

REMEMBER—
CHARITIES DRIVE
ENDS TOMORROW

CALIFORNIA TECH

BUT THERE'S
STILL TIME
TO GIVE!

Volume LII

California Institute of Technology
Pasadena, California, Thursday, November 16, 1950

No. 8

\$593 Given in First Three Days of Drive

Committeemen Making Final Collection
Before Campaign's Deadline Tomorrow

Dig deep, for tomorrow is the last day of the charity drive, and those who have not contributed should do so while they still have a chance. By noon yesterday the total collected was \$593.18, as compared with the goal of \$2750.

If you have not been approached, take your contributions to your UCC or to Walt Pfeiffer if you live off-campus.

Purposes

The staff hopes to get \$1250 for the WSSF, the World Student Service Fund. This fund provides relief for the universities, students and professors of Europe and Asia, which paid a heavy toll during the last war and reconstruction.

36 Agencies in Chest

The Pasadena Community Chest secures funds for 36 different health, welfare and character-building organizations requiring a total of about \$500,000 this year. If you support the Red Feather drive, you're helping many groups at once.

The National Infantile Paralysis Foundation is the third charity included in the drive. The March of Dimes provides millions for direct aid to victims of polio, and in addition grants funds to universities (\$300,000 to Caltech for basic research) in the hope of eventually discovering the causes and cure of infantile paralysis.

Drive Leaders

The Consolidated Charities Drive is headed in the houses by: Blacker—Leo Baggerly; Dabney—Jesse Weil; Fleming—Bob Perpall; Ricketts—Carl Larson. They are assisted by the UCC's with the co-operation of the houses presidents.

Off campus the drive is headed by Walt Pfeiffer, while John McCourt heads the faculty. Tom Stockebrand is managing the publicity, assisted by Bob Deverill, Norm Ellett and Manuel Crespo.

Since there are only two solicited drives in the year, all are urged to support them.

Conference Debate Begins Monday

A full contingent of Caltech debaters will take part in the annual Western States debate tournament being held next Monday, Tuesday, and Wednesday at Pepperdine College.

Regulations for this tournament specify that no school in the conference may send more than ten participants. The ten Tech men who are teamed up for the debate events are Stan Groner and Bill Kemmel; Swaroop Bhang Deo and Mike Lourie; Carl Larson and Mike Callaghan; Hal Martin and Art Savran; and Irwin Rubenstein and Jim Pinkerton.

Patent Attorney ASME Speaker

Leonard Lyon, prominent Los Angeles patent attorney, will be here next Monday, Nov. 20 at 11:00 a.m. in 206 Throop to tell the ASME about patents. Mr. Lyon has done legal work for Caltech in the past.

Campus Calendar

THURSDAY, NOV. 16
12:10 Throop club meeting
7:15 ASCIT Board of Directors meeting in lower Fleming

FRIDAY, NOV. 17
4:30 Water polo; Varsity vs. Oxy at PCC
5:30 Frosh football vs. Redlands at Rose Bowl
8:00 Varsity football vs. Pomona at Rose Bowl

SATURDAY, NOV. 18
10:00 Soccer; Caltech vs. USC at Caltech
2:30 Varsity and Frosh cross country at Pomona
8:30 ASCIT semi-formal dance at Elks Club

SUNDAY, NOV. 19
7:30 Film classic series in Culbertson

MONDAY, NOV. 20
7:30 Film classic series in Culbertson

TUESDAY, NOV. 21
4:15 Cross country varsity vs. L.A. State and Cal Poly at Tech

WEDNESDAY, NOV. 22
7:30 Orchestra rehearsal

SENIORS!

This is the last call for any senior wishing to order his class ring. Orders close Monday, Nov. 20. See Charlie Bates, Blacker 53, any time, or Duane Neverman in Throop Club at noon.

DuBridge Scans Loyalty Enigma, Caltech Services, at Assembly

"The loyalty of an institution should not be judged by whether faculty members take loyalty oaths, but by the value to the nation as a whole," stated Dr. L. A. DuBridge last Friday during the well-attended assembly in Culbertson Hall.

Speaking on "Caltech Serves the Nation," Dr. DuBridge emphasized that Caltech's performance has in the past been of profound importance to the safeguarding of our national security, and that it would continue to be so in the future.

Institute Concerned

"But the Institute is naturally concerned over the future both of its individual students and staff and of the Institute as a whole during the present crisis," the President of Caltech told his audience.

"As yet, there is no definite national policy on the draft deferment of college students. There is a faculty committee at work on the problem and keeping a file of all available information. But we are now in the position of having to wait and see what firm, long range national policies will be adopted to meet the present situation of long-term mobilization."

Caltech in National Defense

Dr. DuBridge illustrated the role which Caltech is called upon to take during national emergencies by describing the functions of the Institute during the last war. Our part in the national defense program extends back to 1940, when the late Professor Tolman was called to Washington, D.C., to serve on the National Research Defense Committee.

Other Caltech personnel were equally active both on and off campus in the effort to increase our war potential. The jet-assist rocket takeoffs were largely developed here, the Institute spent \$80 million in developing and manufacturing artillery rockets, and the educational facilities were almost entirely taken over by the Navy V-12 program for the training of naval technicians.

\$3,000,000 Jets

Since the war, the Jet Propulsion Laboratory has been continued on a large scale—at a yearly cost of about three million dollars—and has just recently been stepped up another thirty percent.

The Department of Defense has continually kept in contact with Caltech and other educational establishments through the many technical and scientific advisory boards which have been formed, and research projects which have been supported.

Lauritsen at Inchon

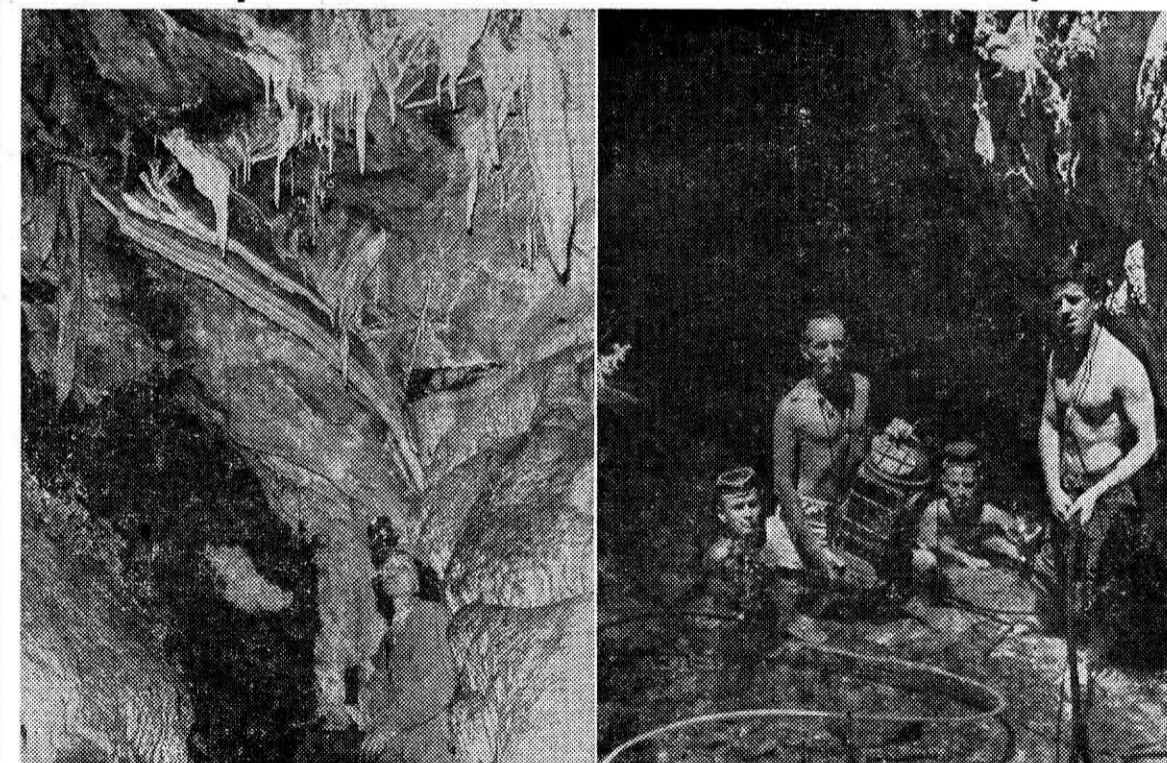
Professor of Theoretical Physics H. P. Robertson is currently serving as scientific director of the Weapons System Evaluation Group in Washington. Professor C. C. Lauritsen arrived at the Inchon beachhead shortly after the invasion forces had landed, and soon thereafter reported to the Joint Chiefs of Staff on the organizational and technical problems which the war in Korea has raised.

Will Continue Basic Research

But what is the present attitude of the Institute with regard to its purely scientific activities? "Basic research will be continued," stated Dr. DuBridge. (Continued from Page 4)

Speleogitis Hits Campus

Cave Explorers Will Visit Titus Canyon



Campbell and other members of the National Speleological Society; "Are these stalactites or stalagmites?"

By Duane Marshall

If you have been on campus at Tech for any length of time at all, you have undoubtedly come in contact with, or heard of a few odd ducks.

There are gentlemen both in the faculty and out that participate in very unusual pastimes. Some build organs, some delight in whisking their students off to give them color blindness tests; some fly gliders and some ride motorcycles. And then there are the geologists.

Do you feel left out of it because you aren't with it? . . . because you're not an odd ball . . . not a weird one? For some of you, salvation is in sight.

From Cave to Grotto

About ten years ago, a group of persons got together, in the

East, to forward the one thing they all had a common interest in, . . . cave exploration.

This "thing" was christened the National Speleological Society. Not only that, but it grew until it was large enough to be divided up into local sub-units or "grottos."

Because of this occasion ten years ago, there are a group of people here in Pasadena and L.A. who pick up their miners hats or hard hats and their carbide lamps, along with rope, ladders, flashlights, dynamite and road maps, to scoot off to some big hole in the ground once a month with an exploring disease which could be aptly termed, "speleogitis."

100 Altogether

The Souther California Grotto

of N.S.S. was formed in 1948 by Dr. William R. Haliday of Huntington Memorial Hospital.

It's still not a large grotto, but in spite of its size, it has explored about 25 or 30 caves so far. The California grottos have explored about 100 caves altogether. That's quite a few caves if you stop to think about it.

The reason there are such a number already explored is that the grottos try to get about one trip a month in their schedule of exploration. Members of the N. S.S. are in some ways ordinary people and would find it quite a strain on their time to have any more than one trip per month at the most. This also shows in their meeting schedules which are also once a month.

(Continued on Page 6)

Engineers Preening for ASCIT Formal Saturday

Pomona Rally Friday 'New'

"You WILL come to the big 'pulverize Pomona' rally," rather than "Come to the big 'Drub Pomona' rally," will be the rallying cry for tomorrow's spirit-boosting session for the Pomona game Saturday, according to Rally Commissioner Frank Ludwig.

The nature of the rally is a big secret, but Ludwig and Leon Vickman, cheer leader, assure all that it will be a grand success, and that everyone will attend. Their brainchild is a novel idea, guaranteed to be original and to raise spirits 100%.

Second Win!

"The Pomona game is the last game of the season, and Tech's last chance to win a conference game. But the Beaver cannot win by himself, he needs a lot of support, which only you can give. So, come Saturday to the best game of the season and cheer the Tech team onto its second straight victory," urged the Rally Commissioner.

Modern Art at Y Forum Nov. 21

The next Y forum will feature a talk on Modern Art, illustrated with slides, to be given by Mr. Douglas E. McClellan, head of the art department of Chaffey College, on Tuesday, Nov. 21, at 7:30 p.m.

He is a strong advocate of modern art, always eager to speak on the topic, so his talk should be very interesting, according to Phil Orville, Assembly chairman.

LaVerne Boyer's Band Setting Time; Apple Bobbing at Intermission

Techmen will discard their lowly peasant costume, levis, to revel in the refreshing atmosphere of high society this Saturday night, at the annual ASCIT fall formal. From nine till one they will be found in the plush sanctuary of the Pasadena Elks club, dancing to the music of LaVerne Boyer or relaxing in congenial groups about the beautiful lounge.

Thanksgiving Theme

The 5000 square foot dance floor will be decorated in keeping with the theme of Thanksgiving. A large lounge and adjacent bar will be open for those who wish to relax.

Dress Semi-formal

Dress will be semi-formal. This is defined as long dresses for the ladies and dark suits or tuxes for the fellows. Admission will be by ASCIT student body cards. The graduate students who have not yet purchased their special student cards may do so at the door.

Rare entertainment is promised for intermission. An inter-house apple-bobbing contest will be open for the gentlemen and a marshmallow eating race will be participated in by couples.

Boyer's Band

LaVerne Boyer's nine piece band will furnish music in keeping with the fashionable attire. Lois Burwell and Larry Straight will be featured as vocalists. Boyer played at the Pasadena Civic recently and is well known to many Techmen. He has played many house functions and past ASCIT events.

The Pasadena Elks Club, 400 W. Colorado, is located on the south side of the street several hundred feet east of Colorado and Orange Grove. It is the white colonial type structure next to the Pasadena Bowling Alleys.

Eaton to Emcee Sports Banquet

Dean Eaton, new chairman of the Physical Education Committee, will preside as Master of Ceremonies at the 29th Annual Fall Sports Banquet, Tuesday, Nov. 28.

Wheaton Trophy

The Wheaton Trophy will be presented to the outstanding football player who is chosen by the coaches and fellow-players as an outstanding contributor to the team in sportsmanship, playing ability, and moral influence.

Football Letters

Football letters will be awarded, and members of the fall sports teams will be introduced.

Tech's team members of 10 and 20 years ago will be invited to the banquet. The 1930 football team was conference champion with a won-loss record of four wins and no defeats.

Students who participated in fall sports may get the steak dinners at half-price, while others may purchase tickets for a nominal fee.

1200 Students Here on Dec. 2

About 1200 high school science students and their teachers will be the guests of Caltech Saturday, Dec. 2, at the first post-war Students' Day, according to Dr. Varney, chairman of the students' day committee.

Invitations Stressed

This event will differ from pre-war Exhibit Day in that it will be strictly an invitational affair, and admission badges will be issued only to those who have received invitations.

This is to enable the limited facilities of the Institute to handle the visitors without considerable damage being done, as occurred the last Exhibit Day before the war, when almost 20,000 tourists were present.

Students' Day Issue

The next issue of the Tech will be devoted to students' day and will feature many items of interest to the guests as well as to campus personnel.

Picture Yourself For the 'Big T'; Last Call Given

All proofs for Big T individual pictures should be picked up in the recreation room in lower Fleming from 4 to 6 or from 7:30 to 9:30 on Monday, Tuesday or Wednesday, Nov. 20-22, if you have not already done so.

Wednesday is the last day the photographer will be here. After Nov. 22 you may pick up your proofs at Marc Drake Studio, 1005 E. Colorado. If you do not pick up your proof, your year-book picture will be selected arbitrarily.

Last Chance

Any off-campus students who have not yet made a Big T picture appointment, or did not keep the one you made, come down to lower Fleming between 4 and 6 p.m. Monday, Nov. 20, and your picture will be taken. Wear a coat, tie, and white shirt, shave, and bring \$1.30.

Y's Doings

By Jim Crosby

Forums, Clubs, and Firesides Planned by Y

The Caltech Y is offering a wide variety of activities with even more coming up this year.

Two Forums Coming

Two forums of particular interest are planned in the near future. The first will be concerned with modern art and will take place on November 21.

In conjunction with national engineering honor society, Tau Beta Pi, the Y is also sponsoring a seminar on "How to Study" for freshmen and others interested in 155 Arms on Monday, Nov. 20, at 11 a.m.

The idea behind the varied program is to offer students the chance to get acquainted with people who have different views on various subjects. As yet the Y has not decided just how much religious emphasis should be placed on the program, but some activities are channeled along religious lines.

Buddhism

The Upperclass Luncheon Club held every Thursday is now engaged in a series of lectures on contemporary religions, and features this week a talk about Buddhism.

The freshmen are currently hearing a series of orientation lectures about Tech and their relation to it at the Tuesday frosh luncheon club.

Firesides

The purpose of the Y's Firesides is to allow students to (Continued on Page 6)

Student's Day

Through a mass of garbled misinformation most of you have probably heard by now that the Institute and the ASCIT are cooperating in reviving what is to be known as Student Day.

This will be held on Saturday, Dec. 2, and is nothing more than a rechristened Exhibit Day. There have been several important changes made, however.

This event has always been put on for the benefit of high school students in Southern California who are potential Caltech students. In the past the general public has also been invited and the affair has been open house. This is not so any more.

Locusts

Attendance at Student Day is to be by invitation only. The reason for this change in policy is simple enough. Over the years attendance grew until an estimated ten or twenty thousand people descended on the campus in 1941 and all but carried off Caltech.

The war supplied a much needed rest from this routine and every effort is being made to avert a repetition. Please help to kill any ideas that this is an open affair.

Invitations are being sent out to about 1000 high school science majors and 200 of their teachers who have indicated their desire to come. With the invitation, each person is being sent a badge with which to identify himself. No badge—no show.

Big Smiles

The cooperation of the whole student body will be needed to make this affair a success. Many of you have already been contacted and will be taking part.

A general program designed to make all these people welcome is being prepared. Even though you may not have a direct part, any individual effort in the way of being friendly will help.

Parking

The first request to be made is that all those who park their cars in Tournament Park plan to move their cars and clear this parking area on Dec. 2.

All the visitors are being asked to park there as a matter of our own convenience in assembling them and getting the show on the road.

As each group arrives, they will be directed to the student houses and Throop club. There they will be divided into groups of about twenty and started on a tour of the campus which is to last all morning.

The tour will include demonstrations and exhibits in each of the departments. In the afternoon there will be several general lectures and more exhibits.

This year, for the first time, lunch is being provided. The students will eat in and around the House to which they were directed when they first arrived. Their teachers will eat at the Athenaeum.

No Sliderules

Inasmuch as one of the main points of the whole show is to attract outstanding high school students who might not otherwise apply at Caltech, the committees responsible for Student Day want to emphasize student activities as much as possible.

Herein lies the second general request. During the noon hour especially, make yourself available for questions, bull sessions, et al. Don't be afraid to blow your horn about student activities instead of lamenting about your GPA or the high standards at Tech. They probably won't believe you anyway.

Carl Hildebrand,
Student Day Director

How the Other Half Lives

Editorial note: This week's gleanings from assorted college papers include another letter to the editor of the OCCIDENTAL concerning Caltech's recent notorious escapade, an article from the MIT TECH showing the effect of astrological events on student life, and two recent selections from the SYRACUSE DAILY ORANGE—articles of interest to all Techmen subject to the whims of their draft boards, one a rumor about a national exam for deferment, the other . . . well.

Draft Exams Planned . . .

Princeton college, which draws up the college board exams used by Syracuse university, has been asked to plan an examination by which draft boards can determine whom to defer, assistant director of the testing service Richard Sullivan has announced.

Major General Lewis B. Hershey, director of selective service, was reported to have consulted with the college board directors late in August, after Hershey was urged to examine the possibilities of a classification test by a panel of six committees of university leaders.

Backing for such a test has also come from the American Council on Education, Sullivan reported.

Sullivan said that he and college entrance examiner Henry Chauncey, director of the board, have already made rough plans for such a test, but are postponing their release until the exam proposal is authorized by Congress in November.

"When we do have a draft of the test," Sullivan said, "the selective service board will announce it."

Educators have been reported backing such a test of the college board variety to exempt or defer college men as superior to the selection system suggested whereby the top half of a class would be deferred.

The ability of superior students at one university might not equal average students at another, it has been thought.

Didn't Feel Bad . . .

In answer to a request from the Oxy night watchman the men of Swan provided encouragement for the Caltech serenaders to leave, last Wednesday.

The Oxy men did not feel badly about this deed. It is understandable that the women students would not understand, for they did not have the misfortune of having the vile smell of a Caltech brewed acid reek in their dorms for a week.

What did hurt the feelings of the "hosts" was the fact that some of the women felt that the Oxy men were afraid of competition from the boys from "Slide Rule CC." I have always heard that only dateless senior women admitted resorting to Caltech men.

B.O.

How to Evade It . . .

Once again the Selective Service Bureau is drafting college students to fill the ranks of the infantry. And when the announcement was made that the students with high averages would be deferred, students all over the country began reading "Cheating for the Draft Dodger," "Successful Lip-Reading," "How to Throw Your Voice and Save Your Buddy," and "Scenic Mexico."

Having had some experience in this fast-moving occupation, we offer several suggestions on how to avoid the draft:

1. Shoot the mail man.
2. Join a religious sect of pacifists whose dogma outlaw mobilization. To do this it may become necessary to have a vision—the most convincing vision is a picture of yourself carrying a gun on your shoulder.
3. Join the National Guard (heh! heh!).
4. Become an ROTC officer—Prepare for a career on the Greyhound lines.
5. Beat the physical exam:
 - a. Claim you have a physical disability—no guts.
 - b. Kiss all the doctors and hope for a post in the State department.
 - c. Contract contagious disease—lice, scurvy, bubonic plague.
 - d. Fail the eye test by playing marble with your glass eye.
6. Be in the upper percentile of your class by making friends with your professor; there are three ways of accomplishing this (1) cash (2) check (3) money order.

THE SQUARES' CIRCLE

Ed. Note. There was some misunderstanding about Dan LeMay's letter last week and about this column; to clarify: "The Square's Circle" is a letter to the Editor column; all views expressed herein represent those of the writer, and not necessarily those of the "California Tech."

This was the case in LeMay's letter; on any such controversial issue as he presented two sides will be given. Unfortunately, due to limitations of space, we were not able to present in last week's issue an article on the other side, although one had been arranged for. We apologize for an omission of an editorial note to this effect last week, and for any misunderstanding caused by that omission.

To the Editor of the California Tech:

Dear Sir:

I believe that an answer to Dan LeMay's letter in last week's Tech is in order. In his somewhat vehement denunciation of Professor Dean McHenry's History 5 lecture of two weeks ago, Dan wrote as if he were representative of the senior class. On the basis of talks I have had with many seniors, I am sure he was not justified in doing so. Few of us felt that Professor McHenry's remarks were deserving of the label "Communist."

There no longer seems to be a need for a reason to apply such a label. It is unfortunate we have reached such a state of political apprehension that merely to depart from the accepted and approved patriotic norm is to invite charges of being subversive. "To disagree" is now synonymous with "To be a Communist," evidently.

Comically enough, an individual may now be a Communist without ever having heard of Soviet Russia, Karl Marx, or Communism. This attitude is particularly well exemplified by the remarks of an instructor in a class the other day.

"I think (so-and-so) is a Communist. —He may not know it, but he is."

"Doesn't a person have to know he is a Communist to be one?" he was asked.

Thoughtful pause. "No, I don't think so."

When patriotism reaches this stage, it is no longer patriotism, I believe, but more akin to a fascism of public opinion. If we refuse ever to think about the constituent precepts of our political heritage and to re-evaluate them in terms of present conditions, we will eventually find ourselves in a position similar to that of setting out to fly to the moon in a rowboat. Certainly we have a rich heritage—but its



(Quote) To meddle little for me it is beste.
For of little medlyng cometh great reste.
—The Beake.

Let us not waste time in idle formalities. Once more have we been delegated by the editor of this here rag to spew forth appeasement to the yapping hordes. We were at first reticent and our inner pride gained the upper hand: it was not for us to play the servile today, the cringing lickspittle, no hangdog caitiff we. Even so, the masses have to be catered to, and albeit we lack the Promethean enthusiasm of Dan Lemay, here goes.

The week was, to put it mildly, infertile in any events of any description whatsoever. The Beak assures his disciples that he is as distraught as they at this, and we cannot but recommend that if events are to be read about, they be perpetrated.

Tech Men Awake

As Oxy coeds said last week—Oxy men! awake! . . . we cannot but admonish you: Techmen, arise, get off your duffs! Clear

usefulness is not entirely independent of the passage of time.

It is pretty well known that human inertia is a lot stronger than common sense would have it be. And no matter how good they may be, people are not gods, in any age. We all know this—or should. It is my opinion that, whatever his political beliefs might be, Professor McHenry was perfectly within his rights in pointing out these facts and in suggesting what he thought were desirable changes. Whether or not we agree with these changes, or even the necessity for them, we have no sufficient reason to challenge his personal loyalty on such feeble grounds.

There is a pitiful lack of imagination shown today in our categorization of people according to the beliefs they hold, and it probably stems from our mental inertia. We're either too busy—or too lazy—to think about ideas other than our own. We receive them into our mental I.B.M. sots, where they are scanned, and then punched, according to the "correct" standard, "Truth" or "Communism." There are no longer Socialists,

house! Clean the decks!

Thursday Night Climax

Thursday night saw the climax of many a yearning heart's desire as Fleming's own John Morrison left as plentipotentiary observer at the UCLA-Cal game.

Many a heart, and indeed many a shekel vibrated in unison with this noble venture, and as Pegasus winged over the purple horizon, many a sigh of: What price the Langhorne sisters now? was heard. Administering a surreptitious kick to the mongrel who had almost cooked his goose, Morrison was seen to slink back in Sunday, and as we go to press, no statement has yet forthcome. Excitement is at its zenith, however, and the price of Angostura is expected to rise.

Swimming Party

Another wassail worthy of mention is the Pauling aquacade. Approaching the upper hills at great speed, the Beak perceived through the casuarinas and banana palms the outlines of a rambling residence.

We held our breath, and al-

Republicans, Democrats, Unionists, Prohibitionists, Free-traders, Pro-Vivasectionists, Evolutionists, Free-Thinkers, or Damned Yankees. Whether they are proposing the repeal of the Shotgun Creek two-percent tax on salt water taffy or challenging the effectiveness of Mother Murphy's Miracle Waters for removing warts, they are all communists.

There seem to me to be two solutions. It is not probable that the first would ever be practiced widely—it consists in thinking for a time before we begin to make accusations. The second is, probably more satisfactory, certainly more imminent if the

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though we were determined to bear ourselves with the icy sang-froid of Sumner Welles at a B'nai B'rith picnic, we could not help but be overawed at the presence of Tungku Mokkaata, His Highness Peter, Grandfather of the Shrine, on the doorsteps.

The head of the house slept through the uproarious racket, the masses quaked in the pool, everybody was convinced of having a good time, and at 10 p.m. all returned to the bleak halls for dancing. Complete darkness was perceived to prevail, however, and the Beak cannot

(Continued on Page 4)

present hysteria continues. Some night, all those possessed with the True Democratic Fervor will rise up in indignation, lynch all known Communists, all those who are known to have been Communists; all those who have at one time or another been suspected of having a Communistic thought or who might in the future have a Communistic thought (i. e. Junior's older than Suzy, but perhaps I should give them both the same allowance.)

Then those who are left may live free from worry. The United States, at least, will be safe for democracy, and all the horror and violence of a Communistic Revolution will have been circumvented.

Bill Whitney

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FOR ARROW UNIVERSITY STYLES

The Die is Cast

Math Tackles Game Theory and Korea

—by Budd LeTourneau

Mathematicians, known for their ability to apply their science to any field of knowledge, have recently extended the field in developing a theory of games. This theory, developed by Morganstern and Von Neumann, was expounded by Dr. H. F. Bohnenblust at last Friday's demonstration lecture.

Korean Landing

An interesting sidelight to the theory is that the Defense Department called Dr. Von Neumann from Princeton to use his theory in choosing the most strategic and unexpected spot for the Inchon landing in Korea.

Infinite Possibilities

Basically, the theory considers all the possibilities of the play, together with the economic factors involved, in calculating the payoff value of the game. Naturally, because of the almost infinite number of possibilities of play, such games as bridge and chess have not been calculated by the theory, although they would follow the same theory precisely.

Payoff

Chance moves in games follow the theory of probability. As an example, consider the throwing of one die: there is one chance in six that the payoff number will come up, and the expected value, if the payoff is \$6, is \$1. The same applies to roulette or to the dealing of cards.

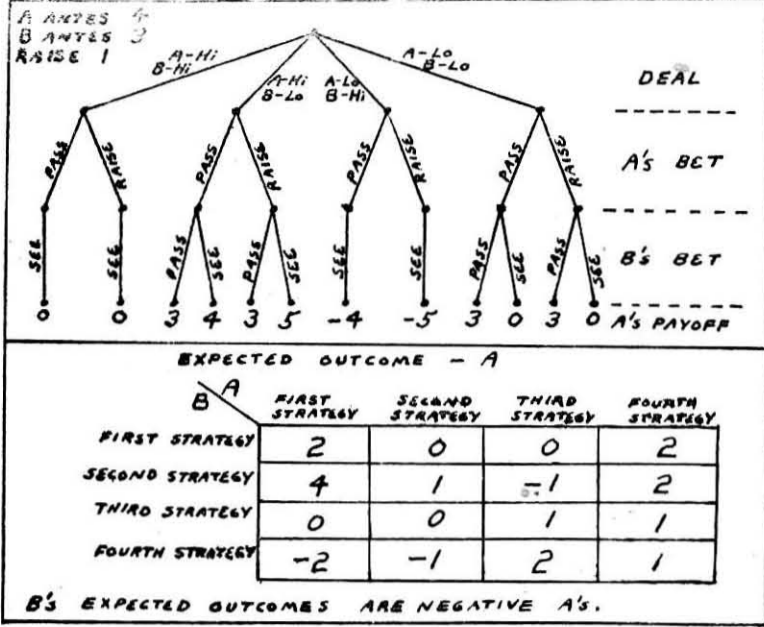
Player's Part Is Strategy

The player's part in a game is strategy, defined as what the player will do under any circumstances of previous play.

It is possible, in any game, for a player to have all his strategies tabulated, such that his move would be selected for him under any conditions of deal and prior play, and so that the two players would merely have to deal, tell an umpire "I use strategy N-17," and leave the room for a highball.

Big Book

Of course, the number of possible strategies is the same as the number of possibilities of play, and would require a book of infinite thickness to record, in any but the simplest of games. And, since in a number of games the player would use a number of different strategies, the combinations become googolplexian, and your present poker-



Differentiate something and set equal to zero.

system will probably not be radically changed by this theory.

Simple Poker Analyzed

As an example of the theory, Dr. Bohnenblust invented a very simple game, a sort of poker, for two players, dealing one card each, two kinds of cards, high or low, and one bet each.

Each raise is one, and the first bettor A can either pass or raise, the second bettor B can either pass or see. A rule is made that if the second bettor has a high card he must see, for simplification. Ante is 4 for A and 3 for B, to compensate for an advantage.

The bettor is betting that he has a higher card than the other player. B, passing, forfeits his ante, A raising, adds one to the bet for a showdown. Payoff possibilities for A are shown in the diagram. (No payoff if both have the same card at the showdown).

Possibilities

The possibilities of the play are seen in the diagram. There are four possible deals; A and B

may both have high or low cards, A may be high and B low, or A low and B high. A has four possible strategies; he may raise with either high or low, pass with high and raise with low, or pass with either high or low. We will call these strategies 1, 2, 3 and 4 respectively. The strategy of raising with a low card brings in the element of bluff. Naturally, all possibilities have to be considered with no preconceived notions.

B has no choice if he has a high card, by rule he must see. If he has a low card, there are four strategies for him; he may always see, see only when A raises, see only when A passes, or always pass.

Table Set Up

Using this information, a table can be set up as shown giving the expected outcome of the game for any combination of strategies by A and B, each using only strategy dependent on

the card dealt him, over a period of time. The table given is for A's outcome, B's outcome is simply negative everything in the table, since this is a zero-sum game.

Outcome

From the table we see that A has a outcome certainty of 0, no matter what B's strategy, and that B has an outcome certainty of -1, no matter what A's strategy.

This gap can be closed by an appropriate choice of mixed strategy in definite proportions, giving a value of 1/3 as the value of the game. The strategy by which A can be certain of winning is left to the experimenter.

A more complicated game could be analyzed in the same way for a game value, but the arrays resulting would be tremendously large.

In the case of more than two players, a coalition based on an interest factor usually permits dividing the players into two parties.

No Tech Next Week!

In accordance with the editorial staff's decision to suspend activities next week, the school administration has decided to call off all school activities next Thursday and Friday. The student house this week end.

Let us have Thanksgiving to the Tech staff for this blessing.

ON THE RECORD

By Bill Whitney

Tonight, at eight thirty, the 1950-51 season of the Los Angeles Philharmonic Orchestra will be officially under way, with soprano Kirsten Flagstad appearing as first guest soloist of the year.

Although this performance is officially the first of the season, the orchestra has already given several concerts in the Southern California area under the direction of its permanent conductor, Alfred Wallenstein.

Philharmonic Trio

An audience of over one hundred thirty students, faculty members, and "friends of Caltech" were treated last Sunday night in Dabney Lounge to a fine performance of chamber music by the Philharmonic Trio. The group was well-coordinated and played with a good sense for phrasing and expression. The Milhaud Suite for violin, clarinet, and piano was particularly well done, guest clarinetist Franklyn Stokes handling his part of the performance with excellent control and intonation.

The next Musicales concert will be held Sunday, November 26, at 8:00 P.M. and will feature violinist Toscha Seidel with pianist Robert Hunter. These performances are within three minutes walking distance from the student houses; they are free,

and they are good. An opportunity like this to hear good music well-performed right on campus is not one which a student should pass by if he has any interest at all in chamber music.

Thanksgiving Concerts

Next week offers a wide variety of musical events. For the convenience of those who may be looking for something to do over the vacation weekend, we are presenting below a schedule which tells at a glance the major musical occurrences and others which might be of interest. A more complete listing of the ballets which will be given by Ballet Russe will be printed in a later issue of the Tech.

CONCERT SCHEDULES:

- Nov. 16, 8:30 P.M. L.A. Philharmonic Orchestra Alfred Wallenstein, conducting Kirsten Flagstad, soprano Beethoven—Prometheus Overture Symphony No. 7 "Ah Perfidio" Wagner—Brunnhilde's Immolation, from "Götterdämmerung." Philharmonic Auditorium
- Nov. 18 Intimate Opera of London Bach's "Love in a Coffee Cup" Pergolesi's "Musick Master" Offenbach's "Jacques & Jacqueline" Dr. Arne's "Thomas and Sally" Old English Songs Wilshire Ebell Theatre
- Nov. 19, 3:30 P.M. Coleman Chamber Music Series Intimate Opera of London Program essentially as above, with omission of "Jacques & Jacqueline." Pasadena Playhouse
- BACH FESTIVAL Nov. 17, 8:00 P.M. Harriet Reiff Craighead, organist St. Paul's Cathedral Choir of Men and Boys South Central Civic Chorus
- Nov. 18, 8:00 P.M. Alice Ehlers, Soprano Fern Conzatti, Soprano Concerto in A Minor Cantata's No. 209 and 202 Chromatic Fantasy and Fugue "Capriccio on the Departure of My Most Beloved Brother." (Continued on Page 4)

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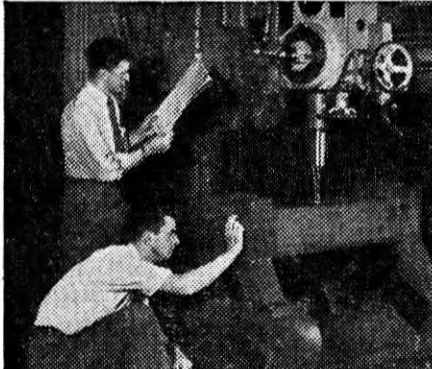
THE DU PONT DIGEST

Engineers At Work

AT DU PONT THEY FIGURE IMPORTANTLY IN MANY FIELDS

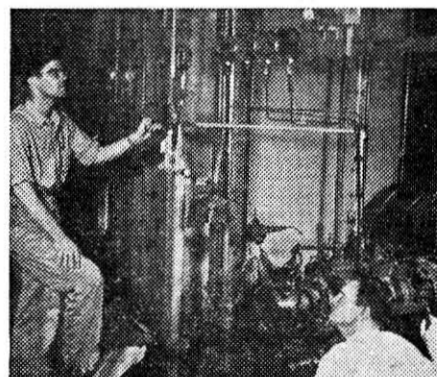
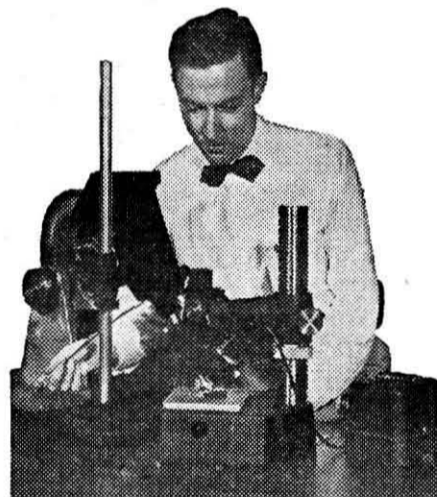


Studying product development in a rotary dryer are: H. J. Kamack, B.S. in Ch.E., Georgia Institute of Technology, 1941; and F. A. Gluckert, B.S. in Ch.E., Penn State, 1940.



Checking component for machine used to finish rolls to high degree of precision: Donald F. Miller, B.S. in M.E., Lehigh, 1950; and Albert W.G. Ervine, M.S. in M.E., Michigan, 1950.

R. E. Sugg, B.S. in M.E., George Washington University, 1948, doing mechanical research to improve machine design. His optical-slit microscope measures surface scratches as fine as 20 millionths of an inch.



R. L. Stearns, B.S. in Ch.E., Yale, 1949; and H. Peterson, B.S. in Ch.E., Northeastern University, 1942, checking a multi-stage carbon-monoxide compressor used for making methanol.

BECAUSE Du Pont is a chemical company, you might expect most of its technical men to be chemists. Actually, there are more engineers than chemists at Du Pont. In each of the ten manufacturing departments there is important work for men trained in chemical, mechanical, electrical, metallurgical and other branches of engineering. These departments operate much as independent units with their own research, development, production and sales staffs. In their respective fields, they do fundamental and applied research on both processes and products. Sometimes engineers participate in the early stages of a project. More often, however, they enter the picture when the project has moved to the point where commercial production is considered. They see it through the pilot plant and semi-works stages and assemble data

necessary for the full-scale plant. Even after manufacturing has begun, development work is continued to standardize and improve the process. Normally, engineers whose main interest is production and plant operation take over when the works stage is reached. Engineers on the technical sales staffs help maintain contact between Du Pont and its customers. They present data on new products and guide customers in process development and similar problems. They also use their technical knowledge in making surveys of possible markets for the Company's products. In addition to the manufacturing groups, the Du Pont Engineering Department—a central staff organization—requires engineers with many types of training. This Department carries on its own program of fundamental and applied research. It also

makes site investigations, lays out and designs new plants and laboratories for the manufacturing departments. It serves them in research on process development, on materials of construction and on methods of measurement and control. Yes, engineers figure importantly at Du Pont. Through their teamwork with chemists, physicists and other trained personnel, the Du Pont Company produces its "Better Things for Better Living...through Chemistry."



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Opera Review

By George Abell

The San Francisco Company, with last Sunday's matinee performance, closed its two-week engagement in Los Angeles.

One of the highlights of the company's second week here was the double-billing of two-act operas, Puccini's "Suor Angelica," and Richard Strauss's "Salome," last Thursday evening.

"Salome" Thrilling

The climax of the evening was Richard Strauss's operatic version of Oscar Wilde's thriller, "Salome." The ideally suited music for this goriest of Biblical tales is extremely dramatic and gripping.

Brenda Lewis, in her Los Angeles debut, portrayed the ghoulish princess, Salome, admirably. Miss Lewis is first caliber both as actress and vocalist.

"Seven Veils" Dance

After some particularly athletic stage business, including the eyebrow-raising "Dance of the Seven Veils," she still retained sufficient wind to do full justice to the thrilling finale.

She does not, like Ljuba Welitsch, attempt to sing the scene while sprawled on her belly, nor does she measure up to the latter in vocal ability; still, she has all the necessary qualifications, and was heralded a definite success by an enthused audience.

"The Magic Flute"

The show Friday night was Mozart's delightful fantasia opera, "The Magic Flute." A list-

tener would never realize that this work was written in one of the most unhappy periods of the composer's life.

Happy Music

That at a time when he was turning out his heaviest and saddest music, Mozart could, on commission, pen such an airy and beautifully happy masterpiece as this, is indeed a wonder, and a tribute to the master's incredible genius.

The story of the opera tells of the many rituals and trials that a noble Egyptian couple must undergo before finally being united.

Lovers

The lovers, Tamino and Pamina, were portrayed by James Schwabacher and Uta Graf. Schwabacher, heard here for the first time in a major role, proved to be a fine lyric tenor. His voice is light and not of great power, but it is clear and well-controlled. Uta Graf has a good voice, and sung with the charm and grace befitting to her role.

Brownlee Superb

John Brownlee, taking the comic part of Papageno, the companion of Tamino, stole the show. He is still a fine baritone, and is an actor superb. One found Dezzo Ernster, as the High Priest, somewhat disappointing, especially after having heard his fine performance in "Parsifal" last week. His bass is not quite steady, and his range is too limited to make some of the lower notes in the score. Sari Barabas sang the difficult part of the Queen of the Night satisfactorily, although

she has not the power demanded for a good rendition of the role.

In English

Owing to the considerable amount of dialogue, it is fortunate that "The Magic Flute" was given in English. Ninety percent of the humor would otherwise have gone completely astray. Mozart's operas are generally well adapted to English translation, and certainly nothing was lost in this one by Ruth and Thomas Martin.

Regrettably, however, most operatic singers muffle their words to such an extent that, but for spoken lines, translations do not completely solve the problem that American audiences are confronted with, of how to figure out exactly what is going on.

"Rigoletto"

The San Francisco Opera Company made its last bow Sunday afternoon with a production of Verdi's "Rigoletto." Verdi composed the music for "Rigoletto" simultaneously with "La Traviata," and one cannot help but notice the striking similarity of the two works.

Here is Verdi at his lightest and airiest. Lyrical melodies abound. The orchestration, as opposed to, say, "Aida," is simple, and the role of the orchestra is very subordinate to that of the singers. In "Rigoletto" are some of the most familiar arias of opera, for example, "Care Nome," "La Donna e Mobile," and, of course, the famous "quartet."

Rigoletto

Enzo Mascherini headed the

cast in the title role of the hunchback, Rigoletto. Mascherini's voice is not overly rich and full; it is to be regretted that the part wasn't taken by Robert Weede, as originally announced. Furthermore, Mascherini is a miserable actor. However, if one didn't pay too close attention, he was satisfactory. Some of the difficulty may be attributed to a cold with which he was reported to have been suffering.

Pons Wiggles

Gilda, the jester's beautiful daughter, was sung by Lily Pons. Miss Pons was not in her usual voice Sunday, but still was more than satisfactory, and she more than pleased a nearly capacity audience. She is developing a bit too much vibrato, and she still tends to deviate from the correct pitch.

Pons did give the audience a sound laugh in the last act, when, after the sack containing her supposedly mortally wounded self was placed perhaps a bit tentatively wiggled herself into a more comfortable position.

Giuseppe Di Stefano, as the Duke of Mantua, was perhaps the highlight of the show, at least vocally. We have heard him in better voice, but he still lived up to his reputation as one of the purest and most lyrical tenors in the business.

DuBRIDGE SCANS

(Continued from Page 1)

phatically. "With the duration of an emergency of this sort so uncertain, it would be disastrous to give up those activities which have a long range value."

Nevertheless, the Institute must be considered partially mobilized, and hence there are the usual problems concomitant with partial mobilization.

Leave Research Teams Intact "Should our team of investigators and educators be kept together, or should we let it be drawn off across the country?"

"The team should be kept together!" was Dr. DuBridge's firm answer to his own question. As members of a highly trained, highly competent research group, these men will be able to contribute much more than if their efforts were dispersed. It is inevitable, however, that certain of the faculty will be forced to be absent from time to time on various duties away from the campus.

Little Secret Work "No attempt has been made to initiate classified research on campus," the speaker remarked. "Education has the function of giving out information, rather than withholding it." Consequently, there is at pres-

CAMPUS BREWINS

(Continued from Page 2)

but express his regret at his being unable to conjecture as to what came off.

Emitting a tragic, lingering cough, evocative of Camille, the Beak betook himself to the edifice of relief. A plump, dark-skinned gentleman in a purple sports shirt appeared at the head of the stairs and screamed dynamically.

Wanderings Transcribed

Picking up our teeny-weeny pencil, we now transcribe the wanderings of the almost extinct Varney's Bar Stork (genus: betar ferrite) last Saturday night in the region of the Great Southwest.

Making his way carefully among the cunningly placed booby traps of lumber in the court, into the almost abysmal

ent very little work of a secret nature in progress in the campus laboratories. There is some, however, and for this reason the armed forces are concerned that all subversive elements be eliminated from among Institute personnel.

Although the loyalty of Caltech as a whole should be based on an evaluation of its service to the country, there is nevertheless the question of personal loyalty.

Weinbaum

At this point, the president discussed briefly the Weinbaum case, much before the public earlier in the year. "What the public was not made aware of," Dr. DuBridge noted, "was that during the trial, there was nothing brought out to show that there has been any Communist activity in which Institute personnel were involved since 1939," the year in which the small, short-lived Communist Club to which Weinbaum had belonged disbanded.

"The term 'Communist' is far too carelessly used these days. Too often, if a man says something with which others disagree he is likely to be labeled a Communist."

"We are opposed to Soviet Russian Imperialism because under such a system individual freedom is sacrificed. But we must be careful in fighting Communism that we do not sacrifice the very freedoms we are trying to preserve."

The speaker then brought out that the line between propaganda and sincerity is sometimes a difficult one to draw. However, he concluded, if on our college campuses we assume good faith on the part of most teachers, those who actually are trying to sell us a party line will be in a small minority.

As to the part which the student in general should take during the present uncertainty, Dr. DuBridge commented that it would be best if he would make the most of his present opportunities and continue with his education, at the same time taking a little closer look at the policies and beliefs held by his institution, so that when he finally graduates from it he knows what it actually stood for.

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darkness of the lounge proper the Beak was nearly trampled by a horde of hungry Darbs on their way to the refreshments, but so dark was the dance that nothing short of a "How do you feel, Frosh?" would have revealed who was present.

Sig (more gasoline than brains) Chamer, who was supposed to have attended, was quoted as saying: "There is nothing like a nice drive down to Whittier when you think you have a date for a real morale booster."

Idly whiling away the evening hours Sunday at the Dabney Hall concert were Messrs. Walp and Goerke, the former with his accustomed, the latter with a comely non-Schmippsonian lass for a change.

Boris Goodenough?

Memo to all TGIT men—be sure to catch Bruce Hedrick's vocalizing at the "Track" tonight. This rising, young baritone (one beer), or bass (two beers), or tenor (three beers), or soprano (five beers and an unfortunate knife wound) has been lifting more eyebrows than noses along Colorado with his vibrant, exciting interpretations of the sea chantys of Outer Mongolia. (One may wonder at Hedrick's choice of material but he says that his repertoire merely reflects the atmosphere he is singing in.)

Hedrick's warbling last week worked the feminine customers into such a frenzy that the management has been forced to institute certain new rules which they have assembled together in the form of a game called musical bar stools.

Any girl who has swooned off her stool while Hedrick is singing must pay double for her next drink. Hedrick as yet has been very modest about his new achievements. His only comment is that he never forces his luck and always lets nature take its course.

As the cock crows, the Beak sits pecking at his typewriter, the four-day growth of beard, the feverish, deep-sunk eyes, the nicotine-stained fingers and the grimy singlet all telling the same story—a Techman having cracked under the stress.

The Beak yields. For any complaints, see Dan Lemay.

ON THE RECORD

(Continued from Page 3)

- Nov. 19, 4:00 P.M. First Congregational Church Bach Orchestra
William Reher, Conductor
Concerto for Viola and Oboe in D Minor
Suite No. 2 in B Minor
Little Fugue in G Minor (Callet)
Brandenburg Concerto No. 6 for 2 Violas.
- Nov. 19, 7:30 P.M. Combined Cathedral and Cloister Choirs
Mass in B Minor
All Bach Festival Concerts at First Congregational Church of L.A., 5535 South Hoover Street.
- Nov. 21, 8:30 P.M. Mrs. L. E. Behymer Concert Series
Elena Nikolaidi
Philharmonic Auditorium
- Nov. 23, 8:30 P.M. L.A. Philharmonic Orchestra
Alfred Wallenstein, conducting
Lillian Steuber, pianist
Weber—Jubilee Overture
Mossiaen—The Ascension
McDowell—Concerto No. 2
Borodin—Symphony No. 2
Philharmonic Auditorium
- Nov. 25 Little Singers from Paris
Wilshire Ebell Theatre
- Nov. 26, 8:00 P.M. Musicale Series
Toscha Seidel, violin
Robert Hunter, Piano
Sonata in B-flat, K4545—Mozart
Sonata in A, Op. 47 (Kreutzer)—Beethoven
Sonata in C Minor, Op. 45—Grieg
Dabney Lounge
- Nov. 27 Vladimir Horowitz
Philharmonic Auditorium
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Campus Interviews on Cigarette Tests
Number 7...THE RAVEN

"You can use my name... but don't quoth me!"

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LOS ANGELES BEVERLY HILLS

ELA JC, Cal Poly Fall To Waterpolo Squad

For the third time this season, Caltech and Oxy water-polo teams will meet. This is the rubber game, each team having previously won once. Also this game will decide the championship of our division of the water-polo conference. No matter who wins, both teams will go into the playoffs next week with the top teams of the other division. The game will be played at the PCC pool at 4:30 p.m. and a big rooting section would be appreciated.

It was a great week for the waterpolo team, starting with a close victory over Oxy on Monday. This was immediately followed by the 12-1 defeat of Cal Poly (SD) on Tuesday. Friday the Engineers journeyed to Huntington Park to meet ELA JC and came out ahead, 24-11.

Beginners

Cal Poly came here with a team in its maiden year, which is part explanation for the great difference in score. The quarters were shortened to five minutes in deference to the visitors' inexperience. Libbey was high point scorer with eight points.

Goals Galore

The game opened with a rash of Tech scores, nine in the first quarter, in fact. The Los Angellans came back in the second quarter with five counters, but were held to only three more points in the rest of the game. Forward Bill Barmore took the scoring honors with nine points, four of them coming in the last quarter. Haire and Libbey got five apiece. Libbey showed his usual speed by taking all four of the sprints which start each quarter.

Score by quarters:

CIT	9	4	4	7-24
ELAJC	3	5	2	1-11
Cal Poly	0	1	0	0-1
CIT	3	2	7	0-12

BUTTIN' IN

—by Butler

Many a game has gone by the boards, but the Beavers have, at last, entered the win column. Of course, the picture looked dark at first when the Leopards drew first blood, but the boys finally remembered that they were favored to win and got down to business. Hal Woody's power running and Babe Karasawa's snappy passing gave the Engineer attack plenty of offensive punch. When it comes to praising the unsung heroes in the line, I find picking any one man a real chore. We all will agree that the whole front wall looked strong.

What Happened?

Looking back over the years, I have now seen Tech football teams win three and tie two. Nothing would make the seniors happier than to have the Beavers make it No. 4 Friday night. Before last Saturday, I had figured the Beavers better than even money to take the Pomona Sagehens. But when Fuzz Merritt's eleven pulled the biggest upset of the year by dropping the Poets 13-10, I became a little skeptical.

What happened at Claremont Saturday is anyone's guess. Pomona has been going through one of its worst seasons in years, but suddenly caught fire to completely dominate Chief Newman's very potent club. It seems, however, that one Quaker journalist saw the writing on the wall. He warned that the team might face a psychological letdown. Letdown! The Poets must have layed down.

(Continued on Page 6)

UCLA Soccer Wins Again

The Tech booters will devote their attentions to the Trojan eleven this Saturday as the USC soccer team invades Tournament Park for the first of a two-game series. The game is scheduled to start at 10 a.m.

In general, the team didn't look as good as it did during our last encounter with the Bruins, although we managed to push through one more tally than we did in our first game. The scoreboard at the final whistle read: UCLA, 4; Caltech, 2.

We held them scoreless for the first period, but early in the second quarter, the ball squirted out of goalie Miller's arms and the Bruins had their first tally. It wasn't long until the Uclans had pushed through another goal, making the score at half-time 2-0 for the Bruins.

Gutierrez Scores

Early in the third period the Beavers began settling down a

(Continued on Page 6)

Tech Harriers Lose To Oxy; Race Hens Saturday

Everyone ran a good race, but Caltech's cross country squad just couldn't get by their nemesis, Oxy.

Paced by John Barnes, who ran the three mile course in a sensational time of 16:13.9, the Oxy squad took the meet by a score of 23-33.

Race

Barnes got out in front right at the start and was never pushed. Hal Butler, former star from PCC and now running for Oxy, battled with Bill Pilkington of Caltech for two miles. But Bill finally had to fall back, leaving third place to Pete Mason who finished first for the Engineers runners.

Others scoring for the Beavers were Bob Cobb in 5th, Pilkington in 6th, Francis in 8th, and Ray Bowerman in 11th.

Pomona

Since Oxy lost to Pomona, this Saturday meet for the squad at

(Continued on Page 6)

Tech Whips LaVerne 27-12 in Wild Game

Woody, Karasawa Pace Engineers For First Win in Thirteen Games

At last joy is spread over the campus. At last the football team need not make excuses. At last the football column is not bordered in black. After a 13 game abstinence from victory at last Caltech has won a game!

Bad

The chances of the Beavers looked slim at the outset of the game when LaVerne received the kickoff and drove 82 yards to a touchdown, the scoring play being a pass to end Stan Adams that was good for 48 yards. This gave the Leopards a 6-0 lead barely minutes into the first quarter.

Right Back

But Tech not to be outdone immediately marched 74 yards to a touchdown and a 7-6 lead. Then it began to appear that whichever team got hold of the ball most or whoever had the best luck with conversions would win the game. LaVerne marched from its own 23 to go out in the lead again 12-7. The touchdown play was again a pass that was good for 47 yards.

Payoff Play

Then it was the Beavers' turn again. They moved 94 yards over, around and through the Leopards to go into the lead 13-12. The payoff play was a 9 yard pass from Babe Karasawa to Al Johnson, which had been set up by a 37-yd. scamper around end by Babe. The quarter ended with the score 13-12.

Clinch

In the fourth quarter Tech began to move again and drove 89 yards to a 20-12 lead. Woody leaped over from the 2 for the score. The Beavers put the finishing touches to an outplayed but not outgamed Leopard eleven in the fourth quarter when they held for downs on their own 47 and then drove to the final score with Randy Moore receiving a Karasawa pass from the

(Continued on Page 6)

Frosh Sports Roundup

by Nick Nicholson

Frosh gridders get their last chance for a win this season come Friday, and we're betting on them to make good. They meet Redlands in the Rose Bowl at 5:30, before the varsity plays Pomona. Redlands is the team they beat last year, and they're out for a repeat now.

All you frosh casaba men will get your chance next week. Basketball practice starts Monday, and Coach Ed Preisler is the man to see about signing up. You'll have to hurry, though; only a week of practice before the league tournament starts off on Nov. 28. If you can handle a ball at all, come on out.

At A Glance

Football

Caltech, 27; LaVerne, 12. Pomona, 13; Whittier, 10. Redlands, 23; Oxy, 19.

Cross Country

Oxy, 23; Caltech, 33.

Water Polo

Caltech, 24; ELAJC, 11.

IH Basketball

Throop, 57; Ricketts, 45. Dabney, 31; Blacker, 22.

SCIC FOOTBALL

Redlands	3	0	1.000
Whittier	2	1	0.667
Pomona	1	1	0.500
Oxy	1	2	0.333
Caltech	0	3	0.000

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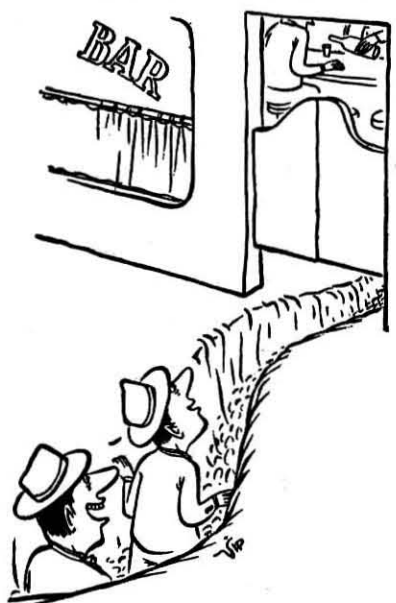
L.S./M.F.T.-Lucky Strike Means Fine Tobacco

In German class the word is "Ja."
In French the word is "Oui."
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By John G. Davis
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SPELEOGITIS HITS

(Continued from Page 1)

The Big Shots

Who belongs to the N.S.S.? Many of its members are people, fornia Grotto. Howard Shugart, likewise a sophomore, is in this thing too.

Yours truly may even be found with hard hat, carbide lamp, rope and three days food, heading for the steam tunnels one bleary evening. John Campbell, who controls grade points in engineering drafting, has a big hand in the doings of the N.S.S. Some of the older members on campus may remember one of the former institute employees . . . Walter S. Chamberlain, who is the acting chairman for the Southern California Grotto.

"Holy" Rumors

What happens? How does everything work? Well, rumor sometimes has it that there is a cave here or there . . . members have their ears flapping in the breeze for any news of caves. A report is made on the rumor at the next meeting and things grind to a screeching start.

The grotto sends out a small crew of members to the site of the rumored cave and cases the joint. If the cave appears worthwhile and a little larger than a badger hole, they turn in a favorable report at the following meeting of the grotto, and the grotto licks its carbide lamps in expectation of a trip.

About 50 per cent of the caves explored and mapped by the grotto turn out to be mere holes in the ground while the other 50 per cent are spectacular holes in the ground. Stalactites and stalagmites and crystal growths can do a lot for a hole in the ground's appearance.

\$\$\$\$\$

It's said by the N.S.S. that the frontier for common ordinary exploration is underground.

The first trip of the Southern California Grotto was to Kokoweef Cave, which is someplace. A couple of very interesting things in the cave made it a very worth while first trip. In the cave was an underground river which had gold bearing sand in it. . . \$8000 worth per ton. Yoicks. Not only that, but the cave was

3000 feet from top to bottom.

In crystal cave in National Sequoia Park and in Timpanogas Cave, Utah, thermographs, barographs and recording hydrometers were left over a period of three months to see what was in the cave as far as temperatures, humidity and pressure were concerned. This is actually what the term speleology should cover . . . the scientific study of caves, while just wandering in and looking around should be called spelunking.

Activities at Meeting

The last meeting of the N.S.S. was held as usual on the first Tuesday of the month in the reading room of the Pasadena Public Library. First on the agenda was a lecture given by John Campbell on climatic conditions on the earth's surface, methods of prognostication, climatic cycles and such. Then movies of scenes from Death Valley were shown by Howard Shugart.

Slides were shown also during the evening and after the projectors were put away, the meeting got down to the real subject of the evening . . . plans for exploration of Titus Canyon cave, near Death Valley, this Thanksgiving. The cave was described as being narrow and winding with a high center and featuring exceptional crystal growths.

Arrangements had to be made with the park service to get into the cave. Originally it had been sealed up to prevent plundering of the crystal growths in the cave by local commercial interests. The entrance to the cave is through an old abandoned mine, which enters it at two levels . . . or used to before the park service sealed it up.

How to Get in

First, the entrance to the cave must be blasted open. The demolition squad of the N.S.S. is considering using shaped charges for the purpose so a nice neat section can be punched out, leav-

UCLA WINS

(Continued on Page 5)

little and it wasn't long before center forward Gutierrez had kicked our first goal. However, the Bruins retaliated, again on a lucky play.

The very first play of the final period saw the Tech forward line move smoothly down the field and this time Bobby Wood scored a nice goal, bringing the Beaver total to two. Once more the Bruins came back, scoring their fourth and final goal in the last minutes when it was hard to tell the soccer game from a free-for-all.

ing a hole for the prefabricated gate which they must install and weld shut after finishing the exploration.

The Park Service doesn't want anybody in the cave after we (the N.S.S.) finish, either. One of the factors in gaining permission to enter the cave was the Society's policy of "no sampling the rock." All the beauty carried out of the cave by spelunkers will be on camera film.

The trip list includes Don Emerson, Howard Shugart, John Campbell, Walt Chamberlain and I'm not going to miss out on something like this myself.

Devil's Hole

Either before or after exploring the cave a little detour to something called Devil's Hole will take place for those who like warm water swimming. I'm told the water was 92 degrees F when the last swimming party was there and there's no reason to expect any difference this time.

Walt Chamberlain is bringing diving equipment along on the trip and expects to dive into this peculiar warm water hole past the depth he has previously been down to . . . 75 feet.

Anybody can join the N.S.S.—even you!

CIT Fellowship To Discuss Mark

Next week the Caltech Christian Fellowship will finish discussing Christ's teachings as given in the fourth Gospel of Mark, and will take up the discussion of Mark 5, in which several of Christ's most significant miracles have been recorded. The Fellowship has inaugurated a new method of study, with small discussion groups meeting in rooms 202, 210, and 211 Dabney at 12:30 on Tuesday and Thursday.

Y's DOINGS

(Continued from Page 1)

meet the faculty on a social level.

Gathering on Sundays from 7:30 to 9:30 p.m., the Firesides consist of informal discussions on almost any subject. These small discussion groups are limited to about a dozen people.

It is hoped that Dr. Bacher, head of the division of Physics, Mathematics and Astronomy, will be host to this week's group at his home.

New Activities

The Y presently is planning a church visitation group which will attend about six church services of different denominations over a period of six weeks to see what they are like, and to comment on them. All who would like to go should contact Barney Engholm or John Boppart for particulars.

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BUTTIN' IN

(Continued from Page 5)

Splashers

If you have not noticed, the Tech waterpolo team is really red hot this fall. Paced by Dick Libby, the Engineers have been racking up some tremendous scores in league play. Because of a couple of disrupted games, the league officials are not sure which club occupies the top position. But some daring souls have, in off-the-cuff statements, nominated the Beavers to first place. The organizational setup of the Waterpolo League must be most interesting.

Basketball

The Hustler wandered over to the Armory a couple night ago and announced to the eleven cage hopefuls that Shy's five will face Loyola in a double feature with USC on Dec. 1. While dwelling on basketball, I should like to toss an interesting tidbit to the troops. One of the men on the squad mentioned with some bitterness that much of the hidden basketball talent on campus is being talked out of going out to the squad by a few men who feel that they should have played more in last year's games. They are entitled to their opinions, but to sour other men is really being a poor sport. When I harp about school spirit, it is this type of attitude that I completely condemn. So, to the men who have been the victims of a few embittered souls, give them the gate and

TECH HARRIERS

(Continued on Page 5)

Claremont is going to be very crucial.

Winning this one and then beating Redlands would give Caltech a co-championship. The odds are at least even in spite of the handicaps of running the tricky Pomona course.

TECH WHIPS LaVERNE

(Continued from Page 5)

17 yard line. The game ended with Caltech winning 27-12.

Tomorrow night in the last game of the season the Beavers are gunning for a victory over the Pomona Sagehens in the Rose Bowl.

Statistics:

	CIT	LV
First downs	20	17
Yards rushing	259	171
Yards passing	196	101
Total yardage	455	272
Passes attempted	22	21
Passes completed	12	3
Interceptions	2	2
Punting average	23.5	42
Fumbles	1	1
Yards penalties	30	10

Score by quarters:

	1	2	3	4	Total
CIT	13	0	7	7	27
LV	12	0	0	0	12

get up to the Armory for practice.

Title?

The cross-country team found it tough trudging Saturday against Oxy. But a look at league results give the Beavers at least a chance for a tie for the title. The outcome hinges on the Pomona race Saturday. A Tech win almost clinches a co-championship.



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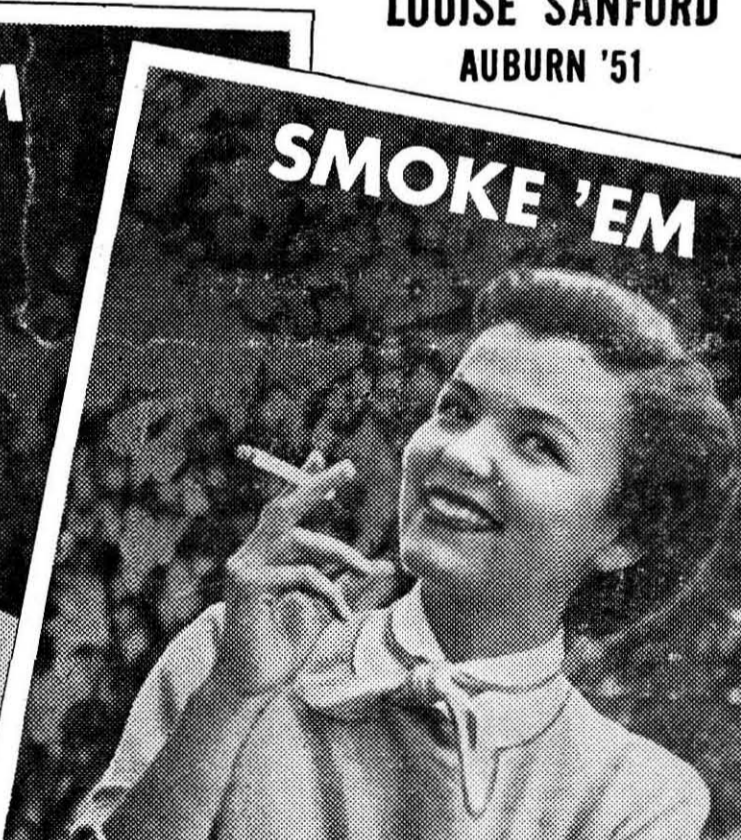
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