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TYPESETTERS

# THE CALIFORNIA TECH

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LATE PAPERS

VOLUME LXXXVII NUMBER 18

PASADENA, CALIFORNIA

FRIDAY 21 FEBRUARY 1986

## Kismet Opens Tonight



photo by Chris Meisl



photo by Chris Meisl

## Kismet Preview

## Grad Student Stipends Are Falling Behind Rent

By Aloysius Crumb

*Kismet*, which opens tonight in Ramo Auditorium, is a lavish musical fantasy of love and evil set in the mysterious East. Essential to its enchantment are sumptuous costumes and a luxurious set, designed by Minta Manning and Eric Warren, respectively. The costumes, especially, create the exotic atmosphere the libretto requires. Costume designer Minta Manning has been a professional costumer for ten years. In the last two years she has designed costumes for TACIT productions including: *Much Ado About Nothing*, *The Dragon's Tale*, and *The Mikado*, as well as for *Kismet*.

Manning researched costumes of the period, but had to keep constantly in mind what was fast,

available, and within TACIT's budget. Fortunately, she was able to rent about 75% of the 200 odd costumes from the Center Theatre Group, costumes that have been used in professional productions of *Kismet* in the past. The remaining costumes were made by Manning.

As in all TACIT productions, the cast is also deeply involved with the costuming, sewing on beads and gold coins and wrapping turbans. Props, too, come from the homes of cast and crew members: spare cushions and anything made of brass have been requisitioned to complete the long list of props compiled by director Shirley Marneus. Other props, including a gigantic brass and enamel mosque lantern, have been obtained from

Paramount Studios.

The props, costumes, set, singing, and dancing should combine into a "brilliant spectacle of sight and sound," on the stage in Ramo Auditorium. Performances are at 8:00 p.m. tonight, tomorrow, and Sunday evening, as well as the evenings of Friday, 28 February, Saturday, 1 March, and Sunday, 2 March. Matinee performances will be held at 2:00 p.m. Saturday, 1 March, and Sunday, 2 March. This last performance will be interpreted for the hearing impaired. Tickets are only \$5.00 for Caltech students, \$6.50 for other students, \$7.00 for Caltech/JPL faculty, and \$8.00 for everyone else. The Caltech/JPL musical is always an event; this year's should be especially exciting. Don't miss it.

by Anthony Stirk

As a member of the Graduate Student Council (GSC), I have been studying how well students can survive on a graduate stipend from Caltech, since a large portion of the graduate students are supported in this manner. The following table has been prepared from official records obtained from the Housing Office, the Department of Chemistry, the Registrar's Office, and the Consumer Price Index Tables (CPI) for this area.

The Housing Office operates three separate classes of graduate residences: the dorms, Catalina, and off-campus housing. Housing Office policy is to charge only what it must to maintain its properties and pay off its loans. This second point is unusual in that most

buildings on campus were funded by donations. Each class of property is supposed to be self-supporting. Funds are not supposed to be pooled. This is the major reason for the difference in rental prices among the properties. The dorms and the off-campus properties are completely paid for and the rent provides only for maintenance and a reserve for major repairs. Dorm rental rates are less than Catalina, but generally more than off-campus rents. The rent shown in the table is that for a single dorm room, not a suite.

The CPI for this area is based on what it costs to buy 300 goods and services. It is not a true cost of living index, but it is a chief indicator of the inflation rate. Interest rates, taxes, benefits, buying of generic products, and other factors are not included in the index. The base year is 1967, which is set at 100, but the method of determining the actual CPI has changed a few times since then. The CPI values given are for September of the year indicated.

Tuition is shown because it reflects how much a student costs Caltech. This may be a truer measure of inflation in this area.

The Chemistry Department's Graduate Research Assistantships (GRAs) were chosen as an example of a Caltech stipend because Chemistry is one of the largest departments on campus. There is also only one GRA rate in Chemistry. Chemistry GRAs are paid in twelve equal monthly installments, and students are paid the same amount no matter what their year in school or experience. Other departments pay poorly during the year and well during the summer (e.g. Environmental Science) or according to experience (e.g. Physics).

While Chemistry GRAs have risen more quickly than the CPI, they have risen considerably more slowly than room rents have risen.

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## Go To Student-Faculty Conference Tomorrow

By Diana Foss

Tomorrow morning at 9:00 a.m., Caltech's fourth Student-Faculty Conference begins with Foster's doughnuts in Baxter Lecture Hall. The topics, in order, are: Teaching Quality, chaired by Jean Tang, Student Facilities, chaired by Rod Van Meter, the Core Curriculum and Humanities, chaired by Art Duval and Ken Haynes, Student Research and Computing, chaired by Tom Workman and John Beck, and Student Morale, chaired by Ted George.

Everyone involved with the conference stresses the importance of students' attending. One of the main benefits that Techers derive from the Institute's small size is the chance to make their voices heard, and the Student-Faculty Conference represents one of the best opportunities that students have for airing their gripes and suggestions. Over the past few weeks, the chairs

of the various committees have polled students for their views on the conference topics, and their findings have been reported in articles in the *Tech*, but the final presentation of these findings, as well as the committees' solutions, will only take place at the conference itself. This is not to say that the agenda is set in concrete; any students with concerns that have not been dealt with by one of the seven committees should by all means bring them up Saturday.

Remember: Caltech students have a great deal of power to change the Institute, but power is worthless if it is not used. The Student-Faculty Conference is a chance to affect one's school that very few students will ever have. If you have ever complained about life at Caltech, tomorrow is your chance to do something about it. If you don't, you have no right to complain.

## Y Needs U

by Huston Horn

A few choice seats are about to open up on The Caltech Y's Student Excomm.

Membership positions are presently available to both undergraduates and graduates, and elections to the Excomm will take place before the end of second term. A preliminary information pizza supper is also planned; the date and time will be announced soon.

Operating under the corporations humanistic by-laws, The Y's student board determines the variety of programs to be presented by The Y. These programs may be related to ethics, politics, religious issues, science, culture or recreation. They are funded annually by a budget in excess of \$35,000 which is available exclusively to the Excomm for program purposes.

Additionally, students assume such typical responsibilities as making arrangements for the program, producing publicity, welcoming and entertaining The Y's guest speakers, and making introductions. Among other good things, perks often include dinners at the Athenaeum and discounts on program fees.

The Caltech Y has been a part of the Caltech community for 70 years. Although financially and corporately independent of the California Institute of Technology, The Y is chartered to serve primarily Caltech's students, faculty and staff. The Y's beneficial influence occasionally extends beyond the campus, however, as in its recent fund-raising drive for victims of Mexico's 1985 earthquake.

Student members of The Y Excomm meet once each week during the school year to plan program

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## LETTERS

## Bylaws Amendment Questioned

To the Editor:

One of the things which was voted on in last week's ASCIT election was an amendment to the publications bylaws. Although the amendment passed by a fair margin, I believe that the election was run improperly. First of all, the text of the proposed amendment was published with only a clearly pro-amendment "explanation." To the best of my knowledge, no one was asked to present an opposing opinion (as one of the editors of the *Big T*, I certainly would have done so given the chance). Unfortunately, I did not read the full text of the amendment until a couple of days before the election, and so I was unable to write a letter in time for publication in that week's *Tech*. Had I been able to, however, there would have remained the problem that many people would have voted

before ever reading *The Tech*. Admittedly, there is nothing in the bylaws which prohibits a situation like this (indeed, this is the prescribed formula for amendment elections), but it seems evident that the bylaws should be changed to eliminate the possibility of this occurring again.

I have a much more serious objection to last week's election. In four of the student houses, the page from *The Tech* with the proposed changes and the "explanation" was posted in the same room in which the balloting was done (in three of the houses, it was posted within three feet of the ballot box). This is clearly against Article VIII, Section 3 of the bylaws, which states that, "There shall be no campaigning or campaign materials present in a room where polling takes place during any election." Since I was

busy on Friday and could not immediately find anybody who knew exactly how I should make a complaint, I did what seemed the most reasonable to me—I brought the matter up at the following BOD meeting. I was informed that I should have made my complaint by 11:00 the following day. This was not at all obvious to me from reading the elections bylaws; indeed, I suspect that it would be a rare person who would be aware of this rule. The BOD has graciously agreed to pass this matter along to the Excomm.

I personally feel that the election should be invalidated and re-run. Although the time had apparently passed for making a complaint (another bylaw which I feel needs changing), there is no question that this rule was violated. I acted in what I felt was a reasonable manner, and I only found out Monday my error. It would be a travesty to not re-run the election. Should the Excomm decide to re-run the election, I think that all of the houses should re-vote, not just those in which the pages from *The Tech* were posted (it is obviously unfair to simply invalidate the four houses in question and let the vote stand, for then these houses would not get their fair vote—I certainly don't believe that the pages were left posted on purpose). Since I plan to explain what I see as the problems with the amendment in this letter, it would not be right to have four houses vote with knowledge that the other three houses did not have. Also, it makes no sense to let the election results stand with the thought that another amendment can always be passed; although I intend to propose a new amendment, there is certainly no assurance that it will pass.

Without further ado, I'd like to explain my problems with the pro-

posed amendment. The new Section 3 is in direct conflict with Section 6, as contracts *always* extend into the academic year after the Editor's term of office (it is not feasible to have books delivered in the summer, and the contract is not complete until the books have been received and paid for; this is, admittedly, a rather minor point). The last sentence of the new Section 4 reads: "If no Business Manager is appointed for the publication, these responsibilities are also those of the Editor." This is patently unfair. Doing a proper job of being Business Manager takes about as much time as doing a proper job of being Editor; at present, our team of two Editors is constantly working just to keep up with the deadline. Someone who signs up to be Editor does not necessarily have (or wish to have) the needed knowledge of bookkeeping, ad solicitation, contract negotiation, etc. to be Business Manager. Furthermore, there is no provision for paying such an Editor for doing the Business Manager's job.

As far as Section 7 goes, approval of a contract by the BOD can be little more than a rubber-stamp, although this is not necessarily bad. The Editors and Business Managers of the *Big T* go through dozens of hours of negotiations with representatives from yearbook companies, and for the BOD to truly understand such a contract proposal the members would need to be present at all of these meetings (not to mention the need for a good knowledge of printing). More important is the 10% budget reserve clause. First of all, this clause is very ambiguous; I have seen three people interpret it in three different ways. A 10% decrease in revenue can mean only one thing: drastically smaller yearbooks. It is the first hundred

or so pages of a yearbook that cost a lot of money, after which pages are cheap. This means that 10% of the revenue might pay for 30% (or more) of the pages. Yearbooks, in general, do not have lots of "unexpected" changes—the only ones I know of in the past few years have arisen from the BOD forcing the *Big T* to pay off a continuing debt. We paid \$2000 for last year's book, they paid \$2000 for the previous year's, and so on. The debt came from a poor Business Manager a few years ago, and the term and annual reports clauses should take care of the gross financial negligence problem if the BOD will just pay off the debt instead of perpetuating it. The 10% reserve clause can only tie the hands of the publications.

The new section 8 is positively frightening: salaries may be

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## EDITORIAL

Hi everybody—

Welcome to the *Tech* that almost wasn't! Upon being handed the Kingdom, the Power and the Glory that is the *Tech* Editorship, I overcame with confidence those trials every *Tech* Editor must face, such as: How do I get the PC and the MCS on speaking terms? How do I project the air of ancient wisdom that staffers expect from the Editor? And where *do* they keep those damn layout boards?

All these I expected. What I didn't expect was the hulk of machinery lying belly-up in the production room. The typesetter was deathly ill, emitting only the occasional "ACK" in Garth Graphic Bold Condensed 10-point. Frantic negotiations with CompuGraphic went nowhere, as I laid emergency plans for a one-page Xeroxed flyer featuring only Bloom County and pizza coupons (hoping nobody would notice a difference). At 6pm Thursday, however, a last-ditch infusion of newt lymph, Southern Comfort, and BC gravy brought the typesetter back to, if not its feet, then at least its knees. The results of the frantic night that followed you see before you.

So, if you notice any misspellings or confused layout, don't blame us: the poor typesetter still isn't in the best of health.

Now it's time for the entertainment portion of the program: the Editor's statement. Everyone else seems to have done one (it did take Matt several months to get around to it, but that's Matt for you), so who am I to break this charming tradition?

1: First and foremost, the *Tech* is your paper. I seem to be the guy in charge, but I'm eager for suggestions. If there's something you'd like to see in the paper, or don't want to see anymore, let me know.

2: If you feel the *Tech* isn't representing you, then write for it! Interesting, well-written articles are always welcome (preferably submitted on IBM PC floppies). Those words Peter and Paul had trouble with aren't taboo, but use them wisely if at all...

3: *Repo Man* is good. *Cerebus* is good. Skiing may well be good, but I've never tried it.

Ciao!

*Jens*

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## The Caltech Y Fly-by

Friday... February 21

Noon Concert with Mark Levy. At noon on the Quad.

Friday... February 28

L.A. Philharmonic—Dvorak's New World Symphony (No. 9) and Brahms's Violin Concerto. At the the Music Center, 8 PM. Sign up in the Y by Tuesday, February 25. Tickets are \$3.

Tuesday & Wednesday... March 4 & 5

James Randi will speak on "Science, Magic, and the Paranormal." 8 PM in Baxter Lecture Hall. Wednesday's lecture will be a repeat of Tuesday's, in case you miss it. Co-sponsored by the Y and the Skeptics.

Wednesday... March 5

Noon Update—"Nuclear Power—A Failure?" Milton Plesset, Professor Emeritus of E & AS. In Winnett Clubroom I. Bring a friend and a lunch.

San Antonio Mayor Henry Cisneros will discuss "The Plight of America's Cities," in the Y Lounge at 10 AM.

Saturday... March 8

Sailing Trip! All day, \$9. Probably leave Tech between 7:30 and 8 AM. Sign up in the Y by Monday, March 3.

Whale Watching! Anybody who signed up for the February Trip but didn't go is still on the list. Anybody else, there are a few spots left. Boat leaves at 10:30 AM. Sign up by Monday, March 3.

Any ideas for programs? Want to join the Y ExComm? Come by the Y or talk to someone already involved. We need you!

## THE CALIFORNIA TECH

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This mosaic of the four highest-resolution images of Ariel represents the most detailed Voyager 2 picture of this satellite of Uranus. The images were taken through the clear filter of Voyager's narrow-angle camera on 24 January 1986, at a distance of about 130,000 kilometers. Ariel is about 1,200 kilometers in diameter; the resolution here is 2.4 kilometers. Much of Ariel's surface is densely pitted with craters 5 to 10 kilometers across. These craters are close to the threshold of detection in this picture. Numerous valleys and fault scarps crisscross the highly pitted terrain. Voyager

scientists believe the valleys have formed over down-dropped fault blocks (graben); apparently, extensive faulting has occurred as a result of expansion and stretching of Ariel's crust. The largest fault valleys, near the terminator at right, as well as a smooth region near the center of this image, have been partially filled with deposits that are younger and less heavily cratered than the pitted terrain. Narrow, somewhat sinuous scarps and valleys have been formed, in turn, in these young deposits. It is not yet clear whether these sinuous features have been formed by faulting or by the flow of the fluids.

## More Humanities To Be Given Next Term

by Chris Smith

The Department of Humanities and Social Sciences has just announced several new courses to be taught third term of this year. Yes, they will exist. Trust us.

**L 105** French Literature—Representations of Self and Other in 18th-Century French Travel Literature

The course will focus on the ways that an 18th-century European viewed non-European cultures and how this changing vision came to affect the European's self-conception. *Instructor: Nanette Le Coat. Class will meet Wednesdays, 2-4 pm.*

**MU 101**—The Music of Brahms

An examination through word, score and sound of this great successor to Beethoven. Works from all genres will be discussed—symphonic, chamber, solo, vocal and choral. The ability to read music, although helpful, is not a pre-requisite. *Instructor: Don Caldwell. Hours to be announced.*

**PSY 101**—The Psychology of Social Issues

Examines a variety of personal and social issues, including sex roles, minority issues, women's issues, group conflict, and war and peace. Emphasis on current research and theory. *Instructor: Hal Fairchild (visiting professor from UCLA). Class to meet MW 2-3:30 pm.*

**Lit 149b** Contemporary Latin American Literature

Reading (which can be in English or Spanish) will include works by Julio Cortázar, Jorge Luis Borges, Gabriel García Márquez, Mario Vargas Llosa, Carlos

Fuentes, and José María Arguedas. Discussions will be in English. Films (with English subtitles) will be shown: "Mexico: The Frozen Revolution", "Erendira", "Inquest in the Andes". *Instructor: Mary Berg. Organizational meeting, Tue 7:30pm.*

**Lit 180** Special Topics in Literature—Joseph Conrad

Reading will include Conrad's four major novels, the most important short stories, and selections from his criticism and personal reminiscences. The course will attempt to cover his development as a writer and will consider biography, evidence from the manuscripts, and contemporary theories of the novel to do so. *Instructor: David Smith. Organizational Meeting to be announced.*

**Lit 180** Special Topics in Literature—Literary Cure

An examination of the ways in which several writers attempted to "cure" deficiencies in their sense of self through writing. *Instructor: Stuart Ende. Class meets T 9-12.*

**H 161** Selected Topics in History—Perceptions of the Body—Changes Over Time

The course begins with the assumption that the human body itself is primarily a social construct. So far the body has been generally neglected as a central object of social history. At best historians have asked so far: how did people perceive those phenomena which we call pregnancy, pain, etc.? The perception of the body in a given time period, or a certain place or class, gives meaning to almost every social phenomenon. The course will be confined to illustrations drawn from European social history in the 15th to 19th century and will introduce students to methods used in the historical study of the body. *Instructor: Barbara Duden, a Visiting Professor of History from Berlin, Germany. Class will meet TTh 12:30-2:00.*

**H 161** Selected Topics in History—The Social History of 19th and 20th Century Women in Europe and the United States

This new course studies European and American women during the nineteenth and twentieth centuries. The class compares crucial topics such as the role of ideology in shaping the notion of "separate spheres," the sexual division of labor, the nature of women's work, women's place in family and community, forms of women's collective actions, and some issues of feminist politics in Europe and the U.S. *Instructors: Barbara Duden and Judy Raftery. Class will meet Tuesday evenings at 7:30.*

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# The Inside World

**Dabney:** The bitter dispute over election results continues to interfere with the normal course of life at Dabney House. Violence from all sides in the fierce election battle makes the streets of beautiful downtown PASADENA unfit for human habitation, even on the sunny shores of Lake PASADENA. As the sun sets slowly over the Institute, we return our attention to Patrick J. Wayne, who has traveled the many miles by land, sea, and air to arrive at the very heart of his quarry's most terrifying powers---

I was exhausted from my journey, so much so that I barely knew where I was or how I had come to be there. It didn't matter. I could let nothing stand between me and my perilous mission, for the very future of the free world's credit-card industry was at stake. It was night-time, but my day was just beginning.

I needed a guide, so I stopped in a cheap bar, looking for a local who could speak English. Fortunately, I was in beautiful downtown BOSTON. They all spoke English there. Sort of.

I walked up to the bartender. "Give me some cookies," I said. "Make those... Pepperidge Farm cookies."

He looked up at me and smiled. "Pepperidge Fahm Rimembahs," he said. He got me some cookies as I plunked down my DarbCard™. He looked at it, and looked up at me.

"I need some information," I said.

"Yeah? What kind of infahmation?" he asked suspiciously.

"Information on a man in these parts," I said. "An evil man. A man by the name of Xi."

The bartender stood bolt upright and shrunk back. "Don't know no Xi," he said. "Nevah heard of him. Nope. Nevah."

I noticed suddenly that a hush had fallen over the bar. I looked around, and everyone was looking the other way. One of the men standing at the bar turned to me. "You'd bettah leave," he said, a look of confrontation on his face. "Go!"

- "J"

**Fleming:** In a recent survey it was found that Classic beats New Formula 2:1. And we all know how Classic fares against "B." I'll pity the other houses when Interhouse Basketball rolls around.

Is it true that ASCIT elections can be won by the candidate with the least votes?

This weekend it's Wine and Candlelight. Is Barry waiting? One might consider rain gear if he is. So I hear, anyway.

There's still room to sign up for the ski trip. Don't miss this opportunity for a rollicking good time.

-A.F.

**Lloyd:** Lloyd pounded down a Discobolous victory in volleyball this week [Yes, but against whom? -Ed.]; thanks to all who came out and played. Sign up for Interhouse volleyball! Practice resumes promptly for the grueling match Sunday. Come out tonight to put the finishing touches on your game, and to pick size and color. We saw Rob being talked to by a national recruiter last week... and he's only a sophomore.

Party Saturday night at the Penthouse with the Moles and the Rudds, so get your dancing shoes! Might even be a live band up there. (or else Jay will sing?)

If you signed up to talk to alums on Sunday, don't forget. Free food, drinks, t-shirts, and a chance to meet new and interesting people. We need 25 heads, so be there.

-J.P.

**Ricketts:** Sorry for missing the last couple of weeks, bur I've been having pain in the neck problems. So much has been happening that it simply staggers the mind. No news is good news.

News flash of the month: Peter-Pete is now an official Mason shoe salesman. He can get you great deals on shoes with fabulous velva-tease insole. It's just like putting your body on a soft comfortable mattress. Buy now while supplies last!

Those amazing fish—SWaka has got some fish that will knock your socks off. When the female wants to mate, she changes her stripes from horizontal to vertical. Then, SWaka spends two weeks adjusting the water temperature so he can put the two fish together. How romantic. Over in Dave's room, no mating ever goes on. His flounder sucks rocks on the bottom, while his sightless fish swim in an endless search for their little white canes.

The Nancy Drehwing Laundry Incident has caused quite a stir in the South Complex. It can now be publicly announced that you can get twice the drying pleasure for twice the price. Contact Nancy or Joel Seely for details.

Initiations went smoothly this year, thanks to my instrument of laughing death (made in Japan), and Josh (Jerome) Kurutz's Hat of Ridicule. There were no major injuries, and only a few upperclassmen received minor injuries while testing their instruments o' torture. Practice Apache is this Saturday, so get out and practice drinking those delicious wines, after your exciting day at the Student-Faculty Conference. Be sure to lavish Saxy with gifts on his birthday, this Sunday!

Mr. Picarole picks the French roll. I pick the poppy-seed roll.

-Saxy

**Ruddock:**

A warm welcome to our new executive committee:

President: Fumihisa Yamazaki, "Biff"; Vice President: Wayne Wendall Lukens, "Waynal"; Secretary: Gregory Allen Martin, "Greggles" (Greggles?); Treasurer: Mark Robert Vagins, "Wagins"; Social Team: Catherine Teh-Yao Chen, "Cathy"; Quynh-Thu Le, "Thu Le or not Thu Le"; Edward Molhwa Yin, "Eddie Yin Halen"; Athletic Team: Wolfgang Maximillian I, Josef of Bavaria Hofmann, "Otter"; Edward Si-Lo Mao, "Refrigerator"; Librarian: Richard Thomas Till, "Tugboat".

Installations are Tuesday, February 25 at 9:30pm in the house lounge or a POSH location to be announced. Formal attire - ahem - is strongly encouraged.

After we're all out of our formal clothes, though - go get 'em! Postponing Installations was a ream, but it gives us an extra week to shower out the old and shower in the new in [Sam said it, not me] "an expression of love and joy." Coolers to the first one to shower the fridge.

Action packed week ahead: Kismet with a singing Doughboy; snow level is retreating to 8000 feet; volleyball practice in the gym; First social event of the new Administration - Penthouse Party with Blacker and Lloyd. Good luck, Eddie, Thu and Cathy!

Remember - a wet excomm is a happy excomm, seniors are wimps and no, Bonz, it's not "tomorrow."

P.S. Butch says, "Sam, you're a weenie."

-Sam

# Protein Yields Synthetic Vaccine For Hepatitis B

[CNB]—Evidence that a simple protein could become the basis for more effective, inexpensive vaccines against hepatitis B has been reported by scientists from the New York Blood Center (NYBC) and Caltech. Such vaccines would consist of synthetic or genetically engineered versions of the protein. Hepatitis B is one of the world's major health problems, affecting some 200 million people worldwide.

The scientists reported that antibodies to a chemically synthesized portion of the virus protein coat neutralized live hepatitis B virus. They tested this neutralization by administering the antibody-virus mixture to chimpanzees at NYBC's laboratory at the Liberian Institute for Biomedical Research in Liberia, Africa. These chimpanzees did not subsequently develop the disease, as they would have if the virus remained infectious.

The researchers were led by A. Robert Neurath of the NYBC Lindsley F. Kimball Research Institute and Stephen B. H. Kent of Caltech's Division of Biology. Their findings were published in the March issue of the international journal *Vaccine*.

The researchers' latest work is an outgrowth of their discovery in 1984 that two novel hepatitis B virus coat proteins produce a strong immune response in hepatitis B-infected humans. These proteins contain a short segment, called preS, not found in the previously known major coat protein, called the S protein. Researchers developing hepatitis B vaccines had largely overlooked the

preS region, concentrating on the more abundant S protein. One vaccine based on the S protein is the currently available Heptavax vaccine produced by Merck Sharp and Dohme.

There is evidence that this vaccine, which includes only the S protein, is of limited effectiveness in some populations especially at risk from hepatitis B, including hemodialysis patients and newborns. In addition, several studies suggest that the combination of preS and S proteins is more effective in producing a protective immune response than the S protein alone. However, it is not certain whether this enhancement is a direct effect of the preS protein on the immune response, or an indirect effect in enhancing the response to S protein.

The earlier NYBC-Caltech studies on the preS-containing protein showed that chemically synthesized proteins, or peptides, derived from the preS region could be used as diagnostics to detect a strong early immune response in hepatitis B-infected humans. This immune response is apparently associated with the clearance of the virus from the bloodstream. These synthetic peptides were able to produce a similar immune response in several species of experimental animals. This response resulted in antibodies that strongly reacted with the virus and could be used to detect hepatitis B in human blood samples.

However, not until now have the researchers shown that those antibodies to the virus were capable of inactivating the virus. The research reported in *Vaccine* pro-

ves that antibodies generated by the immune response to preS inactivate the virus.

The protein that makes up the outer coat of a virus is the key producer of an immune response to that virus. Researchers have traditionally used inactivated viruses as vaccines, but these preparations are expensive, have a limited shelf life, and may have the potential of producing the disease if not properly inactivated. The Heptavax vaccine falls into this category, as do hepatitis B vaccines being tested by the Institute Pasteur in France and the National Institutes of Health.

Synthetic vaccines consisting only of small segments of viral proteins, synthesized either chemically or by genetic engineering techniques, could be safer, more effective, and far cheaper than traditional vaccines. Such synthetic vaccines to hepatitis B are being developed by several corporations and by the NYBC-Caltech researchers. The NYBC-Caltech vaccine will include key portions of the preS proteins believed to be responsible for generating an immune response, and possibly a key portion of the S region.

Other members of the research team are Karen Parker of Caltech, and Alfred M. Prince, Nathan Strick, Betsy Brotman, and Phyllis Sproul of the NYBC. The article, entitled "Antibodies to a Synthetic Peptide from the preS 120-145 Region of the Hepatitis B Virus Envelope are Virus-Neutralizing," was published in vol. 4, no. 1, pp. 35-37 of *Vaccine*, which is published by Butterworth and Co. Ltd. The scientists' research was supported by the New York Blood Center and Caltech.

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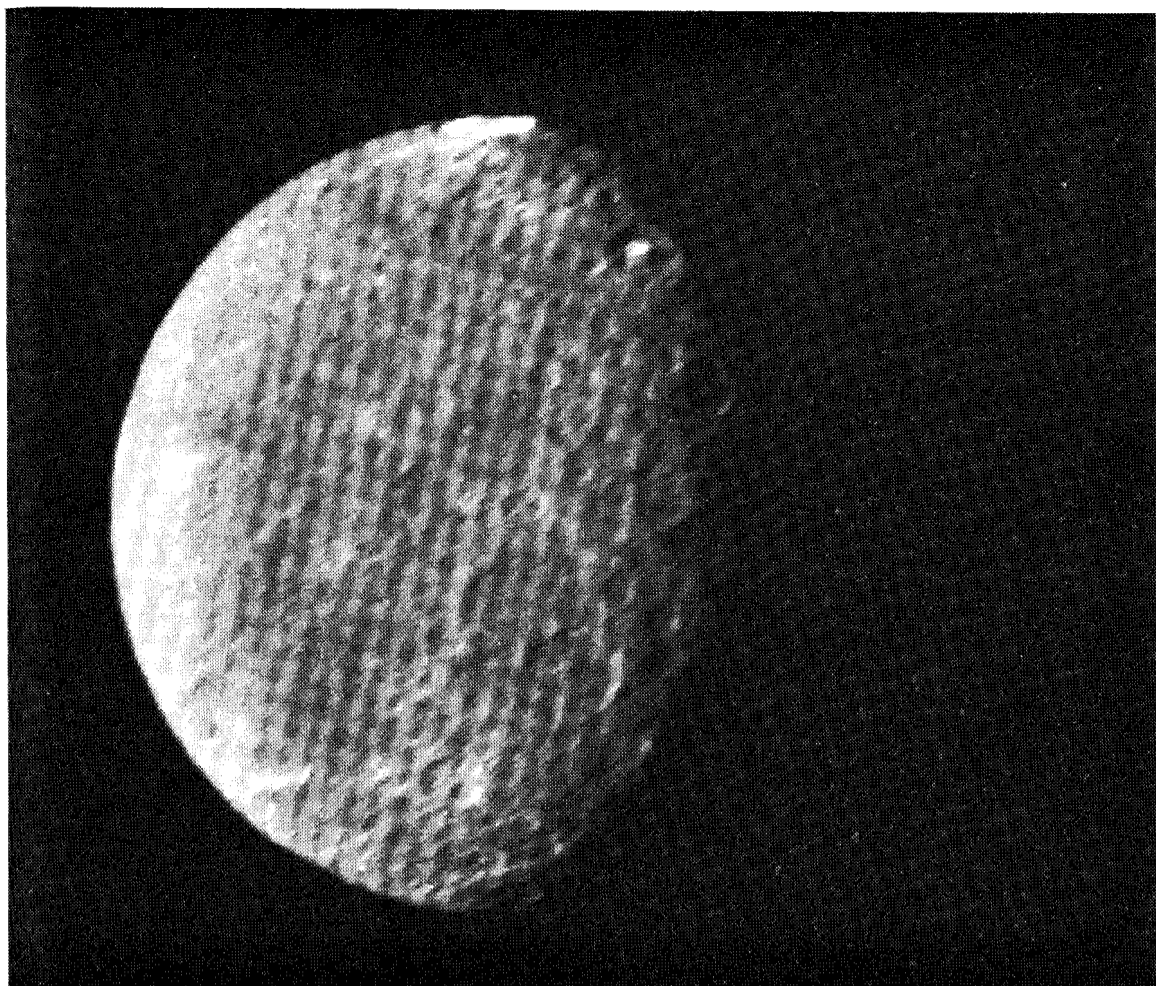


photo courtesy NASA/JPL

The southern hemisphere of Umbriel displays heavy cratering in this Voyager 2 image, taken January 24, 1986, from a distance of 557,000 kilometers (346,000 miles). This frame, taken through the clear-filter of Voyager's narrow-angle camera, is the most detailed image of Umbriel with a resolution of about 10 km (6 mi). Umbriel is the darkest of Uranus' larger moons and the one that appears to have experienced the lowest level of geologic activity. It has a diameter of about 1,200 km (750 mi) and reflects only 16 percent of the light striking its surface; in the latter respect, Umbriel is similar to lunar highland areas. Umbriel is heavily cratered but

lacks the numerous bright-ray craters seen on the other large Uranian satellites; this results in a relatively uniform surface albedo (reflectivity). The prominent crater on the terminator (upper right) is about 110 km (70 mi) across and has a bright central peak. The strangest feature in this image (at top) is a curious bright ring, the most reflective area seen on Umbriel. The ring is about 140 km (90 mi) in diameter and lies near the satellite's equator. The nature of the ring is not known, although it might be a frost deposit, perhaps associated with an impact crater. Spots against the black background are due to "noise" in the data.

**Russian Language**

The Russian Language Workshop meets from 7 to 9 pm on Wednesday evenings. For information, call Larry Mak, 354-6748. Visitors are welcome.

**Yumm Yumm!**

The Master's second term tea will be held Thursday, 27 February, from 2:30 to 4:00 p.m. in the Master's Office. All undergraduates are welcome!

**Investment Fund**

The Student Investment Fund will disburse up to about \$4,000 for projects of broad interest to the students. The disbursements should not be used for the furtherance of any political course or making up any deficit incurred, nor for funding scholarships. Instead they should preferably be used for capital investments. Please submit proposals to: Yosufi Tyebkhan, 1-54, or call him at 796-3227 for details.

**Free Music Class**

Pianist James Boyk is offering a free class in interpretive performance on Wednesday afternoons from 4:30 to 6:00 pm. Open to the Caltech community without charge. Feel free to arrive late and leave early if your schedule is tight.

**Summer Here or There**

GTE Laboratories will conduct the Industrial Undergraduate Research Program of summer internships for upper division undergraduate students in science, mathematics and engineering. Deadline: March 10, 1986. For information on this and other summer programs, here or abroad, drop by the Career Development Center, 08 Parsons-Gates.

**Caltech Gamers**

Every Friday night in Clubroom 1 of Winnett, the Gamers gather to play various fantasy, science fiction and historical simulation games. Fridays are primarily for role-playing games, and times are picked for sessions of other games and gatherings. Just drop in any time between 7:30 pm and midnight.

**Money for Chinese**

The Chinese-American Institute of Engineers and Scientists (CAIES) is offering scholarships to undergraduate students with a GPA of 3.35 in Engineering, Engineering Technology, Architecture, Physics, Chemistry, Mathematics and the Life Sciences. Sophomores, Juniors and Seniors not graduating until after July 31, 1986 may apply.

Application forms are available at the Financial Aid Office, Room 10, Parsons-Gates.

Application deadline is March 22, 1986.

**Dance Alive & Well**

A recent question from a former editor of the *California Tech* led to the discovery that there are three folk dance organizations that meet regularly on campus, none of whom have been sending in announcement information. Well, their secret is out! Here goes:

Tuesday, *International Folk Dancing*, Dabney Hall Lounge. Instruction for beginners, 7:30 to 8 pm; intermediate, 8 to 9 pm; open dancing, 9 pm to midnight. For information, call John Louie, 356-6931.

Wednesday nights, *Scottish Dancing*, 8 pm. Beginners welcome, small donation requested. For information, call Michael Kovari, x4637, or 577-1930.

Sunday nights, *Israeli Folk Dancing*, Penthouse, Keith Spalding Building—beginning instruction, 7:30 to 8 pm; intermediate, 8 to 8:30 pm; open dancing, 8:30 to 10:30 pm. For information, call John Louie, 356-6931.

**Informational Seminar**

March 5, 1986

**On Campus Interviews**

March 6, 1986

Research challenges for PhD/MS graduates with interests in

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Then starting February 3rd, we'll be drawing 10 winners a week for 7 weeks. And if you've got the backside for it, you could easily end up sitting pretty on the sands of Waikiki.



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PARKING IN REAR

# Graduate Stipends And Rent

## from page 1

As a result, our hypothetical student put out 21.4% of his stipend for a dorm room in 81-82, but he will put out 27.8% of his stipend for the same dorm room this academic year. 35.6% of his stipend would rent a room this year at Catalina, and non-Caltech property is generally more expensive. For those students whose stipends are lower or who are paid much less during the academic year than the summer, the relative burden can be even greater.

Average rents seem destined to rise. Demand for housing in the immediate area is increasing. This area of Southern California is one of the most rapidly growing areas

in the country, according to census figures. Furthermore, there has been a marked increase in population in South Central Pasadena (where Caltech lies) in the 19-34 year age group (the most likely group to rent) and in the median contract rent (City of Pasadena Area Analysis Study 1960-1980, published October 1983). This area is growing and changing faster than any area in Pasadena. Far fewer rental places are being built. Condos are all the rage. Graduate student enrollment has also been rapidly increasing. There is at present no limitation on the number of graduate students at Caltech except for the availability of lab space and grant money.

Academic Year	Tuition	Rent	CPI	GRA	Number of Students
76-77	...	...	170.7	4584	...
77-78	...	...	181.6	4860	...
78-79	...	...	197.3	5148	...
79-80	...	...	220.7	5611	...
80-81	5229	...	249.6	6060	851
81-82	6249	120	279.3	6726	892
82-83	7500	135	288.2	7264	865
83-84	8700	155	296.4	7627	936
84-85	9400	180	310.2	8016	999
85-86	9900	195	323.8	8416	1028
% change					
81-85	58.4	62.5	15.9	25.1	15.2

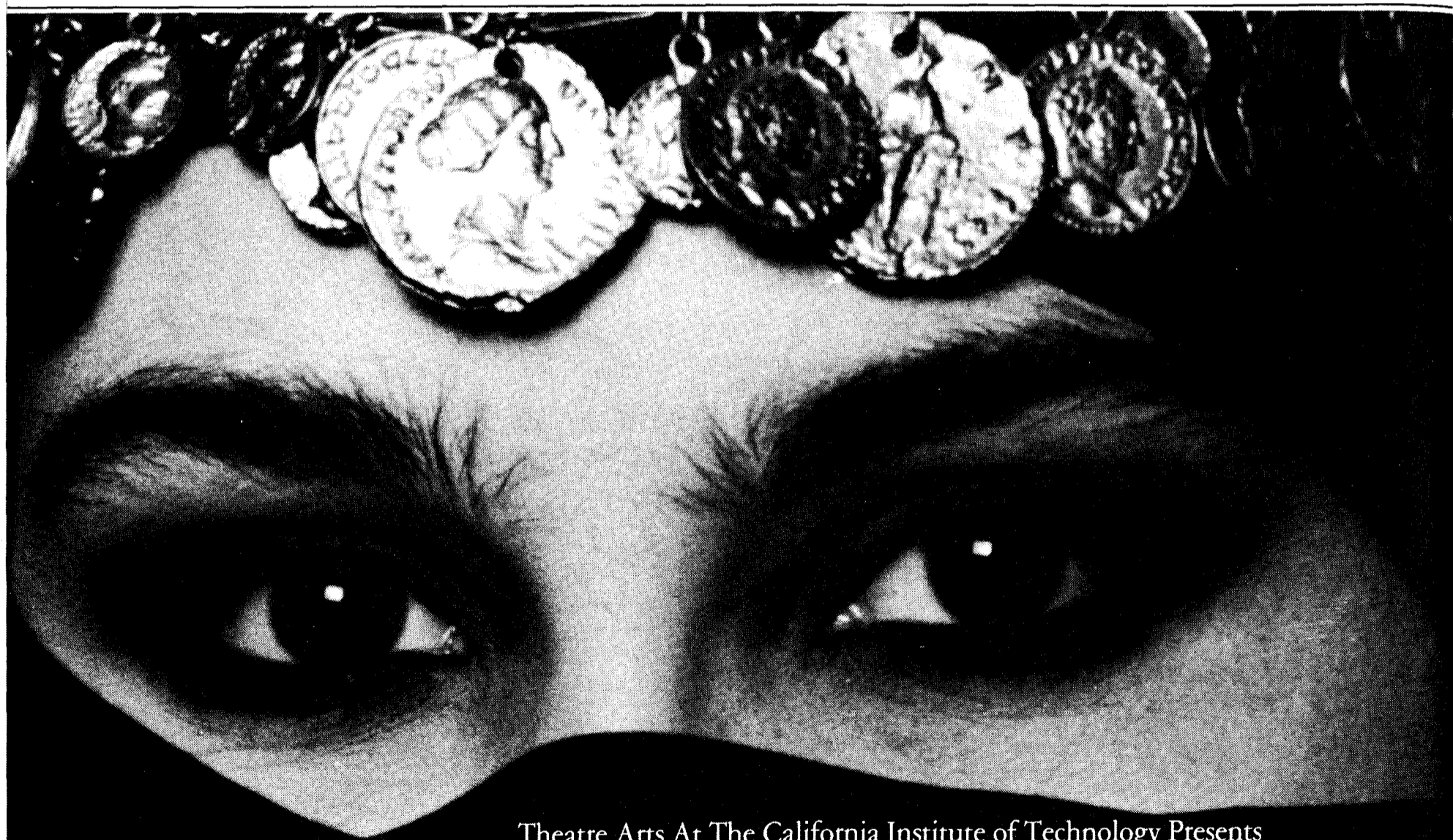
The currently planned Catalina II complex will not be much of a gain for the graduate students. 32 places were lost when Marks House became an undergraduate dorm. 15 more places off-campus were lost to the undergraduates at the same time. These places are anticipated to remain in the hands of the undergraduates for four years (MOSH office estimate). In addition, 28 places were permanently lost when houses were vacated to make way for Catalina II. Catalina II at 160 spots nets the graduate students roughly half that amount. There is currently talk of utilizing Braun House as an undergraduate dormitory. Even without this happening, if the increase in the number of graduate students continues as it has been, Catalina II will just about keep us even with graduate population growth next year, if it can be built in time. There are some indications that Catalina II will not be ready in September. This means that September could show an even greater shortfall in graduate housing than was experienced this year. More off-campus housing will be lost north of the present campus as Caltech expands in that direction. Demand for Caltech properties is

increasing as prices outside Caltech escalate. A Catalina III project has been proposed by the Faculty Housing Committee and would certainly ease the housing problem if funding can be found to finance its construction. Furthermore, graduate students are giving up cheaper properties that have been paid off to occupy higher priced properties that have not been. The debt financing of the Catalina I and II projects adds to their rental cost. This situation is due to a policy formally codified last year that undergraduates will be housed in preference to graduate students.

There are a number of ways out of this dilemma. First is to keep building. But, building is expensive, donors are reluctant to donate living quarters when they can donate equipment or research buildings, we probably can't build fast enough, and there are severe limits to where and what Caltech can build. Even regaining some of the space lost to the undergraduates will only ease the problem a bit. Currently, there is a waiting list on all properties. In years past, the dorm waiting list was exhausted by this time of year. Second is to limit enrollment. Unfortunately, present

enrollment and housing demand indicates that Caltech would still need to build. The idea of an enrollment rollback is unlikely to catch on and would not be effective for a few years anyway. Third is to raise the stipend level to match the rental increases so that students can live in non-Caltech housing and not starve. These higher stipends will relieve the pressure to build more rental properties. Higher stipends should also slow enrollment as fewer graduate students can be afforded. Furthermore, the typical graduate student will not pay proportionally more of his stipend in rent every year. As "disposable" income vanishes and the standard of living drops, Caltech will become a less attractive place to do graduate study.

The GSC is concerned about questions such as how to parcel out housing that is in high demand, whether Caltech should have a limit on its graduate student enrollment, and what medical benefits would be most beneficial to graduate students and how they should be paid for. If you have a good idea, a pet gripe, or time to spend on something you consider important, contact a GSC member.



Theatre Arts At The California Institute of Technology Presents

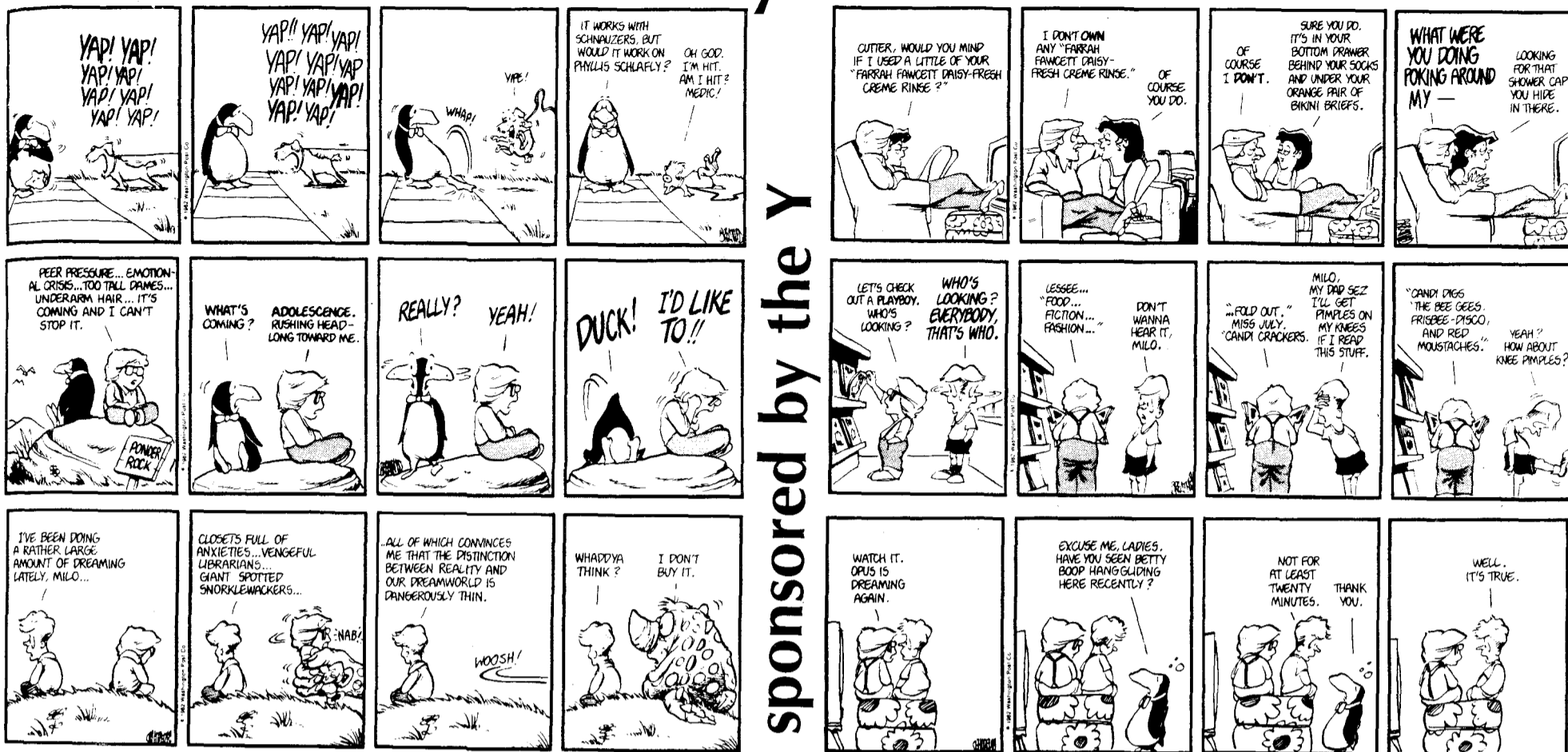
## KISMET

A Musical Arabian Night

Performances are at 8 PM on Friday, Feb. 21 and 28; Saturday, Feb. 22 and Mar. 1; and Sunday Mar. 2 as well as at 2 PM on Saturday and Sunday, Mar. 1 and Mar. 2 in Ramo Auditorium.

Tickets are \$5.00! for Techers, \$6.50 for other students, \$7.50 for Caltech/JPL faculty and staff, \$8.50 in general. The March 2 matinee will be interpreted for the hearing impaired.

# Bloom County by Berke Breathed



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# SHARE IN OUR SUCCESS



### Tau Beta Pi

On Monday, 24 February, the Caltech chapter of Tau Beta Pi will host a talk by Dr. Christos J. Georgiou of IBM's Thomas J. Watson Research Center. The talk will cover Dr. Georgiou's current research in multiprocessor systems, high-bandwidth interconnection networks and VLSI architecture.

Manager of the Systems Interconnection Structures Group, Dr. Georgiou has received an IBM Outstanding Innovation Award for a series of contributions to modular, fault-tolerant switching networks. He is also the recipient of an IBM First-Level Invention Achievement Award and has authored five patent applications.

Show up at 8:00 p.m. in Winnett Lounge for what promises to be a very interesting evening. Refreshments will be served.

### Minorities Symposium

Mayor Henry Cisneros of San Antonio, Texas and president of the National League of Cities, will be among the featured panelists participating in a major symposium on "Minorities in California" on March 5 in Ramo Auditorium.

The symposium will be the occasion of the announcement of the findings of a major report on the political, economic and social impact of minority communities in California. The study, which took two years to complete, was undertaken by Dr. Bruce E. Cain, associate professor of political science, and co-authored by Dr. Roderick Kiewiet, also an associate professor of political science, both here at Caltech. It was commissioned by the prestigious Seaver Institute.

Robert Abernethy of NBC News is moderator of the three panels, where Mayor Cisneros and other political and community leaders and business executives will participate in the symposium and panels.

Open to the public at no charge, the symposium begins at 8:30 am with the panel on "Political Direction of California's Minorities." At 10:15 am, another panel will discuss "Business Opportunities for California's Minorities," and at 2:30 pm, "Community Relations Between California's Racial/Ethnic Groups."

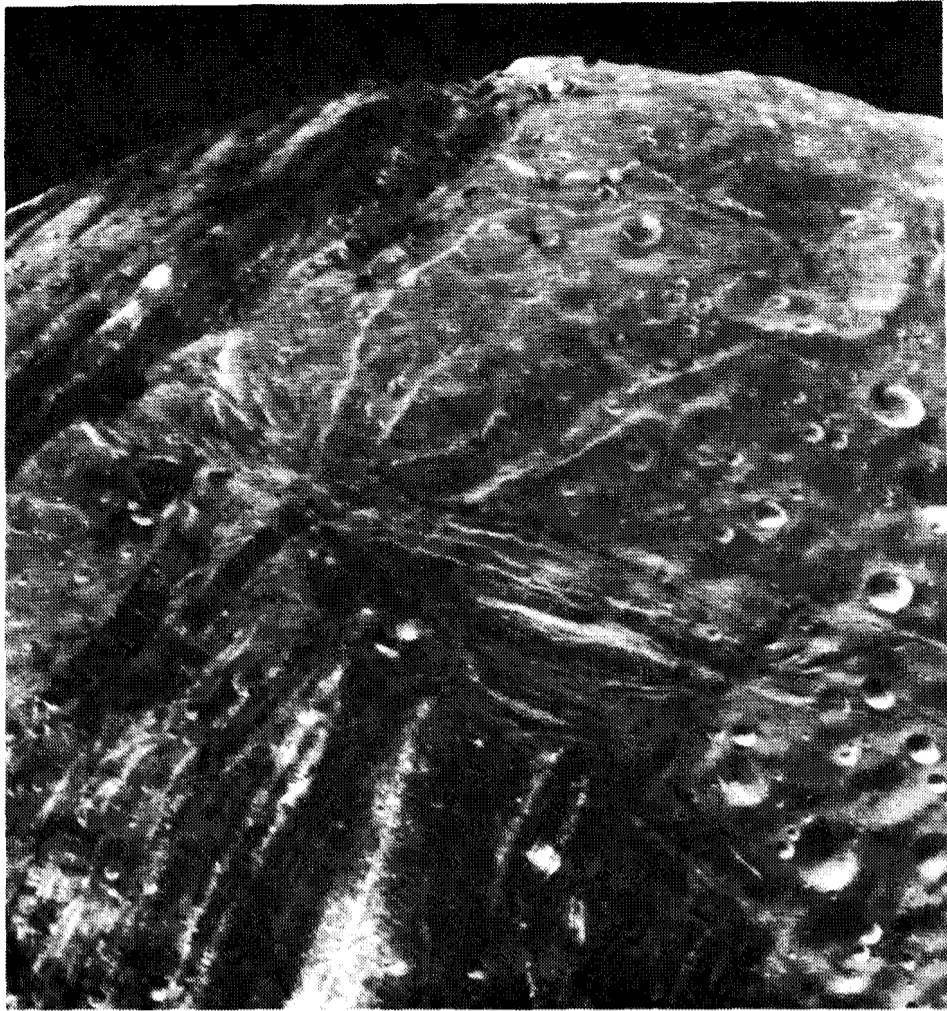


photo courtesy NASA/JPL

This Voyager 2 image of Miranda was taken 24 January 1986 from a distance of about 31,000 kilometers, shortly before the spacecraft's closest approach to the Uranian moon. The high resolution of 600 meters reveals a bewildering variety of fractures, grooves, and craters, as well as features of different albedos. This clear-filter, narrow-angle view encompasses areas of older, heavily cratered terrain with a wide variety of forms. The grooves and troughs reach depths of a few kilometers and expose materials of different albedos. The great variety of directions of fracture and troughs, and the different densities of impact craters on them, signify a long, complex geologic evolution for this satellite.

Voyager 2 acquired this high-resolution image of the epsilon ring of Uranus on January 23, 1986, from a distance of 1.12 million kilometers (690,000 miles). This clear-filtered image from Voyager's narrow-angle camera has a resolution of about 10 km (6 mi). The epsilon ring, approximately 100 km (60 mi) wide at this location, clearly shows a structural

continued on page 9

## Y Needs U

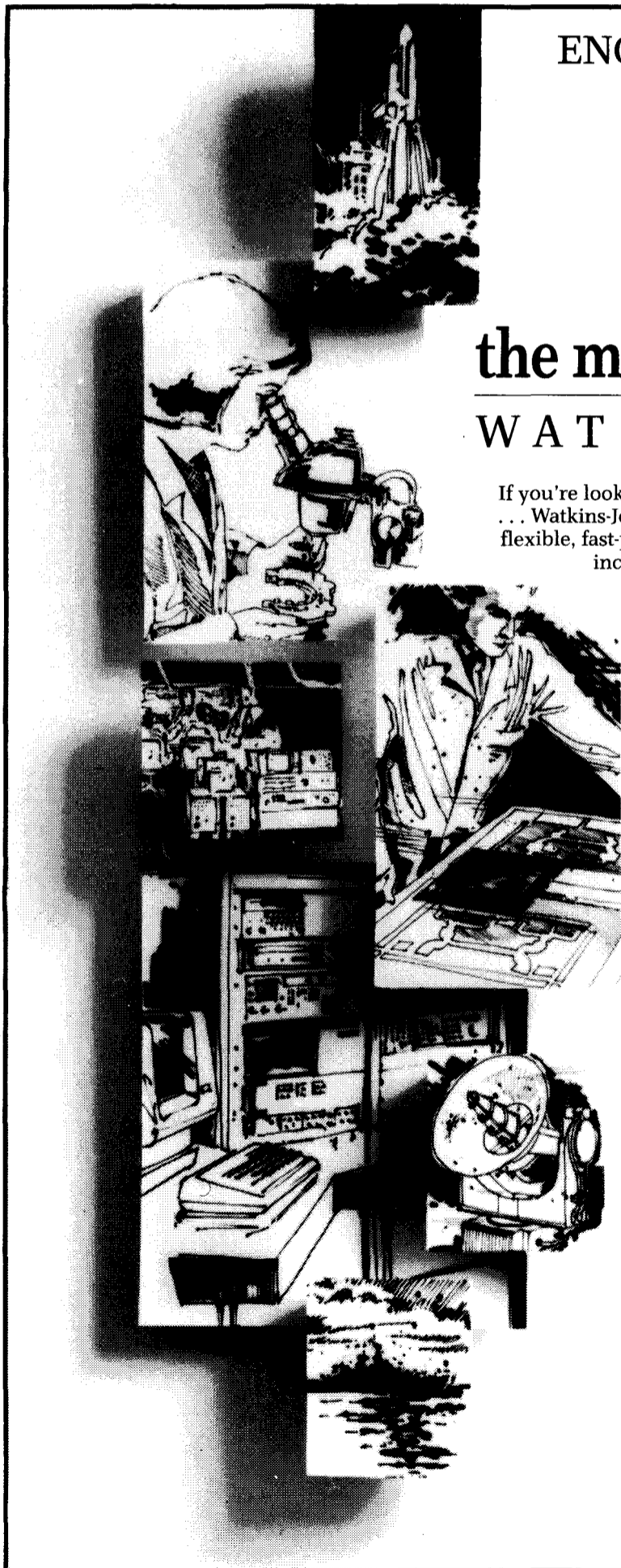
from page 1

grams, and at monthly meetings they are brought into contact with other board members—faculty, alumni and JPL scientists, for example.

Each student member is required to produce at least three programs during each term, or to donate equivalent time in other services to The Y. The Y's professional staff of three assists the students in the production of their programs.

The present Excomm will host the information pizza supper for prospective new members in the next few weeks. It will take place in The Y lounge.

In the meantime, answers to questions about Excomm membership can be obtained by getting in touch with either the executive director of The Y (i.e. this unbiased reporter) or any of the current members. They are: Adam Lewenberg, president; Wesley Boudville, vice president; Michael Goedecke, publicity coordinator; Robin Wilson, secretary; Laura Anderson; Seth Jelen; Kent Noble; Behzad Sadeghi; Andy Swanson; and Brian Treco.



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#### DISCIPLINES:

- EE ■ APPLIED PHYSICS
- MATERIAL SCIENCE
- ENGINEERING SCIENCE
- PHYSICS

#### ON-CAMPUS INTERVIEWS

Tuesday, March 4

Please contact your Placement Center or phone Mike Avina, Watkins-Johnson Company, 3333 Hillview Avenue, Palo Alto, CA 94304. (415) 493-4141, Ext. 2114. An equal opportunity employer m/f/h/v. U.S. Citizenship is required.



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SPORTS

In the first test of the new ASCIT run-off procedures (commonly called the Australian Fire Drill system, as opposed to the older, more traditional Chinese Fire Drill form of balloting), Steve Gomez handily won as IHC Chairman by obtaining the most Yes votes and the fewest No votes.

Similarly, Kathleen Hayashibara narrowly edged out Junko Munakata in an unusually hard-fought race for ASCIT Secretary. Bibi Jentoft-Nilsen defeated Rachel Clark for Frosh Director-at-Large, even though ASCIT still can't spell her name. Eric Scharin has apparently defeated Rob Fätland and

Susan Gerhart for the Upperclass Director-at-Large position, since he had the most Yes votes, and the difference between his Yes and No votes was slightly greater than Rob Fätland's. The By-Laws Amendment passed, 242 to 51 (but see John Fourkas' letter in this issue).

# Beaver Swimmers Drown Opponents

This year's Men's Swim Team have quietly gone about their business of winning swim meets. The season started in December with victories over Oxy, 67-33 and then Redlands, 68-42. After Christmas break Whittier fell 78-33 to the Tech swimmers. Both Oxy and Redlands came back for re-matches, but the results were the same — they lost; Oxy 72-39, Redlands 70-27.

The last two home meets found U.C. Riverside in the "beaver pond of no hope" 73-38 and Pasadena City College came crossing the street to get "wasted on" 85-7. The only black marks were losses to a strong Colorado College and to the NCAA number-one ranked Claremont. The men beavers hold an impressive 7-2 record in dual meets.

Much credit for the success of the dual meet season must go to those brave and talented timers. Their help was appreciated by all. The timers who deserve special thanks were Dr. Cowan and his lovely wife Thelma, grad Dave Kuzo, undergrad Dave Bruning, and alumni Sue Rosik and Scott Michael.

Top times were turned in by freshman Jim Taylor in the 50 Free (22.52), 200 Free (1:55.11), and 100 Fly (57.53). Freshman Boyd Bangerter still holds the 100 Free mark with a 49.49, while all-around swimmer Brian Hayes holds top spots in the 500 Free (5:19.41), 1000 Free (11:10.41) and 100 & 200 Backstrokes (59.91 and 2:11.71 respectively). The top tech time in the 200 Fly is held by junior Randy Brown (2:18.70), and while junior John Sarapata has the 100 Breaststroke (1:05.79). The longest race is the 1650, with freshman Jordan Holt having the honor with a time of 19:27.34.

The dual meet season is over, but now the Conference Meet starts. The three-day conference meet started yesterday and continues today and tomorrow (2:30 pm both days). Some of the best swimmers in the country will be in attendance. The meet will be held at the South Gate Pool, and the Caltech Athletic Office has directions to the event. Any timers will be greatly appreciated, as will a cheering section.



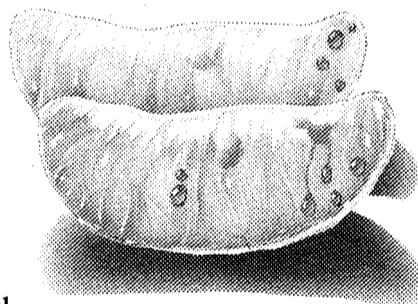
Last reported sighting of new IHC Chairman Steve "Gumby" Gómez, just before his most recent abduction.

## A defense against cancer can be cooked up in your kitchen.



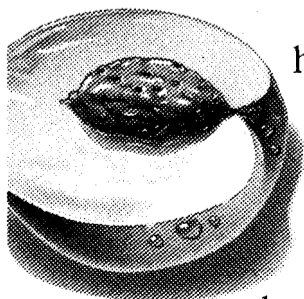
Fruits, vegetables, and whole-grain cereals such as oatmeal, bran and wheat may help lower the risk of colorectal cancer.

Foods high in fats, salt- or nitrite-cured foods like ham, and



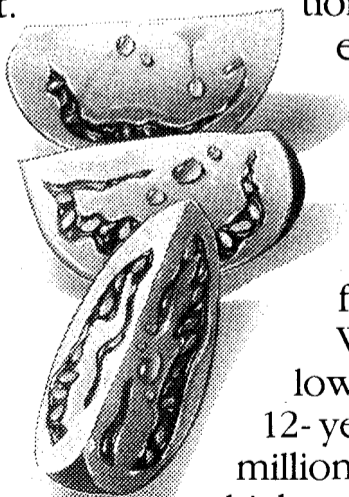
There is evidence that diet and cancer are related. Some foods may promote cancer, while others may protect you from it.

Foods related to lowering the risk of cancer of the larynx and esophagus all have high amounts of carotene, a form of Vitamin A which is in cantaloupes, peaches, broccoli, spinach, all dark green leafy vegetables, sweet potatoes, carrots, pumpkin, winter squash and tomatoes, citrus fruits and brussels sprouts.



Foods that may help reduce the risk of gastrointestinal and respiratory tract cancer are cabbage, broccoli, brussels sprouts, kohlrabi, cauliflower.

fish and types of sausages smoked by traditional methods should be eaten in moderation.



Be moderate in consumption of alcohol also.

A good rule of thumb is cut down on fat and don't be fat.

Weight reduction may lower cancer risk. Our 12-year study of nearly a million Americans uncovered high cancer risks particularly among people 40% or more overweight.

Now, more than ever, we know you can cook up your own defense against cancer.

No one faces cancer alone.



## LETTERS

### Election Questions

from page 2  
withheld for "unsatisfactory performance by the Editor or Business Manager." No clue is given as to what actually constitutes unsatisfactory performance; as it stands, the BOD could withhold salary upon a whim (indeed, one recent Editor did not get paid for two years after he finished his job). Furthermore, I do not believe that the BOD has any business withholding salary; it is the bonus which is meant to reflect the quality of a yearbook (or other publication). An Editor works many hundreds of hours to make a finished book, and it is unfair to deny salary.

I do not intend to suggest that there are not any changes needed in the publications bylaws; changes are needed, and I would like to see many made. This amendment, however, will do more harm than good. Now that I have published an opposing view, I sincerely hope that we will all get the chance to rethink and revote. I also hope that my criticisms are taken positively, as I intend them to be.

—John Fourkas  
Co-Editor, the Big T

### Ring Pix

from page 8  
variation. Visible here are a broad, bright outer component about 40 km (25 mi) wide; a darker middle region of comparable width; and a narrow, bright inner strip about 15 km (9 mi) wide. The epsilon-ring structure seen by Voyager is similar to that observed from the ground with stellar-occultation techniques. This frame represents the first Voyager image that resolves these features within the epsilon ring. The occasional fuzzy splotches on the outer and inner parts of the ring are artifacts left by the removal of reseau marks (used for making measurements on the image).

SPORTS

# Hockey Close Season — Fall to UCLA

by Marty Zimmerman

The Caltech hockey team's regular season ended with a dull thud Tuesday night as they lost to UCLA 7-0. UCLA scored three goals in the first period and two goals in each of the following periods. Peter Dowd once again had a great game in the net, stopping 42 shots on goal. The one cheering note was the large turnout of Caltech supporters.

Next stop — Lake Arrowhead for a two-game series with U.C. Irvine, who finished the regular season in last place.

Ester Williams, eat your heart out. The Caltech swim team prepare for the upcoming SCIAC championships. Left to right are Randy Brown, John Sarapata, Jordan Holt, Boyd Bangerter, Devin Leonard, Jim Taylor, Andy Tikofsky, and Terry Griffey.

See story, p.9

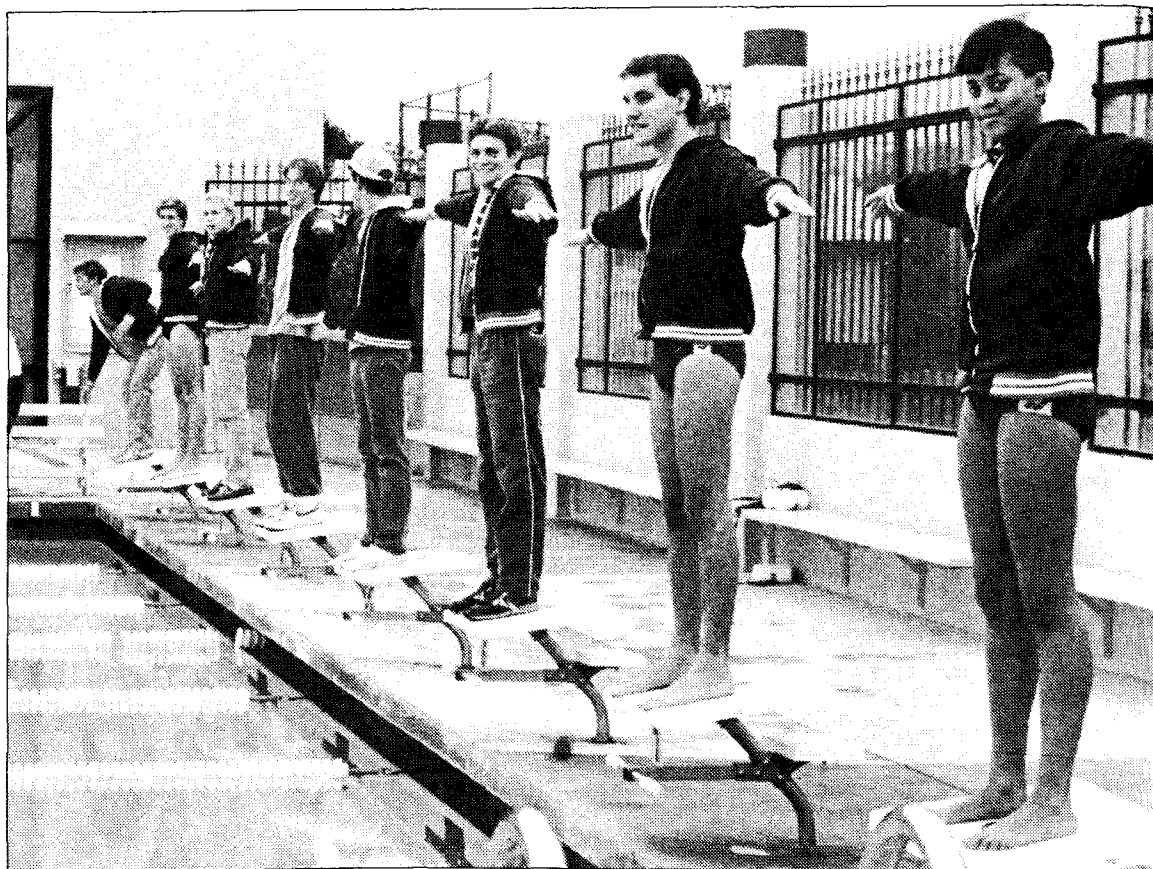
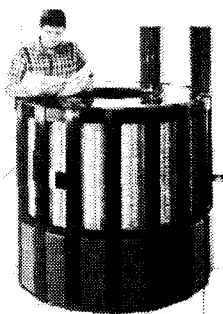
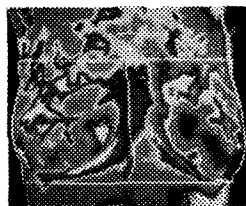
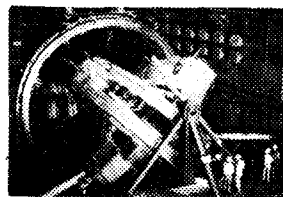


photo by Rod Van Meter



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SPORTS

# Beaver Baseball Team Drop One to PCBBC

## -Fail in Comeback

by Doug Oute

The hard-luck Beaver baseball team lost a tough game on Tuesday, falling 9-8 to the Master's College. Caltech's record fell to 1-5.

At the beginning of the game, it looked as if the Master's would rout Caltech, as they got out to a 8-1 lead after five innings. In the sixth inning the course of the game turned, as Caltech drove across three unanswered runs to make the score 8-4. The Master's rebound-

ed with one run in the top of the seventh, but in the bottom of the inning the Beavers struck back. After a leadoff triple by freshman Jim Burleigh, Michael Keating singled in a run. One out later Alan Marumoto singled, scoring a run. Caltech picked up two more runs, making the score 9-8. The Beavers then loaded the bases, but with two outs the runner from third was thrown out trying to score on a passed-ball, and the Master's

escaped with a 9-8 victory.

Although the Beavers have a 1-5 record, the team are playing well. The Beavers are hitting .253 as a team, and several players are hitting over .300, including Alan Marumoto (.500), Brandon Mymudes (.437), Michael Keating (.348), and Min Su Yun (.333). On Saturday the Beavers travel to Pacific Coast Baptist Bible College for a double header.

# Tech B-ball Top Poets

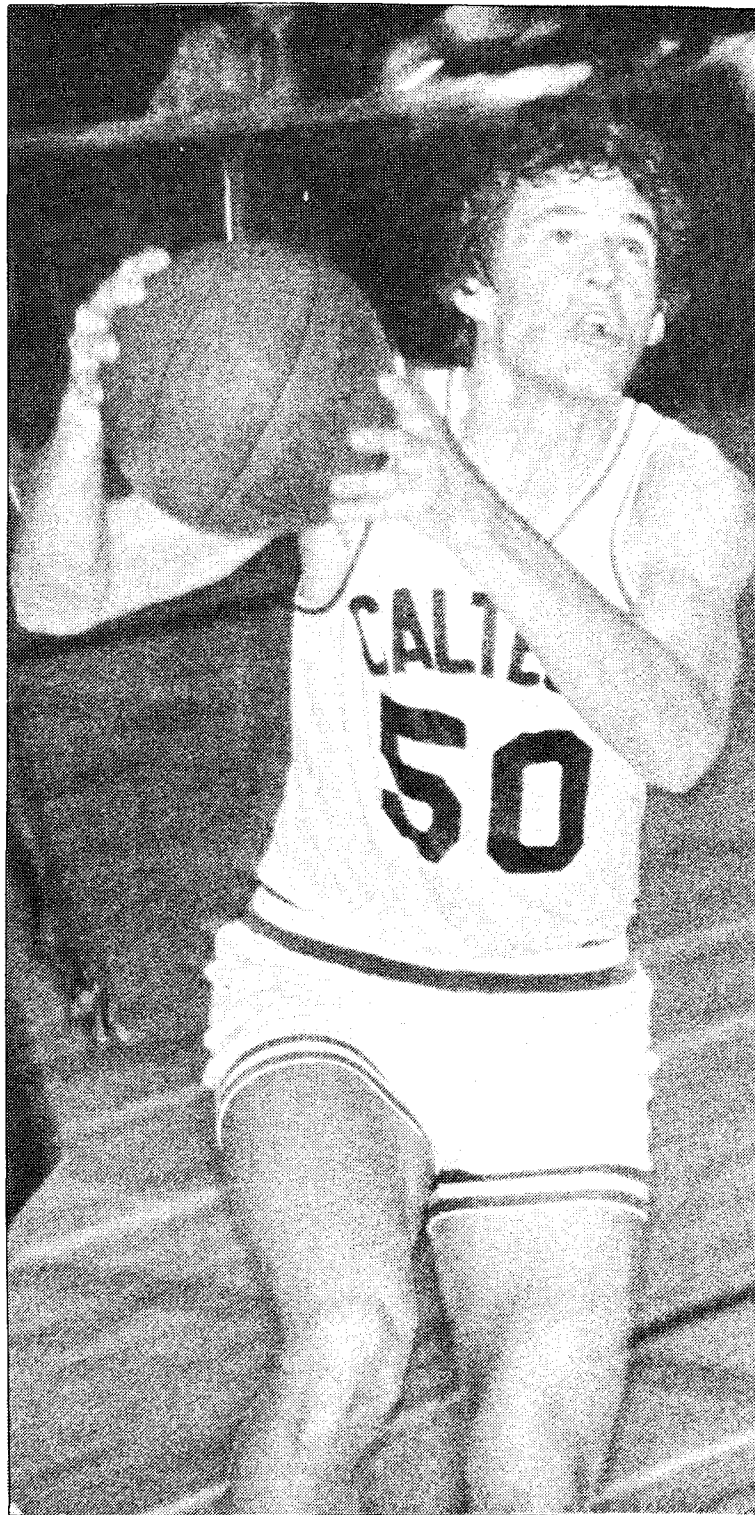


photo by Rod Van Meter

Brian "Beepo" Porter (50) drives the basketball to the Tech goal in Wednesday's victory over the Whittier Poets.

by J. Hoopstien

The Caltech basketball team have gone back to their winning ways, defeating both Whittier and La Verne in league play.

On Family Night against Whittier, who were at the time the first place team in the league, Caltech got behind early, trailing 18-6. Junior center Brett Bush and senior forwards Brian Porter and Jim Helgren took control of the boards, and by halftime Caltech had managed to grab a 36-35 lead.

The second half was hard fought, with Whittier shooting from the perimeter with a high degree of accuracy. But the Beavers were up to the challenge, shooting a whopping 58% themselves. Caltech led by eight with two minutes remaining. The Beavers held on to win by two points, 71-69.

Porter, whose parents came down from Washington to see him play, finished with 24 points, and Bush (whose parents made a shorter journey from Pacific Palisades) scored twenty. Junior guard Ed Zanelli (parents from Westminster) added six steals and ten assists. Freshman guard Brad Scott (whose father played as a CIT undergrad) grabbed three rebounds and had several steals, making-

proud his parents (Fountain Valley) as well as the rest of the fans. Junior guard-center-forward Bill "Gusto" Gustafson (parents from the Yosemite area, sister from Covina) played tough defense inside (points/foul ratio 1/4 on the evening). Helgren's parents (Chicago) were told that family night was two weeks ago and were not present. All families were admitted free of charge.

Against La Verne, Porter started the same way he left off against Whittier, scoring four points in the first 24 seconds. Caltech dominated the game from start to finish, winning 79-69. Porter was again high-scorer with 28 points. Zanelli added 16 points, followed by Bush with 15, and Helgren with 10. Senior guard-forward Rob Fatland added two points. Gusto and frosh guard Aram "Koonem" Kaloustian contributed fine defense.

The regular-season finale will be played tomorrow at 7:30 pm on the home floor against Pacific Coast. Bring your families. Many thanks from the entire club to coaches Mike Poizner and Paul Drozd for a fine season, also to statisticians Tammy and Carol Choy.

## WEEKLY SPORTS CALENDAR

Day	Date	Time	Sport	Opponent	Location
Fri.	2-21	All Day	Swimming (M/W)	SCIAC Championships	South Gate
Sat.	2-22	All Day	Swimming (M/W)	SCIAC Championships	South Gate
Sat.	2-22	11:00 am	Track	Claremont & Whittier	Occidental
Sat.	2-22	12 noon	Baseball	Pacific Coast Baptist Bible	PCBB (2)
Sat.	2-22	1:00 pm	Women's Tennis	La Verne	La Verne
Sat.	2-22	1:30 pm	Men's Tennis	Redlands V & JV	Redlands
Sat.	2-22	7:30 pm	Basketball	Pacific Coast Baptist Bible	Caltech
Sun.	2-23	12 noon	Fencing	Cal Poly & Occidental	Cal State Long Beach
Sun.	2-23	1:00 pm	Women's Soccer	Spinoffs	Caltech
Mon.	2-24	1:00 pm	Golf	La Verne	Pomona-Pitzer
Tue.	2-25	3:00 pm	Baseball	Pacific Coast Baptist Bible	Caltech
Tue.	2-25	3:00 pm	Men's Tennis	Occidental	Caltech
Wed.	2-26	1:00 pm	Golf	Claremont-Mudd	La Verne
Fri.	2-28	All Day	Golf	So. Cal. Intercollegiate Tourn.	Torrey Pines
Fri.	2-28	All Day	Fencing	Men's NCAA Western Reg.	U. San Francisco
Sat.	3-1	All Day	Golf	So. Cal. Intercollegiate Tourn.	Torrey Pines
Sat.	3-1	All Day	Fencing	Men's NCAA Western Reg.	U. San Francisco
Sat.	3-1	12 noon	Baseball	Whittier	Caltech (2)
Sat.	3-1	1:00 pm	Women's Tennis	Pomona-Pitzer	Pomona-Pitzer
Sat.	3-1	1:30 pm	Men's Tennis	Whittier	Whittier
Sun.	3-2	All Day	Fencing	Men's NCAA Western Reg.	U. San Francisco
Sun.	3-2	1:00 pm	Women's Soccer	TNT	La Salle High School

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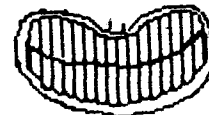
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## WHAT GOES ON

## Attention All Clubs!

The ASCIT fiscal year ends on 28 February. This means it is time for the budget meeting again. The meeting will be held 8 p.m. on 4 March in the Millikan Board Room. All requests are due by Friday, 28 February at 5:00 p.m. Either bring your request to 115 Page or send it to Dave Bruning, Page House 1-53. Included in the request should be a budgetary estimate for the next year, number of members, a list of the members, and the amount requested. Any questions should be directed to Dave Bruning at 578-9971, or x6181.

## Loans for Women

Loan funds are offered by the Business and Professional Women's Foundation

The Fund provides for tuition, fees and related expenses. Loans range from \$500 to \$5000 per academic year, with a total maximum of \$10,000.

For applications and additional information please contact the Financial Aid Office, Room 10, Parsons-Gates.

Application Deadline is May 1, 1986.

## Classical Volcano

The Caltech Geology Club meeting on Tuesday, February 25 at 8 pm in 151 Arms, will feature a talk by Dr. Richard Fiske of the Smithsonian Institution on "Kakatau, 1883: The Classic Geophysical Event."

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## Optical Money

SPIE--The International Society for Optical Engineering, is offering scholarships. Awards will not be made on the basis of need. Selections will be based upon an assessment of the student's potential contribution to optical or optoelectronic applied science and engineering.

For further information and applications, please contact the Financial Aid Office, room 10, Parsons-Gates. Application deadline: May 5, 1986.

## Whalewatching II

Just when you thought it was safe to go back in the water... Join the Caltech Y for Whalewatching II! Come applaud the heart-shaped spouts, the flukes, and the footprints of the California Grey Whale. Boat leaves Long Beach at 10:30 am Saturday, March 8. Some transportation available. \$6 for students, \$7.75 for staff and faculty. Sign up now at the Caltech Y!

## Join the CRC

No, not *that* CRC. This is the Caltech Rambo Club. The club is devoted to pseudo-military exercises of all kinds. These range from survival games (played with paint guns) to sky diving. Sign-up lists are already posted around campus. Contact Bill Foster at x3774, or in 105 Page for more information.

## Methods in Math

The Mathematics Club is presenting a series of informal talks on "Methods in Mathematics." The third speaker in the series is Dr. Richard Stanley, Fairchild Distinguished Scholar. He will speak on the "Method of Generating Functions" in 151 Sloan on Tuesday, February 25, at 7:30 pm. There will be an informal reception after the talk.

## Uranus Encounter

No, this announcement isn't late.

Mr. Michael Urban will present a lecture entitled "Uranus Encounter" at 7 pm on Saturday, February 22 in the Von Karman Auditorium at JPL.

Mr. Urban is leader of the Advanced Software Development Group for the Voyager Project at JPL. He will talk about the Voyager Project with emphasis on the preliminary results of the Uranus Encounter.

The lecture is one of many activities sponsored by the Organization for the Advancement of Space Industrialization and Settlement (OASIS). The organization is a non-profit educational group which promotes space development.

The public is invited; there is no admission charge. For more information about this lecture or other OASIS activities call F. Wiley Livermont at (818) 700-8382.

## Chinese Movies

Every Saturday at 1 pm in Baxter Lecture Hall, Chinese movies are shown, from Taiwan, Hong Kong and China. Usually two or three films, selected from a vast collection of award-winners. Sponsored by the Caltech Chinese Student Association.

## Marin County Grant

If you are a legal resident of Marin County, you may be eligible for a grant. The grant is based on financial need.

For applications and additional information, contact the Financial Aid Office, Room 10, Parsons-Gates.

Application deadline is April 1, 1986.

## 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.

## Newman Club

The Newman Club meets in the Y Lounge every Wednesday evening at 7:30 pm. Friendly discussion and refreshments.

## Bible Study

Wednesdays at noon in the Y Lounge are the time for a Bible study and discussion group. Bring a lunch. For information, call Paul Dunlap, 356-4670.

## CMRS Potluck

Hear ye, hear ye! The Caltech Medieval/Renaissance Society will hold another potluck Sunday, February 23, at 3 pm in Winnett Student Lounge. The agenda will include plans for the upcoming May Tourney to be held on campus. It is important that all members attend. We will begin at 3 sharp as many of our members are in the cast of Kismet and must leave for a performance. See you there.

## C•L•A•G•S

The theme for this weeks meeting is Ice Cream. Come eat ice cream and talk about potential activities (like a dance) and maybe see a movie or something. The meeting is at 8:00 Monday evening in the Y lounge. (By the way, t-shirts are in.)

## Political Internment

The Beckman Internship will be available for the summer of 1986. This internship, supported by friends of Dr. Beckman, pays a stipend of \$2,600. It allows a selected Intern to spend the summer working in the office of a politician and to see from the inside the process of government. The Intern is expected to make arrangements with the appropriate political persons. It is open to any Techer who intends to be a Caltech undergraduate next year. If interested, contact Gary Lorden, Dean of Students, or Jeanne Noda, Associate Dean, ext. 6351, or come to the Dean's Office, 102 Parsons-Gates.

## Career Counseling

The Gnome Club and the Alumni Association are sponsoring a series of Career Counseling sessions in the Red Door Cafe, from 7:30 to 9:00 pm on the nights listed below. Soft drinks, beer and munchies served.

March 6: Careers in Computer Science and EE.

April 10: Research in industry, academia or non-profit organizations.

May 8: Careers in small, medium or large companies.

May 22: Careers in Biology or Bio-Engineering.

## Polish Workshop

A Polish language and song workshop meets in 210 Thomas from 7 to 8:45 pm on Thursday evenings. For more information, call Pat Laubert, 354-3002.

## Modern Dance Class

A modern dance class for the Caltech community is held in Dabney Hall Lounge on Tuesday afternoons from 5 to 6:30 pm. For information, call Liz Oberstein, x6146.

## Aerobics Class

Sandwiched in between the Modern Dance Class and the International Folk Dancing, Dabney Hall is the home of an aerobic exercise class for beginning and intermediate students, 6:30 to 7:30 pm on Tuesdays. The sessions are coed. For information, call Jennifer Wood, 799-6915.

## Sunday Volleyball

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

## Linus Pauling at 85

On Friday, February 28, there will be a special "Salute to Linus Pauling on his 85th Birthday" in Beckman Auditorium. For those of you who don't remember, Pauling was Caltech's only *double* Nobel Laureate, awarded the Chemistry prize in 1954 and the Peace prize in 1963. He was at Caltech from the late 1920s until 1964, during which time his work greatly advanced the understanding of molecular structure and bonding.

The day of salutations will include a full day of speeches on Pauling's life and works, in Beckman Auditorium, as well as a luncheon and a dinner, both at the Athenaeum. For more information, contact professor Ahmed Zewail, Mail Code 127-72.

## Squash Racquets Club

All those interested in playing squash at a recreational and/or competitive level, please contact either Leo Merken (440-9092) or Salim Khan (304-0719, Marks House). Currently, due to the unavailability of courts at Caltech we would have to use the exorbitantly priced facilities of the Pasadena YMCA. If enough people are interested, however, there is a very good chance of getting the club subsidized by Caltech.

## See Kismet

Tickets for *Kismet* are on sale now at the Caltech ticket office. They are \$5.00 for students, \$7.50 for staff and faculty. Performances are Fri. Feb. 21 and 28, Sat. Feb. 22 and March 1, and Sun. Feb. 23 at 8 pm, and Sat. and Sun. March 1 and 2 at 2 pm. *Seating is reserved* and they're going fast, so buy your tickets now.

## Go Turtle-Tagging!

On a remote beach on the Caribbean coast of Costa Rica in July, August, and September, 40 volunteer field assistants will join researchers at the Caribbean Conservation Corporation's Tortuguero Station to assist in the annual tagging of the green sea turtles.

Sponsored by the New York Zoological Society and the CCC, program participants will thoroughly monitor the activities of turtles emerging from the sea, and make an important contribution to turtle conservation and research.

Professor Archie Carr of the University of Florida has directed this research at Tortuguero for over 30 years. 1986 will mark the third annual expedition by NYZS/CCC volunteers.

Five teams, departing July through September, are now being formed. *Additional information and field applications are available from John Behler, Curator of Herpetology, Bronx Zoo, Bronx, New York 10460; or call (212)220-5152.*

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