

Nothing Is So Dull
As Yesterday's News

THE CALIFORNIA TECH

Volume LXXVIII
Pasadena, California

Friday, May 27, 1977

Number 30
Eight Pages

Or Tomorrow's
Tech

Gang Approves Ruddock House Bid To Rotate Summer Residents

By Bob Morrison

Ruddock House President Mike Aziz has submitted a petition to Bob Gang, director of housing, in an effort to reduce or eliminate summer housing of non-Caltech people in Ruddock.

The petition was the result of concern for damages to Ruddock House over the summer. Last year, there was one official complaint of damages to a room caused by members of the Shriners' Hospital sponsored football team. During their stay, some members took a fire extinguisher and sprayed it around a room, for which the Shriners paid full damages and cleanup costs. There have been no known damages, according to Gang, other than this incident.

Gang was not willing to eliminate the income derived from the groups housed over the summer, but agreed to accommodate the people in other houses, starting next year.

A rotation scheme is planned, although no definite plans have yet been made about where the groups will be housed next summer. Nothing can be done this summer, because the contracts with the conference groups have already been made.

There are three groups that concern Ruddock this summer, one of which is planned for one night only. The Shriners' football team of approximately thirty members will also be at Ruddock for ten days in July, and finally a championship Frisbee throwing conference, composed of 150 members, will be in Ruddock for a week in August. The income derived from their stay is expected to be from \$6000 to \$9000, which goes to all of the houses for rehabilitation expenses.

This income is the only source besides student room and board income that is used for this purpose. Consequently, Aziz and Gang now agree that the funds are badly needed; thus there resulted the rotation compromise.

Ruddock has traditionally had the football players and Frisbee throwers, primarily because it is closest to the housing offices, and it is coolest during the summer. Lloyd House, however, as in the past, is also housing a conference of cello players this summer. Blacker, Dabney, and part of Ricketts will be used to house Caltech students.



Photo-Al Kellner

Underclassmen working to meet ditch day's 5:00 deadline

Select Few Senior Stacks Highlight 1977 Ditch Day

By Kevin Drum

With only one day left, ditch day finally arrived yesterday. This year's stacks were not exceptionally imaginative, although there were a few that proved themselves superior to the J. Random Stack. Among these were:

A genuine compustack in Page House. Barry Megdal and David Rolfe programmed a mini-computer to give out clues—with the correct prodding of course. At 5:00 the stack still wasn't broken and this reporter doesn't know if anyone ever got in. It doesn't seem likely.

A clever mechanical stack by Ruddock EE Tom Guthrie. Its simplicity was elegant: just put the correct key into the lock and the door would fall off. The proper key was hidden a mere three feet away. However, thinking that it was a typical EE stack, the Rudds never managed to get in.

A neat twist by Page's John Loo. To the untrained observer, it looked like a random puzzle stack. However, once the puzzle was solved, the message it spelled out was "Eat shit turkeys, I've

moved off campus." When the puzzled Dudes walked in, they found that there was not a piece of furniture to be found.

A Lloyd House stack without a door. A piece of tape was across John Ernest's doorway with a note saying that to get in, they simply had to open the door and walk in. After finding the door (up in the mountains), the Lloydie underclassmen then hid the door about a mile from the original hiding place.

A Page House robot stack. A wooden maze was set up on the floor. A set of controls to a robot were outside the window. To gain entrance, you simply had

Continued on Page Three

Dabney Beat?

Waiting List Finally Fills Frosh Class

By Alan Silverstein

Big news being always lacking about this campus, it seemed appropriate this week to seek out a lot of little information and put it together for your interest.

The Admissions office, personified in my queries by Ms Barbara Brown, assistant director of admissions, has gone to the waiting list to gather in a few more pre-frosh for next year's class. Four lucky souls have, at this time, thereby joined a total of 221 students we're expecting, which includes a disappointing total of only 24 women. Said Ms Brown: "We simply don't know [why such a lower rate of women responded to admission offers]. It would appear that Caltech does not have a good image as far as women are

concerned, but we don't know why. We plan to send out detailed questionnaires to try to discover some of the reasons why women declined their offers of admission at so much higher a rate than the admitted men."

Ms Eola Sheehan, assistant registrar, and Ms Susan Dane, of that office, were very helpful in providing more recent information on how current freshmen have chosen their options this year, and also produced a graph showing how the trends have gone in the last eleven years. That graph (in adapted form) is reproduced elsewhere in this issue. You may recall that several weeks ago, when we last reported on this subject, 23 frosh had not yet decided on their options.

Director of Financial Aid

Ursula Hyman-Kelly told me that financial award letters for current underclassmen for next year will be in the mail by this coming Monday. The self-help figure for next year (i.e. how much must be made up in loans and work-study before scholarships are awarded) will be \$1800, down \$200 from this year—good news for some of you. Ms Hyman-Kelly also emphasized that those of you who have questions about your awards should talk to people in the Financial Aid Office.

A lot of current students partook of the Petrillo's pizza last Sunday evening. If you didn't know, all 100 pizzas (2400 slices!), which were consumed in less than an hour, were

Continued on Page Eight

Davidson Claims Caltech DNA Work Is Harmless

By Tom McCabe

Recombinant DNA is an issue that has lately been catapulted to national attention through media coverage of such things as controversial hearings, conventions and debates around the country.

It has, in many cases, produced bitter splits in the scientific community and has resulted in unprecedented self-policing by scientists of their own experiments. Congress has already held hearings on the subject, and the possibility of the non-scientific public directly imposing restrictions on the efforts of the scientific community are perhaps greater for this one issue than for any other subject in the history of science.

The Caltech Y, in an effort to give the public the facts of the issue, held an informal symposium on Monday evening explaining the history, procedures, and controversy of recombinant DNA, and the research done and safety precautions taken at Caltech itself. Featured in the program were Drs. Norman Davidson, professor of chemistry and Tom Maniatis, associate professor of biology, both of whom are currently doing research using recombinant DNA techniques. Dr. Leroy Hood, Bowles professor of biology, moderated the symposium, which also included a discussion panel of four graduate students, and a question and answer period for the audience.

As Dr. Davidson explained, recombinant DNA is the process by which scientists can mass produce gene segments that are being studied by "splicing" them onto a gene segment from a common bacterium, *E. coli*. The recombinant gene is replicated as the bacterium reproduces itself, and many copies of the gene segment can thus be produced in a short time.

The technique was first developed in 1973, Davidson said, and since then several concerns have arisen that have caused scientists to ban certain experiments. These include the insertion of known tumor-causing genes and toxin-producing genes into *E. coli*. Scientists are also

Continued on Page Seven

Morgan Elected To Top Post

Dr. James Morgan, currently Associate Dean of Students, has been elected Chairman of the Faculty. He will serve a two-year term. Dr. David Goodstein was elected Vice-Chairman and Dr. David Elliot was elected to another term as Faculty Secretary. These three, along with the nominees to most of the faculty committees, ran unopposed.

In the only elections in question, seven new members were elected to the Faculty Board and three new members were elected to the Academic Freedom and Tenure Committee. Dr. Jean-Paul Revel was elected to serve out the remainder of Morgan's term on the Faculty Board. Those elected to regular terms on the Faculty Board were Drs. Tom Apostol, Charles Barnes, Roy Gould, Daniel Kevles, Hans Liepmann, and Rodman Paul. Newly elected members of the Academic Freedom and Tenure Committee are Drs. Norman Davidson, Leverett Davis Jr., and Samuel Epstein.

The nominating Committee, which nominates faculty members to these various posts, was incorrectly listed in the *Tech* two weeks ago. The real members of this committee are Drs. Robert Vaughan (chairman), Charles Babcock, Donald Burnett, Sunney Chan, E.J. List, Jon Mathews, and Joyce Penn.

The newly elected members of the Membership and Bylaws Committee are Drs. David Goodstein, Fred Anson, Francis Buffington, Leverett Davis Jr., Fredric Raichlen, and Ernest Sechler.

A list of the members of all the Standing Committees, along with the student members of those committees (approved by the IHC) is on Page Six.

Inside The Tech

A short history of Caltech as told by the *California Tech*.
Page 8

Dr. Jeremiah Ostriker talks about the evolution of the universe at a Watson Lecture last Wednesday.
Page 7

The still further adventures of former *Tech* editor-in-chief Sandy McQ, who is now home at last.
Page 6

Commentary

The Editorial Page

Tuesday's Election

One of ASCIT's more multifaceted elections in recent memory will be held on Tuesday. Seniors are allowed to vote in this election (although they can't vote for class officers of course). There will be four separate things on the ballot. They are:

1) Class elections
2) Five amendment changes. These changes will a) make the TQFR an official ASCIT publication, b) give the Excomm the power to submit Resolutions to the BOD, c) insure that all elections are held in secrecy, d) raise ASCIT dues \$4 over the next four years, and e) institute a system of penalties against editors of publications not distributed on time and raise the salaries of the *Tech* editors by \$300. Each amendment will be voted on separately and we recommend a Yes vote on all five of them.

3) A survey of Techers about the size of the undergraduate class. The survey will request opinions on possibilities ranging from abolishing the undergraduate program to enlarging the undergraduate class to 3000. The survey will also ask how you feel, from personal experience, the size of the student body affects the following areas: student life in general, student housing, class size, labs, athletics and P.E., Health Facilities, Social Life.

4) Finally, there will be a referendum on student housing discrimination. The questions on the referendum simply ask if you ever felt that you have been denied any sort of housing because you are a student. Although this doesn't affect Caltech greatly, this referendum is being voted on in colleges and universities around the state.

Kevin Drum
Henry Fuhrmann
Al Kellner

MAKE BIG BUCKS AS BUSINESS MANAGER FOR THE CALIFORNIA TECH

FOR FURTHER DETAILS ON HOW YOU CAN
EARN UP TO \$1500 PER YEAR
CONTACT ANY TECH EDITOR.

THE ASCIT FRIDAY NIGHT MOVIE

The Magic Christian

7:30 p.m. & 9:30 p.m.
in Baxter Lecture Hall
ADMISSION: 50¢—ASCIT members
\$1.00—anyone else

NEXT WEEK

FINALS WEEK

Letters To The Tech

Merit Scholarships

To the Editors:

I would like to correct some false impressions that may have resulted from the article on Carnation and Prize Scholarships that appeared in the last issue. It should be noted first that there were 42 winners, 17 sophomores and 25 juniors, for a total of over \$50,000.

The student committee appointed by the IHC is to be commended for doing an excellent job of gathering information and making recommendations, especially in view of the short time available and lack of precedents for their work. In fact their recommendations were quite successful. There were only two exceptions in the final list, one inclusion and one exclusion.

Contrary to the conjectures quoted in the *Tech* article, neither exception involved extracurricular activities. There was

actually a strong area of agreement among the members of the student and faculty committees (including student members of the latter) as to what constitutes merit. Both committees went well beyond GPA into a careful appraisal of transcripts. Both committees also emphasized independent research and faculty recommendations as well as extracurricular activities and accomplishments.

The composite picture of a typical winner that emerged is of someone with truly exceptional performance in difficult courses, attested to by grades and faculty evaluations, or someone with good grades (typically 3.5 or better) doing interesting research or distinguished by their involvement in student life or other accomplishments.

There is a considerable variety of interests, talents, and achievements among the winners of these scholarships that I think

fully justifies the effort that went into their selection.

Gary Lorden
Chairman, Committee
On Scholarships
and Financial Aid

Coffeehouse

To the Editors:

As Mr. Oualline's first letter showed his ignorance, so his second shows his stupidity. He totally missed the point of our letter. We were not correcting the *Tech* article, but supplementing it. To spell out the give and take that Oualline missed;

It is true that decreased business hurts our profits, but rising costs hurt us much more.

We can buy enough food to cover any amount of business in one night, but then we would have to raise prices to cover the spoilage. We believe the current infrequent shortages are preferable to higher prices. If you disagree, please tell us.

As a final word, remember: "A man is known by his enemies as well as his friends." This applies to institutions as well.

With Love,
The Coffeehouse Management

Caltech Y Presents . . .

The End Of A Successful Year

By Alan Silverstein

A very short time remains before another term and another year are but history and memory. But with finals lurking around a couple of weekends, the outlook may not be overly optimistic. Cheer up! For even if those bellies don't dance this year, the Y still has a few programs you can anticipate eagerly, to wit:

The annual **Lost and Found Auction**, featuring our very own Exec Direc Walter "Motor Mouth" Meader, happens on the Quad at noon on Thursday, June 2. "We pre-empt our regularly scheduled lunch-hour ennui to bring you this special Y event, in living holographic color." If any of what we will attempt to sell is already yours—then tune in early (like the day before) to claim it, or you might have to bid for it. Proceeds will go to charity.

What would finals week be without **Finals Decompression Chamber?** (Answer: a lot more dismal.) Drop in and relax between testing—it's better than dropping out—Saturday and/or Sunday evenings, 8:30 to 1:30, in Winnett. As usual, free munchies, lots of blank posters, games to play, and with your help, hordes of people in a

partying mood. Rumor has it that the Y may also sponsor "Son of Glop". Remember the epic 150-pound technicolor saga of first term a year ago? With a little help from Saga, there will be a sequel.

And while you're working at your job all summer (or working at finding one), have a fun-filled camping weekend to look forward to. Sign up now in the houses for **Pre-College Camping Trips**. Take your choice of King's Canyon National Park in the Sierras or Joshua Tree National Monument east of San Berdoo. Each trip will last from early Friday morning, September 16, through late Monday night, the 19th. Cost will be an uninflated \$25, and that covers food and transportation. These annual trips are really a great way to start the year, and to meet a lot of new students as well. Don't shy away just because you haven't camped out before; let this be a mild introduction.

For more information on the camping trips or anything else the Y can do for you, call ext. 2163 or visit 2nd floor, Winnett.

Don't let finals get you down. Remember that summer's coming, and make it one to remember.

For the FIRST TIME in
STEREOPHONIC SOUND



Exclusive Engagement
NOW
SHOWING

PACIFIC'S CINEMA DOME
SUNSET near VINE HOLLYWOOD 456 3401

BOX OFFICE OPENS 10:00AM Tickets on sale throughout each day for that day's performances only
For Group Sales call 841-1000 Extension 1606
EVERYDAY: 12:30, 3:00, 5:30, 8:00 & 10:30PM
SPECIAL MIDNIGHT SHOW FRIDAY, SATURDAY & SUNDAY AT 12:30 AM
SPECIAL ENGAGEMENT. SORRY NO PASSES

THE CALIFORNIA TECH

Volume LXXVIII Number 30
Friday, May 27, 1977

Published weekly except during examination and vacation periods by the Associated Students of the California Institute of Technology, Inc. The opinions expressed in all articles are strictly those of the authors and do not necessarily reflect the views of the editors or of the corporation.

Editors-in-Chief
Kevin Drum
Henry Fuhrmann
Al Kellner

Business Manager
Ken Kroll

Writing Staff
Tom Creswell, Rock Howard, Tom McCabe, Sandy McCorquodale, Bob Morrison, David Ritchie, Alan Silverstein, Brett Van Steenwyk

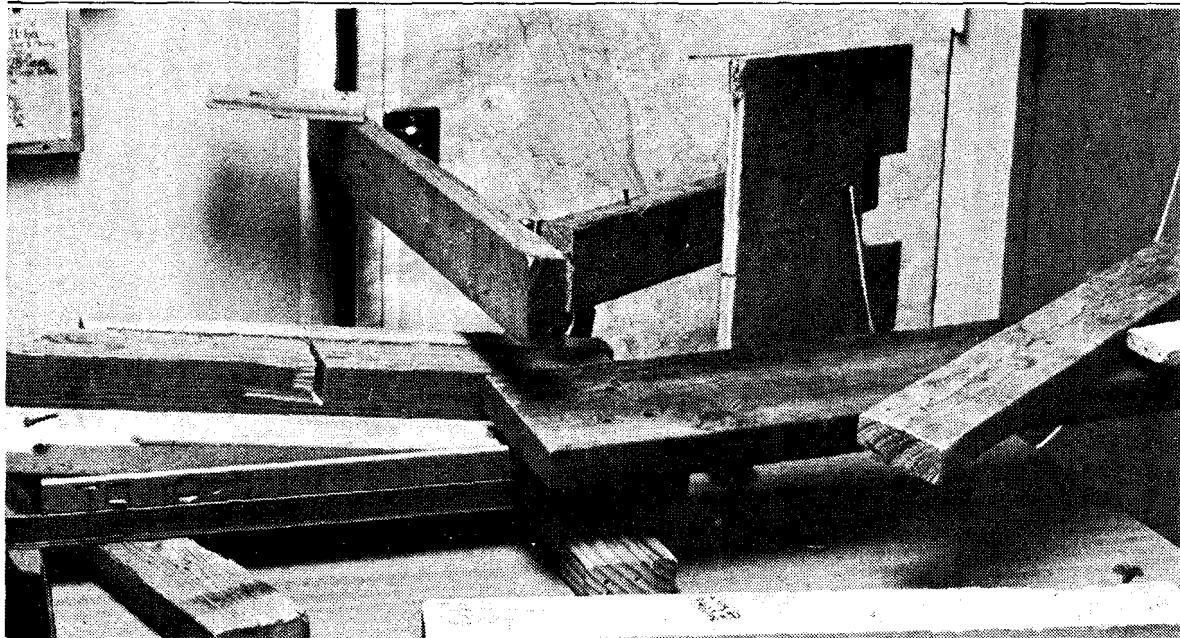
Photography Staff
David Wheeler [Darkroom Chairman], Ed Bielecki, Greg Bone, Ngaiman Chau, Talso Chui, Rich Feldman, Ray Gildner, Ken Li, John Loo, Ed Rea, Tom Snyder, Fred Solomon, Jean Uwate, Chris Wheeler, and a cast of thousands

Production Staff
Alan Boyar, Flora Boyer, Stan Cohn, Nick Smith

Circulation Manager
Bill Gould

The California Tech publications offices are located in Winnett Student Center (107-51), California Institute of Technology, Pasadena, CA 91125. Telephone: (213) 795-6811, Editors—ext. 2153, Business Manager—ext. 2154. Printed by News-Type Service, 1506 Gardena Avenue, Glendale, CA. Second class postage paid at Pasadena, CA.

Subscriptions
term - \$1.50
year - \$4.00
life - \$100



A Page House jamming mechanism to keep out pesky underclassmen during ditch day

Photo-Ed Rea

All The News That Fits

Ricardo, Take Note

B&G recently informed the IHC that it would like to plant grass on either side of the Olive Walk (which is just dirt right now). Because of this, parking will no longer be allowed on the Olive Walk in order to save the grass (even if it is a hardy breed). The IHC voted to recommend that barriers be put at both ends of the Olive Walk in order to keep cars out, but agreed that parking would be allowed on the Olive Walk for the first week of first term to allow students to move in. The grass will be planted by the beginning of next year.

Attention: Student Shop Members

A shop meeting will be held on Saturday, May 28 (tomorrow) from 1-4 p.m. You may return your key and pick up your \$5 deposit. Summer keys will be issued (Summer dues are \$4).

If you cannot attend, contact a shop committee man before the end of the term.

Accent Grave Over the "e"

This week Cinematech is presenting two comedy films: *The Bank Dick* and *March of the Wooden Soldiers*, starring W.C. Fields (as Egbert Souse) and Laurel and Hardy, respectively. Showtime is 7:30 p.m. Saturday at Baxter Lecture Hall. Admission is \$1.00 ASCIT/GSC, \$1.50 general and \$.75 children under 14.

Gays Discuss Stereotypes

The Gay Discussion Group is having a picnic somewhere in the San Gabriel Mountains this Monday (Memorial Day). Phone 793-8864 for details. In addition, we will have another of our regular weekly meetings this Wednesday at 7 p.m., in the Y Lounge, where we will continue our exchange of ideas on gay stereotypes.

White Punks On Reds

Burnt Rubber, Caltech's own rock and roll crazies, will perform at today's noon concert on the Quad. The band features members Quaalude the Red, Kamikaze Hinkley, Rex Raunch, and Dynamite Dyer. The concert is sponsored by the Caltech Y.

Continued from Page One
to guide the robot through the maze, making sure to go through five checkpoints on your way. The stack worked imperfectly and was broken into quickly.

Alan Silverstein's and others' long heralded stack (at least by Silverstein who claimed to this reporter that it would take the Scurve underclassmen "at least a week and a half" to get in) which yielded easily (too bad, Alan). This stack also worked with a microcomputer, but was not as sophisticated as Megdal's. Among the bribes left in the room was a bottle of vodka.

A Rudd who left his door open and simply offered a bribe

to whoever would take it. Three piles of brownies were offered. One plate was marked "Marijuana," another "Amphetamines," and the third "Stay away freaks." According to reports, nobody partook of the latter two offerings.

The Darbs and the Moles seemed to be the most apathetic about the whole affair. Not a single Darb had a stack and the alley three refrigerator was overflowing with bribes from the lazy upperclassmen. Ed Bielecki (former ASCIT President as you may recall) promised a stack for next year, though. "I've got so many pissed at me that there's no way I could offer them a

bribe."

Two RF's take top honors for the ditch day festivities. First comes the Fleming House co-operative effort to RF Chris Russell's room. The stack was broken within half an hour ("There's no way they could have it open by now," Russell is reported to have said over the phone to a friend) and the room was quickly turned into a soccer field. All the furniture was removed and the floor was covered with sod. White lines were drawn on the sod, goals were put up at either end of his room, and a picture of a sheep (which acted too realistically for some) was put in.

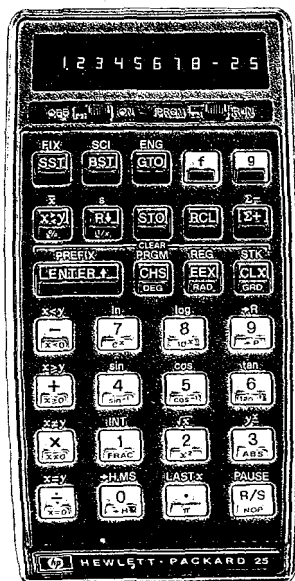
A close second place goes to Ruddock House for its break-in of John Gustafson's puzzle stack. Once they were in, they covered his floor with plastic, then with hay, and then put in a live horse and cow (a calf actually). His roommate, a sophomore, was heard to object somewhat to the plan.

And to make ditch day complete, there was one real live brute force stack. Over a ton of concrete and an enormous steel grating were used in the stack. The roof was already solid concrete as part of a stack years ago. As usual, this brute force stack was broken into fairly early.

INVENTORY REDUCTION SALE

at CALTECH BOOKSTORE

HP 25 SCIENTIFIC Calculator



The HP-25, both scientific and programmable offers 49 steps of keystroke programmability with merged prefix and function keys, single step editing, conditional tests and a pause function. you also get log and trig functions, coordinate conversions, statistical summations and eight addressable memories.

Suggested retail \$145.00

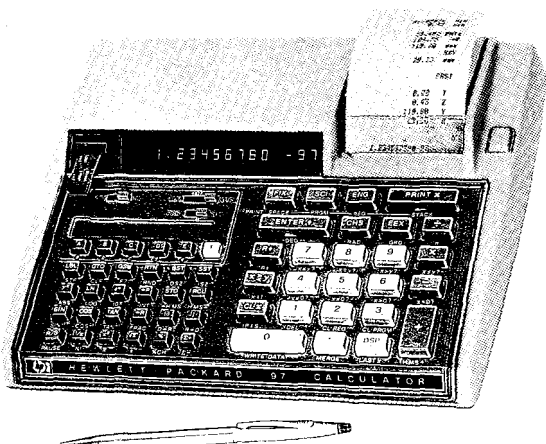
Regular price \$125.00

Sale price

~~\$125.00~~
\$120.00

In an effort to reduce our inventory of HP-97 and HP-25 calculator we are having a sale beginning today May 27. The prices are the lowest we have ever offered on either model. Supply is limited so hurry. Sale ends after last calculator is sold.

HP 97 Desk top Calculator



The HP-97, fully programmable, printing calculator combines exceptional programming power and a quiet the thermal printer. The HP-97 is identical in programming power to the HP-67 and is completely compatible in operation. The total weight of the HP-97 is only 2½ lbs. It is so small it will fit into a standard briefcase, so you can take it with you and operate it almost anywhere.

SUGGESTED RETAIL

\$750.00

REGULAR PRICE

\$646.55

SALE PRICE

~~\$646.55~~
\$626.50

History Of Life At Caltech

By Kevin Drum

Reading through old piles of *Tech's*, I sometimes wonder if anyone would know that they were actually several decades old if it weren't for the date on the masthead and the yellowing pages. Open a copy of the *Tech* from the 1930's and you read about the same problems and complaints that you hear now. So, for your interest and edification, we present the following excerpts from old *Tech* articles. With minor changes, most of them could still be reprinted today. (Many thanks to Dr. R.E. Vogt for the inspiration.)

To begin our sojourn into the past, let's consider the student houses. With record numbers of people moving off campus, this article from the June 2, 1932 issue of the *Tech* when the old student houses were just through their first year, makes one wonder if the experiment of the student houses has worked.

With the graduation of the present senior class, the shock troops of the Undergraduate Residence Plan, the rather surprising realization that the Houses have passed their first year. It has, naturally, been a period of some adjustment and a little confusion. and it is perhaps a little early to comment on the outcome with any great penetration. However, the results have been, in the main, very satisfactory, an it is becoming increasingly evident that the undergraduate committee, who formed and administrated the housing plan have done their work with a remarkable amount of foresight.

There are defects in the present system which should be remedied. The resident associates, in some instances, have not been enough in evidence; a congenial faculty man can be of immense influence in the formation of ahouse unity, especially in the present period. But perhaps in time, with the development of a greater intimacy in the house, the difficulty will be removed. There has been, too, a slackening of interest in interhouse competitions; neither the Discobolus nor the trophy donated to encourage participation in forensic activities has changed hands in a good while.

Obviously, our development is a matter of time, and there is a disquieting tendency to be too hasty. The establishment of "traditions" will be best left to future years, or preferably, to future decades; too much coaxing might be disastrous. It is absurd to think of establishing any spirit, comparable to that of a two-hundred year old university, in a group picked at random associated for only a few months.

However, indications for the future are very propitious. Some of the more encouraging signs are the appearance of a definite personality in each of the four hosues, and the beginning of a kind of social rivalry among them; there is, too, a vague realization that residence brings benefits more subtle than those of wearing a jacket to dinner and the observance of set of social formularies. For those of us fortunate enough to anticipate a stay of some years more, there is a promise that, when the precepts of Poor Richard above the doorways have become a little weathered, there will be developed a house spirit immeasurably better than anything previously existing in fraternity life.

It seems that some students in early April of 1934 were complaining that the heavy workload at Caltech did not leave them enough time to develop any sort of social life (sound familiar?) It also seems that a certain Dr. William Munro told these students that he thought that they could handle the workload, and asked them to "meet him halfway." Their reply, in the April 26, 1934, issue of the *Tech* is below.

In pursuance of the truth, we may apply the usual scientific procedure of tabulation and analysis. First, let us consider the average non-resident commuting student who takes 51 hours of work a week—excluding physical education—and in addition assume that he is athletically inclined to the extent of participating in a major sport for 2½ hours daily, (from 4:00 to 6:30). Dividing his week into six days, we find that for each day his hours are regimented as follows:

Studies	8.5
Meals	2.5
Athletics	2.5
Commuting	1.0
Sleeping	8.0
Incidentals	1.0

Into this hour assigned to incidentals we sincerely believe that the sundry homely necessities of life may be crowded.

But alas! The total adds to only 23½ hours, one-half

hour shot of the twenty-four. Judge not hastily, be not discouraged at such wastefulness of time, for worlds, we have heard, can be conquered in this enormous half-hour. A rigidly planned economy of time will enable one to learn French, or become otherwise a social success in seventeen years by readign any six-foot shelf of books.

Horrors! Sunday is free. Four hours to and from and back and in church, an extra two hours of sleep, a bottle of beer, and set or two of tennis—and again we find one-half hour left. Half-hours are inconvenient at times such as these.

This last half-hour, my friend, is the time in which the up-and-coming student should "come half way" to insure executive success. Conservatively estimated (after a careful round table discussion) is has been calculated that a normal fun loving individual may easily loosely distribute into his lonely half-hour on Sunday:

- 1 six-hour date
- 1 dancing class
- 1 bull session
- 1 headache
- 1 aspirin

And now we understand how our benevolent faculty has made "coming half way" easy. Why, by diligent pursuance of the minute hand of a watch, we might even attend a movie, a play, and assimilate all of last week's news in that extra half-hour.

At any rate, we have conscientiously and solmenly demonstrated that anyone has sufficient time to "come half way."

The recent flap about raising the GPA needed to graduate with honors has forced some people to ask what changes could be made in order to relieve some of the pressure of Caltech without lowering its standards. The article below has some ideas. It is from the May 17, 1934, issue of the *Tech*, back when the average GPA here was 2.36 . . .

Recommending the aboliton of the present grade and probationary systems, changes in the awarding of honors, and almost total reorganization of the Non-Resident Club, the sixteen page report of the Committee on Campus Life and Activities, was adopted by that group at a meeting held last Monday night.

The installation of improved physical elducation facilities, careful supervision by experienced teachers of classes now taught by inexperienced assistants, new methods of distributing men in the individual living houses, revision of methods of selecting Freshmen, and provisions for additional social opportunities for Non-Resident students are other matters considered in the report.

Of greatest interest to the students are the recommendations of the Subcommittee on Curriculum. This group felt that no changes need be made in the courses given, but instructors should be careful not to give more work than could be done in the allotted time.

"Too much attention is being concentrated by undergraduates upon grades and credits in courses," states the report. "For upperclassmen, no grades should be given to the student other than 'passed' or 'failed'."

And an editorial from the same issue on the same subject:

Probably the most frequently used expression by undergraduates while in a serious mood are, "What this school needs is . . ." or, "That's the trouble with this school." This universal spirit of fault finding may be commendable in many respects. It shows that the undergraduates are really thinking about student problems and frequently the results of this thought are excellent.

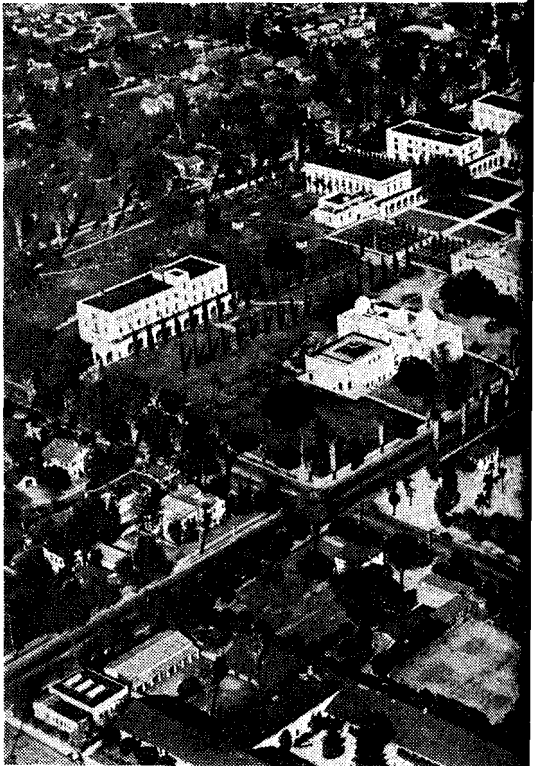
This is not going far enough, however. Ideas as such are the world's most useless commodity; they must be acted upon to be worth the energy spent in evolving them. So, relapsing into our pet phrase, "What this student body needs are ideas in use."

The Committee on Student Life has done an enormous amount of work in preparing the reports which are now nearly complete. These reports contain no end of excellent ideas; suggestions which if put into effect should prove very profitable to the Student Body.

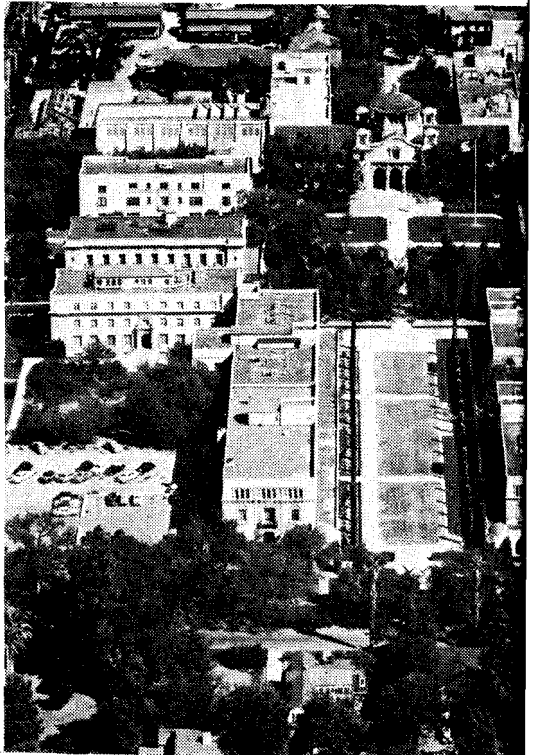
It behooves the students, therefore, to see that these plans are acted upon and put into use. True, the easiest course it to forget about any changes and continue in the old rut, but the effort must be on the part of the students to assure the success of these reforms. The time for action is at hand.



The Throop Institi

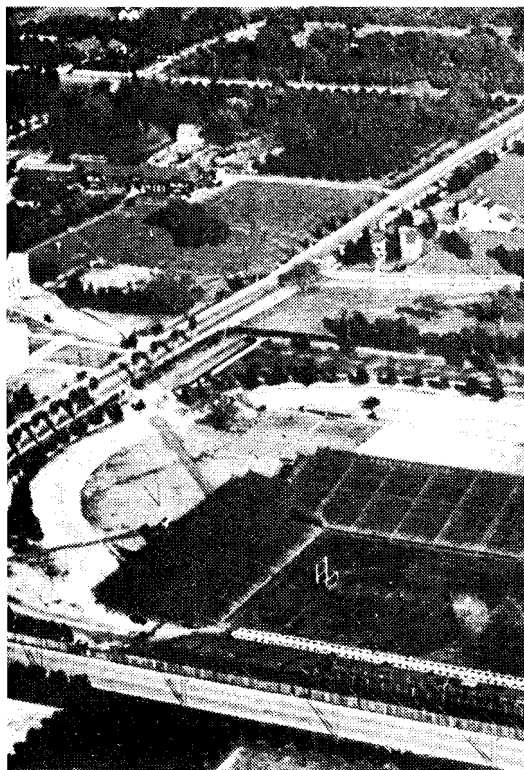


The California Instit

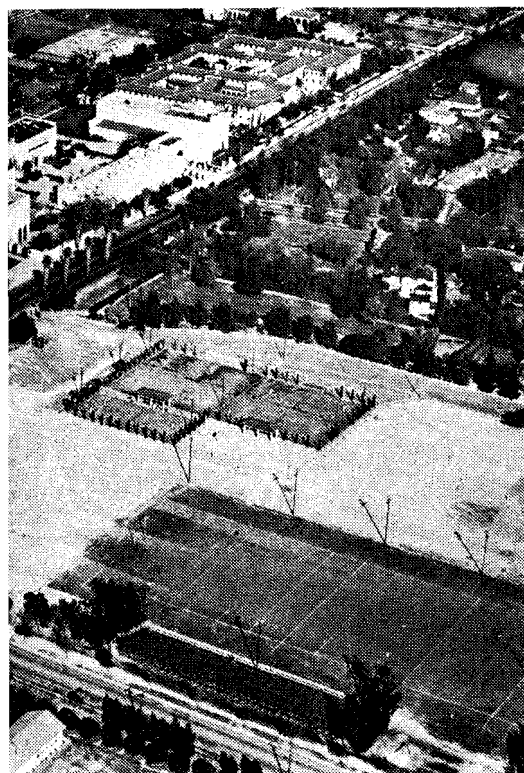


and Cal

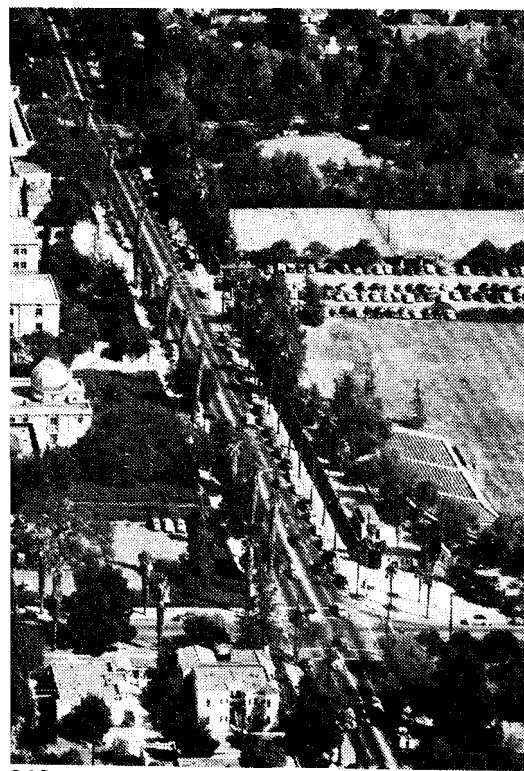
h- After 40 Or 50 Years, We Still Have Many Of The Same Problems And Many Of The Same Complaints



logy in 1921 . . .



ogy in 1937 . . .



948.

For all of you who have wondered if trolling is all there is to life, you aren't the first ones. And, obviously, for all of you who have decided that, in fact, trolling is all there is to life (at Caltech anyway), you aren't the first ones either. This is from the October 18, 1934, issue of the *Tech*.

Are we becoming social misfits?

This question is becoming so real, so important in Tech life that it behooves us to seriously consider the bodily and mental results of our four-year grind.

Layton Stanton has been through it. He was a three-year letterman at Tech, graduated, and received his doctor's degree. Now he coaches football and track, does research work on the side. He understands us, and recommends more recreation time, more "dates," more football games, more sports for the average Tech man. It was he who made the classic (and true) remark—"you want to remember, you freshmen, that it doesn't make one bit of difference whether you get a two or a four in calculus. It doesn't make one bit of difference!" And he was speaking of the effect of grades on ultimate job finding.

Employers don't want to talk to men who are social introverts, who haven't learned how to talk culturedly, who are so one-sided that they quiver upon the sound of a woman's voice, who have never heard a concert, or a play for the fun of it, who have never joked or bantered with their fellow men, who never displayed guts in a game of sport.

Employers want men who take time to find themselves out, who keep themselves mentally happy while they work, who get along with their peers and who are as a result ruggedly experienced and self-confident in any kind of social conflict.

Of course, one of the ways to keep freshmen from becoming "social misfits" is through frosh initiation (still practiced in most houses in one form or another. It seems that current attitudes toward this ritual haven't changed much either.

Friday night will open the house initiation of freshmen. Throop club freshmen started Tuesday. Initiation can be in stiff competition with studies. But, freshmen can be thankful that they have had three weeks' study experience.

Initiation is a serious business. It gives freshmen a responsibility leading to an attitude that the houses are more than a place to eat and sleep. Freshmen will find that the social program and organization of both the houses and Throop club are important toward rounding out their personality, and balancing their activities.

It's for your own good as well as the upperclassmen's pleasure.

Who here hasn't complained about the P.E. requirement. You used to be required to take six hours of P.E. per week. This has been whittled down through the years and now you can even take it pass/fail. However, on December 10, 1936, you couldn't take P.E. pass/fail and they were just as mad about it then as Techers are about it now.

We were delighted to see Professor Fogg vigorously polling the student houses for an opinion on our proposal to change grading in P.E. and Assembly to a pass or fail basis. To us, Professor Fogg's frank and open willingness to cooperate with the student body represents one of the most valuable attributes of a young and growing institute.

Judging from the results of the poll (260 favored the change, 33 opposed), we have high hopes that the new system will be placed in effect at the beginning of next term.

... A football player is entitled to more recognition than a ping-pong addict; our point was to show that the present grading system made no such distinction. Competitive ping-pong or tennis for six hours a week will earn a four in P.E. just as surely as participation in every football game of the season.

At present a student may incur as many as three penalties and receive for sixty hours of work a "passing" grade of one. Grades awarded on the present basis offers no incentive for physical improvement. We postulate that the students will maintain their physical well being without the sham of a reward in the form of a grade.

In order that the members of the student body be recognized as intelligent enough to do without the superficial incentive for the present grading system, the majority of the undergraduates have agreed that the pass or fail system should be adopted.

Now we come to my favorite part. The following article, from the March 10, 1933, issue of the *Tech* gives me a chance to complain with the excuse that it's all on historical grounds.

The trouble with the *Tech* is, and seems always to have been a lack of experienced, dependable writers. While there are a few very competent men on the staff, the paper is dependent for the mass of its copy on inexperienced writers: representatives of the various publicity seeking organizations, men who have enrolled in the journalism class for a term's credit in English. And these do not stay with us. They show an aptitude for learning, but a respectable publication cannot be put out when the majority of the copy is contributed by Freshmen with two month's experience, whatever their potentialities.

From experience, it is impossible to maintain a deadline. This lack of well written material, and the uncertainty about the appearance of whatever is available, disrupts the whole organization. Invariably, each week's work culminates in a frantic writing of stories which failed to appear, on the night before the paper goes to bed. Good make-up, which requires rather careful planning, is plainly impossible.

The paper is often criticized for being too dull and stuffy. Frankly, there is nothing at the Institute that merits any excitement. And if it is a question of our not being funny enough, a good comatose dullness is infinitely preferable to what currently passes for humor on the campus.

I couldn't have said it better myself. Of course, the *Tech* isn't the only publication on campus, even if it is the best. Many of you may remember the talk several years ago which preceded the distribution of each *Big T*, namely that this one might very well be the last *Big T*. This article from the May 2, 1935, issue of the *Tech* is dedicated to Stan Cohn.

Yearbooks in most colleges are upon a much more secure basis than that of the *Big T*. The Tech student body wants its publication to continue; this was shown by the 266-to-5 vote two years ago for a special assessment of \$1.50 per student to liquidate the debts of past *Big T*'s. But the student body does not support its publication; annuals were sold to only 350 students last year, and sales of the 1935 *Big T* will not equal that figure when subscriptions close tomorrow night.

Can the *Big T* become a satisfactory publication for the entire student body? Can there be a satisfactory basis for budgeting the book? Can a yearbook be issued at a truly reasonable cost to each subscriber? There is one solution to these problems. A student body vote to make *Big T* subscriptions compulsory at a price of three dollars would provide for the publication of an excellent *Big T*—not one of the most extravagant we have had—but certainly not one of the smallest. This would guarantee the *Big T* the place it deserves, the position held by other annuals in other colleges.

To end our journey, we go back to the beginning. Today, we seem to think nothing of trying to raise \$130 million in our "At the Leading Edge . . ." program. Back in 1920, when Dr. James Scherer was President of Throop (he was also a president of Caltech when they changed its name, but no one has ever heard of him), and there were only a handful of buildings on campus, their goals were a bit more modest. This is from January 12, 1920.

Throop College of Technology begins 1920 with a New Year's gift of a million dollars, the largest single donation ever made to a Southern California institution. In making this important announcement this morning at the first Assembly of the year, President James A. B. Scherer, while acknowledging deep appreciation of the handsome gift, nevertheless made it clearly apparent that this rapidly growing institution needs still more in the way of endowment and buildings, and that a financial campaign will be waged at once with determination and energy. While the anonymous donor of the million-dollar contribution to the Throop endowment fund specifies that only an equal amount must be obtained from other sources, Throop really needs a total of three million said President Scherer, and the friends of the institution should fully understand the fact. A Campaign and Building Committee, headed by Arthur H. Fleming, Henry M. Robinson, and William C. Baker, will immediately push forward plans that have been recently matured, so that 1920 will be a red letter year for Throop, which undertakes to secure at least an additional million within a specified time.

Institute Committees

Following is a list of the members of the standing faculty committees. Student members are listed in italics.

Undergraduate Academic Standards and Honors

C.H. Wilts, L.G. Bonner, D.S. Burnett, R.A. Dean, P.B. Dervan, R. Gomez, J. Penn, F.J. Sciuilli, T. Vreeland, *Robert Chess, Lloyd Maxson, Yuri Owechko, Ken Rousseau.*

Upperclass Admissions

W.D. Iwan, C.D. Babcock, B.E. Cain, S.I. Chan, E.W. Cowan, R.A. Dean, R. Gomez, S.L. Huntley, D.O. Muhleman, R.H. Sabersky, F.H. Shair, P. Wannier, *Bert Wells.*

Academic Policies

Leverett Davis Jr., J.M. Allman, W.A. Goddard, D.C. Goodstein, P.A. Lagerstrom, M.H. Rubin, T. Scudder, J.A. Westphal, *LeRoy Fisher, Al Kellner.*

Athletics and Physical Education

E.J. List, D.S. Cohen, W.H. Corcoran, F.E.C. Culick, E.H. Davidson, R.P. Dilworth, W.G. Emery, R.J. Powers, *Doug Tally.*

Convocations

R.W. Oliver, A.L. Albee, J.K. Clark, H.B. Gray, R.V. Langmuir, *Senior Class President.*

Curriculum

T.K. Caughey, R. Gomez, A.P. Ingersoll, B.V. McKoy, D.R. Smith, J.H. Strauss Jr., *Ed Bielecki, Eric Eichorn, Ken Rousseau, Chris Sexton.*

Foreign Students and Scholars

D.O. Muhleman, T. Kubota, E. Sternberg, E.G. Strauss, R.D. Wayne, T.Y.T. Wu, *Jimmy Wang.*

Freshman Admissions

E.W. Cowan, J.E. Bercaw, L.F. Browne, S.I. Chan, F.H. Clauser, R.C. Flagan, C.R. Hamilton, F.B. Humphrey, S.L. Huntley, H. Kanamori, W.G. Knauss, R.E. Marsh, J. Mathews, B.V. McKoy, M.A. Nicolet, J.H. Schwarz, R.N. Splitter, D. Wood, *Phil Engelhauf, Yuri Owechko, Louise Saffman, Erik Sirri, Chris Wheeler.*

Graduate Study

P.C. Jennings, A.L. Albee, C.D. Babcock, J.L. Beauchamp, J. Bonner, F.S. Buffington, D.S. Cohen, L.E. Davis, R.P. Dilworth, G. Gavalas, S. Huntley, H.B. Keller, R.V. Langmuir, C.J.

Pings, J.P. Revel, D.L. Smith, R.W. Vaughan, P.G. Wannier, W. Whaling.

Health

F.H. Shair, F.C. Anson, L.G. Bonner, A.J. Hudspeth, J.W. Mayer, D.C. van Essen, J. Mathews, *Walter Hess, Leslie Paxton.*

Independent Studies

D.H. Fender, F.C. Anson, J.M. Kousser, J.H. Seinfeld, *Christopher Rogers.*

Institute Programs

D.S. Wood, C.A. Barnes, J.F. Benton, E.H. Davidson, M. Gellmann, E. Hutchings, P.A. Lagerstrom, H.A. Lester, R. Mooney, J. Penn, J.R. Pierce, J. Pine, J.H. Schwarz, A. Smith, F. Farrar, *Ed Bielecki, Pamela Crane.*

Library

N.R. Corngold, J.F. Benton, A.S. Kechris, J.M. Kousser, L. Lees, W.A. Schroeder, J.E. Tallman, H. Zirin, *Tom McDonnell.*

Patents

S.O. Samson, T.K. Caughey, W.J. Dreyer, D.H. Fender, H.C. Martel, *Eric Eichorn.*

Relations with Industry

G.R. Gavalas, D.S. Cohen, W.B. Davis, G.C. Fox, G.P. Garmire, T. Kubota, C.H. Papas, W.H. Pickering, C.R. Plott, S.O. Samson, *Dave Walker.*

Relations with Secondary Schools

J. Pine, L.F. Browne, D.S. Burnett, W.H. Corcoran, S.L. Huntley, T. Vreeland, *Kenneth Coles, Colleen Ruby.*

Scholarships and Financial Aid

P.W. Fay, U.H. Hyman-Kelly, R.W. Kavanagh, E.J. List, F.D. Nelson, W.P. Schaefer, F.H. Shair, P. Wannier, *to be appointed.*

Special Laboratories

A.L. Albee, F.E.C. Culick, Leverett Davis, R.G. Noll, T.A. Tombrello, R.W. Vaughan, *none.*

Student Housing

R.W. Kavanagh, P.B. Dervan, W.L. Johnson, J.W. Mayer, J.D. Pettigrew, P.G. Saffman, W.P. Schaefer, D.C. van Essen, *Mike Aziz, Bruce Baker, Louis Testa.*

Former Tech Editor-in-Chief Sandy McCorquodale has just returned from a year of travel and study in Europe. His accounts of the past year's adventures have appeared here regularly.

The final chapter of the McQ saga begins with a typically mixed up journey to the airport, where a flight home awaits him. A few hours later, McQ is back in the U.S., still very far from Caltech and science and Pasadena...

By Sandy McCrocodile

And in fifty twisted May hours it suddenly all came together and apart as the end rang down. Up at noon Thursday and into Strasbourg for one last look at the beloved high spots; where we missed the bus, the bistro we were thrown out of, the place we bought the hot sausages that left our tongues hanging out onto the sidewalk, the patisserie which sells bread on Sunday and the supermarket with the cheapest escargot in town, etc. A few cheap beers and by dinner at the chateau I've a good buzz on and only one final in the evening—Cross-Cultural Aspects of African Literature—a course whose name is inversely proportional to its content. Jumped into the local bistro and carted a bottle off to the exam, which was rather trivial come to think of it.

But the Alsatian night had set in by the end of the exam and the only course of action which seemed appropriate was to heat up the night some more at a few parties in various parts of the chateau and finally stumble out to the slum over the road in dire need of rest but only the grim job of packing to look forward to. Books! Kilos and kilos of books to be thrown into the suitcase and stuffed in coat pockets and shoulder bags. Posters removed from between the graffiti and the white spaces, leaving larger white spaces quickly filled with drunken graffiti. (One might as well get one's money's worth out of a liability deposit.) At some point Hans and I conducted another widening and deepening of the hole in the floor, something we had not created, only elaborated on.

Look, No Hans

He wasn't sober enough to walk downstairs without killing himself and it consumed several precious minutes to convince him the open window was not an elevator door. 3:30 in the morning and lugging suitcases downstairs, finding them too heavy for lugging up to the chateau and leave them in the road to be picked up on the way out. We woke our ride at the chateau up at 4 and we were on the road by 4:15, after stopping to get the luggage out of the road and finding another bottle. At the train station by a quarter of five, but the whole place is being renovated and one can't

drive up to the front door, just park a block away and cart the baggage in relays as the two of us can't carry it all at once and the driver is just after his money and has a fuck-all attitude about whether or not we actually get the train. In the station by 5 and all the winos, spying an oasis in our single bottle, are accosting us and demanding drinks in the names of liberty, equality and fraternity. They killed the bottle and we'd made the platform by 5:05. Train to arrive at 5:15 and Hans has run off to get some food and something to drink from somewhere. By now I've begun to come down from the day's consumption and a dull ache is orbiting my medulla. TEE on time at 5:15. No Hans. Pile cases and bags into the train and stand with door open. No Hans. Conductor walks down platform and closes all the doors. No Hans. Train begins to pull out. No Hans. Train has left. No Hans.

Just have to wait for him at Basel, I decide and jump into a compartment with two Italians to sleep off the clickety-clack which is either the train or my spine. To no avail as, for the first time away from the frontier, two French passport control agents want to see identification papers. Out with the old passport in dread anticipation of the search of my bags, but the passport trolls are more concerned with the Italians and ask me to step out into the corridor while they search them. Promised only two minutes, I wound up standing in the corridor's draft for 45 as they took everything the poor Italians had with them apart. They even disassembled a coffee percolator in their drug search. Nothing was turned up, however, and I was re-admitted to the compartment just before the train arrived in Basel. The Italians were congratulating themselves as the contraband had been concealed in the cast one of them had on his arm. I was too blown away to comment on it in any fashion.

That's Life

In the Basel bahnhof long before anything is open and spend 2½ hours waiting for *el boracho* to arrive, which, as it turns out, he did on the very next train. We took the next train to Zurich and discovered, well after the Basel bahnhof had receded into memory, that I had successfully lost my entire roll of rare and valuable French posters. *C'est la vie.* The train we were on was eminently sterile and practical, making snoozing unthinkable and we sat in half-awake stupors for the distance. Boarded the bus at the Zurich bahnhof for the flughafen and suddenly we are engulfed by American tourists. English, English, English, nothing but English without end and two broke students with hangovers trying to look inscrutably European with

little success even though one actually is.

Sweat out three separate lines of ugly American tourists at the flughafen to get the ticket from an incompetent charter service and suddenly at the check-in they don't want my 35 kilo suitcase unless I pay for it. But I have no money and after incessant bickering for a half-hour he finally accepts a good ole B of A check drawn on, you guessed it, the Lake Street branch. He is miffed and my collar's had a heat stroke by the time this transaction is finished, but things are only beginning as the plane is delayed five hours due to a strike in Paris and the charter winds up renting an airplane from another charter service just so we might make the passage before the strike in Paris is over. (My now, wasn't that considerate?)

McQ Is Back

The charter was as bad as coming over and one needs only read the first column in this series of debacles to have a vivid description of the flight. This one was slightly ameliorated by all the free booze and I was totally bombed on Bacardi by the time the plane reached JFK. Customs and immigration was no problem, but I was dead on my feet and the 35 kilo suitcase was impossible to carry or drag and I moved in intermittent bursts of ten yards. My head was in twenty-seven pieces by now and fragments of my cerebellum were flaring like meteors every few seconds. Vision severely reduced through alcoholic depletion of Vitamin A when, saints be praised, the divine Miss G (whose first name, of all the god-forsaken trivia this side of Pluto, is the Hispanic version of Lola) appeared in the international arrivals area to meet whatever students came over on the flight. The divine Miss G had been a student in Strasbourg and left early in disgust at the college. I pray for her. She knew when the two school charters were supposed to arrive and had come down just in case anybody was on this, the first one. Only another chick and myself had come over on this flight and we piled everything into her car, searching at top speed for first the Braniff and then the American terminal as I had a connecting flight in ten minutes and virtually killed several bystanders in the terminals as I dashed past swinging a shoulder sack of books for clearance in front of me. But the real thing is: *As I sat in the back seat surrounded by pounding FM stereo radio from the heart of New York and the Divind Miss G whose father had millions in Cuba and got out in time and the car fishtailed in our haste and disorientation and the remaining ethanol was staking out my remaining brain and a copy of the NY Times was on my lap in this huge Cadillac (very white) gas-guzzler of an El Dorado and my exhaustion from the flight from Europe a fact; I could practically feel myself on the throbbing jugular of Eastern Establishment power and money and affluence and influence and suddenly a thought of Caltech and science and Los Angeles*

was just so much ozone ascending.

Thank you

Technical and statistical typing and tape transcription; resumes, reports, thesis, etc.; printing and binding services. Also available for administrative overload typing. Call us about discount prices to students.

DEE'S SECRETARIAL SERVICE

1125 W. Colorado Boulevard
Los Angeles, CA 90041

Phone: 256-2178



We're Building a New Town

a car-free village for 2500 people of solar homes, organic gardens and small businesses. We are establishing a new way of living with an emphasis on community life, the integration of work and play, and living with nature through appropriate technology. Join our 8 week summer workshop and help create an eco-systemic and human scale town. College credit.

The Center for Creative Community

Cerro Gordo Ranch, Dorena Lake Cottage Grove, Or. 97424

Ostriker Questions Assumptions Of Big Bang Theory Of Universe

By Alan Silverstein

Get ready to switch your perspective to the biggest one there is: the universe as a sea of galaxies, colliding and cannibalizing, rotating in the strangest ways and evolving through lives we can barely imagine. This is the feeling that was conveyed in a rambling, freewheeling Watson lecture given by Dr. Jeremiah Ostriker, Caltech Fairchild Scholar in theoretical astronomy, last Wednesday evening. His first comment of the hour-long talk, entitled "On the Origin and Evolution of Galaxies," was that the title was still valid but the synopsis might not be.

One of his major surprises in graduate school, Dr. Ostriker said in leading into his subject, was that as late as the 1920's very many people thought we were at the center of the only galaxy in the universe, and that what seemed to be other galaxies were no more than "pinwheels pasted on a sphere." He added, "that people maintained such an anthropomorphic view so late amazed me." The ancients had somewhat of a more correct view, he said, as he described the whirlpool galaxy theories of Descartes and Kant. Descartes envisioned "whirlpools out in space that filled all of space"—an idea that is only recently beginning to gain empirical support.

We're Off-Center

Dr. Ostriker made some general comments on our non-central position in the universe, as we understand it today. "We live off-center in a spiral galaxy," he said, launching into a series of slides, half photographic and half graphic, which accented most of his lecture. He showed what is considered to be a large galaxy, about 100 thousand light years across. He mentioned that our period of rotation is about 200 million years, which is quite short on an astronomical scale. Billions of galaxies are apparently observable, within a radius of about ten billion light years (which probably corresponds to the age of the universe). All are flying away from us, and there is no center to the expansion.

In recent times there has been a consensus among astronomers that galaxies as we know them are the building blocks of the universe, and are the result of the Big Bang that will probably end in a cosmic whimper. Dr. Ostriker raised a lot of questions about this consensus. He pointed out that we don't know for sure what the galaxies are made of (most of the matter may not be stars); that we are not sure how they evolve (though we do know that they do change and interact); and that we have no certain idea of their scales (their mass distribution is probably ten times larger and heavier than we think). "Our local neighborhood

is not representative [of what the whole universe may be like] ... that's the punchline of this talk; the next forty-five minutes will be about details ... some of which may be interesting."

Dr. Ostriker digressed to kid about the nature of theoretical astronomy: "It has its advantages ... it's clean; the hours are simple." He continued the lecture by reading from Kant, and commented, "that's not (considered) modern science, you see, because it's lofty."

Interstellar Smog?

A pair of pictures on one slide gave a striking comparison between our Milky Way and another galaxy seen edge-on. The dark clouds evident in both photos along the galactic equator was easy to understand—"there could be obscuring matter—smog!"

Following informally through the evolution of the theory of galactic evolution, Dr. Ostriker told how Messier catalogued the "weeds of the sky," i.e., nebulae, around 1755 so that persons looking for comets (a matter of prime importance) would not be confused. There was serious conflict, one time whether galaxies really were like our own, or merely gaseous nebulae. "Based on the evidence of the times, [I'd conclude] that [the former theory] won the argument." Of course, later developments were to prove that Andromeda is indeed another galaxy, and that swung the outcome back to our contemporary view.

The red shift phenomenon was discovered empirically, with no explanation provided. This helped support the many-galaxy perspective.

Some time was spent discussing and showing examples of how galaxies have been typed, say, by homogeneity vs. degree of presence of bars or spirals. However, it was commented wryly that "Some people think all galaxies have bars, if you just look properly." In any case, bars and spirals are fairly common, although there isn't a good mathematical explanation of why the forms are stable.

Galactic Classification

Hubble proposed a "zoological system" of galaxy classification, based on increasing structure, but this method—and its enlargements—leave Dr. Ostriker dubious because "it depends on what the people at Eastman Kodak can do."

It's odd, he noted that "no one thought, till recently, to ask why they have the size and luminosity they do ..." It seems most galaxies do come in about the same description, say ten to the tenth solar masses, for instance.

Even with the nice theory of galaxies that was being put together in the first part of this century, there were some prob-

Continued on Page Eight

"Shrink!" Matrix Theatre Opens June 2

Shrink!, a new rag 'n' roll musical directed by Ann Bowen, starring David Gallegly, opens June 2nd for an indefinite run at the Matrix Theatre, 7657 Melrose Avenue, Los Angeles. This original musical, written by Bob Goldstick and Bill Wine, deals with a zany day in the office of a New York psychiatrist. The cast includes Edmund Ballin, Valerie Mamches, Joan Vigman,



Dr. Norm Davidson at the Y DNA presentation last Monday

Photo-Al Kellner

Y PRESENTS RECOMBINANT DNA

Continued from Page One
concerned about the unknown effects of combining random genes in a bacterium.

Thus, in 1976, as Davidson explained, the National Institute of Health created a set of guidelines with which all federally funded research would have to comply. These guidelines classify experiments according to degree of possible hazard and specify minimum safety standards for each type.

Dr. Davidson, who admitted to seeing nothing wrong with recombinant DNA, also tried to objectively present both the pro and con points of view. On the pro side, he said that there are no known risks to this research, that the precautions taken anyway are safe enough for dealing with the most dangerous of known pathogens, and that the possible benefits from such research make it a risk not to do it. He argued that if it were possible for recombinant DNA techniques to create dangerous organisms, similar natural processes would already have done so. Finally, he quoted a letter from noted biologist Dr. Roy Curtiss, which among other things, showed that the probability of a bacterium being both dangerous and strong

enough to infect the human gut, was less than one in 10^{20} .

On the con side, Davidson was a little less thorough, mostly confining his arguments to quotations from an article by Dr. Robert Sinsheimer, Caltech biology division chairman, which argued that scientists simply do not yet know enough to be qualified to tamper with evolution. In the article, Sinsheimer proposed that such research be confined to a national center where it could be better controlled and that an organism other than *E. coli* be used for research since *E. coli* naturally inhabits the human gut.

Dr. Maniatis continued the symposium by describing the research being done at Caltech, and the safety precautions taken. Five groups here are working with recombinant DNA techniques, he said. All of them are doing basic research, aimed at understanding more about the nature of genes, including their replication process, the role they play in evolution, and the

Continued on Page Eight

By David Ritchie

Lois Walden and David Webb. Tickets are available at the Matrix Box Office, 653-9725.

Dave Brubeck Immanuel Presbyterian Church Sunday, June 12

Sunday, June 12, at 8 p.m., Dave Brubeck and the Cathedral Choir and Orchestra, conductor John Alexander, and organist Samuel John Swartz will present the West Coast premiere of *The Light In The Wilderness*. The work will be presented as the

final concert of the season at Immanuel Presbyterian Church in Los Angeles, with the composer performing the piano improvisation and Michael McClish as baritone soloist.

Characterized as "an oratorio for today," *The Light In The Wilderness* was composed in 1967 by renowned jazz musician Dave Brubeck, now firmly established as a serious composer of major works. It is written for mixed choir, baritone solo, organ, orchestra, and improvisational quartet. The text of the piece combines selections from the New Testament of the Bible and original texts by Brubeck and his wife Iola. The world premiere was presented in February of 1968 by the Cincinnati Symphony Orchestra and reviewed in *Time*.

For this special performance, early reservations are advised. For further information regarding tickets, call the church office at 389-3191. Immanuel Presbyterian Church is located at 3300 Wilshire Boulevard in Los Angeles.

Highland Gathering & Games Long Beach Veterans Stadium Saturday, June 25

The 45th annual Highland Gathering and Games will be held Saturday, June 25, 8:30 to 5 at the Long Beach Veterans Memorial Stadium, Conant St. at Clark Avenue. Sponsored by United Scottish Societies, piping, drumming, Highland and country dancing, caber toss, soccer, tug of war, athletic events for children, youth and adults, booths, and Scottish foods will be featured. For information, call 360-2919 or 649-6064.

New York City Opera Music Center Opens November 16

The New York City Opera will return for its eleventh visit to the Music Center's Pavilion for 28 performances Nov. 16 through Dec. 11. Mail orders are now being accepted through July 1. Single performances will go on sale in mid-August, including opening night which is not on series.

Tal's *Ashmedai* and Musgrave's *The Voice of Ariadne* will receive their West Coast premieres during the season. NYCO will also offer its West Coast premiere of *Trilogy* ("Impressario," "La Voix Humaine" and "L'Heure Espagnole"). Other new productions include *The Marriage of Figaro*, *The Pirates of Penzance* and *La Fanciulla del West*.

For more information, phone 972-7481.

"Since 1935"
SANG'S INN 1500 E. WALNUT
(1 Bk. East of Hill)
PASADENA

GENUINE CHINESE DISHES
Family Style Dimmers

生園

LUNCH • BANQUETS • FOOD-TO-GO
Specializing in Fried Shrimp
CHOW MEIN • CHOP SUEY
OPEN 7 DAYS NOON to 10:30 PM
Call 449-9772

Restaurant

CASHIERS
Good with figures, detail minded. Full time or part time. We will train qualified applicants. Good working conditions and benefits.

HOSTESSES
Must be 18 years old, with stable work record. Good starting salary, excellent company benefits. Full time or part time. We will train qualified applicants.

COOK TRAINEES
We will train qualified applicants in all phases of cooking service. Opportunity for advancement. Good working conditions. Full time or part time. Excellent Summer Employment opportunities which will continue as part time when school resumes in the Fall.

Openings available throughout greater Los Angeles area.
APPLY 9 A.M. - 12 NOON, MONDAY THRU FRIDAY TO:
JOE LONDON, PERSONNEL DIRECTOR

HAMBURGER HAMLET
322 N. Foothill Road
Beverly Hills, CA

An Equal Opportunity Employer

RECOMB DNA

Continued from Page Seven
method by which some are expressed, or "turned on" while others stay inactive.

Maniatis went on to describe the categories of safety specified by the NIH guidelines. There are two types of safety precautions—physical containment and biological containment. Physical containment ranges from P-1 (standard laboratory), to the high security P-4 which includes airlocks, showers for workers, glove-boxes, etc. Biological containment is simply the use of a crippled strain of *E. coli*, called X1776, which is not able to survive outside of laboratory conditions.

As Maniatis explained, there are numerous P-1 labs on campus. In addition, there are now P-2 labs, in which only "good, microbiological, aseptic techniques" are allowed. Finally, there is one P-3 lab, which includes an airlock, recirculating biohazard hood, and a pass-through autoclave. Work done in the P-2 labs, he said, will use the standard laboratory strain of *E. coli* while all work in the P-3 lab will use the crippled strain X1776.

Three grad students, Welcome Bender, Jon Fuhrman, and Dave Goldberg, and one post-doc, Amy Lee, next participated in a panel discussion and question period.

Fuhrman began by making the strongest case of the night against recombinant DNA. He said that the biggest danger in such research, as opposed to conventional research with known pathogens, is that a dangerous new bacterium might not be immediately recognized as

dangerous. We "don't know what to look for and it may not become apparent for a while," he said. Another fear he had, he said, was that "an air of nonchalance will develop in laboratory techniques," and that the safe lab techniques specified by the NIH guidelines would be hard to enforce after this research has safely proceeded for many years. He was also not convinced that molecular biologists, who are more chemists than biologists, were sufficiently proficient in microbiological techniques. In other words, they were not used to dealing with living organisms. Amy Lee, however, who is responsible for training and testing anyone planning to use recombinant DNA

techniques, reassured everyone that the proper techniques had to be learned well before anyone could even enter a recombinant DNA lab.

Most of the questions from the floor dealt with ideas that had been brought up during the panel discussion. One questioner, though, compared the DNA issue to the atomic power issue, and voiced a concern that the voice of the people would not be heard as "the technocrats" pushed for recombinant DNA. Dr. Davidson answered him, saying, "Recombinant DNA has been the most open, most debated scientific problem ever," and that the community has had more opportunity to give voice in this issue than ever before.

BIG BANG EVOLUTION THEORY QUESTIONED

Continued from Page Seven
lems. "The first was the discovery of quasars." These weird, atypical galaxies may be extreme cases of galactic evolution, but they're not extremely rare.

A second, more subtle monkeywrench was the inclusion (supported by expensive, computer-generated simulation movies, an example of which was shown) that "nature wouldn't permit something like [spiral galaxies]." The assertion is that "the galaxies must not be what they look like"—they'd fly apart or become otherwise unstable. Of course, "you can't do an experiment with stars, which weigh as much as the sun, and you'd need 100 billion of them."

Unlike stars, galaxies are on the same order of closeness to each other as they are large. Hence they should interact more than stars do. Examples were shown of what are apparently

galaxies in collision, throwing off long tails, as well as being cannibalized together into a clumping supergalaxy. Our galaxy, in fact, may have "eaten" the LMC (Larger Magellanic Cloud) in two billion years, as it essentially "re-enters" out of orbit.

Finally, Dr. Ostriker showed

how some measurements of the velocity of portions of galaxies (presumably by red-shift) have shown that angular velocity does not decrease with distance, as might be expected from looking at the solar system. Perhaps, he conjectured, this is due to huge quantities of invisible mass outside the galaxies we perceive optically.

Swords And Starships

By Nick Smith

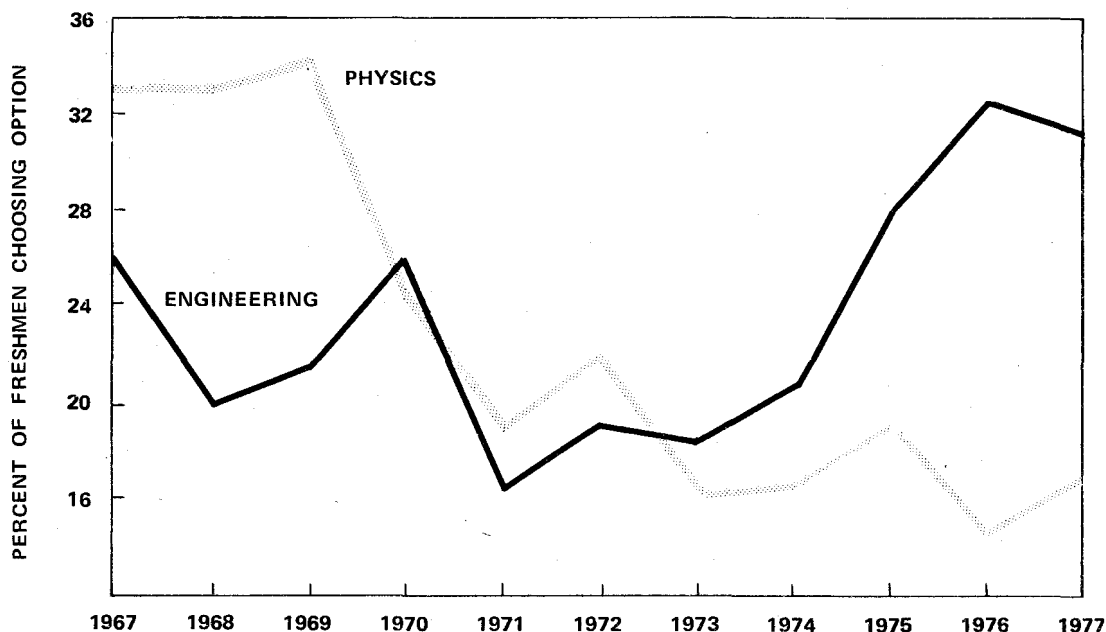
A very short column this week, just to bring you up to date on a couple of things to keep you busy during the summer.

First, in case you haven't noticed, *Star Wars* has been released, and is currently in Westwood and Hollywood. For those of you who haven't been reading about it, this is the first genuine high-budget SF movie since *2001*, and is quite worth seeing. Space opera of the finest kind, with Alec Guinness giving

the acting quality a boost. Even more important, for those of you who can't get out of the area, a very local theatre (walk north to Colorado and turn west, a block past Roma's) has it tentatively scheduled for the summer. Watch for it.

Second, for those of you who plan to be around here in August, there is something worth staying for. The weekend of August 12-14 brings an event called Fantasy Faire VII to the Pasadena Hilton, a small convention for SF fans and professionals. Several major people are going to be there, including Fritz Leiber, A.E. Van Vogt, C.L. Moore, Randall Garrett, Marion Zimmer Bradley, and others. Send for information at the following address: Fantasy Faire, 1855 West Main Street, Alhambra, CA 91801. The prices for this convention are cheap, and the hotel is about a mile from the campus. Films, panels, and all sorts of activities are planned for the three days. Try to go if you can.

Major Trends In Frosh Option Choices 1967-77



WAITING LIST FINALLY FILLS FROSH CLASS

Continued from Page One
brought to you by the Dean's Office. And, you know, since the pizzas were late in arriving, people actually stood and talked for half an hour, instead of gobbling half a pie and running back to their cubbyholes to troll. Hmmm...

Eventually, graduation happens to everyone who survives. To many of you this is a joyous event, unless you happen to be a follower of Zonker Harris. Well, in either case, the Registrar's office also informs me that there years ago, 195 BS degrees were awarded; two years ago, the figure was 162; last year, it was

179. Now that you're familiar with history, and wondering what this year's total will be, I must regretfully say that it is so tentative as to be almost meaningless—but it's 215 as of Wednesday last.

Sometimes people who actually get those hallowed Caltech sheepskins become members of the Alumni Association (you really should, you know). Ms Phyllis Jelinek of that worthy organization says that thus far, seven graduating seniors have become Life Members and 50 persons have joined as new Annual Members.

ROMA GARDENS

BEER & WINE

ITALIAN CUISINE

PIZZA

SPAGHETTI

RAVIOLI

OPEN 5-11 p.m. Sun-Thurs

5-12 p.m. Fri-Sat

10% off to all CIT students
in dining room 7 days/week

Use new back entrance for picking up orders

1076 E. Colorado 449-1948

Now Open for Lunch 11-2

Pizzas, Sandwiches, Dinners

Second-Class Postage paid at Pasadena, California. The *California Tech* is published weekly except during examination and vacation periods by the Associated Students of the California Institute of Technology, Inc., Winnett Student Center, Caltech 107-51, Pasadena, CA 91125.

CLASSIFIED ADS

FOR RENT

1 bedroom unfurnished apartment in duplex, E. Orange Grove Blvd. near Caltech. Newly decorated, private patio, appliances, venetian blinds, carpet, garage, coin laundry, \$180 month. Call 355-2445

OPPORTUNITIES

ATTENTION GRADUATE STUDENTS: If you are working in any group that has just published an important paper, in any field, then we would be interested in having you write a short popularized version, discussing the work. Please contact: B-J Syndicate, P.O. Box 9055, Daytona Beach, Fla. 32020

SERVICES

ACCURATE AND EXPERT TYPING by executive secretary. Will do theses, manuscripts, papers for students and faculty. IBM selectric. Fast service, reasonable rates. Call 441-1410

Buying or selling something? You, too, can take out an ad in the *California Tech*! \$1.50 per inch, plus \$.25 per extra line for Classifieds. Bring ad copy to the *Tech* office or phone ext. 2154.

THRU SUN

COUNTRY PORN
TRASHY TEDDY

MAY 31-JUNE 5

MANDRÉ
THE MASKED MARAUDER
& BOOTY PEOPLE

DOUG WESTON'S World Famous

Troubadour

COCKTAILS • DINNERS • HOOT MONDAYS • NO AGE LIMIT

9081 SANTA MONICA BLVD., L.A. 276-6168