

# CIT on View to One Thousand High-Schoolers

Over a thousand senior science students and their teachers from high schools in this vicinity will descend on the Tech campus this Saturday, the occasion being the first postwar students day.

## Attendance by Invitation

The event is on an invitational basis, in order to provide a more intimate view of the work in all departments, and an overall picture of student life at the institute. A continuous program of science and engineering exhibits and demonstrations has been planned for from 9:00 a.m. to 4:30 p.m.

The program has been planned for its educational value, interest, and to attract outstanding students to the institute.

Students have been invited from all high schools within a 50-mile radius of Pasadena, and also certain ones from more distant schools from which students have come to Tech in the past.

The more than 1000 male senior science students who are coming with their teachers were sent invitations on the basis of their principals' recommendations.

A HEARTY  
AND CORDIAL  
WELCOME—

# CALIFORNIA TECH

—TO OUR  
OVER 1200  
VISITORS!

## Guests to Wear Badges

Each guest has been sent a badge bearing the distinctive color of the house to which he has been assigned for an assembly point and lunch. Badge colors are: Fleming, red; Dabney, green; Blacker, blue; Ricketts, brown; and Throop, yellow. The guests have been divided up randomly by schools for house assignments, with the most local fifth assigned to Throop club.

The Institute is sponsoring the affair with the cooperation of ASCIT. As chairman of the Faculty Committee for Students Day, Dr. Wilbur R. Varney has been in charge of invitations and coordination of exhibits. For the ASCIT, Carl Hildebrand is student day chairman, Kent Stratton is in charge of guides, and Don Tautz is in charge of exhibitors. All student guides and exhibitors will wear distinctive badges.

## Campus Tours Planned

After the students have arrived at Tournament Park, and have been escorted to the student houses, the guides will pick them up in groups of 20 for a three-hour tour of the many departmental exhibits, some of which are described elsewhere in this issue.

Naturally, every group will not see every exhibit, but the guides will try to select a representative selection of exhibits for each party.

The student guests will eat box lunches in the student houses, in order to allow them to meet and talk to the men in the house and observe student life at first hand. After lunch, on the lawn between Ricketts House and the Athenaeum, the students will hear a short welcome from ASCIT president Ulrich Merten, and an address by Dr. Lee A. DuBridge, Caltech president.

Meanwhile the teachers will have luncheon in the Athenaeum, after which they will hear a talk by Dr. Linus Pauling, head of the Chemistry Division, on "The Interrelatedness of Science."

## Demonstrations in Afternoon

In the afternoon the guests can take in any three of the demonstration lectures planned for 1:30, 2:30, and 3:30 p.m., each lasting about three-quarters of an hour. The subjects include a high voltage demonstration, a liquid air demonstration, the movie "The Story of Palomar," illustrated lectures on aeronautics, biology, crystal structure, and geology, and an intercollegiate debate.

Volume LII

## Hallett Smith to Speak At Tau Beta Pi Banquet

### Formal Initiation Tomorrow Night Brings Two Week Pledge Period to an End

Dr. Hallett Smith, chairman of the Division of Humanities, will be the featured speaker at the first Tau Beta Pi Initiation Banquet of the year tomorrow night at Dante's Cafe. The evening's program will also include the traditional Pledge Play, written and produced by the twenty men who are becoming members of the association, and the announcement of the winner of the Pledge Essay Contest.

#### Pledge Period Over

Tomorrow afternoon, preceding the banquet, the formal initiation of the new members will bring to a close the two-week long informal initiation period, during which time the initiates spent long hours polishing their brass "bents," collecting autographs from the active and alumni members of Tau Beta Pi on campus and performing other pledge duties.

#### Juniors Honored

Five of this term's electees are juniors, chosen in recognition of their high GPA's and extensive participation in extra-curricular activities. These "Honor Juniors" are John Boppert, Norman Gray, Richard Jones, Charles Miller, and Peter Verdier.

The seniors who have been elected this term include Leo Baggerley, Michael Basin, Wayne Beebe, Richard Bemis, Frank Bumb, Fred Eisen, Paul Helfrey, Albert Jackson, Dan LeMay, Richard Libbey, George Merkell, Ulrich Merten, Robert O'Connell, Steve Pardee, and Kazuhiko Sato.

#### Hall Hibbard Elected

Hall Hibbard of Lockheed Aircraft will be initiated as an alumnus member of the association in recognition of his contributions to the field of engineering and his undergraduate records.

Tau Beta Pi is the largest Engineering Honor Society in the United States, consisting of 89 undergraduate chapters with a total membership well over sixty thousand. The purposes of the organization are, as stated in the constitution, "to mark in a fitting manner those who have conferred honor upon their Alma Mater by distinguished scholarship and exemplary character as undergraduates in engineering, or by their attainments as alumni in the field of engineering, and to foster a spirit of liberal culture in the engineering colleges of America."

## Peck Awarded Wheaton Cup

Coach Bert LaBrucherie awarded the Wheaton Football Trophy to co-captain Dallas Peck at the annual Fall Sports Banquet held last Tuesday. Following the Wheaton Trophy award, Mr. Musselman made a surprise award of a plaque to Prof. Sorrensen for his forty years service to Caltech's athletic program.

Puffing on a long black stogey, McDean Eaton officially opened the "301st" annual Fall Athletic Banquet with a hilarious commentary on faculty representatives who are members of the athletic council.

The Dean then introduced the speaker of the evening, Jimmy Phelan. Mr. Phelan, who was the coach of the now disbanded LA Dons, but better known for his Saint Mary's Whiz Kids, gave a highly interesting talk on Athletic Psychology.

The speaker, in summary, gave four bases of what makes up a top-notch athlete: First, brains; second, courage; third, speed; and lastly, physical size.

But Mr. Phelan went on to emphasize that for a man to be a champion, he must also have good morale. The man who knows that at the end of any game he has "done his best" is a real athlete.

After Mr. Phelan's inspiring talk, the usual awards of letters to the football, soccer, water polo, and cross country men took place.

The evening was also highlighted by the introduction of members of the 1930 SCIC football Championship Team.

## Institutors Book OC Big T Photos

The Instituters wound up their first activity of the year in business-like fashion recently, having booked appointments for 172 off-campus undergrads to have their individual photographs taken for the 1951 Big T.

Among the many Instituters deserving thanks for the good job are Dud Wagner, Moose Levy, Carl Rambow and Rodger Baier.

Members of the Instituters, Caltech's service organization, are ready and willing to tackle any job of general interest to the Associated Students and the Institute. Any person or group needing manpower for a job of this nature should contact Chairman Jack McEwing in Room 3, Ricketts.

California Institute of Technology  
Pasadena, California, Thursday, November 30, 1950

No. 9

## Students Day -- A Day For You!

Some months ago a group of students and faculty members began to look into the reestablishment of Students' Day. Several objectives have been kept in mind throughout the planning of this event, the first Students' Day since the war.

Many of the students coming to Caltech do so without really knowing what kind of a school they have chosen. There are some who come here with misconceptions, most of them shared by the public, about Caltech. Others do not even apply here because of a misunderstanding of the program and its emphasis at Caltech. We are hoping that the prospect Caltech students visiting us today will have any questions in this regard answered for them.

### Meet Caltech

Please feel free to look around—and don't go home with any questions about Caltech unanswered. The exhibits and demonstrations have been arranged so as to show some of the work that is being done here. You will be told of some of the problems being faced here. Don't get the idea that Freshmen rush right into research at Caltech. But please be mindful that the program here is designed to bring you to the place where you will be suited for research. The program here is not designed primarily to gain proficiency in working problems but rather to get at the factors which created the problems in the first place.

### Fooling Around

One of the aspects of a school that is always hard to show off is what the students do when they are not studying. There seems to be a general misconception held by many people that Caltech students do nothing but study. A recent survey showed that the average Caltech student spends more time in some extracurricular activity than the average student at other schools in the area.

Student activities here cover a wide range of interests. Some indication of the activities available will be gleaned from the list printed toward the back of your program. No one is going to make you stop studying, but if you want to relax there is ample opportunity and plenty to do by way of relaxation at Caltech. We are trying to show off Caltech just as it is. Four years spent here are just what the student makes them. Every form of assistance toward success will be offered but the lead must come from the student. Hope to see you here!

Carl Hildebrand, Student Day Director

## Noel Singers, Assembly Event

Male and Female Choruses—Rose Queen Finalist to Entertain With Christmas Carol Selections



Rose Queen Finalist Sally Hazard

### Students' Day Edition

This issue of the California Tech is a special Students' Day edition, which, we hope, will also tell the visiting high-school students more about Caltech.

The Nysaeans and the Euterpians singers from PCC will combine to present a Christmas singing assembly tomorrow in Culbertson.

The Nysaeans are a group of 25 women singers led by Miss Isobel Smith. Marilyn Egene, contralto, will sing some incidental solos.

Miss Cary Sharp leads the 20 men of the Euterpians, who will first sing as a group, and then join with the Nysaeans for several numbers.

### Rose Queen Finalist

Miss Sally Hazard, soprano, will be the soloist, accompanied by Charles Perlee. Miss Hazard is one of the finalists in the Rose Queen Contest besides being a very talented singer.

### Christmas Sing

The assembly program is a part of the Christmas show, "Sing Noel," presented each year at PCC. MC for the assembly will be Bill Linton, who is "Master of Revels" in the show.

To round out the assembly there will be some community singing of some of the well-known Christmas carols.

## Departments to Display Wares Saturday

See Page Two for More in Word and Picture

## "Story of Palomar" Film Highlights Astro Exhibit

A set of astronomical plates from the 200-inch reflector and the 48-inch Schmidt telescopes atop Mt. Palomar which have never been shown before in public, will highlight tomorrow evening's weekly demonstration lecture and a special exhibit by the astrophysics department Saturday afternoon for students day.

In addition to these slides, a film entitled "The Story of Palomar" will be shown at the exhibit for the visiting students, to be presented twice in the afternoon as part of the 55-minute contribution to the affair by the astro dept.

These films and slides will be accompanied by comments by Erwin Delano, a grad student from Yale in astronomy, who will also answer questions as time permits.

### 20-Incher Open

In the morning high school students will have a chance to peer through Caltech's own 20-inch reflector telescope on top of Robinson.

As a new exhibit of interest to all Tech personnel in addition to visiting high school students and their teachers, a number of new photographic plates will be put on exhibit on the walls of the second floor of Robinson among the now-famous drawings of Palomar by R. W. Cooper.

### Film Goes Into Detail

The 45-minute film on Palomar explains thoroughly the reasons for building the 200-incher and the Schmidt, describes problems in their use, and tells about the members of the Mt. Wilson staff who worked on the Palomar project, particularly Dr. George Ellery Hale, one of the builders of Caltech and the man after whom the world's largest telescope was named.

Equipment at Mt. Wilson, which is operated jointly by Caltech and the Carnegie Institute of Washington, includes the famous 100-inch reflector, a 60-inch reflector, and two solar telescopes.

At Mt. Palomar in San Diego County Caltech now has the 200-inch Hale telescope, 48-inch and 18-inch wide-angle Schmidt telescopes, and a 20-inch reflector for use in photoelectric work. This large collection of equipment now makes Southern California the greatest center of astronomical

## Van de Graaf Generator Will Spark Physics Show

The three million volt Van de Graaf generator will be the main feature of the physics department's show in Saturday's Student Day, along with other displays of liquid air and the tricks it can do, an automatic ionization gauge used in cosmic ray research, a continuous cloud chamber and a demonstration of electrostatic phenomena.

### 2,000,000 Volts

The Van de Graaf generator will accelerate Hydrogen ions through a two-million potential volt difference, while visiting high school students watch the process at various stages.

On the third floor of Kellogg Radiation lab, where the exhibit will begin first, spectators will have a chance to see the Van de Graafs themselves and perhaps climb into one of the smaller ones (turned off, of course).

From there the visitors will go to the second floor where they will be able to watch the fast moving particles and how they are measured, by literally being caught in a small bucket. John Seagrave, a graduate student, will be in charge of the demonstration.

### Large Charge

Frankfurters will bounce and break, and other strange things will happen in the lecture on liquid air to be given by Peter Mason. The lecture, a popular one which has been given to the public and to almost all Caltech students by Dean E. C. Watson, will be held in 201 Bridge.

Also in 201 Bridge, Dick Waters will show the wonders of large (and small) charges in a demonstration of electrostatic phenomena. Two other devices used in cosmic ray research will also be on display in Bridge. Allan Johnston will tell about the continuous ionization gauge, a device which is sent up in high altitude balloons to measure the intensity of cosmic rays by measuring the rate at which electrical charge passes through the device.

### Trial Balloon in Bridge

The ionization gauge, after collecting a certain amount of charge, automatically sends signals down by radio to an observer ensconced on terra firma. Including batteries and all circuit parts the device only weighs five pounds.

(Continued on Page 6)

## Debaters Vie With SC Sat.

Clashing on the question, "Resolved, That the non-Communist nations should form a new international organization," Caltech's varsity debaters, Merten and Groner, meet University of Southern California's topnotch competitors, Pic'l and Cravitz, this Saturday at 2:30 p.m. in Dabney 206 as a special feature of California Institute of Technology's open house.

It was chiefly through the efforts of Pic'l and Cravitz at the recent Western Speech Tournament at Pepperdine College that U.S.C. was awarded the sweepstakes events. Pic'l won first in both oratory and extempore speaking, and with Cravitz, tied for second in men's varsity debate.

### Western Tourney

Last week three of the five Caltech debate teams missed the finals at the Western Speech Tournament held at Pepperdine College by one win. These teams, winning three out of five debates, consisted of Stan Groner and Bill Kemmel; Art Savran and Hal Martin, and Jim Pinkerton and Irwin Rubenstein.

Scores for the other two Caltech teams, Swaroop Bhanu Deo and Michael Lourie, and Carl Larsen and Michael Callaghan, were two out of five debates.

In view of the limited time available for Tech debaters to spend on the subject, Dr. McCrory declared himself well satisfied with results to date, and predicted that more impressive performances can be expected from the boys during the annual Caltech tournament held here Feb. 16 and 17.

(Continued on Page 6)

## Campus Calendar

THURSDAY, NOV. 30

12:10 Throop Club Meeting  
7:15 Board of Directors Meeting in Lower Fleming  
8:00 Water Polo, Caltech vs. Fullerton

FRIDAY, DEC. 1

11:00 Assembly—Christmas Musical Program  
8:00 Basketball, Caltech at Loyola U.  
10:00 Ricketts-Blacker Barn Dance

SATURDAY, DEC. 2

9:00-12:00 Art Class for All Students  
04 Mudd, Instructor, R. B. Beauman  
10:00 Soccer, Caltech vs. USC at Rancho La Cienega  
10:00 Cross Country, Varsity vs. Redlands at Tech  
10:00 Dabney-Fleming-Throop Barn Dance

SUNDAY, DEC. 3

7:30 Film Classic Assembly, "The Chips Are Down"

MONDAY, DEC. 4

7:30 Film Classic Assembly, "The Chips Are Down"

WEDNESDAY, DEC. 6

7:30 Orchestra Rehearsal in Culbertson

## EE's to Exhibit Hi Volt Wonders

Harnessed lightning with sound effects is a suitable description for the high voltage phenomena to be seen on Students' Day in the High Potential Laboratory. This spectacular presentation of the Electrical Engineering Department is expected to draw capacity crowds of students at all three times scheduled.

### Million Volts to Perform

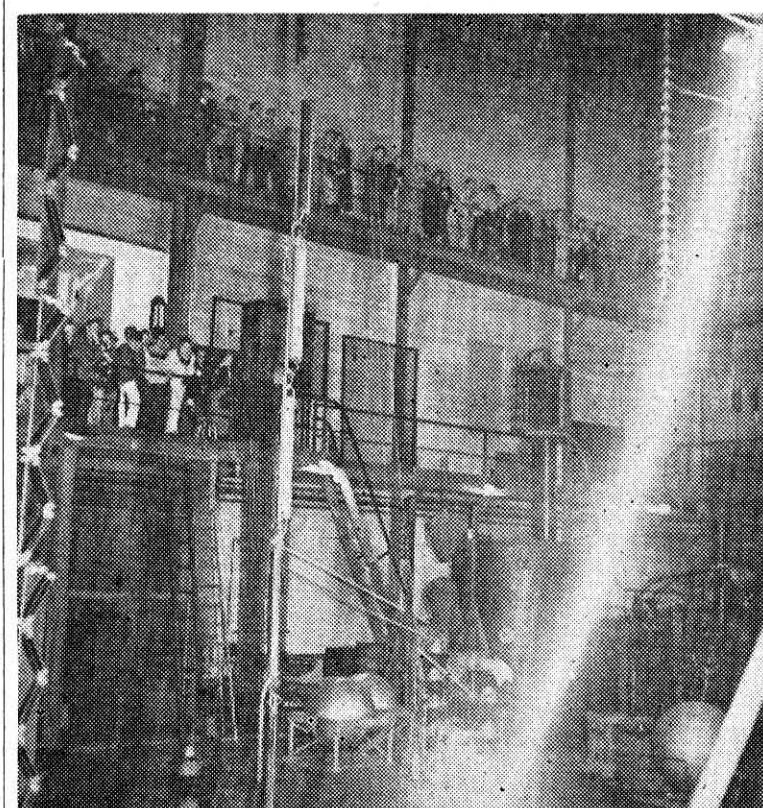
The demonstrations will be conducted by Mr. J. E. Conner and graduate assistants. The first two demonstrations will use voltage obtained from the million-volt transformer. Corona discharge, a common occurrence on large scale transmission lines, will be first shown. The phenomena which leads to ionization of the air and a loss of current is minimized by increasing the size of the conductor or by using hollow conductors.

A horn gap discharge will be shown. For this demonstration a spark is created between the ends of two wires which diverge as they rise. The spark rises due to the heat generated, increasing in length as it progresses. Finally, the resistance of the air becomes too great and the spark breaks with a loud crack only to start again at the bottom. Frequently the spark attains a length of 15 feet.

### Copper Wire Vaporized

The 2,000,000-volt surge generator is used for three demonstrations. A copper wire is completely vaporized by passing a high current through it. A magnificent spark gap is created between two spheres. Finally a block of wood is split into a mul-

## LIGHTNING--MAN MADE STRIKES TWICE



Two million volt surge discharge from artificial lighting generator in Caltech high voltage lab.

titude of fragments by passing the high voltage across two nails embedded in the wood.

The most thrilling experiment is the "Long Arc." In this experiment a spark is drawn from a discharge point on the floor by a wire that can be slowly raised. This spark or arc is elongated until it finally jumps to the steel beams of the building.

This electrical discharge is accompanied by much noise. Since

for a better visual effect all these exhibitions are conducted in total darkness, their spectacular appearance can be well imagined.

### Jumping Ring

Several other very interesting though slightly less spectacular exhibits will be held in the morning by the Electrical Engineering Department. In the EE lab in 4 Throop, Prof. Maxstadt and assistants will show the "Jumping Ring," which is an aluminum ring made to jump from five to 10 feet by placing it in an electromagnetic field. There will also be a demonstration of a motor that reverses itself according to a predetermined cycle.

**Radar Demonstration**  
In 210 Bridge, Prof. Pickering

## Slides and Talk Given by Aero

A 45-minute talk illustrated with colored slides is planned by the aeronautics department for students day. The lecture, which will be given in the afternoon by Dr. Felberg, will present the projects that are being worked on in the department and give a general picture of the facilities available for carrying them out.

No further exhibits or tours are scheduled by the department, as the talk will give a complete picture of its activities.

**Chromatography**  
In 262 Crellin Mr. Gerald Fasman, a grad student, will demonstrate the application of chromatography to chemical analysis. The technique of paper strip chromatography in which components of a mixture are separated by the action of a mixed solvent "developer" rising up a strip of paper by capillary action and appear as colored bands on the paper will be shown.

**Molecular Structures**  
The application of microwave absorption phenomena to the determination of molecular structure and other problems will be explained by Mr. James Shulerie in 13 Gates. He will demonstrate the operation of the microwave apparatus, similar in principle to the spectrophotometer and similar in design to a bad dream.

**Critical State**

Critical phenomena of CO<sub>2</sub> will be shown by the Department of Chemical Engineering in their lab. The apparatus consists of a small glass tube containing CO<sub>2</sub> and a device for compressing the substance by forcing mercury into the tube. The temperature is regulated by blowing hot or cold air around the tube. A greatly enlarged image of the tube, together with dials for indicating pressure and temperature, can be projected on a screen. Thus the changes in the state of the substance in the tube and the lack of distinct liquid and gas phases as the critical point is reached may be readily observed by a large audience.

**Organic Reactions**

In the Junior Organic laboratory, 351 Crellin, various types of organic syntheses will be shown by Prof. Lucas' students. These will include the preparation of ethyl acetate, shown by Roger Baier, the synthesis of butyl acetate by Don Stewart, and the synthesis of butyl ether by Jon Goerke. These exhibits are under the direction of Bill Webber, who will also show the synthesis of 1-heptene by the important and widely useful Grignard synthesis. The organic lab will also demonstrate the application of fractionating columns in separating the components of solutions, the demonstration showing the distillation of CC14 from a solution of iodine and carbon tetrachloride.

### Push-Button Chemistry

The instrumental analysis laboratory, 202 Gates, under the direction of Dr. J. H. Sturdivant,

## --And to Show Giant Brain

Potential EE's among the visiting students on students day may also be waylaid by the analog computer. The Electrical Engineering Department is cooking up a little show and lecture for the occasion.

The only trouble in presenting the computer to the visitors is caused by the small room housing it. Only 15 or 20 students at a time can pack into the room without opening the windows.

### Mechanical Brain

The innocent prospects will be given a rough idea of what the analog computer is and how it works along with the types of problems it works. They will be told roughly how the computer can be used on such problems as electrical circuits, mechanical vibration and so forth.

### Flight Problems

Special emphasis will be given to the fact that the major use of the computer is in aeronautical applications. What happens when the shock of landing hits a plane's wings? What happens to stresses and strains due to gusts of wind? The analog computer knows all. Study of earthquake problems is also given to the computer. A very important application of the computer is calculation of guided missile and automatic control problems.

Chances are that the visitors will see an answer of the computer... an oscilloscope record.

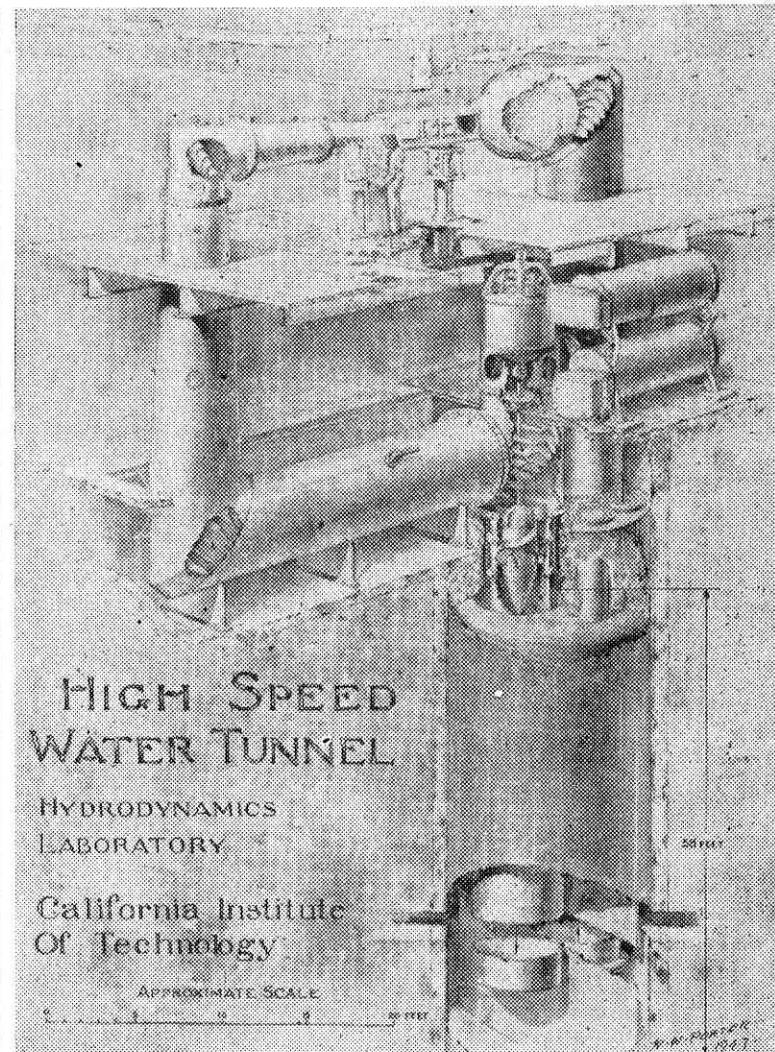
is in charge of a group of electronic exhibits, including working models of an airborne radar set, a cathode-ray oscilloscope, a stroboscope, and an RCA demonstration-type breadboard radio receiver. There will also be a demonstration of a 3-cm. microwave transmitter and receiver with a focusing lens.

Ed Davis is in charge of the student exhibitors for the Electrical Engineering Department.

## Five ME Projects Will Be Shown

Student day visitors will have a chance to see the new titanium alloying furnace, which is making possible the expansion of scientists' knowledge of the metal of the future. This furnace will be demonstrated during the tour of the mechanical engineering facilities. Also to be demonstrated in this tour are a steam turbine, the Pelton water wheel, a steam engine, the spectrographic lab and equipment, a fuel testing engine, and an automobile engine being tested on a test stand.

**Titanium Furnace Shown**  
The demonstration of the titanium alloying furnace, an arc furnace, will be conducted by



Caltech high speed water tunnel in which research about cavitation is conducted.

## Cavitation and Waves in Hydro

Two hydraulics projects at Caltech will be of special interest to visiting high school seniors Saturday, in the demonstrations on cavitation and centrifugal pumps.

### Example of Cavitation

Cavitation is exhibited by a curved surface moving through water at a fairly rapid rate. Since the water will move faster to get around the curved surface, the pressure in the high-

velocity area will be decreased due to the Bernoulli effect.

As the velocity is increased, or the curvature increased, the pressure will be lowered to a point below the vapor pressure of water. The result, cavitation, is the generation of little bubbles of water vapor in the low-pressure area.

### Destructive Effects

One of the important effects of cavitation is the reduction of efficiency of a piece of hydraulic equipment. If cavitation occurs on a ship's propeller, the effective drive is reduced. If it occurs on a turbine, less output is obtained. More important—when the low-pressure area is passed, (Continued on Page 6)

### JEWELER

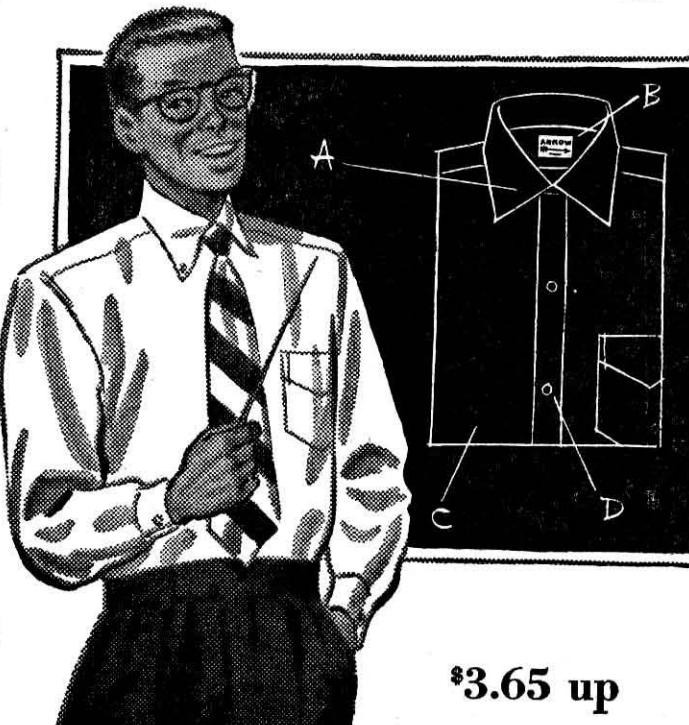
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## Viruses, Nerves, Smog, Careers, in Biology Exhibit

"What Biologists Do," a talk of the work done by the research staff of the biology division. Interesting demonstrations of the following advanced projects will be shown in these morning exhibits:



Dr. Borsook, CIT biochemist, and fractionator.

1—The research on the smog problem and the effect of smog on plants.

2—The nerves and muscle research which, it is hoped, will greatly aid in rebuilding nerve tissue damaged by polio and batte casualties.

3—The biophysical study of viruses.

4—The work on genetics and heredity which has already led to life-saving advancements in the production of penicillin.

5—The techniques recently developed for the study of amino acids, the minute building blocks of living cells.

6—Some of the interesting aspects of marine biology will also be exhibited to the high school seniors during the morning program.

### Dr. Owen Discusses Careers

Dr. Owen will discuss the careers open to people trained in biology and the way in which

(Continued on Page 4)



Burp!

## Aa--Geologists

### Erupt Hot Lava

The principal aims of geological study and the methods by which the geologists work to attain these aims will be the main subject of the talks to be presented by the Division of Geological Sciences on student day.

The program of the division includes three illustrated talks, all to be given by students of the division. These lectures will be augmented by exhibits of various instruments used in geological and geophysical work. In addition, materials encountered and used by the geologist will also be on exhibit. These materials include rocks, minerals and paleontological material.

### Film, Slides With Talk

The first of the three talks,

"Microscopic Study of Rocks and Minerals," will be presented by Clarence Allen, a graduate student of geophysics. Much of the material used for the very popular Friday evening demonstration lecture on this same presentation will be utilized in this

the field aspects of the geological work at the Institute. Lloyd Pray, instructor in geology, will introduce two student speakers. Bob Cobb, senior, will speak on the various courses in the undergraduate curriculum which require field work. Carel Otte, graduate student and resident associate of Blacker House, will then tell of the program of graduate research into various problems related to field geology. The correlation of these research projects and the more general problems of geology will also be discussed.

Both of these talks will be profusely illustrated with color slides.

The exhibits which the division will offer include: the division museum, on the first floor of Arms; minerals, including a new suite from Franklin Furnace, N.J., on the second floor of arms, and the vertebrate paleontology exhibits, on the third floor of Mudd.

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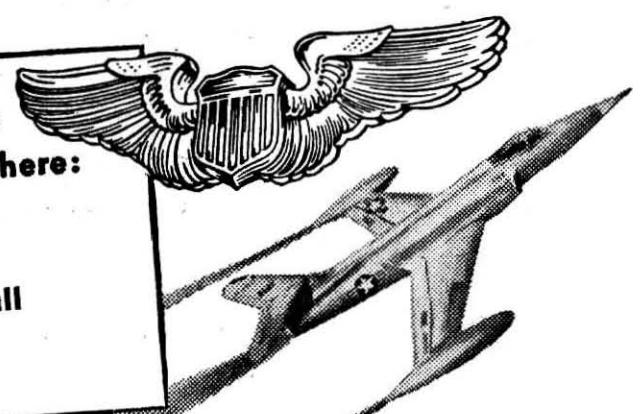
"...earn your wings"



"...get going fast"

In jet-pilot language that means . . . GET GOING AND GET GOING FAST! Your take-off point is the Aviation Cadet Selection Team which will soon visit your own college campus. See if you can qualify. If you can . . . you're on the way up to the top. First stop . . . aviation cadet training school. First pay . . . \$105 a month for one year with all clothing, food, medical and dental care provided free. First commission . . . 2nd Lt. in the U. S. Air Force Reserve. Beginning salary close to \$5,000 a year. You've got a top job and with your training and experience you'll stay on top.

Get on Top...Stay on Top...  
with the U. S. Air Force



Your U. S. Air Force  
Selection Team will be here:

Dec. 6-7-8

Entr. to Throop Hall

9 a.m. to 4 p.m.

**U. S. AIR FORCE**

**More People Smoke Camels  
than any other cigarette!**



## CE Dept. Gives Material Tests

The Caltech civil engineering department will present six exhibits this Saturday as part of the Students' Day program, including surveying, sanitary engineering, soil mechanics, materials testing, concrete testing, and earthquake research. All will be managed by grad students in conjunction with Dr. Converse, Dr. McCormick, Dr. Housner, and Dr. McKee of the civil engineering department.

### Sewage Analyzed

The surveying and sanitary engineering demonstrations will include a transit, engineer's level, and other surveying equipment to illustrate the former, while phases of sanitary engineering, a branch of civil engineering, will be briefly illustrated by exhibits in 108E. These displays will consist of apparatus for water and sewage analyses, and a simple demonstration of water softening by resinous ion

### VIRUSES, NERVES, . . .

(Continued from Page 3)

the future biologist will prepare for his life work. He will cover the academic career in pure research or teaching and the applied biology career in medicine and in industry and will illustrate this talk with slides. Stressing the importance of advanced degrees, Dr. Owen will describe the collegiate preparation necessary for work in biology.

The heredity exhibit will show the visiting students the organisms a geneticist uses to study genes and chromosomes. Dr. Horowitz and Carl Hirsch, a senior biology student, have gotten together to put on this exhibit which will display corn, rabbits, fruit flies, and the bread mold neurospora.

### Radioactive Tracers

Dr. Keighley has been collaborating with Dick Jones in preparing a demonstration of some recently developed bio-chemical techniques involving radioactive tracers and chromatography. This exhibit will feature a starch column which separates amino acids from one another.

### FIVE ME PROJECTS

(Continued from Page 2)

molten state.

The importance of this relatively new metal has come to the fore with the development of jet aircraft and rockets. While comparable to steel in strength and heat resistance, titanium is almost 50 per cent lighter in weight. An explanation of the methods used to obtain alloys of titanium and the use of testing apparatus for determining the properties of the alloys will be given along with the demonstration of the furnace.

### Spectrographic Show

The spectrograph will be demonstrated by Joseph Denney in the spectrographic lab, also in the sub-basement of the new engineering building. This valuable machine is of great use in qualitative and quantitative analysis of trace elements in metals, i.e., elements constituting less than 2 per cent of the alloy. By use of an intense electric arc, the metal being studied is vaporized and its spectral lines are photographed. Analysis of the resulting spectrum is made with a densitometer.

### Model Steam Engine

Moving from the realm of research to the application of

exchangers.

**Live Demonstrations**  
In the four remaining parts of the CE program "live" demonstrations will be given. In the soil mechanics lab, 012E, Mr. MacDougall will show how quicksand behaves, using a metal model house and a box with a glass side. In addition the seepage flow patterns of a dam will be illustrated in a cut away model.

### Concrete Testing

In the materials testing lab, 108-E, Mr. Johnson, who is in charge, will make a number of concrete test cylinders and briquettes, to be subjected to compression and tension tests. Right next door various specimens of shattered materials will be on display along with a table full of deformation meters. A block of wood will be crushed and perhaps other materials, if there is enough time left in the 10 minutes allotted to each visiting group. On the third floor in 310-E Mr. Linderman will put on a demonstration in the earthquake research laboratory.

By means of the radioactive tracers and chromatographic analysis the bio-chemist can make rapid and precise quantitative and qualitative measurements of the amino used in protein synthesis work.

### Marine Life in Evolution

Dr. Beadle, Milo Webber, Donald Sutton and Palmer Smith journeyed to Corona Del Mar and collected some specimens for the marine life demonstration. These marine animals will be used to demonstrate possible stages in evolution.

Art Savran, with the help of Dr. Max Delbrück, will give the talk on bacterial viruses. This demonstration will show methods by which biologists count and study this type of virus.

Thorne Butler will give the demonstration on nerves and muscles.

### Smog Analyzed

Smog and its effects will be the topic of the lecture given by Charles Bates under the direction of Dr. Went. This work has led to great advances by Caltech biochemists in determining the composition of smog.

science, the visitors will be shown to the mechanical engineering lab where they will see demonstrated a 5000-r.p.m. steam turbine and its slower predecessor, the steam engine. A disassembled turbine supercharger and other displays will also be seen, including a working scale model of a complete steam power plant. The entire plant of boiler, engine, steam lines, fittings, etc., is made to exact scale, one inch to the foot.

### Engines Tested in Shop

While still in the ME Building, the groups of visitors will see how gasoline for their cars is tested and rated as to octane by use of a variable compression test engine. In the ME shop, the techniques of testing automobile engines will be brought out in a demonstration of a Chevrolet engine on the test stand. The influence of different fuels, different fuel and air mixtures, and speed upon power and general performance are obtained almost automatically with the elaborate test stand used. The demonstration of the Pelton water wheel will be unusual in that the impulse wheel is enclosed in glass and the action of the water jet can be plainly seen.

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## "Student Life," Morning Theme Of Y Secretary

"Student Life at Caltech," a talk to be given by Wesley L. Hershey, executive secretary of the Caltech Y.M.C.A., will initiate Saturday's informative program for the 1200 visitors to the campus. Here they will learn of the varied extracurricular program which accompanies the undergraduate's scholastic experience at the Institute.

Perhaps more than any other organization on the Caltech campus, the student Y.M.C.A. represents the cultural side of the undergraduate's extracurricular life. Far from stressing solely the religious values to be gained at college, this group has on occasion been dubbed the "pack of all trades" among campus organizations, for the Y places great emphasis on training in the important fields of liberal arts, on social and leadership development, and on service to the Institute and to one's fellow students.

### Get Acquainted!

Shortly after his arrival upon the campus, the new student begins looking forward to the annual Frosh Tea Dance, sponsored by the Y with the motive of helping the newcomer to form acquaintances with some of the Southern California glamour from nearby colleges. He may not know it, but the New Student Camp he has just attended was planned in major part by the Y, and he may even have been met by representatives of that group at the railroad station upon his arrival in Pasadena!

### Endless Opportunities

Throughout the school year, the Caltech Y.M.C.A. operates a replete schedule of activities for every taste and interest. Prominent among these are the Frosh and Upperclass Luncheon Clubs, at which outstanding speakers give talks on such subjects as religion, the arts, or politics! The Forums, which are larger evening assemblies featuring well-known speakers; the Firesides, comprising group visits on Sunday evenings to the homes of the faculty; evening discussion groups at the home of the Executive Secretary on philosophical and religious topics; and the Church Visitation Group, which tours the leading Pasadena

## ON THE RECORD

by George Abell

### Los Angeles Philharmonic Concerts

The Los Angeles Philharmonic Orchestra will lunge into the third week of its 1950-51 season tonight and tomorrow afternoon, when Zino Francescatti, famed violinist will join the orchestra, under the direction of Alfred Wallenstein, in presentations of the Bach Concerto in A Minor, and Saint-Saens' Violin Concerto in B Minor. Also featured on the program will be Brahms' Third Symphony, and "La Valse" by Ravel.

### Horowitz Recital

Another musical event of interest tonight is the Vladimir Horowitz Recital at the Pasadena Civic Auditorium. The noted pianist will repeat the program he gave last Monday at the Philharmonic Auditorium (which includes Bach's "Organ Toccata in C Major", Schumann's "Scenes from Childhood", and the local premier of Barber's Sonata in E Flat Minor).

### Guild Chamber Concerts

The next Music Guild Chamber Concert at Wilshire-Ebell Theater, will be Thursday evening, December 7, when the Paganini Quartet, assisted by Mitchel Lurie, Clarinetist, Don Christlieb, bassoonist, Joseph Eger, french hornist, and Anton Torello on the double bass, will present an extremely varied and interesting program.

First will be two chamber works by composers who are famous almost exclusively for their operatic achievements; Giuseppe Verde's Quartet in E Minor, and the "Adagio for Clarinet and String Quintet" by Richard Wagner. The latter is one

churches on Sundays throughout the year.

### The Big Highlight

Any students who express an active interest in the Y have the wonderful opportunity of attending the famous Asilomar Conference during the latter part of Christmas vacation. This is a general meeting of student representatives from the Southwest which takes place on California's beautiful Monterey Peninsula, and to many has been their most memorable college experience.

Indeed, it is difficult to mention all the services and opportunities available through the Y, (Continued on Page 6)

## THE SQUARES' CIRCLE

by George Abell

I would like to thank Blair, Hamilton, Bryan, Ferstel, Gardner, Parker, Sherman, Forgy, Mishaan, Gehrels, Clark, Robbin, Koster, Betz, Twining, Wilkes, Brown, Lawrence and Salsbury of the Initiators for their invaluable help on the first ASCIT dance this year. Also Jack McEwing and Teddy Einwohner, who helped organize the work.

Without the aid of these men, the dance would not have been a success. Thanks again to all of you!

### Art Cuse, 1st Rep.

of Wagner's youthful efforts, and was first published in 1926, in the complete edition of his works. This will be its first West Coast, if not its first American performance.

### Dorothy Maynor

The gifted Negro Soprano, Dorothy Maynor will give her only Southern California recital this season, at Philharmonic Auditorium in Los Angeles, on Sunday afternoon, December 3rd.

### Ballet

The Ballet Russe de Monte Carlo, on annual tour to Los Angeles will give ten performances, beginning tomorrow, December 1. The dancers will include: Danilova, Franklin, Danielian, Krassovska, Tupine, Novak, Jasinsky, Tyven, Chouteau, Lindgren, and others. The conductor will be Paul Strauss.

The ballets to be presented on each night, are as follows:

**Friday, Dec. 1:**  
Faquita, Mute Wife, Romeo et Juliette, Grand Pas de Deux.  
**Saturday, Dec. 2, Matinee:**  
Nutcracker, Grand Pas Classique, and Graduation Ball.  
**Saturday, Dec. 2, Evening:**  
Les Sylphides, Grand Pas Classique, Prima Ballerina, and Raymonda (act III).  
**Monday, Dec. 4:**  
Swan Lake, Nutcracker, and Scheherazade.  
**Tuesday, Dec. 5:**  
Padme, Pas de Deux Classique, Romeo et Juliette, and Gaite Parisienne.  
**Wednesday, Dec. 6:**  
Coppelia, Blue Bird, Le Beau Danube.  
**Thursday, Dec. 7:**  
Swan Lake, Blue Bird, Prima Ballerina, Scheherazade.  
**Friday, Dec. 8:**  
Les Elfes, Pas de Deux Classique, Madronos, Gaite Parisienne.  
**Saturday, Dec. 9, Matinee:**  
Coppelia, Blue Bird, and Prince Igor.  
**Saturday, Dec. 9, Evening:**  
Swan Lake, Grand Pas Classique, Nutcracker, Scheherazade.

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## Tech Reporter

## Cavorts at T.C. with Spelunkers, et. al.

by Duane Marshall

Have you ever crawled around a big hole in the ground? I mean a really big hole, even spectacular, hole in the ground? I have—in Titus Canyon. It was my first cave. It isn't my I suggest that you sneak off to the next get-together of the spelunkers in the Pasadena Public Library at 7:30 p.m. on Dec. 5 and see the slides and photographs of the cave and see for yourself what lies below the surface of Titus Canyon.

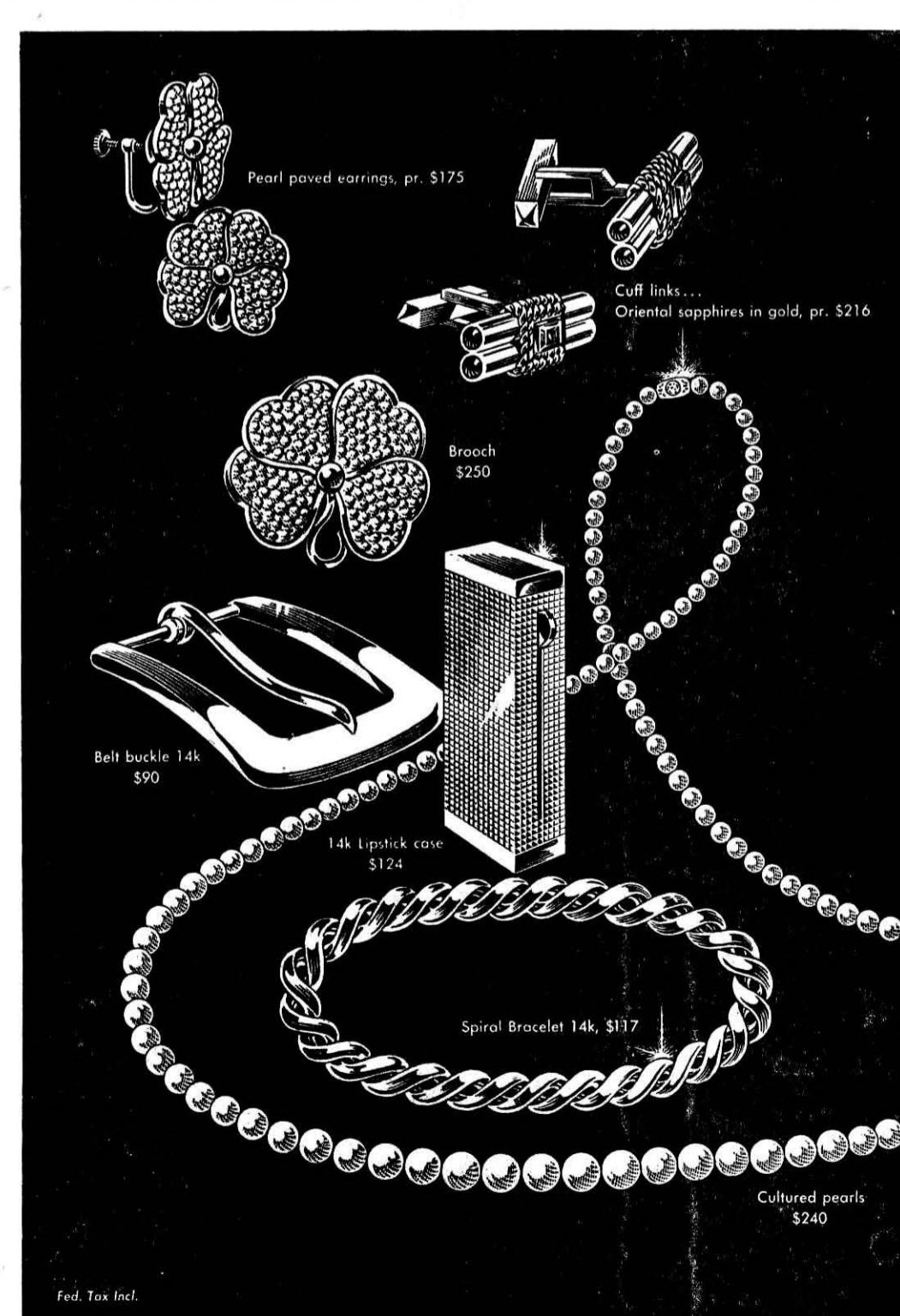
Dr. Richard F. Logan, chairman of the National Speleological Society, will be on hand to give a lecture concerning the description of the cave.

Who was there who was anybody? Anybody meaning Caltech. Don Emerson, Sophomore and Chair Secretary of the N.S.S., Southern California Grotto, was there working on the gate to be installed in the entrance to the Lourie. Said he, when interviewed about his impressions at the bottom of the cave, "Very mine. Also at the gate hanging was Howard Schugard, Soph.

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# Troy Routed in Soccer; Rematch Scheduled Sat.

This Saturday Rancho La Ci- enega is the scene of a rematch between the Caltech soccer team and the Trojan booters. Despite the drubbing they received at our hands last week, they're out for blood this time with a supposedly hot bunch of newcomers.

## Rain Doesn't Hurt

Two Saturdays ago, the Beavers failed to let the rain dampen either their spirits or their playing ability and turned out an excellent performance. The team really got rolling and wound up on top of the rather bedraggled SC team by the lopsided score of 15-0.

At no time during the game were the Beavers at all pressed but they really hit their stride and just couldn't help but score every time they got the ball. The scoring honors go to center forward Carel Otte, who pushed through six goals. Wing Bobby Wood and inside Reinaldo Gutierrez came next with three tallies apiece. Doug Inglis and Swaroop Bhanji Deo each got one.

(Continued on Page 6)

## Musselman Teams With LaBrucherie To Take Title

With the football season virtually at an end, the Athletic Office prognosticators completely skunked the Sports Staff by picking 54-44 wins out of a possible 70 games.

The "Hustler", behind at half-time, showed remarkable psychic powers by pulling up to tie LaBrucherie for top position. "Coin Tosser" Butler got involved with a two-headed quarter and slipped to third place after originally leading the pack.

(Continued on Page 6)

## BUTTIN' IN

—by Butler

At last! The most unpredictable football season in many a year is finally over except for the post-season Bowl games. But right here in our own SCIC, the fans really saw the preseasone dopesters take a back seat. After all was done last Saturday, there was a big three-way tie for the title between Whittier, Redlands, and Pomona. Moreover, the biggest surprise of all was the strong finish by the Sagehens.

Fuzz Merritt's eleven started mighty slow against non-conference foes, but after knocking off a highly favored Whittier team they went on to win a share of the championship.

## Beavers

LaBrucherie's eleven did not fair as well as the other clubs in the conference. But the Beavers did give the fans their money's worth. The Pomona game is probably the most outstanding; the explosiveness of the Tech scoring spree set the stands screaming with joy. But the Sagehen coach had one trick up his sleeve in speed demon Reinke. The SCIC 100 yard dash champ demonstrated almost unequalled speed on the gridiron while scoring three touchdowns to give the Sagehens a 41-28 win.

But the real workhorse on the field was Tech's own Hal Woody. Not only did Woody score all the Beaver touchdowns but also made some thrilling defensive tackles. Behind Woody the rest of the team looked like they really wanted to play ball.

## Next Year

And with only four seniors on the squad, LaBrucherie should

(Continued on Page 6)

# Beaver Sports

## Runners Beat Pomona, LAS

In spite of the rain and smog, the Caltech cross-country squad gathered in two victories in the past two weeks, one a close over Pomona, 27-28, and the other a fairly easy win from LA State, which the team took by a score of 24-34.

## Rain at Pomona

The Pomona meet was run in the driving rain on the Pomona three-mile course, which is, fortunately enough, mostly pavement except for a one-half-mile stretch which was favorably compared with the Mudeo pit. The Sagehens broke fast, as usual, but couldn't keep ahead of Caltech. Pilkington and Mason finished one-two for the Beavers, while Bob Cobb took sixth, Gene Shakespeare eighth, and Francis Scott 10th. Time was 15:47.

## LA Meet Easy

LA State was a little different story. Run the Tuesday before Thanksgiving at Caltech, the meet enjoyed ideal weather. Strigle of LA finished first in 16:47, very good time for the long Cal-

(Continued on Page 6)

## At A Glance

**FOOTBALL**  
Caltech, 28; Pomona, 41.  
Caltech, 19; Redlands Frosh, 13.

**WATER-POLO**  
Caltech, 11; Oxy, 1.  
Caltech, 16; LACC, 4.

**SOCER**  
Caltech, 15; SC, 0.

**CROSS-COUNTRY**  
Caltech, 27; Pomona, 28.  
Caltech, 24; Uomona, 34.

## Three Engineers On All-SCIAC Team

Three members of Caltech's football team were named to the All SCIAC Football Team. Fullback Hal Woody was the only Engineer named to the offensive squad, while Neil Stefanides and Jack Walker were voted spots on the defensive squad as line backer and back respectively.

Woody was outstanding especially in his line plunging, where he could always be counted upon for at least three or four yards. Walker and Stefanides were usually at the bottom of the pile on any defensive play. Walker was also noted for his excellent pass defense work.

Whittier led the list with seven men on the All SCIAC team. This is the first year that both an offensive and a defensive team have been chosen for all-conference recognition. The teams were chosen by a vote of the five conference coaches.

## 1950 ALL SCIAC FOOTBALL TEAM

**Offensive Team**  
End ..... Dan Moon (R)  
End ..... Roger Reinke (P)  
Tackle .... Gregory Welton (R)  
Guard ..... Gale Brandon (W)  
Guard ..... Bill Craven (W)  
Center ..... Dick Bauer (O)  
Back ..... Charles Luciano (R)  
Back ..... James Stecklein (W)  
Back ..... Charles Schlegel (O)  
Back ..... Hal Woody (CIT)  
**Defensive Team**  
End ..... George Corey (W)  
End ..... John Horn (R)  
Tackle ..... Bert Jacobs (O)

(Continued on Page 6)

# Caltech in Waterpolo Finals; Top Oxy 11-4

## Night Game to Decide Champions; Team Rejoices Over Oxy Defeat

This evening the champion of the Southern California Waterpolo Conference will be decided. Either Caltech or Fullerton J.C. will hold this honor; the game to decide which will be held this evening at 8:00 p.m. at Fullerton. Oxy and LACC will be fighting it out for the third place spot.

## Undefeated Season

Caltech won the right to compete in the finals by coming through undefeated in its division, and then defeating LACC 16-4 a week ago Tuesday at the PCC pool in the semi-finals.

The game was a run-away for the Beavers with Barnmore scoring six goals and Libbey five.

LACC had none of the speed and scoring power that Compton, the team they shared second place with in their division, had. LACC went into the semi-finals, rather than Compton, on the flip of a coin.

## Thrill to Win

Tech drew first blood, marching all the way the first time they got their hands on the ball. Bart Stryker went over for 6 from the Redlands 25 yard stripe, after a pass from Johnny Lloyd to Tom Kirkpatrick set the ball there.

Redlands came right back to tie the score, scoring from Tech's 40 on their third play. Midway in the first quarter they made it 13-6 by intercepting a pass

(Continued on Page 6)

## Handballers Win Trophy for Throop

Throop Club regained possession of the Discobolus two weeks ago after a team of Throopers trounced Dabney 5-0 in a handball match. The affair was held on the regulation courts of the Pasadena YMCA.

**Singles:**  
1st—R. Weeks (T) def. L. Michaelson (D) 21-2, 21-1.  
2nd—R. Heacock (T) def. R. Pechacek (D) 21-2, 21-3.  
3rd—F. Davis (T) def. J. LaFleur (D) 21-12, 21-6.  
**Doubles:**

1st—Weeks and J. Helmuth (T) def. LaFleur and H. Crane (D) 21-5, 21-6.  
2nd—J. Ross and S. Rawns (T) def. Stewart and Ham (D) 21-2, 21-1.

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## CALTECH vs. LOYOLA

Caltech meets Loyola tomorrow night in its first full-scale game of the year at Loyola. Second game of the double-header matches SC vs. Arizona State. Game time is 7:00 p.m. Student-body cards will admit.



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## Eastman to Offer Senior Openings

The Eastman Kodak Company, Rochester, N.Y., is interested in seniors for beginning positions in chemical, mechanical, or electrical engineering, in chemistry or physics and in the business administration fields.

Some of the technical openings involve development and design work, while others are in their production and staff departments. If you are interested in employment or in an interview with the Eastman Kodak representative later in the academic year, please contact the Placement Office, 120 Throop Hall, to obtain the Preliminary Application Forms. They must be completed and returned by Dec. 4.

## Caltech Fellowship To Discuss Mark 5

This next week the Caltech Christian Fellowship will continue the discussion of Chapter Five in the Gospel of Mark. In this chapter, two significant examples of complete faith are described. The group is divided into small discussion units meeting in 202, 210 and 211 Dabney on Tuesday and Thursday at 12:30. Everyone who is interested is welcome.

### CAVITATION

(Continued from Page 2) high-pressure area which will erode and tear away metals.

#### Harbor Problems

The demonstration and explanation of research going on concerning centrifugal pumps and turbines will illustrate work which went on during the war when the study of Apra Harbor in Guam became very important to the Navy. Actual wave demonstrations will be given to illustrate methods used to arrive at a solution to this problem.

### "STUDENT LIFE"

(Continued from Page 4)

for such privileges as its loan fund, textbook exchange, tutoring service, and lounge facilities often go unnoticed or are taken for granted. Wes Hershey is a man whom every new student should get to know soon after his arrival at Tech; he is always available to help students with their personal problems and to discuss with them the limitless opportunities to be found in the campus activities of the organization.

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### STORY OF PALOMAR

(Continued from Page 1) cal research in the world, according to Dr. Jesse L. Greenstein, astro professor.

#### 6000 Photos in Project

The large Schmidt is being used right now in an enormous project being undertaken by the National Geographic Society to map the whole sky visible from the northern hemisphere. This project will take four years and will necessitate the taking of about 6,000 individual photographs.

#### Goals of Astronomy

In general, the present goals of the astrophysics research in Southern California include the study of the expanding universe and its application to the theory of relativity, the structure of our galaxy, the quantitative study of the composition of stars, and study of the nuclear energies being constantly released in the stars and our sun.

#### Technological Improvements

During the past few decades great technological improvements have been made on astronomical equipment with the subsequent results that the 100-inch telescope on Mt. Wilson is now doing work for which the 200-inch was originally designed. At present the University of California is constructing a 120-inch reflector atop Mt. Hamilton near San Jose, which will soon replace the 40-year-old Mt. Wilson mirror to a No. 3 position in the world's largest telescopes.

### VAN de GRAAF GENERATOR

(Continued from Page 1)

#### Alcohol and . . .

The continuous cloud chamber is the second device used for measuring the intensity of cosmic rays and operates using alcohol vapor and dry ice. A cloth saturated with alcohol is placed above the chamber; vapor enters the chamber and is condensed by the very cold dry ice below it. Demonstrating the cloud chamber will be Ernst Gehrels.

## AF to Interview Prospective Cadets

Juniors and seniors interested in officer opportunities in the US Air Force will have a chance to find out all the answers next week on the campus. A USAF cadet selection team will be here from Dec. 6 to Dec. 8 at the entrance to Throop Hall.

#### Ready to Take You in

According to Capt. John L. Eicher, who is making arrangements for the team, this visit is one of the many being made to accredited college campuses this year by US Air Force officers to provide college graduates with information on Air Force officer training. The selection team will be ready not only to answer all questions but also to process an Caltech men who may qualify.

#### Two Training Courses

Capt. Eicher stated that there are two courses of training being offered to qualified men.

1—Pilot Training, consisting of one year of intensive schooling in all phases of aviation. Cadets receive \$105 per month during training and upon graduation are awarded commissions as second lieutenants. Ordered to active duty as flying officers, these men may earn pay and allowances amounting to almost \$5000 per year.

2—Navigator Training consists of a year's schooling in the latest techniques of radar navigation. Cadets receive \$105 per month during training and upon graduation are awarded commissions as second lieutenants. Ordered to active duty as flying officers, these men also earn pay and allowances amounting to almost \$5000 per year.

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### MUSSELMAN TEAMS

(Continued from Page 5) at the half. The dejected Butler dropped the unlucky coin in a Las Vegas slot machine.

Jesse Weil, the low man on the totem pole, had trouble all along the way and never did find the true clue.

#### Cracks

The jubilant Athletic Department hurled cutting statements at the Sports Staff. "What you amateurs need is a direct wire to all major football fields."

The Staff team smiled tolerantly at the Athletics' luck, while just waiting for next year and complete victory.

#### Results:

	W.	L.	Pct.
LaBrucherie	27	8	.781
Musselman	27	8	.781
Butler	25	10	.715
Weil	19	16	.545

### FROSH SPORTS ROUNDUP

(Continued from Page 5) on Tech's 35 and running it all the way.

In the second quarter Moose Henderson came from nowhere to chalk up Tech's second score on his interception of a pass on Redland's 13 yard line. Stryker made the extra point on a line buck to end the first half scoring at 13-13.

Bruce Kaiser went over for the all-important final score after a passing-running attack brought the ball from Tech's 30 down to Redland's 13.

#### Starting lineups:

Caltech	Redlands
Henderson	LER.
Kidder	LTR.
Bailey	LGR.
Saliba	C.
Taylor	RGL.
Kaiser, E.	RTL.
Hosegood	REL.
Profet	Q.
Lloyd	LHR.
Kirkpatrick	RHL.
Stryker	F.

### BUTTIN' IN

(Continued from Page 5) really have a nice club next year. Now everyone will chuckle, "That is what you say every year." If the draft does not chop the squad to pieces, I know the Beavers are going to surprise plenty of elevens next fall.

#### Victory

The Tech athletic picture looked very bright the weekend before Thanksgiving. The water polo boys trounced Oxy 11-1 to settle once and for all the many disputed games played between the two schools. The Beaver shin kickers made the Trojans sad by setting them back 15-0 at Tournament Park. Bill Pilkington led the cross country team to a one point victory over Pomona. From reports of the course conditions at Claremont, the Beavers proved to be real "mudders." And to top the weekend off, the Frosh eleven finally came through by tripping the Bulldog yearlings. Ah, sweet victory.

Congratulations to Woody, Stefanides, and Walker for their All-Conference nominations. Coach LaBrucherie is really all smiles; not one of the three is senior.

### THREE ENGINEERS

(Continued from Page 5)

Guard	Fred Much (W)
Guard	Herb Hill (O)
Line Backer	Neil Stefanides (CIT)
Line Backer	Don Axelson (W)
Back	Herman Reed (W)
Back	Dick McCullough (O)
Back	Jack Walker (CIT)

### CALTECH IN WATERPOLO

(Continued from Page 5)

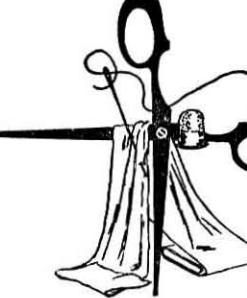
#### Lots of Goals

Scoring for the Beavers seemed to go in pairs. We never made one goal, but that was immediately followed by another. High scorer for the day was Libbey with six. Jerry McKlusky was credited with the lone score for the Tigers.

#### Score by quarters:

	1	2	3	4	Total
CIT	3	5	2	6	16
LACC	0	1	1	2	4
	1	2	3	4	10
CIT	1	5	2	3	11
Oxy	0	0	1	0	1

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MEN'S WEAR

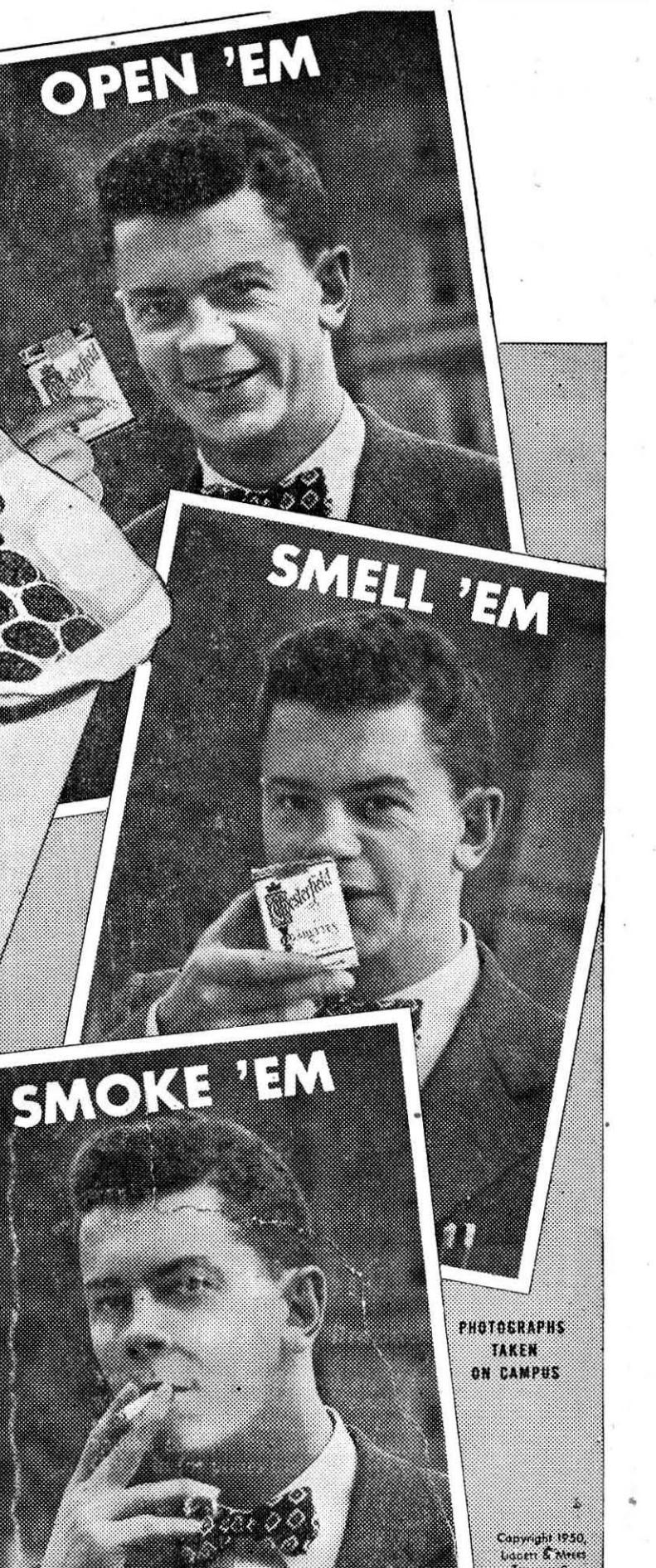
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