

Has the Uncertainty Principle been violated?

California Tech

Associated Students of the California Institute of Technology

Only the angular momentum knows for sure.

Ch 21 — Ugggh!

Volume LXVI.

Pasadena, California, Thursday, February 4, 1965

Number 16

Bishop's Co. To Present Ibsen Drama

The Bishop's Company American repertory players will appear in Henrik's Ibsen **An Enemy of the People** on Friday, February 12, at 8 p.m. in Beckman Auditorium.

Ibsen's play, written in 1882, is set in a small Norwegian town which looks forward to prosperity because of the natural hot springs that it has developed. Conflict arises when Thomas Stockman, a public health officer, discovers that sewage is contaminating the town's medicinal baths and takes the news to his brother, the mayor. When Thomas refuses to keep silent he is denounced by his community rather than acclaimed.

Ibsen does not reduce his play to a good versus evil theme. In a character study of both the high minded official and the more practical mayor, Ibsen uncovers and sharpens the social and ethical conflicts which frequently are submerged and reduced to black and white.

An Enemy of the People, adopted for the Bishop's Company by Gary Heilsberg, is among Ibsen's best known plays. Ibsen's other famous plays include **Ghosts** and **A Doll's House**.

The Bishop's Company has appeared twice before at Caltech. They presented highlights from Shaw's **Saint Joan** last April and Paton's **Cry the Beloved Country** in 1963.

The Bishop's Company has appeared on campuses and in churches throughout the United States and Canada. The Company was organized in 1952 in Burbank, California, under the leadership of Phyllis Baker.

Admission for the performance is \$1.00 for students, \$1.50 for others. Tickets are available at the Beckman ticket office and at the Caltech Y.

Following the performance a discussion-reception will be held in Winnett Student Center.

ROTC Gets New Leader

BY JOHN ROUSE

Gerry Parker relinquished command of the squadron to George Repasy in AFROTC's annual change of command ceremony yesterday. The squadron commander is in charge of planning and directing squadron activities, and has the rank of Lt. Colonel.

Retiring commander Parker is a EE and a social member of Ruddock. He has long been a devotee of electronic gadgetry, which has earned him the nickname of "RF Parker." He tinkers with motorcycles and has been known to bite. Parker will not disappear from the Corps but will remain as an advisor to the detachment staff.

New leader Repasy has held several staff jobs during his years at Tech and went through four weeks of boot camp last summer, so he is well acquainted with all facets of cadet activity. His idiosyncracies include nuclear engineering, a passion for bridge, and being a gung-ho member of Dabney.



In a scene from Henrik Ibsen's play, "An Enemy of the People", Dr. Thomas reveals to his wife and to Mr. Hovstad, editor of the town's newspaper that "all is not well."

Old House Fire Believed Arson

BY TIM HENDRICKSON

Smoke and fire struck the basement of the old Student Houses early Wednesday morning, January 27. The two separate fires, apparently both set by some conspirator with the intention of smoking out Fleming House, did an estimated \$1350 of damage. Most of this sum, according to E. E. Taylor, Manager of Residences and Dining Halls, represents the expenses of clean-up and repair of smoke damage; actually consumed by the fires were one old mattress, a hand laundry cart, and some fishnet.

The first fire, which occurred in the 1301 California Street loading area, was discovered by Paul Kochendorfer, a Ricketts senior. "Smelling smoke, I went down into the basement and found the cart and mattress aflame. I used another cart nearby to push the whole works out onto the driveway," says he.

To the Rescue: BFD!

In the meantime, the Pasadena Fire Department had been called; a hook-and-ladder truck, several pump units, and two utility rigs soon arrived at about 2:30 a.m. to meet the emergency. The fire was well under control by then, however. The only disquieting discovery was that two out of three campus fire extinguishers had failed to operate when student fire-fighters attempted to put out the burning mattress.

After the Pasadena Fire Marshal had departed, Louis Corl, a Fleming senior, reported that he had discovered a second fire in the far chamber of the bicycle room. Investigating firemen donned gas masks and came upon a large mass of smoldering fishnet. A second alarm brought a fire truck down Olive Walk; a fire hose through the steam tunnel entrance, large blowers, and gas masks to penetrate the dense smoke soon put the burning fishnet out. Again, one more campus fire extinguisher failed to function.

About this time the campus guards on duty — Arthur Bolshert and Allen Adair — went through Fleming House and

awoke all those whom the smoke hadn't already gotten to.

Exodus

Taylor stated that the presence of a possible firebug on campus will necessitate the removal of the Interhouse wood supply from the bicycle room. From this Friday through Sunday, pallets will be set out at the 1301 entrance; each House will load all its rough wood on these pallets. B&G will bind and tag the pallets Monday, and ship the wood to a Caltech storage yard at Azusa. Other Interhouse material will

(Continued on page 4)

Mathematics Prizes Offer Students Range of Creativity

BY DICK TEZAK

Brilliant opportunities for fame and fortune have been opened up for Caltech undergrad math enthusiasts under three programs sponsored by the Mathematics Department. An especially rare chance for frosh and sophomores to exhibit their mathematical prowess is among those offered.

If any frosh or soph has been losing sleep lately over that intriguing little brainteaser that refuses to be cracked, the fitful solutions his scheming mind conjures up can be worth a \$25 prize to him.

Brainteasers

A single match problem is to be submitted together with an original solution to the Mathematics Office, 253 Sloan, during the fourth week of the third term. Entries from a single person or from a group need only present "a significant contribution toward a solution."

However, those familiar with Ma I and Ma II take note: judging of the best 2 to 4 problems will be based on the nature of the problem and the "originality and elegance of the solution." A final measure of this mathematical finesse will be made by the Mathematics Department faculty, another notable item.

Expert To Talk On Science, Society

An expert on the interaction of advanced scientific technology with business and society in general is coming to campus. Dr. Louis T. Rader, vice-president and general manager of the Industrial Electronics Division of the General Electric Company, will be on campus February 8, 9 and 10. Dr. Gilbert McCann, director of the Computing Center and a close friend of Rader, invited him here, and ASCIT, the YMCA, and the Faculty Committee on Institute Programs and Assemblies have cooperated to prepare a variety of programs for his stay.

Students have a chance to meet Rader on Monday, February 8. At 1:30 there will be an informal discussion in the Y lounge. This will continue until 4, when Rader will give an informal lecture in Winnett Lounge on "Science, Industry, and Psychology." He will eat dinner in Ruddock and will be free the whole evening for more discussion.

The faculty grabbed Rader all day Tuesday, but at the 11 o'clock assembly hour on Wednesday a panel discussion will be held in Beckman entitled "Computers and Humanity." On the panel will be Rader; Dr. Hallett Smith, chairman of the Division of Humanities; and Dr. Simon Ramo, next YMCA Leader of America. McCann will be moderating the discussion. Rader will then eat lunch in Ricketts.

A Dynamic Career

In a short summary of Rader, McCann wrote:

"His brief career in academic life as Head of the Engineering Department at Illinois Institute of Technology left a considerable

impact upon that institution and the technical community in the Chicago area. Following his return to General Electric he rose rapidly to an important managerial position which involved the independent administration of the Aircraft Control Devices Division. This was a division requiring the rapid development of new products with new technology and their successful, profitable marketing in a very difficult area (both the military and aircraft).

(Continued on page 5)

Notices

WHATEVER YOU DO

Go ahead and do it, but be sure to go to the exchange first. Friday, 8:30, Winnett, all undergrads welcome.

JPL TOURS

The next in the series of semi-weekly JPL tours will be held on Tuesday, February 9, from 1 to 5. Those interested should see the representative in their house this week, as attendance will be limited to roughly three per House. Grad students can sign up in the Y.

MUSICALE

Would the people holding Musicale keys with the following numbers please send their name, campus address, and the key number to Chris Parr in Crellin: 9, 10, 14, 16, 18 through 23, 46 through 50.

PLAN AHEAD

Get a date now for the great ASCIT snow party, Feb. 26, 27, ... See House social chairmen for details.

DRAMA DRAMA DRAMA

Come out and read a play. Get warmed up for the ASCIT play. Also get a small part (or a big one) in this term's reading. Dabney Lounge, 7:30 p.m., Monday, Feb. 8. Absolutely no experience necessary. You're probably better off without it. Everybody reads. Fun fun fun. Laugh at worse.

GREENSTEIN

will snow everyone at the Frosh Diner's Forum this week.

GALA NOMINATING PARTY

If you are interested in running for any national, state, or ASCIT offices, come to the annual ASCIT Nominating Party: Monday, Feb. 8, 9 p.m. in Winnett Clubroom 2.

GOOD SMALL?

7 o'clock Sunday evening, the Wesley Fellowship of St. James Methodist Church will continue its discussion of J. B. Phillips' **Your God is Too Small**. For transportation, see Larry Hughes (794-9413).

WORTHY CAUSE

All Caltech students, faculty, and employees invited to fund raising party for non-commercial F.M. station KPFK. It's Saturday, Feb. 13, 6309 Monterey Rd., Highland Park. (Known to many as the "Happy Haven") wear roaring '20's garb, bring loot for the cause.

STRIKE! YER OUT! OF IT!

Baseball team needs manager. Low pay, long hours, no glory. See Preisler, please.

CHRISTIAN SCIENCE LECTURE

The Christian Science Organization on campus will sponsor a free lecture to be presented 8 p.m., Thursday, February 11 in Dabney Lounge. Elbert R. Slaughter, a Christian Science Board of Lectureship will speak. All are invited.

Editorials

RUN!

The time has come, the Walrus said, to consider the future. Nominations for offices on the ASCIT Board of Directors are open, as of last Monday, and the events of the next 2½ weeks will largely determine whether life here for the next three terms will be worth something or not.

The place ASCIT has in making our lives exciting and fruitful is sometimes shadowy and hard to determine, but quite possibly that indeterminacy can be eliminated by the election of an enthusiastic and devoted BOD. Now, that statement may prompt you to say, "Well, that rules me out. No sense in undevoted Me running for an office — back to the bridge game." But the fact is that the quality needed in a BOD member is usually not developed until he fights a good campaign and begins to serve in his office. Most candidates have only vague ideas about the position for which they're contending, and they can work effectively only through the development coming from a few weeks in office.

The point is, that the way to get a new Board that will work hard, is to have lots of candidates for all the offices. Someone trying to win a contested office not only will generate a myriad of idealistic goals (maybe even some eventually being reached), but also will feel a duty to his electors when the time comes for work. And, of course, getting lots of candidates means YOU RUN! Think of the opportunities for learning responsibility, think of snowing grad schools, think of earthly power and graft and corruption — think of anything, think about running, seriously. If you are dissatisfied with ASCIT activities this year and wish things were different, then run! If you are cheerful and satisfied, then make sure that'll happen again next year, and give your personal touch to it: run!

In 1962 there were 16 candidates in all and only three contested offices; these dropped to 14 and two in 1963. Then suddenly last spring there appeared 24 candidates, contesting eight of eleven offices. Let's see that happen again.

—Stuart Galley
Wally Oliver



BY J. C. SIMPSON

February is comedy month at the Ice House, and the Show is certainly unusual to say the least. To give you an idea, the three acts are "The Times Square Two," "Pradel and Domingue," and "The Shaggy Gorillas minus One Buffalo Fish."

There are really four of the Times Square Two. One is an appropriately garbed chauffeur, and then a ridiculously dressed "Stage Manager." The other two are the Two, and they put on the act. The Two ride around in a Model A in which their chauffeur drove them down from Canada (where they originated), and the theme of the group seems to be as offbeat as humanly possible. At this they are a complete success.

Four Out Of Two

After the stage manager and chauffeur go through a few antics on the stage, the Two come out dressed in double-breasted suits, polka-dot ties and the rest of the 1920's outfit. What follows is an act designed to be completely ridiculous in every way. It's so different that it's almost impossible to describe, so I won't.

It's a lot easier to describe the audience reaction. Half thought they were quite funny and laughed all the way through the act. The other half (myself included) just sat there stone-faced as if waiting for something to happen — nothing did. Whether or not any individual would like it would be impossible to say, but I'd guess that the average Techman wouldn't be too impressed.

After the Two, things pick up. The second act is Pradel ("assisted by his sister Dominique" — she

holds the signs), the best pantomimist I've ever seen. Each of his imitations is painstakingly detailed and performed with real skill. Almost all are funny. Pradel was at the Ice House last year and was very well received then. He's superb again this year.

Best Yet!

I enjoyed virtually all his sketches, especially his classic — the creation of man and woman — which had everyone in the house in an uproar. Several of his other sketches, notably the weight lifter, and the cowboy, were almost as good. Pradel's act is unique and enjoyable, and definitely worth seeing.

After hearing the name of the Shaggy Gorillas, etc., and hearing that they were a comedy group, I'm not sure exactly what I expected, but it wasn't much. It turns out I was pleasantly surprised. Not only are the Gorillas easily the funniest act I've seen at the Ice House, they also sing well. Their act consists of folk songs, which they do very well, preceded by very lengthy comedy introductions, which they do even better. They also have a few pure comedy routines, such as the fashion show (where they model their blazers as five entirely different outfits) and hilarious satires on dieting and advertising.

Grossest Yet!

In addition to this they are definitely the grossest group ever to play the Ice House. Some of their jokes just barely skirt the border of pure raunch, but they manage to always stay on the border and so they get away with it, and get in some really funny jokes besides. If this combination sounds like the perfect act for a

(Continued on page 5)

Computers Run DebateTourney

Much discussion has centered around automation and cybernetics and their impact on our way of life. Has modern computer technology rendered human judgment obsolete? Is man really being replaced by machine? Not at all in the opinion of Caltech debate coach Herb Booth, who is currently making preparations for a computer-controlled debate tournament. Scheduled for February 19 and 20, the tournament is expected to draw to the Caltech campus teams from 40 colleges across the nation.

Judges Still Judge

"There is no facility in the entire world that is more adaptable to a completely computer-controlled tournament than that at Caltech," claims Booth. In seconds the IBM 7094-7040 system, the 1402 reader-punch, and the 1403 high speed printer will set up rounds, tally and print results, and select eight teams for the elimination rounds — work that represents many man-hours of labor at most tournaments.

In fact, everything will be automated except that most important of all jobs, judging. Here the human element remains unchallenged. "Even if it were possible," explains Booth, "we don't know anyone who wants to replace a human judge with a set of blinking lights. We'd prefer to believe debate is more fun because sometimes one can get a laugh or a smile or a wink from a judge."

Another First

Colleges from ten different states will be represented. Among those providing the best competition will be the Universities of Illinois and Oklahoma and Washburn University of Topeka, Kansas. The most prominent West Coast entries will include USC, Stanford, University of the Pacific and Loyola. The computer will arrange the schedule so that all teams within one geographical area meet an equal number of teams from other geographical areas.

Aside from the "gimmick" of using computers, colleges have been attracted to the Caltech tournament by the natural appeal of southern California. Visiting teams have been promised Hollywood entertainment during their stay, including tickets for live television shows and trips to several motion picture studios.

Although last year's national finals at West Point were partially computer-controlled, this is the first time computers have been used so extensively to run a debate tournament. Already the tournament has received national recognition, including letters from other colleges asking how similar tournaments might be set up elsewhere.

Christian Scientist Lectures

"Where Are You Going?" is the title of a Christian Science lecture to be delivered by Elbert R. Slaughter at the Dabney Hall on February 11 at 8 p.m.

Currently on a tour of the continent as a member of the Board of Lectureship of The First Church of Christ, Scientist, in Boston, Massachusetts, Slaughter will lecture on the journey to "spiritual reality" which must take place within the consciousness of every individual. The program will be sponsored by the campus Christian Science Organization.

The Critical Ear

BY NABUCCODONOSOR

I Had a Ball

(Mercury OCM 2210)

In the past few years Mercury has put out about three original cast recordings to musical comedies, all of which were smash flops; so when they came out with the original cast album to Joseph Kipness' production **I Had a Ball** the prospects were not good. Surprisingly, the performance on the record is good, and the music itself is not half as bad as might be expected.

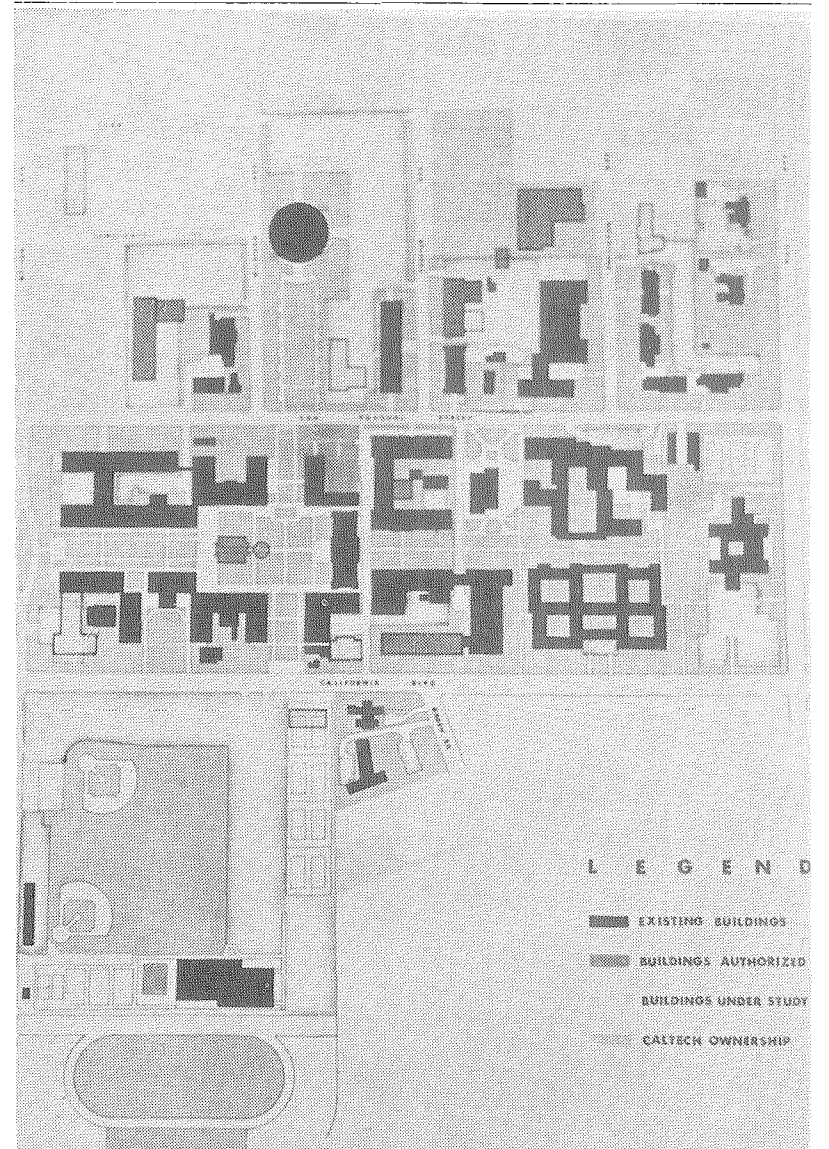
Starring Buddy Hackett, Richard Kiley, and Karen Morrow, the musical is built around a negligible plot dealing with con men at Coney Island and various entangled love stories. But since Jack Lawrence and Stan Freeman, who wrote the music and lyrics, insist that their purpose is not to create great drama but merely to entertain, it may be best to analyze the music from

that standpoint alone.

Finger of Fate

"When we started to write this score we were determined that . . . every song . . . had to be able to stand on its own so that people could walk out of the theater and remember them (sic)," write the composers. After listening to the record three times and to Lester Lanin's arrangement of the score twice, there are three songs that I can remember: "Coney Island, U.S.A.," the big opening production number that sounds suspiciously like Dinah Shore's old Chevrolet song; "Addie's At It Again," a slick quarter describing the promiscuous habits of the Coney Island hustler known to her friends as "Miss Under-the-Boardwalk"; and "The Fickle Finger of Fate," a lament sung by Richard Kiley which sounds suspiciously like "Milord."

The main trouble with Law-
(Continued on page 3)



The campus will look like this in a few years. Major features are new Humanities, Chem-physics, and Physics buildings.

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Visit Europe In The Junior Year

BY HANK SUZUKAWA

There is hope for all of you who have become tired of seeing the same drab southern California surroundings year after year. If you are one of those fortunate individuals who has intelligence, charm, and tons of money, you can go to Europe for the summer or even for the entire 1965-66 school year and even augment your education at the same time.

For those who only wish to visit Europe in a unique manner, the Experiment in International Living may have something to offer you. This program is involved in the exchange of about 4000 young people between the United States and areas abroad. These people live as a "member" of a family abroad for a month and have enormous opportunities to learn the customs, traditions, and everyday life of the inhabitants of that country. The second month the "experimenter" spends traveling about the country with the host family members or for special work or study projects.

The Snake In Spain

Since snakes may be appalled by the lack of studying in the "Experiment," another interesting program is that called "Classrooms Abroad." This group sends from 200 to 300 students to various European cities for a nine-week study of the language, culture, and civilization of the country. Among the cities in which one can study are Berlin, Vienna, Rouen, Madrid and Florence. The students will have regular courses in language and

National Bridge Tournament Scheduled

Caltech will be one of the more than 200 colleges, universities, and junior colleges throughout the country which will participate in the 1965 National Intercollegiate Bridge Tournament February 6 through 14. Entries are still being accepted for the 11-table tournament scheduled for Winnett Lounge on February 13.

All play will be by mail and will be conducted on the individual campuses in a single session, on a date fixed by the Tournament Director between February 6 through 14. The top scoring pair in each of the fifteen regions will represent their region in the Face-to-Face Championships in Chicago on May 7 and 8, 1965, all expenses paid by Whitman Publishing Company.

The National Intercollegiate Bridge Tournament Committee, a part of the Games Committee of the Association of College Unions, is interested in developing contract bridge as an interesting supplement to the collegiate social program; Bob McDonnell, local tournament director, said.

Musical Comedies For The Masses

(Continued from page 2)

rence and Freedman's music is that it seems to follow the principle set up by Jerry Herman in *Hello, Dolly!* that a catchy tune can be improved by playing it very loudly. This at times ruins what might otherwise be a reasonably good song. The lyrics are mediocre, but in some places they shine, as in "The Fickle Finger of Fate" when Kiley sings, "Life is a dirty book that should be censored . . . It's all a rose-colored crock." Could this be a reference to Tech? Again the composers make effective use of rhythmic dialogue in a spoken duet, "The Affluent Society." Considering that Jack Lawrence is the composer of "Tenderly" and "The Poor People of Paris" and the occasional moments of brilliance in this score, it seems reasonable that the composer-lyricist team may yet produce a memorable musical.

Buddha's Nose

The star of the show is Buddy Hackett, but his performance on the record is negligible since he doesn't have a singing role. Richard Kiley's voice is the most outstanding single feature to recommend the record. Kiley, who created the part of the Caliph in *Kismet* and starred in *No Strings*, does well with the material sup-

plied him, but with the exception of "The Fickle Finger of Fate" he doesn't really have a chance to demonstrate either his acting ability or his vocal powers on the record.

The female lead, Karen Morrow, can only be appreciated if a Carol Burnett-type voice doesn't grate on your ear. Since her role isn't a comedy part her talent as a comedienne, which was apparent in *The Boys From Syracuse*, is completely obscured. She does, however, give a lively, spirited (and loud) performance.

Genesis 38

The only other player of interest is Luba Lisa, who plays the inconstant Addie—but not because of her performance on the record. It is her comments on the album jacket that make her worth mentioning.

"People always seem to be casting me as a nymphomaniac or an Addie-type . . . I'm not nearly like these parts. I'm a nice Jewish home girl, a family type girl," she writes. And, concerning Buddy Hackett, "We play a game in the dressing room."

As an original cast album *I Had a Ball* isn't bad. If you aren't particularly interested in musicals you probably won't like it. If you are, it may be interesting to listen to, but not worth buying.

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.

But then designing spacecraft to reach the Moon and

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.

JPL JET PROPULSION LABORATORY
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ON CAMPUS INTERVIEWS: February 12, 1965

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Paul A. Harmon

Sharp Tells Why He Chose Geology When At Tech

BY JUAN LARGO

"Do it because you like it," said Dr. Robert P. Sharp to the Friday night horde at the Frosh Diner's Forum. Sharp explained his basic motivation on the topic "Why I Am a Geologist" to the eager crowd in Chandler.

Sharp, chairman of the Division of Geological Sciences, came to Caltech in 1930 along with a friend who had a burning religious desire for Caltech. He came here thinking that he'd like to be a civil engineer; but after the freshman drafting course he was cured of the notion.

"So then I decided I would like to be a chemist," but not after Ernest Swift convinced him otherwise. However, in those days, students didn't have to choose an option until the third term of their sophomore year.

Meanwhile, Sharp managed to survive his frosh year intact. "The first term is always the hardest," he said, striking into the cores of bitter-sweet reminiscences of every Techer at the Forum. At the end of his frosh year Sharp had gained confidence; in the interim, his colleague had fallen by the wayside.

During his sophomore year, Sharp took an option course in geology, and decided he liked it. "I guess I always liked to play around with dirt and mudpies," he said later.

Define Your Terms

Sharp describes physicists as those who "make very precise measurements on very pure materials"; chemists as those who "make very precise measurements on impure materials"; and geologists as those who "make very imprecise measurements on very dirty materials!" "I never did like precise measurements," said Sharp.

He then went on to describe briefly what various men at Caltech are doing right now in geology, such men as Art Boucot,

who just finished a long stay in Antarctica studying fossils, trying to get an overall picture of what the world looked like four million years ago. Such pictures can be formulated by studying the world-wide distribution of fossils.

Drifter Boy

The theory of continental drift is one of the burning questions in geology and close to the heart of all true surfers. Heinz Lowenstam is probing this question and perhaps many others when he destroys fossils! Or rather, grinds them to a powder in order to analyze them chemically. It is possible to estimate the temperature, depth, and salinity of the water in which these fossils once

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Fleming Fumes

(Continued from page 1)

probably be stored in the far chamber of the bicycle room.

In addition to the three out of four fire extinguishers that failed to work, the campus Safety Department discovered about ten more in the old student Houses last Friday that were inoperative. Previously checked in January by the Safety Department, the faulty extinguishers appeared to have been discharged and simply refilled with water; the pressure cartridges had not been renewed.

Since this is a potentially dangerous situation, Taylor stated that the Safety Department would maintain a closer check upon the extinguishers from now on. "Tampering with the extinguishers," he concluded, "should probably be regarded as a violation of the Honor System."



Professor Waser stands agast at what the students eat outside his class at a Faculty served meal in Lloyd.

ALL SAINTS EPISCOPAL CHURCH
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 Bryon Green at Caltech — Feb. 16
SUNDAY SERVICES:
 8:00, 9:10, 11:00, 7:00 p.m.
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 Episcopal Chaplain

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challenge



Dale Anderson
B.A., Wittenberg University

At many companies the opportunity to work on challenging projects comes after many years of apprenticeship and a few grey hairs. Not so at Ford Motor Company where your twenties can be a stimulating period. There are opportunities to prove your worth early in your career. Dale Anderson's experience is a case in point.

After receiving his B.A. in Physics in June, 1962, Dale joined our College Graduate Program and was assigned to our Research Laboratories. Recently he was given the responsibility for correcting cab vibration occurring on a particular type of truck. His studies showed that tire eccentricity was the cause of the trouble. Since little change could be effected in tire compliance, his solution lay in redesigning the suspension system.

Tests of this experimental system show the problem to be reduced to an insignificant level.

That's typical of the kind of meaningful assignments given to employees while still in the College Graduate Program—regardless of their career interest. No "make work" superficial jobs. And, besides offering the opportunity to work on important problems demanding fresh solutions, we offer good salaries, a highly professional atmosphere and the proximity to leading universities.

Discover the rewarding opportunity Ford Motor Company may have for you. How? Simply schedule an interview with our representative when he visits your campus. Let your twenties be a challenging and rewarding time.

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Men go where their thoughts take them. The journey to Truth is a revelation of Spirit — the kingdom "within you." Hear this lecture titled "Where Are You Going?" by ELBERT R. SLAUGHTER, a member of the Board of Lectureship of The First Church of Christ, Scientist, in Boston, Mass.

Christian Science lecture

8:00 P.M., Thursday, February 11,
 Dabney Hall of Humanities
 Sponsored by Christian Science
 Organization on campus.

CONTEST! Greenfield Piles Statements Higher

Below are the remains of two Tech stories that for some inexplicable reason have not been printed. However, one will see that they do not make any sense. Some might say this fact is not new, but this is an extreme case. What has happened is that the slugs of the two stories have been randomly jumbled.

cussed at the seminars which the bolts the Dynakit FM tuner and Built by Mike Ball of Blacker thorn, publicity director for the Fung? FM tuner were not insured. Wes information, see Nort Greenfield in 229 Ruddock. subcommittee is planning. For Sunday morning. Dick Hackament permission) between 4:30 Y, packs up and heads for home. disappears. There are no clues.

More Frails

(Continued from page 2)
Techman, you're right. Overall the show is good — Bob Stade hasn't put on a bad one in a long time — and certainly worth seeing. If you go you needn't even skip the first act — the Times Square Two should be seen at least once just to show how far one can carry the ridiculous. But the second time you see the show, you'll probably skip them.

As a special attraction last Tuesday, the Ice House had a "guest act", the Shantymen. As closely as I can tell they are a third rate Chad Mitchell Trio that in addition came along several years too late. Some of their stuff is fairly well sung, but they suffer from a complete lack of originality. The group and everything they sing is perfectly type-cast in the "typical college trio" role and are singularly uninspiring. Their act was just an audition, so I hope the Ice House has decided not to hire them, at least until they learn to put on a lot better act.

Rader To Talk

(Continued from page 1)
During his years heading this division he consistently succeeded in having the best profit ratio of any General Electric Company division.

"He went to International Telephone and Telegraph (as a director) at a very critical time in their history, when they were converting from an old fashioned loosely linked group of international companies to a more closely knit international operation, he played a very dominant role in the successful and profitable redevelopment of this company. He had a brief and somewhat stormy career as president of Univac. In the initial phases of this activity, he succeeded in converting Sperry Rand's computer operation from a very costly loss position to a more profitable one. However, management squabbles and a complete breakdown of their corporate structure forced him to leave this job.

Back to General Electric

"He comes back to the General Electric Company in a very interesting position as a senior vice president in charge of all of their activities relating to control, automata, and computers. In its reorganized activity the General Electric Company under Rader's direction is embarking on a most interesting program to capture a substantial part of the automata and computer market. The impact of this new effort on IBM has been considerable. IBM and all the other industries in the computer field feel very strongly that now General Electric has developed a large long-range plan to be a major factor in this area. For the first time IBM has a real competitor."

The object of the contest is to unravel the deep mysteries that are told by these stories; the first troll to do so will receive two free record albums. Give your solution to any Tech Editor and get free records. Also get worldwide acclaim. Also get lost, Ralph.

TO WIT:

be replaced or rebuilt, whichever is more convenient. pre-amp from the hi-fi set. two years ago, the pre-amp and Scene: Y Lounge at 1:30 last Use of QUIKTRAN will be dis- and 5:30 p.m. without charge. tion manual, but it's easy enough A dark shadow appears around

bRb oYed

Can you solve this one, super-Taking nothing else, the shadow Hershey of the Y says they will remote consoles (with depart- the corner. He breaks in and un- to use it. Anyone may wrestle out to Lue at any of the with QUIKTRAN at merely add to the fun of trying sleuths? Or is this a job for Leon to ask someone a question. Right now, there is no instruc- But the system's idiosyncrasies

That there is any value in tradition per se is strongly denied by many. I begin to feel that at Caltech many traditions which have been maintained till the present will not survive much longer for this reason.

Initiation, most will admit, is a ridiculous practice. If its purpose is to make frosh a better part of the House and "force their class to unite," then there are perhaps many better ways that this could be accomplished — by a class challenge in some sport, for instance.

Was Interhouse Worth It?

Interhouse this year seemed to bring this question of traditional student activities to the fore once again. Many say, "It is not worth the trouble: the night itself is often flat and unrewarding after what has gone into the enterprise." How is this immense "waste of time" to be justified?

One can give many answers to this question. To me it is unfortunate that there is a need to seek these. I project myself into a time when Caltech will have abolished the few traditions that remain and the void that I see has little appeal. It is not for the night of the dance alone that one puts a few weeks' work into

Interhouse — there are other rewards, but we are beginning to lose sight of these.

Disappearing Traditions

Because of the rationalistic and individualistic environment at Tech, there is a strong tendency for the authentic but absurd traditions to be whittled down until at last, lacking all meaning, they become defunct. It appears to me that before long Initiation will be gone — it has already been successfully watered down and denatured by the authorities to the point where it is a dilapidated and pretentious anachronism. The students themselves will finish the job.

In the short time that I have been here, I have seen a deterior-

ation set in in the communal and group spirit. This pattern for development will undoubtedly continue till a transformation has been achieved. Caltech will then be able to boast of the completely rational student who can say with conviction that he lives for himself alone, expecting nothing from his fellows and being prepared to give nothing to them. In this glorious atmosphere, individual enterprise and scientific creativity will flourish and Caltech will realize its highest objective, in the words of the Bulletin, the student will develop "character, breadth of view, general culture, and physical well-being" as well as the "sound training in his professional field."

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SPORTS

Basketball Team Wins Again 72-59

BY LEON FUNG

Tech's varsity basketball team surged to another overwhelming victory Saturday night on their home floor, as highly-touted Upland went down before a small but enthusiastic crowd of Beavers, 72-59.

Dazzled by Tech's blitzing full court press, Upland found itself behind from the outset and was not able to get its powerful offense in gear. Sizing up the situation, the Upland team went into

a stall in the first quarter, which consisted of both their guards calling out numbers while exchanging the ball and dirty looks.

This was finally broken, however, by Tech's harassing defense, and from there on it was a runaway. It was not a dull game, though, as the crowd was continually brought to its feet by the thrilling dribbling and ball-handling of Dennis McCreary and John Nady's horizontal jump shot.

Fouls Galore

Tech fans became uneasy when Jim Pearson collected his fourth personal foul in the second quarter, but he managed to keep his hands to himself the rest of the way. Don Blain was also held to only four fouls which lowered his average to 4.8 per game.

Jerry Yudelson played an outstanding game, and even John Tucker managed to connect on better than ten percent of his
(Continued on page 8)

VP's Down Resident Associates

The Student House vice-presidents successfully defended Caltech's undergraduate honor last Saturday by repelling a touch football challenge from the Master's Marauders, Huttenback and his Resident Associates. After a scoreless first half, the Vice squad erupted to post a 19-0 win.

The victorious squad was led by Doug "The Touch" Josephson who completed one TD pass to "Hands" Harkness and two to "Greasy" Green. An extra point pass to "Moves" Hirschi completed the scoring. A stern forward wall composed of "H.M.S." Greenfield, "Rock" Dalton, and Ted "Where's the Water" Jenkins was vicious on defense, always dangerous (especially to each other).

The losers were magnificent in deception and cunning, but failed to come up with a big play, except for two towering punts by Bob "The Toe" Huttenback. Their offense traveled the breadth of the field time and time again, but failed to move forward on most occasions. "Prance" David and "Sidestep" Kerdelmidis led the losers' running attack. Always stern on defense were the sturdy quartet of "Mugger" Walsh, "Bruiser" Brady, "Retched" Rispin, and "Languid" Lingane.

Trophy Standings

INTERHOUSE FOOTBALL		
House	Won	Lost
Fleming	6	0
Page	5	1
Ruddock	4	2
Blacker	3	3
Dabney	2	4
Ricketts	1	5
Lloyd	0	6

INTERHOUSE		
House	Points	
Fleming	58½	
Ruddock	54	
Page	37½	
Blacker	36	
Dabney	28½	
Ricketts	21	
Lloyd	16½	

DISCOBOLUS			
House	Won	Lost	Points
Fleming	6	1	19
Blacker	2	2	8
Ricketts	1	2	5
Dabney	1	2	5
Ruddock	1	1	4
Page	1	1	4
Lloyd	0	3	3

Netters Set For New Season

Featuring two well-balanced squads, the varsity and frosh tennis teams are awaiting their first matches. The varsity opens up against Cal Poly one week from today and the frosh play Redlands a week from Saturday.

The varsity, competing in a tough league, have ten men working out for the team. The two toughest teams in the conference should be, as usual, Redlands and Occidental. However, Oxy's strength lies in its top men, meaning that they are vulnerable to a well-balanced team. The varsity netmen should pick up strength against the other three members of the conference — Claremont, Whittier, and Pomona.

Competing for the varsity this

year will be five members of last year's varsity and several sophomores. John Hoshor, Butch Niell, Don Green, Val Ellis, Tom Buckholtz, Freeman Rose, Jeff Pressing, Mark Satterthwaite, Reagan Moore, and William Pate comprise the squad.

The frosh seem to be a well-balanced team with no really outstanding player. No indication as to how the team will fare this season can be determined until after the first round of play in the conference.

Like the varsity, the frosh have ten men working out for the squad, namely Ray Kawal, Roger Davidheiser, Ed Groth, Herb Robinson, Jeff Haight, Steve Marcus, David Erlick, Kelly Booth, Peter Gloomfield, and Peter Osburn.

IH Track Next Week

BY JOSE

The patter of little feet you hear nowadays should not cause you any concern, for once a year the men of Caltech don their spiked shoes and take to the races of the Interhouse track meet. The three-day meet will be held Wednesday through Friday of next week.

New Rules

So far as the rules are concerned, there are a few changes, although a couple more are still

needed. The old problem of how much training an athlete must have has been solved again this year by requiring ten days of working out under a coach's supervision for all events.

One of the most unfair rules of the meet is the choosing, rather assigning, of lanes for the distance races, especially the 660-yard run. Usually one thinks that the start of such a long race is inconsequential; this is not so. A poor lane assignment could

mean getting bottled up in the pack or else running in the fourth or fifth lane around a curve, which, for those mathematically inclined, amounts to about ten yards, more often than not the difference between first and second place.

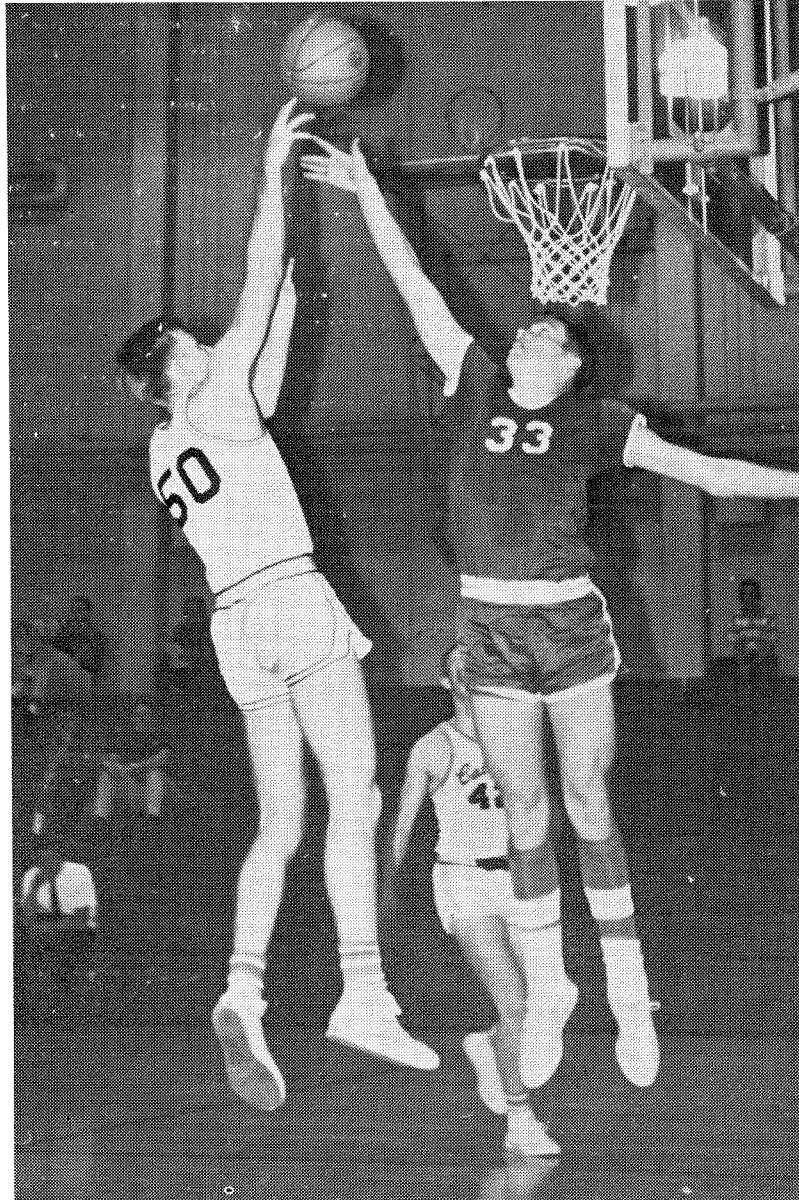
Stay In Your Lane

The race cannot be staggered for the simple reason that there are more participants than lanes. So the start must be from scratch. The real injustice occurs when lining up the runners. Say House A draws lane one. Then all the entries from House A are given the first lane. The poor House that draws lane seven could, and usually does, have its top runner tenth, twelfth, or even fifteenth in line.

I feel that a much fairer system of assigning lanes would be to put the first man of House A in the first position closest to the inside. Next to him should be the first man from House B, and so on. In this way, a potential winner would be guaranteed of seventh position at the worst. The situation is not so critical in the 1320 yard run, but it is equally unfair in this longer event.

Some of the top events this year should be the sprints and the weight events, due to the high quality of frosh participants.

(Continued on page 8)



Jim Pearson shoots while John Tucker waits for the rebound that never came.

Swimming

BY TED JENKINS

Tomorrow the Caltech swim team will meet its first foe, Santa Ana City College. The Tech squad will play host in the Alumni Pool at 4 p.m.

As yet the team is still untried and since this is the first time Santa Ana has been scheduled, the outcome is anyone's guess. Losses from last year's team will make for a weaker squad this year, but some fine performances will be produced. To get in on the ground floor, see the meet tomorrow.

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BY J. K. EVANS

Since it's basketball season, let's try to make the game a little more interesting for you rabid fans who are out there drooling at every Tech game. This week we will briefly discuss a few of the common offenses and defenses in current use so that you ignorant lunks will have some idea of why all those little men run around in circles.

First let's consider the standard rolling offense with a low post. The low post is the center, who is the tallest man on the team. That's why he's the LOW post. Deceptive already, isn't it? He gets down on his hands and knees behind one of the defensive men and that unlucky individual, in attempting to pursue his man, rolls over the center.

This is a foul (any personal contact is a foul, except biting, gouging, kicking, elbowing, or sticking out your tongue) and the center gets a free throw, in addition to the basket scored by the man released when the defender fell down.

High post is the same thing except the center stands up and trips the guy.

Hoop Skirts

The I formation is when the two forwards and the center line up in front of the basket. On the count of three, they form a human pyramid, the ball is tossed to the top man, and he drops it through the basket. This is very popular with short teams.

The fast break is used against teams that only have one really good player. You watch your chance and at the first possible moment gang up on him and break his leg. Or his arm. Or anything. The faster the break the more likely you are to win.

The double post is like the high and low post only both of them hit him at once.

Now some defenses. First the

zone. This is used when you're ahead and are afraid they'll catch up. You divide the court into zones (East and West), put up a barbed-wire fence, and if they try to enter your zone to put the ball in your basket, you machine-gun them.

The man-to-man is used when the two teams are evenly matched but yours is a little bit better. Each one of you picks one of them and beats the crap out of him. You win by default.

Finally, the press is used when all else fails. You get a second-hand steel press and squash your basket just enough so their ball won't go through it. You win 1-0.

Wrestlers Finally Meet Match

BY G. B.

After two months of unquestioned championship, the Tech p.b.'s (pretzel-benders, not Parker bites) finally met their equals in L.A. State Tuesday. Complete not only with a seven male, eight gorgeous female rooting section (outnumbering Tech's few loyal supporters), but also with a 123 pound wrestler, L.A. State, obviously unfamiliar with that great literary masterpiece, the **California Tech**, arrived on time in full force.

Due to the presence of Rosales,

Gorbet was forced to demonstrate his prowess by starting the match off with a beautiful takedown. Unfortunately, Rosales was not impressed and they fought to a 5-5 tie, giving two points to each team.

Hayamazu, undaunted by this sterling performance, tied Reynolds 4-4, bringing the score, amazingly enough, to 4-4. Then Fujimura was pinned by Fisher of L.A. State after 2:35 of the second period.

Enter the 147 pounder and the magnificent Faulconer. Having waltzed for three minutes with Day of L.A. State in the first period with no success, Faulconer loses his head and chooses the up-position to start the second period, thus crushing any hopes for one of his reversal-pins. He did well enough to win his match 4-2, keeping Tech close at 7-9.

At this point things began to look worse. McWilliams, fresh from a two-week stay with the flu, was pinned by an exceptionally fine display of wrestling by Caputo of L.A. State. Then Crenshaw was narrowly defeated 5-3 and Powell at 177 pounds was pinned in 37 seconds of the second period.

The main event, the conclusion of the match already determined, pitted Kampe against Christian. An almost textbook example of move and counter-move, the match was fought mostly standing up. The third period was by far the most exciting and fainting spectators were efficiently handled by the Red Cross Emergency Headquarters.

With seven seconds to go and behind 2-3, Kampe managed to scramble behind his opponent. The referee awarded two points for the takedown but, as the scramble ended up off the mat with no conclusive advantage to either wrestler, he canceled them. Kampe did however have 1:50 of riding time to 0:42 for Christian; so Kampe had the necessary one minute excess and was awarded one point resulting in the third draw of the evening.

The final score was Caltech 9, L.A. State 24. The next home match (as can be seen in the calendar) will be tomorrow at 4 p.m. with Biola. For pure entertainment per dollar, nothing beats wrestling — it's free.

Next Week In Sports

VARSITY BASKETBALL				
Fri.	Feb. 5	8:15 p.m.	Redlands at Redlands	
Sat.	Feb. 6	8:15 p.m.	Biola at Caltech	
Wed.	Feb. 10	8:15 p.m.	Claremont-Mudd at Claremont	
FROSH BASKETBALL				
Fri.	Feb. 5	6:30 p.m.	Redlands at Redlands	
Sat.	Feb. 6	6:30 p.m.	Biola at Caltech	
Wed.	Feb. 10	6:30 p.m.	Claremont-Mudd at Claremont	
VARSITY SWIMMING				
Fri.	Feb. 5	4:15 p.m.	Santa Ana City College at Santa Ana	
WRESTLING				
Fri.	Feb. 5	4:00 p.m.	Biola at Caltech	
Tues.	Feb. 9	7:30 p.m.	San Fernando Valley State at Caltech	

Discobolus Stays In Fleming

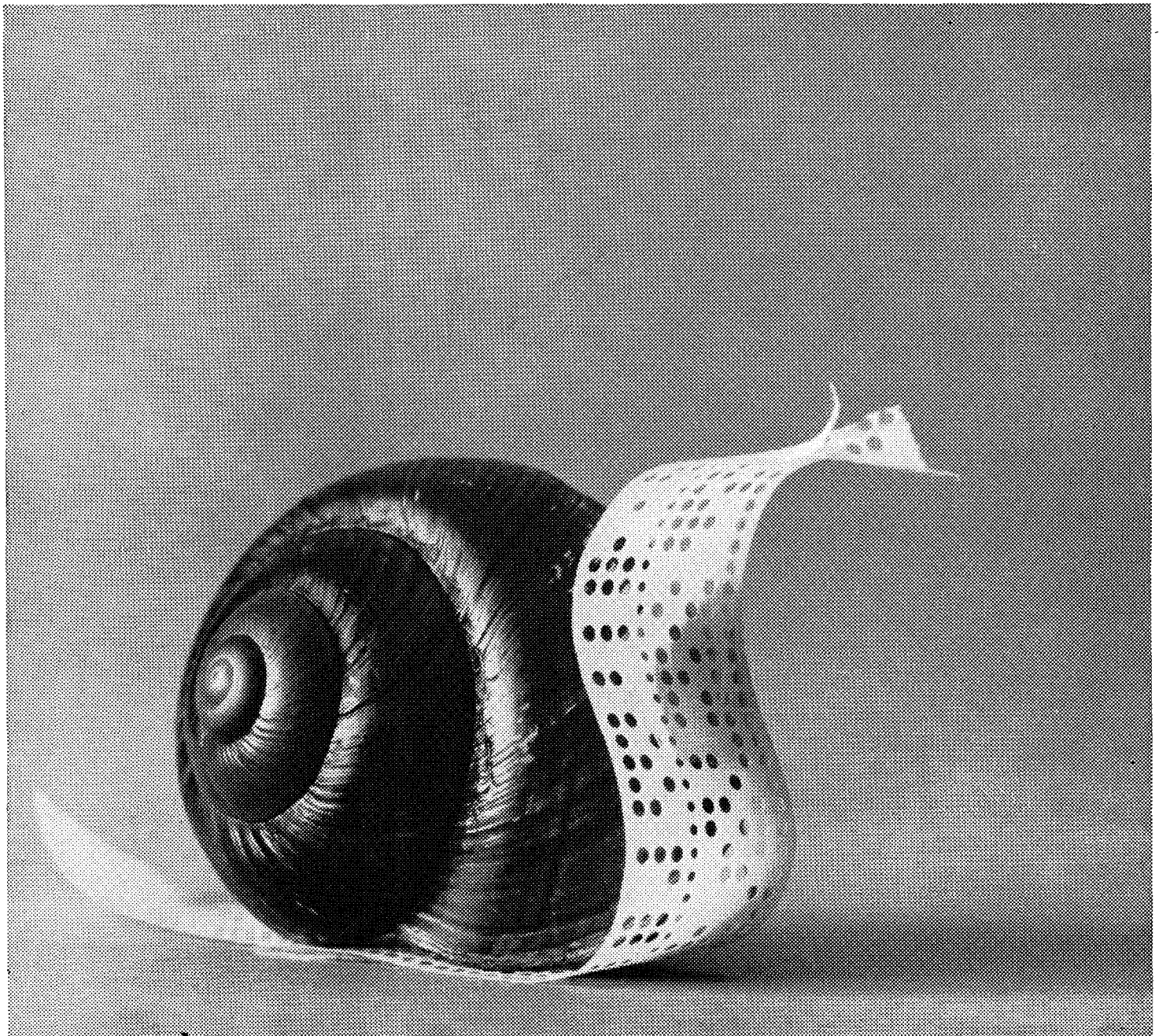
Fleming extended its lead in the Discobolus trophy race last Sunday afternoon by whipping Dabney in the all-American games of billiards and pool. The exciting spectator sport was held in Winnett Center, the gathering place of Tech sports enthusiasts.

While the on-lookers were holding their breath in anticipation, Schultz of Dabney pulled out a 50-40 victory over Putman of Fleming. His come-from-behind victory started Dabney off with a 1-0 lead after the first match.

Then along came Kubler. The Fleming frosh easily defeated his Dabney opponent in billiards. With his victory, Fleming squared the match at one-all, setting the scene for the dramatic final matches.

Huerta, another Flem, duplicated the feat of Kubler. His victory was so decisive that the score was not even recorded in the "Wanderings of Discobolus" book that travels from House to House.

Ross of Fleming then was sent up against Beard of Dabney. Ross triumphed in the end by a score of 50-46 in the manly sport of pool in the closest of the afternoon. Fleming confidently won the next match by forfeit and went home to await a challenge from Page.



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Frosh Eat

(Continued from page 4)

grew by the relative abundances of calcium, strontium, magnesium and the oxygen isotopes.

The origin of tektites is another puzzle in geology which is now being attacked by Hugh Taylor. Tektites are meteorites of fused glassy material found in widely scattered places around the globe. Taylor has found that the birthplace of these tektites cannot possibly be the earth since the oxygen isotope ratio, 16 to 18, is much too great.

What Lead? (Cough, Cough)

Striking closer to home is the issue of lead contamination in the atmosphere. It is almost certain that this contamination is caused by the combustion of lead tetraethyl in gasoline. The big question is, "How much lead is too much lead?" To find this out a well-known refining company, under the pretext of scientific research, went to the Amazon jungle to find the "uncontaminated" man. Once this was established, the company compared this level with the level found in the civilized, smog inhaling man. The difference was very small, therefore the company claims that there is no danger of our rotting overnight from their product.

Claire Patterson ran into this lead contamination while pursuing the more esoteric studies of lead isotopes. Patterson found that lead contamination in the atmosphere was grunging up all of his test results.

Grunge Forward!

He began to wonder where one could escape from this contamination and it turned out that it had spread through the entire atmosphere. Through probes in the glaciers of Greenland, he was able to correlate the beginning of the contamination with the time when lead tetraethyl was first incorporated into gasoline.

Next winter Patterson ships out to the Antarctic to further confirm his findings. Hence we are not at all certain just how much of this lead crud is in us.

The evolution of continents led Dr. Lee Silver to attempt to test the hypothesis that continents grow by accumulating "junk sediments" around the edges. Therefore, the middle part of a continent should be older than the outer parts. Silver uses zircon crystallography as a means of dating rocks.

Rubadabdub

How does one know if he will make a good geologist? According to Sharp, you've got to like it. You can also test yourself by answering these simple questions. Do you hate precise measurements? Do you like to play with mudpies? Do you find soil accumulating in your cuffs? Your notebook? Do you have dreams of rocks crashing against the floor of the rooms above you? If you answer yes to all of these questions, chances are pretty good you'd do well in geology or Fleming.

**Bickley gets
its two cents
worth.**

—"Honest Abe" Brunswig

**DEAR DOUG,
I'M PREGNANT.
LINDA**

Gallagher Talks on Islam

"My subject topic is not the production of robots by some middle-eastern mystic," said Charles Gallagher, the AUFS speaker on campus this week, as he addressed a Caltech audience in Beckman Monday on "Islamic Society and Scientific Man."

"It is simpler and deeper than that," Gallagher, who is an authority on Morocco, Algeria, Libya, Tunisia, and a myriad of other North African and middle-eastern countries, proceeded to show the effects that the Islam religion has had upon Islamic thinking; but first he made several observations.

Science is All

First, a scientific man is not necessarily a scientist, but merely an individual who applies reason and logic to understand the world around him. Thus not only are the fields of science under discussion, but the social sciences and humanities as well.

Second, keep in mind that Islam

is a unified way of thinking that holds one-sixth of the world with lation trends continue, will soon hold one quarter of the world.

The classical Islamic civilization's beliefs — and if present population does not share western goals; Islam is founded on the belief that absolute truth is revealed only by God, and this truth comes through revelation rather than through speculation. Thus the Islamic society avoids the experimental method, with its speculative "half-truths" and theories.

And Inspiration?

Because of this belief in revelation, observation and experimentation lost ground to the theological argument and to precedent early in Islamic history. The concepts of freedom and the eternal struggle to better the society that characterize western thought did not develop in the Islamic world.

To try to change what God had ordained would be folly to the

Moslem, indeed maybe even dangerous. Furthermore, to quote an early Islamic writer, "Freedom is slavery with God as the master."

Thus one can see the basic difficulties of the scientific man in Islamic society. It has only been recently, when faced by the power of the western methods, that this bias against experiment and logical thought, as well as social changes, has been broken down somewhat.

Today in countries such as Turkey and Tunisia, modern methods of social government and thinking have come into the foreground. But the change is anything but complete; in fact it is just starting, and in some Islamic countries has not yet begun.

It will be some time before the Islamic world learns to rely on thought, reason, and decision rather than faith and revelation. Only then can the dreams of the Islamic people be realized.

Basketball

(Continued from page 6)

shots. With Dave Goodmanson leading the way on fast breaks, Tech ended the game under a full head of steam and won going away. The individual scoring leaders were Tucker with 18, Yudelson 11, and McCreary 11.

Next week the team travels to Redlands on Friday and returns home to beat Biola on Saturday night.

IH Track

(Continued from page 6)

Dick Harley and Rock Levinson are the men to watch. Even the hurdle events will be unusually fast this year due to presence of Allen Lee.

As usual, the preliminary heats of those races run in lanes will be held on Wednesday. Field events will be run off on the following day, followed by the climax, the track events finals, on Friday.

The Challenges of the Future



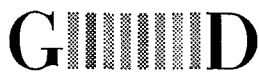
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