautics.

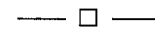
Gerald F. Vultee, the founder of the Vultee Co., attended Tech, himself, for one year. He and his wife were killed last January in an airplane crash in Arizona.



NAVY ASKS VON KARMAN TO DRAFT PLAN FOR NEW DIRIGIBLE

Dr. Theodor von Karman of Caltech and Dr. William F. Durand of Stanford have been instructed by the United States Navy Department to prepare new specifications for airships. The two scientists will make calculations designed to avoid structural breakdown in lighter-than-air craft. The new airship specifications are due to be presented at a conference in April.

Investigations at the Guggenheim Airship Laboratory at Akron for the navy have developed such important results in connection with the question of airships in gusts of wind that Dr. von Karman recommended that the navy continue the research.



SLIDE RULE MISSING SIXTEEN YEARS RETURNED

If you have ever lost anything mysteriously, don't give up hope, for Douglas MacKenzie, '22, just got back a slide rule of his that vanished 16 years ago when he was a student at Tech. Doug, Designing Engineer in the Pasadena Street Department, was handed the rule the other day by an out-of-town engineer to whom it had been given by another who found it in the street some years ago. Through MacKenzie's name being on the rule, he was traced down and it was returned to him. The mystery of the rule's disappearance, however, has never been solved.

TRONA

By Robert L. Sherman, '32

To many present and former students at Caltech the name of Trona conjures up vague thoughts of chemistry and desert regions, but probably few know of the American Potash & Chemical Corporation for which Trona is the common abbreviation, and of the unique process that research developed to make the town and plant possible.

Trona is situated on the shores of "beautiful" Lake Searles about 185 miles by road from Los Angeles and almost exactly 100 miles due North of San Bernardino. The lake is the crystalline remnant of one of a chain of ancient lakes starting with Owens Lake and ending with Death Valley sink; apparently for a considerable time it was the last of the series insofar as flow was concerned, with evaporation exceeding the inflow, thus building up a heavy charge of salts. As the inflow continued to decrease and evaporation continued unabated, or more probably augmented by the forces making a desert of the region, saturation was reached and crystallization commenced. Finally the lake reached the present state in which the brine is below the salt level in summer, and evaporation is restricted to the precipitation within the watershed. In winter the brine may get several inches deep over the salt body, but by summer the surface is dry and solid; cars are driven over it as on a paved road—an unusual "lake."

The brine which permeates the salt body is of course saturated with the various salts comprising the latter, of which the chloride and sulfate of potassium and the chloride, sulfate, carbonate, and borate of sodium are the more important, with numerous other salts also occurring in lesser quantities.

The main plant process involves evaporation of the brine from the lake in triple-effect evaporators during which operation the chloride, sulfate and carbonate of sodium crystallize out (the latter two as a double salt known as burkeite), due to their relatively flat solubility curves, with increasing temperature; sodium tetraborate and potassium chloride solubilities increase markedly with temperature and consequently remain in solution in spite of the removal of water. The "concentrated liquor" resulting from this step is then cooled in two stages, the first of which is relatively rapid, and during this stage potassium chloride is crystallized. The borate supersaturates, however, and by suitable operation can be held in solution, to come out during the second stage of cooling as crude borax which is separately refined.

The Soda Products plant was put into operation in 1934 to separate the burkeite removed during the evaporation step into its component salts, sodium carbonate, or soda ash, and sodium sulfate or salt cake. This is accomplished by a process of fractional crystallization which is a little too complicated to detail here.

Potassium chloride, or "potash," is sold in three grades, the two more impure forms representing the bulk of the production and being used for fertilizer manufacture; part of the production is refined for sale to caustic manufacturers.

Total potash production amounts to about 500 tons per day.

Borax (decahydrate) production aggregates about 270 tons per day; part of this is dehydrated by fusion in special furnaces, and part is converted to the technical and U.S.P. grades of boric acid by sulfuric acid; the remainder is sold as standard borax.

The soda ash and salt cake production figures now are about 135 and 200 tons per day respectively, and as this is a young plant, these rates are still increasing.

The World War, with the consequent shut-off of German potash for American fertilizer needs, gave Trona its chance. The then-struggling little outfit made profits as the price of potash soared, even though the process was inefficient and the products low-grade. Forethought pointed out that such conditions would not last, and every effort was bent on research and development which rewarded the corporation with the present status in which it now competes with all other producers on an even footing and profitably, having overcome difficulties which seemed insurmountable not so many years ago. The benefits of industrial research are not always appreciated as much as at Trona, and the recognition of that fact is evident in the relatively large and active research force maintained today.

As is not surprising, the Research Department claims the largest number of Tech men at Trona, with several others in the production and Engineering Departments.

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There follows a list of Tech men and the part they play in the production and development of the potash industry.

CHARLES F. RITCHIE, '22, is Assistant Director of Research and as such has charge of several of the various investigations in progress at any time, as well as a good deal of patent work. Mr. Ritchie is married and has two children.

H. TODD NIES, '23, is Patent Engineer, which position, in an organization constantly developing new processes and wrinkles, is no small one.

TOM G. BERNHARDI, '30, is Research Engineer engaged in several evaporation process problems such as heat exchanger, tube corrosion and hydraulic classification of salt sludges. Tom is married.

NORMAN GUNDERSON, '31, is a Research Engineer working mostly on new products and processes.

JULIEN PHILLIPS, ex '28, who finished at M.I.T., is also working on similar problems as well as on various wrinkles in the newer plants.

E. BRYANT FITCH, '32, is another Research Engineer at present doing process research on the Soda Products plant, which, being a complicated and still comparatively new process, keeps him busy.

HUNTER NICHOLSON, '33, is a Research Engineer working on general process problems throughout the entire

plant, trouble shooting, and developing and testing new equipment.

HENRY SUHR, '33, is a Research Chemist engrossed in equilibrium solubilities on various salt and water systems of any number of components; Hank is another married man.

FRANK R. BRIDGEFORD, '22, is the Production Department Manager and the oldest in point of service of all the Tech men at Trona. He has four Tech men working under him.

MORGAN FORNEY, '30, is an Evaporator Operator and as such has charge of the operation of, and the crews on, one of the three triple effect evaporator units.

HARVEY S. EASTMAN, '30, is the Soda Products General Foreman in charge of the operation of this plant and the crew of forty men.

ROBERT L. SHERMAN, '32, is the Production Office Engineer, engaged primarily in cost work and statistics; Bob is married.

JOHN M. FOX, JR., ex '31, is a Production Control Analyst.

WILLIAM H. ALLEN, '25, is Superintendent of the Testing and Development Division of the Engineering Department. His work gets him into almost every new process, wrinkle and piece of equipment throughout the plant. Bill is married and the father of two children.

WILLIAM E. JOHNSTON, ex '31, who finished at U.S.C. in '32, is in Allen's Division working on equipment testing throughout the plant.

RALPH WHISTLER, ex '34, who finished at U.S.C. in '34, is an Estimator in the Engineering Department. Ralph is married.



Trona, as seen from Scarles Lake after a rain.

Courtesy of General Petroleum Corp.

ALUMNI YOU SHOULD KNOW

IRRIGATION ENGINEER

Munson J. Dowd graduated as a civil engineer in the War class of 1918. He was an energetic chap, largely working his way through Caltech. As an undergraduate he was a crack football player, and in his senior year was Captain of the team.

Married in his Junior year, he had a son who saw him graduate. This son, Munson W. Dowd, is now a senior in Civil Engineering at the Institute. Young Dowd is among the first sons of a C.I.T. (not Throop) graduate to return to C.I.T.

During the latter part of the War Mr. Dowd worked for the Pacific Southwest Shipbuilding Co. In 1919 he joined the U. S. Reclamation Service in Yakima Valley, Washington. In 1922 he left the Reclamation Service to join the Imperial Valley Irrigation District (largest in the world.)

Mr. Dowd was Water Master for two years, after which he became Maintenance Engineer on the main canals (U. S. and Mexico). He was General Superintendent for a year and in 1926 became General Superintendent and Chief Engineer, which position he still holds.

Two main points for which he has worked are now becoming a reality — the All-American Canal, and a civic owned Light and Power system for the Valley.

Mr. Dowd works long hours and takes no vacations, but due to the semi-political nature of his job travels to Washington, D. C., Mexico City and Sacramento frequently. He is well liked throughout the Valley, and is familiarly known as "Mike" Dowd.



MUNSON J. DOWD

SALES ENGINEER

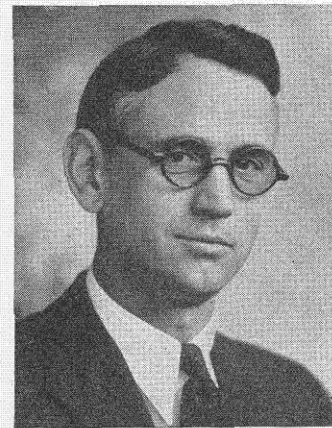
In 1911 Caltech moved onto its present campus, and among the members of the first class to graduate from this new location was genial Harold C. Hill, who is well known to many alumni for his interest in Y.M.C.A. and Alumni affairs. At the present time he is a member of the Board of Directors of the Alumni Association and handles the Alumni share of the Placement Service.

From 1911 until 1917 Mr. Hill was in the Motor Sales Department of the General Electric Co. at Lynn, Mass. Naturally he did a lot of traveling during these years.

During the War period, from 1917 until 1919, Mr. Hill served as 1st Lieutenant in the Army, spending the majority of this period as an instructor in Electrical Engineering at Fort Munro, Virginia. On receiving his discharge from the Army, he returned to the General Electric Company and spent the next four years in the Foreign Sales Department at Schenectady.

In 1923 Mr. Hill was transferred to Los Angeles to the Industrial Sales Department of the General Electric Co., where at present he is in charge of the Petroleum Industrial Business.

Mr. Hill, who is married and has one daughter of High School age, is a member of the American Petroleum Institute and of the Electrical Maintenance Engineers.



HAROLD C. HILL

ALUMNI YOU SHOULD KNOW

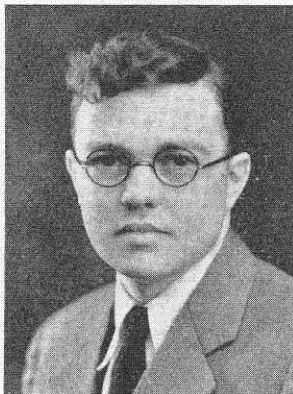
STEEL PLANT ENGINEER

On graduating in 1925, Glen M. Schlegel signed up for a two and a half year apprenticeship with the McClintic-Marshall Corporation. Traveling east to Pittsburgh he entered on the morning of July 1, 1925, the Carnegie Works gate (not to be confused with Carnegie Steel Co.) with overalls and a pair of gloves under his arm. He had a job.

Promotion came easily and rapidly to Glen Schlegel and he progressed from shop, to drafting room, to assistant to the works manager, then into the engineering department, where he performed varied design and estimate work. In 1928 he became Assistant Works Manager of the Carnegie Works and in 1929 was transferred to the same position of the larger Leetsdale Works.

Depression hit the steel industry hard and as a result Schlegel did double duty as Shop Superintendent and Assistant Works Manager. In 1931 the McClintic-Marshall Corp. was absorbed and became a part of the Bethlehem Steel Corp. After being closed for part of the depression, the Leetsdale plant was reopened in 1937 and Mr. Schlegel was made Assistant General Superintendent in charge, which position he now holds.

Under his able supervision many interesting steel jobs have been performed, among which are 14,000 tons of structural steel for the Empire State building, the external structure for the Naval gas holder at Sunnyvale, California, two plate girders weighing 84 tons each, which were 12' 3" deep and 154' long, for the Maumee River Bridge in Toledo, Ohio, the approaches to the Huey Long bridge in Louisiana, and part of the flooring of the San Francisco-Oakland Bay bridge.



HAROLD W. LORD



GLEN M. SCHLEGEL

VACUUM TUBE RESEARCH ENGINEER

After receiving his degree in Electrical Engineering from the California Institute in 1926, Harold W. Lord spent the next year on "test" at the Schenectady Works of the General Electric Company. In 1927 he was placed in the Vacuum Tube Engineering Department.

At first he was engaged on radio receiver tube development, later his work included development of new circuits for the industrial application of thyratrons and high vacuum tubes for power and control purposes. The principal achievement was the invention of the Thyatron Synchronous Timer for resistance welders. For this work he received a Coffin Award in 1933. Coffin Awards are made annually by the G. E. Co. to employees realizing outstanding achievements in their field of work and are considered a signal honor.

A more recent development of his is the half-cycle magnetizer with Thyatron control. This relatively inexpensive equipment, weighing about 100 pounds will magnetize magnets which in some instances formerly required a 10,000 amp. 50 kw. D.C. generator.

At the present time 18 patents have been granted Mr. Lord for various inventions.

In August of 1937 he was transferred to the Consulting Engineering Laboratory where he is currently engaged in the field of circuits for newly developed fluorescent and other light sources.

Mr. Lord, who was married in 1928, has one son and two daughters. His hobby is photography, in which he excels.

FIRST FLIGHT AS COPILOT

Being excerpts from a letter giving impressions gathered by Tom Terrill, '33, during his first flight as copilot from Brownsville, Texas, to the Canal Zone.

Having returned from my first trip as a copilot with Pan American Airways, Western Division, I find the information fund bubbling over with all the sights, sounds, and smells gathered and experienced during a five day trip from here to Panama and back. The flight was intensely interesting, all the story book and moving picture fable about the Tropics popping to life before my eyes: native women in colorful garb running along the streets of Guatemala City, barefooted and carrying great baskets of fruit and other foodstuffs on their head; gigantic volcanos rising ten to twelve thousand feet in the air, smoke pouring from their mouths, black slashes of cold lava tearing scars into the thick green growth on their sides; tremendous lakes of clear blue water filling extinct volcanic craters; oxen yoked with crude timber harness pulling crude little carts with solid wooden wheels; a terrain dotted with grass huts housing natives not far removed from savage habits; tremendous banana plantations; and thousands of square miles of unfathomable jungle.

The first hop is from here to Mexico City, making one stop at Tampico. Between here and Tampico, which is on the Gulf Coast of Mexico, the country is flat and marshy. Its one outstanding feature is the tremendous amount of bird life in the marshes—ducks, geese, and a myriad of other species. Tampico itself is an oil center. Directly on the course and some forty miles north of Tampico lies an old tramp steamer on the shore.

Leaving Tampico, we climb steadily to ten thousand feet, even then barely maintaining a few thousand feet above the ground, because the country rises so steeply as we approach Mexico City. A good landmark is a lake which has been dubbed "Step-In" Lake by the pilots, because it bears a rather rough resemblance to that particular item of feminine undergarmentry.

Approaching Mexico City, which appeared to be a rather large establishment, I was particularly impressed by the giant "Sleeping Lad" and "Popo" (which is a contraction of its real name, this being a tongue twister of the first water). In the distance stands Orizaba, all three bearing snow on their summits which rise seven to eight and more thousands of feet above the Mexican plateau which, in itself, is around eight thousand feet high.

At Mexico City I went into the routine which is required of copilots all the way down and back at each stop. Pulling up to the passenger platform, the pilot sets the brake and leaves the ship, the copilot stopping the engines and noting the time of arrival. Then he takes the measuring stick, crawls up on the wings and measures the amount of fuel in each tank. Consulting his dope sheet, he determines what the required minimum amount of fuel is for takeoff to the next station, supervises the refueling, measures each tank again

to be certain that he has enough for the hop. By that time the pilot has completed the necessary ritual and the ship is ready to depart, whereupon the copilot rushes back into the ship, all in a lather and wondering what was the use of stopping anyway on account of he did nothing but work all the time he was on the ground.

The run from Mexico City south to Tapachula is the longest single hop on the trip. It takes about three hours, the course carrying the plane out over the Pacific a bit. As we got further south, the vegetation became thicker, greener. Rivers became more in evidence and the whole picture slowly shifted to a tropical setting. Thatched huts dotted the terrain, banana plantations appeared, tall palm trees are seen lining the shores of the many lagoons, swamps cover much of the land near the ocean. Roads are a curiosity, trails the rule.

Descending for a landing at Tapachula, we noticed the air becoming sticky and hot as we lost altitude. On the ground it was stifling. One has to have a hardy constitution to withstand the rigors of perspiring freely on the ground and flying through icy air in ten minutes after take off.

The last leg of the first day's flying is from Tapachula to Guatemala City, which requires climbing to ten thousand feet and playing hide and go seek with a dozen volcanos, one of which, Santa Maria, is belching forth clouds of steam and smoke. Descending into Guatemala Valley one is met by the sight of a rich and beautiful country. Studded with volcanic peaks, the valley is some 4000 feet above sea level. Here lies Guatemala City, the capital of the country. Here I found a thousand police on duty (part of the army), passed under an aqueduct carrying water although it was built by the Spanish in 1550, beheld modern buildings featuring glass block windows and neon signs, observed oxen tugging at wooden wheeled carts, saw smartly dressed women rubbing elbows with barefooted natives, expressed amazement at the tile sidewalks and the beautiful air terminal built of colored tile, attended a fair which offered rides on roller coasters and all the old line attractions of any American beach town, saw smartly uniformed cadets strutting with their girls, listened to a friend bewail the 50 cent fine that had been thrust upon him for jay walking, had the humiliating experience of being turned down by a native peddler who refused to part with a box of matches for two American pennies (they won't accept our money, insist on their own even though the exchange rate is one to one), listened to rhumba and also the American jazz rendered by marimba bands, noted a considerable number of Germans in the populace, drooled at the mouth when I saw a beautiful hand made saddle with inlaid work finished off with leopard skin for the grand sum of 35 dollars.

Next day and in the air at 7:30 down to San Salvador, capital of Salvador, past a mountain where lies the wreck of a Douglas in which three men died, gliding down over a lake in a volcanic crater for the approach to the field which lies on the very edge of the lake, checking gas and watching two or three military training planes practicing landings. Over the mountains and into Tegucigalpa, Honduras. Here is the greatest collection of skygoing junk I've ever beheld. I believe I have found the graveyard of old airplanes. That is, they were old when they left the United States but are still being used by Central and South American airlines. Fords by the dozens. Old Ryans, Hamiltons, Condors, and even a tri-motored Fokker. What a collection of junk! Which brings to mind the story of one Chuck Stanton who left Los Angeles some three months ago to fly for an outfit in Costa Rica. On his first flight he disappeared and has never been found. Army outfits from Panama looked for him for two weeks, don't think he'll ever be found. They say the jungle is two hundred feet deep in places, will close in behind a plane and literally swallow it up.

From Tegucigalpa on down to Managua, the capital of Nicaragua. Into the air and climbing over Lake Managua, a huge body of water out of which rises a great volcano "Omotepe." Next stop is San Jose, capital of San Jose. This city is said to be another beautiful spot much the same as Guatemala City. It lies in a verdant valley, cut with gorges and rushing mountain streams, truly a beautiful place. On our return trip we picked up a shipment of bar gold at San Jose, alleged to be some 15,000 dollars worth. Incidentally, we flew a shipment of live chicks to Guatemala City. The shipping of chicks into South America and Central America has become quite a business.

Next hop is to David in north Panama. Here again we were at sea level in heavy, sticky air. The pilot let me land the ship here, both on the south and northbound trips. None of these fields are very large. Pan Am had to build most of them at its own expense. I wish some of the boys in the states who are griping about small fields could get a load of some of them on this run! A classmate of mine at Albrook Field, Canal Zone, told me about a swell mess of red bugs he picked up at David. They are worse than fleas, causing larger welts and much more annoying bites. We have to be very careful about eating and drinking. Some of the native farmers practice the charming custom of fertilizing their plants with their own excreta, thus creating an affliction known as amoebic dysentery. The water is used with caution, too.

Thence to Balboa and Albrook Field (Atlantic side, Panama Canal) and over to the end of the second day's run at France Field, Cristobal (Pacific side). I didn't fly the third day, the company sending another man down to Medellin, Colombia, and back for orientation purposes. I took the Ford hop back to Balboa and spent the day with a classmate who showed me Miguel Locks, where we watched a steamer pass through, Panama City with its thousands of blacks (Panamanians), the fortified islands, and the many military

establishments. All blacks in the Canal Zones are referred to as Silver Employees. Whites are called Gold Employees. This dates back to the days of the canal construction when blacks from Jamaica were brought in as laborers. Offered gold pay, they spurned it, insisted on silver.

What I mean it's something to see a black talking Spanish or talking English with a Spanish accent. Also to hear Chinese or Hindus speaking Spanish. They say the Jamaican blacks speak like genuine cockneys from jolly old England.

I'm leaving again tomorrow (Monday) for a trip to Panama and back. The company is opening a new run in South America from Panama to La Guaria and to several intermediate points. Also is making several changes in schedules as well as putting the three new DC-3's into service. Thus everything is in an uproar and is highly interesting.

For now I must sign off. More at an early date.

Tom Terrill

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LOREN BLAKELEY, '23, who was the faithful editor of those alumni news items that one used to find in the California Tech of a few years ago, is now Chief Engineer of the Santa Ana Valley Irrigation Company. This company serves irrigation water to 17,000 acres on the east side of the Santa Ana River between Olive, Santa Ana, and Tustin.

Mr. Blakeley and his family have taken up their residence in Santa Ana.

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The 1938 Volume of the Technical Bulletin of the Academy of Motion Picture Arts and Sciences listing productions between September 1 and December 31, 1937, has just come from the press. Gordon S. Mitchell, ex '30 is Manager of the Academy Technical Bureau. Given individual technical credits in the above mentioned volume are: Louis H. Mesenkop, '27, who is Chief Dubbing Mixer for the Paramount Studios. Rerecording and Effects Mixer in "Angel" and "Ebb Tide."

Edward Dmytryk, ex '30, Film Editor in "Hold 'Em Navy," a Paramount Picture.

ALUMNI CALENDAR

March 5th and 6th	—	Tech Seminar Week-end
To be announced	—	Alumni Dance
April 8th and 9th	—	Exhibit Day
To be announced	—	Stag Field Day
June 10th	—	Commencement Banquet

Members of the Alumni Association will receive full details and reservation cards of these meetings by mail.

TECH SEMINAR WEEK-END

MARCH 5-6, 1938

Of interest to every alumnus is the forthcoming "first edition" of Tech Seminar Week-end, March 5 and 6, with seminars Saturday morning, Saturday afternoon, and Sunday morning, with a general meeting Saturday night. Detailed programs and reservation cards have been mailed and everything points to a capacity crowd.

We have been told that the sign of an educated man is his desire to learn, and that college can do little more than train us in the art of clear thinking. After being exposed to intensive study during our undergraduate days, many of us thought on that eventful day of graduation that we would welcome relief from processes of education and that the speaker of the day merely talked in parables when he spoke of a mere "commencement" of learning. Many of us thought that we now had at our command the tools necessary for success, and that we could keep informed merely by reading the newspapers and a chosen periodical or two.

But many of us have changed our minds. Also, we have found that keeping informed in our chosen field is not enough to fit us for that advancement which requires a knowledge of related fields and human relationships which is all too difficult to obtain. Others of us have never lost the desire to learn, but lack the time or funds to enable us to remain on talking terms with our changing world and its problems.

A partial solution is to tap that well of information which many have lost sight of, our alma mater. Certainly, no group of men is better able to tell us about the newer things in science, engineering, and the humanities than is the present faculty of the California Institute. And the committee in charge of plans for the first seminar week-end is convinced that no group could have shown any greater degree of co-operation in imparting such information than was evidenced by the faculty in accepting our invitations to speak. Events such as the Seminar Week-end will cement a closer relationship between faculty and alumni which should benefit the Institute as well as its graduates.

The seminars themselves are designed to impart both general and specific information. Seminars of more general interest will occupy most of the time available. Two seminars on different types of subjects will be scheduled simultaneously for each period to permit a choice of subjects and speakers. These talks will contain sufficient general information to refresh your recollections but will also deal with the more recent advances. Departmental seminars on more specific subjects are scheduled for 2:00-3:50 Saturday afternoon. There will be eight of these, of which you will probably want to choose the one dealing with your specific branch of engineering or science. Here you can learn of advances



Dabney Lounge, which will recall pleasant leisure hours to many of the more recent Alumni, is to be the registration and central gathering place for the first Tech Seminar Week-end.

in your particular field and these departmental seminars will, in most instances, include short discussions by several men of their research work on the campus or reports of other current developments. All of the seminars will give you much specific information and will form a basis for a general discussion and questions on your part.

The program is thus nicely balanced to give you a maximum of information in a most interesting manner, with plenty of choices on your part. For example, if you missed the opportunities now afforded students of learning about the newer subjects now in the curriculum, you will want to attend the talks dealing with biology, geology, aeronautics, etc. For those who have wondered what's going on in the field of medical research, we offer a general discussion of the newer concepts of the treatment of disease by chemicals and X-rays. For those who are having difficulty in orienting their thoughts on the new particles of physics, there will be an outstanding talk which will revise your concepts of atomic physics. For those who want knowledge of chemical advances, general and specific, we will offer presentations which you could not obtain elsewhere. Finally, we will have information for you on Tech's new cryogenic laboratory, the 200" telescope, materials of construction, advances in transportation (including the recently announced non-sway train), and advances in the engineering sciences in general.

Is the plan experimental? Frankly, yes, though based upon the suggestions which many of you have given. The success of this year's program will determine in large measure the possibility of future endeavors to bring you closer in touch with the Institute, all of which is another reason for coming. As time goes on, and as we find out in greater detail just what you want, your Alumni Association feels that the appeal of the project can constantly be enlarged. But, while our program this year is experimental, almost unanimous approval of it in principle and general subject matter has been given by those who have heard of it.

Can you afford to miss this opportunity? If your reservations have not been sent in, mail them today.

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DEVELOPMENT OF LOCAL MADE

TALKIE

By D. Nitta

(Some excerpts taken from a translation into English by a Japanese of an article appearing in a Japanese motion picture trade journal. The article is said to be authentic by an American sound engineer who has been some time in Japan and has been closely associated with motion picture development there.)

Talkies of Japan of today has shown a remarkable development but before it reached to the present state of development,

there were many difficulties and episodes which I am going to write here.

It was seven years ago when I was working at a laboratory of Minatalkie. At that time, there was no expert or experienced engineer of talkie and when a trifle trouble was found, everybody was very anxious about it and he consulted with other engineers. When we went to Hakodate to project Minatalkie there, we experienced a very queer trouble. The trouble was that no sound was reproduced. As it was winter, we believed that sound reproducing machine was frozen and therefore we heated the machine but it was in vain. We all believed that we were the expert of talkie but no good idea was born. We therefore placed an amplifier on a table and prayed for a help of god. Later we found that cause of this trouble was due to wrong connection of wire and amplifier. . . .

Sound reproducing machine of today can be operated by one engineer but in the former day, it required several. When I equipped a sound reproducing machine at the Denkikan Theater of Asakusa, there was happened a very funny trouble. The machine was "sound-on-disk" system and the disk was rotated by a flexible shaft connected to a flywheel of the projector. The trouble was that the flexible shaft was twisted. If one engineer held one end of the shaft, the other end was twisted, and vice versa. Therefore, five engineers had to hold the shaft during projection. . . .

When I was making a research on talkie on the 4th floor of the Hogakuza Theater . . . Mr. Sasho of Paramount introduced me an assistant manager of Hotel New Grand of Yokohama who intended to project a talkie at the hotel. He came to my laboratory and I tested my machine. However, when a frame which was cut and spliced came in a sound head, very big noise like bang-bang of machine gun was heard and the assistant manager of Hotel New Grand ran away. It is not yet clear why such big noise was heard and due to my lack of knowledge, I missed one of my customers. . . .

When I delivered a lecture at a meeting of talkie engineers, one of the attendants asked me which was stronger, ampere or voltage and I was very much surprised to be asked such a question. As you know, ampere is a quantity of current while voltage is pressure of current and to compare these two units is very silly. It is my regret to find out such an engineer has no fundamental knowledge of electricity although he operates sound reproducing machine every day. Engineers should know Ohm's law at least. . . . However, as a matter of fact, engineers forget this law and they are puzzled when a trouble is found. This is because they do not know a fundamental theory of electricity and they excite when they meet a trouble.

Construction of amplifier is very complicated and its action is very delicate. Therefore, engineers should have a very quiet mind and they should be very careful before they touch on it.

SCIENTISTS GO TRAVELLING

The winter vacation is the season for scientific societies to hold their annual meetings. This year the American Association for the Advancement of Science held its Convention at Indianapolis. This meeting included gatherings of various member societies, but in addition the Astronomers held a meeting at Bloomington, Illinois, the Chemists went to Cleveland, and a few weeks ago the Aeronauts met in New York. As usual Tech sent a strong contingent East to attend these meetings and share ideas with men from other schools.

At the Indianapolis meeting there was a science exhibition which showed certain recent experiments and discoveries. Tech was invited to make an exhibit showing some of its cosmic ray work. Dr. H. V. Neher and Dr. W. H. Pickering, '32, took charge of this display, and they report that it attracted much favorable comment. Needless to say, it was a gathering point for the Alumni present. Among those who turned up were the following. Ray Binder, Ph.D. '36, who is now married; Everett Cox, Ph.D. '33, now at Colgate; Doc. Hains from Williams; Stu West '30, who is working with an oil company somewhere in Texas; Robley Evans '29, now making a name for himself at M.I.T.; Dick Crane '30, from Michigan; Dick Sutton, Ph.D. '29, now at Haverford; C. Crawley, Ph.D. '34, from Alabama, and Selby Skinner, Ph.D. '33, from Chicago. Of the more recent graduates, Howard '34, and Ribner '35, were present. They are both working at the University of Washington in St. Louis.

Members of the faculty who attended the other meetings include Doctors Pauling and Yost who went to Cleveland for the American Chemical Society meeting. Dr. Pauling presented a paper and then started on a tour of the East which kept him away until the beginning of February.

Although the Astronomical Department at Tech is not as yet very numerous, two of their number, Dr. J. J. Johnson '30, and Dr. Dinsmore Alter, were present at their meeting to present papers.

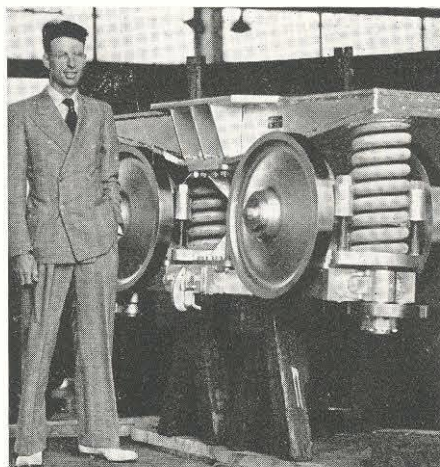
The Aeronauts, headed by von Karman, made national news, to the extent at least of being reported in Time when they presented some rather startling theoretical conclusions. Dr. Clark Millikan presided over the meeting of the Institute of Aeronautical Sciences being the retiring president.

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CALTECH GRADUATE AWARDED HIGH HONOR

Dr. Sterling Bright Hendricks, Ph.D., '26, has recently been awarded the annual Hillebrand Prize of the Chemical Society of Washington. The award was made for Dr. Hendricks fundamental X-ray research on the properties of crystals, including polarization and index of refraction.

Dr. Hendricks is now with the fertilizer research laboratories of the Bureau of Chemistry and Soils of the U. S. Department of Agriculture.



Edmund G. Grant, '30, a designer in the Astrophysics Department, stands beside a completed Dome Truck.

200-INCH DOME NEARS COMPLETION

By the time this is published the 137 foot dome which will house the 200-inch telescope will be going around in circles.

The weight of the two million pound dome is supported by thirty-two trucks spaced equally under the periphery. There are four springs per truck, each spring was wound from a 1 3/4" round bar and carries a load of 17,000 pounds. A single spring weighs 150 pounds. The trucks run on a double circular track of approximately 430 foot circumference.

Everything about the 200-inch project is either colossal or infinitesimal. The seventeen foot mirror will reflect from its surface light which has been traveling for as long as six hundred million years, whereas the surface will be accurate to one millionth of an inch. The forty-six foot diameter bearing at the North end of the polar axis will support a load of seven hundred thousand pounds, but can be moved to follow a star with a torque of only forty-six foot pounds.

Soon the shutters will be complete, and work will be resumed inside of the dome to make it a livable laboratory for the numerous scientists who even now have come to do preliminary work at the 200-inch telescope site.

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WM. H. MOHR '29 ADDRESSES ALUMNI

On Friday evening, February 11, 1938, about eighty alumni gathered at the Los Angeles Athletic Club for an excellent dinner and to hear several interesting talks.

The first talk was by a well known alumnus, Bill Mohr, '29, who told of his experiences as Chief Concrete Inspector on the Yerba Island Tunnel for the San Francisco-Oakland Bay Bridge. Following this Mr. R. B. Southworth of the Columbia Steel Company presented a splendid motion picture showing the erection of the cantilever spans and the spinning of the cables on the San Francisco-Oakland Bay Bridge. The program proved so interesting that the speakers jointly spent three-quarters of an hour answering questions.

NEWS OF CLASSES

CLASS OF 1896

Miss DIANTHA M. HAYNES is Chairman of the Science Division of the Redondo Union High School. Miss Haynes, who also attended Stanford University, is an active member of the C.I.T. Alumni Association.

CLASS OF 1916

Secretary: Harold E. Shugart, 7470 Santa Monica Blvd., L.A.

KENNETH RICH has been appointed Principal of a new high school, the construction of which has just commenced. It is located in East Bakersfield and will be part of the Kern County High School system.

CLASS OF 1918

Secretary: E. H. Imler, City Hall, Pasadena.

JOSEPH F. HARTLEY who majored in Chemical Engineering when in Tech, has been closely associated with the paint industry since graduation. At the present time Mr. Hartley is Vice-President of the rapidly expanding North American Paint and Chemical Company, which has just erected a new building in Los Angeles.

GENE BRYANT HEYWOOD is Vice-President and Director of Harris, Hall and Company of Chicago, Investment Bankers.

CLASS OF 1922

Secretary: Al. W. Knight, 1016 West 9th St., L.A.

EDMUND T. GROAT recently visited the Alumni Office and pleased the Secretary by bringing his family to call. Besides Mrs. Groat there are three children, Lenerd, 12; Margery, 10; and Russel, 6. Ed was spending two deferred summer vacations rolled into one and dropped around to inspect the rapidly growing campus. He is employed by the General Electric Company in Chicago.

CLASS OF 1923

Secretary: Loren Blakely, 1112 Kilson Drive, Santa Ana.

LEWIS M. MOTT-SMITH is highly successful in the geophysical field, having organized the Mott-Smith Geophysical Company, of Houston, Texas. Five Caltech Alumni are employed by this company, whose work extends through Texas, Louisiana, and Mississippi. The placements with this company were made through the Alumni Placement Service. In spite of his many duties Dr. Mott-Smith has retained his position as Instructor at Rice Institute.

ARTHUR DUNCAN passed the candy and cigars on December 11, 1937, celebrating the arrival of a 6.3 pound boy, Russel Edward. "Russ" is the third child in the family having a brother and a sister.

CLASS OF 1924

Secretary: Loys Griswold, care General Electric Co., 5201 Santa Fe., L.A.

JOHN W. PIPER is now manager of the Japan Office of Paramount Pictures, Ltd. He started his dues Californiaward on December 31, 1937, and the check was received January 28, 1938. Since time-space equals distance, we realize that John is a long way from his old associations. We reciprocate the hearty New Year wishes.

CLASS OF 1926

Secretary: D. P. Macfarlane, 1429 N. Gower St., Los Angeles.

CLAUDE D. HAYWARD is Relay Engineer in the Philadelphia plant of the General Electric Company.

CLASS OF 1927

Secretary: Kenneth Belknap, 6191 N. Figueroa, L.A.

ROBERT T. ROSS, Ph.D. Yale '34, who is now Acting Assistant Professor of Psychology at Stanford University, was a holiday visitor to the campus. He is doing research in three different fields of psychology: Fusion Frequency in Different Areas of the Visual Field, the Psychology of the Theatre, particularly on audience reaction to light, and the Interests and Attitudes of College Students. His fifth paper entitled "Attributes of the Socially Acceptable Person," was published about March 1.

RICHARD DODGE is working in the field for the Texas Oil Company.

EDWARD M. BROWDER on December 17, 1937, returned to the Panama Canal Zone, where he is employed in the Division of Operation and Maintenance. He spent a four months' vacation at Berkeley, attending the University of California pursuing courses in structural engineering and photo-elastic studies.

CLASS OF 1929

Secretary, Al Kramer, 1074 Browning Blvd., L.A.

A. LARRECO is at the Lynn works of the General Electric Co, where he was recently placed in charge of research on electric turbines.

CLASS OF 1930

Secretary: Ernest Hillman, 527 N. Hayworth Ave., Los Angeles.

M. L. LEPPERT is at present engaged in radio development work with the General Electric Company in Schenectady.

JACK D. PRITCHETT has lead a varied career since leaving Caltech. On graduation he joined the General Electric Company where he took the test course and later the business training course. Later we find Jack teaching at Arizona State Teachers college and at present word comes that he is testing diesel electric locomotives for the American Locomotive Company. Jack is married and has two young hopefulls, he spends much of his spare time studying to become a teacher of vocational education in New York state.

GEORGE A. ROSS is in the works laboratory of the General Electric Company at Schenectady where he is a specialist on welding. George is also Secretary-Treasurer of the Northern New York Section of the American Welding Society.

CLASS OF 1931

Secretary: Ted Jurling, 2306 Fargo Street, L.A.

WILLIAM A. ARNOLD, '31, Ph.D. Yale '36, is an Assistant in Micro-Biology at the Hopkins Marine Station, Pacific Grove, California. Bill expects to go to Holland next year to carry on research under the Rockefeller Foundation.

ROBERT P. COLEMAN who is a Junior Physicist with the National Advisory Committee for Aeronautics, at Langley Field, Virginia, spent his winter vacation in California, coming by way of the Panama Canal. Propeller Sound is the problem upon which he is working for the government.

"Still unattached" was his answer to a vital query.

EMERY BUFFUM spent his winter vacation in the Los Angeles area. He is party chief with the Western Geophysical Company at Yoakum, Texas.

LAWRENCE W. BOLLES was recently transferred to the Whitewater repeater station of the Southern California Telephone Company. Larry, his wife and year-old daughter are making their home in Banning.

LAWRENCE L. FERGUSON is engaged in auditing and statistical studies with the General Electric Co. at Schenectady. Larry has been with the General Electric Co. since graduation.

NEWS OF CLASSES

CLASS OF 1932

Secretary: Howard W. Finney, 1031 West 47th Street, L.A.

EDWARD C. KEACHIE, who is professor of Economics at Pacific University, was a visitor to the campus during the Christmas holidays. "Chet" was in Southern California to attend a meeting of the Pacific Coast Economics Association which was held at Pomona College, December 28 to 30, 1937.

RICHARD D. MORGAN, ex '32, Ph.D. '36 University of California, gave the campus the once over during the holiday season. His trip south was, of course, prompted by his desire to see California's blue and gold team romp over the Crimson Tide of Alabama. Dick is a cousin of Dr. Linus Pauling, Chairman of the Division of Chemistry and Director of the Chemical Laboratories of the Institute.

CHARLES CORYELL, Ph.D. '35, was married on December 2, 1937, at Flagstaff, Arizona, to Miss Grace Mary Seeley, of Colorado Springs. Mrs. Coryell is a cousin of William Thomas, '32.

CHARLES W. JONES is now chief engineer of the Standard Steel Company. The pride of his life is Donald, aged two years.

THOMAS F. ANDERSON, Ph.D. '36, is now a Professor of Botany at the University of Wisconsin.

BRIAN SPARKS was a member of Captain Musick's crew on the first flight of the Samoan Clipper to New Zealand. He was fortunate enough not to be aboard on the ill-fated second flight.

CLASS OF 1933

Secretary: John E. Meskill, 1393 Prime Court, Pasadena.

KENNETH S. FITCH was married on December fourth to Miss Dorothy Lee Corley. The ceremony took place in the First Methodist Episcopal Church in Pasadena.

ED MATSON was killed in an automobile accident, near Palmdale, California, December 17, 1937. With him at the time of the accident were his father, mother, and brother, Donald, all of whom were seriously injured. He was employed as a draftsman by the Shell Oil Company. Besides the members of the family named above, he is survived by a brother, Joe Matson, '26, of Waialuku, Hawaii, who came to Pasadena upon learning of the accident.

ROBERT L. SMALLMAN is engaged in setting up industrial exhibits for the General Electric Co. in Schenectady. Bob celebrated New Year's Day in a big way—by becoming the father of twin girls. A note from Bob tells us that Sam Johnson, '33, spent the holidays with him. Sam is now attending Harvard Business School.

F. E. STRAUSS is also working at the General Electric plant in Schenectady, where he is engaged in the design and application engineering incident to the manufacture of industrial control apparatus.

CLASS OF 1934

Secretary: J. Robt. Schreck, 723½ E. 49th Street, L.A.

NICO VAN WINGEN was a visitor to the campus during the holiday vacation. He is taking a course in Petroleum Engineering at the University of California at Berkeley and expects to receive his Masters degree in May.

LOUIS STEVENSON takes a prize for interest and loyalty in the Alumni Association for he came all the way from Blythe to attend the January 21 meeting only to find it had been postponed to February 11th.

DICK CRUTCHFIELD is now an instructor in psychology at the University of California, Berkeley.

RAY E. KIDD is an editor in the publicity department of the General Electric Co. in Schenectady where he handles advertising and sales promotion for various central station lines. Ray was a visitor in Southern California last summer.

CLASS OF 1935

Secretary: Allan Ray, 320 W. Ramona Blvd., Alhambra.

CHARLES PATRICK is now employed as an instructor of mathematics in the Vocational Department of the Monterey High School, Monterey, Calif.

ROBERT McRAE has taken a position with the Shell Oil Company in Maracaibo, Venezuela.

To JAMES J. HALLORAN we extend our deepest sympathy for the loss of his charming wife, Ruth Gillespie Halloran, who was instantly killed in an automobile accident, which took place in Montana early last December. At the time Jim was employed as a dredge engineer on the Fort Peck Project in Montana. He left the Institute in 1933 and completed his course by self-study, receiving his degree in 1935.

CLYDE CHIVENS is now with the Research Laboratories of the Cincinnati Milling Machine Company, Cincinnati, Ohio.

CHARLES F. THOMAS, '35, aerodynamic engineer with the Lockheed Aircraft Corporation, was recently elected to the board of directors of the Pasadena Preventorium. Thomas, through once having been a resident pupil in the Preventorium, has an excellent understanding of the problems arising at the school, and is expected to bring the point of view of a pupil to the administration of its affairs. Thomas is a graduate of the Pasadena High School and of Caltech. He is chief stress analyst with Lockheed at present.

LOUIS T. RADER, M.S. in Electrical Engineering '35, who is employed at the General Electric plant in Schenectady, writes of a Christmas party at Asbury Park, New Jersey, at which were present J. W. McRae, Ph.D. '37, and wife; Si Ramo, Ph.D. '36, and wife; Dean Wooldridge, Ph.D. '36, and wife; Howard Griest, Ph.D. '37.

CLASS OF 1936

Secretary: Holly Dickinson, 1143 N. Fuller, Hollywood.

LARRY YOUNG, M.S. '36 in Physics, is now employed by the Geophysical Company of Los Angeles.

ARTHUR IPPEN, who received his Ph.D. in 1936, and who is now an instructor in hydraulic engineering at the Institute, was married during the Christmas holidays. Traveling to Flagstaff, Arizona, he met his bride who had just arrived from Germany. They were married at Flagstaff and spent a short honeymoon at the Grand Canyon.

R. L. HAND is in the test department of the General Electric Co. in Schenectady. Incidentally, he received an M.S. in '37.

SIMON RAMO, Ph.D. '36, who since graduation has done turbine testing and cathode ray oscillograph development, is now supervisor of the third year advanced radio (c) course at the General Electric Co. in Schenectady. Si is secretary of the Alumni Chapter at Schenectady.

CLASS OF 1937

Secretary: Paul Schaffner, 347 South Normandie, L.A.

JOHN SELBERG who is employed by the International Derrick Company was recently sent to Portland to super-

NEWS OF CLASSES

wise the erection of a radio tower designed by himself. John's home is in Portland so no doubt the natives sat up and took notice for a home town boy was making good. John secured his position through the Institute Placement Service.

DICK RIDGWAY writes that his work in the Testing Department of the General Electric Company, at Schenectady, is very interesting. He says the contentment of the employees in the face of prevalent labor trouble is particularly noteworthy.

JOHN BLUE is now employed in San Francisco by Paul Scherer, '19, son of the Institute's former prexy, Dr. James A. B. Scherer.

BYRON KELLY is with the Meter Laboratory in Alhambra.

JAMES HAROLD WAYLAND, Ph.D. '37, is teaching physics at Redlands University during the second semester.

DONALD HYERS, who received a Ph.D. from Tech in '37, is at the present time an instructor of Mathematics at the University of Wisconsin.

TOM HARPER, who worked for the telephone company for a time after graduation, has recently joined the research staff of the Hydraulic Machinery Laboratory at Caltech where preliminary investigations for the Grand Coulee Pumps are under way.

Employment Registration

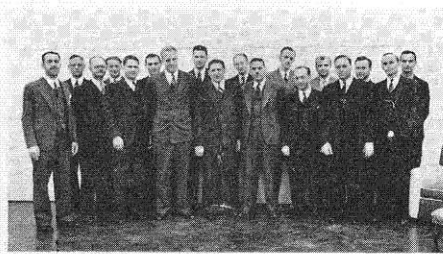
A Bit of Sound Advice from The Alumni Placement Service.

1. When your employer informs you of your impending dismissal or lay-off, don't hesitate. CALL OR WRITE THE PLACEMENT SERVICE AT ONCE.
2. Don't wear out your shoes pounding the pavements and don't put off your visit for weeks until you are at the point of despair. When the axe falls CALL OR WRITE THE PLACEMENT SERVICE AT ONCE.
3. Don't allow the Placement Office to lose good positions that are proffered, because of your neglect in registering. In spite of the recession, A-1 men are still in demand.

To illustrate: A short time ago a call came for a first class Mechanical Designer. The few mechanicals listed were not qualified for the position, so it had to "go by the boards" and the firm found someone else for the job. The next day

an alumnus who was a well qualified and experienced Mechanical Designer came in to register. When asked how long he had been out of work he replied: "Three weeks." Had he CALLED OR WRITTEN AT ONCE he could have had a splendid position.

The Placement Service was created and exists to aid YOU in obtaining a position. Unless YOU register when out of employment they cannot be of help. Not only those who are unemployed but also those desiring a change should register; if you cannot come in person do it by phone or mail.



Membership Drive Closes

Pictured above are a group of Class Secretaries and Alumni Officers who gathered for a pep rally about a month ago. The meeting was held in the council room of the new General Electric Building in Los Angeles.

Alumni President Ward Foster gave one of his excellent pep talks and then introduced Atwood — Editor of the Alumni Review, Hill — in charge of the Placement Service, Arnerich — chairman of the forthcoming Alumni Dance and several other officers who talked on their various phases of Alumni Activities. Later coffee and sandwiches were served by our host Harold Hill. This meeting opened a final ten day drive to increase the membership in the Alumni Association for the current year.

Prof. Sorensen Meets Many Alumni During Eastern Trip

During the later part of January Professor and Mrs. Sorensen traveled East for the midwinter convention of the A.I.E.E. held in New York City. Professor Sorensen who is the only director of the American Institute of Electrical Engineers from the west coast also serves on both the nominating and the standards committees. Mrs. Sorensen planned to spend several weeks visiting her daughter, Mrs. Fred Groat at Englewood, N.J.

Mr. Groat, who graduated in 1924, is an electrical engineer with the Brooklyn Edison Company.

This meeting of the A.I.E.E. was the largest in its history, having a registration of more than 1,800 delegates. Among these were to be found many Caltech Alumni, namely Louis A. Pipes, '33, Claude D. Hayward, '26, both of whom presented papers; Harry St. Clair, '20, Jack North, '23, Simon Ramo, Ph.D. '36, George Harness, '28, were among those in attendance whom the reporter noticed.

NEW YORK

Professor Sorensen attended a dinner given for him by the New York Alumni at which the men and their wives were present. In all there were some thirty odd who attended the meeting among whom were, Ralph Watson, '27, George Wislicenus, Ph.D. '34, Walter W. Ogler, '19, Charles H. Prescott, Ph.D. '26, George Harness, '28, and Beverly Frandall, '29.

SCHENECTADY

On Monday evening Jan. 31, 1938, Professor Sorensen attended a dinner at which all Alumni in Schenectady were present and H. S. Endicott, '23, who came over from the Pittsfield works for the meeting. These men report an interesting discussion and pleasant evening.

The Schenectady group includes the following men, Harold W. Lord, '26, M. L. Leppert, '30, Jack D. Pritchett, '30, George A. Ross, '30, Lawrence L. Ferguson, '31, Bob Smallman, '33, F. E. Strauss, '33, Ray E. Kidd, '34, R. L. Hand, '36, Simon Ramo, Ph.D. '36, and Louis T. Rader, M.S. '35.

PITTSBURG

On February first the Alumni in Pittsburg gave a dinner in honor of Professor Sorensen at which there was a near 100% turnout. There were thirteen alumni besides Professor Sorensen who gathered at the table; they were Ed Forgy, '21, Glen Schlegel, '25, J. B. Mercereau, '24, Morris Muskat, Ph.D. '29, P. H. Wyckoff, M.S. '37, T. E. Brown, Ph.D. '36, Dr. J. E. Hobson, Ph.D. '35, C. T. Anderson, ex '24, W. M. Brubaker, Ph.D. '36, Forrest Green, '31, W. N. Arnquist, Ph.D. '30, O. F. Ritzman, and E. E. Schueler, '26. This is reported to be the largest gathering of Tech Alumni in the Pittsburg area in the past seven or eight years.

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