

Houses Prepare for Interhouse Dance

Work, Frosh! By the time you read these words there will be little more than two full days left to complete construction for Interhouse Dance. The deadline for Interhouse is 8 p.m. Saturday night, which means the Caltech natives will be restless tomorrow night and all day Saturday. However, many Houses appear to be anticipating this

rush and a few might even complete their projects before Friday night.

Two large Easter Island statues will greet travelers entering Ruddock's land of Polynesia. To visit the islands, couples can ride a raft through the lagoon. To the left of the visitors is a sheer cliff with a cascading waterfall.

A volcano will rumble and belch threatening red vapor over parts of the Ruddock and Lloyd dining rooms (Saga angered the gods). Once safely past the volcano and coral reefs, visitors will find the island is a typical Polynesian paradise. According to Doug Gage, there is also the possibility of a luau table.

The music will be supplied by Johnny Sexton's Band, featuring Cubby O'Brian, former Mousketeer. Ruddock's Interhouse efforts have been thwarted somewhat by the unusually violent trade winds which have pelted the Caltech archipelago in the past few days. However, the tireless efforts of diligent natives seem to be winning out.

Water, Water, Everywhere!

The towering Dewit Peak will accent the Swiss Alps theme of Blacker. Cascading downward from an adjacent peak, Mitchel Falls runs into Rimmel Gulch and finally ends in a courtyard-size lake of the Swiss Alps variety.

From the southeastern shore one may discover a random "Echo Point" of a very strange nature. From the Blacker Lounge Ski Chalet it will be possible to view a cable car running to a distant chalet between the two peaks. An unobstructed view of the southern slopes and of the lake will be found by traveling a short distance to a second observation post.

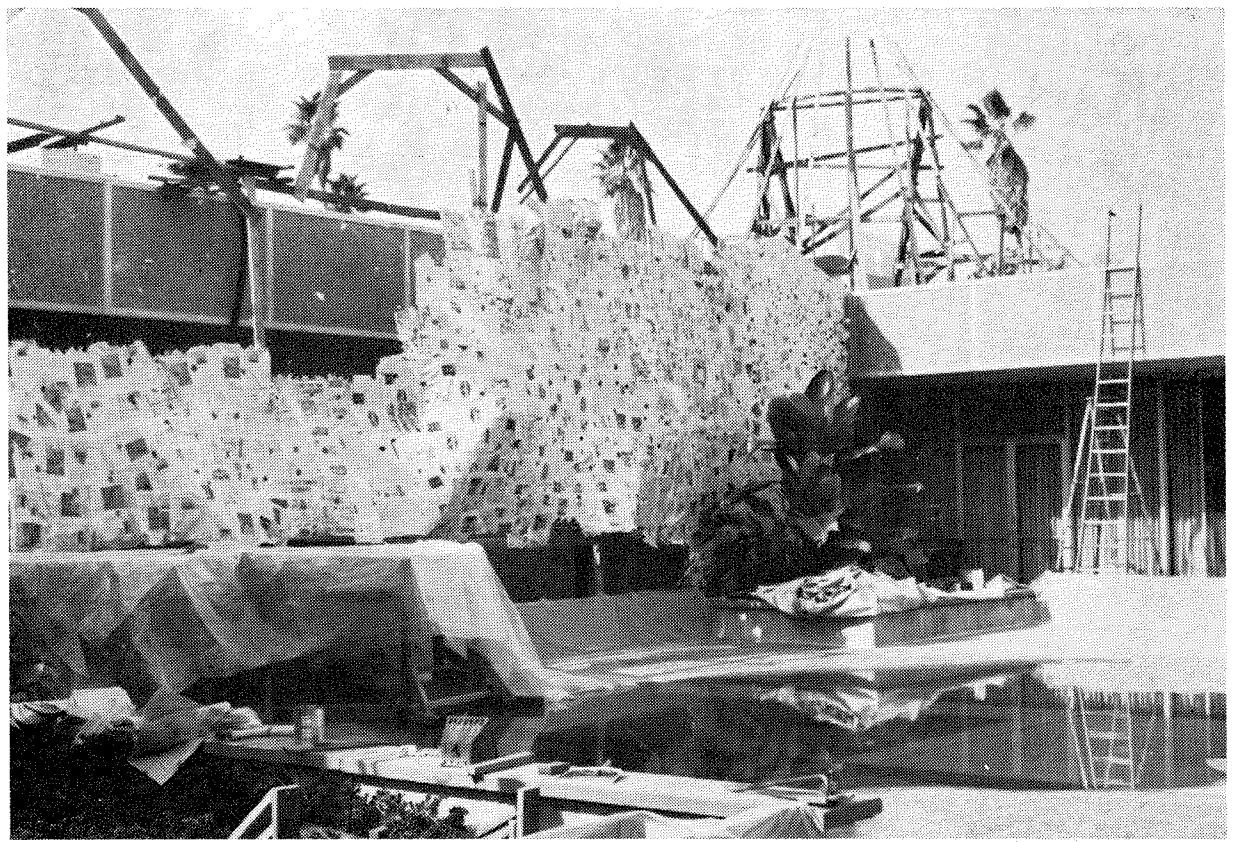
According to Larry Anderson, general supervisor, the music will be provided by a band. The design of these lofty peaks is the result of the creativity of Eric Jones, while the details are being hashed out by John O'Pray.

In the Land of Dixie

The Ricketts version of the paddlewheeler Reuben E. Lee will be featured at its Dixieland Interhouse. The Reuben E. Lee is a restaurant which is presently anchored in Newport Bay at Corona del Mar.

In the grand ballroom of the paddlewheeler, the Crown City Jazz Band will provide swingin' entertainment in nine-piece Dixieland style. Unwary and less-than-sober strollers must take care not

(Continued on page 3)



Construction proceeds in the Ruddock courtyard in preparation for Interhouse. When the lagoon is filled, the mountains papier-macheed, the waterfall falling, and the volcano (top) belching steam, the scene will join the six others in snowing dates and sundry visitors. —Photo by Bob Geisenhainer

Theology Students To Visit

When Ralph Q. Techman returns from Thanksgiving vacation, he will find waiting for him a little pamphlet slid under his door. It will tell him about the new, extra-bitchin', Y's Visiting Theological Students program. This article is written to delude Ralph Q. into thinking that he knows all about the program, so he doesn't have to read the pamphlet.

The week after Thanksgiving, Nov. 30 through Dec. 3, the undergrad Houses, MJ House, and Marks House will be hosting nine students of theology. Many hours were spent this year in selecting students who would have relevant things to say and who could say them well, since the cornerstone of this program is informal interchange of ideas in the Houses. It is hoped that each member of each House will help make these guests of Caltech feel welcome. Ideally, they should be accepted as part of the House for the four days. It is in this way that best communication is established.

Weekly Sex

The week's program will also include a discussion of sex and morality in the light of certain select passages from **Tropic of Cancer** on Tuesday afternoon. Wednesday afternoon will find the visiting students together in groups of two or three in House lounges, locking horns and seeking resolution. Thursday afternoon is their free day to dream up the most unusual and creative program they can think of. On two evenings faculty members will be hosting theological and Tech students in their homes for dinner, with discussions on any subject for as long as interest remains. Sign up at the Y or on House bulletin boards.

Invasion

A variety of students were chosen. From Jewish to Existentialist, we have Barry Kogan (Hebrew Union College) in Blacker, George Gorman (Methodist from Fuller Theological Seminary) in Dabney, Bruce Marks (Episcopalian from Church Divinity School) in Fleming, Boyd Baker (Calif. Baptist Theological Seminary) in Lloyd, Bill Owen (Unitarian Existentialist from Starr King School for the Ministry) in Page, Elliot Daley (Presbyterian from San Francisco Theological Seminary) in Ricketts, Bob Martin (Pacific Lutheran Theological Seminary) in Ruddock, Larry Ross (So. California School of Theology) in Marks, and Paul Berry (Roman Catholic, post-doctoral fellow at Tech) in MJ House.

Caltech YMCA Nears Its Goal

BY MIKE MEO

"Definitely a success," said Dick Hackathorn, YMCA Publicity Director, "but we'll have to wait a few weeks to evaluate it completely." The words were describing the 1964-65 Y Finance Drive. Although the graduate students' contributions have not all been received, the undergrads went \$50 above the 1963 mark. When the drive is over, a goal of \$2700 is likely to be attained.

The Finance Drive is not only interested in the dollars-and-cents aspect; of primary importance is determining the mood and interests of the student body. Some people object to the political activities undertaken in recent years, for example, and complaints, usually voiced with alacrity to the solicitors, can be taken into account by the Executive Committee and the Cabinet in scheduling activities. A second consideration in the Cabinet's decision on programs is the interest shown by the student body. Good programming fulfills the needs of the students.

A topic of controversy among the Y leaders at present was touched on in last week's **Tech**

editorial — should Y activities be selected for the student body at large or only for those with an interest? A high "interest threshold" would exclude many of the more apathetic, but might be more enjoyable for those with the drive to get involved. This controversy would be resolved by a louder pulsebeat of the student body; results from the interest

poll are not what they might be, because only a fraction of the students turned them in.

(Continued on page 3)

Caughey Sounds

BY LES PISCIOSS

Eerie sounds pervaded the air at Beckman Monday night when Dr. Thomas Caughey lectured an enthusiastic audience on "Sounds and Vibrations." Utilizing all types of electronic gadgets, the Caltech professor of applied mechanics did a superb job in both displaying and explaining many characteristics of these phenomena.

Caughey began his presentation by defining both sounds and vibrations as mechanical disturbances in elastic media. He then showed many types of oscillations with the help of pendulum and spring systems. The Foucault effect and the complete transfer of energy between two spring-connected pendula were both quite impressive.

Audible Demonstrations

Turning to audible vibrations, he proceeded to demonstrate that sound possesses all the characteristics of other wave phenomena, notably light; a television-size oscilloscope and a companion sound system made it easy for the audience to notice the various effects. First, Caughey told of the interdependence of frequency, wavelength, and velocity of propagation of waves, but stated that amplitude is not related to these

(Continued on page 4)

Frosh Lose Blue Slips

BY M. MEO

No grades for freshmen . . . chances to miss finals . . . now the frosh get no blue slips, and there are no requirements for returning for the second and possibly the third term! Last Friday at lecture, Dean Strong announced to the freshmen his decision to have failing notices given orally by the individual instructor. The Faculty Board has tabled the motion of the Academic Standards Committee to set up the minima for returning students, he added.

Abolish Frosh

Strong's reason for abolishing the traditional notices was to pre-

serve the spirit of the ad hoc Committee on the Freshman Year, which is still dreaming up experimental changes to lessen the pressures and problems of frosh. The sporting custom of posting blue slips on doors, he said, introduces a gamesmanship contrary to the efforts of the Faculty Board.

All frosh can come back after Christmas, even the one or two who definitely are failing. Strong plans to persuade the unfortunates to quit, but doesn't anticipate much success. "Students are eternal optimists concerning marks," he philosophized.

Notices

MOUNT WILSON ERUPTS!

More important, Thanksgiving will not be published next week, because of the **Tech** vacation.

SENIORS

Remember to return Senior Write-ups and photo proofs to the **BIG T** office by Friday, Nov. 20.

MODEL UN APPLICATIONS

December 5 is the deadline for selection of delegates to the Model United Nations at Claremont third term. All those who want to become delegates or who desire more information should contact Jerry Yudelson, Marty Einhorn, or Fred Lamb (Ruddock) **immediately**.

GRADUATE BUSINESS SCHOOL

Students interested in graduate education for business are invited to talk with Harold R. Metcalf, Dean of Students in the Graduate School of Business of the University of Chicago. Dean Metcalf will be on campus Tuesday, December 8, 1964, from 10 a.m. until 3 p.m. to discuss programs of study at the Graduate School of Business and to provide information about financial aid and career opportunities. Interviews can be arranged through Dean Eaton's office, 116 Throop. The University of Chicago offers courses of study leading to the degree of Master of Business Administration or Doctor of Philosophy in business.

DON'T GO TO DANCE CLASS

this week because there isn't any. Next session is Tuesday, November 24.

MORE YET DRAMA STILL

We meet again! Dec. 2, probably same time and place. Still guaranteed.

GET A LITTLE

flu shot at the Health Center; otherwise you'll get sick and quarantined and then you'll get horny and be unbearable for ever and ever.

Editorials

Math Made Simple

Mathematics is essential to all branches of science. Therefore the mathematics background each student obtains is very important to his scientific education. Yet just what does the Caltech educational program provide in this area?

The theory of the math teaching is to teach as though all the students were majoring in mathematics. This philosophy also applies to teaching physics to physicists and chemistry to chemists. Thus in mathematics the net result is a highly theoretical approach which mathematicians appreciate. However this approach is not as useful to the non-mathematician.

The highly theoretical emphasis in Math 1 and Math 2 is demonstrated by the weekly tests. Invariably half of the questions are abstract proofs. The emphasis is not on working a problem in a specific practical case, but to show a concept in the general abstract case. A prime example is the teaching of an idea such as Gauss's Theorem. This was taught in both Math 2 and Physics 2 almost simultaneously. It is unlikely that a physical problem could be solved using the Math 2 approach.

We feel that a change should be made in the math program. Why force students who need a practical course in math to struggle through a theoretical maze that will be soon forgotten? A choice should be given to students of taking a practical course or a mathematician's course. This way the math majors can have a course designed for their needs and the rest of the students can learn practical math.

What would the results be? Probably a better understanding of the math involved would be obtained. If a concept can be applied to a physical problem the idea behind it is clearer. The Apostol text, although a good book for mathematicians, is inadequate in teaching anything useful.

Most students need practical mathematics, that is mathematics which is not taught at Caltech. We would like to see it changed.

—Wally Oliver
Stuart Galley

Marble Statue of Apollo Has Glorious History

BY TIM HENDRICKSON

In solemn humility stands Phoebus Apollo — Greek god of manly beauty, music, poetry, and prophecy — on the landing between Throop and Kellogg. A copy by one O. Andreoni Roi of the famous Apollo Belvedere in Rome, Caltech's Apollo has never inhabited Olympus nor driven the sun's flaming chariot across the sky. Were it not for a fortuitous accident, in fact, unashamed Apollo might still be in some dusty corner covered with modest bedsheets.

Apollo was sculpted in 1891 for the father of a Mr. Louis Bradbury, owner of Mexican gold mines and an art patron of discriminating taste. Bradbury had the statue shipped to his Duarte estate, but found that he had no suitable place to keep his seven-foot Carrara marble masterpiece. As a temporary measure, Bradbury left Apollo in a vacant house in downtown Los Angeles. **Poor Lonely Apollo**

There Apollo remained, alone and unadmired, until a movie company leased the vacant building for office space. Too heavy to be moved, Apollo stayed in the middle of the main hall. Finally, Mr. Elmer Gray, an architect associated with Caltech for many years and a member of the Pasadena Art Association, toured Los Angeles in 1909 with Bradbury and came across—as he described in a letter to Dr. Lee A. Dubridge in 1955—"an enormous object all covered over with what looked like bed sheets sewed together."

The "enormous object" was none other than our Phoebus Apollo. "But why have you this work of art that is good enough for the Popes to look at all covered up?" Gray asked of Bradbury. "Some of the girls in the moving picture company," replied

Bradbury, "thought it was indecent, so we covered it up!"

The Coming of Apollo

Several years later, with the opening of the Stickney Art School in Pasadena, Gray remembered Apollo and contacted Bradbury. Bradbury readily consented to make an indefinite loan of Apollo to the Pasadena Art Association, provided that Gray could raise the money to move the statue. Since Pasadena had no art museum, however, the Art Association decided to exhibit Apollo at what was then Throop College.

Gray raised the money — about \$100 — needed for resurrecting the pedestal of the statue from the street outside (where it was buried) and for moving the statue and pedestal to Throop College, through ten-dollar donations. The first such donation was made by Dr. George E. Hale, the noted astronomer and physicist.

And so Apollo has stood since 1911; his fate here at Caltech has been most unbecoming a god. Deep within the Caltech archives one may find the missing fingers of

(Continued on page 8)



Phoebus Apollo Belvedere, B. S.

Close and Lamb From Other Campuses
Debate at U C By Jace
Santa Barbara

Caltech debaters participated in the Santa Barbara Invitational Tournament at the University of California at Santa Barbara on November 13 and 14. The team of Dave Close and Fred Lamb, participating in upper division, won four rounds of debate while losing two. Roger Davison and Gary Scott also competed in upper division, compiling a record of three wins, three defeats.

Letters

Grid Watchers' Jeers Immature

Editors:

One of the most embarrassing and humiliating things that can occur to a young man is to be thoroughly beaten in an athletic contest in front of a crowd of his friends and relatives. This happens frequently to the Caltech football players, who compete against teams which outweigh them by an average of at least twenty pounds per man, and which contain several men on athletic scholarships.

Last Friday night was an example of just such a humiliating occurrence. The Occidental team was faster, larger, more experienced, and perhaps more skilled than the Caltech squad. The Caltech players knew in advance what they would be facing. They face this handicap in most of their games. Yet they prepare rigorously for each, in the hope that they can win some games and enjoy the competition in them all.

Spectator Tradition

With the built-in tradition of losing seasons and lopsided scores, there is also a built-in tradition of another kind. This is the protective mechanism exhibited by certain Caltech students who choose to participate only on game days. These students need take no time from their studies during the week to prepare for their Friday night exhibitions. They show up at the game to applaud if Caltech wins and to jeer if Caltech loses.

I have been associated with Caltech for over ten years, and with Caltech football for six seasons. I know that the players welcome any support which the student body sees fit to give. I also know that the players would rather have no one in attendance at their games than to have their own classmates mock their efforts.

The most disgusting aspect of such a performance by the spectators is that the very ones who ridicule the team are unable to perform with enough skill or desire to be able to play on the squad. Perhaps by their vocal efforts they wish to publicly separate themselves and put themselves above the football team. Perhaps they wish to show that they are somehow smarter, more witty, more well-rounded, and "neater" than the men down on the field who are taking the physical pounding from which they shrink.

Competitive Atmosphere

One of the best features of student life at Caltech, as I see it, is the competitive atmosphere. When a select group such as the Caltech student body is assembled, it is right to foster competition in all areas; academic, social, ath-

letic, political, intellectual, and in all phases of campus life. Only through this type of competitive process do you bring out the best in the most people.

Some men can excel in the classroom, even at Caltech. Others will find other ways of expressing their individual personalities and demonstrating their singular superiority. The man who chooses to do this by participating in intercollegiate football, however, risks more in so doing than does the man who instead turns to the glee club, or to campus politics, or to journalistic activities.

Loaded Dice

In other, non-athletic activities, Caltech men start competition on a fairly even basis. In athletic contests, and particularly football, the odds against a good showing are stacked heavily against the Caltech man. Even an outstanding football player (and we do have some of these) must rely on his teammates to help in a contest. And the team as a whole must first undergo days and weeks of strenuous practice, involving no small measure of physical pain and fatigue, just to prepare for the chance to meet a larger, stronger group of men in front of an indifferent group of spectators. When the game is over, the spectators can walk away quickly and think of something else, or they can make in-

Loaded Dice

(Continued on page 5)

and fortunately still is held by St. Paul's Polytechnic Institute of Virginia. Previously the record was 11, held by Rose Polytechnic Institute of Terre Haute, Indiana. Their mark included consecutive shutouts of 80-0. It seems that polytechnic institutes and winning football seem to be incompatible."

Go RPI!

You will undoubtedly recall that RPI recently ended their multi-year losing streak, which had climbed only to about 30 games. In praising the football coach for RPI's streak breaking 20-20 tie with Nichols College, the **Polytechnic** sagely commented:

"Last Saturday marked the beginning of a promise. Prior to the 1964 season, head football coach Dick Riendeau assured end to the losing streak. Although he must have certainly implied victory in his statements..."

Oh well, it certainly beats losing. And RPI seems to have ample spectator support, a big advantage over Caltech, although the **Polytechnic** recently criticized the source of these fans.

"The stands were nearly filled last Saturday, but an analysis of the crowd proved rather discouraging. One quarter of the spectators were members of the Rensselaer band, while another half of the grandstand was filled by the corps of ROTC students who were offered a day off from drill as a reward for attending the game. The remaining 25 percent was composed of various officials, sportswriters, a few men appointed to display their fraternity banners, and a number of students eager to relieve the week's tension with a good laugh."

If Tech could just get anyone to come to the games, and maybe even cheer, I'm sure there'd be no complaints about the source.

IF Block

In one point the two schools are quite similar. Again from the **Polytechnic**: "One of the most formidable blocks against the gridders' progress is the emphasis heaped upon interfraternity (here substitute Interhouse) football..." Even with this RPI managed to get 38 guys out who stayed with the team. If they can do that with a 30-or-so game losing streak, why can't we do it when we win a game a year and might do a lot better with student body support?

California Tech

Published weekly during the school year by the Associated Students of the California Institute of Technology, Incorporated.

Editors-in-Chief

Stuart Galley, Wally Oliver

Managing Editor

Rick Briggs

News Staff

Les Fetting, Les Fishbone, Barton Gordon, Tim Hendrickson, Ralph Kimbrell, Michael Meo, Craig Nelson, Dick Tezak
Photographers: Bill Boyd, Bob Geisenhainer, Jules Kline, Larry Ruzzo

Feature Staff

Bob Berry, Editor

Don Green, Tom Greenfield, Tom McKenzie, B'L' Orr, Jeff Pressing, John Rouse, J. C. Simpson, Hank Suzukawa

Sports Staff

Steve Blumsack, Editor

Peter Balint, Larry Dillehay, J. K. Evans, Mike Hunsaker, Gary Ihas, David Jackson, Ted Jenkins, Gary Ratner, John Tucker

Copy Staff

Norton Greenfield, Editor

Gary Schnuelle, Bob Schor

Business Staff

J. C. Simpson, Manager

Circulation: Stewart Davey

Roger Whitlock, Muskrat

California Tech, 1201 East California Blvd., Pasadena, California 91109.
Member of The Associated Collegiate Press
Represented nationally by National Advertising Service, Inc.
Second Class postage paid at Pasadena, California
Printed by Bickley Printing Co.
Subscriptions: \$1.50 per term, \$4.00 per year. Write: Circulation Manager.

Petition for Cal Politics Circulated

BY FRANK HENYEV

A petition supporting free political activity on a college campus will be sent to the Berkeley campus of the University of California, where on-campus political activity was banned earlier this year. The petition expresses sympathy with the Cal students who are involved in the Free Speech Movement.

The ban applies to card tables that off-campus student groups set up at the principal entrance to the campus, on which they display pamphlets advocating their particular cause, which may be anything from a conservative patriotic organization to a socialist club. The ban was originally justified by the claim that the tables disrupted traffic, but was

later clarified to allow informative literature but not persuasive literature or money collection.

The refusal of students and non-student members of the political groups to comply with the University's rulings has led to numerous suspensions from the University, and even to one arrest. This arrest made headlines across the nation when students sat around the police car carrying the arrested man for 32 hours to postpone the arrest. During this time a temporary agreement was reached to help solve the free speech problem. Students felt that the University administration failed to live up to its side of the agreement.

Any student interested in signing the petition may find copies on House bulletin boards, or in the Winnett Lounge. Those interested in finding out more, or in helping to circulate the petition, may see Dick Hackathorn, Lloyd; Chris Dalton, Dabney; Eric Jones, Blacker; Frank Henyey, Marks; Barrie Logen, MJ; Alan Title, physics; Stu Goldstein, biology; or Chris Parr, chemistry. A folder containing newspaper articles on the Free Speech Movement has been placed in the YMCA office.

"Coasters." Spectators can also amuse themselves with the mermaid (watch out for her pet). Steve Brown is the supervisor of these undersea fantasies.

Do It Here, Twice!

Lloyd House will rock to the music of the "Parlays" in a gala Mardi Gras atmosphere. In true New Orleans spirit there will be a fountain in the courtyard. In the lounge there will be a bar of authentic Mardi Gras size and quality. The black mahogany top will stand at a height of 50 inches and will enclose the corps of bartenders in a space some 16 by 8 feet.

The carnival atmosphere will be supplied by artistically-placed lights, figurines, and miles of crepe paper. This year Lloyd is placing less emphasis on actual

(Continued on page 8)

Observations By THE SPY

1. WHY does the YMCA have three (count them, three) copies of "Science and Health with Key to the Scriptures"?
2. WHAT does Ed Hutchings know about Uncle Foster that makes Uncle F. pay off Mr. H.?
3. WHO is taking V.K. to see Parsifal?
4. WHAT did Dean P.C.E. do to his hand?
5. WHY does his secretary have an unsatiable lust for peanut-covered doughnuts?
6. WHY are so many freshmen over six feet tall?
7. WHO has a fixation on tall frosh?
8. IS it really true that Elmo (Bud) Taylor's old secretary built the Red Chinese A-Bomb?
9. IS the Millikan Memorial

Library unbuilt because the Board of Trustees can't decide how many women's johns to put on each floor?

10. WHAT is B&G going to do about the Pumpkin on Throop?

11. WHO has done WHAT with WHO'S WHAT?

12. WHO writes this garbage?

STUDENTS,
if you need
HELP
in fulfilling
your language
requirement-
inquire about
tutoring
services at
BERLITZ,
THE LANGUAGE CENTER
170 South Lake Ave.
SY 5-5888

Interhouse More

(Continued from page 1)

to fall in the river which runs through the entire length and width of the Ricketts courtyard.

There are also cargo crates on deck as well as a snag in the river. According to supervisors Gary Ratner and Sven Anderson, hot cornpone will be served on board. Anyone knowing what to drink with hot cornpone should contact either of these men.

Wanted: Dead

The thriving gold-rush town of Dabney Creek, or whatever it will be called, can be found by traveling eastward through "Dead End Cave." The sound of digging, blasting, and swearing will greet couples who mosey over to Dabney's Gold Rush Interhouse.

Wanderers will see a real sluice-box complete with running water. Several buildings of the typical Western mining town style will be seen straight ahead and to the left. The saloon lies straight ahead (over yonder) and is complete with a bar and a nudie picture.

Visitors needing a breath of fresh air (saloons have a notoriously of having chokingly dense atmospheres) can step outside and pet the burro which will be tethered to a nearby post. There will also be a covered wagon, to serve as amusement rather than transportation. The entertainment will be on a tape monitored by a professional disc jockey. The owl-hoot cattle rustlers responsible for this Western scene are Jack Comly and Paul Swatek.

We Need Dirt!

The Rustly Shovel Saloon (E. I. Dabney, Proprietor) opens Interhouse night in Fleming with two floor shows at 9:30 and 11 p.m. The shows consists of a skit, "Virtue Is Its Own Reward" or "Nelly Has A Bad Day at the Track," bluegrass music, and a debate between two candidates for the mayor's office. These will take place on a stage complete with authentic curtains.

The show will last about half an hour. The saloon has complete gambling facilities, and a bar. For those not satisfied with just hanging around the theater and saloon, there is a covered wagon, campfire, and an authentic Western gallows.

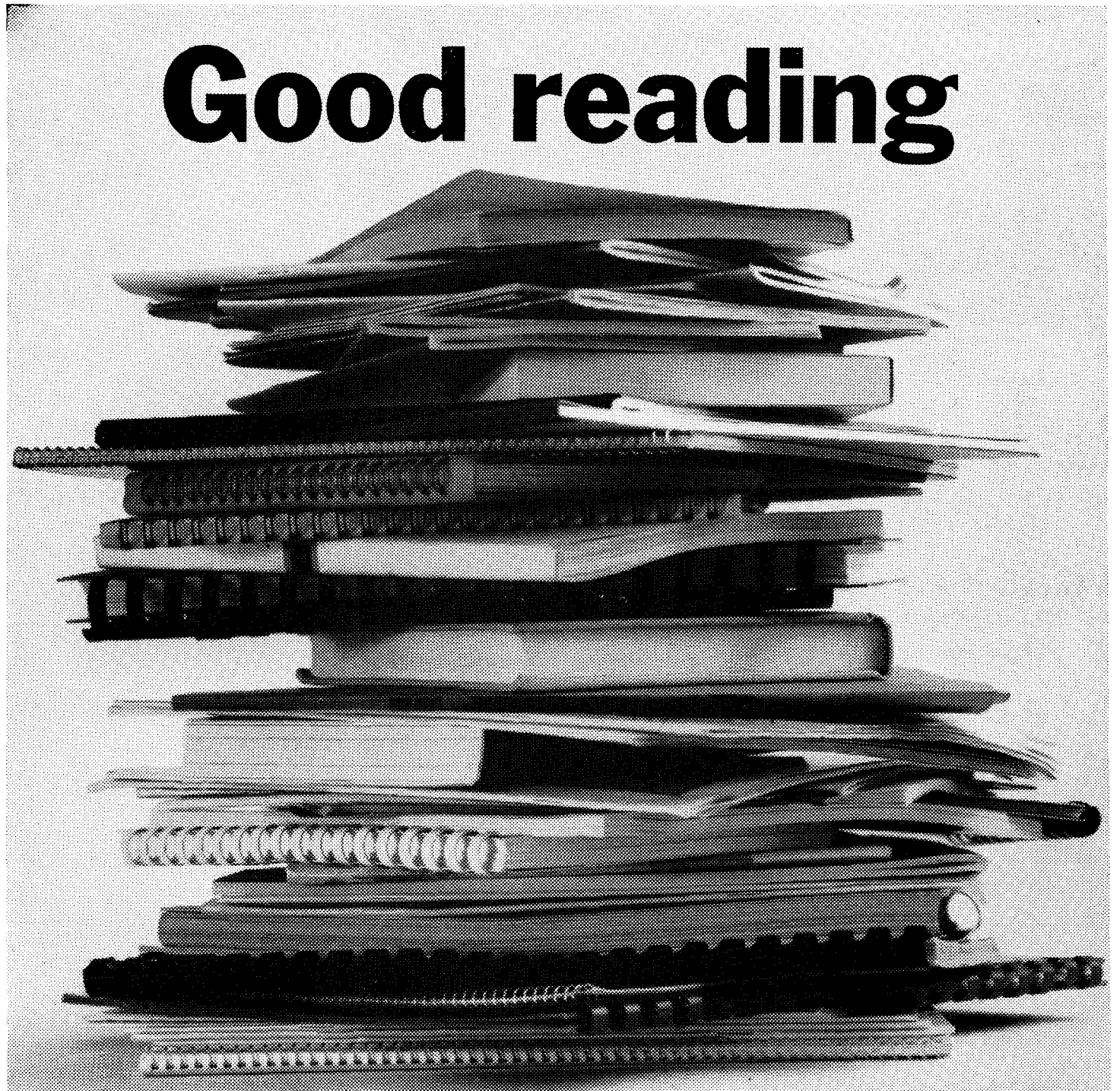
Other attractions include the bawd house in upper alley number two. The men responsible for the theater, saloon, and the random lynchings which take place on Interhouse night are Gordie Myers and Mike Scott.

Out, Out, Damned Squid

Couples who enter the Page underwater courtyard will find themselves in an eerie world with grotesque undersea petromorphisms, including a natural archway. Once past all lurking dangers of the sea, couples can enter Nemo's Island by any one of three airlocks. The vast maze of Nemo's power room and laboratory can be seen there.

Meanwhile, a giant squid will pass silently through the archway and attack the Nautilus without warning (the Nautilus is moored in Nemo's Island). The sounds to this Neptunian world will be provided by the "Starfires."

There will also be a show put on by two members of the "Olympics" and two members of the



Good reading

You're looking at the intelligent product of one week's work. (Some might be in your campus library.) They're technical bulletins written by some very talented scientists and engineers at the Jet Propulsion Laboratory. JPL people write over 500 such documents each year. Documents with titles like "Evaporation Effects on Materials in Space," and "Simple Guidance for Deep-Space Booster Vehicles." Pretty heady stuff.

But then designing spacecraft to reach the Moon and

planets is a pretty head-y assignment. And it takes a lot of bright people to make it happen. Where do these bright people come from? Better colleges and universities around the country. Yours, for example. Why not sign up for an interview with a JPL man? Besides working at the most fascinating job in the world, you'll also have lots of good books to read.

JPL JET PROPULSION LABORATORY
4800 Oak Grove Drive, Pasadena, California

"An equal opportunity employer." Jet Propulsion Laboratory is operated by the California Institute of Technology for the National Aeronautics and Space Administration.

ON CAMPUS INTERVIEWS: November 23, 1964

Contact University Placement Office for Appointment

ROTC Carries Torch Around Forest Lawn

Caltech's AFROTC Color Guard participated in the Fifth Annual Sacred Torch Ceremony held on Veterans' Day at Forest Lawn Memorial Cemetery in Los Angeles. Similar ceremonies commemorating the Allied veterans in World War I are held each year in France, England, Belgium, Mexico, Israel, and Italy, as well as in the United States.

ROTC &

Each year there is an exchange of torches among the participating countries, with the United States holding three ceremonies — one at Arlington National Cemetery, one at Kansas City, and one on the West Coast.

Pack Leader Parker

Color guards participated from Army, Navy, and Air Force ROTC units and from veteran and youth groups. The torches of the various countries were presented by their consuls. In the televised ceremony from Forest Lawn, the British torch was carried by the color guard unit from Caltech. The torch was presented by the British Consul General, the Honorable P. G. F. Dalton.

Bite

Caltech's performing color guard was commanded by Max Bartlett. Other members of the unit included Dennis Weaver and rifleman George Sherman and Pat Sutcliffe.

ROOF! Huttenback Gets Ticket Money

The ASCIT Board decided Monday to encourage submission of ideas for the use of the back roof of Winnett. This is to be sort of a contest, although prizes and judges have not yet been selected.

The idea for the contest originally arose in a meeting of the Winnett Student Center Committee, after they realized that all the space there is wasted. Ideas already suggested include installing a surface of Caltech clay tiles and a guard rail, making it fit for outside dancing under the romantic Pasadena moon. Ideas should be submitted either to the ASCIT mailbox on the second floor of Winnett (by the YMCA office), or to Rodger Whitlock, activities chairman, in 241 Page.

For those Caltech students interested in cultural events, there will be more Institute-financed attractions upcoming. In addition to the opera tickets already distributed among the seven Houses, and the reduced admission price of 25c to the Esquire Theater, for which all students are eligible, Dr. Huttenback has revealed that in the near future there will probably be similar bargains for such events as Philharmonic concerts and the winter ballet season.

While winning the contest might not produce any monetary reward, suitable ideas will be pushed by the ASCIT Board for execution by the Institute.

More Sound

(Continued from page 1)

parameters; thus, amplitude and any one of the three, usually frequency, is enough to define any simple sinusoidal wave motion.

With the oscilloscope, he then showed that although wave form is dependent upon the phase relationship and the harmonics present, the sound is only a function of the harmonics. This led to a neat description of beats, a third frequency produced by the modulation of one wave train by another.

The money to finance this cultural program comes from Institute funds and from the budget of the Master of Student Houses. This money comprises a cultural fund which is technically part of the "contingencies fund," used for certain emergencies, such as paying for waiters to serve during coffee hours.

According to Huttenback, the purpose of this program is to encourage students to attend outstanding cultural attractions in the Los Angeles area, and to keep abreast of current trends in the world of culture.

**Drop in for a game of skill
and apply the laws of physics —
besides it's FUN!!**

— FREE INSTRUCTION —

LAKE-COLORADO FAMILY BILLIARDS

977 East Colorado Blvd.
792-0674

CIT Drama Club Presents

3 ONE-ACT COMEDIES

by Georges Courteline

Culbertson Hall, Caltech

Nov. 27 & 28, 8:30 P.M.

**Tickets \$1, Caltech Bookstore
or at the door**

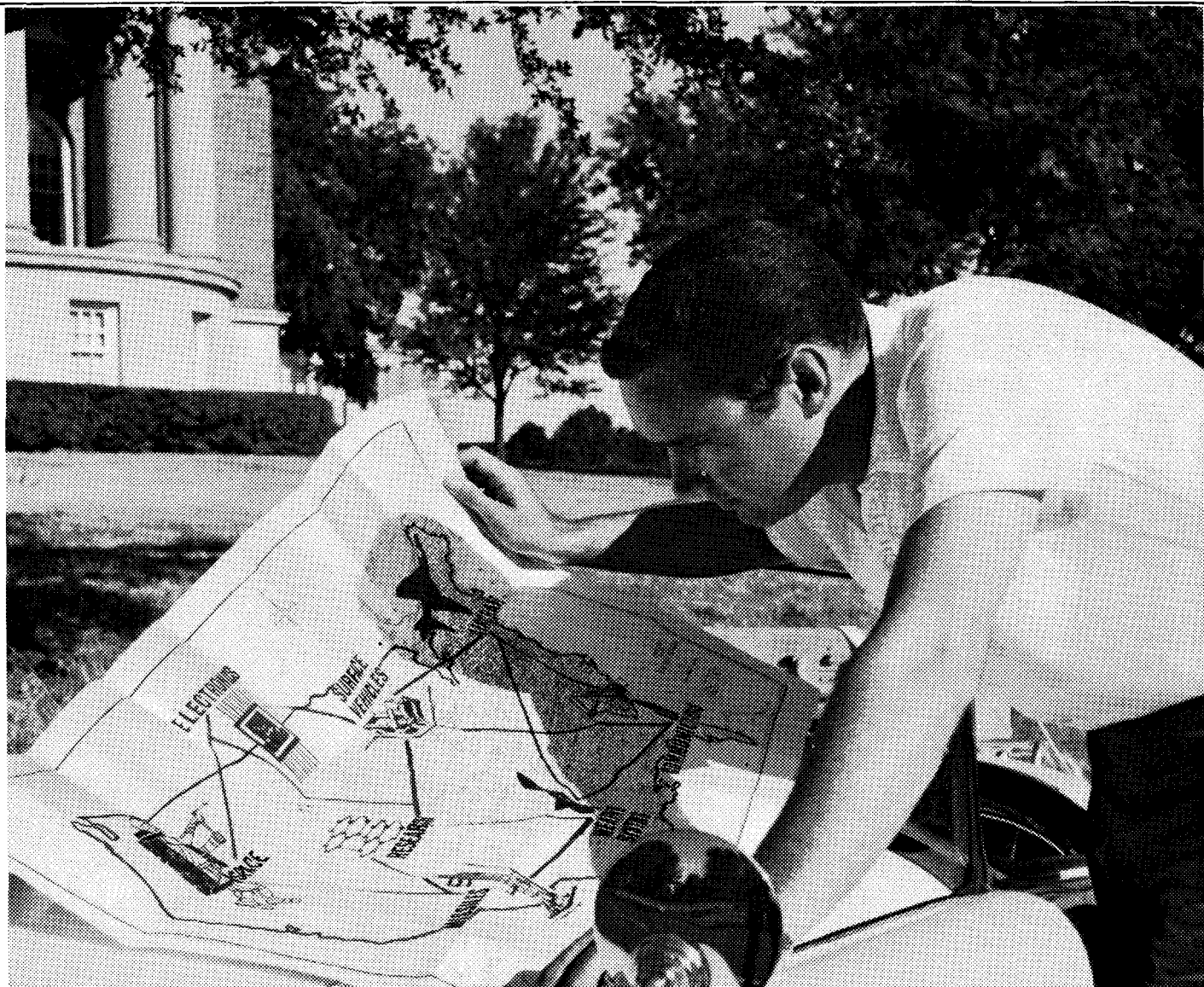
**it's GREAT
to be IN!!**

A-1 Racers®
slacks

EXTRA SLIM
CONTINENTAL STYLING



AT YOUR CAMPUS HEAD-QUARTERS STORE OR WRITE:
A-1 KOTZIN COMPANY
LOS ANGELES 15, CALIFORNIA



GOING OUR WAY?

If you're mapping out your career destination, Ling-Temco-Vought offers a wide choice of exciting and challenging routes to your personalized goal.

Here at LTV, young, alert engineers are "going places" in the fields of aircraft, missiles, space, mobile surface vehicles, weapons systems, ground and airborne communications, electronics, and range services. Supporting these activities is an excellent engineering climate providing the opportunity to contribute and professional advancement which is a direct function of the contribution. Assignments are diversified and stimulating in such areas as: **aerodynamics • avionics and instrumentation • dynamics • systems design • propulsion • stress analysis • communications design •**

telemetry and tracking • reconnaissance systems • amplifier and computer design • electromagnetic interference control • technical administration . . . among others.

In addition to a rewarding professional environment, LTV offers engineers the opportunity to earn advanced degrees through company-financed graduate education programs.

Before selecting your industrial home, investigate the career avenues available with Ling-Temco-Vought. Get complete details from your Placement Office or write College Relations Office, Ling-Temco-Vought, P. O. Box 5907, Dallas, Texas 75222. LTV is an equal opportunity employer.



LTV DIVISIONS AND SUBSIDIARIES: LTV ALTEC • LTV ASTRONAUTICS • LTV CONTINENTAL ELECTRONICS • LTV LING ELECTRONICS • LTV MICHIGAN • LTV MILITARY ELECTRONICS • LTV RANGE SYSTEMS • LTV RESEARCH CENTER • LTV TEMCO AEROSYSTEMS • LTV UNIVERSITY • LTV VOUGHT AERONAUTICS • KENTRON HAWAII, LTD.

More Football Letter

(Continued from page 2)
sulting remarks about the ability of their team.

The players cannot recover so quickly. First, it takes days, weeks, often months to free themselves from the bruises, bumps, sprains, and broken bones they suffer. They must also live with the memory of their own performance and their defeats. Yet they do this, and they always return, eager for the next game, or next season. They return because they enjoy playing football. They enjoy working together toward a common goal with a group of their peers. They enjoy even the violent physical contact. There will always be a group of students at the Institute who want to play football.

Immature Ridicule

I suppose the point of this letter is simply that I do not like to see the efforts of our football team being ridiculed by those who could not do even as well as our present squad members. I can understand the reaction which prompts such remarks, but I am disappointed in the maturity and intelligence demonstrated by those students who make the remarks.

I do not expect any change on the part of the non-participant Caltech man as a result of this

letter. In fact, it will probably have the effect of worsening the situation. The pseudo-intellectual student cynics who read this will no doubt find several statements which they can artfully twist and parrot back in unison at the next athletic contest. Nevertheless, someone should speak for the team members, and I have done so. I should add that I write as an alumnus and former player, and not in any official capacity as a representative of the Institute or Athletic Department.

Players Deserve Respect

The Caltech football team deserves the respect of the student body for the hard work and dedication which goes into each football season. Those who mock their efforts, from the safety of the stands, only degrade themselves. If the positions were reversed, I'm afraid that scores

such as last Friday's would be a regular occurrence.

I am proud of the Institute, and of the caliber of student here. I only wish that the few who display publicly such poor taste and manners could see that their disservice is far greater than that of the team.

R. L. Van Kirk

Attention SENIOR and GRADUATE MEN Students
WHO NEED SOME FINANCIAL HELP IN ORDER TO COMPLETE THEIR EDUCATION THIS YEAR AND WILL THEN COMMENCE WORK.
Apply to **STEVENS BROS. FOUNDATION, INC.**
A Non-Profit Educational Fdn. 610 ENDICOTT BLDG., ST. PAUL 1, MINN.
UNDERGRADS, CLIP AND SAVE

welcome to the
Campus Barber Shop
in Winnett Center
haircuts \$2.00
Three Barbers to Serve You
8 to 5:30 Monday - Friday
Paul A. Harmon

GOSH, I'M ALL OUT OF SMOKES. HERE - TRY A PINCH OF MY COPENHAGEN.

BOY, I SURE LIKE THAT MAN-SIZE TOBACCO TASTE. YEP! AND COPENHAGEN GIVES ME A REAL TOBACCO LIFT WHEN I WANT IT.

DATED FOR FRESHNESS **Copenhagen SNUFF** **TRY A PINCH OF REAL TOBACCO TASTE**

AD "C"

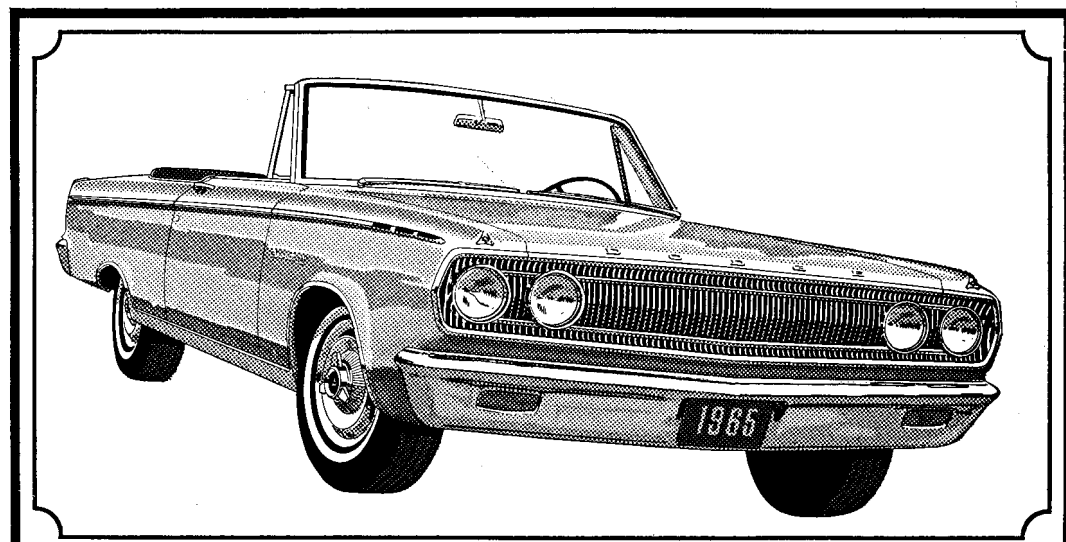
SAN FRANCISCO
STILL LOWEST AIR FARE - "THRIFTAIR"
\$11.43 plus tax
WESTERN AIRLINES

Chuck says he paid 300 bucks less for his Coronet than you did for that turtle of yours

You really know how to hurt a guy

"Chuck's a swinger," says she. "His Coronet is quick and clean, with a lean and hungry look. It's equipped with a 426 cubic inch mill that will mock your turtle at the strip or on the street. He's got four-on-the-floor, buckets, belts, carpets, console, spinners, and a padded dash. And he said that everything but the four-speed stick and the 426 was standard." Then she broke his back by asking, "Didn't you pay extra for some of that jazz?"

Don't let the truth hurt you. Better see the all-new, hot new Dodge Coronet before you buy a (cuckoo), a (cuckoo-cuckoo), or even a (cuckoo-cuckoo-cuckoo).



'65 Dodge Coronet DODGE DIVISION CHRYSLER MOTORS CORPORATION

SPORTS

Soccer Team Returns To Winning Ways, 4-0

BY HORNSWOGGLER

In spite of the disappointment concerning the setback from UCLA, the Beavers again fielded a victorious team Saturday as they defeated Azusa 4-0. Despite a shortage of substitutes and the ill-condition of the participating players as a result of late evening celebrations, Caltech experienced few difficulties.

The game started at a slow pace which usually marks any game which controls the ball. The only score of the first half was kicked in by center halfback, Dick Wade.

The second half found Azusa scoring against itself once as the result of a bad clearing kick; single goals by Trishuk and Mewbold insured the eventual Azusa defeat. The predominating factors in the game were Azusa's lack of talent and Tech's surplus of talent, albeit a little tipsy.

In a practice game against UCLA, the Beaver jayvees again went under to the Bruins. The final score was 4-1. The first half was marked by UCLA's excellent teamwork which produced two goals.

In the second half, Caltech began to take control of the center of the field. The Beavers then subjected the Bruins' defense to a severe strain as they forced the Bruins to break up its usually very tight defensive posture in

front of the goal. With quick, deadly passes from the center of the field into the goal area, Caltech managed to score.

Harriers Combine To Outrun Pasadena

A combined varsity and frosh team from Caltech placed sixth in a field of more than a dozen teams at the Biola Invitational crosscountry meet last Saturday. It was one of best performances by a Caltech team at this meet in several years.

Bill Putman came in first for Tech in 23rd place. He was followed by Pete Cross in 32nd, Mike Meo in 35th, Dave Kolb 39th, and Larry Dillehay 67th. Caltech had a total of 196 points just losing out to Cal Poly of Pomona which had 195. Redlands was first, Westmont second, Pomona third, and Cal Western fourth.

A Win!

In a meet here Tuesday against Pasadena College the combined varsity and frosh teams won the meet by a 24-33 score over a mile course. Bill Putman came in second for the Tech harriers with Pete Cross 3rd, Mike Meo 5th, and Dave Kolb 6th.

Both the varsity and frosh

Tigers Crush Gridders

BY J. K. EVANS

For this week's atrocity story, we will consider the decapitation and utter destruction of CIT's Beavers by the Oxy football machine Friday night at the Rose Bowl. The score, thanks to the infinite charity of the Oxy coach in refusing to go for a two-point conversion after the tenth touchdown, was 68-0.

That bit of grace was the only kind thing Oxy's new coach did, however; after running up a first half lead of 40-0, he didn't even have the decency to put in the third string until halfway through the fourth quarter. Maybe he was

afraid the Beavers would make a comeback and rack up seven touchdowns in the last quarter. In any case, there was no semblance of a contest; it was only in the last ten minutes of the game that it became reasonably clear that CIT actually had a coherent team, which did do fairly well against Oxy's third string.

Meat Grinder

As one may surmise, the first three stanzas were unmitigated murder. Oxy struck for three touchdowns in each quarter, then added a clincher in the last frame. Three TDs came on passes of 55, 22, and 17 yards; 6 were scored on runs of 2, 2, 2, 3, 15, and 21 yards; and one was the result of a 64-yard punt return. Highlights included runs of 51, 18, 26, 31, and 17 yards by swift Oxy backs.

The Techmen were completely outplayed in the first half, rushing for 12 yards, but came back a little in the second half to end with a sum of 38 yards on the ground and 64 in the air. Chapyak and Hall zeroed in on Ihas, Bren-

nan, and Guffrey for the aerial work while Frazzini and Brennan carried the mail on the ground.

Oxy, on the other hand, rolled up a total of 363 yards afoot and 109 in the airways despite losing 98 yards on penalties. Interesting sidelight: both teams ran 57 offensive plays. Tech got 104 yards while Oxy got 472 and ten touchdowns. There must be a moral there somewhere.

Right Conference?

Is there an explanation? It seems that Friday was one of those days when CIT couldn't do anything right and Oxy couldn't do anything wrong. However, we can't just kiss it off and let it go at that. This horrendous defeat serves to point up something that the Faculty Athletic Committee seems to be trying to ignore or at least sweep under the rug: this conference is too good for Caltech, at least in football.

This was Tech's worst defeat in five, and more, years. In fact, (Continued on page 8)

"can I solve problems for IBM?"

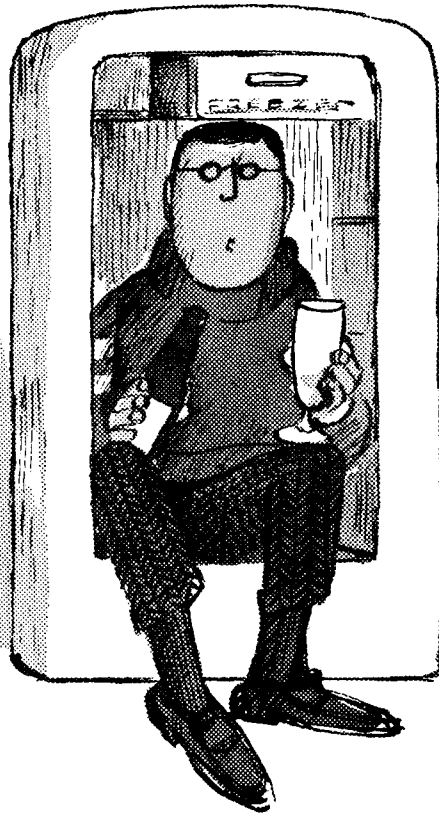
A variety of technologies—any of which you may have studied—can be used to build computers. You can solve problems in Research, Development, Manufacturing, Marketing or Programming.

Wherever you start in IBM, your abilities can grow along with the computer field. Some of the disciplines we put to work are Chemistry, Physics, Metallurgy, Engineering, Mathematics, Statistics, Economics and Business Administration.

If you want growing room for your ideas, see IBM. Your placement office can make an appointment with our interviewers. Or write directly to Manager of College Relations, IBM Corporate Headquarters, Armonk, New York 10504. IBM is an Equal Opportunity Employer.

Interviews January 12-13

Applied Mathematics, Applied Mechanics, Data Communications, Digital Computers, Guidance Systems, Human Factors, Industrial Engineering, Information Retrieval, Marketing, Manufacturing Research, Microwaves, Optics, Reliability Engineering, Servomechanisms, Solid State Devices, Systems Simulation and related areas.



Can beer be too cold?

Maybe we shouldn't care *how cold* people drink beer... just so they drink Budweiser. (After all, we're in business!)

But we do care. And if you think that's unusual, you ought to see the care we take to *brew* the beer. For instance, we could save a lot of time and money if we weren't so stubborn about our exclusive Beechwood Ageing and natural carbonation. But we are... and we have to pay the price. In fact, we know of no beer produced by any other brewer that costs so much to brew and age.

That's why, after we go to such fuss to brew all that taste *into* Budweiser, we want our customers to get it all out. And this is a fact: chilling beer to near-freezing temperatures hides both taste and aroma.

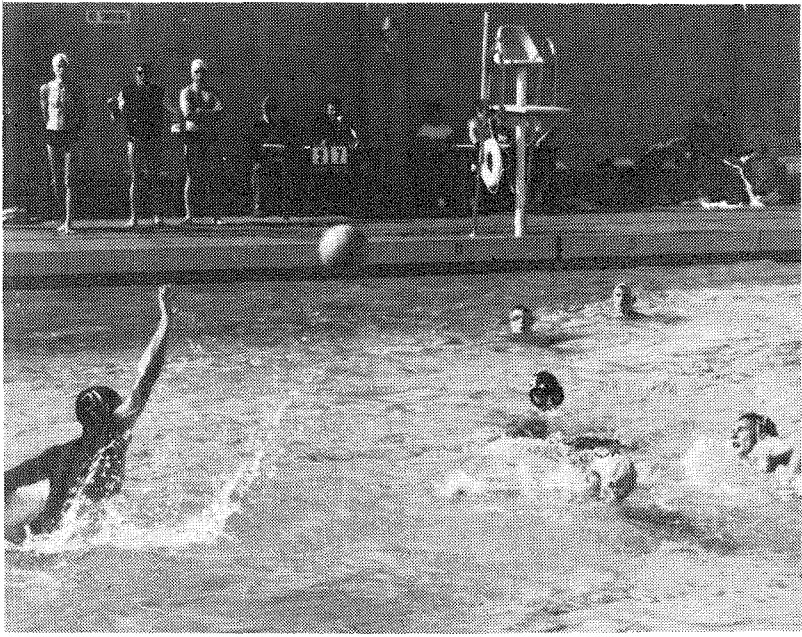
40° is just right.

To make it easy for you, we've asked all the bartenders to serve Bud at 40°. Also, every refrigerator is designed to cool Bud at 40°.

Of course, if you're on a picnic or something and the Bud is on ice and nobody brought a thermometer... oh, well. Things can't *always* be perfect.

Budweiser®
that Bud®...that's beer!

ANHEUSER-BUSCH, INC. • ST. LOUIS • NEWARK • LOS ANGELES • TAMPA



Ted Jenkins attempts to block a pass by a white-capped SF State player. The Webmen lost, but will be shooting for the conference title tomorrow against Occidental. A tie for the title was guaranteed earlier in the week.

Water Polo Team Wins, Clinches Tie for Title

BY TED JENKINS

The water polo team traveled to a drizzly Pomona on November 10 where the combination of the cold and the sprinkling made for dense fog cover close to the water in the pool. Despite the adverse conditions, the varsity squad was able to jump to an early lead of 4-1 at the end of the first quarter.

This lead was maintained through the second and third quarters as Caltech and Pomona scored one goal apiece in each of these quarters. In the fourth quarter the Beavers increased the lead as they scored 3 and Pomona 2. This brought the final tally to Caltech 9, Pomona 5.

Outscore Entire Team

John Walter outscored the entire Pomona squad with seven goals while Rick Nielsen rounded out the total with two. The squad played a careful ball-control game and no one was forced to leave the game due to excessive fouling.

The frosh team did better against Pomona this time than in their first game. Pomona had won the initial encounter 11-1, whereas the score was 9-2 in the

more recent game. This emphasizes the ability of the frosh team to improve more rapidly than their opponents.

Two More Games

Two games were played last weekend. On Friday the varsity hosted Cal Poly of Pomona in a rematch and settled an earlier defeat by whipping Cal Poly 11-5. Effective double-teaming by a San Francisco State team on Saturday led to a 9-6 defeat for the Beavers, although Tech outscored the opposition 4-1 in the final period.

With the victory over Pomona the Caltech squad can do no worse than a tie with Oxy for the conference championship. The

game on Tuesday with Redlands was a forfeit, leaving a determined Oxy team the only obstacle in the way of an undisputed conference title for the Beavers. Be sure to see the championship game tomorrow in Oxy's pool at 4 p.m. The game should be as exciting as the initial contest when Caltech struggled to beat the Tigers 4-2.

Is it progress if a cannibal uses a knife and fork?

Varsity Hoopsters To Begin New Season Soon

BY LEON FUNG

As winter draws nigh, veteran coach Ed Preisler is once again attempting to forge a basketball powerhouse out of the residue of last year's disaster. Faced with the graduation of five of the top six of last year's team and the return of only two lettermen, the coach assures us that Tech may yet surge to victory with the new secret offense he is installing. This will replace last year's four *Sports Illustrated* plays. As it was felt beneath the dignity of Techmen to compete against teams we managed to beat last season, all these have been scheduled as scrimmages instead of games. This, it is believed, will give our team more opportunities to meet challenging competition. Our season, however, suffered a major setback when Ambassador College cancelled out.

The two returning lettermen from last season's team are John Tucker and Dennis "Elgin" McCreary. Tucker last year set a new league record in technical fouls. Also returning from the varsity are Doug Holford, Jerry Yudelson, and Mike Aschbacher. Jim Pearson, who left after his frosh year to be with the girl back home, has decided science is better after all and has doubled the team's potential.

Heros (?) Return

All the heros but one of last year's frosh team have reported for practice. They are Ed Hsi, Herb "Legs" Jubin, Don Blair, Dave Goodmanson, Rich Williams, and Reagan Moore. New players out for the first time are Bo Barbosa, Jim Beale, and John Nady. Both Beale and Barbosa have looked good in practice, and Nady is becoming a really inspirational leader.

The "Engineers" already have three scrimmages under their belts and another coming up against Pacific Christian Friday night. The season opens here against UC Riverside on Dec. 1. Tech also plays L.A. Pacific on Dec. 8 and Life College Dec. 9 at home before the league season begins after Christmas. Although this was originally thought to be

a rebuilding year, the feeling down at the gym is that if Tech can get past Life College we will be well on our way to a successful season.

Next Week's Sporting Events

		CROSS-COUNTRY	
Sat.	Nov. 21	10 a.m.	All-Conference Meet at Mt. SAC
		FOOTBALL	
Sat.	Nov. 21	2 p.m.	Claremont-Mudd at Claremont
		SOCCER	
Sat.	Nov. 21	10 a.m.	Semifinals at Pomona
		WATER-POLO	
Fri.	Nov. 20	4 p.m.	Occidental at Occidental



TAKE A LOOK AT TOMORROW!

FORD MOTOR COMPANY'S EXPERIMENTAL GAS TURBINE SUPERHIGHWAY TRUCK ANTICIPATES THE NATIONAL HIGHWAY NETWORK OF THE 1970's.

A new era in trucking is almost here. When the 41,000-mile national highway network is completed it will be possible for the first time to schedule coast to coast, big payload hauling. Ford Motor Company's answer to the challenge is this experimental tractor-trailer combination. A tandem axle drive tractor, powered by a 600 hp gas turbine engine permits a cruising speed of 70 miles per hour, a non-stop range of 600 miles. Designed for long-distance, non-stop operation, the two-man cab includes sleeping facilities, fold-away table, lavatory, toilet, oven, refrigerator and TV for the co-driver—with over 6'3" of headroom. Because of its cruising speed, the truck will be compatible with the normal passenger car flowrate of traffic. Other unique features are its odorless exhaust and extremely quiet operation.

Anticipating the opportunities and needs of the future is standard practice at Ford Motor Company. That's why it's such an exciting place to work. Look to Ford Motor Company for a career with growth potential and satisfaction—from pure science to manufacturing . . . marketing to labor relations.

THERE'S A FUTURE FOR YOU WITH . . .  MOTOR COMPANY

The American Road, Dearborn, Michigan

An equal opportunity employer

I H Swimming

Practice for Interhouse swimming will begin on Monday, Nov. 23, at 4 p.m. Coaching will be available at that time each week-day until the meet, to be held during the second week in December. All interested students should check with their House athletic managers concerning eligibility and PE credit.

More Football

(Continued from page 6)

if memory serves, the last time CIT lost this badly the victor was either Whittier or Redlands. CIT no longer plays either team, and with good reason: Whittier is ranked in the top twenty small college teams this year. Whether these schools give athletic scholarships or not (our nominal reason for cessation of competition with said schools), it is certain that their football teams are out of our class.

The CIT Athletic Powers—that be apparently do not want to admit that Pomona, Oxy, and even CHM are very nearly on a par with Whittier and Redlands, and their teams are going to get better, not worse. Sending an undertrained, outweighed, undermanned squad into a meat grinder every week may build character but it breaks bodies, as was efficiently demonstrated last year when the Beavers were demolished by Santa Clara in a classic

mismatch.

Constructive Critique

So much for destructive criticism. Is there a solution? The obvious move is the discontinuation of football as an organized sport at Caltech, but this suggestion is so malodorous as to defy description. Another denouement would be the complete dissolution of conference obligations as far as football is concerned. That's more like it.

Granted, there are problems attendant on a step of this nature. In fact, on entering into a discussion of the subject with Athletic Director Emery, one is drowned in a veritable flood of negatives, foremost among which seems to be the contention that there isn't anybody else around to play. This is not true. There may not be very many people around to play, and it might take a little effort on the athletic director's part to find enough opponents to fill a schedule, but the problem is soluble.

Pushover Schedules

A second objection is that such action might jeopardize Tech's conference position with respect to other sports. This is a valid question; however, it is not clear that the rest of the conference will banish CIT completely because Tech chooses to be discreet rather than valorous. In fact, most coaches would rather not play an utter mismatch; easy victories breed overconfidence, and there is always the possibility of injury to key players needed for important games. Oxy, while not necessarily overjoyed at the removal of CIT from their schedule, would probably not weep bitter tears.

This is a question worthy of consideration: are the benefits derived from conference participation in football worth the degradation of morale and pride and the actual physical damage that result from such participation?

I think not.

More Humble Eunuch

(Continued from page 2)

his right hand. More than once indignant Institute employees have attempted to clothe Apollo in underwear. And lastly, about a decade ago, Eros, who was always jealous of Apollo, exacted a harsh penalty from the Greek god of manly beauty.

Independence

But in 1958 things began to look up for Apollo. That year Mr. A. R. Phillips, the owner of an insurance agency, saw Apollo on campus, and wrote in a letter to Caltech: "Apollo looks rather out of place and unappreciated where he is. But he would render a wonderful decoration for any garden. Is there any chance that the Institute would sell him?"

But the statue had only been loaned to the Institute, so that the Institute could not sell him. "Could I ask the name and address of the lender?" Phillips wrote back. Bradbury, however, was deceased, and had made no provision for Apollo's fate.

Nobody, it seems, actually owns Apollo now, yet Apollo is certainly as much Caltech's as anybody else's. Nor does anybody seem to care about Phoebus Apollo — Greek god of manly beauty, music, poetry, and prophecy. But certainly Apollo deserves a more godlike fate. Maybe the Caltech planners can incorporate him into some campus courtyard of the future — or into the PCC reflecting pool.

More More More

(Continued from page 3)

building and more emphasis on having a really bitchin' party.

Steve Card, reiterating his

statement of last week, says that "Lloyd will be the place to do it!" The general supervisor of Interhouse plans at Lloyd is surfin' Jim Crabtree of Bachanalley.



Advt. for Falstaff Brewing Corp. of San Jose, Calif., dedicated to lovers of winter sports, to lovers of splendid beer and to lovers...