

If any elementary  
particle escaped  
the Big Bang...

# The CALIFORNIA Tech

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It must have been  
Noah's Quark

Volume LXXII

Pasadena, California, Thursday, February 4, 1971

Number 16

## Beckman on Beckman

### It's An Ill Wind

by Peter Beckman

According to Dr. Conway Snyder of JPL we live on the outskirts of the sun. Speaking on "The Moon and the Planets in the Solar Wind" at Beckman Auditorium Monday night, Dr. Snyder explained that a "solar wind," made up of the ionized gasses of the sun's corona, is continually streaming past the inner planets as the corona expands into space.

Dr. Snyder has studied the solar wind for several years and has worked on experiments carried by the Mariners and other probes. These have produced much new information about the magnetic fields of our closest planetary neighbors.

#### The Moon

Some of the most exciting information has come from a solar wind detector left on the moon by Apollo 12. Changes in its readings give information about the moon's magnetic field which in turn gives clues about its structure. These "preliminary, tentative, and controversial" observations indicate that the moon has four distinct layers, crust, outer mantle, inner mantle, and core. These layers are relatively cool with a core temperature of only about 800 degrees centigrade.

#### The Planets

The solar wind forms a shock wave around the earth. Within this are the Van Allen belts which are composed of ions that are trapped on the earth's closed magnetic field lines. These ions enter from the solar wind through a "cusp" between the Earth's closed lines and the open lines of the solar wind.

Mariner probes have shown that shock waves exist around Venus and Mars, but they are much closer than earth's indicating that these two planets have much smaller magnetic fields.

#### The Solar Wind

It was first postulated over two centuries ago that the sun was responsible for geomagnetic disturbances on the earth. At first ridiculed, this theory is now completely accepted. One turning point came in 1957 when it was shown that the sun's corona had to expand continuously. In this expansion, particles of Plasma are "frozen" onto the sun's magnetic field and are convected outward.

By the time they reach the earth the density of the particles is only about five particles per cubic centimeter but they move at a velocity of 350 kilometers per second. Most of the particles are hydrogen or helium ions, but traces of heavier elements such as oxygen and even iron are found.

When there is a solar disturbance the wind increases and the resulting interaction between it and the earth's magnetic field creates geomagnetic storms.

Much remains to be learned about the solar wind, especially its effect on the outer planets. This field will be a center of research far into the future.

\* \* \*

Next Monday at 8:30 p.m. Prof. Harrison Brown will speak at Beckman Auditorium on "The Limits of Growth: How Many People Can the Earth Support."



Dr. George Hammond spoke on "John Chemist Contemplates his Navel" yesterday at the Chemistry and Society seminar.

## Group Works To Protect Public

by Ralph Graham

A small number of students received an introduction to a new group that will focus on protection of the public interests last Tuesday. The group will call itself the Southern California Center for Law in the Public Interest and will be similar to the Public Interest Research Group (Ralph Nader) and the Center for Law and Social Policy (C. Halpern).

The full-time staff of the center will consist mainly of young lawyers who are committed to the defense of the public welfare. Because of the strong need for supporting scientific evidence in court, it is likely that Caltech researchers will develop a close relationship with the Center. Also, undergraduates from a variety of colleges may be included on the Center's staff to perform investigations, work on policy, perform office duties, and, of course, to maintain grass-roots contact.

Specific issues the group hopes to attack include investigations of the control of estuaries by Irvine Ranch, fines imposed by the APCD, and rates set by the PUC. Work on these projects can not begin in full until next month when the Ford Foundation decides whether or not to approve the Center's application for funds for its first years' operation.

An ASCIT committee maintaining contact with the Center has been formed. It consists of Bill Beranek, Steve Watkins, and Ralph Graham

### In Memoriam

Peter W. Beckman  
Kim C. Border  
John L. Fisher  
Paul A. Levin  
Phillip L. Massey  
Ira D. Moskatel

May Their Souls Rest in Peace

## News Briefs

## Research Directors Conference Announced

Caltech's Industrial Associates are sponsoring a research director's conference next Tuesday and Wednesday in the Noyes lecture hall. Discussions will cover the future of science in the seventies and the "planning and marketing of research."

### New York Poet Comes to Winnett

Edward Field, an erstwhile farmer, machinist, typist, bill collector and actor, will read from his own works in Winnett Lounge next Wednesday at 7:30 p.m.

### Medical Ethics To Be Topic of YMCA Luncheon

This Thursday at noon Dr. Joseph Fletcher, visiting professor of medical ethics at the University of Virginia's School of Medicine, will speak at a YMCA luncheon in the Athenaeum.

### Selective Service Urges Courses on Draft

Believe it or not, the Selective Service System is encouraging high

schools to run a course on the draft. To that end it has published an 85-page "Curriculum Guide to the Draft." The New York City school district has already adopted the book and has either elective or required courses on the subject in all of its high schools.

### AFROTC Sponsors Seminar on Scientific Research Opportunities

Caltech's AFROTC detachment is sponsoring a seminar on the opportunities for scientific research in the Military today. The meeting will be in 147 Noyes at 10:00 a.m. Wednesday.

### ASCIT Nominations Now Open

ASCIT Board members are now accepting nominations and \$4.00 filing fees from those people who wish to run for ASCIT elective offices, including Editor-in-Chief of *The California Tech*.

### Encounters to Strike Again Soon

On February 14 the Encounters

## Public Interest Center Started Officer Nominations Opened

by Alex Seita

A student-supported Public Interest Center, elections procedures and nominations for ASCIT offices, and the coffeehouse managers' recommendations highlighted the B.O.D. meeting held last Thursday night. Ralph Graham (FI) reported to the Board about a proposal made by four young lawyers concerning a movement to consolidate students, labor, and interested citizens into supporting, by funds and physical aid, a Public Interest Center. This center, consisting of a staff of lawyers, secretaries, science advisors would move to vigorously oppose actions by corporations, individuals, or government agencies which would destroy the environment, discriminate against special groups (e.g., students), or in any way pursue harmful activities in southern California. Graham was authorized by the Board to check into the proposal and to ascertain the feasibility of ASCIT participation.

#### Nominations, Elections

Moving with uncommon speed, the Board opened nominations for ASCIT offices a week earlier than planned. Nominations will be closed at the Board meeting on February 11, and elections will be held on February 19. The offices open for nominations are: President, Vice-President (B.O.C. Chairman), Secretary, Treasurer, Interhouse Committee Chairman, Director of Academic Affairs, Director of Student Life, two Directors at Large, and *California Tech* Editors.

For the general elections scheduled for February 19, new voting procedures will probably be initiated. The ASCIT Executive Committee, which has the onerous task of revising voting procedures, cur-

rently leans toward the retainment of no-votes and write-in candidates, with votes totaling more than 50% required for victory in a singly contested race and more than 40% for victory in a race involving two or more candidates.

The election to be held tomorrow concerns a proposed By-Laws change allowing the Board to appoint the athletic managers, the activities chairmen, and the social chairmen, with the Board of Control appointing the B.O.C. Secretary. This proposal originates from the ASCIT Executive Committee which urges the acceptance of the By-Laws change.

#### Coffeehouse benefits

Upon the advice and entreatments of the present coffeehouse managers, the Board accepted the following conditions:

(1) Profits in excess of normal operating capital to be set aside in a special fund designated for coffeehouse expansion or use.

(2) The initiation of double entry bookkeeping for greater accuracy and to conform to Institute regulations.

(3) Permission for the managers to consume inventory, and to repay at wholesale cost at the end of the term.

(4) Permission for the managers to purchase food along with coffeehouse supplies, and to repay at the end of the term, subject to an audit.

(5) No cash loans from the coffeehouse funds; loans by checks to be allowed.

There are presently three teams vying for the position of coffeehouse managers with nominations to be closed Thursday, February 4.

#### Miscellaneous

On April 24th, a festival of college choruses will be held in  
Continued on Page Three

## Math Announces

## Summer Research, Independent Study

The Department of Mathematics has received a grant from the National Science Foundation to support summer research and independent study programs in mathematics for Caltech Sophomores, Juniors, and Seniors during the summer of 1971. The grant provides for the support of six students each of whom will receive a stipend of up to \$1,000 for a 12 week research program.

Details concerning the applications may be obtained from the Mathematics Office, 253 Sloan. Applications will be accepted by Prof. Dean until April 5. Each application must contain a proposal for a research program. Applications will be judged by a panel from the Mathematics Faculty. Awards will be announced before April 20.

Leo Guibas, Lennie Berman, Andrew Odlysko, and Bruce Litow received similar awards last summer.

Continued on Page Six

EDITORIAL

WHO CARES ?

Give me an A A  
Give me a P P  
Give me an A A  
Give me a T T  
Give me an H H  
Give me a Y Y  
What does it spell? WHO CARES!

In the past a tradition of apathy, the immovable object, was unchallenged by the surmountable force of temporary human activism. For brief periods, largely characterized by personality worship, apathy met its match in a centralized, impassioned effort to change the world — and people have fun doing it. Now we are engaged in a great war testing whether that apathy, can long endure. As soon as the national election was held (if not before it) people on campus ceased acting — even ceased talking about acting. History has repeated itself.

In the realm of campus social activities, talking about doing something has ceased, also. The product of a very constructive idea, the ASCIT Executive Social Committee has been given the responsibility of dispensing funds for social activities they would not be able to pursue otherwise. There appears to be, however, no campus-wide activities. Weekly movies are nice to have — but they don't help people to meet other people, as we see it the function of any campus social program.

Consider for example the unaffiliated off-campus student (of which there are quite a few). If he doesn't have strong house ties, then there are no regular opportunities for recreation and for meeting people. In the future, the number of off-campus students will probably increase. They are members of ASCIT (albeit by choice) and some attempt should be made to provide student body activities independent of house affiliation.

Caltech's Environmental Action Council has continued to provide a recycling depot and information center, but we haven't heard much about students getting involved and propagating their enthusiasm. If we are wrong and have been deaf, please write the TECH and tell us.

Perhaps there are not so many immediate issues this month — or next; but the same issues we collectively lamented only six months ago have not disappeared. The environment is dirty, the draft is still in operation, the California Welfare program is getting the shaft. We can still organize and do something constructive. A-P-A-T-H-Y still spells Apathy.

—Ira Moskatel  
Philip M. Neches  
Paul A. Levin

ESC Announces Guidelines

EXECUTIVE SOCIAL COMMITTEE STATEMENT

The Executive Social Committee understands the following to be general guidelines for the granting of funds:

1) Group events have priority over those involving a single person. The more the better.

2) Involvement of outside people is encouraged - faculty, grad students, off-campus and professional people.

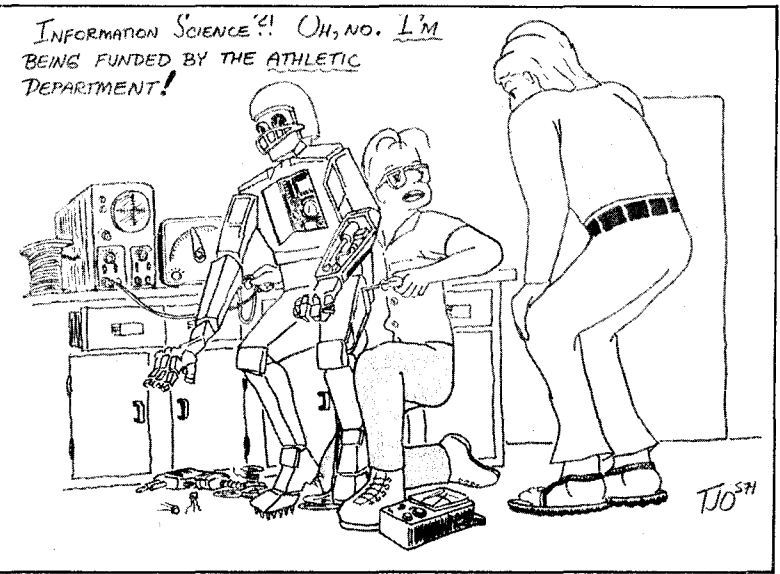
3) ORIGINALITY is most important. The committee has seen hundreds of ski trips and alley parties.

4) Requests made after the event have lowest priority.

5) Multi-house, multi-group requests are quite desirable.

The Committee will interpret and apply these guidelines as it sees fit. The time of the year and the calendar of events have some effect on the decisions.

—Robert Abarbanel  
Chairman



Friends Society

Urges Objectors

To Apply For CO

Dear Editor,

In the January 7 issue of the Mark Peterson paints a dim picture for men who are considering applying to their draft boards for conscientious objector status. As a draft counselor with the American Friends Service Committee, which "specializes" in CO cases, I'd like to brighten it a bit.

The January 7 article says that "even if you are entitled to a deferment as a conscientious objector you probably cannot get it." Statistics compiled by the Selective Service System in June through October, 1970 show that slightly less than 1/3 of the I-O claims were granted by local boards, and slightly less than half of combined I-O and I-A-O claims. However, the percentage granted rose slowly but surely over those four months and our experience with men who get adequate counseling is much better. Mr. Peterson also says that appeal boards "will not reverse the local board." They do in about 15% of the cases.

Courts are requiring justification from the local boards for turning down a CO claim. Even if they uphold the decision, a five-year prison sentence is unlikely. Some judges give a sentence of two to three years doing alternative service as probation; or they give a 2-3 year prison term and parole is first available after 1/3 of the time is served.

Mr. Peterson says "it is generally easier to get a physical deferment." This is true if you actually have a physical problem. But if you are sincerely opposed to war, you should apply for CO status. Your chances are pretty good with proper counseling. If you are qualified for both, apply for both and if you get the I-Y you won't have to do alternative service anyway.

In addition to the practical aspect of keeping yourself from being drafted, filing a CO claim identifies you as part of the movement away from violence and destruction and towards peaceful and creative ways of solving problems.

In peace,  
Dotti Pearlman  
American Friends Service Committee

Throop Beat

Tech Applications Down

by millikan troll

Although the nominal deadline for applications for the Class of '75 has passed, the Admissions Office will, as usual, continue to accept the applications which will doubtlessly trickle in over the next two or three weeks. When all have arrived, there will be between 1150 and 1200, so Dr. Miller estimates.

This represents a drop of some 10 to 15% from last year, although slightly ahead of the year before. Dr. Miller attributes this drop to a combination of financial and (hopefully transitory) social circumstances.

Economy Gets Tech

Like it or not, Caltech is still one of the most expensive schools in the country, and with a recession on, many people feel that they don't have the money for private college tuition. Informal exchanges of information with other private colleges seems to indicate that the same phenomenon can be found elsewhere. Other private schools report drops in applications of between 5% and 20%.

Many of the applications which would have gone to private colleges will probably be diverted to state colleges and universities, many of which already suffer from massive overcrowding (just ask any UCLA student). This could result in diversion of many students from state schools to community (2-year) colleges, which have not yet felt the crowding pinch.

Frivolity Out

Dr. Miller also feels that the number of people who apply just to see if they could get in (but have no intention of enrolling ) has declined.

Further, with engineers and new PhD's finding themselves facing unemployment, fewer people would seem inclined to pursue those professions.

Also, the country seems "disappointed, and wrongly so ... with the plight science and technology have gotten us into." The result has been a marked, but hopefully temporary, falling off of interest in science and technology. (It seems to this column that blaming science for social ills is inverse logic. Science has fulfilled, perhaps too blindly, the desires of society, and has pointed out the dangers all along the way).

But Don't Despair

However, we can report that applications from women have

increased somewhat over last year, and that despite the tight financial situation, no cuts in financial assistance for either upperclassmen or incoming freshmen are anticipated. However, the Institute will most certainly be compelled to look harder for scholarship funds.

Elsewhere in Throop, the Division of Humanities will present a proposal for a Humanities and Social Sciences Tutorial. Aimed primarily at the student pursuing a regular science or engineering option, the proposed Tutorial would have the student working on a problem of his choosing with one faculty member. The student would receive a letter grade and 9 units of credit for each term. Some sort of written work would be required.

Faculty Board Meets

The Faculty Board will consider the proposed HSS Tutorial at its regular meeting Monday. The program could be in effect this coming September, and would involve an estimated 25 students.

Also, the Faculty Board will consider implementation of the new P.E. requirement decided upon by the faculty.

Top of the Week

MIT is reportedly interested in getting in on Caltech's informal exchange program. ... This week's Etaoin Shrdlu Award goes to Ronald Reagan for increasing taxes and cutting services.

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# FORUM



Constipated? Irregular? Clear out your system by watching famed guitarist Andres Segovia who will give two performances at the Music Center's Chandler Pavilion this Friday and Sunday.

## Who Called Moratorium on Peace?

by Nick Smith

Last Sunday, only a few miles from here, a peaceful antiwar protest was turned into a riot of small but deadly proportion. When the smoke of burning buildings and cordite cleared, one man was dead, seventeen more were gunshot wounded, a further thirty were injured, and seventy-five were arrested. For most of my readers, that should be a little too much and too close for comfort, since East Los Angeles just isn't that far away.

What happened to turn the Chicano Moratorium into a deadly little affair of bricks and bullets? As is usually the case, the parties to the disturbance disagree.

According to Rosalio Munoz, co-chairman of the Chicano Moratorium, a group of demonstrators broke through the line of monitors and headed for the sheriff's station. Before the monitors could head them off, the deputies opened fire on the surging group. Munoz stated that the deputies made no effort to use tear gas, and shouted no warning, only fired two volleys, one into the air and the second into the crowd. Munoz further stated that the crowd had "sticks and stones."

Sheriff Peter Pitchess stated that a comparatively small group had come to the march prepared with projectiles, including concussion and fire bombs. He also stated that at no time did his deputies aim at the crowd, firing shots over the heads and at the feet of the rioters. (This says little for their aim.) Furthermore, the sheriff's deputies who fired were under a barrage of rocks

and other projectiles, according to the sheriff.

A comparatively unbiased source, a reporter for one of the local Spanish-speaking TV stations, stated that there was no burning or looting until after the deputies opened fire. At the same time, however, the crowd was definitely menacing, according to his description. In fact, some of the crowd tried to fight the reporter.

As is usually the case in the event of a disturbance, both sides seem to have been somewhat in the wrong, but in this case it is fairly clear which side was the most wrong. It is my belief that the sheriff's men showed considerable restraint considering the conditions, and that the rioters were definitely in the wrong. Remember, stones have been considered deadly weapons since the days of David and Goliath. Also, some of the "sticks" turned out to be lengths of iron pipe. When rocks and pieces of pipe start flying your way, it takes remarkable cool to fire warning shots above the heads of the throwers, which was done.

At the same time, the deputies were definitely not perfect. They made no effort to use tear gas, normally the immediate recourse under riot conditions. In addition, they refused the use of bullhorns to Moratorium monitors at the outbreak of trouble. The one thing which still bothers me about the one fatality is that the man was neither a Chicano nor an officer of the law. The dead man was a

24-year old Austrian by the name of Montag. (Yes, just like in *Fahrenheit 451*.) What was an Austrian, a recent student of Hebrew, doing supposedly at the forefront of a Chicano riot?

It's just a little too much to take when everyone says that there will be a riot at a march, and even with both organizers and the law working against such an occurrence, there is still a riot. It seems such a shame, too. After all, the whole idea of the march was to be a protest against war and killing, but for six hours the fighting was more fierce here than in Asia. As they say on the posters, war against war is still war.

### ASCIT of Seita

Continued from Page One

Beckman Auditorium. Hosted by the Glee Club, ASCIT members will be admitted without charge. After the festival, a party co-sponsored by ASCIT and the Glee Club will gyrate at Winnett. The party will be open to all.

With the failure of the proposed By-Laws change authorizing B.O.C. jurisdiction in campus disruptions, the Board of Control announced further consideration of the issue of campus disruptions and revisions in its position.

This week, the Board of Directors will hold their meeting on Thursday, February 4th, at 7:30 p.m. in Winnett Clubroom II.

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# North and South Bridge

by Charles Johnson

The Caltech bridge club is meeting at 7:30 p.m. Wednesday nights in Clubroom I in Winnett. In a five table game last week Jay Siegel and Peter Chau were first overall.

The hand shown today comes from a recent duplicate game and is a tough exercise in how to pick the best from several possible lines of play.

North

S: x x

H: A J

D: A Q 10 x x x x

C: x x

South

S: A K x x x

H: K Q 10 8 2

D: J x

C: Q

The bidding:

South	West	North	East
1S	Pass	2D	4C
4H	Pass	Pass	Pass

When declarer saw dummy, he would probably rather have been playing 5D as much less could probably go wrong. But 5D was made very difficult to reach with East's interference bidding. Thus, after East wins the opening club lead with the king and continues with the Ace, South must try to find the best way to play 4H. Since the bidding suggests that trumps and the side suits are unlikely to break favorably, declarer will be happy to make 4H as that would probably be a good result. If anyone can see a line of play that succeeds against any lay of the cards, this column would be happy to hear of it.

The problem, though, is to find the line of play with the greatest chance of success. How would you play this one?

O  
D  
D

By

Dan

K

I

O'Neill

S

## BUCKY BUG'S COMPOSURE CORNER



# Abelard & Heloise Stars Diana Rigg

by E. Gansner

The play *Abelard and Heloise*, currently being performed at the Ahmanson Theater, is definitely worth an evening away from Tech. Both the play and the production are commendable.

Brought to Los Angeles almost intact from its original run in London, *Abelard and Heloise* stars Diana Rigg, famous for her Emma Peel characterization in *The Avengers*, and Keith Michell, who has appeared in many straight plays and musicals such as *Irma La Douce* and *Man of La Mancha*.

Set in Twelfth Century France, the story involves Abelard as a Roman Catholic cleric, widely known and popular with his students, who espouses only God and reason and suddenly finds himself in love with Heloise. The rest of the play involves the physical and mental resolution of this love.

Physically, Heloise has a baby and, to protect Abelard's position in the Church, she wishes to remain his mistress. However, she is finally persuaded to marry Abelard, but she must still live separated from him. Heloise's uncle and guardian Fulbert, in order to save Abelard, has him castrated. With this, Abelard gives up Heloise and becomes a monk, while Heloise joins a convent.

Mentally, the play is a complex interplay of the effects of guilt and love. The love between them is not a "Love Story"-type of love; it is the "mating of two eagles." Both

Abelard and Heloise are intellectual giants. As a man of God, and a person who has never loved before, Abelard is confused and must try to reconcile his human love with divine love. Heloise, somewhat of an agnostic, finds herself searching for God, yet believing only in Abelard. And both are concerned with the role of sexual love in divine and romantic love.

The acting is excellent. Diana Rigg, who seems to play only characters of dominant personality, has found another one and milks the role for all it has. Michell displays the charm and humor required of Abelard, and, later, he shows Abelard as confused as

Feynman when he finds out that physics is a lot of bunk.

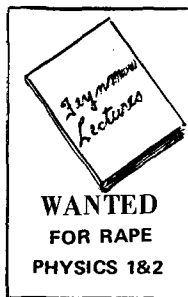
The two most notable supporting actors are opposites in quality. Ronald Radd turns Gilles de Vannes, Abelard's friend and advisor, into a fascinating Falstaff who finds himself forced to face reality. Alberic of Rheims, a short but potentially strong role, is played by Byron Webster as the stereotyped, self-righteous churchman.

Several distinctive effects used in the play are worth noting. In many of the scenes, there would be a group of actors in the background and used as part of the scenery. They act as mimes, emphasizing strategically the changing moods and themes of the scene. Also the combined nude and miracle scene is

done with beauty and sensitivity, transforming the nudity from a gimmick, as in many plays, into an integral part of the play.

However, the use of off-stage speakers is badly done, and even if well done, they would probably take more away from the play than they would add.

Although when the play is over, it is rather easy to break the emotional spell, the characters of Abelard and Heloise, and the many questions raised in the play remain quite active in the mind. For this alone, it is worth seeing.



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"Remember that theoretically, Rolls Royce was just as much in contention for this award."

"To find a match for the car's roadability, you have to compare it with something much more expensive such as a Porsche 914 or a Datsun 240Z."

"Now...available as an option the spanking new 100 horsepower, overhead-cam four...and that extra cost isn't much... \$50 surcharge for the optional power. What you get for that modest sum is a Capri that will do zero to 60 mph in 11.8 seconds... without sacrificing much if any of the 24.5 mpg economy

served up by the standard model."

"...the Capri corners like a Siamese cat on sandpaper."

"The four-speed gearbox with its fully enclosed 'rail' shift linkage stems directly from the LeMans-winning GT40 Fords."

"No car at any price except the rare few that are equipped with genuine ZF boxes can compare for shifting ease with the Capri's so-called 'rail-linkage' in the standard four-speed box."

"...options include a three-speed automatic transmission..."

"Another surprising feature on a modest-cost, volume-produced engine (100 hp) is the use of twin-venturi Weber carburetion. Though probably not the same design, the six Weber 2V's used on the 12-cylinder Lamborghini cost \$1,800 to replace."

"The Capri...represents a remarkable bargain...it offers outstanding value at any reasonable price—say, even \$2,900 in standard form...would be a good buy with just normal handling characteristics."

"There's not much fault that can be found with the Capri, a tangible that caused us to choose it as our Import Car of the Year for 1971."

Unquote.



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Corrected

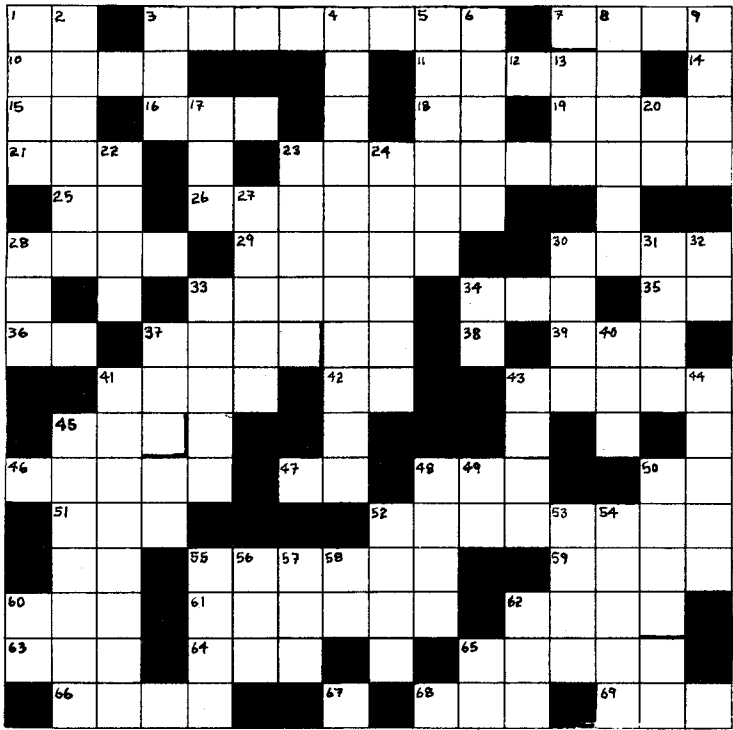
Are You Lord Of The Rings?

By Etaoin Schroedlu

- Across
1. The force which defeated Sauron and took the ring. (Init.)
3. Mountain of Rohan, north of Dun-harrow.
7. Riders of the \_\_\_\_\_
10. "... they say I have become \_\_\_\_\_ of Gondor."—Pippin (2 words)
11. Edain
14. Ernil \_\_\_\_\_ pheriannath.
15. Rebuilt Bagshot Row. (Init.)
16. "... great gray \_\_\_\_\_" of Shelob.
18. "But \_\_\_\_\_! Master Elrond, the years of your abiding run short at last!"—Aragorn.
19. \_\_\_\_\_ Hen, whence Frodo fled from Boromir.
21. \_\_\_\_\_ Guldur.
23. Mountain of the door to the Paths of the Dead.
25. The Age of the War of the Ring. (Abbr.)
26. "And on the hill of Cerin Amroth when we \_\_\_\_\_ both the Shadow and the Twi-light, this doom we accepted."—Aragorn.
28. "Tall \_\_\_\_\_/and tall kings/Three times three."
29. "... in the West a pale light lingered, and out of it I \_\_\_\_\_ a voice, remote but clear."—Boromir.
30. Eryn \_\_\_\_\_ east of Rauros.
33. A \_\_\_\_\_ of Seige.
34. The \_\_\_\_\_ Towers.
35. Bilbo's annoying relatives. (Abbr.)
36. Come to \_\_\_\_\_\_. (Init.)
37. \_\_\_\_\_ of Elendil.
38. "\_\_\_\_\_ menel aglar elenath!"
39. Tale or Lay.
41. Son of Huor of the Third House of the Edain; married on Eldar.
42. Elvish consonant sound, No. 20 in the Angerthas.
43. Baggin's sword.
45. One of the Companions of Thorin.
46. Lost Realm of \_\_\_\_\_.
47. 'Fog \_\_\_\_\_ the Barrow-Downs.'
48. The \_\_\_\_\_ Downs.
50. "\_\_\_\_\_! laurie lantar lassi surinen!"
51. Original form of the name 'Took.'
52. The 'one without hope' who rode from Rohan.
55. River of Gondor.
59. \_\_\_\_\_ aranian, or kingsfoil.
60. The Uruk \_\_\_\_\_.
61. The Falls of \_\_\_\_\_, site of the breaking of the Company.
62. "\_\_\_\_\_ the earthborn, old as moun-tains.
63. The \_\_\_\_\_ Ring.
64. "His \_\_\_\_\_ has grown long," said Gondalf" of Sauron.
65. "Legolas Greenleaf, long \_\_\_\_\_ tree."
66. "You hold out your hand to me, and I perceive only a finger of the \_\_\_\_\_ of Mor-dor."—Theoden.
67. The \_\_\_\_\_ rune on Weathertop, left as a sign.
68. The \_\_\_\_\_ Book of Westmarch.
69. The "\_\_\_\_\_ of Nimrodel," sung by Legolas.

- Down
1. The \_\_\_\_\_ of Mordor.
2. Imrahil, Prince of Dol \_\_\_\_\_.
3. The Prancing Pony.
4. What Frodo does to fulfill part of Boromir's dream.
5. Wormtongue's father.
6. "Fool of \_\_\_\_\_!"—Gandalf.
8. "Baruk Khazad! Khazad \_\_\_\_\_!"—Dwarf war-call.

9. The Return of the \_\_\_\_\_.
12. "\_\_\_\_\_ Elbereth Gilthoniel"
13. "Grip, grab! Pinch, \_\_\_\_\_! And down to Goblin-town you go."
17. One Eldar.
20. "I must go now \_\_\_\_\_ I shall never go."—Frodo.
22. Shelob's \_\_\_\_\_.
23. The lands of the Barrow-Downs.
24. The old woman of Gondor who knew the cure for the black breath.
27. He brought back the shards of Narsil to Imladris.
28. Frodo's squire.
30. Gathering of Ents.
31. Battles of the Fords of \_\_\_\_\_.
32. Quenya use for \_\_\_\_\_.
33. A type of Hobbit.
34. 'Farewell \_\_\_\_\_ Lorien.'
37. Meaning of 'Anor.'
40. Dwarf-daughter of Thrain II.
41. Luthien.
43. \_\_\_\_\_ Ford.
44. Saruman's follower.
45. The tower of Nan Curunir.
48. Wet, swampy areas.
49. \_\_\_\_\_Pharazon the Golden.
50. Some of Bulterbur's specialties.
52. Son of Luthien and Beren.
53. The White \_\_\_\_\_ of Isengard.
54. Sindarin word for 'Hope.'
55. Oromë, the Kine of \_\_\_\_\_.
56. Dwarf, bearer of grievous tidings.
57. "The men of Carn \_\_\_\_\_ came on us at night."—Merry.
58. Heat, also a letter in Quenya.
60. "\_\_\_\_\_! Tom Bombadil! Tom Bombadillo!"
62. Sharkey's \_\_\_\_\_.
67. The letter-rune on Samwise's box.



The Critical Ear

Grace Slick Repackaged

GRACE SLICK AND THE GREAT SOCIETY: Columbia G30459.

This double album collection is a repackaging of the only two Great Society albums, both recorded live. The Great Society was a relatively short-lived San Francisco rock group from which sprang the lead singer of the Jefferson Airplane as well as that group's early hits. The first two sides of this repackaging contain live versions of "Sally, Go Round the Roses," "Somebody to Love" and "White Rabbit." These versions alone make the album worth buying, but in addition the album contains a Slick version of Dylan's "Outlaw Blues" and an ode to Lenny Bruce with interesting lyrics. Anyway, if you liked Jefferson Airplane's early albums, you'll like this album.

BE A BROTHER; by Big Brother and the Holding Company Columbia C30222.

It's not Cheap Thrills by a long shot, but the group is still good. The quality of production is

improved by the addition to the group of former Electric Flagger Nick Gravenites, who also writes and does some vocals. Sam Andrews does the rest of the vocals and most of the rest of the writing. Janis Joplin makes a posthumous appearance on one cut. One or two of the songs seemed more reminiscent of Country Joe than of Big Brother, but the album is good overall:

Brownsville Station; Warner Brothers 1888

Wanna bet? This album is sort of a random cross between Bill Haley and Led Zeppelin. It ranges from "Hello Mary Lou" and "Be-Bop Confidential" to "Roadrunner," with a few original numbers thrown in. The album is an updated version of 1960 rock, and rates only a fair. The album cover almost saves it, with comic book heroes used liberally and gags ("Faster than a speeding bullet!" "Yeah, all he said to me was 'Hi' and 'thanks' ") wandering around. Just buy the cover, not the album.

—Nick Smith

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MONDAY

—All amateur talent show

TUESDAY

—Toni Felice

WEDNESDAY

—New show—Adrienne's Space Odyssey Show

THURSDAY

—Adrienne in the Vibrating Bed Show

FRIDAY

—Lunch—New male & female nude dance

—New act—Sadie: the Complete Sex Symbol, a 402 lb. bottomless dancer

SATURDAY

—Toni Felice in her Lilly St. Cyr Bathtub Act

Cover charge reduced to 50¢ from 7 p.m. to 12 midnight with Caltech student, faculty, alumni, or employee identification card.

News Briefs

Continued from Page One

**Beckman Hosts Julliard Quartet**

This Sunday the Julliard Quartet will perform works by Mozart, Wolf, and Bartok at Beckman Auditorium at 3:30 p.m. There may still be some tickets available for the asking left at the Beckman Ticket Office.

**Mr. F-310 To Speak at Chemistry, Society Seminar**

The Chemistry and Society Seminar will be held in 22 Gates at 4:00 p.m. On Thursday, February 11, instead of Wednesday, the usual day. Dr. M. R. Barusch of Standard Oil Company will discuss chemical aspects of the development of F-310.

**Dear Mr. Hutchings,**

How do you like the new type?

—The Tech Staff

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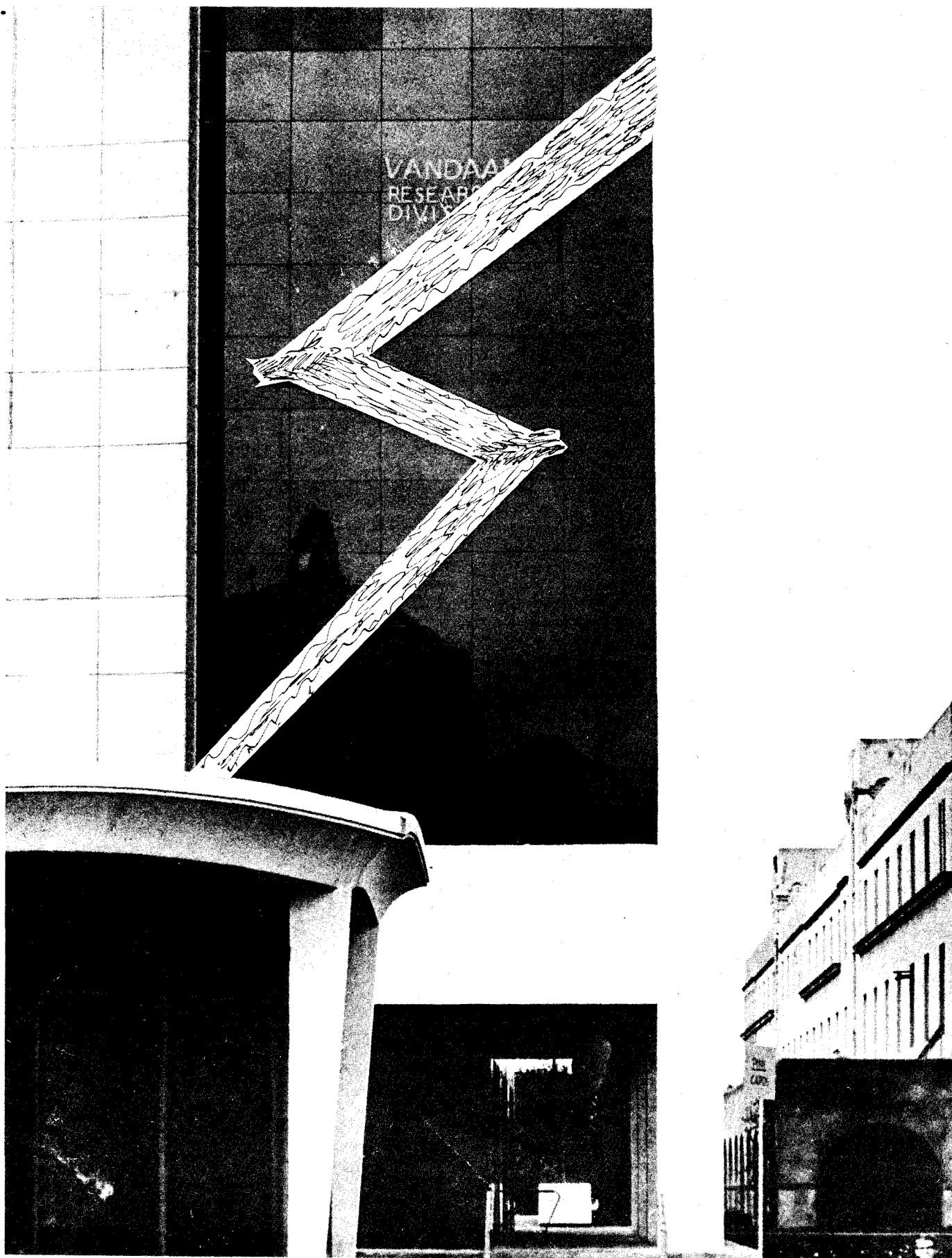
SY 3-6149

Coming Feb. 17: Truffaut's "The Wild Child"

Starts Feb. 24: "Diary of a Mad Housewife"

# Happy Birthday Terry Suber

**Your friends at B&G wanted  
to build you something . . .**



**But it broke!!!**



Oxy Over Tech, 80-31

## Swimmers Torpedoed

by Bob Kieckhefer

In front of a cheering crowd at the Caltech pool last Friday the Occidental swimmers defeated the home team, 80-31. Once again Bob Coleman was the only Techer to beat his opponents, as he won the 1000-yard freestyle, the 200-yard individual medley, and the 200-yard backstroke. Second places went to Alan Rice (in both diving events), Tim Hight, and Larry Watkins.

The lopsided score was partially due to the leg injury earlier in the week to diver Greg Beall, who probably could have taken firsts in both diving events. The Caltech

divers play such an important role on the team that coach Lawlor Reck predicts that, if they all show up, Caltech could give Oxy a close battle for the league championship in March.

Coach Reck also praised Larry Watkins' effort in the 50-yard freestyle. After practicing hard all term, Larry came within a foot of beating his Oxy opponent.

Tomorrow the swim team travels to Claremont to take on the Claremont-Harvey Mudd Stags, winners of the SCIAC relay meet.

# Baxter Opening

When?

by Paul Levin

Much verbiage but a yet-unspecified amount of work has gone into plans for the dedication of Baxter Hall, but has anyone stopped to consider if Baxter Hall is going to be finished?

Original plans called for moving into the building over Christmas break, but it was obvious by October that this deadline wasn't going to be met. Plans now call for moving into the building over spring break.

One even wonders if it will be fully opened by that time. Robert Gray, director of Caltech's Industrial Relations Center, had a tentative reservation for the new auditorium, Ramo Hall, on March 30. When his wife tried to reserve Ramo Hall for a date in April, she was told that it might not be ready for use. "Does my husband know about this," she asked. He was told. (It now appears as if it will be open in time.)

Mr. Dunham of the Architect's Office explained that many factors have contributed to the work slow-down. There was some disagreement concerning the design of the speaker enclosures for Ramo Hall, so work halted while the debate raged. While preparing to connect into the sewer main, it was learned that gas lines and electrical conduits blocked access to the main under San Pasqual. The connection had to be moved almost fifty feet to get around the interference.

Work is now progressing steadily and completion is expected around spring break. "They want off of there," said Mr. Dunham, "they're losing their shirts. . . . I think he's (the contractor) down about \$100,000."

Mr. Harry Shenk, foreman for the general contractor, did not care to comment on this but did add that inclement weather and two personnel changes had also hindered their work.

Just keep your fingers crossed. There's a building waiting to happen.

What?

by John Bennett

Baxter Integrated Arts Festival is now scheduled for the evening of May 21. The date has been selected to coincide with the public opening of the Caltech Artists-in-Residence Plastics exhibit in the Baxter gallery. Also, this festive event will close the week of formal dedication ceremonies with a splash of artistic punctuation.

Much has been said about the Festival in previous articles (notably November 5, 1970) and the intent remains the same today as then: that by highlighting the exterior of Baxter and attracting attention to the exhibit within, the public will understand the potential for Caltech artistic achievement. The exterior composition, including laser sculpture, electronic music, computer art, and body-brain music will be united to create one quality artistic effect.

Production Begins

Until now, emphasis has been entirely placed in finding money and agreeing on its date. This has been accomplished, the result giving students considerable responsibility for the festival, within broad limitations prescribed by the Institute.

There will be a meeting tonight, February 4, at 8:00 p.m. in Winnett Lounge for those interested in contributing to the Festival production. Invitations have been sent to some students, but all are invited to attend. What we actually produce in May begins tonight.

May has been nicknamed "Art and Technology Month" because shows will occur here, at UCLA, USC, and the County Museum. We have been invited to cooperate in a broader effort, but surely our enthusiasm will define our limits. The 500 persons turned away from Elsa Garmire's lecture on laser art gives a startling indication of the excitement and receptivity of the general public.

THE INFINITE SHAFT

How Old Is The Cosmos?

A: Ask Mother/Father Time, good old zen profs.  
Q: Thanks, that's a beg help. Another question: The fact that we're still here. (minus a few of us in recycling, plus a few of us recently recycled) and that Fire, Air, Water and Earth still are extant inspite of and/or thanks to our race is worth celebrating. If you think YOU suffer the generation gap (when you talk to a four-year-old humanoid) think how Father/Mother Earth feels (as they say, women/men dont like to tell their age) e with three-and-one-half billion(more or less) moronic, r irreverent humanoids running around on his/her belly.

We may be oblivious to Earth, but do you think Earth is oblivious to us?  
A: Dunno. But wish we shared the earts and sciences of Wisdom , Knowledge, Humility, and Compassion to really throw the old boy/girl a big party this year. The ecology trip has been sounding alot like a wake these days. Lack of reverence for life is what go us and Earth where we are today.

Please stop by CEAC and share your ideas for Earth Days 1971. Open 7-9 a.m., or call 793-8028.

## Classified Ads

### NOTICES

Sci-fi troll wanted by pressured grad student to collaborate in finishing half-finished novel. Must be willing, able to write 250 pp. manuscript in return for equal partnership in unlikely wealth and glory. Contact B. 449-0693.

### REAL ESTATE

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