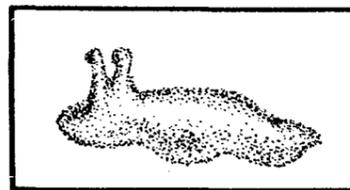




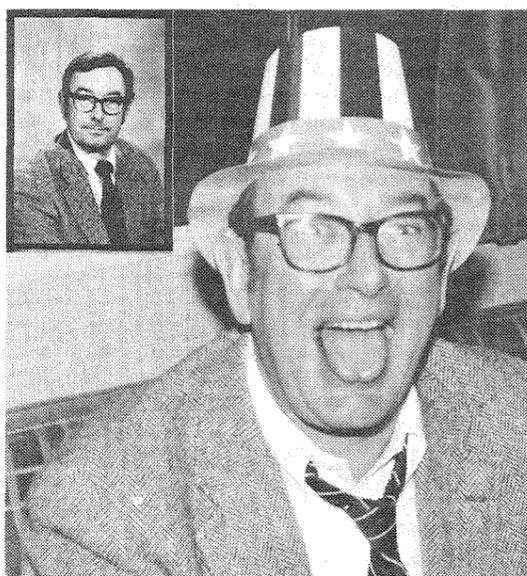
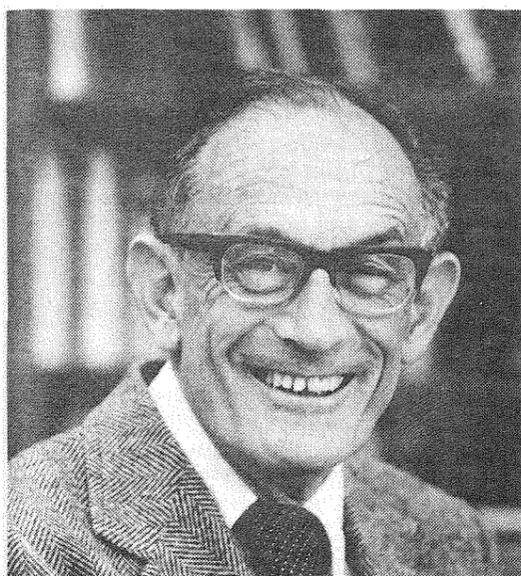
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to Our Snake!

THE CALIFORNIA TECH



PASADENA, CALIFORNIA

Gray, Liepmann Get Top Awards



The Winners Are: (right to left) Harry Gray (before and after!) and Hans Liepmann

by Josh Kurutz

Harry Gray, Arnold O. Beckman Professor of Chemistry, and Hans Liepmann, Theodore von Karman Professor of Aeronautics, Emeritus, were each awarded the National Medal of Science by President Reagan in Washington on March 12. The honor was given to twenty American scientists this year for their outstanding contributions and achievements in science and engineering.

Liepmann's reaction upon learning of the award was one of pleasure about the "nice recognition." Gray, at first, expressed disbelief, but then, "it slowly sunk in and it really felt great...just marvelous."

Gray felt the Medal was "the most important recognition you can get in this country," adding, "This is something my group and I share."

Liepmann was chosen as a recipient for his "theoretical and experimental advances in fluid mechanics which laid groundwork for high-speed flight, resolving aircraft buffeting, space reentry vehicles, and more efficient combustion." Professor Liepmann considered his largest contribution to be to his students.

Gray was selected for his group's research in Bio-inorganic Chemistry and Inorganic Photochemistry. The latter involved the conversion of solar energy into more useful types of energy. The former entailed the role of metals in living systems and long-range electron transfer in proteins.

Gray regarded the Medal as "a special honor" because he was awarded for ongoing research, whereas most receive it as recognition of lifetime accomplishments. He felt the recognition, "really

helps everyone (in the group of researchers) relate to the importance of our work."

Just before Gray was informed of the prize, he had returned from Congress where he had testified on funding for chemistry and the future of chemistry over the next decade. Eager to tell the news, his graduate students greeted him at the airport with a banner proclaiming "Hail to the Chief" and an RV stocked with enough wine and beer for a party of historic proportions.

The National Medal of Science dates back to 1962, when the late Theodore von Karman, then a Caltech Faculty member, was the first to receive it. On August 25, 1959, the 86th Congress decreed that no more than twenty Medals per calendar year were to be given out. Qualified recipients were to have made significant contributions to science or engineering. The Medal is purely honorary, unaccompanied by stipend or office.

Twenty received the 1986 honor, and 205 have been awarded Medals since their creation. Including this year's pair, twenty Caltech faculty and alumni have been given the award.

The faculty winners were Theodore von Karman (1962), John Pierce (1963), Alfred Sturtevant (1967), Arie Haagen-Smith (1973), William Fowler (1974), Linus Pauling (1974), William Pickering (1975), Richard Feynman (1979), Simon Ramo (1979), and Seymour Benzer (1983).

Non-faculty alumni awarded Medals include Wolfgang Panofsky (1969), Allan Sandage (1970), Saul Winstein (1970), Kenneth Pitzer (1974), Sterling Hendricks (1975), E. Bright Wilson, Jr. (1975), Donald Knuth (1979), and Charles H. Townes (1983).

Amazing Banquet

by Josh Kurutz

A radio-controlled, propeller-powered, balsa and mylar dirigible floated noiselessly about the Pasadena Hilton as the Southern California Skeptics assembled for the March 6 James Randi banquet. The program included recognition of the organization's officers and especially devoted members, a presentation by magician Randi, and a talk by *Los Angeles Times* columnist Jack Smith.

The event was held in honor of James "The Amazing" Randi, a professional magician, writer, and investigator of the "paranormal." He described himself as a "fraud, liar, cheat, thief, and charlatan," noting that he considered himself "a magician, by trade."

Most of the attention directed at Randi was for his twenty-five year career dealing with claims of the paranormal, which he had always found to be "hollow and without merit." Regarding such hoaxes, Randi commented that there were no convincing presentations to his experienced eye. He also noted that many cases involved tricks so realistic, "only a fellow conjurer could spot them." Randi did not admit to anything he could not explain.

Most recently, The Amazing Randi was investigating faith healers, whom he described as charlatans who used magicians' gimmicks. His latest book, *The Faith Healers*, covered his probe into this area.

Randi had authored a multitude of other books, including *Flim Flam*, *The Truth About Yuri Geller*, and *Houdini: His Life and Work*. He also created and marketed an ESP test kit; an note inside offers anyone who tested positive for having ESP to collect ten thousand dollars from the creator. No one has collected the sum yet.

Randi started his disclaiming career at the age of fifteen. There was a spiritual group in his town

holding meetings to converse with the dead; Randi decided to investigate it. He was promptly jailed for four hours for breaking up their proceedings. During that stay, he vowed to become able to eliminate this sort of "flim flam."

The only credentials the Amazing Randi has are his experiences. He feels very "unadorned and unencumbered" by his lack of academic degrees.

Randi was one of four founders of the Committee for Scientific Investigation of Claims of the Paranormal, from which the Southern California Skeptics was

born. "Once formed, the organization took off at an astounding rate," said Randi. The association publishes its own journal, the *Skeptical Inquirer*, which has an ever-increasing subscription.

Notables in attendance at the Skeptics' banquet included Caltech professor Murray Gell-Mann, Det. Pat Riley of the LAPD bunco squad, Bill Jarvis from the National Council Against Health Fraud, Al Hibbs, chairman of the SCS; Bob Stiener, ex-chairman of the Bay Area Skeptics; Ernie Ernici from the San Diego Skeptics; and Paul Kurtz from the national skeptics organization.

Carmela Going

by Diana Foss

After over fourteen years of caring for Caltech undergraduates, Carmela Kempton is leaving her desk in the Master's Office. Although she left a promising career at a downtown bank to work at Caltech (in order to be closer to her then five-year-old daughter) she has no regrets. She says she is going to miss most the entertainment, the amusement, and the knowledge she has gained from students over her years here. In fact, Caltech students have spoiled her for "conventional social exchange;" she says she finds her mind wandering at parties, so much does she enjoy talking to students.

Carmela remembers fondly several events she helped organize. When Jim Mayer was Master, she organized a series of ballroom dances. She recruited every young woman she could think of to come, including her daughter and her daughters friends, and the first few dances were smashing successes. Gradually, however, the number of

female partners dropped off as the women realized that Techers really couldn't dance, and that their conversation was rather impenetrable. Still, ever resourceful, the students resorted to dancing with each other, the pictures of which Carmela still treasures.

Cooking contests were also fun. "Students would stay up all night making these absolutely spectacular full-course meals," she recalls, "and we had trouble getting faculty judges, because they had to eat seven full meals in only seven hours."

She understands completely why people fall in love with Caltech. "Where else can you sit at your desk and hear a cannon go off?" she asks. Once, about ten years ago, a huge lioness walked through the door into her office. It turned out to belong to a student; giggling outside soon tipped her off. She has become close to many people while at Caltech, old R.A.'s and students write to her from all over the world.

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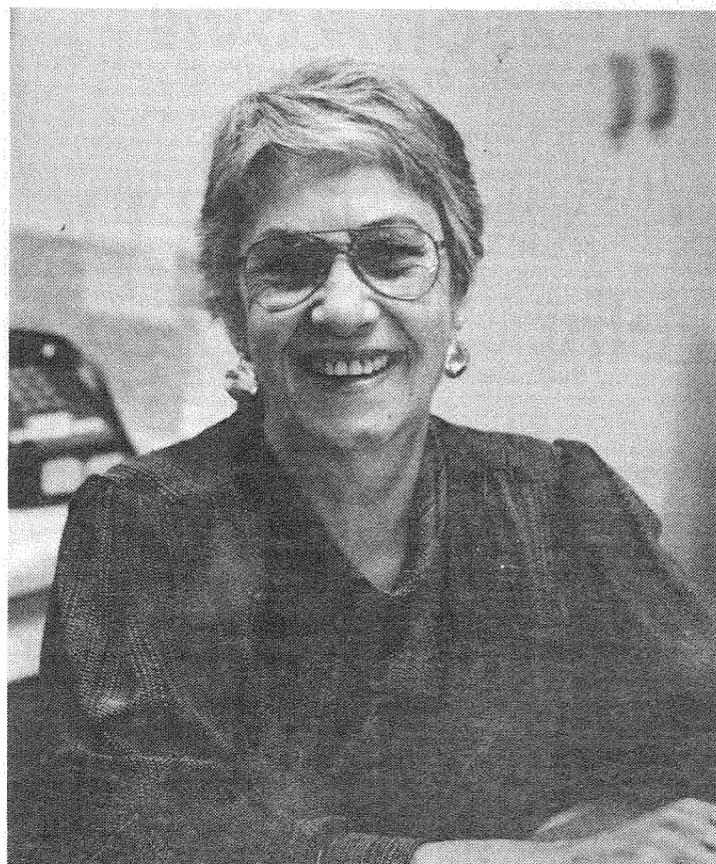


Photo by Bob Paz

Carmela Kempton, the power behind the throne, retires April 1st

A Question
of Bias

Well, it had to happen.

The comment has been relayed to me (not directly, of course) that the *Tech* is "getting too Scurvy again".

I should explain here, for the benefit of those who don't keep up with the undergrad social scene, that a "Scurve" is a member of Ricketts House. The charge is, then, that there are too many Scurves working on the paper, and that, therefore, the *Tech* has been unfairly promoting the interests and views of Ricketts House above those of the other houses.

I plead guilty to being a Scurve, as does Josh Kurutz, but anyone who voted for us could easily have found that out. Diana Foss is also a Ricketts member, and her byline is quite prominent; more on this later. Josh Susser is also a Scurve, but his contributions are mostly in the layout department, hardly a politically sensitive area among the houses. We have some other Scurves on the staff, and also several people from other houses.

Why the disproportionate number of Ricketts members? The *Tech* has for years had a chronic shortage of staff members, especially writers. When the editor recruits people, it's easiest to find people the editor knows, and, Caltech being what it is, this most often means fellow house members. This also explains the prominent Blacker/Page representation in the previous administration's staff.

What about the issue of bias? A large factor in this complaint must be the prominence of Diana Foss. Diana writes a lot of news copy. Diana is a member of Ricketts. The two, however, have nothing to do with each other. Diana writes because she likes to write; she has good style and good contact with the faculty and administration. None of her copy has ever, as far as I can tell, been biased by her house membership. Nor, if I can help it, will anybody else's copy; the paper should not be merely a big whiteboard for people to show off their creativity.

If the paper itself has any political bias, then so be it; no paper is completely impartial. My political views are my own, not Ricketts'; I've had them much longer than I've been at Caltech.

continued on page 3

You'll be Sor-ry

To the Editor:

As a result of the recent ASCIT budget meeting, twenty members of ASCIT have decided to pull out. They are generally members of the Rambo Club and/or Syndicate Alley in Page. Dissatisfied with recent decisions, of which the allocation of a mere \$200 to the Rambo Club was the last straw, they feel that ASCIT as it currently operates is not worth their dues.

I don't doubt that some groups may have gotten more or less than they "deserved", or even that the budget meeting was badly run. I wouldn't be surprised if some matters were rushed through without adequate discussion. Those things are not the issue though.

When a student pulls out of ASCIT, there are some things from which he should refrain, and it goes much deeper than being a question of whether or not you pay a dollar to see the Friday movie. When you are out of ASCIT, you have no vote in elections, can not hold an ASCIT office. How can you be a member of any club that receives ASCIT funding, or take part in any of the activities of the Y if you don't support them? You have no right to take advantage of campus parties, or two house parties that are partially subsidized by ASCIT. Forget about using the ASCIT van. Don't ever read the *Tech* [actually, the *Tech* is financially independent these days -Ed.], the TQFR, the little t, or the Totem.

Then, there are the intangibles such as the higher quality of teaching that we have as a result of the TQFR, or the Faculty-Student Conference. I don't believe that a person can go to school here without benefiting from these things, and I consider using these services without supporting them to be "the taking of unfair advantage" even though the BOC will never see such a case.

This is the same method that another house used several years ago when they were fined for kidnapping. They withdrew enough members of their house to pay the fine with the dues they had saved in effect making the entire student body pay in their place. It was a spineless move then, and it's no better now. I have to admit that when I heard talk of mock battles or parachute jumping with the Rambo Club, it seemed like it might be fun. But, if this kind of

cry-baby attitude is typical of the club, I want nothing to do with it. Somehow I can't picture Rambo throwing a temper tantrum either.

-Peter Ashcroft
Blacker House

Great Jokers

To the Editor:

So I'm assured that the Caltech Rambo Club does not represent any ideas that Rambo represents. Then I wonder why they call themselves the Rambo Club. Somebody told me it was a joke that just got "stuck there". I really hope it is.

But to be sure that entertainment is their "express and only purpose", I want to know why, in the budget sheet, they described the survival game as a sort of "training for conventional warfare". I don't believe that they regard training for conventional warfare as an entertainment, so it must be another joke that just got stuck there.

Now I feel good because I know that the Rambo Club members are not dangerous militarists but great jokers. Last week's letter to the Editor from them was very informative. I am grateful.

-Hasok Chang

Funding Clubs

To the Editor:

I write in response to the letters in the last two issues concerning the Caltech Rambo Club. Hasok Chang's letter, stripped of emo-

tionalism and loaded phrasing, questions whether the Institute should associate itself with survival games by funding the group; Konstantin Othmer and David Parkinson's reply answers this, essentially, by saying that it doesn't matter: the club is devoted to entertainment, not to any political doctrine. In their last paragraph they modify this by saying that even if survival games do bother some people in the Caltech community, that should have no bearing on Caltech support for the group: "If all clubs were open to the scrutiny of all Caltech members, the rights of any group would be endangered."

While I disagree that any club (as opposed to any individual) has rights not subject to such scrutiny, their point is in some sense valid: if all people involved in Caltech, or specifically all who pay the activities fees that fund student groups, had to approve each such group, then clearly no political organizations would survive, for example. As a first-year grad student, I'm relatively new here, so I don't know if religious groups receive Institute funding or other support [they do -Ed.], but any that do would likewise be snuffed out; and even purely social or otherwise noncontroversial clubs would be endangered: why should I pay to let someone else play a game I don't enjoy, or have a dance which I'm not interested in attending? The answer to such questions, I think, lies in the function of the Institute: first and foremost it is an educational institution, and student activities should be sup-

ported or not supported depending on their contribution to that educational function. Many student groups organize guest speakers or cultural events; while one might disagree with the ideas advanced by some, the presentation of opposing views cannot but enhance the quality and diversity of the intellectual environment. Sporting events and clubs also have a function (*mens sana in corpore sano* and all that, plus encouragement of such qualities as teamwork and sportsmanship), and it could be argued that even purely social clubs and events have a place (in terms of support structures against academic and other pressures, for example, particularly for newly arrived foreign students unused to the alien social environment of the United States; or simply in terms of "letting off steam").

This is not meant to set me up as an apologist for any club that somebody might want to form; for example, I wouldn't stretch

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THE CALIFORNIA TECH

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Friday... March 14

Noon Concert with Even/Odd. At lunchtime on the Quad. Bring a lunch and a parity of friends.

Saturday & Sunday... March 15 & 16

DECOMPRESSION—Relax before or after trolling it out. Food, games, videos, food, and more. *Magician* Sunday night. EVERYONE (undergrads, grads, faculty) welcome. 8 PM-12 midnight each night in Winnett Lounge.

Spring Break

Ski Trip! Spend either 4 or 8 days at Mammoth. Food, transportation, and lodging provided. If you signed up and won, GO!

The Y has discount passes to "College Days" at Knott's Berry Farm.

Tuesday... April 1

"Ronald Reagan: The Movie." Filmmaker Michael Rogin will present this comparison of the President's popular anecdotes with very similar scenes from his movies, and ask the question, "Does he know the difference?" In Baxter, room 231, at 8 PM.

Wednesday... April 2

A Y Pizza Party. Come meet the current Excomm and see if you're interested in joining us.

Friday... April 4

Noon Concert with Goldenhair. At lunchtime on the Quad. Bring a friend and a Rapunzel. A rep. from Student Travel International will be there to help you go to Europe.

L.A. Philharmonic—Music by Haydn, Mozart, and Brahms. At the Music Center at 8 PM. Tickets \$3 each. Sign up by Wednesday, April 2.

Movie Tickets

The Y has discount passes to the Pacific and Mann Theatres. \$3 each.

Learn about the Y. Come to an Excomm meeting & give us your ideas! Mondays at lunchtime, in the Y lounge.

LETTERS

from page 2

"presentation of opposing views" to advocate formation of a Nazi Club, a Bigot's Club, a Dictatorship of the Proletariat Club, or any such thing antithetical to democracy. One needn't go to such extremes, either: for example, at my undergraduate institution there was a chronic low-level ruckus over funding for the Gay Alliance; again, I haven't been here long enough to find out if there's similar discontent with CLAGS, but there probably is at some level. The point I wish to make, however, is

that discussion of the appropriateness of Institute support for any student group should take place within the framework of the Institute's educational mission; and within this framework, I find myself agreeing with Hasok Chang. Bear in mind that "survival games" such as those played by the Rambo Club are not concerned with wilderness survival in the sense of woodcraft, edible wild plants and how to build a fire; rather, they are simulated warfare, pure and simple. More to the point, as Konstantin Othmer and David

Parkinson point out, they are devoted to the *enjoyment* of such warfare, not to training for civil defense, say. Is this an appropriate application of the educational mission of Caltech? I am not a pacifist; I worked the last two summers in a defense industry. However, I am convinced that violence and the potential for violence are matters to be approached only very seriously and with much caution; and the Caltech Rambo Club's attitude towards violence as fun has no place, however peripheral, in the syllabus of an educational institu-

tion like Caltech. I therefore urge withdrawal of financial and other support from the group.

—Mark Looper

P.S. HONOR CODE NOTICE: Some of the ideas above are not original to me, but were suggested to me by others during a similar dustup over a similar group at couple of years ago at my undergrad school.

and also paved the way for future discussions on these important matters.

Sincerely,
—David Bruning

Dog-Nuts??

To the Editor:

In view of a recent report in the *Tech's* Inside World column extolling the prowess of this year's Fleming basketball teams, we would like to recount for the *Tech* readership certain events which occurred on the evening of March 5, 1986. A competition was scheduled between a group of elderly retired Ruds known as the Dog-nuts Motley Crew, and the allegedly elite squad from Fleming known as Fleming Classic. Tragically, several members of the Crew were unavailable. The Crew was determined to face the Fleming horde, even though their surviving members numbered but four.

Faced with the choice, outlined in the GSC basketball rules, of honorable competition against an outnumbered group, or covering under a technicality, the Flems chose the latter, forcing the Crew to forfeit.

In Fleming's behalf, we should mention that after assuring their hollow paper victory, their members did offer to play a scrimmage match which was accepted in the spirit of good competition by the Crew. With their numbers supplemented with a bystander, the Dog Nuts Motley Crew then proceeded to dismantle Fleming Classic. After half-time, the humiliated Fleming players refused to return to the court. This shattered all hope that Fleming Classic would avenge a similar rout of the Fleming "New Formula" squad several weeks before.

Given the above events, our credulity (and we assume that of the *Tech* readership) is severely strained in regards to the aforementioned prowess of the Fleming basketball teams. If any members of Fleming House feel inclined to rescue their besmirched honor, the Dog Nuts Motley Crew will gladly accommodate them with a rematch.

Sincerely,
—Captain Moebody and
his Dog-nuts Motley Crew
Stomping Commies in the
Twenty-First Century

P.S. Note the irony that the Fleming color is red.

More Editorial

from page 2

It's very easy to sit and complain about something; more difficult is to get up and do something about it. If you feel the *Tech* is too Scurve-dominated, there is an easy and direct way for you to attack the problem: join the staff. If that's too drastic for you, but you still have real complaints, please send me a letter.

Just don't do nothing.

Notice

The *Tech* is now accepting submissions on IBM PC floppies, preferably in WordStar format. Leave us a floppy labeled with your name and the file's, and you can pick it up Friday.

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—Mark Looper

P.S. HONOR CODE NOTICE: Some of the ideas above are not original to me, but were suggested to me by others during a similar dustup over a similar group at couple of years ago at my undergrad school.

ASCIT Budget

To the Editor:

In last week's issue of the *Tech*, Sam Wang and Michael Keating contributed a letter whose main purpose was to criticize the ASCIT Budget meeting, in particular the ESC and ASCIT Movies budgets. As the ASCIT treasurer, the person responsible for the running of the budget meeting, I would like to respond to these allegations.

First, I would like to give you some background on how the meeting is run. Each year clubs are asked to send in their requests, which are looked over and then compiled into a proposed budget. At the meeting itself, the members of the BOD receive the proposed budget. Most budgetary items are set in the bylaws or are determined by previous costs. These costs include insurance, supplies, salaries for publications editors, etc. The budgetary items that the BOD then considers vote include such ASCIT organizations as the ESC, IHC, and BOC, as well as all ASCIT clubs.

In response to overspending on the ESC and Movies budget, I would like to point out that this is where most people on campus get their largest return from ASCIT. Almost everyone attends an ASCIT movie or goes to a multi house party, whereas the clubs only include certain people, and there are only a few editors. Also, it should be pointed out that in the year before last, the ESC actually spent more than \$15000. Since I am not speaking for Rob personally, I would urge any of you with questions about the social budget to talk to him.

In regards to the ASCIT Movies, I did indeed propose sharing the movies with Harvey Mudd. However, it was also stated by the Activities Chairmen that this would probably not save a significant amount of money, since the movies are rented on a per showing basis. It should also be noted that in previous years the Activities Chairmen have asked for but not recieved increases in the movie budget, which one reason the movies have succumbed to the burden of rising prices.

The general complaints that have recently been heard about the fairness of fund allocation must also be addressed. One complaint is that not enough consideration is given to each club. At the meeting, there was a discussion about the number of ASCIT members, club activities, and general campus interest. It was only after all discussion had ceased on these issues that a proposal was brought forth and voted upon. Most complaints stem from the question of how funds are to be distributed among the clubs. The Board of Directors is currently examining this question. Anyone with questions, comments, or suggestions on this matter should talk to the nearest BOD member.

In conclusion, the budget meeting last week was run in a responsible manner, giving full consideration to all organizations present. If there are any perceived inequities in the system, or complaints about the system, I would like to hear about them. You can either find me in room 115 Page, or send a note to me at mail-code 1-53. I hope that this letter has cleared up any misunderstandings

Crossroads A Peculiar Bliss

by Nick Smith

Crossroads
Directed by Walter Hill
Columbia Pictures

Crossroads is a sort of blues cross between *Phantom of the Paradise* and *The Devil Went Down to Georgia*. The funny thing is, it's very good!

Ralph Macchio plays a young classical guitarist who always wanted to be the finest blues guitarist in the world. The first two strikes against him are: he's white, and he lives in Long Island (attending Juilliard, no less!). Long Island is *not* one of the legendary birthplaces of the Blues.

Joe Seneca and Jami Gertz are his companions in a bizarre odyssey in search of a "missing" blues song that will make Macchio rich and famous (well, famous, anyway). Gertz is in search of her future and Seneca is in search of his soul. Together, the three of them run into redneck motel owners, mean black sheriffs, and just maybe the devil himself.

During a few parts of

Crossroads, the audience is asked to suspend its disbelief a bit too heavily, but it's in a good cause. The movie is sort of a modern fantasy, with music in the place of magic, and guitars in place of swords. The young would-be blues man and his mentor travel in search of their musical Grail, to an intersection of roads that no one knows about or believes in. There's a damsel in distress to be rescued (granted, the means aren't quite traditional), villains to be outwitted, and a final showdown against the champion of evil. You know, the classical stuff. Not very fresh, but done very well.

Crossroads is very close to being a great film. Only the predictability of a few scenes weakens it, and the acting and direction are great. Blues music is presented lovingly and carefully, under the musical control of Ry Cooder, one of the best guitarists around. If you like blues music, this one is a "must see" movie. If you *don't* like blues music, go see it for the acting, and wear ear plugs.

by David Hull

Bliss
Directed by Ray Lawrence

You have to watch *Bliss* with your eyes wide open, but it's worth it. *Bliss* is the story of an advertising agent, Harry Joy, who dies for four minutes as the result of a heart attack. After recovering, he spends some time determining whether he is in Hell or merely mad, curses his friends and family for all eternity (and it couldn't happen to a worthier bunch), has his car sat on by an elephant, meets up with a macrobiotic whore by the name of Honey Barbara, and many years later lives happily ever after.

If this sounds somewhat cryptic, disjointed and surreal, good. Much of *Bliss* is told in the form of hallucination and nightmare, and the Joy family is such an amoral bunch that no one bats an eye at the most outrageous occurrences (such as Honey Barbara and her boyfriend moving in with the Joys—at least I *think* they both moved in; some or all may have been hallucination). Though the

going gets a bit mystifying at times, the weird stuff serves to show what's happening inside the characters' heads, which helps in the long run. Harry Joy is a storyteller, and accordingly the movie begins with Harry telling a story which his father told of Harry's mother. It ends, more or less, with Harry telling his daughter a story about her mother. In between is Harry's own story. (There is more going on in this than I will tell you here—not that there are great surprises to avoid spoiling, but the story should be allowed to unfold at its own pace.)

Harry's story is of a person learning to be true to his principles in a world of self-centered materialism. If this sounds like a message, it is, but as in any worthwhile work, the message is not presented in stark black and white. When we first meet Honey Barbara, everything suggests the old "woman of ill-repute but with a heart of gold" stereotype. She turns out to be just a person, with her own defects. She may lecture Harry Joy about karma, but she ain't shy about drinking his wine.

Bliss can easily be seen as heavy-handed. Much of the humor is downright gross, and some scenes will (not might, *will*) offend many people. Beware particularly of sardines, incest and open-heart surgery. But there is also much fine subtlety, as when a priest explains the benevolence of God to Harry, or another scene, where the mere

sight of a hospital bed suggests several levels of humorous implications.

This compactness of expression is one of the strong points of the storytelling. Unfortunately, this quality is not consistent; the narration often gets in the way. The film gets off to a rather slow start because of the excess narration, and what could have been an intriguing (though easily solved) mystery at the end is made almost trite. At more than one point, characters simply face the camera and narrate at you. While this is at least direct, I found it quite distracting.

There are other technical flaws. At one critical point where Harry must choose between "good" and "evil", his reasons for choosing "evil" are made apparent, but not convincing. I could see the arguments for doing what he did, but I didn't buy them, and found it hard to accept his action as plausible.

But these complaints are fairly minor on the whole. For every lapse in the storytelling, there are a dozen memorable scenes or lines (of which I only remember a few). "The story of the love-letter that took eight years to send" is worth the admission price alone. The satire is brilliantly biting throughout, and the acting is quite good, and the characters are all clearly drawn—they are real, albeit sick, people.

continued on page 5

Daddy's Been Turned Into a Scotsman!

by Nick Smith

Highlander
Directed by Russell Mulcahy
20th Century Fox

Highlander is a very strange movie, both exhilarating and depressing. Russell Mulcahy seems to have made his reputation in videos, which explains the powerful but bizarre visual impact of the film. But is it good? Well...

The film starts out by blaring a piece of music by Queen. Now, I like Queen, at least sometimes. I did *not* like some of their previous movie work (*Flash Gordon*, for example). In this case, the music seems like Queen decided to do some *evil*-sounding heavy metal, but came out sounding like *Queen* singing *evil*-sounding heavy metal. Not quite the same thing. Anyway, the opening theme music isn't bad, but it's jarring, until you realize that it's the *villain's* theme song, not the hero's. Why? Well, there is *no* other memorable music in the film, so I guess they went with the best piece. Sigh!

The next jarring thing is hearing Christopher Lambert speak. His role is that of a man who has been alive for centuries, but whose origins were the Scottish highlands. He has lived in Scotland and America the bulk of his vast life. So what is his accent? Something murky that is probably a trace of Lambert's own French accent. His speaking voice is only noticeable in the flashback sequences that involve either his Scottish friends or Sean Connery (who plays the role of someone who is *not* Scottish, but who has a thick accent easily mistaken for it). In those scenes, Lambert's voice is so far out of place that it's like seeing Bruce Lee speaking German in a French comedy.

Oh yes, the movie. Well, the plot seems to be that every once in a while, a man is born to be superhuman. These men (no women, apparently) are super-strong, heal incredibly quickly, and can only be killed by chopping off their heads. When these Immortals reach a critical number, they are

supposed to kill each other off, and whichever one survives becomes champion of the world (hmm, now I know why they got Queen to do the music), and wins a prize of great value. Who has ordained this, and why? Sean Connery's character is the most knowledgeable, and *he* can only shrug. The audience certainly never finds out.

If you ignore the more paranoiac implications of the plot (mankind exists largely as a practice field for the Immortals, for instance), it becomes a halfway decent good vs. evil battle. Just don't examine it for logic. There isn't much.

What is good about *Highlander* is the acting and the visuals. Ignoring his voice, Christopher Lambert is quite good, and Sean Connery is

great. The few other major characters are also very good, and the cinematography is quite striking. There are a few rather bloody fight scenes, but the blood is unavoidable in context. It is not an overly gory movie, by any means. If you like swordfights and such, this one is for you.

Overall, *Highlander* was slightly disappointing, but not bad. It's far from a waste of money, but even farther from major Oscars. Don't be surprised if "Princes of Evil" turns up as a major video for a while. It's The Kargan's theme (the major bad guy), and he's *mean*. If you locked him in a room with the Terminator, I'm not sure who would walk out, and I sure wouldn't stay to find out. Anyway, see this one at your own risk.

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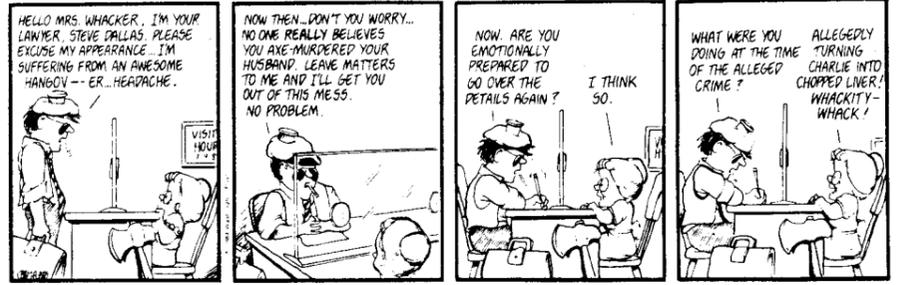
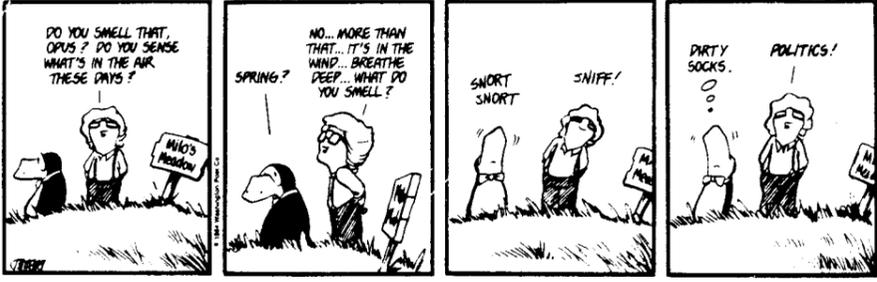
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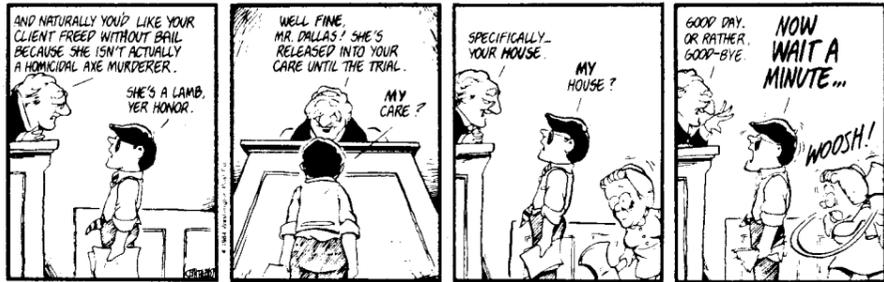
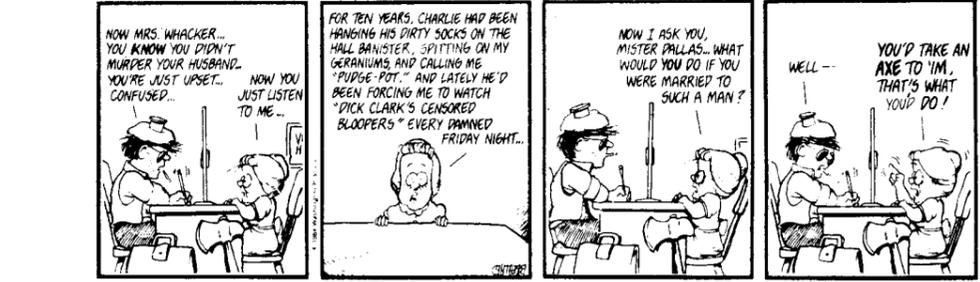
from page 1

"I had an experience that not many women get," she goes on. "Four different bosses, and each was terrific." She has been the Assistant to David Smith, Jim Mayer, Sunney Chan, and finally Chris Brennan. A mutual friend of hers and David Smith's told her about the job opening at a time when she was feeling guilty about not being able to spend much time with her youngest child, but she waited three months before taking the job. She was moving up rapid-

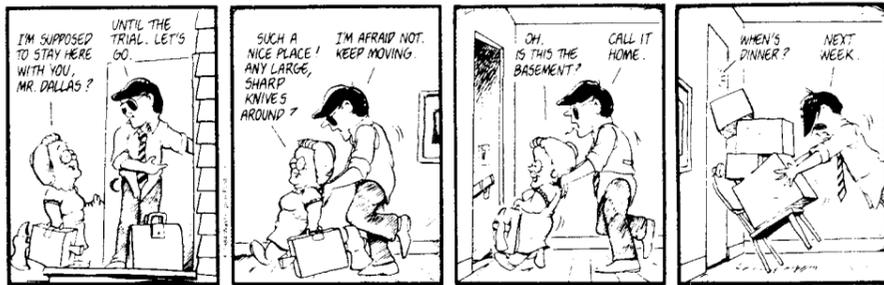
ly in her position at a bank, and she wasn't sure she wanted to give that up. However, she decided to come to Caltech, and it was "fun from the very start." She brought belly dancers to a party several months after starting her job, and exotic touches, like this and the elephant at the Saint Patrick's Day party last week, have been her trademark ever since.

She hopes that her replacement will continue doing these "costly, bizarre things" for undergraduates, and that the Master's Office will continue to provide opportunities for Techers to develop more parts of their lives than just studying. Although she will miss Caltech, and feel odd as an outsider looking in, she is not going to "sit at home and clean the oven." As soon as her retirement is official, she and her eldest daughter are taking off for Italy, and Carmela plans an extended vacation in Europe. She will use her free time to continue in her love of gardening, fixing up old houses, and visiting her "very cute" grandchildren. She also plans to become more involved with projects to aid the homeless in Los Angeles, a concern of hers since the days when she worked downtown.

As much as she will miss Caltech, Caltech will miss Carmela Kempton even more. Long regarded as "the power behind the throne" in the Master's Office, she has done enormous good for Techers. We wish her well in this new phase of her life.



BY BERKE BREATHED



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Bliss
from page 4
If I haven't given enough tantalizing hints about the film to excite your curiosity, let me point out that I'm only scratching the surface. Watch closely and you'll see a richly detailed world behind a vulgar facade. And if *Bliss* doesn't play just a little havoc with your sense of reality and morality, check your pulse. You may be dead.

Bliss is playing at the Beverly Cineplex in the Beverly Center (at LaCienega and—you guessed it—Beverly). That's the place with 14 (fourteen) theaters. Admission is \$6, and it sells out easily on busy nights, but they let you park free for 3 hours and you can see more than one movie if you sneak around a bit. (You can also park free if you leave late enough.) *Brazil*, *Stripper*, *Kiss of the Spider Woman* and nine other films I don't remember are also showing there, so chances are you can bail out if the movie you want is sold out. Call the theater for showtimes.

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EXCITING EVENTS OFFERED BY PUBLIC EVENTS
Flamenco guitarist Carlos Montoya will appear in Beckman Auditorium, Saturday, March 15 at 8 PM. Back by popular demand, Montoya has appeared on the Beckman stage more often than any other artist.

Born in Madrid, he began playing guitar at the age of eight, learning from his mother and the local barber. He later played for the famed dancer La Argentinita, touring Europe with her for three years.

In 1948 Montoya took an unheard-of step—he gave a full concert recital of Flamenco guitar music. These concerts met with formidable success and gained for him an ever-growing following in Europe, Canada, and the United States.

One of the most important things to realize about Montoya is that he creates as he goes along. What he plays are all his own arrangements and original compositions based on the Spanish Gypsy tradition.

CIT students tickets for Carlos Montoya are only \$8.75-7.50-6.25. Rush tickets for \$5.00 each go on sale the day of the show. Caltech student I.D. is required for these discounts (limit of two tickets per I.D. at these special discounts.)

If chamber music is more to your liking, the Mladi Wind Quintet will give a free concert in Dabney Lounge, Sunday, March 23 at 3:30 PM. Ensemble members include Lisa Edelstein, flute; Kathleen Robinson, oboe; Stephen Piazza, clarinet; William Alsup, French horn; and John Steinmetz, bassoon. Their program includes works by Reicha, Steinmetz, Berio, and Nielsen.

Over the past decade, the Mladi Wind Quintet has established itself as a world-class chamber ensemble. The five members of the ensemble have a rich and varied background in music performance. Their list of individual credits includes extensive work in the motion picture and television industry, as well as performances with the Los Angeles Philharmonic, Los Angeles Chamber Orchestra, San Diego Symphony, Utah Symphony, Royal Ballet, Joffrey Ballet, American Ballet Theatre and New York City Opera.

Tickets can be purchased at the Caltech Ticket Office, located just north of the Beckman Auditorium parking lot. Call campus extension 4652 for further information.

Good luck with your finals, and have a great Spring Break!

The Inside World

Blacker: Well, I bet you're wondering why there hasn't been an Inside World in a month? Sorry, but we don't know; do you?

Movie weekend was a roaring success (Yeah, Social Team!). The most corrupt frosh denies being under the influence of drugs or alcohol. An interrogation under gravy failed to crack him. John could not be convinced of the necessity of a cold shower so the awesome waiting staff helped him out.

Speaking of cold showers, rumor has it that Irene was in need of one. I never knew that anyone could get buzzed off Wagner. The magic clamp opened the door of death, allowing us to introduce Walter to the finer things in life (\$1.99 a bottle).

Looking forward to new and better Inside Worlds in the future,
—NLF and the Magic G
P.S. Mike...Mike...What if???

Dabney: I opened my eyes and looked around. I didn't know where I was or how I got there. It was nighttime. The air was cold and damp. My head started to clear. I remembered being at Dr. Xi's house, and I remembered him starting to give me his forged DarbCard™—and that was it. Someone must have knocked me out from behind, then taken me somewhere. Here. Wherever "here" was.

I stood up and looked around. There was a thick, opaque fog that held visibility to about five feet. I seemed to be on a road, but I couldn't see far enough to know where it went.

Suddenly in the distance there was something bright. It moved closer. I had no weapons, and there wasn't anywhere to run, so I just waited. It came closer. I soon realized what it was: the blinding glare of an Hawaiian shirt. It was Xi!

He came closer. He was unarmed, but I knew there was no chance of defeating anyone wearing such a blinding shirt. "What are you up to, Xi?" I asked him.

"It is not what I am up to, Mr. Wayne," he said. "It is what you will be up to—or at least trying to get up to."

A cold chill ran through me. "You can't mean—"

"Yes, Mr. Wayne. The Hill of Death." He laughed fiendishly. "But wait, Mr. Wayne, there's more. Here's Don Pardo to tell you about what you've won."

From nowhere, the voice of Don Pardo erupted into the air, along with a light bouncy musical selection. "That's right, Patrick, you've won a trip up the Hill of Death, whose sun-drenched slopes grow the world's richest coffee. But that's not all! You can also take along this beautiful set of cast-iron luggage." A chorus of "ooh, aah" came from an unseen audience as Vanna White presented the set of bags. "Hand-made in Pittsburg by skilled craftsmen at United States Steel Luggage, this fashionable twelve-piece ensemble looks smart whether you're flying to the Holy Land or just going out for a bite to eat. The full size trunk even sports concrete reinforcements for a truly hefty feel. All from United States Steel Luggage." A round of applause came from the audience.

"And, Patrick, you'll be dressed in the latest all-body protective armor from Elmer's Gardening Supply Company." Vanna came over and started dressing me in large inch-thick steel plating, then hooked up a series of copper tubing to the suit. "Yes, it's the first full environment suit in solid steel that weighs under twenty-two hundred pounds—especially convenient if you jog or fly in light aircraft." Vanna finished with the suit, and attached an unlicensed nuclear accelerator backpack to me. It switched on with a burst of ten Hertz rumbling.

"And finally, Patrick, you'll be going up the Hill of Death on your New Bike!" An enormous round of "ooh, aah" and applause was emitted by the unseen audience as Vanna wheeled out a very unusual bicycle. "It's the Securicycle II™ from Geschvinnen! Yes, you have the twin advantages of a solid steel frame and concrete-filled tires, matched with the safety of over seventy-seven individual fifty-watt headlights, each with its own lead-acid battery for added protection." Vanna executed primary ignition on the Securicycle II; the lights powered up one by one, making the bike a beacon visible for miles (even through the fog). Much applause ensued. "Back to you, Jim!"

"Thank you, Don Pardo," Xi said. He snickered as he saw me standing in my suit, which was humming disconcertingly at ten Hertz. "Perhaps you are reluctant to ride up the Hill of Death with cash and prizes in such magnitude. Well, Mr. Wayne, as an incentive, you will be pursued by this—"

A strange scientist-type walked up, with his female research-assistant. He was playing with some sort of blender, while she did her nails. He looked up at Dr. Xi. "May I have a little music...to make sludge by?"

Dr. Xi smiled at him. "Certainly!" he replied. A strange and wacky tune from the 50's started to play on analog equipment. The woman looked up, smiled, and started dancing. I shrieked in agony and hopped on the bike, and started riding up the 33-degree slope that was the Hill of Death.

—J

Fleming: a visit to the Housing Office recently gave new meanings to the familiar phrase "We'll bend over backwards to help you out." New meanings such as "Bend over backwards and maybe we'll help you out," or maybe just "Bend over." It's good to know that we've all got a friend that we can depend on, embodied by the Housing Office. Just remember to cover your back, and to kowtow to the fat lady. Because the Opera's not over until the fat lady sings. And we all know how temperamental fat ladies can be. So sing, fat lady, sing! Maybe we'll go see CATS instead.

In a disappointing match last Tuesday, the Big Red Machine actually lost a game to Blacker, spoiling a perfect Interhouse / Discobolus record since the beginning of the volleyball season. We won the match, of course.

Fleming's own Classic C League Basketball team went undefeated once again this term. Just one word describes these guys, and that's "Awesome".

Things to look forward to: the Big Red ski trip to Mammoth (or the would-be ski trip, anyway); Interhouse Basketball and Football; and more of those rousing, power-packed Ath Team announcements by the dynamic Mr. John Josephson. All of these things and more coming next term.

Lunch For Leaders

by **Huston Horn**

One hundred Caltech students will be the guests of Ametek Corporation at an Athenaeum Leadership Luncheon on April 14.

The speaker will be Ruben F.

Mettler. Dr. Mettler, a Caltech alumnus (BS '44, Ph.D. '49 in EE) is Chairman of Caltech's Board of Trustees and is the Chairman and CEO of TRW Inc. At the Ath luncheon he will speak informally on

techniques of leadership in industrial technology.

The Mettler Leadership Luncheon, the first in a proposed series, is being planned by The Caltech Y, the undergraduate Dean of Students, and the Alumni Association. A number of alumni are also being invited to attend the April luncheon.

Ametek Corporation, whose chairman is Robert Noland, a Caltech alumnus and the benefactor behind Caltech's annual Noland Leadership Prize, is picking up the costs of the leadership series. The student and alumni luncheon guests, accordingly, may attend free of charge.

The objective of the series is to introduce Caltech students to some of America's most outstanding leaders, whether they are in education, politics, religion, law or industry. The speakers will be invited to discuss their understanding of leadership in the fields they occupy.

John W. Gardner, a psychologist and educator, the founder of Common Cause, and onetime Secretary of Health, Education and Welfare, has been invited to be on the campus on May 13. Another Leadership Luncheon at the Ath is being planned for his visit.

Undergraduate and graduate students who wish to attend the Mettler Leadership Luncheon must sign up in the office of The Caltech Y. Reservations for the lunch will be accepted on a first-come basis. A standby list will be provided in the event of cancellations.

The new pool table's bitchin' (thanks to the MOSH, no thanks to the aforementioned Housing Office), just don't nap next to it.

Until next time: Snake, Frosh, Finals are Coming.

—Al Fansome

Ricketts: What in the heck has been going on this week? Oh yeah, new officers are now officially installed. David LeePin now has quarters, stamps, blue books, pipe cleaners, first aid supplies, fish food, earwax and other convenience items. He cashes checks, he slices, he dices—buy now while supplies last. This week's special: Dave's magic elixir—only \$8.99. Get a 10% discount if you present this article at time of purchase.

The buck stops here: Send your "tax-deductible" check or money order to Ricketts House Jub-Jub Fund, 1-59 Caltech, Pasadena CA 91126. Your contribution will go towards research on how to stop the spread of evil pie through America. In these troubled times, no one is safe, not even in their own homes. The American public must be informed that consumption of pie can cause a slow, irreversible change of the pie-eater into Darth Vader (a known evil dude and pie-eater).

Next article—the evil Emperor's obsession with batteries and how it brought about his twisted fear of the Care Bears.

[---And those of us who don't loathe strawberries wish to thank Bongo for the wonderful far-Fosters donuts at lunch Thursday!—Ed] Wiggly Wiggly Worms!

—Saxy

Ruddock: Welcome to the world of Leather and Lace and highschool kids. Yes, the Ruddock frosh had a successful party even if Fishbone, the Untouchables and twenty kegs weren't there. Maybe next year...

The Ruddock Machine rolled over Ricketts, Dabney, Lloyd and Blacker in Interhouse Volleyball. BPO's taking entries on the final four NCAA! Go Villanova! (No, Tung, it's not football!)

Alley challenge between 5 and 6 delayed indefinitely due to lack of snow, sun and other necessary conditions. Veep says: 6,3,1,5,4,2,...7.

Frosh say: Snake y'all, you're on grades.

Taney says: You don't need the police to make a cardiac arrest.

Happy Finals everybody and an even better spring break.

—Butch EMOR

P.S. Mike...Mike...What if???

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By Commodore

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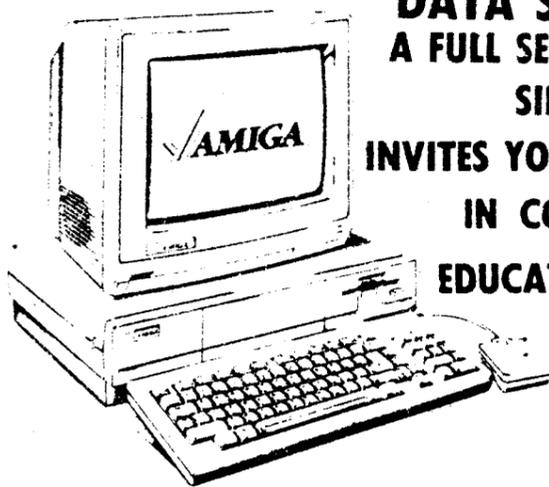
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Commentary - Is Five Years Too Long?

by Tony Stirk

Last year an accreditation team visited Caltech. To prepare for its visit, Caltech produced a self-study report from which the following tables on June 1984 Ph.D. graduates are produced.

The characterization of the Institute as being made up of students interested in physics or chemistry and assorted exceptions is borne out by the Ph.D. statistics which places 53% of the July 1984 graduates in these two disciplines. If we include masters students, Electrical Engineering is a stand-out. One third of all the masters degrees awarded were EE masters. Together, these three disciplines accounted for 55% of all graduates that year.

Ten women graduated with Ph.D. degrees. Four were in Chemistry, two in Biology, and one each in Chemical Engineering,

Environmental Engineering Science, Geology, and Social Science. Nineteen masters were awarded to women of which five were in Geology, four in Electrical Engineering, two each in Aeronautics, Mechanical Engineering, and Physics, and one in each in Chemical Engineering, Chemistry, Civil Engineering, and Environmental Engineering Science.

The most disturbing statistic in the tables is the average number of years a Ph.D. graduate student spends at Caltech. While the administration maintained at meetings with the accreditation committee that the average graduation time in Chemistry was 4 years, by its own figures it is 5 years. If the administration is quoting an average graduation time of its graduate students of 4 years, most graduate students are going to look like

slowpokes when they apply somewhere. Employers and prospective graduate students should be told that it takes an average of 5 years to graduate from Caltech, not 4.

A long graduate tenure is undesirable because one's potential earnings suffer and because it may be more difficult to find employment in the field with such a record. With the average tenure of a graduate student at over 5 years, that graduate student will need housing and facilities for that length of time. If the time were shortened to four years, there would be 20% less housing and parking needed. There are certainly other good reasons to keep the residence time of graduate students down, but these reasons seem to be the most glaring.

Why, then, are people staying here so long? There are many possible reasons, but the simple fact is that people stay as long as it takes, and that is usually as long as their advisor decides that it takes. Advisors may have decided that they want more out of their graduating students. A student's later years are the most productive, since he usually isn't taking courses by that time, knows where everything is, and understands a little better what is going on. Since the reputation of a professor depends to a large extent on the both the quantity and quality of the work produced by his graduate students, and the quantity and quality of a student's work can be expected to increase with each passing year, it is advantageous for the professor to keep the student at Caltech producing results as long as possible.

Some members of the faculty and the administration agree with the accreditation committee's comment that the average stay should be shortened. Some policies have been implemented to try to achieve this goal. For example, Chemistry requires that its professors support their graduate students until they graduate, but after their fifth year of study, the department will not normally allow the student to teach. This means that the professor must pay for the student out of his precious grant money. A grad chemist must also meet with his

candidacy committee before the end of his fifth academic year to petition for permission to register. In the petition he must include a plan of action and a specific date for the completion of his degree requirements. (Caltech policy is that after five years of full time residence, or six years of full or part-time work, a student must get permission to continue his graduate studies from the Dean of Graduate Studies who will consult with an option representative.)

There should be some changes made Institute-wide as the tenure problem is not confined to Chemistry. Steps need to be taken to make it financially prohibitive to hold students more than five academic years. Chemistry has taken a step in the right direction. Further steps could also be taken. If the student's tuition is provided by the department or Caltech, payment of the tuition should shift to the student's advisor after five years, adding a further financial incentive to graduate students on

time. Advisors should be asked to justify in writing why they could not graduate their student on time. An enrollment ceiling might help matters as an older student has to graduate to make room for a new one. Professors who hold their students too long would thus be denying themselves and their colleagues new graduate students. Making available graduation statistics by professor might also work. Some professors are known to keep their students for an extended period. Such cases are unlikely to be a fault of the students but the policies of the professor. Professors would know that prospective students would be able to see in black and white how long they keep their students.

It is part of an advisor's job to see that his students progress satisfactorily towards their degrees. With 35% of June 1984's graduates taking longer than five years to complete their degrees, it looks like some professors need to be reminded of this fact.

It's The Law!

with Mike Roberts

Chapter 1:

The Gathering Storm

The deep red morning sun rose over the sea. The sky was cloudless and the water was flat and still. Fog hovered silently over the rocks up the coast. A pair of waterbirds dove for fish in the distance. I took out my binoculars, and tried to see across the water. No land was visible.

I got inside my rover and looked at the map. It was the most recent one I could find, and even at that it was about twenty years old. For some reason, it was hand-drawn, and showed only the one continent and a few miles of surrounding sea. It seemed to have been drawn without reference to any kind of satellite photo. The only detail was around the Kshotingi villages, which were up in the mountains and far away from civilization. My eyes scanned down to the bottom of the map; the signature of Clare Misner was delicately penned. "Missionaries," I thought. That would explain why they concentrated so much on the Kshotingi.

According to the map, I was in Eddington. According to my senses, I was on a beach.

I picked up the microphone in the rover. "Reilly U29970 hailing anyone who can hear. Over." I waited. Nothing. It wasn't altogether surprising, since the transmitter wasn't powerful enough to get much past line-of-sight.

I decided to drive up the coast for a while. According to the map, Eddington was reasonably close to the coast—within sight of it, in fact, if the map's scale could be trusted. Since the terrain became visibly mountainous to the south, it was a good guess that north was the right direction to go.

I made one more scan with the binoculars. The south was definitely too hilly. I looked north. Nice and flat. As I put the binoculars down, something caught my eye. I looked back up, but it was gone. I kept looking, then saw it again: a small flash of light, flickering on and off. I looked more closely, focused the lenses, and could see that it was moving.

"Reilly U29970 hailing anyone who can hear," I said into my transmitter. "Over." I waited.

"Pindarin SQ133 to Reilly U29970," a thickly-accented voice replied. "Shortly arriving. Please await. Over."

Eventually, the flash turned into a vehicle. It was about five more minutes before it approached close enough to get a good look. It was an official rover from the Union Consulate in Eddington; the man driving it wore the uniform of a Lieutenant with the Union Starfleet. I took out my papers and presented them to him. He gave them a cursory glance, then greeted me. "Good morning, Mr. Reilly. We feared we wouldn't find you. You will please follow me to Eddington." He got into his rover and started driving.

After about an hour's drive, we arrived at the outskirts of Eddington. It was, in fact, several kilometers in from the coast. Most of the town consisted of small brick houses, widely spaced. There was a modest amount of activity around the houses; children played and men and women tended gardens, made repairs on their homes, and stood about and spoke to one another. We soon arrived at the Spacefleet base, which was surrounded with a high chain-link fence and patrolled by armed guards. We were immediately admitted by the guard at the front gate.

My escort took me into one of the buildings and led me to the office of the Planetary Governor. He spoke with the receptionist for a moment, who made a brief phone call, then admitted me to the Governor's office.

"Mr. Reilly," he said as I walked in, "welcome to Prohaska. I am terribly sorry about your trouble in getting here. I trust everything has been dealt with?"

"Not yet, Mr. Governor," I replied. "I'm afraid my ship will need repairs."

"I'll have men working on it immediately," he assured me. "Now, may we discuss your visit here?" I nodded. "Mr. Reilly... what exactly brings you to Prohaska?"

I raised my eyebrows momentarily. "The assassination, of course."

"I assure you, that is strictly a local matter. The Union said they would not conduct a formal investigation. I don't understand why they sent you."

"They didn't send me," I said. "As Regional Inspector General, my assignments are my own choice. I have an interest in this case, so I have come."

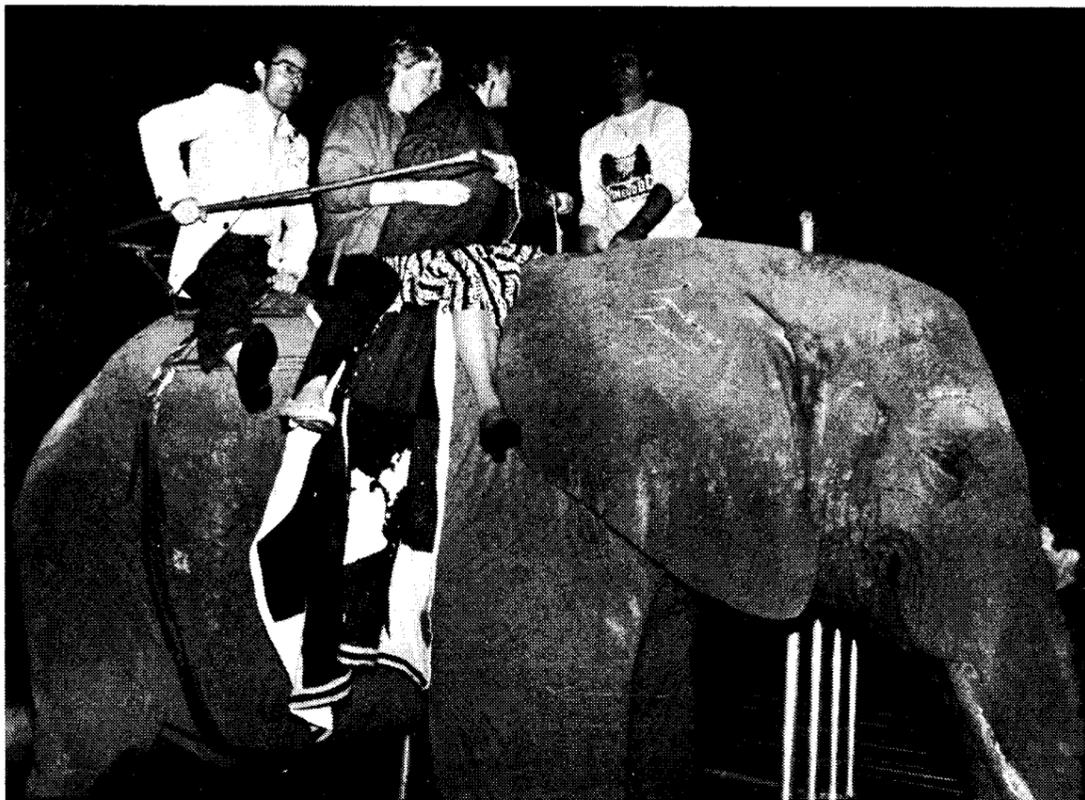
To be continued---

Duration of Graduate Study

Years	# of Ph.D. Graduates	% of Total Ph.D.s
2-3	2	1.6
3-4	19	15.4
4-5	58	47.2
5-6	26	21.0
6-7	8	6.5
7-8	4	3.3
8-9	6	4.9

Average Duration Graduate Study (by option)

Option	# of Ph.D. Candidates	Years, Months
Aeronautics	4	5,10
Applied Mathematics	5	4,2
Applied Mechanics	1	6,0
Applied Physics	10	5,4
Astronomy	3	4,10
Biology	9	5,6
Chemistry	31	5,0
Chemical Engineering	11	4,10
Civil Engineering	5	5,0
Computer Science	2	5,0
Electrical Engineering	6	4,11
Engineering Science	3	6,2
Environmental Engineering Science	2	5,3
Geology	11	5,7
Mathematics	2	3,8
Mechanical Engineering	2	4,4
Physics	13	5,4
Social Sciences	3	4,4
Total	123	5,1



Seta the Oliphant, here Mastered by Chris Brennen, at the St. Patrick's Day bash last Friday

Neural Networks For Slugs

[CNB]—A powerful new theory of information processing being developed by Caltech's Professor John Hopfield could lead to computers that handle information less like high-speed adding machines and more like living organisms. Although still in its infancy, the theory of computation and associative memory being developed by Dr. Hopfield could spawn computers that easily and naturally recognize patterns, reconcile conflicting data, and find answers to "fuzzy" problems beyond today's digital computers.

Dr. Hopfield is the Roscoe G. Dickinson Professor of Chemistry and Biology, and is also collaborating with researchers at Bell Laboratories.

Such computers could be compact, energy efficient, and relatively insensitive to device failure, making them ideal as the brains of sophisticated future space probes to explore the solar system and planets with little supervision by their human builders. Researchers here and elsewhere have already built experimental hardware embodying the new concepts and are using the devices to further develop the theory.

This view of associative memory also offers a new approach to understanding how the brain stores and processes information. For instance, working with biologists at Bell Laboratories, Dr. Hopfield is already using the theories to model with a computer the learning behavior of the garden slug.

Memory "Cell"

The basic unit of Dr. Hopfield's associative memory theory is a mathematical description of a simplified version of a nerve cell. This "cell" can either be built as electronic hardware, or modeled on a computer. Such a model cell works differently from the elementary circuits of digital computers that in operation are either switched off or on, with no in-between. Instead, Hopfield's associative memory components function like amplifiers and resistors, either increasing or damping the current that passes through them.

Using Dr. Hopfield's theories, circuit designers can devise a structure of such amplifiers interconnected by resistors that implicitly

contain a set of memories, much as the brain contains information in the connections or synapses of its neural circuitry. Each memory the circuit holds is spread throughout all the resistors in the circuit, unlike digital computers, in which each piece of information is stored within a specific memory component.

The resulting associative memory circuit will "remember" the information by producing the desired output voltage when an input voltage pattern representing part of a stored pattern is fed into it. Many such pieces of information can be mapped onto a given circuit, which will remember one or another, according to the input.

"Biologic" Circuits

Such circuits behave very "biologically," Dr. Hopfield has found. For instance, in his experiments, an associative memory given a partial hint can remember a whole piece of information. In such experiments, Dr. Hopfield programmed a minicomputer to simulate a circuit of 100 neurons with 10,000 interconnections. The memories this simulated circuit produced were strings of voltages that Dr. Hopfield assigned to represent sequences of letters.

When the system was operated, Dr. Hopfield found, it would recall an entire memory "word" or sequence when fed only a portion of the letters in that sequence. The circuit could also deal with wrong information. When Dr. Hopfield gave it a hint that included some wrong letters, it could correct them, yielding one of its programmed memories intact.

In one test, Dr. Hopfield found a surprising behavior reminiscent of the brain's tendency to more readily remember important information. In this test, he fed an ambiguous set of letters into the memory—one that could hint equally at either of two complete memories. The computer would then make a choice and reconstruct one of the two memories in correct detail. Like people, it would usually or more easily choose the larger of the two memories when the two were of different lengths.

Perhaps most intriguing, however, is Dr. Hopfield's discovery of a sort of electronic inspiration within the circuits. When

the system has stored many memories, it also constructs *new* memories, which are actually combinations of the nominal stored memories. As memories, these new creations are spurious. But this ability to generate new and plausible combinations of what is known seem related to the generation of conjectures, and may be regarded as the inventive ideas of these circuits, says Dr. Hopfield.

Other researchers who have built associative memories have also found "biological" behavior. Tech grad students Massimo Sivilotti and Michael Emmerling, working under professor Carver Mead, constructed a microchip containing 22 nerve cell equivalents with 484 connections. As with many microchips when first designed, many of these connections were faulty. But the memory chips still functioned, although at a somewhat degraded level of performance. Such "fail-soft" behavior is reminiscent of biological memories that degrade overall when damaged, but do not usually forget specific data, as a computer would.

Because of this ability to withstand damage, associative memories would be ideal for spacecraft, and engineers Anil Thakoor and John Lambe at JPL are currently designing associative memory circuitry that could be highly miniaturized. Also, Bell Laboratories researchers Larry Jackel and Rich Howard are developing microcircuit associative memories. Researchers at Bell have designed the largest associative memory yet constructed—512 nerve cell equivalents with 256,000 interconnections.

Optical Memory

Associative memories need not be electronic, researchers have found. For example, Caltech elec-

trical engineering professor Demetri Psaltis and his colleagues have built an associative memory using lasers and optical components instead of electronics. Also, Caltech's Amnon Yariv and his colleagues have used new optical techniques called phase conjugate optics to produce optical versions of associative memories.

Besides storing information, the new collective circuits built using neural network theory can also process it, sometimes far outperforming digital computers. In particular, collective circuits are better at the kinds of tasks at which the brain excels—for example, the kinds of problems occurring in pattern recognition and in making the optimum choice from a number of complex alternatives.

Traveling Salesman Problem

In one experiment that showed this ability, David Tank of Bell Laboratories and Dr. Hopfield have developed these theories and networks to solve the Traveling Salesman problem, a well-known and extremely difficult one for digital computers to solve because of the number of possibilities that must be considered. Basically, the problem involves finding the most efficient route for a salesman to travel among a set of cities on his route. In real life, there is little importance to finding the absolute best answer; a very good one will suffice.

In the simulation, the researchers programmed the neural network model to represent a number of cities, adding connections that represented the cities' distances from one another. They found that the collective network could settle on an answer in a tiny fraction of the time required by a digital computer. The system performed well in finding a very good solution. For example, for a ten-city route, the

system would find the best route 50% of the time, but one of the *two* best routes 90% of the time. The researchers have simulated systems for up to 30 cities.

Neural network theories also offer a new approach to understanding how living organisms process information. For instance, Dr.

Hopfield and Alan Gelperin of Bell Laboratories are attempting to model the learning process of the garden slug on a computer, using associative memory theories.

Slugs?

Garden slugs can learn to avoid foods that they associate with harm or unpleasant taste, an ability that makes them a useful model system for studying memory in higher animals. In experiments by Gelperin, Christine Sahley and others, the slugs display most of the paradigms of Pavlovian conditioning shown by mammals. Also, since the slug possesses only about 5,000 to 10,000 neurons, it can be realistically modeled in a computer.

In one experiment, the researchers tried to understand how the slug distinguished the time sequence of events. If a certain food was initiated *after* the slug was fed quinine, which has an unpleasant taste, the slug did not subsequently avoid the food. But if the food was given *before* the quinine, the slug did avoid the food in later encounters. The researchers modified the basic connections in their model to "remember" the time history of an impulse, and the system did successfully capture this aspect of the slug's behavior.

The result, says Hopfield, indicates that the strong feeling of time sequence that animals and humans possess may originate at the very basic level of the single nerve cell and its interconnections.



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SPORTS

Open Volleyball Finishes

- Edwards' Team Take The Ice Cream

by Joe Dink

Volleyball enthusiasts who managed to get out of bed early last Sunday, 9 March, played in the Caltech Open Triples Volleyball Tournament sponsored by the Caltech Men's Volleyball Club. Randomly chosen teams took part in four hours of spirited round-robin play.

The championship match saw a

team consisting of Tyler Housel, Ricardo Palazuelos, and Linda Tanner pitted against the team of Chad Edwards, Nuri Dagdeviren, and Frank Mills. Tanner was defending her first place title from the previous Caltech Open. In a fiercely fought final game, the Edwards team engineered a nail-biting come-from-behind victory to edge out the Housel team 15-13 and remain undefeated for the day.

Winners received ten-dollar gift certificates from Baskin-Robbins Ice Cream while the second place finishers got five-dollar certificates. At the next triples tournament in May, Linda Tanner will be trying for an unprecedented three consecutive times winning prizes. This makes her the one to beat. Watch here and on campus bulletin boards for further details of the upcoming tournament.

WEEKLY SPORTS CALENDAR

Day	Date	Time	Sport	Opponent	Location
Sun.	3-23	3:00 pm	Women's Soccer	Jazz	La Salle High
Thu.	3-27	12 noon	Baseball	Pacific University (Oregon)	Caltech (2)
Sat.	3-29	All Day	Track	Redlands Invitational	Redlands
Tue.	4-1	3:00 pm	Baseball	Claremont-Mudd	Caltech
Wed.	4-2	3:00 pm	Women's Tennis	Whittier	Caltech
Thu.	4-3	1:00 pm	Baseball	Claremont-Mudd	Claremont-mudd (2)



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Baxart Lives

by Diana Foss

Although the Baxter Art Gallery may be gone from Caltech, it certainly lives on elsewhere. The Archives of American Art, a research bureau of the Smithsonian Institution, has asked for the records of the gallery to be made available to researchers of art activity in America. This request comes in recognition of the major contribution that Baxart made to the field of contemporary art, "a major contribution that should be recognized and preserved," according to Stella Paul, the Archives' Area Collector. She goes on to say that "the history of this institution will be relevant to future scholarship. It is our aim to ensure that such records are kept carefully and made available so that important research can be conducted."

The Archives is the world's largest collection of manuscript material relating to the visual arts in the country from Colonial times to the present. Jay Belloli, the director of the Baxter Art Gallery before its closing, is tremendously flattered. "We always thought that we were making a contribution to contemporary art in Southern California, and it is extremely satisfying that the Smithsonian thinks so, too."

Another piece of the gallery, the wildly successful "25 Years of Space Photography," shows no sign of giving out. The show was the third-biggest show in the history of the IBM gallery in New York; 113,000 people saw it, more than anyone had expected. From 2 May to 30 June, the show will be at the Fresno Metropolitan Museum, whence it moves to the Exploratorium in San Francisco, where it is booked for February and March of 1987. Even more exciting for those responsible for the show, it will be at the premiere photography museum in the U.S., the International Museum of Photography in George Eastman House, from May to August of 1987. And then, as part of a program organized by the Indo-US Subcommittee on Education and Culture, "25 Years of Space Photography" will travel for a year to various museums in India star-

ting in late 1987.

The show is so very popular that demand has led Belloli to arrange for a second set of the images. IBM, the show's original sponsor, will probably provide the funds. In this second incarnation, the show will travel to Utrecht, Holland, for an exposition entitled Space'86. Space'86 will involve many countries and private companies involved in the space effort, and attendance for the period of 3 May to 29 June is expected to reach 300,000. There are also potential exhibition sites in France and Spain; the show could very well be traveling through most of 1988. The catalog has sold out, and W.W. Norton, the publisher, is considering reprinting it. Quite a feat for a gallery that many people at Caltech took for granted, when they thought about it at all.

Contemporary art will not stay forgotten in Pasadena, however. As soon as President Goldberger made his decision to close Baxart in 1984, Belloli got started on plans to open another gallery away from Caltech. The people working on the new Pasadena Gallery of Contemporary Art are amazed and very pleased at how quickly preparations are coming along. Plans for the PGCA to make its home in the old Armory building on N. Raymond seem to be near success; fundraising efforts have been very successful, and they are even starting to think about their opening shows.

The new gallery will differ from Baxart in several ways. Most importantly, the Pasadena Art Workshop will be located in the same building, providing studio facilities and educational and outreach programs in conjunction with the exhibitions. The exhibitions themselves will have an even greater variety than did Baxart's; Belloli especially wants to arrange shows of children's art that come from the workshop program. With this new affiliation, the Pasadena Gallery of Contemporary Art will also be a community center, with meeting rooms and a lecture hall, as well as studios, classrooms and an exhibition space. Almost as important, the gallery will also have a real street address and even be above ground.

Marrie's Memorial

by Gary Ludlam

It is not uncommon, at college campuses around the country, to come across memorials to various people associated with the school. For the most part, however, the only people to receive such an honor are wealthy beneficiaries, school founders, Nobel laureates, and others who have somehow managed to gain a prominent position in the public eye. It is, therefore, somewhat exceptional when an institute as notable as Caltech commemorates a woman simply because of her love for the school's community and the love felt for her by faculty, administration and students alike. Marrie Casey was such a woman, and on Monday, March 3, a memorial to her was officially completed in Dabney Garden.

Marrie Casey worked for Caltech in the registrar's office for 30 years. She was the person to whom countless undergrads brought their drop cards and pre-registration cards, and it was she who handed them right back if they weren't filled out without mistake. Yes, she was a stickler for accuracy, and she wouldn't hesitate to chew someone out if they deserved it, but she cared for the students as if they were her own kids. She was loved and respected

by all who encountered her, and Caltech grieved when, two years ago, shortly after retiring, she died. She was 65 years old.

Marrie Casey's Memorial can now be seen in Dabney Garden. Colorful flowers, a lush lawn, and two stone benches adorn the newly renovated section. Each bench bears a plaque reading: "In the Memory of Marrie Casey." The memorial was built with donations from faculty, administration, and present and past students, with money coming in from as far away as Switzerland. It is not only a tribute to Marrie Casey, but an example of the love and respect that so many had for her.

Marrie Casey loved her job. The students were her friends. She was gruff and hard, but, all the while, she was truly concerned about the students. This was shown at Christmas, when she received, literally, hundreds of cards. She was adamant about filling out drop cards correctly, but instead of grumbling about it, the students organized contests between the houses to see which house had the fewest drop cards returned. At Frosh Camp the freshmen were always warned: "Never get on the bad side of Marrie Casey." But those same frosh came to love her, as did everyone else.

Caltech Baseball Bests Pacific Coast Baptist

—Frosh Colder Pitches Complete Game

by Ternin Too

The Caltech Beaver baseball team wound up second term play with a 6-2 victory over Pacific Coast Baptist Bible College. Brian Colder turned in a superior performance on the mound, while the Beaver offense capitalized on several Pacific Coast miscues to earn the victory.

PCBBC threatened in the top of the first inning, placing runners on

first and second with only one out. But Colder chose to have none of that and proceeded to pick off the runner from second and then the runner from first. The poor man on first had claimed to know Colder (and his pick-off move) as well as he knows his brother. Two seconds later, he stared up to the umpire, who declared him a victim of fratricide.

In their half of the inning, the

Beavers pushed across the first run of the ball game. Michael Keating beat out a grounder that the Pacific Coast shortstop bobbled. He then stole second base and went to third on a base hit by Colder. Keating scored on a passed ball.

In the fourth inning PCBBC managed to tie and in the fifth even pass the Beavers by one run. But these runs were not earned. Both

of the base runners who scored had gotten on base by dropped fly balls. Colder picked another runner off of second base in the fourth.

Caltech, however, responded to a wake-up call to fight. In the bottom half of the sixth inning, the Beaver awoke their bats. Colder, Min Su Yun, and David "Bruno" Bruning all lashed out hits. Yun's hit was good for an RBI, knocking in Colder. Brandon Mymudes gritted his teeth to take a vicious welt from a PCBBC pitch. After circling to third base, Yun was batted in by a sacrifice fly by Brett Bush.

The Beavers added a run in the seventh inning with Keating taking home on a squeeze bunt by Colder. In the eighth, Yun led off with a walk and stole second. He went to third on a single by Brian Lemoff

and scored on a wild pitch.

The baseball team will resume play during spring break, when they will take on Pacific University (Oregon). They are at home for a double-header on Thursday of the post-finals break period.

Pitching Phenom

This game is already rumored to have been the best pitched game by a Techer in two years. Colder finished the complete game showing tremendous control, striking out seven, only giving two free passes to Pacific Coast, and hitting one batter (this man had to duck to his knees to allow the pitch to bean him). The Beavers missed the presence of slugger Jim Hamrick for this game. Hamrick returns to action after finals week, barring unexpected job interviews.

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WHAT GOES ON

Music Festival

CalArts School of Music is hosting World Music Festival '86 on March 28, 29 and 30, April 4, 5 and 6 on the CalArts campus in Valencia. It is open to the public and will feature guest artists of international acclaim, representing music from many nationalities and cultures.

Friday, March 28 will begin the festival with a concert of student ensembles from CalArts, followed by Balkan, Japanese, and Javanese music, with a special appearance by Glen Velez, a renowned percussionist who plays everything from a Middle-Eastern fish-skin tamborine to an oversized Irish Bodhran.

Saturday will feature an Irish band, jazz, and more Javanese music and dance.

Sunday, March 30, will feature Japanese, Balinese and North Indian music.

Friday, April 4 will feature Irish and African music, and a special "surprise" band.

Saturday, April 5, is the day for the CalArts Hand Drum Ensemble, and more Javanese and South Indian music, with special guest artist Ravi Shankar (who has worked with various western artists ranging from George Harrison to Frank Zappa).

The festival concludes on Sunday, April 6, with three concerts: jazz, Balkan music and Balinese music and dance.

The program starts at 4 pm on the opening day, 5 pm on the other days. Special international meals are offered on most of the days of the festival. For further information, call (818) 362-2315. Tickets are available for individual days or for the entire festival.

Networking Forum

The Caltech/MIT Enterprise Forum will return on March 18. Andy De Mari, Ph.D., a Caltech alumnus and President of Retix, will present his business plan to a panel of technical, financial and marketing experts.

Retix, in Santa Monica, is in the business of networking and internetworking computer systems. The company manufactures and markets network controllers, gateways, and communications software.

For those unfamiliar with the Forum, it is a presentation and analysis of the business plan of a small company in the technical field, usually an entrepreneurial outfit of the type that so many Techers have found themselves in when venturing into the real world. If you are interested in forming your own company, or joining a small one, you may find the Forum both useful and interesting.

The Forum at 7:00 pm in Baxter Hall is free to Caltech students with I.D.

Another MacGroup

The MacValley Users Group is having a general meeting on Tuesday, March 18 at 7:30 pm in the cafeteria of the Burbank High School at Burbank Blvd. and Third St. in Burbank (where else?).

Michelle Mehterian of Aegis Development will introduce Doug Clapp's Word Tools, a new word processing desk accessory, and Jerry Koszut of DataPak Software will introduce Liberty Spell-Checker.

For further information please contact Ruth Stever, (818) 848-1277, or write MacValley Users Group, P. O. Box 4297, Burbank, CA 91503.

CPR Course

A Cardiopulmonary Resuscitation (CPR) course will be conducted under the auspices of the American Red Cross for all Caltech personnel. The course will be offered during two successive four hour afternoon sessions, March 25 and April 1.

An American Red Cross certification will be awarded upon satisfactory completion of the course.

Any individual interested in taking this course should contact the Caltech Safety Office at x6727.

Work in Japan?

A Caltech alum is offering two jobs in his Japanese factory for the summer. Travel, room and salary provided. Students will be doing basic factory work. If interested, contact Gary Lorden, Dean of Students, or Jeanne Noda, Associate Dean, x6351 or come to the Deans' Office, 102 Parsons-Gates by March 17.

Y Meets Y

Techers who are interested in cut-rate use of the facilities of Pasadena's downtown YMCA are invited to let it be known at The Caltech Y. The Caltech Y and the YMCA have begun discussions of group rates for student use of such facilities as squash and racquet ball courts, the indoor swimming pool and an assortment of classes. The YMCA has even suggested a barter system whereby students would gain free admission in exchange for programming assistance with the YMCA's recently-installed computer system.

To add flesh and blood to these up-to-now theoretical conversations, please supply your name and particular interests on The Caltech

Y's sign-up sheets. The Metropolitan YMCA is located on Marengo just west of the Pasadena City Hall (just north of the Plaza Pasadena shopping mall).

Women in Engineering

The Society of Women Engineers is offering scholarships for women in engineering. For more information and application materials, go to the Financial Aid Office, Room 10, Parsons-Gates, or call or write to:

Gloria Badillo
L.A. Section
429 N. Palm Avenue Apt. A
Alhambra, CA 91801
(818) 249-5252

Application Deadline: March 15.

Spend Time Conserving

The Student Conservation Association is looking for students willing to serve as expenses-paid (no real salary) volunteers for various projects in National Parks, Wilderness Areas, and Wildlife Refuges. The work ranges widely, and includes working with conservation professionals working on wildlife surveys, natural history interpretation, biological and archaeological research. Volunteers who are accepted into the programs will receive a travel grant for round-trip transportation to their program area and a stipend to help offset food and living expenses, as well as free housing at the work location.

For further information, contact the Student Conservation Association, Inc., P. O. Box 550 Charlestown, New Hampshire 03603. Those interested in summer positions should contact them immediately, at (603) 826-5206.

SSSSP Needs You

The Summer Secondary School Science Project will be needing tutors and counselors this summer, running from Monday, June 23 through Thursday, August 7, 1986. Those interested must wish to teach and work with motivated high school youth and/or supervise them in the north undergraduate houses for the seven weeks of the program (especially during the evenings). As of this writing, 3 tutors each are needed for Biology, Chemistry, Physics/Trig, and Physics/Calculus programs, as well as 12 to 15 counselors. Contact Lee F. Browne, who forgot to give us his extension, for further details.

Y Not Volunteer

Student volunteers, undergraduates and graduates are needed to help produce the Caltech Y's second-term Decompression. Decompression, those elevating moments of that otherwise depressing finals week, will take place on the evenings of Saturday and Sunday, March 15 and 16.

From 8 o'clock until midnight The Y will serve up cassette movies, rock videos, chili, milk and punch, fresh fruit, sugar-fixes, cream cheese, bagels and bedlam. Volunteers are needed to help with the preparation and serving of the food and with cleaning up. It's not only fun to do, you'll sleep better.

You may sign up in the Y office by climbing the 24 steps on the north end of Winnett.

Hispanic Scholarships

The Society of Hispanic Professional Engineers Foundation is offering scholarships for the 1986-87 academic year. Applicants are assessed and graded on: GPA, activities, SHPE membership, student comments, educational desire, financial need and counselor's comments. Please pick up application materials in the Financial Aid Office, Room 10, Parsons-Gates. Application Deadline: April 15th.

Future of the Shuttle

Mr. Martin MacDonald, of Rockwell International, will speak on the current and future Space Shuttle program at 7:00 pm on Saturday, March 15 at Rockwell's facility in Downey. He will answer questions on the recent *Challenger* disaster and on the future of the program. There will be a full-scale mock-up of the shuttle available for viewing.

Mr. MacDonald is a member of the technical staff of the Space Transportation and Systems Group at Rockwell. His lecture will be presented in the DEI Room. Enter at Gate 53 on the corner of Bellflower Blvd. and Stewart & Gray Rd.

The public is invited; there is no admission charge. The lecture is sponsored by OASIS, the Organization for the Advancement of Space Industrialization and Settlement. For more information about this lecture or other OASIS activities call F. Wiley Livermont at (818) 700-8382.

Another Final Offer

The Poetry Workshop that meets in the Y Lounge on the second and fourth Tuesday evenings of each month now has copies of its book *Another Final Offer*. They are on sale for \$2 (cheap) and are available in the Y Office. New members are always welcome. Bring your poetry to share.

Need \$ For 3rd Term?

If you think you will need a Guaranteed Student Loan for third term, make an appointment with Ellen Schick in the Financial Aid Office. We're in 10 Parsons-Gates, and our extension is 6280. Application Deadline: March 31.

Summer Jobs

The Alumni Association, in conjunction with the Career Development Center, has generated some summer job possibilities. These positions are currently available, so if you are interested in summer employment, you should come by the CDC as soon as possible. We expect to have more jobs available so please check with the CDC (Room 8, Parsons-Gates) on a regular basis.

Hillel At Rest

Tuesday afternoons from 4:30 to 6:00 pm is an informal gathering of Hillel and Caltech Jewish community in the Y Lounge, 2nd floor of Winnett Center. Refreshments and a little relaxation. For information, call Myra Baxter (213) 208-4427, or drop in.

Grad Student Housing

Graduate student housing information packets and applications for 1986-87 are now available in the Housing Office. Included in the packet is information concerning the 2-bedroom Catalina Apartments currently under construction and scheduled to open in September, 1986. If you are interested in obtaining information for next year, stop by the housing office and pick up a packet or call x6178 and a packet will be sent to you.

Sunday Volleyball

Every Sunday at noon, there is a session of recreational volleyball at the Gym. Call Tyler Housel for information, x4942.

Bitch, Bitch, Bitch

Yes, it's that time of year again. Bitch about your favorite class; laud your worst prof. It's TQFR time! If you didn't get any in the mail, pick them up across from 105 Winnett. Remember, no one hears the mute.

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Creative Writing Class

There will be a Creative Writing Course offered for the Spring Term. Lit 108a—Seminar in Creative Writing—will be offered once a week. It will meet with an Organizational Meeting initially at 1:00 pm in Baxter 127 on the first Wednesday of the term.

Bridge Tournament

Mark off Sunday, April 6th on your calendar for a Swiss Teams tournament! Play will be in an afternoon session and evening session. Don't miss it! Come as teams of four, partnerships or individuals. Call Jeffrey Pugh (x4543) for more details.

Win a Zenith PC

The Space Weapons Study Group is having a Star Wars Off-White Paper Contest, to get people thinking about the Strategic Defense Initiative and its problems.

Think of a destabilizing, unworkable, or incredibly expensive way to render nuclear weapons obsolete, write it up on a single sheet of paper, and send it by April 14 to the SWSG, care of the Y, 218-51. If your idea is the funniest, you win a Zenith PC!

Multiple entries are encouraged; there will be a prize for the house with the most entries. Winners will be announced on April 15.

For more information, look for the flyers that will be distributed, or call x6576 or 795-5099.

Bus Passes

If you ride the bus a lot, and are a full-time undergrad, you can get a bus pass good for unlimited non-express fares for \$15 per month, plus \$1 initial fee. To get it, you need a 1" by 1 1/4" non-returnable photo, something from the registrar indicating you're really here, and a form which also ought to be at the registrar's office. You have to do all this twice a year, but it's cheap if you ride the bus very often. The form will tell you where to get the pass itself. Still confused? Write RTD, Los Angeles, CA 90013.

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AT&T Award Winners

Last Thursday, March 6th, the second AT&T Research and Development Awards of \$500 each were presented to five Caltech undergraduates. AT&T donated this money to reward juniors in Electrical Engineering or Computer Science for a combination of academic achievement and involvement in the Caltech community.

The checks were presented over dinner at the Athenaeum by Mr. Alex Gillon of AT&T to:

Randy Brown
George Chen
Bena Currin
Ravi Subramanian
Rosaline Wu

Starre-Crost Auditions

Two households, both alike in dignity. . . TACIT's spring production of Shakespeare's *Romeo and Juliet* will be casting this weekend. Now's your chance, if you've ever wanted to strut and fret your hour on the stage, acting the Bard's romantic tragedy. . . from forth the fatal loynes of these two foes/a paire of starre-crost lovers take their life. Energetic young men are required for the fighting. Auditions will be held in 25 Baxter, 7:30 to 10:30 pm tonight, March 14, and 1-6 pm Saturday and Sunday. Bring a script if you have one. Please also drop by and sign up if you're interested in working backstage. For more information, call x6259. Students, faculty, staff, JPL welcome.

ASCIT Nominations

Nominations for the ASCIT appointed offices have been extended until April 1st. Interviews will be held on April 3rd and 4th for the offices which require them. Short descriptions of the jobs and signup sheets are up on the bulletin boards of the student houses and on the door of the MOSH's office. The available positions are:

- ASCIT Executive Committee
- Social Activities Committee
- President's Staff
- Election Chairman
- Educational Policies Committee
- Communications Director
- Student Darkroom Director
- Publications Darkroom Director
- Totem Editor
- Big T Editor
- little t Editor
- Big T Business Manager
- little t Business Manager
- California Tech Business Manager

Current office holders are listed in the *little t*. Please sign up as soon as possible.

Free Japanese Music

The UCLA College of Fine Arts will present a free program of Japanese court and chamber music on Saturday, March 22, at 1:30 pm in the Japanese Gardens of the Huntington Library, at 1151 Oxford Road in San Marino. Seating will be on a first-come, first-served basis. For further information, please call the College of Fine Arts at (213) 206-6465 or the Huntington Library at (818) 405-2125.

Requiem Auditions

The William Hall Chorale will be holding singers auditions for their May 31, 1986 performance of Benjamin Britten's *War Requiem* at UCLA's Royce Hall. The William Hall Chorale is also looking for singers for their 1986-87 season which will include a concert of the Romantics, works by Britten, and their traditional Baroque presentation of Handel's *Messiah*. Auditions will be held in the music building at San Gabriel High School, on March 17th and 24th from 7-10 pm. For reservations and further information please call Thomas Sheets or Dr. William Hall (714) 997-6891 at Chapman College Music Dept.

* Decompression *

An hour-long magic show will be one of the highlights of this term's Finals Week Decompression sponsored by The Caltech Y.

Glenn Falkenstein, who calls himself the Head Haunter and has made eyes bulge and jaws drop on *That's Incredible* and *The Merv Griffin Show*, will dazzle and mystify Techers this Sunday night from 9 until 10 in Winnett Lounge.

Decompression I begins Saturday night at 8 and continues until midnight. There will be the usual fare of fresh fruit, bagels, cakes, milk, popcorn, videos and chili (homemade this time by Chemistry Grad Brian *Burp* Treco).

Decompression II on Sunday night will be all of the above plus the Head Haunter.

Grads and undergrads willing to help The Y Excomm put on the Decompression program are invited to volunteer themselves. Come by the office today or show up in Winnett on either night of the event and report to Grad Wesley Boudville.

Decompression is made possible by donations from ASCIT and the Caltech Service League and by a generous dip into The Y's program funds.

Forbidden Love

On Wednesday, March 19th, the 1983 French film *Un Amour Interdit (Forbidden Love)*, starring Brigitte Fossey and Fernando Rey, will be shown (with English subtitles) in Baxter Lecture Hall at 7:30 pm. The director, Jean-Pierre Dognac, will be here in person and will answer questions at the end. Dognac, a veteran French stage director, has won several distinguished awards. Between 1965 and 1980, his innovative productions of the French classics (Molière, Racine) and of contemporary drama (Brecht, Von Horwath, Osborne) were noteworthy Parisian events. An actor in his own right, Dognac also directed at the Avignon Festival and was a guest director in the Théâtre du Soleil's space the Vincennes Cartoucherie. He taught at Idec, the prestigious French cinematographic school.

Faculty Cocktails

The Ricketts House social team cocktail party with the faculty will be in the Ricketts Lounge today at 4 pm.

Quarter-End Party

Come for a special Hillel goodbye party for Alvin Joran and celebrate the end of the quarter also. Tuesday, March 18, 4:30-6:00 pm, Y Lounge. Everyone is welcome!

Summer at the Royal

For the first time in its distinguished 150-year history, the Royal College of Art in London will offer a special program this summer for American adult, undergraduate and graduate students through a new arts program jointly sponsored by UCLA Extension. Starting July 13, students will be able to choose from 15 courses offered during two three-week sessions at the College's campus in South Kensington, London. The normal course offerings of the Royal College are roughly equivalent to graduate school level, but these special courses are more open.

The cost is high, \$1995 for one session or \$3895 for two. These fees will include bed and breakfast, all course costs, all administrative costs and group social and cultural events. The cost is slightly reduced if you make your own accommodations outside the college.

For further information, call UCLA Extension at (213) 825-9496 or write 10995 Le Conte Ave., Los Angeles, CA 90024.

CCF Elections

We will be finishing "family business" tonight, followed by the traditional end-of-the-term refreshments (ice cream!). Don't miss this important meeting, as its outcome will affect us for at least the next year. 7 pm, 210 Thomas.

SF At The Hilton

On Easter Weekend, March 28-30, there will be a science fiction, fantasy and horror convention at the Pasadena Hilton, a traditional movie and TV oriented gathering called Equicon. Originally a *Star Trek* convention, it has broadened to include just about any fun SF. In addition to the usual stuff (art show, dealers room, costume contest, panel discussions, movies, evening parties), this convention is having a 50's Science Fiction Movie Sock Hop, Regency-period dancing, and a fund-raising benefit party for the Motion Picture and Television Fund (a charitable group that helps entertainment industry people with various health problems), and various special seminars on how to break into various parts of the science fiction media at a professional level. The whole thing is run by John and Bjo Trimble (the same Bjo who designed the snake that appears on certain familiar issues of *The California Tech*). Anyway, the whole thing is a lot of fun, and the cost is moderate: about \$30 for the whole weekend, less for a single day. Go and have an end-of-spring-break fling.

Shroud of Faith

The St. Philip's Young Adult Group is sponsoring a talk on the Shroud of Turin, on Sunday, March 16 at 7:30 pm at the St. Philip's Newman Center, at Hill and Green. The speaker, Mr. Donald Lynn, was a member of an international team which examined the Shroud in 1978. He will be discussing the investigation, and the reasons why it has, for centuries, been thought by many to be the burial shroud of Jesus Christ. Mr. Lynn's background includes more than thirty years in advanced research and development, including more than ten years at JPL. He is currently a consultant specializing in technical management, information management, and computer image processing.

Be a BUMPer

The Boston University Marine Program (BUMP) is offering a 16-credit (semester credits—do your own arithmetic) course in Marine Science during the fall semester at the Marine Biological Laboratory on Cape Cod. The course is intended for seniors or well-qualified juniors majoring in biology, zoology, or marine sciences who wish to gain firsthand knowledge of the marine environment and marine life. The course consists of four 3-week sections, with laboratories, lectures, seminars and individual projects. For further information or applications, contact: Coordinator, Marine Science Semester, Boston University Marine Program, Marine Biological Laboratory, Woods Hole, Massachusetts, 02543.

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