Sorry Nixon ...

We're going to have to lay you off.

Volume LXXIII

Pasadena, California, Thursday, January 13, 1972

Number 13

Wasserburg **Explains Theory** Of Half-baked Moon

by Philip Massey

The moon is a "half-baked Dr. Gerald Wasserburg told the physics research conference last Thursday, and may very well not have been formed in the same time and place as the Earth.

The rocks brought back from Apollos 11, 12, and 14 tell an interesting story of the moon's early history. When the rocks are heated and the ratio of isotopes of the gases given off are taken, the ages all seem to be about 4.6 billion years-the time the moon and earth were formed. Yet other tests show that the rocks have existed as rocks for usually about 3.3 billion years, with a range of about 3.2 to 4.0. Soil samples tested give the same 4.6 billion years old age. This raises a number of interesting questions.

The 4.6 billion years is a reflection of the moon's formation. You can heat, cool, or do anything to a substance except letting it lose atoms and you'll get the time the atoms came together, not the age of the solid. Yet if the youngest rocks are as old as 3 billion years old the moon would have had to cool from a presumably molten state to a temperature where they could exist as solids in only one and a half billion years, which is a "g.d. small" time for a planet that size to cool. There doesn't seem to be any way of getting rid of enough heat fast enough so that the entire surface would be cool in such a short period.

There is another heat problem. The moon is giving off a lot of heat at its surface, as much as half of the earth. Yet the moon is a much smaller object. Furthermore, these heat sources cannot be evenly distributed throughout the moon's volume, because if they were and the moon's surface were as hot as it is, there would have been

Continued on Page Three



The Marie Marchowsky Dancers preforming a number entitled "Athletes' Feet."

Beckman Spaced Out Murray Lands Audience On Mars

by Peter W. Beckman

"It's just like another planet," said Prof. Bruce Murray during his lecture on "Mars-From Science Fiction to Science" on Monday evening at Beckman Auditorium.

The remark was somewhat more enlightening than the casual reader might suppose since one Professor Murray's main points was the fact that throughout recent history man's observations about Mars have been biased by the erroneous belief that the planet was similar to

These persisted up to the first Mariner missions which conclusively destroyed the legends. Most of the fables began with Percival Lowell, the astronomer who publicised the Martian canals and the probability (in his eyes, at least) of intelligent life inhabiting the fourth planet. They continued to be an obstacle to clear thinking, and even up to 1965 many scientists thought the atmospheric pressure of Mars was about 10% of earth's-dense enough for free water to exist.

Mariner IV disproved all that.

Continued on Page Two

Famous Novelist,

Lawrence Durrell Speaks

by Jeff Mallory

Lawrence Durrell, world famous poet and novelist, will be on campus today. The Humanities and Social Sciences Division has arranged for Durrell to give a talk in Baxter Lecture Hall at 3:00 this afternoon. He is in Southern California to help organize UCLA's celebration of Henry Miller's 80th birthday.

Durrell has been widely acclaimed for his novels, Bitter Lemon and the Alexandria Quartet series, among them, poems, essays, and plays. Jazz piano and composition, auto racing, teaching in Greece, and serving as press officer for the British in random parts of the world have filled his ante-literary career, so his lecture should be interesting.

The Marie Marchowsky Theatre Dance Company will entertain in Ramo Auditorium a week from the Friday and Saturday, January 21 and 22, at 8:30 pm. Miss Marchowsky, presently Caltech's resident dance instructor, used to be a soloist with the Marth Graham Dance Company, and has performed in groups across the country. She and her company of five will dance to the music of Stravinsky.

Hovhaness/Bartok, Harrison and others.

by Claude Anderson

things rolling for second term, so

the next week's program will

consist of discussions and

planning sessions. Your partici-

pation in these is encouraged and

needed if the programs are to

happen. If none of the things

listed below interest you, talk to

the Y about what does interest

lounge, a group will meet to plan

a series of seminars on Nixon's

visit to China. There will prob-

Today at 4:00 p.m. in the Y

The Y is beginning to get

YMCA Plans Bangla Desh,

Latin American AUFS Programs

The company has been praised by major reviews from several newspapers and should be a good program for modern dance aficionados. Tickets are \$4, \$3, \$2, and \$1.50 to Techers.

Popcorn, Peanuts . . .

Brace yourselves. The circus is coming to town this Saturday for two shows in Beckman Auditorium (now complete with Dr. Beckman's portrait) at 11:00 a.m. and 2:00 p.m. This is the first in the five part children's series for this year. Henry's chimps, Little Alfie the Elephant, clowns, dogs, trapeze artists, everything you've always wanted in a circus will be there, accompanied by a calliope and our own Band. Parley Baer, long-time TV actor, will be ringmaster. One catch-you must be accompanied by a child for admission. Series tickets are \$5.00 for children and \$7.50 for adults and single circus tickets are \$1.25 and \$1.75. For group rate information call 793-7043.

Ma Bell Lectures

Dr. John Pierce, just acquired from Bell Telephone Labs, will lead off the spring Caltech

ably be times before and after the trip to discuss its impact on the world.

There is more money for sports events tickets. Decisions about how this will be spent will be made Tuesday at 4:00 p.m. A professional hockey game is now under consideration, and suggestions are welcome.

A desire to have Christian theologians on campus for a program on dimensions in Christian thought has been expressed. At 4:00 Wednesday plans will be made concerning whom to invite. This meeting particularly needs the involvement of interested students.

Rap Sessions

At noon on Tuesdays, there will be a series of political rap sessions in the Y lounge. These will be very informal and will simply serve as a vehicle for Techers to come and discuss what's happening.

Tom Saunders, an American Universities Field Staff representative who has returned from Latin America, will lead a discussion on pot, fornication, and other subjects of interest in Latin America. Mr. Saunders has mainly studied the Catholic church's influence on Latin America, but Friday's discussion will center on other influences.

There will soon be a rap session on Bangla Desh in the Y lounge. This will be led by Caltech people from India and Bangla Desh. Like all of the other events, this needs the support and participation of many students.

Lecture Series with a history of "Speaking Machines from Bellows to Computers," February 14. Dr. Jerome Weingart from EQL and JPL will be discussing "Harnessing the Sun- New Prospects for Large-Scale Energy Application" two weeks later on

Continued on Page Two

News Briefs

akers-Knicks Tickets From

In an ever-increasing effort to being held Monday afternoons, often as possibly Saturday morenrich the lives of Techers and bring together the members of different houses, the Caltech Y has purchased a block of tickets for the Lakers-Knickerbockers basketball game on Friday January 21. The \$5.50 tickets may be had at the subsidized price of \$2.50. These will be available on a house quota basis through Monday; each house is allotted eleven tickets. After Monday, they may be obtained at the Y office.

Hillel Business Going Strong

Caltech Hillel is continuing to have weekly business meetings,

12:30 to 1:30 during lunch in Chandler. Come and see what is being planned, or give us a better

A Lunch and Wine-Tasting Party will be held January 30 to celebrate Tu Bishevat, the Jewish Arbor Day, from 12:30 p.m. Further details will be forthcoming.

Israeli folk-dancing sessions are being held weekly on Sunday evenings at 7:30 in the Penthouse-Patio of Keith Spaulding (better known as Parkinson). Come and get some exercise, pick up some culture, and/or meet some people.

Sabbath services are held as

nings in Clubroom Two. For further information on this or any of the other events contact Jay Siegel, Page House.

Directory of Caltech Musicians Open for Inspection

A directory of musicians is now available from the Musical Activities Committee on the Caltech campus and at JPL. The directory is designed for those who wish to form ensembles, or find new musicians to enlarge already active groups. Also, it provides a means by which people of similar musical interests may share their experiences.

Continued to Page Two

Those Were The Days.



Learn what life was really like in the "days of old when men were men" by reading Etaoin Schrodelu's new series starting on page eight.

Look Ma, No Blue Slips!

Registrar Cracks Down On Drops

by Etaoin Schroedlu

In case any of you haven't gotten the word yet, the Registrar's Office called to tell us that Drop Day is going to be rigorously enforced this term, and future terms. Due to a plethora of people trying to drop courses after midnight had chimed and the grades in question had turned into pumpkins, the Academic Standards and Honors Committee has instructed that nobody be allowed to drop a course after Drop Day, which will be the 11th of February this term. Add Day, 21 January, will also be strictly enforced.

Drop IS 129 Early!

Various other glitch-causing practices have also been terminated. Students wishing to drop below 36 total units will have to secure a petition approving the action. In addition, students wishing to change their pre-registration curricula must submit the appropriate add/drop cards for each change. In particular, anybody who pre-registers for a course and does not register for it, but neglects to drop it, may expect to find that course appear on his final grade slip all the same, and he may not like the grade that appears along with it. Surprises like that nobody

Funny, you Don't Look Blueish

There is, or has been, a rumor going around that anyone who does not receive a Blue Slip in a course cannot be failed in it. A variant of this rumor requires the student be given a make-up exam before he can be failed. The Registrar conducted a study into the anatomy of this rumor, and has come to the conclusion that it is NOT TRUE. A student CAN be failed in any course, regardless of his Blue Slip status. Let all beware. Incidentally, the Registrar reports that his office will

'work like hell' to get the Blue Slips out before Drop Day, but the deadline for profs' reporting the midterm grades is only a few days before it, and the slips may not make it to everyone until the day before Drop Day or the actual day itself. If your status in any course is of concern to you, you'd better check it out with the instructor in question well in advance of 11 February.

So They Tell Me Dept.

Some of you may have noticed that the course listing carried the entry Pl 104, Philosophy of Education, taught by L. Browne. That's Lee Browne, Caltech's Director of Secondary School Relations, and he reports that the course will be loosely structured and concern itself primarily with models of elementary and secondary schools, while offering individuals the chance to pursue topics of their own choosing

It's getting to be that time of year again, especially for all you seniors. Unless Uncle Sugar decides to draft you all after all, some of you will be looking for jobs, and the Placement Office's activities are beginning to warm up. Find an employer now and avoid the June rush . . .

Now is the time for all good ASCITers to come to the aid of the party, by getting into the upcoming elections scene. Non-candidacies aren't very effective ... Dr. Miller has been out of town all week. Are applications going that badly? ... Your friendly local newspaper can still use staff members.

The Etaoin Shrdlu Award this week goes to none other than Millikan Troll for a) getting sick and b) neglecting to write Throop Beat before he got sick.

Elephant Hides on Mars?

Continued from Page One

Its instruments showed that Mars had an extremely thin atmosphere consisting primarily of arbon dioxide and that the ice caps were made of dry ice with almost no water in them. Unlike Earth, Mars had no magnetic field, and the handful of useful photos showed the surface to be cratered like the moon.

the picture. Their photos showed chaotic terrain, odd circular features near the polar caps, and a featureless desert region called

Elephant Hides

Finally, with the pictures

Mariner IX is transmitting, scientists are beginning to realize that Mars has features unlike any yet encountered. Large plateaus are scarred with valleys the size of the Grand Canyon, other areas show an "Elephant Hide" type of fracture pattern, and several craters show signs of subsidence and collapse.

These unique features are Mariners VI and VII added to raising many questions as to the nature of the processes which shaped the Martian surface, but they are inevitably leading to one conclusion—that Mars' planetary evolution was completely different from that of the earth or the

"Violence and Aggression in Man"

The L. S. B. Leakey Foundation for the Study of Man's Origin, 1100 Glendon, Los Angeles, California 90024, has available the transcript of a dialogue between Dr. Louis Leakey and Mr. Robert Ardrey, on the subject of "Violence and Aggression in Man." The cost, including tax and postage, is \$3.00.

Look. . . . More News Briefs

Continued from Page One

The directory is sectioned by instrument or voice range and indicates particular styles and skills of those listed.

Printing costs prohibit a general distribution but copies are available for inspection in the following offices: Vice President for Student Relations, Master of Student Housing, Winnet Center, YMCA: also in the musicale. Interested persons may also contact the band or glee club managers or the following members of the musical activities committee: Harold Gordon X1935, Paco Lagerstrom X1556, and Frank Marble, X1784.

Gay Discussion Group Alive and Well

The Caltech Gay Discussion Group will have a meeting (a pseudo-semi-encounter-rap session) next Wednesday at 8:30 p.m. in the Y lounge. All interested students and faculty are invited to attend. The group's advisers, Ian Hunter and Nancy Beakel, will be glad to answer any questions (Ex. 2394) anyone may have.

Uncle Henry Wants You

Ford Motor Company is looking for students to participate in its annual Los Angeles College Roundtable Program on February 4. Fifteen students are needed from Tech, and anyone interested should call Mr. Greenfield (X2311) in Development immediately.

ASCIT

Party-Party

WALPURGIS NIGHT PARTY comes on February 11 to the Ricketts-Fleming courtyard. Features: Viva, a Latin-rock band, torch-lighting, exhibition fencing matches, and experimental movies. Needed are a few Techers to design and construct a flaming altar for the night.

Ascit Hitch-hiking

February 26 and 27 a mass hitch-hiking expedition up the Coast Highway is planned. If you've never hitch-hiked before, this is a really good opportunity

to open up a whole new world. Interest at girls' schools looks high enough to expect that we can pair off one-to-one, optimum for getting rides.

Placement Office Offers Interviews

The Caltech Placement Office has announced that placement interviews will be held by various organizations at Caltech starting this coming week. For further information consult the Placement Office, X2362, or the recruiting ads in The California

Auditions Saturday For H.M.S. Pinafore

Auditions for this year's AS-CIT Musical, H.M.S. Pinafore, will be held in 19 Baxter this Saturday. There are openings for everyone chorus, orchestra, technical, extras, as well as principals and understudies in all the major roles.

Discuss Vietnam With Realife Vet

The Caltech YMCA will sponsor discussion groups on Vietnam

Lecture Series

Continued from Page One

The Genial Dean, otherwise known as Dr. Robert Huttenback, explores "Racism and Imperialism in the British Overseas" on March 13. April Fools Day +2 brings 'The Non-Military Effects of Herbicides in Vietnam" by Dr. Matthew Meselson, a Biology professor from Harvard. A cine-maker, Frank Capra, and a Tech alumnus, tells the how and why of Hollywood film making with April 17's "A Caltech Alumnus in the Arts."

Donovon was Right!

Topic of myths and legends from centuries, "Atlantis" will be revealed in all its splendor by Dr. Nicholas Tschoegl, Chem. E. prof, on May Day. Finally, Dr. Charles Archambeau's long postponed "Sea Floor Spreading and Continental Drift: Manifestations of Planetary Evolution" will wind up the series on May 15.

This issue was put out by frosh. Now you know why.

ON JANUARY 14, ASCIT PRESENTS:

RUNCH

Starring: William Holden, Ernest Borgnine, Robert Ryan, Edmond O'Brien, Warren Oates

+ PINK PANTHER CARTOONS

7:30 p.m. and 10:00 p.m. in BAXTER

Admission: 50¢-ASCIT members and their guests; \$1.00—anyone else

(NOT OPEN TO THE GENERAL PUBLIC)

NEXT WEEK:

THE FORBIN PROJECT

at 7:30 p.m. in the Y lounge on January 18 and January 25. Anyone who is interested in rapping about Vietnam is invited.

Among the participants will be Ed Schroeder, BS '70. Schroeder was in the Army and recently returned from Service in Vietnam, where he was assigned to an Intelligence unit. Schroeder was trained for ten months in the Vietnamese language and culture, and in interrogation techniques, and is concerned about the entire situation in Vietnam (see article, this issue of the Tech). The discussions will not be formal, but of an open, rapping nature, and will be continued if there is sufficient interest in them.

What's Going On In ASCIT?

Had the secretary of ASCIT published the minutes of the past two meetings before now, you would have known that nominations for the upcoming election of ASCIT officers have been open for a week.

The CALIFORNIA Tech

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One of our beloved shrinks, Dr. Nancy Beakel.

Photo by Owen.

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Nuclear Family Approaches Critical Mass

by Peter W. Beckman

The good old, 100% as-American-as-apple-pie-and-includes-mother nuclear family is disentigrating. This is the conclusion the institute psychologist Nancy Beakel arrived at in her lecture "The Family-Will It Survive?" last Wednesday afternoon.

According to Dr. Beakel the family relationship is not a static one. Until the turn of the century the extended family, which included several generations and numerous close relatives, dominated the scene. It was destroyed by the results of a modern industrial society-mobility, urbanization, education, and affluence. More important were changing social norms. It became "acceptable and proper" for the members of the youngest generation of the extended family to leave and create their own nuclear families consisting only of parents and children.

Stereotypes

This relationship was dominant until about five years ago. The mother was the accepted social and emotional leader while the father was the executive leader. This stereotype has changed into another. The mother is unhappy because her children mature faster while the father is often absent. The children in their turn are rebellious and contemptuous of parental authority.

This creates a great number of disturbed families. In these groups the relations are static, and even when help is offered

there is a tendency to remain disturbed.

Is the nuclear family the best way to raise children? According to Dr. Beakel many sociologists and psychologists no longer think so. They have suggested alternatives that range from communes made up of adults and children, and peer-group communes to centers where children are raised and conditioned to control aggression and the problems which face today's world.

Whatever the best alternative, psychologists see the nuclear family evolving into something different under the impact of today's complex world.

Moon

Continued from Page One

evidence of melting more recently than 3 billion years.

One explanation may be found in the moon's high radioactivity. The surface contains lots of uranium and thorium. Could it be, then, that the moon was never completely molten like the earth, that it was instead "half-baked?" If the upper 100 kilometers of the moon's crust contained radioactivity concentrations equivalent to those found at the surface, then both the high heat and the lack of melting would be explained. The moon would then probably have been "painted" (Gamow) with radioactivity from the original solar nebula as it had almost finished being formed.

Thank God It's Friday

by Jeff Mallory

You are cordially invited to a T.G.I.F. party tomorrow afternoon from 4:00 to 6:00 p.m. in the Baxter Art Gallery (in the patio outside if the weather's good). Everyone is invited to come and have a good time and view the Gallery's newest exhibit—a display of Aldo Casanova's sculptures.

Casanova is a romantic deeply concerned with life and regeneration. His works suggest, and yet are distinct from, the idea of fertility and sexuality, embodying a kind of triumph of life and survival.

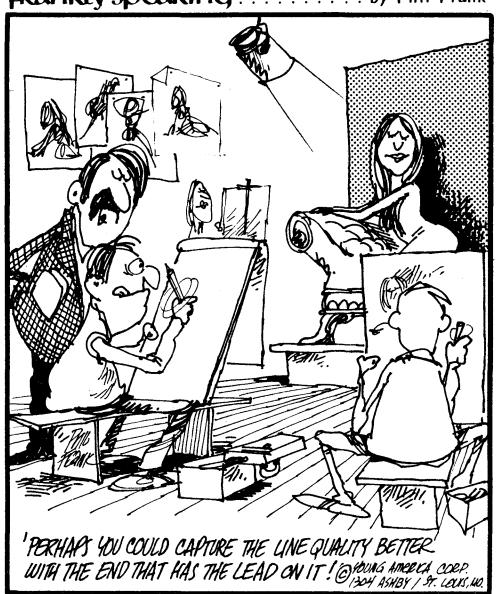
The Joseph Hirschhorn Collection, Whitney Museum, UCLA Sculpture Garden and several

large private collections hold Casanova pieces. He was awarded the Prix de Rome, one of the highest artistic prizes in 1958. Casanova has shown several sculptures here before, and has given two to Tech on permanent loan.

A showing of turn of the century posters is also on display at the Gallery. The Gay '90's brought a craze for posters that turned many prominent artists to poster work. The revival of Art Nouveau has brought back many of these creations, and a leisurely stroll among them is interesting as well as entertaining.

Both collections are impressive, intriguing, and worthwhile. Drop by tomorrow and enjoy the art and the party.





Radio

Where It's All At

From time to time this column will appear to inform you about radio in this area, since it has come to my attention that some people actually listen to their radios. Both AM and FM stations will be covered from time to time.

KPFK, 90.7 FM is a listener supported station of extremely excellent and varied programming. Unfortunately, it is impossible to find out exactly what their programming will include in the future unless one is a station subscriber, and receives their bulletin. However, I do have the following programming infor mation about the station:

6-9 am and noon-2 pm, various classical music

after midnight, rock without hype or commercials

5-6 pm, weekdays, "Dealing." with rock, funk, visitors and

8 pm Thursdays, The Firesign

10:30-12:30 am-pm Saturdays and 10 pm-midnight Sundays, folk music.

In addition to all these things, the station is having such things in the immediate future as a program of poetry and music of Leonard Cohen on the 14th, and a reading of Herman Hesse's Siddhartha beginning on the 17th. A very interesting station.

The Tech About Town

KMET, 94.7 FM, now features much of the old KPPC staff, including Steven Clean, Jeff Gonzer, and Doctor Dimento. The station format is ultra-progressive rock. If you get the chance, listen to the station between 2 and 7 on Saturday or Sunday mornings. Their female DJ, Birdfeather, is interesting, and those are the only hours when she is on.

KRLA, 1110 AM, now features about half of the old KMET staff. For some reason, when KRLA did some format changes, they went out and got some very good FM rock DJs to do half of their broadcasts. Now the station has ex-FMers on from 9 pm to 9 am, including B. Mitchell Reed and Mikel Hunter. The new format includes sets of several songs with no commercial interruptions until the set is over. In other words, it is quite possible to go for twenty minutes without breaks, somethings unheard of in AM radio. Anyway, the station is basically rock, with lots of album play, but not as far from the norm as KMET. Much better than KHJ, the local Boss 30 outlet, and the only other AM rock station with 24 hour broadcasting and decent reception.

-Nick Smith

Books

Give Me That Old Time Religion

The Wine Bibbers Bible by James Norwood Pratt and Jacques de Caso 101 Productions, San Francisco, \$3.95

The Wine Bibbers Bible is not the absolutely all encompassing book that its title would indicate. It is, in reality, another introductory volume, better written than some and illustrated with some of the finest line drawings ever found in a wine

The Bible begins with an essay on wine by the Frenchman Charles Baudelaire. Frankly, I found it boring as all hell and skipped on to the next chapter before I was halfway through it. Here the real meat of the book begins. Separate chapters cover tasting, buying, serving, winemaking, wine history-all the important aspects of the subject. Each is covered interestingly and in good detail; in fact, the authors seem to deliberately dredge down into the vast mass of wine trivia for random comments.

In its discussion of the wines themselves the book is slightly disorganized. Sherry and champagne are found in the chapter entitled "Winemaking" while the table wines are listed under "Wine Varieties".

Gospel According to Pratt

Unlike many authorities, Pratt at least admits that his ideas about wine are not necessarily the gospel truth. He begins "Wine Varieties" by saying, "This chapter will be unfair, misleading, and unabashedly prejudiced ..." Then, of course, he gives us his ideas on what is good and what is not in the crowded field of wines. Generally, I am able to agree with most of his opinions (at least as to what I've had), although in a couple of instances we disagree. (Of course, this is only natural. To get two winos to agree on anything while sober is practically impossible.) Anyway, this information is enough to keep the beginner away from the really rastier stuff. Terminology

The book contains a glossary of wine terms and names. The definitions tend to be a little too

brief. (Chateau d'Yquem is not

just a "First growth Sauterns, Bordeaux.") But it will probably provide definitions and descriptions of all the terms a beginner is likely to encounter.

Altogether, the book provides a good overview of the subject of wines. It is by far the prettiest guide that I have seen, and since it is two to three times as expensive as comparable paperback guides it will probably be most useful as a gift to the wino who has practically everything.

-Peter Beckman

DRUGS AND YOUTH (Medical, psychiatric and legal facts.) by Robert Coles, M.D., Joseph H. Brenner, M.D., and Dermot Meagher. Paperback, Avon Books, \$.95.

This book is a rather comprehensive study of drug usage and things concerning drugs. It is not a scare book, but rather an attempt to deal honestly with both sides of the issue. For example, the medical section deals primarily with the immediate physical reactions to the various drugs, while also presenting the evidence of good or harm caused by the various drugs. It points out flaws in many of the much-publicized studies showing genetic damage caused by various drugs, but also includes specific warnings about the use of certain drugs, especially during pregnancy.

The psychiatric section is admittedly somewhat biased, since the patients treated by a psychiatrist are not a random sample of humanity, and probably not of drug users. He does, however, explain what seems to happen under various conditions with LSD and similar drugs, and discusses the finite chance of not

Continued on Page Eight



Ahmanson: Sleuth

Anthony Shaffer's smash hit thriller, "Sleuth," opened a six week engagement. for Center Theatre Group at the Ahmanson Theatre yesterday, January 12. Anthony Quayle and Donal Donnelly, who co-starred in the original London production, star in the CTG presentation. The play, which has received high critical praise since its London opening, has repeated its success on Broadway where it has played to Standing-Room- Only during its current year-plus run. "Sleuth" won the Tony Award as "Best Play" of the 1970-71 season on Broadway.

Mr. Quayle plays a successful mystery writer and Mr. Donnelly an adulterous young wastrel, and they are up to some murderously brilliant games in a two-story, oak-paneled setting that exudes a fine air of richness and menace.

The Center Theatre Group presentation, the third in Managing Director Robert Fryer's 1971-72 subscription season, will play nightly except Sunday with matinees Thursday and Saturday. Tickets are on sale at the Music Center box office and all ticket agencies with student discount tickets available a half-hour before performances.

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The Gang

That Couldn't

Shoot Stra ight

MGM released its new film, The Gang That Couldn't Shoot Straight, over Christmas vacation. The reception was not exactly wild; in Chicago there was no waiting line for tickets and the theater was running only half-full. I have to assume (and hope) that this was the case everywhere.

In some places the film is really funny, but with little or no plot it is hard to create such situations. The film is, in general, quite crude. I can't see how it ever received a GP rating. The title, incidentally, is a bit overstated; the gang couldn't shoot at

and the Tramp.

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E COLORADO BLVD 449-5320 681-6669

by Nick Smith For those few of you who actually do things, there are a

few musical events coming up over the next few weeks. Theyre given by location, and no locations with minimum ages are included. First clubs, then con-

Ash Grove, at 8162 Melrose in Los Angeles, features David T. Walker and Jimmy Reed now thru Sunday, with Jimmy Rogers and John Brim all next week.

Ice House, at 24 N. Mentor in Pasadena, has Michael Nesmith and the First National Band this week, with Mason Williams playing next week.

Troubadour, at 9081 Santa Monica Blvd. (in either Hollywood or Santa Monica) has Hedge & Donna this week, with the Nitty Gritty Dirt Band starting next Tuesday.

B. B. King and Freddie King are in concert at the Santa Monica Civic on the 14th.

Black Oak Arkansas, Chuck Berry and Elvin Bishop are in concert at the Hollywood Palladium on the 21st of this month.

If You've Got Money...

The Carpenters, of infinite soft rock ballad fame, headline a show at the Anaheim Convention Center on the 22nd.

Mstislav Rostropovich, the famed Russian cellist, is in an S. Hurok presents at the Dorothy Chandler Pavilion on the 23rd.

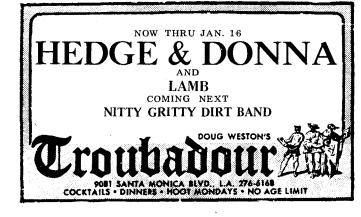
Traffic is in concert at the Santa Monica Civic on the 24th and 25th of this month.

Neil Diamond is at the Valley Music Theater on the 28th.

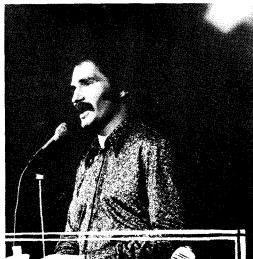
Seals & Crofts and Boz Scaggs are at the Santa Monica Civic on the 28th.

Segovia is at the Dorothy Chandler Pavilion on the 29th and 31st.

Finally, Deep Purple and Buddy Miles are at the Long Beach Auditorium on the 30th.













Clockwise from upper left: Michael Nesmith, Gabe Kaplan, Clark Maffitt, and Captain Stringy.

Photo by Ctein

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Kaplan, Nesmith At The Ice House

The show at the Ice House this week features a great deal of confusion. It also features some good entertainment.

The show opens with Clark Maffitt, a fine guitarist and a teller of funny stories. His performance ranged from a song about pill-popping to a song about the rape of a mermaid. (At this point, one might well ask, "But How?" If not, maybe you'd better think about it.) In addition, there was a bit of classical guitar, Bach to be precise, and nicely done. Clark Maffitt must be seen to be appreciated fully, and he is worth seeing.

Gabe Kaplan is in the middle of the bill, and livened things up even further with his monologs on subjects from TV and commercials to a boy buying his first prophylactic. I have been informed that Gabe Kaplan was recently mentioned in the Wall Street Journal in an article about the life of new-style comedians.

The star of the show, Michael Nesmith, is an excellent entertainer. He has written several hit songs, including "Different Drum." He was a member of a successful teenybopper rock group, the Monkees. He is back where he belongs musically, doing modern country music of the type done by the Dillards and Linda Ronstadt. Michael plays guitar, and is backed up by Red Rhodes, the living legend of the pedal steel guitar. Whether on hit songs, like "Jo Anne," or on his lesser known songs, such as "Propinquity" and "The Grand Ennui," Michael Nesmith displayed a warm Texas voice, the sort that one wishes Kris Kristofferson had. Michael Nesmith is well worth listening

On opening night of the above show, there was also a special guest act, featuring Captain Stringy and his dog, Meat. The Balloonman also showed up. You now understand as much about the special guest act as I do.

Mea Culpa

(The following review was scheduled to be printed last issue, and was prevented by a certain editor-in-chief who will remain nameless. My deep apologies to the entertainers and to the management at the Ice House, for this review should have been printed on the 6th.)

Belland and Somerville are fine entertainers in their own right, and this week the rest of the show at the Ice House is just as good as the stars.

The show opens with Jon and Suzy Mann, a duo of very talented guitarists and singers. Jon alternates between 12-string guitar and autoharp, while Suzy plays 6-string. Both of them sing beautifully, and I very much want to hear them again. Suzy is sort of a cross between the first impression of a Goldie Hawn and the musical ability of a Sylvia Tyson. She giggles and talks a lot to the audience to fill in gaps while guitars are tuned, and sings so beautifully when the music starts. Jon Mann is an accomplished guitarist, as well as an autoharpist. I was particularly impressed with their song about spring. In addition, they did sort of an American raga, using a 12-string guitar instead of a sitar, and a cross-echoed lyric instead of a chant. They called it a raga, and it left one with the impression of one, although I can't really describe any better what it was like. As you can tell, I was very much impressed with Jon and Suzy Mann, and I hope they return soon.

On the night I attended, Lily Tomlin was recording a live album on the Polydor label. This album is one featuring one of the characters she has been using on "Laughin-In," 51/2 year-old Edith Ann. It would be unfair and impossible for me to tell what happens on the album, but it is Lily Tomlin at or near her best. Gabe Kaplan finishes out the week as the middle act.

As far as Belland and Somerville go, how does one go about telling about a pair of unknown superstars? In the last decade or so, Bruce Belland and David Somerville have been lead singers on records whose total sales

Continued on Page Eight





Desiderio Sets Frosh Marks

"Caltech 3" Take on U.C. San Diego, and Live

by Bob Kieckhefer

Russ Desiderio led Caltech's swimmers against UC San Diego last Friday, breaking two freshman breaststroke records and scoring ten points for the visiting team. Because only three Techers had arrived in San Diego when the meet started, Tech could not enter a complete medley relay team. Russ swam the breaststroke leg anyway, setting a new frosh record of 1:06.9. Later in the meet he won the 200-yard individual medley and the 200-yard breaststroke, the latter in 2:29.4, shaving 2 seconds off Mabry Tyson's old frosh mark.

Swimming team captain Tim Hight also had a good day, getting a first place in the 100-yard freestyle by inches and a second place in the 200-yard freestyle by a body-length or two. Greg Sharp, the other member of "The Caltech 3" placed second in the 1000- yard free-style and third in the 50

While these men were performing heroically against a much larger UCSD squad, the real excitement of the afternoon was unfolding just north of San Clemente. Realizing that the score of the meet would not be too close, Steve Bitondo, Virgil Shields, and Bob Kieckhefer decided to spend most of the afternoon coaxing a Ford cooling system into action, amid clouds of steam and the unhelpful advice of various gas station attendants. ("You can tell this stuff is strong enough to dissolve rust-here, smell it.") The car

was not satisfied with their efforts until it had passed the Western White House; the swimmer-mechanics finally got to UCSD 40 minutes after the meet had started, in time to enter one individual event apiece and form 34 of the freestyle relay team.

The final score of the meet was UCSD 71, Caltech 24. Hopefully, the score will be closer tomorrow, when the Techers take on Cal State LA in their second away meet of the season. On Saturday afternoon the SCIAC relay meet will be held at Occidental; any swimmer who would like to swim a few 50's is urged to attend this "no-pressure" event.

Wrestlers Undefeated; Host Own Tourney on Saturday

Top Small College Teams Expected

The third annual Caltech Invitational Wrestling Tournament will be held Saturday in Brown Gym, featuring many high-rated small college wrestling teams.

The undefeated Caltech Beavers are definitely considered as possible repeaters as champions of their own tournament.

The preliminary matches begin at 11:00 a.m. Admission is \$.50 for students and \$1.00 for adults.

Finals will be held Saturday night in two parts: the consolation round will began at 6:30 p.m., and the championship an hour later. Price of admission is \$1.00 for students, \$1.50 for adults.

-Gavin Claypool

Go TECH!

Cagers Drop Conference Pair

by Andy Renie

Redlands and Claremont-Harvey Mudd handed Caltech convincing defeats in last weekend's encounters on the Tech basketball court. Saturday night Claremont trounced the home team by a score of 87-45. The night before, Redlands beat the Beavers 88-44. The back-to-back losses left Caltech's record sagging at 1-5.

Claremont took a 15-4 lead in the initial six minutes and was never seriously threatened after that point. The visitors had a comfortable 42-23 lead at the intermission.

Against Redlands, the Beavers fared only a little better in the

opening stages. They trailed 10-4 after five minutes, and 33-22 at the half.

Claremont-Mudd had an extremely well balanced attack as they had five players in double figures. They were led by forward Rex Huxford who tossed in 21 points. Center John McKniff contributed 15, Jeff Noslund and Cal Whitham 12, and Craig Duley 11. Caltech had only one player in that select group-Mark Bleck, who made

In the Redlands game, forward Jack Feely scored 10 points to lead the Beavers. The Bulldogs placed four players in double figures, led by Joe Kennedy with

In many respects the games were identical, and resembled other Caltech games this season. The Beavers, who have now lost five straight, are averaging just under 47 points a game. Their defense has yielded an average of 81 points. Jerry Feely is the leading scorer for the Beavers, with a average of slightly over 13 points a game. Chris Cooper is second on the team with about eight points a game, while Don Keenan is third with six a game.

Page Defends Discobolus Tonight

Page House will try to defend the Discobolus trophy at 7:30 tonight against Ricketts House in a wrestling meet in Brown Gym.

The Pageboys have had the trophy since October, when they

Continued on Page Eight

by H.P. Schnurrd

Our grapplers' wild rampage continued this week with a shutout of UCR and tight wins over highly rated Biola and tough Pasadena. The Beavers now stand undefeated in ten dual meets this season.

Last Friday, Biola, never before beaten by Techers, was demolished by a fantastic team effort; everyone came through.

"It had been extremely rocky for the Caltech team that day, We were up by just six points with six big matches left to play. So when Zieve tied at 150, and Ken lost to one of fame, Pallor wreathed the features of the patrons of the game. A straggling few got up to go, leaving there the rest, With the hope that springs eternal from within the human breast. If only Bruce or Smoody could have a go at that! They'd put down even money now, with either on the mat! But Val preceded Smoody, and likewise, so did Rick. And the latter hadn't wrestled much, the former was a prick. So from that stricken multitude came silence of the dead, For there seemed but little chance of Caltech coming out ahead. But Val pinned his opponent, to the wonderment of all, And the inexperyenced Richard his Biola man did maul. And when the dust had lifted, the fans checked out the score, And they saw that Tech was winning, and they cried in glee for more...."

Smoody clinched the meet with a 13-2 decision, and victory was ours: Caltech 27, Biola 18.

Tuesday, in a triangular meet at UC Riverside, we first mashed the Riverside squad, 57-0, with five forfeits and four pins by Lewis, Zieve, Walker, and Morris; Bruce Johnson defeated an excellent opponent to complete the shutout. Against Pasadena it looked grim after we dropped close decisions in the lower weights; even the ref seemed to be working against us, giving away at least one match (134) by refusing to call stalling on Lewis' opponent. Our rally began when Pasadena's 150 man, who was pinned in a UCR match, forfeited to Zieve. Critical wins by Ken Walker at 158, and Rick Short-gutting it out with a bad cold-at 177, and another forfeit (this time to Smoody) tied it up, 18-all. In the final match, Johnson ate up his man as he worked for a second period pin and the Caltech victory.

Perhaps someone will notice us now; we "scientists and engineers" have beaten the tenth, ninth, and fifth rated schools in southern California.

The annual Caltech tournament, to be held in Brown Gym on Saturday, should give us a good indication of the strengths of some of the other ranked teams. Tickets are available from any wrestler.

Loss of MVPs Hurts

Horsehiders **Need Players**

by John Tristano

Tom Howell, last year's most Institute of Technology Varsity valuable player and all-league Baseball team has started praccenter fielder, and Jerry Feely, who won both MVP and all-league recognition the year prior, are apparently not returning to the team this year. Feely, whose brilliance at the plate won him the all-league second baseman honor two years ago, will be unable to play this year. He is scheduled to undergo surgery on his right shoulder, an injury that has plagued him since high school. Jerry intends to work out with the team until the operation, and plans to return to the team next year.

Tom Howell's exact status cannot be clearly defined at this point. Although the coach talks as though Howell is on the team. Howell has not yet attended any practices and states that he has no intention of playing this

The one, the only, California

ticing for the up and coming year. Coming off last season's four big victories, the team is expected to reach even greater heights in the upcoming year. There is still room left for YOU on this upsurging team if YOU can fit the followingqualifications:

- 1. Enrollment as an Under-
- 2. Meeting of NCAA requirements (Frosh pass 36 units)
- 3. The initiative to go out and give the old college try.

So hurry on down to the gymnasium (Jim Nausium) and sign up quickly while there is still room and and remember you too can become the school hero. YOU TOO can impress your $girl(s?)(\phi?)$ You too can have a lot of fun. So join up now before its too late. Practice at 4:00 every weekday.

Ye Olde Sports Menu

	Friday, Ja	nuary 14	
4:00 p.m.	Swimming		Away
6:30 p.m.			Away
	Varsity Basketball		Away
	Saturday,	January 15	
11:00 a.m.		l Wrestling Tournament	Home
1:00 p.m.	Fencing		Away
2:00 p.m.	Swimming		at Oxy
	JV Basketball		Away
8:30 p.m.	Varsity Basketball	La Verne	Away
	Wednesday	r, January 19	
4:00 p.m.	Wrestling		Home
6:30 p.m.	JV Basketball	Occidental	Home
	Varsity Basketball	Occidental	Home
	Friday, Jai	nuary 21	
4:00 p.m.	Swimming	•	Home
6:30 p.m.	JV Basketball	Whittier	Home
8:30 p.m.	Varsity Basketball	Whittier	Home
	Saturday,	January 22	
6:30 p.m.	JV Basketball		Home
8:30 p.m.	Varsity Basketball		Home



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
JANUARY 9	10	11	12	13	14	15
DABNEY LOUNGE, 8:15 p.m. THE CONCERTANTE ENSEMBLE performing music by Teleman, Dahl, Mozart, and Messiaen. Free.	BECKMAN AUDITORIUM 8:30 p.m. Caltech Lecture Series: Bruce Murray, Ph.D. on Mars—From Science Fic- tion to Science. Free.	Done Tuesday After Lunch: The Commic Time of the Week		The CALIFORNIA TECH Take out a classified ad for fast results!		BECKMAN AUDITORIUM 11 a.m. and 2 p.m. Children's Series: The Circus: clowns, acrobats, circus acts. Series: Children \$5, adults \$7.50. Single: Children \$1.25, adults \$1.75. Adults not admitted without a child.
JANUARY 16	17		19	The CALIFORNIA Tech wants YOU as staff	RAMO MARI DANC ograph with a \$2.50.	AUDITORIUM 8:30 p.m. E MARCHOWSKY THEATER E COMPANY—a gifted chore- er and sensitive performer company of five. \$4.50-\$3.50- Caltech students \$1.50.
JANUARY BECKMAN AUDITORIUM 3 p.m. and 8 p.m. PASA- DENA SYMPHONY OR- CHESTRA (Music Director Dr. Richard Lert) with guest conductor Robert Walton Cole, \$4.00-\$2.50. Students \$1.	BECKMAN AUDITORIUM 8:30 p.m. Caltech Lecture Series: Dr. Louis Breger, Associate Professor of Psychology, speaking on Implications of Recent Research on Dreams. Free.	25	26	27 The CALIFORNIA TECH get a subscription for your parents!	BECKMAN AUDITORIUM 8:30 p.m. JOHN LILL, sensational young British pianist makes his Los Angeles debut. \$5-4-3-2. Caltech students \$1.	of conditionals and incompletes.
JANUARY 30 Midterm Week Grindge!	31	FEBRUARY 1	Univers WALLS 2 hour Series:	AUDITORIUM 8:00 p.m. al's MUSEUM WITHOUT 5—a series of 11 films on art. rs of films each program. \$10, students \$8; individual as \$2.50, students \$2. Midterm Week Sigh!	BECK p.m.	MAN AUDITORIUM 8:30 CARLOS MONTOYA, flamen- itarist. \$6-5-4-3. Caltech stu- \$2.
FEBRUARY DABNEY LOUNGE, 8:15 p.m. Chamber Music series: Sylvia Greenfield (flute), Walter Kennan (piano) performing music by Hindemith, Dahl, Varese, Messiaen, Brahms, and Schubert. Free.	Mid-Term Deficiency Notices Due 9:00 a.m.	BECKMAN AUDITORIUM 8:30 p.m. Encounters series: TORU TAKEMITSU, com- poser. \$3.50, students \$2.	9 RAMO MUSE I part o Studen	AUDITORIUM 8 p.m. UM WITHOUT WALLS, f series of art films. \$2.50,	BECKMAN AUDITORIUM 8:30 p.m. VIENNA CHOIR BOYS in a program of sacred songs, an operetta, sacred, secular, and folk songs. \$6.50-5.50-4.50- 3.50. Caltech students \$2.50. DROP_DAY	BECKMAN AUDITORIUM 11 a.m. and 2 p.m. FILMS FOR CHILDREN, selections from 2nd Int'l Children's Film Festival. \$1.25. Adults \$1.75.
FEBRUARY 13 BECKMAN AUDITORIUM 3:30 p.m. Coleman Chamber Music Series: Warsaw Quintet playing Faure's Quintet op. 89, Schumann's Quintet E flat major, op. 44, Bacewicz' Quintet (1952). \$5-4-3-2.50.	BECKMAN AUDITORIUM 8:30 p.m. Caltech Lecture Series: John R. Pierce, Ph.D., on Speaking Ma- chines from Bellows to Computers. Free.	Today has been cancelled due to lack of interest	MUSEU	series of art films. \$2.50,	18	19
FEBRUARY 20	Preregistration for second term, ALL WEEK.	BECKMAN AUDITORIUM 8:30 p.m. Leakey Foundation Series: RICHARD E. LEAKEY in an illustrated slide lecture on Further Evidence of Early Man. Sold Out.	MUSEU	series of art films. \$2.50,	BECKMAN AUDITORIUM 8:30 p.m. Armchair Adven- tures: Don Cooper on "The Rockies." \$2.50.	BECKMAN AUDITORIUM 8:30 p.m. SHIRLEY VER- RETT and MARY COSTA in joint recital. \$6-5-4. Cal- tech students \$2.50.
FEBRUARY 27 DABNEY LOUNCE, 8:30 p.m. Chamber Music Series: IL TRIO NOVELLO playing works by Bach, Dahl, Ravel. Free.	BECKMAN AUDITORIUM 8:30 p.m. Caltech Lecture Series: Jerome Weingart, Ph.D. on Harnessing the Sun—New Prospects for Large-Scale Solar Energy Application. Free.	29	MUSEU	series of art films. \$2.50,	3	BECKMAN AUDITORIUM 8:30 p.m. NANA MOUS-KOURI and the Athenians; Greek folk singer and her quartet of music makers. \$6.50-5.50-4.50, Caltech students \$2.50.
DABNEY LOUNGE 8:15 p.m. Chamber Music Series: Choral music from the Middle Ages, Gregorian chants, early polyphony. Free.	6	7 Blark! It's Tuesday After Lunch Again	BECKMAN AUDITORIUM 8:30 p.m. Encounters Series: GYORGY LIGETI, Hungarian-born composer. \$3.50, students \$2.	The CALIFORNIA TECh typesetting service for snowy term papers, etc.	BECKMAN AUDITORIUM 8:30 p.m. Armchair Adven- tures: "Polynesia" with Stanton Waterman. \$2.50.	BECKMAN AUDITORIUM 8:30 p.m. OSCAR GHI- GLIA, world renowned guitarist.
RAMO AUDITORIUM 2 p.m. and 7 p.m. MARIA CALLAS' first dramatic movie—"MEDEA" directed by Pier Paolo Pasolini. \$2.50.	BECKMAN AUDITORIUM, 8:30 p.m. Caltech Lecture Series: Dr. Robert A. Huttenback, Chairman, Division of Humanities and Social Sciences, speaking on Racism and Imperialism in the British Overseas. Free. Wagner Festival 7:00 a.m.	N \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	15 A	The CALIFORNIA TECH YOU LOSE! no issue today	S * 17	BECKMAN AUDITORIUM 11 a.m. and 2 p.m. Children's Series: "The Snow Queen" presented by the Heiken Puppets. \$1.25, adults \$1.75.
MARCH BECKMAN AUDITORIUM 3:30 p.m. Coleman Chamber Music Series: The TOKYO QUARTET play Quartet in B flat major, K 589 by Mozart: Quartet by Miyoshi; Quartet No. 9 in F minor, Opus 95 by Becthoven. \$5-4-3-2.50. Students \$1 off.	120 dB 20	21	22	The CALIFORNIA Tech is possibly the world's best newspaper.	24.	25
A				T		TATE OF THE PARTY

As Advertised on Page One

Those Were The Years That Was

by Etaoin Schroedlu

Feeling down and out? Physics 2 or AMa 95 or something got you down? Cheer up: you're about to hear how it was back in the Pre-Stoned Age, when men were alone and giant course-loads walked the earth.

We shall turn back our time machine to 1966-1967 for several reasons. That year is five years ago now, a nice quantum of time, it was the last of the Tech academic years to remain free of the impact of Joe Rhodes, and it was also the year in which your humble reporter appeared on the

Graphics Bit!

In the frosh year, according to the Institute Bulletin for 1966-1967, all students had to take particular courses totaling 147 units. The only choice available to them was whether to take H lbc or En lbc (all students had to take both H la and En la). Among the other requirements were full years of physics and chemistry, at 12 units per term per course, with 6 lab hours a week in chemistry and 3 in physics for all three terms. (These labs were invariably at 8:00 in the morning; at least, all three of mine were.) Math was only 10 units but was divided into Lecture and Recitation sections, giving you three times as many chances to fail in a given quarter. (Does it look as though I must have failed it myself?) Fear not: there were two tests per term in one of the two halves of the course, and each of the tests was worth part of the grade by itself, so that it was possible to fail part of the same part of a course and pass the other part of the same part. If you think you're confused, you should have seen the Registrar's Office. The Humanities offerings were worth 11 units each term, and of course there

Frets & Frails

Continued from Page Five reach uncounted millions. Bruce Belland was lead singer for the Four Preps at their peak, while David Somerville was lead singer for the first major Canadian rock group (yes, before the Guess Who) called the Diamonds. The latter group did such songs as "Little Darling," remembered by

oldies-but-goodies fans all over

the world.

Anyway, these two got out of the vocal group bag a few years ago, and now sing as a duo with a backup group. They do a lot of comedy in their show, and it is good. They also do a lot of good music. My favorite of all their songs is their version of "He Ain't Heavy, He's My Brother." It puts the original hit version to shame, and totally dwarfs the recorded version issued by the writer. In addition to slow tunes, they do a good job on such upbeat tunes as "Hey, Nellie Nellie." (Yes, the same one Judy Collins recorded several years ago.) This is a good show to go to if you want to come out happy.

-Nick Smith

was that old standby, P.E. This was also the last year of the Graphics requirement. (If you don't know what that was, don't even ask.) Anyone wishing to take any sort of elective had to do it in addition to these 147 units, or place out of some of

What else is New?

Nowadays, my handy Institute Bulletin tells me, a frosh need only take 87 units of dictated courses (barring advanced placement, and the like), counting P.E., which need no longer be taken immediately. (At one time, falling behind two terms in P.E. was grounds to be brought before the Standards and Honors Committee for reinstatement. In fact, I knew a fellow with a 4.3 GPA to whom that happened, but that's a different story.) Other electives may be taken, from a list of courses virtually all new in the last five years, up to a minimum of 126. This is substantially lower than 147. After passing through several different ground states, all of them strange, Ma 1 seems to have permuted back to a dual entity, now at 9 total units. (Ma 1.5 has also returned; that was the Final Solution of the year before me.) Physics and chemistry have shed their labs, which have taken up residence in varying densities in different requirement listings. Several new courses are available to fill the old Humanities slots, which is a distinct improvement, I'm sure. (I haven't taken any of these new courses, but I'm still sure.)

We Don't Need H 5:

Among the other unmourned deaths of recent years were several other courses required of everyone for graduation in 1966: H 2, American History; H 5, Public Affairs; En 7, Advanced Literature; and, thank God, P.E. 2. (Now, if we can only do

Drug Book

Continued from Page Four coming back from a trip. He also discusses the "problem" of marijuana and other light drugs (as opposed to heroin and other heavy drugs).

The legal section should be of general interest to anyone ever in danger of being arrested. In addition to a summary of the marijuana laws in every state, he spends a entire chapter on the legality or illegality of certain arrest, search and trial procedures. He explains when you have the right to object to a search of your person, home or car, and when you've just blown it. All in all, the legal section is quite good.

This is a book that I would recommend if you are curious about the physical effects of drugs, or about the legal aspect in particular. It is well written, by qualified specialists, and is sensible. I suggest its purchase.

-Nick Smith

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something about P.E. 1 ...) Ph 2 and Ma 2 have been dieted down from 12 units per term to nine, although the physics loss is again due to removal of the lab, which couldn't have been removed too far, in the opinion of the Techers of 1967. In all, then, the specific units required of everyone beyond the frosh year, regardless of option, has dropped from 129 to 54 in the last five years. This is also as far as one can realistically expect it to go.

We Win Football Games Now

In general, fewer units are required per term as well. Below are the figures of units for minimum graduation, tabulated by option for 1966-67 and 1971-72 by adding up the minimum figures listed for each term: Astronomy, 555, 531; Biology, 579,546; Chem E, 590, 561; Chemistry, 585, 543; Economics, 564, 522; Engineering, 559, 522; Geology, 601, 561; Math, 570, 468; Physics, 522, 516. Of course, much of this difference, if not all of it, may be traceable to the changes in frosh year and required courses cited above, but it is still a substantial change. Both geology figures are so high because of the summer field geology requirement. Doubtless math has its own reasons for its latter figures.

Did We Ever Need H 5?

There has been a great reduction in individual courses required within specific options as well. For a sample, chemistry used to require 127 units of particular courses besides those mentioned above, but now the figure reads 90. Of course, a major reasons is the dropping of German as a requirement, but an added help was the reuniting of certain chem courses upward? How's that? you inquire? Well, Ch 41 and Ch 46 used to total 10 units a term for three terms, and the average chemist used to moan that Roberts and Caserio together couldn't get the work done in just 10 hours a week. Now the uniting reads 35 units, and that's with the infamous '46 lab' meeting for only one term. Of course, we ought not to forget that chem now gracefully adds a rider in the Bulletin to the effect that 'this core program is not rigorously required for graduation in the option,' which is a far cry from the notes of five years ago, which featured

only the ominous-sounding warning about the probable fate of students with below a 1.9.

Similarly, the Chem E people have loosened up a great deal, too; their sophomore year used to consist of 156 units and only 9 electives a term, while their junior year was 146 units with no electives at all!

No, but Sulzburger Did.

There is one new requirement incumbent upon all Techers now that did not exist five years ago, however, and it is a very interesting one. In 1966 there was no Institute requirement of 108 units of Humanities and Social Sciences electives for graduation. Before all you humanities-haters in the audience begin to yearn for the good old days, however, let me assure you that this lack was for a good reason: nobody had the time to take 108 units of any sort of electives. The average schedule permitted only the taking of one humanities elective, chosen from a list of 50 such courses, called Senior Humanities Electives, to be taken each term in the-you guessed it-senior year only. Of course, with 81 units of required En 7, H 2, etc. etc. etc., you hardly needed such a requirement. Check it out.

Of course, all the above would mean little if whatever people are taking now isn't better than what they were taking before. Fortunately, however, the moral of our story is secure: instruction at Caltech is a healthy step better than it was in 1966, if not more in this opinion at least. Of course, the more rigid a program is, the worse it is, since a student can never do worse choosing his own program rather than a required one, if he's willing to listen to advice, and can almost always do better, so in this sense the new, looser Caltech had to be an improvement over the old, rigider one, but the increased teaching enthusiasm and capacities of the Caltech faculty, which have paralleled the loosening of the curriculum requirements, have indeed led to a vast improvement over the Caltech of

defeated the Scurves in golf.

Last Sunday, the Page offense won in football 27–18. However, that score was against the Page defense. Lloyd House, the chal-

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Computer Music **Seminar Thursday**

by E. Gansner

The major school of recent serious music composition centers around the computer as its performing artist. Next Thursday, January 20, Jim Tenney from he music department at CalArts will speak on computer music at 4:00 at 74 Jorgensen. Refreshments will be served at 3:30 and Tenney should be around after his talk to answer questions.

Computers promise to dominate most serious music composition in the years to come. Although the computer-ascomposer has not been very successful, the computer-as--instrumentalist could well become the best instrument ever conceived. Whereas traditional instruments and analogue synthesizers are limited in sounds by their physical make-up, a computer and loudspeaker can produce any sound whose wave function can be generated on a computer.

Can Computers Belch?

On one hand, the computer can make a sound for any function the mind can invent. On the other hand, in light of recent research on the sound make-up of traditional instruments, the computer can exactly reproduce the performance of these instruments. Presently, computer composition is troubled only by the listener's unfamiliarity with literally unheard-of sounds.

Tenney is one of the earliest composers of computer music. A graduate of Bennington college, he came to Bell Laboratories in 1961 and soon became heavily devoted to the computer, under the auspices of Tech's recent acquisition, John Pierce. He has done research at the Yale University Music School and the Polytechnic Institute of Brooklvn. He is now on the music faculty of CalArts and ranks as one of the best composers of computer music.

Presently, Tenney is working with John Odden, a Blacker frosh, and Fred Thompson in implementing a computer music program in REL on the Tech computer.

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