

It's a bird;
It's a plane —

California Tech

Associated Students of the California Institute of Technology

It's a Millikan Library

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—Photo by Wisenheimer

"Frosh!" cries Holford, overwhelmedly, as sophomores discover graft and corruption on the part of juniors who repaid the sophs for their dirty deeds.

New RA's Compare Tech to Harvard

BY DICK TEZAK

Having supervised their student houses for more than a month now, Caltech's three new Resident Associates, who are all graduates of Harvard, note many differences between life here and in the Ivy League. Peter Lingane, RA of Ruddock House and a 1962 graduate of Harvard, has found that "the pace of life here is generally faster, and the individual is under greater pressure. The Caltech student plays harder, studies harder, and goofs off harder than his counterpart at Harvard."

Harvard Immigrants

Myles Walsh, a graduate student in aeronautical engineering and new RA of Ricketts House, agrees with Lingane, attributing this pressure to Caltech's emphasis on turning out specialized and highly creative men in the shortest possible time. "At Harvard," according to Walsh, "the student is not encouraged to specialize until later in his college career, when he may choose between the natural sciences, social sciences, and the humanities." Charles David, a product of Harvard's class of '62 and new RA of Page House, enjoys the atmosphere here, which is more informal than at Harvard. David, who is a graduate student in biology, spent last year studying at Cologne University in Germany, and is currently a member of Caltech's varsity soccer team.

Because of the similarity between the Student House system at the two schools, all three feel right at home on the Tech campus. Harvard, like Caltech, has no fraternities, and there the Student House plays much the same role in the life of the undergraduate as it does here. However, there are some differences, the chief of which is that Harvard

frosh live in separate houses. There is therefore much less contact between them and the upper-

Integration

Another difference is that the faculty live in the houses along with the undergraduates. Lingane feels that in many ways the House life at Caltech is superior to that of Harvard, since "there are more things to do, and one has a greater opportunity to make friends." David is more critical of the Caltech Student Houses, especially in regard to the manner in which meals are served. "At Harvard, the food is served cafeteria-style, and there is a more relaxed atmosphere." Both agree that at Harvard the conversation during meals is more erudite, with members of the faculty mixing readily with the students. "At Caltech," says Lingane, "there is a tendency to avoid discussing science, humanities, and other intellectual pursuits at the dinner table, while at Harvard no such inhibition exists."

Initiation O.K.

Regarding that time-honored institution, Initiation, the general reaction of the new RA's is favorable. Lingane reports receiving very few complaints from the frosh. "Things did not get overly rough, and in most cases the upperclassmen were fairly reasonable in assigning stunts for the freshmen to perform." Walsh feels that initiation was well executed. "The spirit was taken in by the frosh, without excessive roughness. As a result, they learned a lot about their House and its members." David is less enthusiastic, and argues that "Initiation is not really needed. The purpose behind it, which is to acquaint the freshmen with their

(Continued on page 2)

Frosh Mudeo Victors Tradition on Wane

BY MICHAEL MEO

The Frosh won the Mudeo for the second straight year by a score of 3-2. Not only did they outbride the sophomores, they triumphed in mudsling Tuesday south of the Gym.

"This is another one of Caltech's many traditions crumbling before your eyes," said John Vitz, junior judge. "Every year the Mudeo draws less and less interest." What kind of spectator appeal does an event have held on a cold, clammy day like last Tuesday? Is it impossible to postpone such an event in case of inclement weather? A lot more interest would arise, and the contest would be a lot more memorable, if it were held in warm weather. Some day, perhaps, a vote of the school will be taken, and Randy Troll will vote against retaining the Mudeo because he didn't get much of a kick out of standing in the mud and rain in 1964.

Mud and Fung

Intercollegiate athletes are not allowed to compete in the Mudeo, according to Coach Nerrie. Yet there was Warren Sterling, member of the frosh water polo team, in there swinging during the horse-and-rider competition. Sterling wasn't doing anything that maybe a dozen others weren't doing; besides, if no one is checked in, how do you know who is and who isn't competing? A tragic example of this was Ry Young, who re-cracked his breastbone and was taken to the hospital. He didn't have the pink slip necessary to compete, but jumped in anyhow, and the ambulance pulled away from the field just as the freshmen were announced winners.

On the sophomore side, 28 students and a grandstand participated in the tug-of-war; 30 frosh and a wire fence opposed them. The frosh won because Doug Holford, president of the Junior

Donna Burrow Sings Bawdy Airs In Dabney

Dabney Lounge filled to capacity Wednesday at 11 when the ASCIT-Alumni Assembly series presented Donna Burrows, the "fertility song lady." Mrs. Burrows, who claims to be Scottish, specializes in rather risqué folk songs (generally of English or Scottish origin and some from even before the time of Chaucer. However, she also sings Hebrew and contemporary American folk songs, and her topics can range from the very serious to levity.

Mrs. Burrows has a wealth of off-color jokes and atrocious puns, and between songs she used them to keep the audience groaning. At one point she even let the audience sing along, hootenanny style, through the chorus of a song composed primarily of "little Willie" jokes. All in all the program made for a wacky, thoroughly ridiculous, and tremendously enjoyable hour of entertainment.

Class, required the sophomores to untie their end. Asked about the frosh tying their end to a fence, he replied, "I can't see that far."

The Loch Ness formed by the rain never did drain, so the wheelbarrow race, which was next, was in reality a swimming race. The sophomores won because the freshmen began to sling mud at their opponents, picking up where the recent national election left off. Holford was quite upset that so much mud was being thrown, probably because he was unaware that he was soon to take a swim.

Dirty Frosh

Andy Kampe read the rules for the mudeo event, but they weren't very closely observed. All of the frosh horses had unclasped their hands at least once when time was called, and one soph horse hadn't, but four fresh-

men were in the pit and only two sophomores. The event went to the freshmen, and the sophomores dumped Holford.

Things were fast and loose during the tire event, too. Many of the tires gathered up by the freshmen were stolen by the sophomores after they were (technically) out of play. When asked about the rope the freshmen used to pull tires, Holford said, "Who's got my glasses?" The sophomores won, mainly so that the score would be a tie before the last event.

In the sack race, the sophomores were 'way ahead, but the freshmen put their rope to good use by pulling their men the last twenty-five feet. The event and the Mudeo went therefore to the freshmen, the donors of \$90 to the junior kitty this year, it is rumored.

Interhouse Materializes With Two Weeks Left

BY LES FISHBONE

With Interhouse only 16 days away, the seven undergraduate houses are feverishly working to complete construction before the traditional 8 p.m. Saturday deadline. Though they have been encouraged to keep costs low, the event still looms as a bitchin' affair.

Page appears furthest along; according to Steve Browne, the task is about one-third done. However, minor technical difficulties have been encountered on the squid for its "Twenty-Thousand Leagues Under the Sea" theme. Vast strides have also been made by Ricketts. Under the direction of Gary Ratner, the bandstand of its Mississippi riverboat has already been built. He aptly said, "Starting is half the job."

Flood Tide

Ruddock's Polynesian village, one of the most ambitious projects, still requires much work. The construction of a hut, volcano, coral reef, and war canoe are yet to be started. Doug Gage says hopefully that the heavy carpentry will be finished by this weekend and everything will be fine unless Lake Ruddock overflows into the lounge. Blacker is working on a Swiss Alps scene and has gathered much of the material it will need for this mountainous task.

Dabney and Fleming, both planning Western themes, have not yet begun actual building; nevertheless, both seem ready to start with a bang Saturday. Jack Comly of Dabney envisions a mining scene in the courtyard and a saloon in the lounge. Fleming's Gordie Meyers tells of a covered wagon and campfire in the portico; a Blue Grass band giving two shows is another part of the attraction.

Do It Here!

Lloyd House, led by Jim Crabtree, has engaged the services of

the Parleys, a noted band. Also featuring two vocalists, this promises to enhance the staying power of the Mardi Gras atmosphere there. According to social chairman Steve Card, "Lloyd will be the place to do it!"

Notices

SENIOR WRITE UPS

Seniors—remember that senior write ups of about 100 words should be turned in to the Big T office by Nov. 20. If you have any questions, please see Tim Stephens in Blacker.

FLU SHOTS

Better flu shots than flu. Shots free to students. Health Center.

DANCE CLASS

The dance class, to learn dance class dancing, will be held Thursday in Clubroom 1 as usual. Go to the dance class.

DANCE AFTER FOOTBALL GAME

i.e., After-game dance in Winnett, Friday, Nov. 13, after the game.

FREE LOVE AND ETC.

The Y lounge is open from 8 to 12 p.m. Monday through Thursday for bull-sessions, music, studying, and free-thinking. Hot coffee and hot air are provided.

LEARN TO FLY

Anyone interested in flying, learning to fly, buying a plane, sightseeing, etc., come to the meeting of the Caltech Flying Club tonight at 7:30 in Winnett Clubroom 1.

BIG DEAL!!

Due to the generosity of the Master's office, the YMCA, and the Esquire Theater, Caltech undergrads are being admitted to the Esquire for only 25c. This special deal will run through Dec. 8, and includes the following double features:

The Guest—A Matter of Who, Nov. 11-17

Electra—Black Orpheus, Nov. 18-24

Antigone—The Fugitive Kind, Nov. 24-Dec. 1

Oedipus Rex—Phaedra, Dec. 1-8. Call 793-6149 for information.

Editorials

Give, Give, Give!

The annual fund drive of the Caltech YMCA is upon us, and it is time again to consider giving our money to this organization. A natural thing to ask before donating is, What has the Y done for me in the past and what can it do for me in the future?

There are some people on campus who are unhappy with the Y, because they think it's not serving the entire studentry as it should. The common complaint is either that it's serving **some** students according to their desires or **all** students, but according to the desires of the Y's leaders. Leaders of America and other guest speakers famous in a narrow field; transportation provided to picket for "fair housing," but not against "forced housing"; facilities for writing letters or sticking bumper placards or signing petitions for this cause but not for that one.

It may be true that an organization that would cater to **all** factions would find itself lacking in principles; but the questions remain: Who is to decide what shall be supported and what shall not? and, more important, Why should the Y expect a gift from every student on campus when it doesn't return service to every student on campus?

We found that the Y's booklet presenting its activities of last year—if taken (like Saga food) with a necessary grain of salt—convinced us what a dreary and unenlightened campus this would be without the Y-sponsored events. We also believe that, if the Y does in fact need improvement, the best way to effect an improvement is not to choke off the activities by withdrawing financial support, but to give the money and then put out the effort required to be certain it is channeled to better use.

The Y does an amazing amount of good on campus. If you reckon up what your part in Y activities last year was worth to you, it'll probably be a good amount. Give again this year at least that amount.

—Stuart Galley
Wally Oliver

New Developments Named In Chemistry

Lights burning late every night testify to the extensive research work conducted here at Caltech. In chemistry, Gates and Crellin Laboratories provide facilities for research in physical, organic, inorganic, and analytical chemistry, while Church Laboratory's facilities are used primarily for chemical research related to biology. There are many interesting projects conducted and the few cited here will serve to enlighten all about the going-on in the chemistry department.

Dr. John D. Roberts, chairman of the Division of Chemistry, is doing research in the mechanisms and structures of organic compounds. Working jointly with other researchers, Roberts is involved with the use of nuclear magnetic resonance (NMR) to determine the structure of organic compounds. Data from the NMR spectra is providing new information as to the nature of carbon-nitrogen and nitrogen-hydrogen bonds. Other investigations involving the use of NMR include the determination of the energy barrier to internal rotation in halogenated ethanes and ring inversion in cycloheptatriene.

Associate Professor John H. Richards, also involved in many research projects, is trying to determine the part iron takes in certain organic reactions where its presence causes the reaction to proceed over seven hundred times faster than normally. Other investigations conducted by Richards include the determination of the role of vitamin B12 in carbonyl exchange reactions, the effect of light on certain compounds such as santonin which change their structure when exposed to light, and the synthesis of strychnine.

Chemical Biology

In biological chemistry, studies are of the physical chemistry of large molecules such as DNA and RNA. Dr. Jerome Vinograd, a research associate, has begun to study the properties of these macromolecules in acid solutions after his successful investigations of their properties in basic solutions. Vinograd has also developed some new techniques in using the ultracentrifuge in the study of DNA and RNA. This procedure, which involves the use of a double-channel centerpiece in the centrifuge, provides a greater area for the molecules to move in when the centrifuge is in operation.

Dr. Norman Davidson, professor of chemistry, Dr. Gunter Maas, a research fellow, and William Galley, a graduate student, are all involved in developing a method for determining the molecular weights of large DNA molecules. Ordinary methods of determining the weight of molecules do not work for such large molecules. Their method consists of counting the number of DNA particles per unit volume of solution by using photoelectric microscopy to detect the previously dyed molecules.

Chemical Physics

The study of low energy electrons scattered by molecules has permitted Professor Aron Kupperman and Pax Wei to see certain electronic changes that take place in molecules. An instrument of their construction has enabled these changes to be measured by studying the low energy electrons.

Funds for these research projects have been contributed by Caltech and by industry. A number are also supported by the National Science Foundation and the Public Health Service.

From Other Campuses

By Jace

At long last it has happened. Rennselaer finally ended its five year losing streak in football by tying Nichols 20-20. In a game reminiscent of some past Caltech games, Rennselaer led 20-6 with only four minutes remaining in the game when Nichols came on to score 14 points and tie it up. Rennselaer also does at least one thing we could sure use here — kick field goals. RPI got right back on its way to a new and longer record of losses, and shows no new signs of straying from the path again.

Perhaps this football record wouldn't be so bad if RPI students weren't paying \$1900 for big-time football. Many there probably wish for a return to the old (1848) days when tuition was a bit more reasonable . . . \$402 year.

Speaking of olden days and sports, the MIT *Tech* recalls the time 75 years ago when the MIT team defeated Brown 48-0 in football of all sports for the first victory in MIT's history. MIT has come a long way since that day, however and, now the *Tech* institutes such revolutionary features as the "crash of the week" featuring photo coverage of all the better crashes in the MIT area.

Sell Tech

And how can you too rise to these same heights of glory? How can you lose countless football games to Ivy League schools, charge \$1800-\$1900 a year tuition and fire newspaper editors at the drop of a hat? The means is now at hand. For a paltry sum you can buy yourself a college. Carthage College, in Carthage, Il-

linois, is up for sale; the small sum of \$1,500,000 you get 37 buildings and a 15 acre campus. An additional advantage is that you can award yourself any degree you may not be able to squeeze out of *Tech*.

If you rush out right away and obtain this bitchin' buy, you will undoubtedly want a few pointers on how to run such an institution. Especially after spending years here wanting to kill and mutilate the newspaper editors for their ridiculous, unfair, arbitrary, and irresponsible stands (or don't you remember the last 2 years), you'll want to know how to control the newspaper in your own responsible manner. The Georgia *Tech Technique* has a few pointers gleaned from its past experience. Following is a brief summary,

Hot Pants

"It seems everybody has his own pat answer to the question of editorial policy in the *Technique*. Some of the more routine involve firing the editor, firing the staff, or if all else fails, firing the office. These methods have all been used over the years with varying success."

To end on a more spicy note, a hot girdle society became the center of attraction in a student dorm at the University of Colorado. The girdle caused a fire by overheating in a laundry dryer. Fire Lt. Allen W. Mason, after inspecting the dryer, concluded that "a synthetic banded rubber girdle" was responsible. "They'll do it every time," Mason said. "The new girls that come in take these synthetic girdles and put the heat on for an hour and they get overheated." While inspecting the contents of the dryer, Mason said he heard a girl yell, "Oh-oh, it's a panty raid!!!!"



BY J. C. SIMPSON

Before reviewing this week's fare at the Ice House, I'd like to correct an error in my last column. The Troubadour does not really cost \$12.50 on Saturday nights, but a mere \$2.50, and there's a 50c discount to card-carrying students.

On to the Ice House (\$1.75 Saturday nights but no discounts), the present acts are billed as a comedy and frolic show, and it's a good, well-balanced one.

The first act is George McKelvey; he's billed as just plain funny and he is indeed. For sheer enjoyment I think he was the best of the three acts — he's only a fair singer but his songs are almost as funny as his jokes.

Subways are for . . .

After introducing the subject of subways (if they did have subways in Los Angeles, they'd have cars in them, he proceeded to the ballad of Mervin Schwartz, and the great New York City subway race, a truly hilarious song. He then continued by explaining the folk movement (FM) and the bomb movement (. . .) and kept up a flood of funny jokes and songs right up to his finale. The finale was "Radiation Baby," a song aimed at bringing the folk music to the teen age set, or, more specifically, "a significant song of social protest that you can dance to." For an encore he didn't have time to sing so he did three hair oil commercials. McKelvey is one of the best I've seen in a long time.

Second act is the Trio, a group of singers from San Francisco who are the most typical looking and sounding group I've seen yet. And every song they do is type-cast. Their stock in trade, however, seems to be their between the song patter. This at least is better than fair, although not exceptional. Their best joke was the description of the girl who killed her be-bop boyfriend by putting 2000 volts through his guitar and letting him twang himself to death. The act is enjoyable but not on a level with either of the other two.

And finally

Last and lead act is Don Paulin, back for his third appearance at the Ice House. His act has changed very little since his last trip, but since he was great then, this isn't necessarily a detriment.

His lines aren't so funny as McKelvey's, but they're still good and he also has a superb voice. He can vary his voice over a wide range and handles an amazing variety of songs. Combining this with his "way" with the audience makes this a great end to a very enjoyable show.

I'll close with a couple of lines of W. C. Fields that Don Paulin quoted early in his act: — "who put orange juice in my orange juice"; "virgin — four year old girl . . . very ugly."

RA's Compare

(Continued from page 1)

house, would get accomplished anyway."

At Harvard, initiation is much more simple, consisting of a formal dinner in which new members are officially welcomed into the house. There are no water fights, and very little hazing.

They Bathe Too

The most frequent criticism of Caltech made by the new RA's is that here there is a much more narrow spectrum of activities in

which to participate. Harvard, for example, has a professional newspaper and literary magazine, a large number of drama groups, and its own radio station. In summarizing the differences between the two schools Lingane contends that "at Harvard, less time is spent on studies. There is more free time in which to meet people. Oh yes, one final comment. Despite what everybody says, Radcliffe girls are lovely, intelligent, and very nice."

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San Francisco Opera Gives Puccini's Turandot

BY B'L'ORR

It has been said that opera combines the worst points of drama and music. Whatever the case, the San Francisco Opera's production of Puccini's *Turandot* last Friday night certainly combined the best points of opera. The production, which opened the company's twenty-eighth Los Angeles season, starred Birgit Nilsson in the title role, Franco Tagliavini as the Unknown Prince and Pilar Lorengar as Liu.

Turandot (not "Turn-a-dot") was the last opera which Puccini wrote, and it was, in fact, an unfinished opera, the last duet and the finale having been completed by Franco Alfano. The story of the opera concerns a legendary princess of China who has sworn that no man shall possess her. To guard herself against all suitors, she has decreed that the man who would win her must first answer three riddles; if he fails, his head is to be cut off and displayed on the walls of Peking as a warning to other presumptuous males.

Enter Calaf, the Unknown Prince, son of Timur, an exiled Tartar king. He is immediately dazzled by the beauty of Turandot and sets about to win her. *Allora la Testa!*

By the end of the second act Calaf has succeeded in answering all three riddles and it is evident to all that he has won — to all but the princess herself, that is. She still insists she will never be his, oath or no oath. Instead of hollering "foul," Calaf offers a counter-challenge: If Turandot can discover his name by dawn, she can add his head to her collection; otherwise she is stuck with all of him.

Turandot spends the night searching the city to find some clue to the prince's identity. Finally, her soldiers find Timur, the prince's father and Liu, a young slave girl and former servant of Calaf. They attempt to tear the secret from Liu by torture, but she seizes a dagger and stabs herself. The crowd, moved by her love for the prince, carry her body away, leaving Turandot and Calaf alone. Here the final duet and the seduction of Turandot take place; she reveals her fear of Calaf and at last finds out what she has been missing. Dawn comes; Turandot calls a truce; general rejoicing.

Miss Nilsson completely dominated the riddle-scene of the second act, with a soprano voice that was not only clear, but also produced volume worthy of any

Brunnhilde. In fact there were times when her duets with Tagliavini sounded more like soprano arias. Tagliavini sang his part well from a musical standpoint, but he seems, unfortunately, without real dramatic talent, which is especially important in a dramatically unified opera such as this one.

Siate Maledetti!

The two performers who were really outstanding in every respect were Miss Lorengar, as Liu, and Giorgio Tozzi, who played the part of Timur. Puccini supplied these two supporting roles with the most moving arias of the opera, and they both managed to project character and mood to the farthest corner of the theatre.

The San Francisco Opera company will remain in Los Angeles through November, giving performances almost nightly at the Shrine Auditorium. For those Tech students who may be attending their first opera this month, either through the generosity of Dr. Huttenback or through actual cultural curiosity on their own part, here are some helpful hints on opera-going and some indications of what you may expect to see. First, before you go it may be a wise idea to try to find a copy of the libretto to the opera, or at least a plot summary, and familiarize yourself with the story. Otherwise, unless you speak Italian or German, you are liable to find yourself completely unaware of what the people on the stage are shouting about.

If you arrive at the auditorium early, you will get a chance to see the show outside before the opera starts. On opening night, for instance, there was a red carpet running up the sidewalk from the curb to the theatre, down which walked the cream of Los Angeles society, as flashbulbs flashed and thousands cheered. If Turandot's gown, with its twenty-five-foot train, and her five-inch fingernails were impressive, they were nothing compared to some of the things that were floating through the lobby.

Hojotoho!

After you finally climb all the

(Continued on page 8)

Rogers Speaks In Beckman On Interpersonal Communication

Dr. Carl Rogers spoke Monday night before a capacity crowd on "Some Elements of Effective Interpersonal Communication." In the fifth program of the Caltech Lecture Series in Beckman Rogers presented a series of his "learnings" in the field of interpersonal group therapy. He is now head of the Workshop in Human Relations at La Jolla, a position which he has held since early in 1964.

Rogers stated before his lecture began that he would not attempt to tell "about" communication, but that he would actually communicate with the audience through many examples of people who had actually experienced group therapy and through examples of his own experiences.

Rogerian Theory Simplified

Rogers explained that to be able to communicate at a personal level one must be able to hear not only the words which a person is speaking, but also to hear the deeper meaning the words seem to be "crying out." The ability to hear the deeper meaning is an enjoyable experience because it puts one in touch with other human beings; it enriches one and enables one to hear more about individuals and know more about inter-personal relationships.

Hearing deeply, Rogers continued, is "hearing below the conscious level" or hearing a person's "inner world" and being able to "resonate" with the person's feelings by sensing the meanings implied. During the course of his work in group therapy, Rogers discovered that the more deeply a person was heard, the more that person would respond to the therapy and reciprocate the communication.

Dungeons

In the examples from group therapy, Rogers found many people who had previously experienced a real lack of personal

communication. These people were living in their own "private dungeons" of isolation. Rogers explained that, in his opinion, a continued lack of personal communication would tend to make at least some individuals psychotic, since they would be forced to live in their own private isolation. It is through group therapy that these "emotionally sterile" people have been led to a greater ability in personal communication.

Pool!

Rogers concludes from his experiences that a fundamental basis for communication is learning to trust his feelings. In this sense he defines "congruence" as this awareness of your true feelings. In one case, a lack of such truthfulness and integrity of feelings on the part of one of his interviewees so disgusted Rogers that he finally blurted out "Oh pool!" This comment immediately set the therapy on a more honest basis which eventually led to its successful conclusion.

Through the ability to hear deeply and the satisfaction derived from being heard, the ability to be one's real self and to see the real image of others, the deep satisfaction of receiving love from others and likewise the satisfaction derived from giving love to others, Rogers concludes, people find their lives both enriched and enhanced.

welcome to the
Campus Barber Shop
in Winnett Center
haircuts \$2.00
Three Barbers to Serve You
8 to 5:30 Monday - Friday
Paul A. Harmon

The Old Philosopher

BY T. G.

There is too little of what one might, for want of a better expression, call "contemplation of beauty" here at Caltech. One of the major attributes of this somewhat crass society we have created is supposed to be the leisure time it gives us. Of course we argue here that the exigencies of competitive slavery have made vast inroads into our free time.

Lack of time is not alone responsible for the impassive approach that prevents us from engaging in those enriching activities which make life worthwhile. We seek too much refuge in the alternate escape of self-pity and a cheap cynicism and arrogance of an infantile nature. Our consumption of non-scientific books is lower, per unit literate population, than it is on the island of Tristan da Cunha.

Science for Scientists

But science is to be the essence of this new world and science must be our star. How futile. Science, like Aristodemus' drinking, singing, and talking, is not in itself either good or evil — "only that which has a noble purpose is noble and worthy of praise." There are too few noble scientists here: there are snakes. And the few of us who love science will probably not stop to ask ourselves why till IBM tells us; we will prostitute ourselves unwittingly.

Therefore let us contemplate more beauty to save us from this awful fate. But I become too specific. Plato believed that only by a serious attempt to develop in oneself an appreciation of the higher things of life, could one approach the point where one would lead the life which above all others man should live — the contemplation of beauty absolute. He is not the only one to have made such a claim. Oscar Wilde thought along these lines too, and added that "to the true cynic nothing is ever revealed," which should give us food for thought.

A Rose Is A . . .

Where and how should one obtain beauty that it may be contemplated? A ridiculous question. Beauty is or should be in the

mind of the observer and nothing can make up for its deficiency there. But here are some suggestions. For the culturally inclined there is a reasonable art gallery (of the selling variety, but you can take a look without buying) only a few blocks up San Pasqual. There are also frequent free concerts (e.g., Sibelius this Saturday at John Burrows Auditorium, Burbank; call 842-4886 for more information) and other political and dramatic presentations close at hand.

Since sociological and environmental limitations and inbred inhibitions proscribe much direct experience, have recourse to literature and obtain vicarious experience with all the emotional value of real experience.

HOLIDAY TRAVEL?

If you plan to travel in the West between Dec. 13 and Jan. 6, please call us or see your Travel Agent as far ahead as possible so that we can all serve you better.

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Interviews January 12-13

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IBM

Historic Gates' Heads Pass Into Oblivion As B&G Strikes Again

Coleman Slates Chamber Concerts

BY TIM HENDRICKSON

With the passing of the Johns in Gates, a sad new age has begun at Caltech. Let us lament; no more exists the austere regimen that steeled some of the greatest minds of the twentieth century.

From 1916 — when Gates was constructed and occupied — to 1964, the two restrooms therein have remained essentially unchanged, according to Mr. Wesley Hertenstein, director of Physical Plant. Until their remodeling, begun third term last year, they were the eldest of Johns on campus; their recent demise marks the end of an era.

Giants Roam the Courts

The era began with the construction of Gates in 1916; then Dr. Arthur A. Noyes was the first chairman of the Department of Chemistry. Dr. James Sturdivant, professor of chemistry, recalled that Noyes, Dr. Richard Tolman and Dr. Earnest Swift, as well as Dr. Robert Millikan, chairman of the Executive Council, were ardent tennis players. At that time, however, there was no Athenaeum nor gymnasium; the only athletic facilities were two asphalt tennis courts in Tournament Park . . . and the two shower stalls in the upper restroom — which also sported saloon-type swinging doors — of the newly-constructed Gates.

Later, when Gates Annex was completed in 1927, room 20 (the little cubbyhole next to 22 Gates) was a faculty locker room. After the Athenaeum with its tennis courts and facilities was built in 1930, the lockers in room 20 fell into disuse; when the Scott Brown Gymnasium was completed in 1954, room 20 became a library reference room.

Champion Swift

Back in the days of that era, recalled Sturdivant, there were Faculty-Student tennis championships sponsored by the Athenaeum. Several anonymous faculty members pointed out that for some time Swift had the reputation of being "tops on campus."

About his tennis prowess Swift modestly recollected: "On occasion I was lucky."

And Millikan?

An interesting observation, mentioned Sturdivant, is the relative increase of women's restrooms in newer buildings. Gates itself has none. The influence of Noyes' secretary, however, made itself felt on the Annex to Gates built in 1927, which has one ladies' room. But Church, which dates to 1955, has a ladies' restroom and lounge on every floor. At this rate, one tends to wonder about the Millikan Library.

Hertenstein explained that the renovation of the "heads" (nautical jargon for Johns, which presumably became established at

Caltech during World War II and the Navy V-12 Program) is financed by the Trustees' "Rehabilitation Fund." Through this fund such general campus improvement is effected as: the installation of air conditioning in lecture halls, the replacement of incandescent lighting by fluorescent, the rewiring of laboratories for more power, and the modernization of restrooms.

And Maxim?

Of course, science being the competitive business that it is, such improvements as the rehabilitation of Johns must necessarily have a lower priority than certain other campus improvements. For it is an old maxim that old toilets outlive old laboratories!

BY JOHN ROUSE

Sixty years ago, the Coleman Chamber Music Association was created. Instrumental in forming the association was Miss Alice Coleman Batchelder, a well known local music teacher. The association does not perform, but hires world-famous chamber music ensembles to perform at the Pasadena Playhouse.

Also, to stimulate interest among young people, there is a Youth Concert at Civic Auditorium, where young ensembles perform, and an Audition Performance Award Concert at the Playhouse, both events being held in the spring. The ages of the performers in these concerts range from ten years to beyond

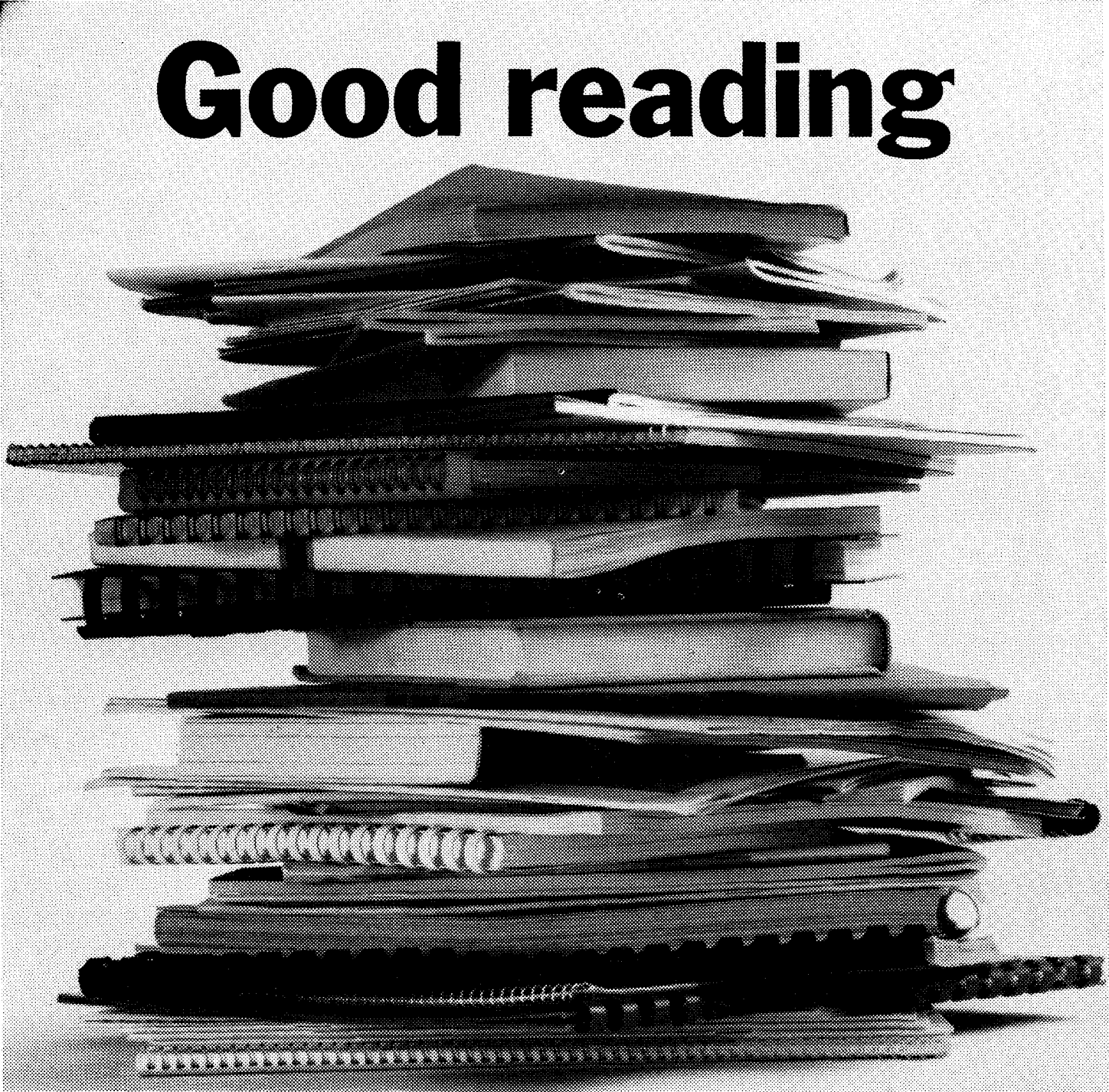
college age.

Upcoming concerts include the Societa Corelli, Nov. 29; Vegh Quartet, Feb. 14; Pasquier String Trio, Feb. 28; Budapest Quartet, Mar. 7; and the Beaux Arts Trio, Mar. 28.

Tickets are normally sold in one-year subscriptions, which are already sold out for the season. However, there are usually seats available for any given performance, as season subscription holders are requested to turn in tickets which they do not plan to use. To get a ticket, call the association office at 793-5721, a day or two before the performance, and you will be told if any tickets are available.

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Good reading

You're looking at the intelligent product of one week's work. (Some might be in your campus library.) They're technical bulletins written by some very talented scientists and engineers at the Jet Propulsion Laboratory. JPL people write over 500 such documents each year. Documents with titles like "Evaporation Effects on Materials in Space," and "Simple Guidance for Deep-Space Booster Vehicles." Pretty heady stuff.

planets is a pretty head-y assignment. And it takes a lot of bright people to make it happen. Where do these bright people come from? Better colleges and universities around the country. Yours, for example. Why not sign up for an interview with a JPL man? Besides working at the most fascinating job in the world, you'll also have lots of good books to read.

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ON CAMPUS INTERVIEWS: November 23, 1964

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PB-16

Once Upon A Time There Was A...

Once upon a time there was a happy little particle family which lived down in the shade of a lithium atom. There was Papa Proton, Mama Neutron, the little 1s twins, and the youngest member of the family, 2s. Little 2s was a merry little fellow whose favorite pastime was spreading out and behaving like a wave, which caused his mother no end of worry. She had always had trouble finding him since the day he was delivered by Dr. Heisenberg.

One day Mama Neutron stuck her head out through the dotted Swiss orbitals covering the window of their happy little nucleus and shouted, "Junior!" She always called 2s Junior because she couldn't remember his name. "Junior," she said, "you may play anywhere you please (as long as you fulfill the Schroedinger wave equation), but don't go near the fluorine atom. He is a horrible,

mean, electronegative old ogre who loves to take little 2s electrons and chain them into 2p bonds."

"All right, Mama," said little 2s, skipping merrily up the energy levels in the garden behind the nucleus. It was a wonderful day and 2s was so full of energy (hv) that he gamboled about emitting childish ultra-violet waves of joy.

Hee, Hee, Hee

Suddenly little 2s felt a tug at his probability function. There, leering over the garden, was the fluorine atom. "Come into my 2p level," said the fluorine atom to the trembling little electron, meanwhile kicking another unfortunate electron back to its orbital. "You'll have lots of little playmates there." And before he knew it, little 2s found himself snatched away screaming as the fluorine atom (now ion) went racing down the road chortling to himself.

Suddenly the fluorine ion stopped short. On the path ahead was a beautiful, obviously irresistible member of the opposite

sex. "Hi, Big Boy," she said. "Come up and see me some time. Just try the third electrolytic vat on the left and ask for Anne."

Ha, Ha, Ha

Little did the fluorine ion know, but this was the little electron's fairy godmother, Anne Ode, who just happened to be speeding down the path in her cadmium hotrod.

The fluoride ion felt irresistibly drawn to her magnetic personality. "You and I could emit beautiful spectra together, baby," he said, pushing his eyes back in and straightening out his 2p orbital.

"To coin a phrase, I bet you tell that to all the cute little electrodes," replied Anne.

All at once Anne noticed something strange about the fluoride ion. "My, what big orbitals you have! Have you been indulging in stray electrons again in spite of my warnings?"

The fluorine ion was caught red (7500 A) handed. Suddenly he

made a break for it, but too late. The fairy godmother was too quick for him. With a wave of her magic wand (a reconverted Mohr buret) she freed the little electron and the fluorine atom was whisked away into a platinum cell at the top of an extremely high mountain of a very hard vacuum. There he was left all by himself to meditate on his crime for the next megacentury.

Garf

And so, dear children, if someday you are slaving away in your laboratory over a hot test tube and you find a lithium atom which won't react, look very closely at it. You will see Papa Proton, Mama Neutron, and three little electrons sitting on the front porch of their happy little nucleus, and you will notice that little 2s always stays near at hand, because he promised never to stray away from home again.

Moral: Never kidnap an electron; it may be a shocking experience!

(Taken from the *Journal of Chemical Education*, December, 1955.)



A payday in Europe can help

WORK IN EUROPE

Grand Duchy of Luxembourg — Every registered student can get a job in Europe through the American Student Information Service, and the first 5000 applicants receive \$250 travel grants. It is possible to earn \$300 a month from a job selection that includes lifeguarding, child care and other resort work, office, sales, ship-board, farm and factory work. Job and travel grant applications and complete details are available in a 36-page illustrated booklet which students may obtain by sending \$2 (for the booklet and airmail postage) to Dept. N, ASIS, 22 Ave. de la Liberte, Luxembourg City, Grand Duchy of Luxembourg.

YMCA Equality Weekend To Be Held At Malibu

The annual Camp Hess Kramer Conference on Human Relations for college students co-sponsored by the Los Angeles County Commission on Human Relations and Camp Hess Kramer, Inc., will take place this year over the weekend of November 13, 14, and 15, at Camp Hess Kramer located on the Pacific Coast Highway north of Malibu. This year's conference theme is "Equality: realities and illusions."

The program will include dramatic presentations of basic human relations problems, workshops designed to assist in the development of human relations sensitivity and an opportunity to meet leaders of projects and programs which have been developed to offer solutions to human relations and civil rights problems.

Full scholarships valued at \$50 each are available to three Caltech students. For further information and application forms contact Tom Huff at the Y.

Book Looks At College Revolt

BY RODGER WHITLOCK

(Editors' note: The book reviewed below was received from Dell Publishing Company, and our stalwart reviewer took it upon himself to produce the following public service story.)

Drive, He Said is the first novel by one Jeremy Lerner, a graduate of Brandeis University, who has also "done graduate work at the University of California at Berkeley," according to the blurb on the back.

Ridiculous

Lerner seems obsessed with the idea of a revolution of college students, overthrowing all the crass restrictions on private behavior. It's ridiculous. After starting out with a sort of stream-of-consciousness episode during an inter-collegiate basketball game, the tale degenerates completely. In spite of this, the novel does keep one's interest, perhaps because of the total madness of the writing.

In my estimation, nothing is to be gained by reading *Drive, He Said* except a couple of wasted hours, and a feeling that Jeremy Lerner is insane.



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SPORTS

Gridders Make Mistakes Shut Out By UCR, 13-0

BY J. K. EVANS

CIT's Beavers put up a good fight, but you can't win if you can't score, and score is what the Beavers failed to do as the UCR Highlanders celebrated Homecoming with a 13-0 victory at Riverside Saturday afternoon. The vaunted Tech defense came through in fine style, stopping UCR's running game several times and competently holding their aerial play to a respectable total rather than the atrocious sums that have been the rule in past games. Unfortunately, despite the one-man-ganging of frosh Frazzini who carried the ball 22 times for 155 yards, Tech points just wouldn't come.

The trouble with CIT's offense can be pinned right on the passing game. One can't complain about a ground attack that rolls up 199 yards, and one can't gripe about a defense that holds the enemy to two TDs at opposite ends of the game; but one can make exception to a aerial game that goes 4 to 10 to the other team. In fact, Tech lost the ball eight times thru passing, 4 interceptions and 4 drives stalled when the QB, fading to pass, was smeared for 10-yard losses as the UCR line poured through the sievelike pass-protection blocking.

Offensive

In fact, it may not be amiss to note that while the defensive line is on the whole outstanding, the offensive line does not reach such heights of accomplishment. One marvels at the sheer power this boy Frazzini must have, since he makes most of his yardage dragging unblocked tacklers in his wake. He has yet to lose a yard while carrying the ball; against UCR he made pickups of 38, 20, and 18 yards in addition to innumerable pittances. The whole Tech backfield runs well; Hall picked up 34 yards, and Chapyak, dodging tacklers like a matador, ran for 23 yards to the UCR one but his gain was nullified by a penalty. It is kind of sad that long drives punctuated by fine running have to end in interceptions or huge losses due to defective pass blocking.

Speaking of huge losses, Powers threw the Riverside QB for a 25-yard loss early in the second half after a frustrating first half that saw the Beavers drive into UCR territory three times only to lose the ball twice on interceptions and once on incompleting passes after a mad melee of penalties on the Riverside 24-yard line. UCR struck early, springing a halfback loose for 51 yards in the first series of plays and QB sneaking in for the TD from the one to lead 7-0 with two minutes gone in the game. But the CIT defense dug in and nailed hides to the floor for the rest of the half as Josephson mashed ball carriers, Kampe, Brenner and Kawal filled holes, Scott wreaked havoc on end sweeps, and McWilliams made tackles and batted down looooooong passes with equal facility.

Second-Half Frustrations

The second half saw UCR open with a passing attack to take their

minds off their frustrated ground game. Passes got UCR to the Tech 14, where Powers did his trick. A holding penalty set UCR back to midfield, but a pass for 29 got them back in striking range. In fact, a TD pass was nullified by another penalty before Scott intercepted an aerial to momentarily save the bacon.

Again the seesaw started, highlighted by Frazzini's 38-yard gallop, a UCR pass bouncing from hand to hand among Tech defenders before falling incomplete, and Chapyak falling over his own feet as he scrambled away from unrelenting tacklers. Finally UCR tired of the byplay and uncorked a 41-yard TD pass over Mowery's head to lead 13-0. The game was to all intents over except for some fine defense by Josephson and Mowery and two more pass interceptions which killed the last Tech hopes for a last-second come-from-behind miracle. Like I said last week, dreams are dreams.

Rugged Frinks Win Touch Football Game

BY JOSE

Ruddock's senior class challenged the remainder of the House to an eight-man touch football game last week. The Frinks showed their superiority by defeating the underclassmen Sunday afternoon on the varsity football field, 19-12, in a hard fought, but friendly, game that was enjoyed by all.

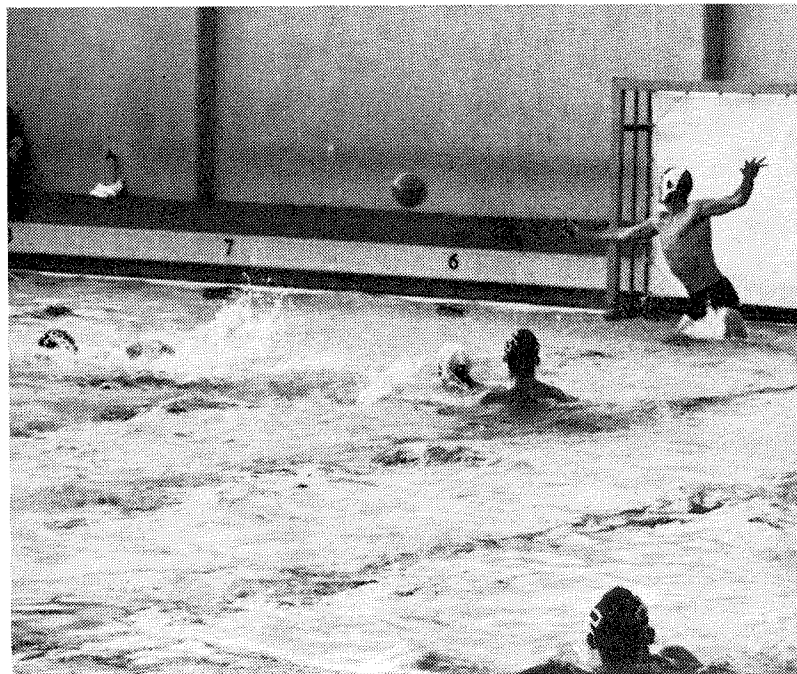
No-On-Turechek

Considering the lack of practice, both sides made excellent showings, but the seniors got off to a quick start, never to be caught. Sam Sherman led the winners to a touchdown during the first series of plays. "Simple" Sam passed to Ken Brown for the score after proceeding downfield on aerial strikes to Brown and Blumsack. Another touchdown by the forces of evil and perversion shortly thereafter made the score 12-0. Except for the senior's first long drive, both defenses monopolized the action during the first half.

During the second half, the underclassmen found an end in John Tucker, finally scoring 6 points on a pass to Big John from Tech varsity quarterback Chapyak. However, the Frinks tallied on a long bomb to Brown, who scored 18 points during the contest, aided by a downfield block by Steve Blumsack on Greg Brewer. Shortly after Butch Niell added the conversion on a pass from Sherman, Brewer avenged himself by snaring a Chapyak pass while stumbling through the endzone. This completed the scoring as the seniors proceeded to run out the clock and went home to a well-earned reward.

Although the pass resulted in all the scoring, the line play cannot be ignored, as Rosbash, Wise,

Webmen Are Still Unbeaten



—photo by Jules Kline

Hugh Maynard watches as John Walter fires a shot towards the Claremont goal. Caltech's varsity team beat the Stags to hold the conference lead.

In one of their easiest games this year, the varsity water polo team remained in the ranks of the undefeated by swamping Claremont-Harvey Mudd 8-4 in the Alumni pool last Friday. Tech's second and third teams gained valuable game experience by playing most of the second half.

The game was never close. The Beaver's first team controlled the first half which ended with Tech ahead 5-0. Then Coach Emery played the second team in the third quarter, but Claremont still could score only one goal, matching the Beavers in that quarter. CHM managed to put the ball past Tech's goalie three times in the final quarter, outscoring the winners by one, when the Tech second and third teams were in the game.

In general the Beavers played their usual type of game. A fine team effort and excellent defense led to the five point bulge at the half. The winning strategy, as usual, was the waiting game — controlling the ball until a good shot could be taken; and many shots were taken.

Dave Jarvis scored his first goal of the season against CHM, but Nielson and Walter, the top two scorers this year, won honors again with four and three goals respectively.

The Webmen were looking past the CHM game to this week's Pomona game. The Sagehens took a long bus ride home a couple of weeks ago when a last-second goal stunned them at the Alumni pool. It would be an understatement to say that Pomona would like to beat Caltech, especially at home. The game is equally important to Tech, but for a different reason — should the Sagehens fall by the wayside, Caltech will have clinched a tie for first place in the conference this year. Needless to say, the team is "up" for this game.

Flems Retain Discobolus

Fleming flattened Lloyd in wrestling last weekend, 28-10. For Lloyd, Forfeit won the 123 class and Hayamizu, the 130. In the heavier weights I. Forfeit wrestled at 137 for Fleming and won decisively. Wyatt at 145, Falconer at 155, Myers at 175, and Wilson at heavyweight pinned their Lloyd challengers. Baze at 165

won the only decision of the match for the Flems.

This win, besides showing the bravery, if not the wisdom, of the men from Lloyd, increased Fleming's Discobolus point total to 12. Not only that, the Flems were saved from having to take off their sweat socks for at least another week. Fleming seems to have an outside chance of going through whole year without having to wash their athletic supporters if the other houses don't become co-ordinated.

This week the Darbs have offered Fleming a choice between tennis and the ever-popular sports of rifle shooting and handball. Fleming hasn't chosen a sport yet, but is leaning toward handball in which they predict a total wipe-out. (Of whom, nobody says.)

Blackinton, Levin, Neidengard, Pucik, and Walters provided excellent protection for Sherman while harrassing Chapyak. Inexperience in the line seemed to hurt the underclassmen cause.

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Soccer JV's Lose Twice With 11 Men, 8 Men

The jayvees had a rough go of it last week, bowing to UCLA and UCR within a 24-hour period. The games were played last Friday and Saturday away from home.

No Offense

The game against UCLA was played Friday afternoon. The Bruins scored quickly on a lucky corner kick. After that goal, the first half found Caltech readily, but not easily, containing the UCLA front line while the Bruin's defense repulsed an almost non-existent Beaver offense. As a

result, the entire first half was an uneasy stand-off between the Bruin offense and the Caltech defense.

In the second half, Coach Andrews shifted the positions of several key players, significantly improving the offense at a small expense to the defense. However, this weakening allowed UCLA to score one more goal, as the UCLA defense managed to hold the Beavers scoreless, although serious threats were mounted. The game ended with UCLA 2, Caltech 0.

Kick, Mole, Kick

The UCR game was more of a scrimmage than a game, as Tech could only find 4 players who could make the game, announced at the last-minute. Four "athletes" around campus filled out the team in a game of wide-open 8-man soccer. Lack of substitutes wore out the Beavers after they had taken a 1-0 lead. By the time the game was over, half the team had minor injuries but were still playing in a worn-out state. Tech's hustle and determination kept the score down to a 6-1 setback.

Cross-Country Teams Divide Pomona Meet

The cross-country meet between Caltech and Pomona last Friday afternoon followed the same script as previous meets of the year. The frosh remained undefeated while the varsity remained winless..

In the varsity race, Steve Grulack of Pomona ran away from the field to win in 14:34 on the approximately 3-mile course. Pete Cross and Bob Miller of Caltech placed fourth and fifth, respectively. The final score was 19-34 in favor of Pomona.

Frosh Need Rides

Bill Putman won his fourth straight race on the 2.2-mile freshman course. Mike Meo and Dave Kolb finished close behind Putman in second and third places. The frosh have been having more trouble arranging transportation to their meets than in winning them; only five frosh were able to compete last week due to lack of transportation.

Saturday the top seven or eight frosh and varsity runners will compete in the Biola Invitational Meet, and next Tuesday both teams will run the two mile course at Caltech in a meet against Pasadena College. Three years ago, the Caltech frosh won the Biola Invitational; this year's team is probably superior to that team, so watch out for the Caltech frosh this weekend. The course is rather unusual, making the race very interesting to watch; anyone with spare time Saturday morning could well spend a few hours watching the meet at Biola.

Caltech Defeated By UCLA

BY HORNSWOGGLER

Last Saturday afternoon, the Caltech varsity soccer team suffered its first loss of the season at the hands of the ever-strong UCLA team in a close, hard-fought match.

The game started slowly as each team played its characteristic style — Caltech started cautiously feeling out their opponents, while UCLA attempted to overpower the Beavers as they had done to lesser teams. The net result was a stalemate.

UCLA then started playing more cautiously and began a passing game, predominated by the

strong Bruin lines. At the middle of the first half, UCLA caught the Caltech team off-balance and quick pass from the wing position produced an easy goal. After this goal, the Tech team settled down permitting no further costly mistakes and taking control of the middle of the field. Unfortunately, the Beavers consistently pressed their attacks down the middle of the field where the Bruin defense could easily contain any threats. UCLA was also stalled as the strong Caltech defense made no more slips. Thus no more goals were scored.

The second half found Caltech

using its usual beginning-of-the-second-half power. The Beavers, displaying their superior passing game down the center where Trishuk pushed through a goal. The UCLA team, unlike less competent teams, responded to the Caltech drive and stiffened their defense and once again contained the threats which the Beavers continued to push down the center. The game then settled down to the stalemate of the first half until once again the Bruins caught the Tech defense off-guard and scored their second goal. The second goal was scored in almost the same way as the first Bruin goal. Following this lapse, Tech gradually acquired control of the ball, but time ran out before the desperate Beavers could score.

The game did prove that Caltech played as well as the Bruins, thus giving the Beavers a reasonably good shot at the league title.

Next Week's Sporting Events

CROSS-COUNTRY					
Sat.	Nov. 14	10:00 a.m.	Biola Invitational at Biola		
Tues.	Nov. 17	4:15 p.m.	Pasadena College at Caltech		
FOOTBALL					
Fri.	Nov. 13	8:00 p.m.	Occidental at Rose Bowl		
SOCCER					
Sat.	Nov. 14	9:00 a.m.	Azusa at Azusa		
VARSITY WATER POLO					
Fri.	Nov. 13	4:15 p.m.	Cal Poly (Pomona) at Caltech		
Sat.	Nov. 14	11:00 a.m.	San Francisco State at Caltech		
Tues.	Nov. 17	4:15 p.m.	Redlands at Redlands		
FROSH WATER POLO					
Tues.	Nov. 17	5:30 p.m.	Redlands at Redlands		

If a man who cannot count finds a four-leaf clover, is he entitled to happiness?

"The development of management is essential to our goal of great growth"



At the 1964 stockholders' meeting, Arjay Miller, President of Ford Motor Company, emphasized the Company's far-sighted recruitment program and its accent on developing management talent:

"One aspect of our planning is crucial to the success of everything else we do. It engages the best thoughts and efforts of our whole management team, from top to bottom, throughout the world. I am speaking of the development of management. The immediate future of our Company depends heavily upon the abilities of the people who are now key members of our management team.

"In the longer run, our future depends on what we are doing at the present time to attract and develop the people who will be making the major decisions 10 to 20 years from now. We are developing management competence in depth in order to attack the problems that will confront a company of great growth—and great growth (both in profits and sales) is exactly the goal we have established for Ford Motor Company.

"We are continuing to emphasize recruiting. Last spring, 180 of our management people devoted part of their time to recruiting outstanding graduates from colleges and universities throughout the U.S. Last year, these efforts resulted in our hiring over 1,000 graduates, 220 more than the year before.

"We are seeking and we are finding young men—and young women, too—with brains and backbone—people who have the ability and the desire to make room for themselves at the top. We give our trainees challenging assignments with as much responsibility as they can carry. We promote them as fast as they are ready. Those who are interested in easy security soon drop out. Those who have what we want stay with us, and move up quickly to increased responsibility and the pay that goes with it. Thanks to the quality of the people we are recruiting and developing, I am firmly convinced that our outlook is most promising."

Trophy Standings

INTERHOUSE TROPHY

Team	Trophy Points
Ruddock	21
Page	16½
Fleming	16½
Blacker	12
Ricketts	9
Dabney	4½
Lloyd	4½

DISCOBOLUS TROPHY

Team	Points
Fleming	12
Lloyd	2
Ricketts	1
Blacker	1
Ruddock	*
Page	*
Dabney	0

*: has not had a chance to challenge for the trophy yet.

—Paid Ad

"Fools have always been governed by fools and doubtless always will be, but not all scientists and mathematicians are yet fools."

—E. T. Bell



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Note: All persons neither twenty-one years of age nor married are forbidden to read this column.

Darb

1/3 Dry Gin

1/3 Dry Vermouth

1/3 Apricot Brandy

4 Dashes Lemon Juice

Stir well with ice and strain into glass. Especially recommended for those desiring to see green elephants.

Whiskey Sour

1 or 2 Jiggers Whiskey

Juice of 1/2 Lemon

1/2 Teaspoon Sugar

An old standard, but beware; they're easy to make.

Esoterica: The Screwdriver (1 to 3, Vodka and Orange Juice) is also known as the Golden Screw.

VODKA MARGARITA

1 1/2 oz. Vodka

1 oz. Contran Cointreau

3/4 oz. Lemon Juice

Frost edge of glass with salt. Shake with cracked ice and serve in cocktail glass.

ENSENADA QUICK MULE

1 oz. Vodka

1 oz. Tequila

1 oz. Demerara Rum

1/2 Lemon

Frost edge of glass with salt and lemon and shake with cracked ice. Strain into cocktail glass.

As the proof of this drink is, over 100, it is recommended that it be drunk only after a Chem 21 midterm.

BLOODY JOHN

1 1/2 oz. Rum

1 1/2 oz. Applejack

Shake with cracked ice and strain into cocktail glass. To be served only once a month.

Andromeda Tilted Upright

The Andromeda Galaxy of 100 billion stars has been "tilted upright" so that earth-bound scientists can take a better look at it. The galaxy was lifted by mathematics and unconventional photography. A cross-hatch lattice tracing was drawn of Andromeda's arms in the almost edge-on position. The work was done by Dr. Halton C. Arp of the Mount Wilson and Palomar Observatories, who lifted the lattice upright.

Observatory photographer William Miller photographed a picture of Andromeda from such an angle as to foreshorten the edge-on appearance. He made it appear that the ensuing photo had been taken "looking down" on the galaxy. The photo roughly checked Arp's geometric projection.

Andromeda's Differences

The astronomer pointed out that the new look at Andromeda shows the galaxy to be much less similar to our galaxy than supposed. Andromeda's two major spiral arms are symmetrically coiled and spaced some 13,000 light years apart. In our galaxy the arms are much closer together and probably are either multiple or branched. This agrees with

previous observations that the Milky Way Galaxy has a higher percentage of gas than Andromeda and thus, by inference, a higher percentage of young stars, Arp said. In spiral galaxies, most of the young stars, gas and dust lie in the spiral arms.

Attempts have been made in the past to project Andromeda upright so that its structure could be studied more satisfactorily. For many years extensive studies of Andromeda were made at Mount Wilson and Palomar Observatories by the late Dr. Walter Baade, who measured the positions of 688 emission nebulosities in the galaxy's arms. Arp, who was a student of Baade, reported that the overall spiral arm pattern of these fluorescent hydrogen clouds is difficult to interpret unless the effect of a small satellite galaxy of Andromeda's is taken into account.

Baby Huey

This satellite, known as M-32, is a rich sphere of stars about 1,600 light years in diameter. It is near one edge of Andromeda and apparently warps the plane of the pinwheel out of "flat" by an angle of 5 degrees in its vicinity, Arp said.

Recent observations made with

radio telescopes by the Department of Terrestrial Magnetism of Carnegie Institution of Washington disclose that M-32 has pulled the gas and stars, which normally congregate together in the arms, away from each other on the side of Andromeda nearest to M-32.

This observation, Arp pointed out, opens the intriguing question of whether the effect is gravitational or magnetic or both.

(Continued from page 3)

Opera

stair and reach your seat, waiting for the first quiet strains of Parsifal, don't be surprised to hear the orchestra launch into "The Star Spangled Banner." Also, if you find that the music of the opera bores you, you can spend most of your time watching the dancers, the chorus, and the spectacular sets, or, if all fails, the Shrine Auditorium has a fascinating ceiling. It is, however, unlikely that you will have to resort to this, except between acts.

In the coming weeks, the company will be presenting an abundance of Verdi operas, plus Carmen, Fidelio, Parsifal, Die Frau Ohne Schatten, Der Rosenkavalier, The Bartered Bride, Le Nozze di Figaro, I Pagliacci, and the American premier of Shostakovich's Katerina Ismailova. Tickets range in price from \$8 to \$3 and can be purchased from Berry & Grassmuck Music Store at 279 E. Colorado.

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We're planning to interview engineering and science seniors and graduate students on campus on the date listed below. So drop in at your campus placement office and arrange an appointment. We'll be looking forward to meeting you.

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