

Tech Talks To Jane Van Lawick Goodall

TECH: What made you accept Dr. Leakey's offer to study the wild chimpanzees?

Dr. van Lawick: Simply because it was the sort of thing that I had wanted to do and had dreamed of doing all my life.

TECH: Just to study the animals as they are in nature?

Dr. van Lawick: Yes, but I would never have aspired to anything as fascinating as the chimp because I had no qualifications except wanting to know. I would have accepted anything, but being offered the chimpanzee—it was fantastic.

TECH: Why was Dr. Leakey originally interested in the animal studies? Was he interested in tying-in chimp behavior with that of man's ancestors millions of years ago?

Dr. van Lawick: Yes, that was really the idea, especially since these chimps live on a lake shore. That's so close to the way the earliest men lived. In fact, it probably throws light on man's behavior in some ways. It makes people realize that before man used stone tools he must have grubbed around with sticks, and twigs, and leaves. This just hadn't occurred to people before I studied the chimps.

TECH: In the past few years there have been several discoveries of animals using tools. You, yourself, discovered that the chimp and the Egyptian vulture use tools. Do

you think that as research goes on more animals will be found that use objects in a way that can be called tool using?

Dr. van Lawick: Yes, I think that we also found that the mongoose will use stones to break open ostrich eggs. However, the whole concept of animals using tools arouses excitement because of the idea "man the tool user." So, as soon as you find an animal using a tool most people think, "aaah, intelligence." Well, that's not necessarily true. For example, the Gallapagos woodpecker finch uses a spine to prove insects out of bark; that's just as much a part of his growing up and living as the long tongue of a normal woodpecker.

I think that tool using becomes significant when an animal can adapt the patterns he has to use tools in new contexts. In other words, he solves new problems by using tools. The chimp, compared to any animal other than man, uses an incredibly wide variety of objects for an incredibly wide variety of purposes. No other animal that we know of yet can even approach him in this respect.

TECH: The chimps appear to use a great deal of what is today called "body language." Do you think that this is the way that communications started in our ancestors before speech developed?

Continued on Page Eight

Graduate Program; Expanded Offerings For Humanities

by Malcolm Handte

The Division of Humanities and Social Sciences plans both a broad expansion of undergraduate offerings and the establishment of a graduate-level program leading to a PhD in "Social Sciences." With the aid of a major increase in funding, the division should, in the next few years, do much to close the gap in

breadth of offerings, and in reputation, that now exists between it and the scientific divisions.

Dr. Robert A. Huttenback, acting chairman of the division, and Caltech's genial dean of students, outlined its plans in a recent interview. The greatest expansion in the present undergraduate areas will be in economics and political

science, although rapid development of the philosophy and psychology programs is also projected. The graduate program will prepare its students to tackle problems from an interdisciplinary standpoint.

In the humanities increased emphasis will be placed on creativity. Writers, musicians and artists in residence will become increasingly numerous. The social sciences will undergo a major shift in emphasis toward a more theoretical approach. A program of research into the theory of social change will be accompanied by the establishment of research fellowships in the social sciences. The department hopes to be able to apply the results of its theoretical research to the solution of contemporary problems such as population control and the protection of the environment.

The concrete results of the expansion program are already becoming apparent. Coming to Caltech next year with appointments as professors will be James Quirk, a theoretical economist; David Grether, an econometrician; two political scientists and a social psychologist.

On the eve of its "great leap forward" Caltech's Division of Humanities and Social Sciences is, when compared with those of most

Continued on Page Eight

News Briefs

Former President DuBridge Receives Millikan Award

On Tuesday, November 24 Caltech's former president Lee A. DuBridge received the second Robert A. Millikan Award at the annual Banquet of the Associates. This black-tie (or as someone said, "straight jacket") affair was held at the Century Plaza Hotel.

In accepting the award, DuBridge said that he was perhaps ineligible to receive it because "hopping off to Washington" did not break his association with Tech and because he had helped institute the award. It was obvious that he was speaking to friends, for his speech was not much of a speech at all; he just had some things he wanted to get off his chest. He devoted the remainder

of his speech to a discussion of the relationship between science and society since the 1930's: from almost nothing to the winner of the war to almost nothing again. He hoped that "society will learn that science and technology are the cure for society's ills, not the cause."

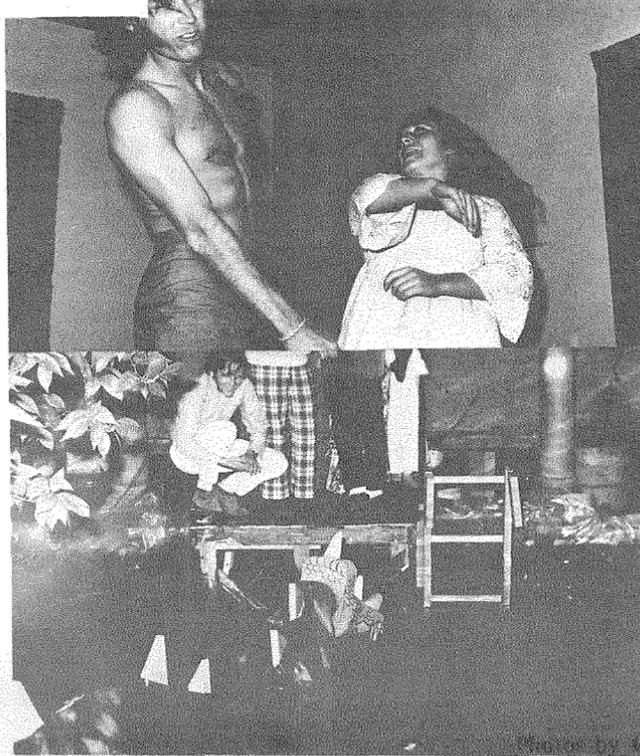
Throop Tree Lighting Set For Monday

At 5:00 p.m. Monday the much-talked-about Throop Christmas Tree will be lit. Dr. Brown is expected to be the guest of honor at the lighting. The event will be highlighted when the Glee Club performs part of its Christmas repertory.

Continued on Page Seven



INTERHOUSE
'70



Throop Beat

Applications Keep Pace

by millikan troll

The dust of Early Decision has started to settle in the Admissions Office. With that almost out of the way, Dr. Miller reports that applications to Tech have been keeping pace with last year. However, this year's crop of applicants will probably put increased demands on scholarship funds.

Dr. Miller explained that the Institute could get caught between the pressures of increased demands on scholarship funds, and decreased contributions to them. The problem will probably not be critical next year, he indicated, but could get quite serious the year after if present trends continue.

Sophs Down; Juniors Up

On the average, Miller continued, sophomores usually have their scholarships lowered compared to when they were freshmen (some do go up, however). This results from the expectation that sophomores will earn more during the summer.

Conversely, more juniors find their scholarships increased than decreased. (Is it possible that juniors are worth less?)

California residents are reminded that today is the last possible day to mail your California State Scholarship application. If you do not apply for a California State Scholarship and are a California resident, your chances of receiving a scholarship from the Institute are reduced.

Top of the Week

The Browns have been back in town since November 23. . . . As far as we know the mail ballot to the faculty on the PE requirement has not been sent out yet . . . A post mortem of the student participation program at the Palm Springs trustees' meeting was held yesterday. . . .

Terry LaGrone, ASCIT Treasurer, reports that ASCIT got the tax exemption under Section 501 (c) (3) that it has been seeking. The change enables ASCIT to receive grants directly. . . . Anyone interested in being Business Manager of the Big T? See any BOD member. . . . Fifteen students have been accepted for the Class of '75 under Early Decision.

Calendermania

Several offices have complained that they have not been getting their Institute calendars, or have been getting less than usual (complainers include your friendly newspaper). About 3400 Institute calendars come off the presses each week, of which about 2,000 go off campus. The remaining 1400 find their ways into offices and mailboxes here on campus and at JPL.

Apparently, the number of on-campus recipients has been cut in order to provide for increasing demands for Institute calendars by the outside world. The Public

Relations office is trying to restore cuts made in critical areas on campus, but an increased press run (and hence budget) for the calendar may be needed.

Und Ve Shall Call Him Ludwig

The 200th anniversary of the birth of Ludwig van Beethoven approacheth! This great event is but two short weeks away. . . .

This week's Etaoin Shrdlu Award goes to Jff Hxct for expecting to receive his subscription. Close runners-up include the ubiquitous Shrdlu winners Regan and Nixon, for not staying out of the headlines, and B&G, for being themselves.

Letters

Beckman Replies To Smith Column

Gentlemen:

Nick Smith has pleaded for comments on his article concerning Proposition 18 (*The California Tech*, October 29), wherein he alleges that opposition to this measure by the Auto Club of Southern California stems from the fact that Auto Club directors are also directors of corporations that "benefit from continuing expansion of Los Angeles." I am named as one of such discredited persons because I am a director of Security Pacific National Bank and Southern California Edison Company. It is a pleasure to comply with his request.

At the outset, let me suggest that the article might well serve as case-study material for H 40, the new course in Practical Politics, for it illustrates two frequently encountered characteristics of political writing: first, the technique of evading reasoned analysis of an issue by throwing a cloud of suspicion over one's opponent and, second, the propensity of political writers to mention only those facts that appear to support their viewpoints. Unfavorable evidence may be omitted unintentionally, of course, because of failure to obtain adequate information, or it may be deliberately withheld.

With respect to my multiple directorships, the writer doesn't indicate just how either the bank or the Edison Company would benefit by a NO vote on Proposition 18. It seems to me that both might gain as much, if not more, from a YES than a NO vote. No doubt I'm politically naive.

But why stop at these two directorships? There are more. Surely the writer must know that my principal business affiliation is with a company that derives a substantial part of its income from the sale of air pollution instrumentation. I am

Kaufman Asks PE Requirement Repeal

by Kaufman

It is reasonably clear that two years' intermittent exercise alone will not make substantially better scientist/citizens or seriously reduce susceptibility to disease. It is entirely possible, however, that these good effects may derive from a continuing enjoyment of exercise, the apparent goal of physical education. Certainly a valid educational enterprise, this: changing

effete, namby-pamby eggheads into healthy young chaps romping the playing field between intellectual triumphs.

Unfortunately, some (or most) of us are not quite that malleable. Some are already committed to *mens sana in corpore sano*, some are uncommitted, and a few reckon regulated exercise more trouble than value. Should these last be forced into the mold of the others or out of the Institute?

Enforced Attitude

Further, the putative value of the P.E. requirement is the chance to impress on the uncommitted group a given (favorable) attitude, albeit concerning a noncontroversial sub-

ject. Even supposing, as above, desirable results from this attitude, complete uniformity of opinion may not be vital. Is indoctrination to true, healthy values worth coercion?

Some people, though valuing physical activity so little that they seldom exercise, have suffered little for it, even rising to positions of great honor and responsibility. For a student of this character, enforced physical activity is just so much time in prison, of no conceivable benefit if only by virtue of his antagonism. That, admittedly, is his own fault — for not liking what he is expected to like. Yet the purpose of the course is enjoyment.

The question is not whether to encourage such people to change their attitudes—which the requirement does not do—but whether they are to be allowed to graduate.

Freedom of Choice

Finally, any great benefits of P.E. should be apparent to the student involved. That much trust of student judgment is extended in choice of course of study, within extremely broad limits, and in behavior towards other members of this community under the Honor System. Moreover, in virtually all aspects of health, safety, and social and emotional adjustment, barring P.E., the faculty has left perfect freedom, for good reason. It is largely such freedom which makes Caltech a community of scholars rather than a collection of infants and glorified baby sitters.

A poll taken in the Student Houses this week on the PE requirement produced the following unofficial results: about 66% favored abolition of the PE requirement; over 80% favored a one year requirement over a two year requirement if there is one.

chairman of its board of directors and a stockholder. This company obviously could benefit from an expanded program of air pollution research and control, stated to be one of the objectives of Proposition 18.

Why, then, did I not urge passage of the measure? The answer is simple. Proposition 18 was, in my opinion, a poor piece of legislation; its bad features outweighed the good. I wonder if Nick Smith studied Proposition 18 in depth. The measure was not an opinion poll for or against mass transit, although apparently many people thought it was and voted YES. It was really a dangerous and inequitable tax bill.

I am in favor of a sound mass transit system, and so is the Auto Club, despite Nick Smith's statement to the contrary. The Auto Club played no part in the defeat of the 1968 Rapid Transit Bond proposal that was overwhelmingly turned down by the voters. Actually, the Club has actively supported legislation in Sacramento providing funds for the Southern California Rapid Transit District and for air pollution research.

Why did the Auto Club oppose Proposition 18? The Club's directors, each exercising his independent, experienced judgement, decided that passage of the measure would not be in the best interests of the Club or its membership. If Nick Smith had taken the trouble to telephone the Auto Club, he could have learned that, at the directors' insistence, a post card poll was

taken of 5,400 Club members selected at random by a computer. The NO vote was 67.7%.

The defense rests.

I enjoy reading the *California Tech* and take this opportunity to compliment you for the high quality of the publication this year. The articles are interesting and usually well-written. It is gratifying that your writers have not had to resort to foul language to hide literary incompetence. They write well and should be encouraged. Urge them, however, to rush into print slowly, making sure their facts are correct and adequately complete before reaching conclusions.

Please tell Nick Smith that all businessmen aren't necessarily evil all of the time. As proof, I hereby graciously waive my right to sue for libel.

Sincerely yours,
A. O. Beckman

If P.E. Is Required, Why Not Require. . . .

Gentlemen(again?):

I've heard a great deal recently from people who don't realize the great Goodness of having a PE requirement. They seem to be under some misconception that by the time a person gets to Tech (or

Continued on Page Eight

DELIMEAT

KOSHER STYLE
Delicatessen
& Restaurant
LUNCHES DINNERS
CATERING
FOR ALL OCCASIONS
1770 E. COLORADO BLVD.
796-4373 Parking in rear
Nat Zatkin

POSTERS

Extremely Wide Selection
The Print Store, Inc.
1515 E. Colorado (Opposite PCC)
Open Evenings Till 10

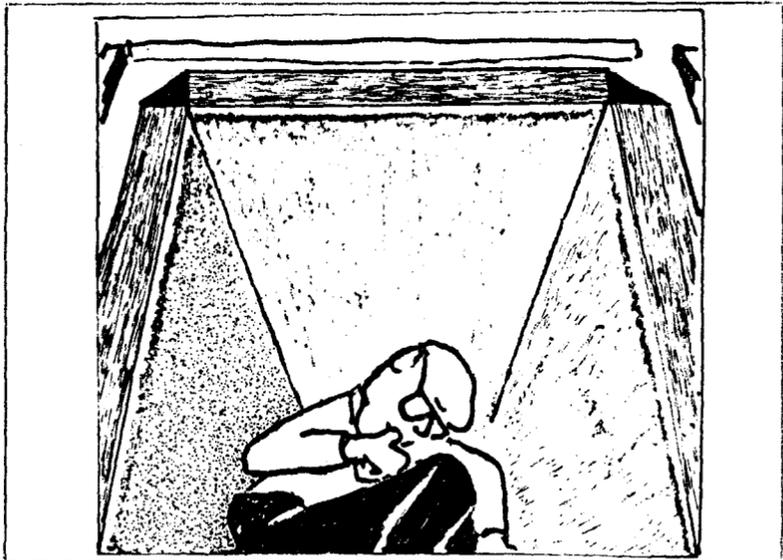
ASCIT MOVIES OF THE WEEK:

Dracula has Risen from the Grave
7:30 p.m., 10:30 p.m.

Comedy of Terrors
9:00 p.m.

FRIDAY NIGHT — CULBERTSON HALL

Admission 50¢



The CALIFORNIA Tech

Thursday, December 3, 1970
Volume LXXII Number 10

Published weekly by the Associated Students of the California Institute of Technology, Incorporated. The opinions expressed in all articles herein are strictly those of the author, and do not necessarily reflect those of the editors or the newspaper staff.
Copyright 1970 by the Associated Students of the California Institute of Technology, Inc. All rights reserved.

Editors-in-Chief Paul A. Levin
Ira D. Moskatel
Philip M. Neches
Entertainment Editor Nick Smith
Film Editor Dave Dobrin
Photography Editor John Fisher
Sports Editor Ira Moskatel

Staff John Abbott, Peter Beckman, Patricia Clabaugh, Barry Dohner, Emden Gansner, Roger Goodman, John Garth, Malcolm Handte, Jim Henry, Philip Massey, David Miller, Mike Mariani, Bruce Montgomery, Terry O'Neill, Etaoin Schroedlu, Alex Seita, Bob Standley, Elliot Tarabour, Millikan Troll, Ralph McGee.

Photo Staff John Belsher, Steve Dashiell, Karen Eatgn, Bill Loucks, Ken Mills, Alan Stein.

Business Manager Marvin Mandelbaum
Circulation Manager Metin Mangir

The California Tech publications offices: 115 Winnett Center, California Institute of Technology, 1201 East California Boulevard, Pasadena, California, 91109. Represented by National Educational Advertising Service, Inc. Printed by News-Type Service, 125 South Maryland Avenue, Glendale, California. Second class postage paid at Pasadena, California.

Subscriptions \$1.50 per term
\$4.00 per year
Life subscription \$100.00

Independent Studies Nears Reality

by Bob Fisher
ASCIT President

A couple of weeks ago I mentioned that many of the things a Student Government does are behind the scenes. Two of our projects, however, should be out in the open, and in fact could use considerably more publicity than they have been getting. They are the Independent Studies Program and the ASCIT Social Committee. This week, the ISP. Next week, the Social Committee.

Recently the Faculty voted to approve the Independent Studies Program. It will go into effect this academic year unless the Faculty Board vetoes it because of unforeseen snags. Passage of the ISP came after 2 and 1/2 years of heavy politicking on the part of both students and faculty. I consider the program revolutionary for Caltech. During the Faculty meeting Dr.

Rochus Vogt stood up and asked, "Do you mean to say, someone in this program wouldn't have to take Physics 1?" Dr. Fred Anson's reply, speaking for the APC which drafted the final version, was, "I want to be entirely clear about this. There are no inherent Institute requirements for anyone in the ISP. None." This means no Option requirements, no Ph 1, Ph 2, Ma 1, Ma 2 requirements, no Humanities requirements, and presumably no PE requirements, though this latter may be carrying flexibility too far.

Recruit 3 Advisors

Each Undergrad in the ISP would be responsible for recruiting 3 Faculty members to be his advisors. They, in loose consultation with the ISP Committee (and of course the student), would chart out his academic career. Each individual would be expected to take some courses. Which ones they are could

vary from person to person — there would be no central core as the program is now envisioned. Furthermore, all work would be done on a Pass-Fail basis if desired (unless the prof refused to let his course be taken pass-fail).

The Independent Study Program is not intended to be a refuge from courses and grades. Each student in it should do some work beyond the standard curriculum. This could take the form of research with a professor or graduate student, independent reading, exchanges with other schools or Institutions, or anything else the Advisory Committee can approve.

With Portfolio

If the student receives grades, his GPA is calculated as usual. If not, his credentials for Grad School or jobs will be based on his "Portfolio," an extensive record of

Continued on Page Six

One Why?

Disability Assured

by Mark Peterson

Unless you have a safe lottery number you will probably have to get a 1Y deferment to avoid the draft. This article will discuss how to develop the information necessary to get that deferment. The next article will discuss what to do with that information after you have developed it.

When you leave school the appeal process will keep you safe from the draft for at most two years. Therefore, unless you will be 24 when you leave school, you will need to get some other deferment to get past the age of 26 when you will be safe from the draft. The 1Y will almost certainly be the easiest deferment for you to get.

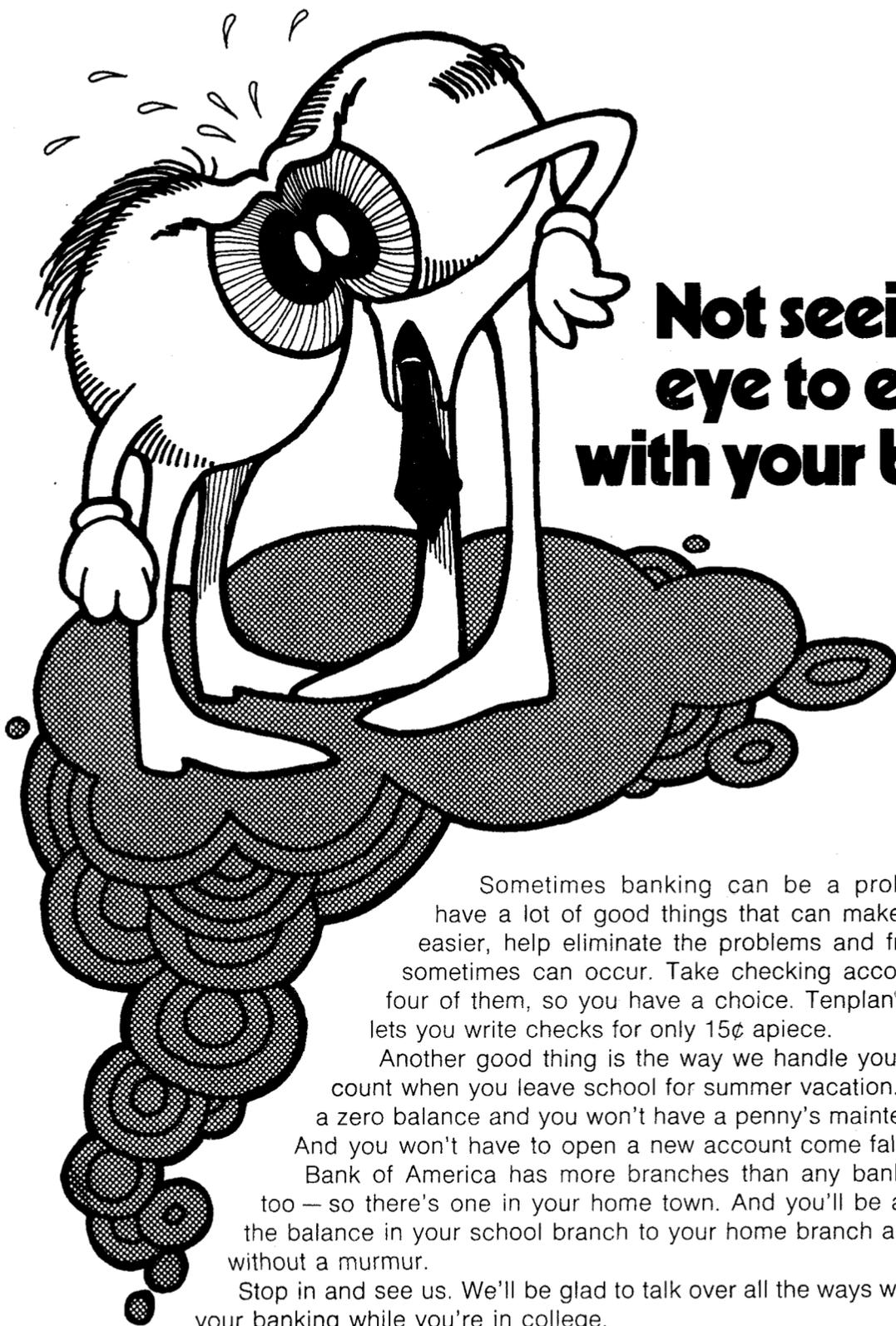
To get the 1Y deferment you must be physically, psychologically or morally unsuitable for the army. Since you are morally unsuitable only if you are on probation, you

have a criminal trial pending or you are a child molester, your best chance for the deferment is to be physically or psychologically unsuitable.

The army publishes a long list of physical and psychological conditions which will cause a draftee to be unsuitable. A draft counselor will have access to this list and can help you determine if you have one of those conditions. In general, a draft counselor's help will be invaluable in preparing and presenting your claim to the 1Y deferment. Even if you do not now have the basis for the deferment, you are likely to within another year or two when your body has deteriorated a little more.

If you believe that you have one or more conditions which should get you a 1Y, you should get a letter from every doctor who has treated you for such conditions. Letters should be addressed to "To whom it may concern" and should be sent to you rather than directly to the draft board. Each letter should be carefully reviewed before it is sent to the draft board. Some doctors have a knack of writing unfavorable letters. A doctor's letter should state the condition on which you are claiming unsuitability and give the basis for the diagnosis, the symptoms which were found, tests which were conducted, etc. Also, the letter should discuss the effect that the condition would have on your ability to serve as a soldier and the effect of military life on the condition.

Continued on Page Seven



Not seeing eye to eye with your bank?

Sometimes banking can be a problem. But we have a lot of good things that can make your banking easier, help eliminate the problems and frustrations that sometimes can occur. Take checking accounts. We have four of them, so you have a choice. Tenplan®, for instance, lets you write checks for only 15¢ apiece.

Another good thing is the way we handle your checking account when you leave school for summer vacation. You can have a zero balance and you won't have a penny's maintenance charge. And you won't have to open a new account come fall.

Bank of America has more branches than any bank in California, too — so there's one in your home town. And you'll be able to transfer the balance in your school branch to your home branch and back again, without a murmur.

Stop in and see us. We'll be glad to talk over all the ways we can help with your banking while you're in college.

BANK OF AMERICA

Bank of America National Trust & Savings Association • Member FDIC

HI LIFE
1758 E. Colorado
449-9705

SPECIAL DAYTIME OFFER for Caltech students, faculty, alumni, and employees over the age of 21.

Good from 12 noon to 3 p.m.

A sandwich and beer for \$1.00. (Your choice of eight sandwiches) Upon presentation of Caltech ID.

PLUS TOP ENTERTAINMENT!

BABY DOLL
RINDY MARTIN
TONI FELICE
KITTEN
JOANIE ALLEN

and the rest of our top girls



Cover charge reduced to 50¢ on Monday thru Thursday nights; waived on Sunday, Friday, and Saturday with presentation of Caltech student, faculty, alumni, or employee identification card.



audience

chandler pavilion: new york city opera

by Paul Levin

While Ginastera's *Don Rodrigo* is not a new opera, its performance in Los Angeles by the New York City Opera Company was something new for L.A. opera-goers. While this is only one of the nine operas to be performed during the current three-week engagement, it is certainly one of the more unique pieces to be given.

Although it is a contemporary work, *Don Rodrigo* uses a classical libretto set in the eighth century. In fact, the whole opera so closely resembles those of the last century that it is often possible to forget that one is listening to a modern work. However, a few scenes might sorely try the patience of a Boston censorship board even today.

The sets and costumes are magnificent. While preserving the medieval flavor (of the twelfth or thirteenth century) the designers removed much of the ornamentation to make the result more pleasing to today's audiences. For example, a gothic cathedral was reduced to nothing but a few rows of slender columns supporting statues of praying saints. There wasn't even a cross.

Had the cast not contained extremely strong singers, the performance would have been tenuous, but everyone was able to hold his part. Acting, too was superb. *Don Rodrigo* is an atonal work. Instead of relying on traditional Western harmony its music harks back to the music of the early Coptic church. It's wierd.

Orchestration for the work is somewhat unusual, too. During one scene change the audience found itself surrounded by the brass section; during the previous scene some of them had left the orchestra

pit and moved to the far back corners of the auditorium. Through the marvels of modern electronics a xylophone kept on coming from the ceiling, and the work ended with chimes coming from at least six locations in the building.

Don Rodrigo is a truly impressive work. While it probably will not appeal to exactly the same audience as the others do, it certainly deserves to be ranked with the classics. Go see it.

films: ryan's daughter

by Ira Moskate

Ryan's Daughter is a human film about very human beings. Director David Lean and award-winning screenwriter Robert Bolt have re-created the world of a young woman searching for a love she cannot define and maturing traumatically in the process.

Set in Northern Ireland during the Irish uprisings at the turn of the century. The daughter of the local publican, Rosy Ryan (Sarah Miles) is a spoiled teenager unsatisfied with whatever she has. She falls in love with the widowed local schoolmaster (Robert Mitchum) and marries him. Life with the educated but prosaic pedagogue is anything but exciting.

In the tradition of recent movies, the wedding night is depicted explicitly and the camera zooms in on the frightened girl in bed as her husband makes love to her almost mechanically. The romance is gone.

EUROPE 1971

Caltech Charter Flight
July 4 - Sept. 4
LA/London/LA
Boeing 707 Jet

\$295 including fees and taxes
Flight Chairman: Dr. O. Mandel
For information call: 476-4543

A replacement is brought in from the Western Front for the British commander in the village. While tending her father's pub Rosy observes the shell-shocked captain (Christopher Jones) in a fit. As he recovers in the emptied bar, the affair begins. The movie deals with Rosy's desires, the superstition of the townfolk, and the relationship between Rosy and Shaughnessy (Mitchum).

Behind the major action is the theme of rebellion and the struggle against the natural elements. The most impressive cinematography was a storm scene where the villagers are fighting the waves to get ammunition being deposited on shore.

The thematic lead of the movie is the deaf-mute Michael, played by John Mills. Deformed since birth and the butt of cruel jokes, Michael struggles simply to live. He is powerless to better himself and cannot show his emotions. Although Michael is not a lead, Mills' performance is nothing less than brilliant.

Sarah Miles, as Rosy, is a consummate actress. Portraying at the same time youthful fears and the undisciplined passion Miss Miles makes Rosy believable without causing the audience to either pity or hate her. We are presented with a statement about the continuity of life, achieved through reproduction rather than melodrama.

Robert Mitchum is one of the weaker players. He loses the battle of empathy to the Irish accent which he tries to maintain throughout the movie. Trevor Howard is quite convincing as the parish priest who must continually temper the behavior of the townspeople when their superstitions and weaknesses overcome them.

Maurice Jarre's score is inappropriate, as it was for Lean's last film

Doctor Zhivago. The theme in Zhivago was a waltz played as a march. The theme was beautiful, the march was appropriate but the two didn't mix. Here the theme is a ballad-type melody again as a march. The waltz would have been more fitting.

All in all, however, Ryan's Daughter is a beautiful motion picture. I saw a preview which ran almost 3½ hours, yet I didn't notice the time. It is not a movie which will inspire tears—sentiment isn't this picture's purpose. It may help you form your insight into human nature. It is a human film.

books

FLAVORS, a book of Mason Williams things; Doubleday and Company, \$2.95.

This is a collection of the poetry, prose, and just plain ideas of one of the better songwriters and musicians of the past few years. His poetry isn't Byron or Shelley, but it isn't meant to be. Much of it is funny.

He included a short autobiography which sort of explains him, except for the Greyhound bus. My only objection to the book is the price, much too high for a paperback. Pick up a copy somewhere and read it, but don't pay the absurd price if you can avoid it.

DEAR DOCTOR HIPPOCRATES, by Dr. Eugene Schoenfeld, Evergreen Books, \$.95.

This book includes an assortment of letters he has received and answered in his medical column over the past couple of years. His column is printed largely in underground publications, since he answers letters Dear Abby or Dr. Brothers wouldn't touch with a ten foot pole. I mean, people don't talk about sex and drugs in newspaper columns, do they? That sort of thing isn't nice. Anyway, if you are interested in learning about various medical problems related to sex or drugs, buy the book. If you enjoy reading odd letters and responses, buy the book. Just buy the book, if you can find a bookstore with the nerve to sell it this close to San Marino.

—Nick Smith

NOW THRU DEC. 6

WAYLON JENNING

AND
JERRY JEFF WALKER
COMING NEXT
CAT STEVENS
DOUG WESTON'S

Troubadour

9081 SANTA MONICA BLVD., L.A. 278-6168
COCKTAILS • DINNERS • HOOT MONDAYS • NO AGE LIMIT

Pre-Finals Mind-Body Rinse-Out

featuring

The New World Music Society

In Dance Concert

Refreshments Will Be Served

Saturday, December 5 8:30 P.M.

Winnett Center Lounge

50¢ Admission — 25¢ with Hillel membership card

TOPOLOGY OF PROGRAMS

P. O. Box 85
La Mirada, California 90638

presents a pamphlet of
Experimental Graphic Writing
by Robert Harry Hever on

ELEMENTS OF HUMAN INTERACTION

N² - MAP

ENVIR- ONMENT	ENVIR. ON INDIV.	ENVIR. ON THINGS
INDIV. ON ENVIR.	INDIV. IDUALS	INDIV. ON THINGS
THINGS ON ENVIR.	THINGS ON INDIV.	THINGS THEY MAKE & DO

An easy-to-read expansion of these 3 Elements & 6 Interactions to 535 sub-Elements implying 285,000 Interactions covering most phases of human involvement. Instructions are given for reading, making & using n²-Maps. 15 Interpretations & Analyses are suggested. 20 Thought Provokers are posed on current human interest topics. Aspects of Western Technology & Theravada Buddhism are contrasted.

\$4.00 Postpaid
No C.O.D.'s please.

Are you interested in a challenging career?

YOU CAN HAVE OPPORTUNITIES FOR:

- Uninterrupted graduate work.
- Scientific research in a world-wide R&D organization.
- Extensive and early management responsibility.
- Pilot or astronaut training.

If these sound interesting to you, drop by the AFROTC office at 1107 San Pasqual, or talk to any AFROTC cadet.



Scrumptious
STEAKS
Picayune
PRICES

"2 for 1"

The **WESTWARD HO** 's Thickest Small Steak

Including soup or salad, oversized baked potato, and garlic toast.

Reg. 3.95

Present this ad and get

TWO DINNERS for the PRICE OF ONE!

Tax and tip not included

Good until Jan. 7

ENTERTAINMENT

DANCING

541 S. Arroyo Parkway — at California Blvd.

SY 5-5043

MU 1-8062

FRANK D. CLAY & SON



CAL-TECH STUDENTS AND EMPLOYEES!
For special consideration on your new Chevrolet Car or Truck ask for ERNIE HAYWARD, Fleet Manager, or JERRY SHEPHERD, general manager.

"SERVING PASADENA SINCE 1922"

2605 E. COLORADO BLVD.
PASADENA 796-2603

The Critical Ear

The Youngbloods—Rock Festival—WR1878
Carp—Carp—E30212
U.S. Apple Corps—SSS—12

The mood of a country is often reflected in its music. We being students at an urban institution are many times not exposed and occasionally not even aware of the feeling of a great portion of the country. These three albums provide an excellent view of that part of the country in addition to some real fine music. That portion of the country to which I am referring is rural America. Simple people, content with their lives and with their religion.

U.S. Apple Corps is the most notably religious record of the group. I was never, being a heathen by nature, really turned on to religious music. I found however the music itself ignoring the lyrics, rather good. Their rendition of "Swing Low Sweet Chariot" is the most impressive I have ever heard and reminds me very much of Sly and the Family Stone, a group which I like immensely.

Carp provides a blend of the religious and daily lives of these people in an outstanding piece of work. They sound a lot like the Band but with a unique sound that I can't quite describe. Perhaps it is the fact that they have not yet made it big and have not yet been

perverted by the big city, but enough of my wild speculation and social commentary.

Rock Festival by the Youngbloods has none of the religious aspect but they do provide yet another view of this part of our society. Particularly good cuts on this album are "Misty Roses" and "Peepin' 'N' Hidin'." This is definitely one of the Youngbloods better efforts. —Tarabour

Glee Club To Sponsor Car Wash Tomorrow

by Roger Goodman

The Caltech Glee Club is sponsoring a car wash tomorrow between 11:00 a.m. and 3:00 p.m., in the parking lot on the northeast corner of San Pasqual and Wilson. The \$1.50 donation will help the Glee Club raise funds for its many activities. For 50 cents extra, a Glee Club member will save you a trip and pick up your car, have it washed, and return it to its parking space. For this service, either return the memo you may have received in the mail or else call Wayne Anderson at 449-9504.

This weekend will be a busy one

From Stem To Sterno

Interhouse Show Lauded

by Elliot Tarabour

Fleming's Interhouse show this year was a truly impressive combination of musical and theatrical talent. The exciting music and laugh-a-minute humor made the event downright entertaining.

The show began with Sheldon and the Shmucks performing a

group of songs which completely characterize an era in American music. From the slow ballad "Last Kiss" (which tugged at everyone's heartstrings) to the exciting finale of "Rock Around the Clock," the audience sat spellbound. No incidents broke out after the performance reached this frenzied pitch. An additional word of praise should be thrown in for the Powerglides who did an excellent backup job for the Shmucks.

Following the SCHMUCKS the FLEMING HOUSE JUG BAND provided a pleasant respite from the feverish performance before. Their simple slow ballads warmed the hearts of those who listened. The lyrical imagery was truly superb. For example during their big number ("Big John") the image of "a giant sequoia" hit every one right in the face. It was musical poetry in it's finest form.

Then came the traditional Fleming House Play. This year entitled "Hot Noogies, Clarabelle." Behind the facade of humor was a true morality play. The message that it had for all was that one should just be oneself and not attempt to project images since images can never last. It ended as tragically as it began with poor Flakey lying in the gutter and the evil Clarabelle tormenting him until he could stand it no longer and finally cried out for an end to his torture by screaming, "Hot Noogies, Clarabelle," and there it ends giving the audience much to think about and consider while touring the rest of Interhouse.

All in all it was a perfect night of entertainment by my criterion: It had nothing for somebody, something for everybody, and everything for nobody.

for the Glee Club, with three programs. Sunday at 4:00 p.m. will be a Christmas program at the Michillinda Presbyterian Church, at the corner of California and Rosemead Boulevards.

The annual Christmas concert in the Athenaeum will be this Sunday evening at 8:00 p.m. in the Hall of the Associates, preceded by dinner at 6:30 p.m. This event is for Athenaeum members and guests, and reservations may be made by calling ext. 1097.

The annual Christmas tree lighting will be next Monday at 5:00 p.m. The Glee Club will lead in the singing of carols on the Throop steps facing Millikan.

The Club sang in Page House last Monday at dinner as part of its series of on-campus programs. A guest at the meal was Institute Trustee Stephen D. Bechtel, Jr.

Recordings of the Glee Club's 1969-1970 season, including the medley from their Hawaiian tour, are available at the Caltech Bookstore.

Lederman Corrects Flavors Combinations

President Baskin-Robbins Ice Cream Co. 1201 South Victor Blvd. Burbank, California 91506

Dear Sir,

As an ice cream lover, Caltech mathematics major, and free-lance genius I feel obligated to point out an error in your advertising. This evening at Baskin-Robbins Pasadena, I notices a poster claiming that Baskin-Robbins offers 31x31x31=29,791 different banana splits. I was informed by the attendant that a banana split is made with three scoops of ice cream and some topping and bananas.

The figure of 29,791 is incorrect.

How many splits are possible with three distinct flavors? (Here let V = vanilla, C = chocolate, S = strawberry). We have 31 choices for the first flavor, 30 for the second flavor if it is to be distinct from the first, and similarly 29 choices for the third flavor, a total of 31x30x29=26,970 distinct splits. However, we have assigned six times as many splits as are distinct, since, for example, the combination VCS would also appear as VSC, CSV, CVS, SVC, and SCV. Therefore the correct number of splits with 3 distinct flavors is 26,970/6 = 4,495 splits.

How many splits are possible with only two distinct flavors (eg. VVC, or CCS)? We have 31 possibilities for the double scoop, and 30 possibilities for the single scoop. Therefore the number of distinct splits with two distinct flavors is 31x30 = 930 splits.

Dear Mr. Lederman,
Sorry for the delay in answering
Continued on Page Seven

2 BIG COLOR HITS

A Blake Edwards production
Julie Andrews-Hudson
Darling Lili

Paramount Pictures Presents
A Howard W. Koch
Alan Jay Lerner
Production Starring
Barbra Streisand
Yves Montand
On A Clear Day You Can See Forever



COMING!
Dec. 16 "The Phantom Tool Booth"
Dec. 25 "Airport"

THE Esquire

2670 E. Colorado
SY 3-6149
MU 4-1774

Join the Cassette Revolution!

...study for exams with cassettes now!
You'll never want to study any other way!

Each cassette is a full one-hour recording of all the important content material taught in college courses, based on the most widely-used textbooks.



READY NOW:
Introductory Psychology
Educational Psychology
Abnormal Psychology

AVAILABLE SOON:
Afro-American History
Introductory Physics, I
Introductory Economics
Introductory Philosophy
American Government
English Composition
Basic Statistics
Introductory Sociology
Introductory Anthropology
Social Psychology
Personal Adjustment and Mental Hygiene
Child Development

Available at your local bookstore.
CASSETTE PACKAGE*: \$6.95

*each package contains: one-hour cassette, an outline of the contents, a bibliography of the standard textbooks for the course, and a detailed glossary with definitions for self-testing.

COLLEGE CASSETTE OUTLINE SERIES

Holt, Rinehart and Winston, Inc. 383 Madison Avenue, New York 10017

A graduate school that's more fire than smoke.

Only Honeywell offers a computer course designed exclusively for college graduates. Our postgraduate program for managerial candidates.

No matter what your major was. If you can qualify, you'll be ready to learn computers from one of the world's top computer manufacturers and leading educators, Honeywell.

You'll find yourself ready for the fastest growing industry around. An industry that

doubles in size and opportunity every five years.

Which could make your future pretty bright. All you have to do to light the fire is mail this coupon.

Admissions Officer - Postgraduate Studies
Honeywell Institute of Information Sciences
2600 East Nutwood Ave.
Fullerton, California 92631
(714) 870-0120

I would like additional information on your program.

I would like to arrange an interview

on _____ at _____

(date) (time)

Honeywell will call you to confirm this date and time.

Name: _____

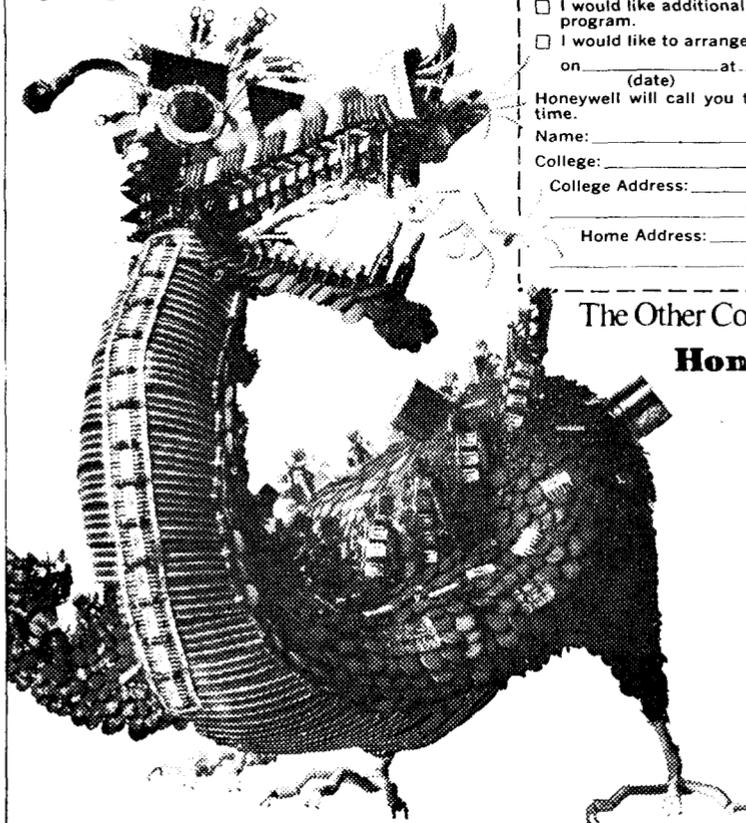
College: _____

College Address: _____

Phone: _____

Home Address: _____

Phone: _____



The Other Computer Company:
Honeywell

PE? ASCIT of Seita

by Alex Seita

At the B.O.D. meeting of November 19, eight undergraduates were asked to represent ASCIT at the November 23rd Faculty meeting which would deal with the issues of an Independent Studies Program and the PE Requirement. Consequently, these students vocalized a range of student opinions at the Faculty meeting, which resulted in a faculty vote to accept the Independent Studies Program and to table the matter of the PE Requirement until a polling of all faculty members was conducted. The student representatives were M. Aaronson, B. Barker, R. Fisher, L. Guibas, B. Johnson, B. Kaufman, P. Morgan, and M. Turner.

By-Laws Changes (Finally)

An ASCIT election will be held tomorrow concerning the abolishment of ASCIT subsidies to PE, and an expansion of powers for the ASCIT Social Committee. The elimination of the PE subsidies which amount to \$5.50 out of each student's ASCIT dues will channel more funds to the student houses through the ASCIT Social Committee. The other By-Laws change insures that the Committee will receive and have control over funding from ASCIT.

The election ballots with appropriate information should have reached all students by today giving some time for reflection before the election which allows the options of voting in person as usual, by proxy, or by mail.

Student Conference

In keeping with tradition, the B.O.D. allocated \$109 from the contingency fund to send ASCIT President Bob Fisher to the Annual Conference on Student Issues in Las Vegas. Instead of the multitudes of Board members that were sent in the past, this year, only Fisher was sent to the Student Conference sponsored by the Association of Student Governments. ASCIT is represented each year in order that a knowledge of other students' ideas is acquired and that we can pass on pertinent information concerning student research centers.

Announcements

Peter Evans, a virtuoso flamenco guitarist will perform in the Ruddock House Dining Room tonight from 8 to 9 p.m. His concert is presented by the ASCIT Activities Committee, Dr. David Smith, and the Faculty Committee on Programs.

ASCIT Treasurer Terry LaGrone reported that ASCIT has an opportunity to go into the pinball machine business which will yield substantial profits (\$20/week/machine). The B.O.D. sanctioned his continued investigation into that possibility.

The ASCIT Food Service Committee will dine (for dinner) at USC, IHC, and Pomona over this week and next in order to experience the quality of those schools' dining services. The committee will also question the students and the food service personnel at those schools.

LaGrone ecstatically revealed that ASCIT had accumulated \$100 in interest, an item of news that was hysterically applauded by the Board.

Bob Fisher was fired as ASCIT Yell Leader in view of his dereliction of duty (absence at football games) and Page House was appointed in his place.

This week's meeting the the ASCIT B.O.D. will be held at 7:30 p.m. Thursday, December 3, in Winnett clubroom II.

Simple Human Outrage

Corky Tells of Chicano Movement

by Alex Seita

Rodolfo "Corky" Gonzales is a nationally known leader in the Chicano community who heads organizations designed to help Chicanos achieve equality of human rights and needs. Raised in a migrant labor family, Corky was once ranked in the world's top ten as a professional boxer, presently teaches at the University of Colorado, and is a social critic as a playwright and poet. He has been associated with the federal government through the Youth Corps and two national commissions.

When Corky Gonzales relates the story of the Chicano movement in America, a remarkable and salient feature about him is noticeable. Here is a man without elegant social

criticisms; here is a man who professes simple human outrage when he observes America's treatment of his people; here is a man deep with pride that he is a Chicano.

This past Monday, there were three opportunities for the Caltech community to acquaint themselves with Corky when he gave an Olive Walk Talk, a seminar in Winnett, and finally, an after dinner speech at the Athenaeum. Throughout these events, Corky made it clear that he was here at Caltech not to entertain but to devulge the truth. At noon, he spoke of the scientists' obligation to reform society, to question traditional goals, and to realize the entrenchment of societal double standards. In the afternoon,

he began a dialogue depicting his work and his experiences. At evening, he spoke of his enjoyment in helping his people, in seeing their spirit, in relating to his culture from the Spanish conquistadors and the American Indian civilizations. Repeatedly, he emphasized that the Chicano movement was real, that he and his people were committed to a struggle for a proper share of American prosperity and civil rights.

At night, Corky stated that he was talking on three levels: one, to censure oppression from individuals and institutions; two, to ask the return of Chicano Uncle Toms; three, to express his love for the family of Chicanos. He deprecated people who questioned the speedy entry of Chicanos into the American mainstream by saying, "take it slow." Concentrating on the Uncle Toms of his people, Corky noted that they were people without an identity, that because they had rejected their heritage they were without a future—"unless you know where you're from, you don't know where you're going." "Come back," he stated, "because all good originates from the family." Then, with great feeling, Corky applauded the love of Chicano for Chicano among his people, demonstrated specifically when Cesar Chavez pledged support for Corky in his current courtroom battle by proclaiming, "It is my duty, Corky."

Throughout his speeches, Corky Gonzales gave me the impression that he was primarily at Caltech to reach Chicanos than the Caltech community, to inspire and affirm the faith of Chicanos than to enlighten the ignorant minds of those in ivory towers. Nevertheless, his potency of feeling was obvious, and thus, enlightening in another way. I saw a man who would be unaffected by arguments to "stop organizing" and to "become American and acquire American (WASP-ish) values;" I saw a strong man determined that his people receive their due.

Independent Study? ASCIT of Fisher

Continued from Page Three

comings and goings during his time here. A student is eligible for admission any time but first term of the Freshman year. Similarly, he can leave (or get booted out) at any time. If this happens he might have to delay graduation, although some requirements could be waived. But for a 1.9, there is no minimum GPA for admission.

I am hopeful that the ISP may be operational before third term this year. Formation of the appropriate faculty committee and education of the faculty as to the nature of the program is a limiting time factor right now. It is not too soon for undergraduates to seriously think about whether they want to get into this, and if so, to formulate

some specific plans about their proposals. Informally sounding out a few Houses, I have found over 40 who are interested already. Undoubtedly there are more I haven't reached. The Faculty has set no explicit size limit on the ISP yet. Nevertheless, there will be a restriction imposed by the need to find 3 Advisors (not all of the same Division). To some degree I imagine this will be first-come-first-served.

If I don't have your name on a list from my House tours and you want more information on the Program, leave a note and name in Dabney House's "F" mailbox. I'll forward copies of the Proposal when I get them. Early second term we can all get together for a more formal discussion.

Bridge Tourney

Announced — ASCIT

May Subsidize Entrants

Duplicate bridge competition for college and university students on campuses throughout the nation begins here during the week of January 11, 1971. The event, sponsored by the Recreation Committee of the Association of College Unions-International, Charles Goren, and the American Contract Bridge League will culminate in an all-expenses-paid trip to the National Finals scheduled for April 30 - May 2 at Northern Illinois University in DeKalb. (The Region 15 Semi-Finals will be at San Diego State College on February 18, 19, and 20).

The entry fee is \$1.00 per person at the campus tournament level. In past years the ASCIT BOD has subsidized 50 cents of this for ASCIT members. Master points will be awarded at the campus level as well as the semi-finals and finals. The Winnett budget will pay all of the entry fees for Caltech winners who qualify to go to the San Diego tournament. Transportation to and from San Diego will also be paid at the rate of 10 cents a mile, four to a car.

Sign up in Winnett office anytime between now and the day of the tournament which will probably be Wednesday, January 13.

"Pre-Finals Mind and Body Rinse Out" Saturday

The Caltech Hillel is sponsoring a "Pre-Finals Mind and Body Rinse-Out," this Saturday at 8:30 p.m. in Winnett Center Lounge. The New World Music Society will be featured in a dance-concert, and refreshments will be served. The cost is 50 cents, or 25 cents with a Hillel membership card. There will be many people (girls) from nearby colleges coming to this event.

Every Sunday evening, Hillel sponsors Israeli folk-dancing at the rooftop penthouse of the Business Services Building, at the corner of California and Wilson. Instruction is given from 7:30 to 8:30 p.m., and dancing continues to 10:30. The

cost is 25 cents to non-members.

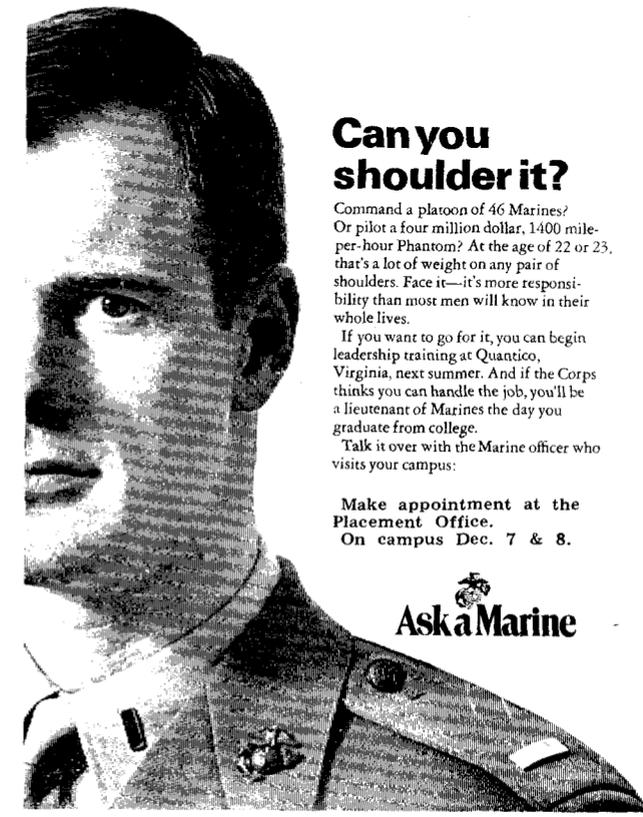
UCLA also has folk-dancing every Wednesday night, with the same format, at 900 S. Hilgard Ave. in Westwood. There are many activities sponsored by Hillel chapters at most colleges in the L.A. area. For listings call Marv Mandelbaum in 123 Ruddock House or see the infinite flyers on his door.

PAT'S LIQUORS AND DELICATESSEN
1072 E. Colorado, SY 6-6761
Open to midnight daily,
1 a.m. Fri. & Sat.
Keg Beer Party Supplies

ATTENTION INTERNATIONAL STUDENTS
Call MARTIN LEWIN TRANSARGO, INC.
2240 N. Figueroa St.
Los Angeles Calif. 90065
Specializes in Overseas baggage shipping and Commercial shipping.
Air-Ocean-Truck
Serving students for over 10 years.
Tel. 225-2347.

Typing & Technical Editing
by an experienced typist and technical writer. Per page charge:
\$1.50 straight typing
\$0.50 drafts
\$1.00 technical editing
Phone: 335-2065

TOP Quality JOB PRINTING
A Complete Plant At Your Service
795-4500
De Lacey PRINTING & LITHOGRAPHER
108 S. De Lacey • Pasadena, Calif. Zip 91105



Can you shoulder it?
Command a platoon of 46 Marines? Or pilot a four million dollar, 1400 mile-per-hour Phantom? At the age of 22 or 23, that's a lot of weight on any pair of shoulders. Face it—it's more responsibility than most men will know in their whole lives.
If you want to go for it, you can begin leadership training at Quantico, Virginia, next summer. And if the Corps thinks you can handle the job, you'll be a lieutenant of Marines the day you graduate from college.
Talk it over with the Marine officer who visits your campus.
Make appointment at the Placement Office.
On campus Dec. 7 & 8.

Aska Marine

We cordially invite California Tech students and faculty members to bank with us.

Complete banking services including:

- Automobile Financing
- Bank-By-Mail
- Certificate of Deposit
- Checking Accounts (Bookkeeping by electronic automation)
- Collateral Loans
- Drive-In Banking
- Escrows
- Foreign Banking
- Letters of Credit
- Home Modernization Loans
- Life Insurance Loans
- Money Orders
- Night Depository
- Personal Loans
- Real Estate Loans
- Safe Deposit Boxes
- Savings Accounts
- Travelers Checks
- Trust Services
- U. S. Bonds

Auto Banking Center at Colorado and Catalina Office, 1010 East Colorado and Citizens Commercial Trust & Savings Bank of Pasadena, hours: 9 to 4:30 daily; 9 to 6 Fridays

PASADENA
Head Office: Colorado and Marengo
Colorado and Catalina Office: 1010 E. Colorado
LA CANADA
La Canada Office: Foothill and Beulah

Citizens Commercial Trust & Savings Bank of Pasadena

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION
CLUB FEDERAL RESERVE SYSTEM

Ice Cream

Continued from Page Five

your erudite dissertation on our poster — which indeed was wrong (our poster, not your reasoning).

It is very nice that you took the trouble to work out in detail just where we had gone wrong! Just to double check, though, we had our own resident genius check on it and you might be interested in seeing the enclosed xerox which confirms your statements.

It's too late to change our posters, but not too late to show our appreciation to a Baskin-Robbins fan like you, and we hope you will enjoy the enclosed treat. (Enclosed were certificates for a free hot fudge sundae and a float.)

FLAVORFULLY YOURS,

Karen Trudnich

Manager

Publicity and Public Relations

News Briefs Breeze On And On And

Water Polo Players Named to All-League Team

This week the SCIAC named the all-league water polo team. Two Techers made it to the first team, and two more were named to the second team.

Captain and outstanding senior goalie Ken Hanson was the unanimous choice for All-League Goalie. Senior field player Larry Watkins was named to the first team for the third year in a row. Another senior, Robert Hall, and junior Steve Sheffield (Captain-elect for next year) were named to the second team. Congratulations!

Reading Program

Rebates Available

Students eligible for rebate of the Reading Improvement Course may pick up their checks in the Master of Student Houses Office.

Cheap Tickets Available

For Messiah Performance

The Beckman Auditorium Ticket

Office has 50 tickets at \$1.00 each for the December 5 performance of Handel's Messiah at the Pasadena Civic Auditorium. The concert beginning at 8:20 p.m. will feature the Pasadena Chorale and Symphony.

Thursday Drama Club Meeting Has Been Cancelled

Learn to Play Go

In Y Lounge

Today and next Tuesday there will be instruction in the Japanese game of GO at 4:00 p.m. in the Y Lounge. Beginners are welcome, and in addition there will be play to match all levels.

It's Still Coming, Be It So Announced!

As part of its continuing public service, the Tech wishes to point out that there are but thirteen days left until Ludwig Beethoven's two hundredth birthday. Be so advised.

1Y's Are Psychosomatic

Continued from Page Three

If you do not now have a basis for a physical deferment, you should work on developing a history which will support a claim for a 1Y deferment in the future. See a doctor whenever you have any physical or psychological problem. As a student you should have access to free medical help at school. If you do not and you cannot afford a doctor, see if you are eligible for Medi-Cal or go to a free clinic. A documented history of complaints about back problems, problems with other bones or joints, allergies, migraine headaches, stomach disorders, etc. is almost essential if you wish to get a physical deferment based on one of these conditions.

Many psychiatrists feel that a large percentage of our population suffers from some psychological problem. Just having grown up in America during recent times makes it likely that you have such problems. Thus, you should have

little difficulty justifying psychiatric help. Behavior and emotions which may not seem particularly abnormal to you may be a basis for a psychiatric deferment. For example, if you never study you may have problems of irresponsibility, hostility to authority, etc. If you always study you may be a compulsive-obsessive. If you study a moderate amount but are worried that you study too much or too little, you may have anxiety which indicates psychiatric problems.

There is little reason to hesitate requesting a 1Y on the basis of psychiatric problems. Only your draft board will know the basis for your 1Y deferment and your draft records are confidential. Those records will be released to the FBI and the CIA, but this should be of little significance to you unless you want a top secret government clearance.

If you have any questions which you would like answered in this paper by a draft lawyer, write to:

Mark Peterson
19½ Horizon Avenue
Venice, California 90291

Classified Ads

HELP WANTED

TRANSLATORS
with scientific training required. All languages and disciplines. Free-lance. Send resume to Box 5456, Santa Barbara, Cal. 93103.

FOR SALE

Lightweight motorcycle, ideal for student. 48 cc. Italian made, new. 100 miles/gallon, 39 miles/hour. \$150. 684-1365 or 466-5141.

For sale: '62 Rambler. Re-built engine. Good tires. Runs; ideal as parts source. Jim Ellern, ext. 2542 or 449-6106.

CASSETTES: lifetime jam guarantee, individual plastic containers. . . C30-\$0.48; C60-\$0.54; C90-\$0.78 C120-\$0.98. **REEL TO REEL:** reconditioned Scotch or Ampex **LOWER NOISE 1800'** reg. \$7.35 now \$1.94; **Standard 1800' Polyester** reg. \$6.20 now \$1.50. **DAK ENTERPRISES, 10845 Vanowen, N. Holly. 877-5884, 984-1559.**

GAME OF DIMENSIONAL ANALYSIS. Clarify science, stimulate creativity as you play. Give the appropriate **RACE THRU SPACE** game — III for thinking adults @ \$10.00 II for right-on students @ \$6.95 I for junior spacemen @ \$5.95 Send orders, names, addresses, checks inc. 10% (tax, postage) to **UNIVERSAL FIELD FOUNDATION, 435 Crescent Ave., Buffalo 14, N.Y.**

SERVICES

Crestline Cabins and Lodge for groups. Weekend and holiday reservations, call (213) CA 1-6849. Brookside Lodge.

Fowler Secretarial Service - 248-1492 — Specializing in: term papers and theses — IBM Selectric — math symbols available — rapid service — reasonable rates.

TYPING, term papers, technical reports, correspondence and resumes typed in my home. IBM Executive Typewriter. Patricia Clabaugh, 792-1641.

You, too, can take out ads in the California Tech!!!! \$1.50 per inch plus 20¢ per extra line for Classifieds. Bring ad copy to the Tech office, or phone Caltech extension 2154. O.K.?

If General Electric can build an electric tractor, why can't they build an electric car?

General Electric is marketing a 14-horsepower rechargeable electric tractor capable of speeds up to 7 miles an hour.

We think it's a remarkable innovation. But an electric car it's not.

As a garden tractor for home use, Elec-Trak™ can take advantage of characteristics that would be distinct disadvantages in an electric car.

The availability of fuel is no problem for Elec-Trak. It's designed for limited use near electrified structures, making overnight recharging possible.

The heavy weight of the battery, which would slow down a car, means greater applied traction for Elec-Trak.

Because Elec-Trak must travel at slow speeds to do its jobs, there are no aerodynamic energy losses to take into consideration.

Still, one might expect Elec-Trak to be the forerunner of a pollution-free automobile. Perhaps it is. But there are many crucial problems left to be solved.

The most important one, of course, is the development of a substantially better electric battery. Any car built today would be severely limited in range and performance, and probably prohibitively expensive.

General Electric is making progress on new batteries, but there's a long way yet to go.

We've experimented with zinc-air batteries. Sodium-sulfur batteries. Silver-zinc batteries. Lithium-halogen batteries. And others. There are problems with all of them. Problems of life-span, cost, practicality.

Despite the problems, General Electric scientists and engineers are working for the breakthrough that will make electric cars possible.

Maybe the breakthrough is closer than we think. But we'll

continue to work and leave the predictions to someone else.

Why are we running this ad?

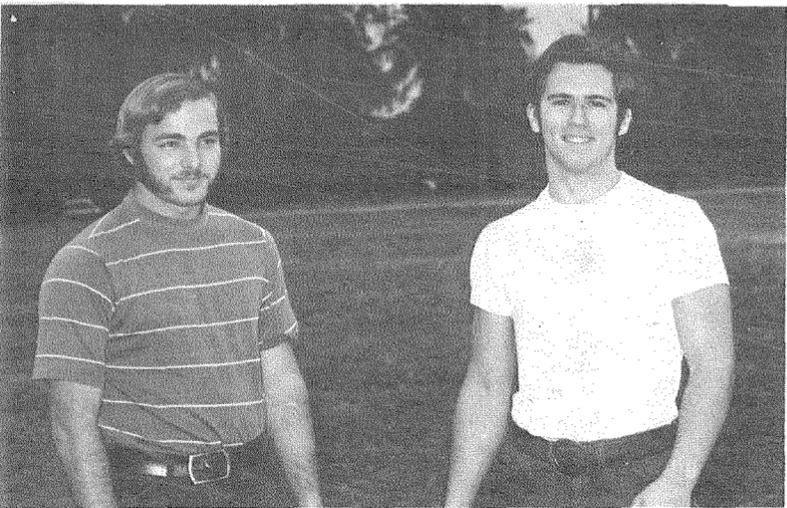
We're running this ad, and others like it, to tell you the things General Electric is doing to solve the problems of man and his environment today.

The problems concern us because they concern you. We're a business and you are potential customers and employees.

But there's another, more important reason. These problems will affect the future of this country and this planet. We have a stake in that future. As businessmen. And, simply, as people.

We invite your comments. Please write to General Electric, 570 Lexington Ave., New York, N.Y. 10022.

GENERAL ELECTRIC



Bob Bales and Craig Broskow, seen here in their civvies and SEG's were named Players of the Week after their outstanding efforts in Caltech's last game against HM-CMC. Basketball season is upon us! —Photo by Fish

Water Polo Team Takes Third Place In SCIAC

by Bob Kieckhefer

"At the end of the season we are the best team in the league." These were coach Lawlor Reck's last dry words before the jubilant water polo team threw him into the Occidental pool on November 21. In the hard-fought, high-fouling game before an Occidental homecoming crowd, the Techers played one of their finest games this year to build up a 5-1 lead by the middle of the fourth quarter. Oxy desperately applied a goalie press to the Techers, most of whom had three or four fouls, with the hope of evening the score. Their plan worked, as they netted two quick goals. However, goalie Ken Hanson's block of a penalty shot turned the tide as Tech scored two goals on the empty Oxy cage, pushing the score to 7-3 at the final gun. Larry Watkins scored four goals in his final game as a Techer, with Bob Hall scoring two and Tim Hight, one.

The previous Wednesday the water polo team defeated formerly unbeaten Redlands, 7-6. A Redlands penalty shot score with a minute remaining in the game tied the score at 6-6 and placed intense pressure on both teams. Under tight pressing from Redlands, Tech moved the ball down the pool. Watkins tried a lob shot which bounced off the far goal post. Following a much-practiced play, Steve Sheffield was there, but his lob shot also missed. Then, with less than 30 seconds left, Larry drilled the ball past the exhausted goalie. Bob Hall ended the game by stealing the ball from his Redlands opponent, who was trying to move the ball in for a shot.

The week before, Tech had beaten UCSD and Pomona, giving the team a four-game winning streak and third place in SCIAC.

In their post-season meeting, the team elected Steve Sheffield to be next year's captain. SCIAC opponents named Ken Hanson as the all-league first team goalie and Larry

Watkins as an all-league first team forward. Steve Sheffield and Bob Hall were elected to the all-league second team.

Letters . . .

Continued from Page Two

college for (that matter) he is probably big enough to cross the street all by himself and do other grown-up things, and that the time might be better spent on other things.

However, the truth of the matter is that the average Techer will not exercise unless forced to do so. It is clearly the responsibility of the Institute to see that he does so.

But why stop there? How many students here get a full eight hours of sleep a night (or every two nights . . .)? Why not have a three units sleep course, meeting twice a week for instruction, with one one-hour practice section. Of course, it wouldn't count towards the humanities requirements, but think of all the good it would do!

And what about meals? Why, do you realize some Techers *actually skip breakfast*. (It's a sad fact.) Perhaps if there were another three units course . . .

After all, if the Institute doesn't spend the time and money to make certain that each student, for his first two years here at least, gets the necessary exercise, nourishment, and rest—one might ask what else the Institute is for.

Sincerely, (well . . .)
Philip Massey

Tech Talks To Jane

Continued from Page One

Dr. van Lawick: I would say that this is extremely probable. Unless man and chimp evolved along extremely similar parallel lines, this suggests that before the branch-off the common ancestor of man and chimp used the same sort of non-verbal communications.

TECH: Do you have any trouble with poachers who steal the chimps for export?

Dr. van Lawick: Not where we are, but in most places in the chimp's range they are in great danger. For one thing, the way they catch the baby chimp is to shoot the mother. As you can imagine this leads to a very high death rate. I estimate that for every one chimp that reaches its destination a minimum of six others have died.

TECH: Then you are in favor of limiting the export and sale of wild animals?

Dr. van Lawick: I'm very strongly in favor of this. The only answer to the problem is to set up larger breeding colonies to supply animals.

TECH: Some people are against zoos because they take an animal out of its natural habitat and this changes the behavior of the animals drastically. What do you think of efforts such as Africa U.S.A. that try to recreate the animal's habitat?

Dr. van Lawick: I believe these are the answer for the future. I've just been to the one near San Diego. They have 2,000 acres of the most superb rugged country—rather like Africa. Their smallest enclaves are to be 500 acres. It's really beautiful, and for an animal to be kept there I can see nothing wrong.

Some zoos, of course, are terrible; others are not so bad. If only people would use a little imagination in displaying what should rank as their top exhibits—their apes. It would be much better for everybody. I've designed all sorts of little gadgets to give the chimps something to do, but very few zoos will use them.

TECH: Do the chimps become bored in captivity?

Dr. van Lawick: They become very, very bored; they literally become neurotic. It's just like putting a person in prison for life, but it doesn't have to be that way. I know of groups of chimps and monkeys that can be and are kept alert and happy in captivity, if people use enough imagination about it.

TECH: I believe that conditions were primitive at the beginning of

your research. How are they now?

Dr. van Lawick: Things were primitive compared to most research stations in the field. They are still pretty primitive, but we have thatched aluminum huts. This is because the chimps just pull your tent apart.

TECH: You now have research students with you. Do they aid greatly in getting information?

Dr. van Lawick: Oh, yes. We now have between six and ten students, and naturally we get between six and ten times information as one person. There is such a wealth of information to be collected.

TECH: With these added people it must be more expensive. Is there much of a problem getting money for the research?

Dr. van Lawick: Yes, there's quite a problem which is why I'm here. The money I get from this lecture tour, if necessary, will get two of my students through Cambridge. It's very difficult to get grants for American students to attend British universities. They want to go to Cambridge because there is a very good department of Ethology, the study of animal behavior, which is just being born in the states for some reason.

TECH: How long do you hope for your study to continue?

Dr. van Lawick: I would like it to continue for another 30 or 40 years at least. We need to find out what underlies the strange social structures of the chimp community, why some males go around together while others don't, why relationships develop between some males and females, and other questions. We can only know these when we know the exact relationship between the different individuals.

TECH: One last question, when are you going back to Africa?

Dr. van Lawick: Christmas, my husband's back there. We'll spend Christmas with the chimps.

Persons interested in supporting Dr. van Lawick's work and other research focusing on man's origin, animal behavior, and the conservation of our environment, should contact the L.S.B. Leakey Foundation, 1100 Glendon Ave., suite 1407, Los Angeles, California 90024.

Flamenco Guitarist Peter Evans to Dock At Ruddock House

by Alex Seita

The plangency of flamenco music will reverberate throughout Ruddock House tonight when Peter Evans begins his performance of concert guitar. On loan from *Doug Weston's Troubadour*, Peter Evans has received laudatory reviews from the *Daily Variety* and the *Hollywood Reporter*. This virtuoso guitarist whose repertoire covers traditional to classical pieces in flamenco music "possesses an impeccable, uncompromising style," *Daily Variety*, and is "one of the finest flamenco guitarists around," *Hollywood Reporter*.

A student of flamenco guitar in Spain, Peter Evans usually conveys his experience throughout his renditions of fiery, demanding pieces. He demonstrates his skill by his interpretations of *Granadians*, *Panaderos*, *Scherzo Mexicano*, *Venezuelan Waltz No. 3*, *Malaguena*, together with captivating Castilian tunes.

Sponsored by the ASCIT Activities Committee, Dr. David Smith, and the Faculty Committee on Programs, Peter Evans was selected to perform for the student body by his reputation and after being reviewed in a program at PCC before 500 people. Our student reviewers were Tom St. John (Fl) — "really quite arousing," and Rick Krueger (Pa) — "the cops and I loved it."

Peter Evans will perform tonight from 8 to 9 p.m. in the Ruddock House Dining Room and will be open to the Caltech Community. The use of Ruddock House for the site is part of the Activities Committee's hope to evoke greater campus participation in ASCIT events. Refreshments will be served.

Humanities . . .

Continued from Page One

other universities of equal academic rank relatively small and unprestigious. Despite that fact and even, in part, because of it, Dr. Huttenback is confident of being able to attract young, innovative scholars to fill the faculty and research positions that will be created in the next few years.

POLLUTION = (POPULATION)²
 X = support + volunteers + dollars
Pasadena Planned Parenthood
 1045 N. Lake Ave. 798-0706
 Your friendly neighborhood birth control center

The Smart Set PRESENTS
Entertainment & Atmosphere
Designed for Caltech Clientele
 WITH
Richard & Pepe on Stage
 COCKTAILS — DANCING — & GAMES PEOPLE PLAY
 953 E. COLORADO BLVD. PASADENA
 RESERVATIONS 449-8391

Jason Robards Katharine Ross
 They touched each other and let go of the world

'FOOLS'

Cinerama Releasing presents A Robert H. Yamin-Henri Bollinger Production
 screenplay by Robert Rudelson executive producer Pat Rooney
 produced by Henri Bollinger and Robert H. Yamin directed by Tom Gries in Color

GP ALL AGES ADMITTED FROM CINERAMA RELEASING

Original Soundtrack Featuring KENNY ROGERS & THE FIRST EDITION on Reprise Records

EXCLUSIVE ENGAGEMENT STARTS CHRISTMAS DAY!

PACIFIC'S PICWOOD PICO OF WESTWOOD BLVD. 272-8238 • 474-2569

Second Class Postage paid at Pasadena, California. The California Tech is published weekly except during exams and vacation periods by the Associated Students of the California Institute of Technology, Inc., Winnett Center, 1201 E. California Blvd., Pasadena, CA 91109. \$4.00/year.