

The California Tech

Associated Students of the California Institute of Technology

Volume LXI

Pasadena, California, Thursday, February 4, 1960

Number 16

Student Houses Filled As 159 Sign To Move

The three new undergraduate houses were filled to near-capacity last week before volunteer lists closed, Master of Student Houses Robert Huttenback said today.

Total number of volunteers was 159, including 96 students presently off-campus. Classes in the new houses are balanced as well as expected, said Huttenback.

Leading the rush across the Olive Walk were this year's sophomores, with 68 class members planning to move. The freshmen had 65 volunteers, and the juniors, 26. Seven off-campus students moved into the old houses to fill vacancies created there.

Both old and new houses will be filled to capacity next year with new freshmen and graduate students. Probably about 170 out of an expected frosh class of 180 will live on campus, as well as 30 graduate students. Applications for residence have been received so far from 28 graduate students, including 16 now living in the Old Dorm.

House A, with a capacity of 85 attracted 21 freshmen, 30 sophomores, and three juniors. Probably 26 freshmen will be assigned to live there next fall.

House B drew 19 frosh, 25 sophomores, and 12 juniors, and will have 25 members of the class of '64. Its capacity is 80.

House C will have 26 members from the class of '64, 25 from '63, 13 from '62, and 11 from '61 to fill its capacity of 85.

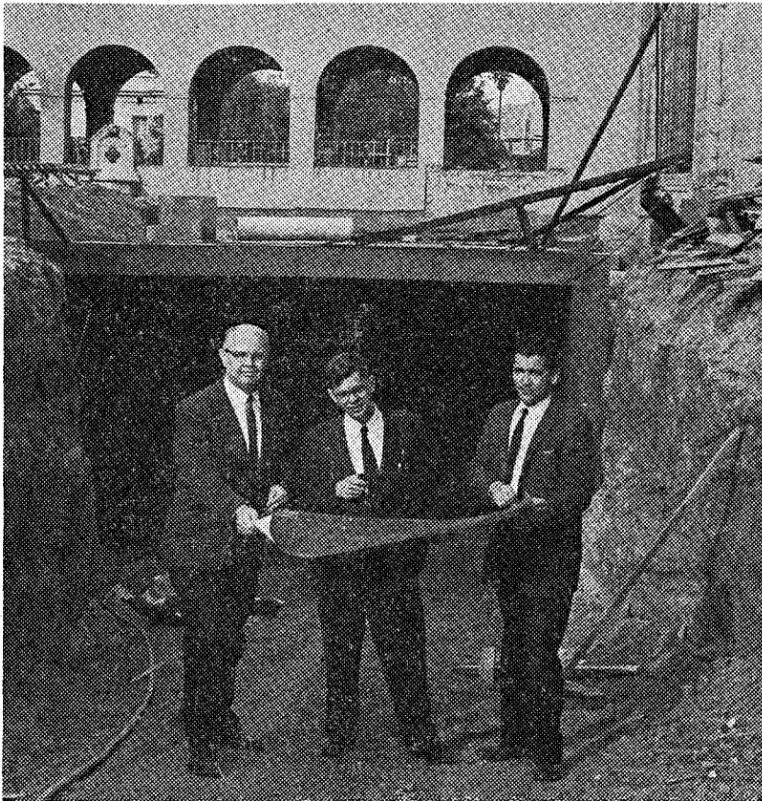
The old houses will revert back to their original capacities of 73 for Blacker, 70 for Dabney, 81 for Fleming, and 78 for Ricketts. Total number of occupants of the seven houses will be about 560.

Dramatists Cast For February 9 'Caine' Reading

The Drama Club's first offering of the theatrical season is set for next Tuesday, February 9. Members of the club will present a reading of "The Caine Mutiny Court-Martial," at 8:00 p.m. in Dabney Lounge. The reading, although officially presented for the Faculty Play-Reading Group, will be open to the public. Admission is free.

"The Caine Mutiny Court-Martial," adapted by Herman Wouk from his novel, is a suspenseful courtroom drama, dealing with the problem of justifiable mutiny: in times of great crisis can a subordinate officer relieve his commander if he judges that commander to be mentally unfit for his post?

Seen in this presentation will be Drama Club veterans Mike Talcott, Stu Goff, Larry McCombs, Ken Scholtz and Bob Poe, and new faces Bill Hogan, Art Robinson, Stan Sawyef, Carl Hamilton, Dohn Schildkraut, Richard Harris, Pete Lippman and Paul Widess.



Drs. Fowler, Lauritsen, and Whaling (from left to right) examine blueprints for the installation of the new linear accelerator in front of its home in the new Sloan basement.

Zap - Guess What?

Particle Accelerator Nearing Completion

The delivery of Caltech's newest electrostatic accelerator is planned for this spring, as construction speeds ahead on the facilities in the new Alfred P. Sloan Laboratory of Mathematics and Physics.

The 10,000,000-volt accelerator, costing \$1,150,000, is being supplied by the Office of Naval Research. The O.N.R., together with the Atom Energy Commission, has been supporting the study of nuclear reactions here at Tech since 1946.

ENERGY LEVELS

To the present date, the heavy particle accelerators in Kellogg have been used in charting the energy levels of the nuclei of the 10 lightest chemical elements (from hydrogen up to fluorine and neon).

With the new accelerator, the energy level and nuclear reaction studies will continue into the heavier elements; they will also be able to investigate the higher energy levels of the lighter elements.

RESEARCH TECHNIQUES

There are two methods of causing interactions between nuclei. One is the brute force method involving random collisions between nuclei at extremely high temperatures.

The other is to bombard a "stationary" target nucleus with high energy nuclei, as from a heavy particle accelerator. Though the energy of the nuclear "bullets" is not so high as in the thermal methods, use is made of the existence of the nuclear resonant energy level to achieve the same effect. At a resonant level, interactions take place much more readily than at either higher or lower levels.

With the continuously variable energy of the accelerator beam, one is able to bombard the target nucleus until a resonant level is found, indicated by a shower of reaction products.

This heavy shower of reaction products is the principal reason

for the heavy concrete and earth shielding which surrounds the analyzing room on the target end (north side) of the atom smasher.

Findings from the past research at Kellogg have been of interest to nuclear physicists, astronomers and cosmologists, shedding light on mysterious birth and death of stars; the nature of the nuclear processes taking place in our sun; also the synthesization of the heavier elements.

Caltech physicists working on these studies include C. C. Lauritsen, who started nuclear physics research at Caltech in 1932; his son, Tom Lauritsen; C. A. Barnes and Ward Whaling, associate professor's in physics, and William Fowler and R. F. Christy. About 25 graduate students are also engaged in nuclear research as they work for their Ph.D.s.

Japan Expert Olson Sets Visit

BY MATT COUCH

Dr. Lawrence Olson, the third member of the American Universities Field Staff to visit Tech this year, will arrive on campus next Monday, February 8. Olson will speak on Japanese affairs.

Olson's interest in Japan developed during World War II when he served as a Japanese translator. Since joining the AUFSS in 1955, Olson has studied and written about developments in Japan from bases in Kyoto and Tokyo.

In addition to his interest in Far Eastern affairs, Olson has written a book of poems and has contributed poetry and book reviews to the "Virginia Quarterly Review," "The Saturday Review of Literature," "Poetry: a Magazine of Verse," and "The New York Herald Tribune."

Olson will be on campus from Monday, February 8, until Wed-

ASCIT Elections Open Tuesday With Nominations Meet

Nominations for 11 ASCIT offices will open next Tuesday evening at a student body meeting, 7:30 p.m., in 206 Dabney. The election rally is slated for Monday evening, February 23, and the election for Tuesday, February 24.

To be elected are nine members of the Board of Directors: president, vice-president, secretary, treasurer, athletic manager, activities chairman, social chairman, business manager, and representative at large. Also to be chosen is an editor of the California Tech and a secretary of the Board of Control. (Descriptions of the work of each of these offices began in last week's California Tech and continue in today's issue on page 2.)

NOMINATIONS CLOSE

Nominations will close immediately after Tuesday's meeting for all offices to which more than one candidate is named. For any offices which are uncontested, nominations will remain open one additional week until February 16. Nominations may be given in writing to Tom Jovin, ASCIT president, during that time.

The California Tech will sponsor an open meeting on Thursday, February 11, 7:30 p.m., in Throop Club at which time all candidates will be present to debate campaign issues and attempt to answer any embarrassing questions from the audience. Candidates will speak at Student House lunches and dinners and during the noon hour in Throop Club on February 16, 17 and 18.

Each candidate will write a 100-word campaign statement in the February 18 issues of the California Tech.

The information meeting previously planned for all candi-

dates has been cancelled.

BY-LAW AMENDMENT

Also on the ballot at the February 23 election will be a proposal to amend the by-laws to permit members of the Board of Control to serve more than one term. Chief argument in favor of the amendment is that the present one-term restriction prevents experienced members from being re-elected.

The original reasons for the restriction were to allow more people a chance to work on the BOC. It is now felt however, that the work of the BOC is of such importance that the choice of the most capable members, whether or not they are incumbents, should take precedence over giving lots of people experience.

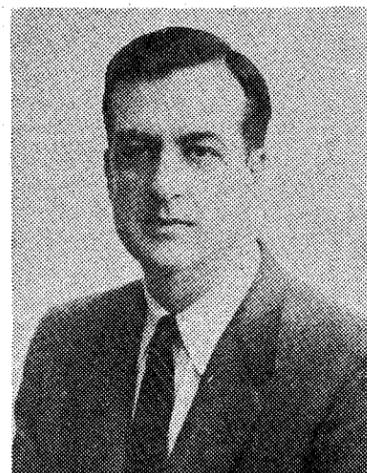
LOYALTY RESOLUTION

At the suggestion of Kip Thorne, the BOD voted Monday night to include a resolution on fact that the undergraduate student body at Caltech opposes the the February 23 ballot to the effect that the undergraduate student body at Caltech opposes the loyalty oath required in the National Defense Education Act and urges the passage of the Kennedy-Clark bill.

Three Juniors Set To Travel

Three juniors will spend their next summer vacation in Europe on money granted this week by the DuPont Junior Travel prize. Winners of the competition, open annually to juniors with honor standing, are Bill Bauer, Robert Poe, and Michael Schwab.

Selection was made by a faculty committee headed by Horace Gilbert, professor of business economics. Competitors were judged on the basis of a proposed foreign study project and travel itinerary which each submitted.



Lawrence Olson

Relations at the Biltmore in Los Angeles, topic, "Japan and Communist China."

Tuesday morning Olson will attend H 5 at 11 a.m. in 206 Dabney, speaking on "Japan: the Domestic Situation." He will lunch informally with the H 5 staff at the Athenaeum. At 7:30 p.m. he will attend H 124 in 208 Dabney to discuss, "Can Japan Maintain a Democratic System?"

On Wednesday he will attend the "Y" Luncheon forum at the Athenaeum, topic, "Japan and the U.S." Olson will have dinner in the Student Houses, followed by a YMCA Public Affairs Commission panel discussion in Dabney Lounge.

Thursday morning, Olson will attend the Econ 100 classes at 8 and 11 a.m., in 101 Dabney, to speak on "Japanese Merchandising in the U.S." At noon he will

(Continued on page 8)

Board Members Reveal Duties

ASCIT's Board of Directors continue their explanations of their duties.

Next week: Jovin's Finale.

• Secretary

The Secretary of ASCIT has three principal functions.

First, and possibly most important, he is responsible for keeping all records of study body affairs. This includes maintaining a complete filing system and keeping it up to date, as well as publishing each week a set of minutes whose distribution, now in excess of 100 copies per week, rivals that of the California Tech.

Second, he must publicize the agenda of the Board through announcements to the Houses, occasional Tech articles, and any other appropriate means. Finally, he is expected to be an active member of the Board. The position can be time-consuming and sometimes quite frustrating; but, in retrospect, it's worth it.

—Bill Bauer

• Activities Mgr.

In his two years of existence the main concern of the Activities Chairman has been the Jazz

Concert. But this is an arbitrary activity and could be supplemented or replaced by just about anything.

The set concerns of the AC are chairmanship of the Honor Awards Committee, chairman or member of various appointment committees, scheduling the use of Culbertson and Dabney Hall by student groups, and arranging the dates of ASCIT events with the Social Chairman. The AC is the main connection between the Institute and student clubs and organizations.

The scope of this job is mainly determined by how much the officeholder wants to make of it.

—Hugh Kieffer

• Social Chairman

The ASCIT Social Chairman has essentially one job, the Lost Week End held in May. This keeps him busy during the first half of the third term. His Social Chairmanship continues into the first term with Homecoming and a Christmas Dance, and in the second term with a formal event held off campus (unless the social budget happens to be at a new low, in which case he holds a less pretentious affair).

Of course, there is the other side of his job, sitting on the BOD meetings. This is sometimes quite fascinating, other times a hell of a bore, but each time quite educational. ASCIT offices have much to offer — for more information about my job, see me or the Little t.

—Kendall Casey

• Representative

For a freshman interested in finding out about the big campus picture beyond his stints in 201 Bridge and frequent chem lab water fights, there is no better way than becoming ASCIT Representative-at-Large. Although admittedly, as the youngest member of the all-powerful BOD, he will have to serve as a catch-all for assorted tedious jobs, he will get a chance to find out some of the thinking and reasons behind the decisions, rules, and committees that often baffle freshmen and upper-classmen alike.

The main duties of the Rep consist of running the campus blood and charities drives, maintaining the Olive Walk bulletin board and, in general, performing miscellaneous tasks not specifically delegated to other members of the BOD.

The Rep can usually get appointed to any of the committees of the BOD by showing interest, and he receives an opportunity to meet with students from other schools and the Caltech faculty in non-classroom capacities, thus broadening his range of interests. I would be happy to talk over the duties and advantages of the office with all interested freshmen.

—Bob Koh

• BOC Secretary

The work of the Secretary of the Board of Control involves many things. Although he has no vote, he actively participates in all discussions. At the same time he is responsible for keeping permanent records of all proceedings of the Board.

The less specific duties associated with the office are also important. He serves as a right-

(Continued on page 3)

Defense And Apology

Editor, The California Tech:

The recent editorial in the California Tech about ExComm made some very good points, and there is little doubt that the five remaining members of ExComm must carry the blame for the lack of concrete achievements. However, there was never any claim that we had run out of things to talk about. Our error was one of mechanics, not one of ignorance. For this we apologize and would like to offer an explanation.

The present ExComm took office about the middle of third term last year, right in the middle of the ExComm Poll for the planned report. At this time, there were about 12 people, mostly seniors, working on the report. This year we were presented with the mountain of polls and much work which those who had graduated were planning to do. Even the most enthusiastic person can become discouraged with tabulation, cross-tabulation, compilation, motivation explanations and evaluations. Here is where Doug Carmichael really deserves a great deal of praise for getting out what he did of the report before leaving to major in psychology. However, things mired down and little other than our stand on no-rotation, however popular or unpopular, and a meeting with the new Student House Committee was accomplished first term.

Now that circumstances have changed and we are back on our feet again, we can resume some of the other philosophical issues which should also occupy our time: a look at our Honor System, the importance (or lack) of living on campus, an integration of the IHC and ASCIT, the general position of the Caltech student with respect to students in other universities, views toward world and national problems and politics, the position of the science student in society, consideration of the position of class and ASCIT offices, etc. We plan to expand our minutes in length and in distribution so that people may see what we are doing at the moment.

I feel that it would be a mistake to do away with a group

which is as potentially useful and thought-stimulating as ExComm. Our methods of actually effecting any changes are purely through the media of publication and persuasion. We were not set up to bring about any real concrete change but to have some evolutionary effects and to keep issues in front of a possibly otherwise complacent student body. The last term had its share of external issues, but in the future we promise to try and live up to our somewhat nebulous but still philosophically defensible existence.

However, we still need the faith and active support of the student body which we will welcome at our forthcoming meetings.

ASCIT EXECUTIVE COMMITTEE



Editorial

The Campaign

ASCIT nominations are next week. The men running for office and the voters following the campaigns will—or at least should—face a number of issues.

Shortly after the present officers took over last year, the California Tech ran an editorial pointing out some of the difficulties ASCIT faced and offered a couple of suggestions for improving the situation. Thankfully the situation has improved since then, but many of the problems are still around and, if somebody isn't careful, we could find ourselves back in the same hole by this time next term.

ASCIT's principal stumbling blocks come from the fact that the Board of Directors, as such, is given too much importance. An ASCIT officer, in many cases, concentrates on his job as a BOD member, while often neglecting his responsibilities as an individual officer. (Reference: see "Duties" articles in this and last week's Tech.) Members of the student body come to the Board as a whole with their requests and problems rather than contact specific people.

As an example, consider the Big and Little T's. These activities should be the responsibility of the business manager and treasurer. They should watch finances, organization and progress without getting the rest of the BOD involved in resolutions, hearings and what-have-you. The ASCIT vice-president and the ASCIT social chairman should have nothing whatsoever to do with publications.

In short, ASCIT government would be a lot more efficient, more meaningful and more pleasant if the Board of Directors would only delegate responsibility when necessary and not assume it.

Another big problem which the new officers will be facing almost immediately is the ASCIT budget. Our suggestion for alleviating a lot of the strain here is simple: make the yearbook a businesslike enterprise. Big T appropriations are the biggest single item on the budget and are still only a fraction of the book's income. If possible, sell more ads; if not, make the Big T smaller.

A third general area to consider will be finding the best way ASCIT can work with a Student House organization representing essentially the whole student body. Is a revision of basic structure in order? What are the places of ExComm, EPC and other ASCIT organizations?

We hope to hear some worthwhile questions, answers and suggestions in the next three weeks.

—cm

The California Tech

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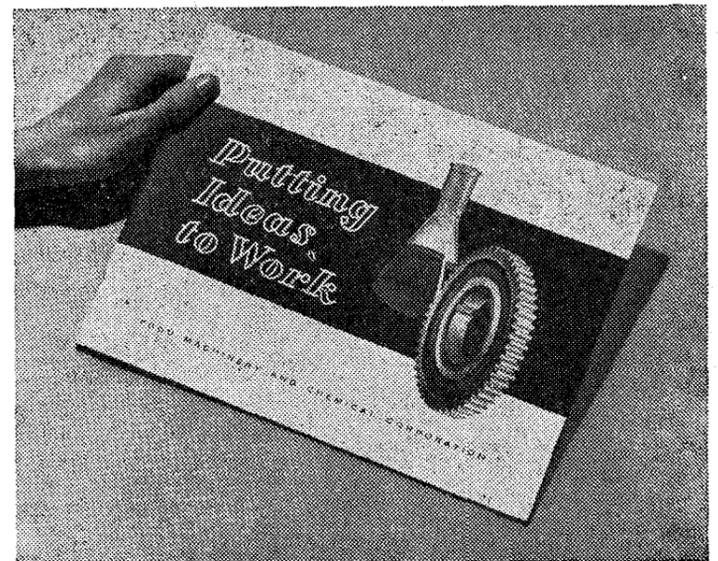
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ENGINEERING STUDENTS TO DISCUSS INDUSTRY CAREERS



Students majoring in chemical, mechanical, or electrical engineering are now scheduling appointments to obtain information on Food Machinery and Chemical Corporation, a major national producer of diversified machinery and chemicals. Company representatives will visit the campus on February 8 and 9

Arrangements for individual interviews may be made through the local college placement office.

BOC Chief Outlines Master Key Policy

BY TOM TEBBEN

The master key policy of the Board of Control can be stated quite simply: the BOC considers a violation of the Honor System involving a master key on the same basis as any other violation. Possession of a master key does not constitute a violation of the Honor System.

Nevertheless, the easy access to the entire campus provided by a master key enables anyone possessing such a key to enter many places where he has no legitimate business. Consequently, a discussion of the considerations involved in the use of master keys is probably in order.

The basic principle underlying the Honor System is mutual trust and respect. Recently this principle has been applied to develop the criterion of "unfair advantage." Taking "unfair advantage" of other students, the faculty, or the Institute, is in a violation of the Honor System.

Unfair advantage can also be applied to master keys. However, in this case it has some implications which are not immediately obvious. It is quite clear that using a master key to enter a locked room and steal something is a violation of the Honor System. Apparently it is less clear that private offices and

BOC SECRETARY

(Continued from page 2)

hand man for the ASCIT "Veep" and assists him in arranging meetings. He is also responsible for presenting recommendations of the Board to the Deans. In this way he serves as a liaison between the Board and the Deans.

John Stenbit

laboratories and the equipment which they contain are not open to the general student body. In addition to "unfair advantage," one must consider personal rights and privacy. When a man is issued a key to an office or laboratory, he should rest assured that only he or those having his permission will enter the office or lab. Violation of this privacy is a clearcut violation of the Honor System.

The widespread possession of master keys by the undergraduate student body has aroused concern among the faculty and administration. This concern can be attributed to the fact that some graduates have not used master keys responsibly. They have entered unauthorized areas and, on a few occasions, have violated the privacy of personal offices. In addition, some of the many master keys in the hands of students have come into the possession of people not connected with the Institute. Since the remainder of the world does not live under an Honor System, it is obvious that this is potentially quite dangerous.

It is virtually impossible for Institute personnel or faculty members to obtain authorized master keys. Thus it should be quite clear that students have no "inalienable right" to them. Using a master key to enter an unauthorized area is a serious violation of the Honor System, and it will be dealt with as such. It should also be re-emphasized that Caltech campus master keys provide ready access to a great deal of valuable equipment and should be treated with corresponding respect.

ASCIT Slates Winter Dance February 20

The ASCIT winter dance is slated for February 20. Hal Loman's band will furnish the music, according to Ken Casey, ASCIT social chairman, and the entertainment will be announced next week. The place has not been set definitely, but the dance will be held off-campus.

Dress will be similar to the Interhouse Dance. The formal has been discontinued because of the waste involved in spending \$1500 on 60 people.

Techmen To Fill KRLA Air Time

Local radio station KRLA is planning a series of educational programs, and about 30 minutes a week will be available to Techmen for presentations of a generally informative nature. Programs won't necessarily have to be about science — music or discussions of significant topics will also be all right.

Anyone interested in writing, directions or announcing for this series will please contact Mrs. Blyth at the News Bureau (Lower Throop).

Dr. Pauling Unharmed After Day On Cliff

Dr. Linus Pauling was rescued unharmed Sunday morning after spending a chilly 24 hours stranded on a slippery shale cliff near Monterey, California, overhanging the Pacific ocean. He had gone walking on his 160-acre ranch Saturday morning to inspect the fences and wandered onto the narrow ledge.

Then, Pauling said, it looked too dangerous to go back and he "got the jitters" and decided it would be safer to remain where he was until someone found him.

His wife reported the professor missing at 6 p.m. Saturday night, and search parties with flashlights were organized immediately. Radio reports Saturday night erroneously reported him dead at the base of a cliff. (One placed the cliff in Argentina.)

To stay awake, Pauling reported he recited lectures on the nature of chemical bonds, the periodic table, and the Mohs scale of minerals and counted in French, German, and Italian. He attempted to tell time by following the stars with a stick until the fog rolled in.

He was spotted Sunday morning by a rescue party which by then included forest rangers, two

army H-19 helicopters from Fort Ord, sheriff's deputies, bloodhounds, and several civilian volunteers including Dr. Barclay Kamb, assistant professor of Geology and Pauling's son-in-law, who had gone to the scene when he heard Pauling was missing.

Pauling was huddled beneath a large map of the area attempting to keep warm. He reported that he had heard the searchers pass just above him early Saturday night, but his shouts had not been heard because of a large overhang between him and the rescue party.

Ex-Techman Digs Concert Drama

"So far out the Beats don't understand it," is the way informed sources describe the most recent success of former Caltech student Dennis Johnson. Formerly Class of 1960, Johnson is now attending UCLA, where he will present a "concert drama" at 7 p.m. this Saturday.

Details of the performance are reportedly secret, but leaks have disclosed such anomalies as instruments in the audience. Although our bearded informant was unable to provide any further details, we have been assured that even Techmen will be welcome at room 1200 Schoenberg Hall. Like, free, man.

Run Openings Close 2-12

Students wishing to be observers on this year's Mobilgas economy run should fill out an application in 113 Throop before February 12.

Announcements

Y FILM SERIES

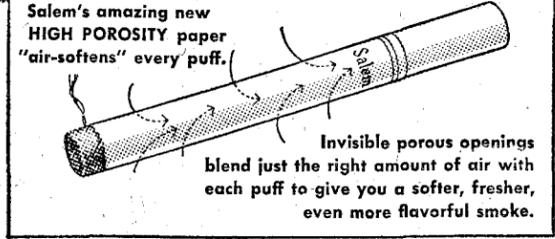
"Citizen Kane" is the Y film picture this Sunday, 7:30 p.m., 206 Dabney.

FOLK DANCING

The folk dancing class will meet this Sunday, 7:00 p.m., in Culbertson.

CHESS CLUB

A not-very-optimistic attempt to organize a chess club will be made in Ricketts dining room at 7:30 p.m. tonight. Those interested can show up or not as they please — no one really cares.



An important break-through in Salem's research laboratories brings you this special new HIGH POROSITY paper which breathes new freshness into the flavor.

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fresh air in through the paper to make the smoke taste even softer, fresher, more flavorful. If you've enjoyed Salem's springtime freshness before, you'll be even more pleased now. Smoke refreshed, smoke Salem!

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NOW MORE THAN EVER

Salem refreshes your taste

Positive Bias

BY PIERRE SUNDBORG

Caltech is an unusual market for the commercial electronics world. We buy a higher percentage of our equipment, particularly hi-fi gear, in kit form than probably any other group in the country. Construction of hi-fi apparatus from kits is fun, easy, saves a lot of money, and is a good excuse for not doing math problems. There are a lot of tricks of the trade, most of which save time and temper. Here are a few.

First, the important matter of soldering irons. For most kit work a small iron, such as an Ungar "Pencil" iron, is desirable. A wattage rating of 20 to 40 is best.

There are times when you will want a lot of heat, such as when a filter capacitor has to be soldered to a chassis. In these cases, there is nothing as good as a soldering gun. Most of the guns on the market have two heats. The low one is for general work and for circuit boards if you're careful. The high heat is just right for soldering to a chassis. There are two reasons why most people don't use guns for wiring kits. First, they are much heavier than irons and seem to get heavier as you work. And, of course, you have to wait for them to heat up. Use your own discretion in buying soldering equipment and get what feels best to you.

Solder is something you don't buy very often. A little bit goes a long way. So why not be smart and get the best? The new 5-core rosin solders are ideal for kit work. Be sure that you buy rosin core, and use only 50 and 60 per cent tin solders. If you want to make it easy to hold a goodly amount of solder without inconvenience, try this kink: wind the solder in a coil around a sharpened pencil, starting at the thin lead end and winding back along the barrel of the pencil. Then, remove the coil from the pencil and push the free end of the solder down the center of the coil, so that it comes out through the small end of the coil. From then on, just pull out a little solder as you need it. Simple and convenient.

Most of the hook-up wire supplied with kits is solid wire with thin plastic insulation. Don't strip the insulation from the end of this type of wire by using "diagonal" wire cutters. You'll almost certainly cut slightly into the wire, thus weakening it and maybe laying the groundwork for a later break. Instead, squeeze the wire with a pair of

long-nose pliers until the insulation splits away from the wire. Then clip off the ends of the insulation with cutters.

It isn't necessary or even desirable to wrap wire several times around a terminal before soldering. A good soldered joint is a mechanically strong joint. Just put the wire through the terminal, bend it a little if necessary to make it stay there, and clip off the excess. When soldering, heat the joint until it is hot enough to melt the solder.

When mounting parts, do just as the instructions say unless you're sure that you know a better way. In building FM tuners, in particular, it is essential that you place components just exactly where the book says to. Keep lead lengths as short as possible, but not so short as to make overheating of components a problem.

Most transformers in kits have their leads "precut to the nec-

essary length." Well, it just isn't so. Usually the leads are at least an inch too long. Extra length, particularly in audio work, means hum and trouble. If transformer leads are too long, go ahead and cut them to the proper length. In Dynakit amplifiers most leads are way too



long, but think before cutting. The Dyna Company will not guarantee any transformers on which the leads have been cut. I've never seen a bad Dynaco transformer, so I cut up a storm.

Quite often the bolts holding power transformers together have not been tightened enough at the factory, and the transformers will rattle in operation. Be smart and tighten up transformer bolts before mounting.

When mounting control potentiometers and switches, do not tighten the nuts until you slip on the knobs and make sure that pointers point to the right things. Then, tighten up the nuts, but not too tight. Overtightening of nuts on pots will make them very hard to turn. Easy does it.

When you wire a rotary switch, be sure that you have it oriented properly before making connections. It's easy to get confused by 24 contacts on one wafer. Take your time and have someone else check your work. Don't apply heat to a terminal any longer than necessary. Overheating can cause resistors to change value quite radically, and it will damage small capacitors. Never solder to a tube socket which has a tube plugged into it.

When you're through building the kit, check your work carefully. Scrape away excess rosin, then shake all solder blobs and wire scraps out of the chassis. Then have someone else look the unit over. Quite often he will

find a trouble spot that you have looked at a dozen times without noticing.

If you have a meter handy, measure the resistance from the high voltage supply to ground to be sure there are no shorts. Then put in the tubes and plug it in. Watch for the filaments to light. If they don't, hold everything and find the trouble before proceeding.

If you built an amplifier, set the bias on the output tubes. If it was a tuner, an alignment job is a good idea. Most tuners "age" and need realignment after a week of operation. It's a good idea to check the bias in amplifiers periodically. It shouldn't be positive.

Scoop of the week department: EL-34s are nice output tubes and are used in Dynakits and other fine machines. Allied Radio sells them for \$4.65 each. I can get you a matched pair, guaranteed new, for \$3.50, or single tubes for \$1.50. Two-week delivery, I think. Let me know if you can use some. 49 Ricketts.



...THE EXPLORATION OF SPACE

Since its inception nearly 23 years ago, the Jet Propulsion Laboratory has given the free world its first tactical guided missile system, its first earth satellite, and its first lunar probe.

In the future, under the direction of the National Aeronautics and Space Administration, pioneering on the space fron-

tier will advance at an accelerated rate.

The preliminary instrument explorations that have already been made only seem to define how much there is yet to be learned. During the next few years, payloads will become larger, trajectories will become more precise, and distances covered will become greater. Inspections

will be made of the moon and the planets and of the vast distances of interplanetary space; hard and soft landings will be made in preparation for the time when man at last sets foot on new worlds.

In this program, the task of JPL is to gather new information for a better understanding of the World and Universe.

"We do these things because of the unquenchable curiosity of Man. The scientist is continually asking himself questions and then setting out to find the answers. In the course of getting these answers, he has provided practical benefits to man that have sometimes surprised even the scientist."
"Who can tell what we will find when we get to the planets?"

Who, at this present time, can predict what potential benefits to man exist in this enterprise? No one can say with any accuracy what we will find as we fly farther away from the earth, first with instruments, then with man. It seems to me that we are obligated to do these things, as human beings."
DR. W. H. PICKERING, Director, JPL

JPL Representatives here for interviews...

ON February 17, 18

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DOUBLED AND REDOUBLED

By Katora George Milaon Mishugahara

North		West	
S 7 6	H Q 7 3	S J 8 3	H J 10 6 5
D J 4 3 2	C K 9 6 2	D 9 7	C Q J 7 5
East		South	
S 5 4 3	H 9 4	S A K Q 10 9	H A K 8 2
D Q 10 8 6 5	C 10 8 4	D A K	C A 3

Contract: 7 No Trump, South declarer

Opening lead: Four of Clubs

With a 27-point hand and a little encouragement from North, South decided to try for the big game, a contract which ostensible depends upon the losing heart split. However, one of the appealing aspects of bridge is the fact that there are so many possibilities available to the persevering and resourceful player. The possibility employed by the declarer of today's hand is one of the grandest and rarest of all—the Vienna Coup.

South takes the opening club lead in his hand with the ace. He runs off five tricks in spades, exhausting the suit, and then proceeds to heart hearts. After two hear leads the hands look like:

North		East	
H —	D J 4 3	H J 10	D —
C K 9		C Q 7 5	
West		South	
H —	D Q 10 8	H A 8	D A K
C 10 8		C 3	

Now South leads the Ace of Hearts and West is forced to slough a little club to keep his Queen of Diamonds protected. This renders the 10 of clubs useless as a stopper. Now the Jack

of Diamonds is no longer a threat and may be discarded if necessary.

Next South leads the Ace and King of Diamonds, this time applying a squeeze to East. East must retain his good heart and, therefore, is forced to slough his two little clubs on the diamonds. The result of this series of plays to leave both West and East with only one club apiece, setting up the 9 of clubs on the board.

To understand this type of play is far easier than to recognize it in a game. The principle involved is that at least one defensive player (in this case both) is forced to protect more than one suit. If the declarer is clever, he can arrange to hold on to his potential winners while the defender squirms. In our hand, West had to hold diamonds, East had to hold hearts, so neither could protect clubs.

The particular squeeze illustrated in this hand is called a Vienna Coup. The distinguished feature of this play is the unblocking of suits by the declarer. In other words, he plays off the top cards of the squeezing suits, thereby setting up tricks for the defenders which they will never be able to cash. Examples of this type are plentiful, but don't expect to play one next time you sit down in the lounge.

The Bar/Ly

BY JOHN BERRY

These first two drinks your writer recommends with qualified enthusiasm. In part this is no doubt due to his lack of rapport with rum-base drinks, as several friends became quite enthusiastic, if that's the word for it, about them.

THE FAIR AND WARMER

- 2 parts light rum
- 1 part Sweet Vermouth
- 2 dashes Curacao

Stir with ice and strain into glass. Two variations which I consider worth while are substituting Cointreau for Curacao or Dry Vermouth for Sweet.

THE GRADEAL SPECIAL

- 2 parts light rum
- 1 part Apricot Brandy
- 1 part Dry Gin

Stir with ice and strain into glass.

It is possibly a little too sweet. I like a small dash of Angostura Bitters added.

You may know about Absinthe and Pernod supposedly being aphrodisiac. I cannot vouch for it but I can vouch for their whetting your appetite for food. The drinks of today's column are excellent aperitifs:

BUTTON HOOK

- 1 part Pernod
- 1 part Apricot Brandy
- 1 part Brandy
- 1 part White Creme de Menthe

Shake well with ice and strain into glass.

Do not use green Creme de Menthe under any conditions. If you do, the drink will turn out bile pigment brown. (If you can't figure this crypticism out, ask a biologist.)

DUCHESS

- 1 part Pernod
- 1 part Dry Vermouth
- 1 part Sweet Vermouth

Shake well with ice and strain into glass.

BRIGHT LIGHTS . . . COFFEE AND SHOES

by griffen



Rubino lay in the road, his head propped up on his chin, resting and contemplating deeply, as Sicilians are prone to do, and he thought of the lovely Melinda Lee (for that was her name) in the arms of that fiend, Alan Tobias. Being a masochist, he imagined how he would fight Tobias to the death, and as he, Rubino, fell in a pool of blood, Melinda would rush to his side and kiss him as he gurgled his last. But no! he would not die; he had to live and love and laugh and be happy.

Every day dawns bright and clear over Fair Oaks, but this one was brighter and clearer and Arturo woke with a wonderful smile as he thought of what this morning was to bring. Far away, Alan Tobias also woke with a smile, but rather than the future, Tobias was thinking of the past night . . . Melinda Lee, he thought. What

a pleasant name. How sweet she had been to him. How unfortunate that he would be bored of her within two or three weeks. He rolled over and went back to serene sleep.

Arturo strolled down Colorado to his uncle's all-night drugstore whistling the overture to "Cavalleria Rusticana"; he had saved for weeks to buy the album and he played it over and over until he couldn't get the music out of his head. As soon as he got into the drugstore, he rushed to the back room where the chemicals were kept and picked out the small bottle marked "cantharidin," which, through his extensive medical readings, he knew to be the infamous **Spanish fly** . . .

Meanwhile, back at the Huntington Sheraton, the Isota-Franchini had just pulled out of the driveway and San Marino mothers bolted their doors and stroll-

ing matrons blanched visibly as the big yellow car roared to life. Unbeknownst to Tobias, his rival had just cruised his Rooffast across Oak Knoll into the parking lot of the hotel. Dismounting, the swarthy Italian walked past the doorman and into the lobby.

He climbed the three flights of stairs to Tobias' well-known lair and adroitly picked the lock, having learned the art to perfection on difficult trunk-room doors. Rubino then stealthily crept through the inner door to the bedroom. It was now that he would have his revenge. Rubino's revenge was sweet, he thought, and he whistled the first violin part of Brahms' "Fifth Hungarian Dance." He took a small amount of the white powder and put it into the half-filled bottle of champagne that stood by the bedside.

(Continued on page 8)

A Campus-to-Career Case History



In the master control room of San Diego TV station KFMB-TV, Max Beere discusses a new studio-transmitter link with chief engineer Charles Abel.

His "temporary" job became a career

Max P. Beere spent two years at the University of Hawaii while with the U. S. Navy, then earned his B.S. degree in Engineering at the University of Utah, where he served as technical lighting director for numerous campus theater and television shows.

On graduating in 1955, he fancied a television career for himself, but felt that, being married, he couldn't afford to serve a TV apprenticeship.

Max had an interview with the Pacific Telephone and Telegraph Company in Los Angeles. "I was offered a position in transmission engineering," he says. "It sounded great—but I really thought of it as a 'temporary' thing until I could get into television."

Max's TV career came sooner than he had hoped. Assigned as telephone com-

pany liaison with the TV networks, he was soon surveying microwave relay routes for the "Wide, Wide World" show, and working on "remote" and mobile telecasts from such interesting locations as Death Valley and rocket-launching sites deep in the desert.

In August, 1958, he was transferred to San Diego, where he took on full responsibility for TV-and-radio Special Services. This led to a particularly satisfying assignment in early 1959—the development of a new and successful closed-circuit educational TV system for 18 elementary schools in Anaheim.

"The telephone company really opened my eyes," says Max. "It's a fine place to work, where new ideas are welcomed and recognized and chances for advancement are excellent. I'm sold on it."

Max Beere is one of many young men with varied college backgrounds who are finding stimulating careers in the Bell Telephone Companies. Learn about opportunities for you. Talk with the Bell interviewer when he visits your campus—and read the Bell Telephone booklet on file in your Placement Office.



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Letters To The Editor

Master Key Policy Attacked; Central California Reader Writes

Editor, the California Tech:

I write this to u by my daught dawter as i dont no no writing. The reason i write is a envelope i find near whear clear crik runz into Big Sur. clear crik is a liddle stream what runz bye ovr cabin. Lik i say, i see this enf envelope at botom of clif near fourk in stream. I think may-be u beter kum get Mr. Linus. i think.

X

misuse of master keys, I will consider the labs, the student shop, and the porters' rooms. I know that there have been entrances into and breakage in locked labs by students who had absolutely no right to be there. Some of the instances were made worse by attempts to repair the damages.

Non-members of the student

shop have entered and used the tools of the shop. The use of the tools is for members checked out on them only. I have seen students with master keys that did not know what to do with them. As they entered the covered walkway next to Fleming, they were so hot to use them that they opened the porters' room on the northwest corner

of the House. With insane desire to use their magical keys, students wander in places where they have no right to be.

As another objection to master key is that many professors resent students having a key to their offices. They consider their offices — where they keep important and personal things — private. They expect their offices

to have the protection of private rooms. In civil law, buying of keys to a house not your own is regarded as conspiring to enter.

Why should students be allowed to have a key that fits private offices, labs, and other rooms that they have no right—and often no reason—to be in.

PETE MAYER

Dear Editor of the California Tech:

The master key policy of this campus is very bad. The fault lies partly with the Board of Control and partly with the Administration. I will first deal with the Administration policy and then with the Board policy.

Because of the key policy of the Administration, the students need master keys to enter the classrooms and libraries in the evenings. It is fair to say that the students have as much right and reason for access to the libraries — including the chemistry library — as anybody else. It is also fair to say that they should be able to use the classrooms in the evening. The noise and other distractions in the Student Houses gives them good reason to want to study in the classrooms.

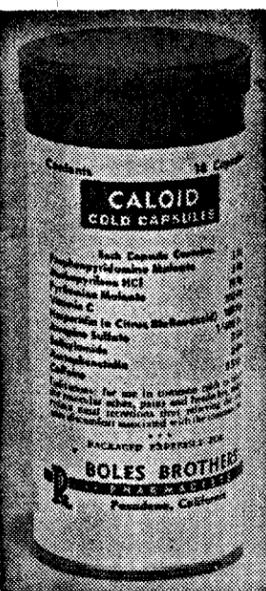
Therefore, the Institute should issue keys to each student for most building entrances and for all libraries. If there is any reason to lock the class rooms at night, the Institute should issue keys for the classrooms; if there is no reason, the lock should be removed from the classroom doors.

After such action on the part of the Administration, unauthorized possession of master keys by students should be against the honor system.

Because of the erroneous belief that they own the campus, students use their keys to get into places where they have no right to be. Added to this, they have the bright idea that they are privileged and competent to use and repair anything. Their privilege is usually non-existent; their lack of competency is shown by the locks in the Student Houses and much of the interhouse damage.

To be more specific about the

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- Missile Turbine Accessory Power Units, Magnetic Amplifiers, Liquid Oxygen Systems, Air Turbines, Freon Centrifugal Compressors, Turbocompressors, Welding Engineering, Sensors and Servos, Connecting Networks, Electronic Flight Data Systems, Controls and Transistor Circuitry, Air Conditioning and Heat Transfer



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Beavers Whip Riverside, Aim For Pomona On Sat.

A 56-50 upset win over UC at Riverside on Tuesday afternoon evened the Caltech exhibition basketball record at 3-3 for the season. The losers whipped the Beavers 56-48 in their only other meeting in the second game of the year.

Saturday the Techmen will host Pomona in an attempt to reverse an earlier 66-65 setback. The Sagehens held the home court advantage last time but now the Beavers, after their second conference win, stand a good chance of knocking off the visitors.

Cal Western journeys to the Beaver hardwood next Tuesday in another non-league encounter. The Westerners, after a rocky start, have come on fast, holding a one-point triumph over tough Cal Poly at San Luis Obispo, members of the CCAA. Basketball-conscious Pepperdine, topping their league standings, had a rough time downing the Westerners by a 60-48 count.

Fred Newman, hitting 10 for 28 field goal attempts, tacked on five free throws to lead the scoring in the Riverside game with 25 points. Bill Rikpa, who started the game, was clicking on his favorite long set shots to garner 14 points.

The visitors put on a last-minute spurt in the first half to take a narrow 31-30 advantage to the dressing rooms with them. The Beavers moved out in front quickly in the second half by scoring four fast buckets. Newman hit on a jumper, Rikpa connected on a long one-hand push, Maley dumped in a fielder and the Beavers were off, never to be headed. The closest the losers could come was to a 44-44 deadlock but Rikpa again swished the cords to push the Beavers ahead.

Missing the rebounding of injured Roger Noll, the victors found surprising help from New-Blakemore who split 25 rebounds between them.

LOSE TO REDLANDS

The Beaver basketball squad was handed an 83-53 beating by Redlands Saturday night. The Bulldogs, who led throughout the game, combined a strong scoring punch with excellent rebounding to gain the win.

Top Beaver scorer was Newman, who hit for 22 points. Jack Shroeder of the Bulldogs scored 24.

Unlike the Whittier game of last week, the Beavers could not contain the Redlands height advantage, continually letting the Bulldogs pull down rebound after rebound. The Beavers were limited to but one shot every

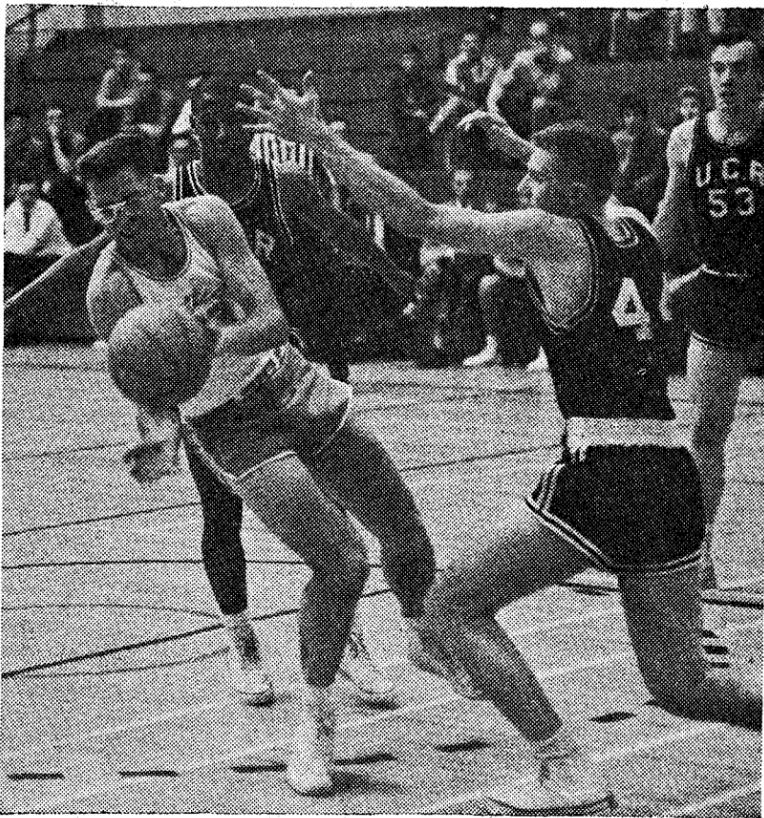
(Continued on page 8)

Sailors Fourth At Santa Barbara

The Caltech sailing team, led by skippers Tom Bowman and Lowell Clark, grabbed fourth place in a regatta held at Santa Barbara last week end.

Orange Coast, Occidental and Santa Barbara all finished ahead of the Beavers, while Caltech ended up ahead of California and San Diego.

The meet consisted of six races, with each school participating in but four of the events due to a boat shortage. Caltech grabbed three third places and one fourth to anchor down the fourth spot.



Frosh Basketball Post Big Victory Over Redlands

The fired-up Caltech freshman basketball squad, on its way to a respectable conference season for the first time since 1955, blasted their Redlands hosts off the court Saturday with a 62-41 decision.

Stalemated at the half with the score 22-22, the victors swamped Redlands with a 40-19 output in the final half. Tom Bopp, tallest man on the court at 6-4, tallied 23 points, many on driving layups off the smooth-working offense. Steady Mike Perlman netted 17 for the runner-up slot. This win was the second over Redlands, who dropped a close four-point decision on the Beaver court earlier in the season.

Holding an overall 8-2 record, the spirited frosh currently rest in second place in the conference with a 4-2 slate behind undefeated Whittier. The 1955 frosh were the 1st yearling squad to post a winning season with a 9-6 record including a

4-4 mark in league action. The starting five for the frosh are Bopp, Perlman, Pete Fischer, Tom Anderson and Dave Barker with Marty Hoffman and Bruce Chesbro as top replacements. Bopp, a former All-League choice in the Desert League at Bishop High, is leading the starting five with a 15-point average while Fischer is holding down a 13.5 average.

Top reblouders are the ever-present Bopp and Perlman. Playing a tight-man-to-man defense for the most part, the frosh have yielded more than 50 points in a game to their opponents only twice, in their only losses to Whittier and Claremont-Harvey Mudd. Showing a habit of second half rallies, the little Beavers have topped the 40-point mark in the second half of three of their last four games.

The charges of Coach Ed Preisler take on Pomona Saturday in their next league test at home.

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Interview Sked

Thurs., Feb. 4—Douglas Aircraft, Ampex, Linde, Goodyear Aircraft, du Pont, Ramo-Wooldrige.

Fri., Feb. 5—du Pont, Ramo-Wooldrige, Microwave Engineering Labs, ACF Industries, Hoffman Electronics.

Mon., Feb. 8—National Security Agency, Shell Oil, Food Machinery.

Tues., Feb. 9—Shell Oil, Food Machinery, Texas Instruments, American Machine and Foundry, C. F. Braun, Procter and Gamble.

Wed., Feb. 10 — Procter and Gamble, Garrett, Bureau of Reclamation, Reynolds Metals, Lawrence Radiation Lab.

Thurs., Feb. 11—North American Aviation.

Fri., Feb. 12 — NAA, Ingersoll Rand, Argonne.

Olson Visit

(Continued from page 1) attend the "Y" Grad sack lunch club. At 2:45 p.m. he will attend a Westridge School Current Events class, topic, "The New Life in Japan." He will have dinner at the home of Dr. and Mrs. R. J. Allen.

Bright Lights

(Continued from page 5) and from which Tobias was known to drink especially large amounts when going to sleep.

Before leaving, Arturo added one last touch: he adjusted the lock on the inner door so that it could not be opened from either side . . . Rubino's revenge would wake the world . . . the Rollfast gathered speed up Oak Knoll, and the sun set gracefully over San Marino.

Next week: Tobias refuses to take the Loyalty Oath.

Frosh Fill Two Offices Tuesday

Arthur Robinson was elected freshman class secretary, and Larry Rabinowitz to one Board of Control post in a run-off election held Tuesday. They will take office immediately.

Two frosh class offices still remain open, and will be decided in a run-off to be held next Tuesday between Henry Abarbarl and Ron Krischke for president, and Kenneth Manley and Lee Samuealson for the other Board of Control membership.

The officers named in the previous frosh elections and the one Tuesday will serve until the end of this year.

t Applications Due

Tomorrow is the last day to submit an application for editor of the little t. Give name to Dick Norman, Blacker.

Basketball

(Continued from page 7) time they got the ball, while Redlands was able to tip in their missed shots with disheartening regularity.

Aside from the defeat, the Beavers suffered another loss against Redlands. Starting forward Roger Noll seriously sprained his right ankle while going after a loose ball in the third quarter. Noll will probably be out of action for at least a week, but might see limited action Saturday against Pomona.

New Lit Course Set Next Term

A new course in 18th Century English Literature will be offered to seniors next term. Dr. Robert J. Allen, visiting professor from Williams College, Williamstown, Mass., will instruct the new class.

The study will include visits to the Huntington Library.

Allen has made 18th Century English Literature his specialty and has written one book and many articles dealing with this period.

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 <p>Nuclear power at the Atomics International Division (Canoga Park, California)</p>	<p>Atomics International, located in the San Fernando Valley of Southern California, is a leader in the development and manufacture of nuclear reactors for power, research, and mobile systems. Two proven AI power reactor concepts are now under construction. Atomics International is building a Sodium</p>	<p>Graphite Reactor for the Consumers Public Power District of Nebraska and an Organic Power Reactor at Piqua, Ohio. AI also is engaged in extensive research activities to develop improved materials for fuel elements and reactor components.</p>
 <p>Electronics & electro-mechanics at the Autonetics Division (Downey, California)</p>	<p>Autonetics, a leader in the field of electronics, is engaged in research, development, and manufacture of Computers, Inertial Guidance, Armament Control and Flight Control Systems. Autonetics designed and built the inertial navigation system for the USS Nautilus and Skate; the first, completely auto-</p>	<p>matic landing system for supersonic missiles and aircraft; the first, general purpose, all-transistor, digital computer. It is now at work on the inertial navigation system for the first nuclear-powered Polaris-carrying submarines and the guidance and control systems for the Minuteman and GAM-77 missiles.</p>
 <p>Naval aircraft & missiles at the Columbus Division (Columbus, Ohio)</p>	<p>The Columbus Division, designed and built the Navy's T2J Buckeye, America's most versatile jet trainer which will train today's jet cadets to command tomorrow's manned weapons systems, and the Navy's supersonic, all-weather A3J Vigilante, today's most versatile manned weapons system. Advanced</p>	<p>design studies now underway at the Columbus Division include undersea, land, and air weapons systems for all Military Services. Current studies include ASW, missiles, ECM, intercept aircraft, electronics systems, VTOL-STOL, ground support equipment, and other still confidential programs.</p>
 <p>Design & development of manned weapon systems at the Los Angeles Division (Los Angeles, California)</p>	<p>The Los Angeles Division is the home of the next-generation manned weapon system—the Mach 3 B-70 Valkyrie multi-purpose bomber—and America's first manned space vehicle, the X-15. Engineers in this division are engaged in research, development, and</p>	<p>production of complete manned weapon systems. Work encompasses the fields of Electronics, Metallurgy, Structures, Aerodynamics, Thermodynamics, Dynamics, Mathematics, Physics, Human Factors and Industrial Engineering.</p>
 <p>Missile weapon system management & space research at the Missile Division (Downey, California)</p>	<p>The Missile Division is the home of the GAM-77 "Hound Dog," an air-to-surface missile for the Air Force's B-52 bomber. The Missile Division has within its ranks some of the nation's most experienced engineers and scientists in the fields of missiles and weapon systems. They are performing research on</p>	<p>missiles and space exploration vehicles of a wide variety of range, speed and propulsion methods. Scientists at the Aero-Space Laboratories, an organization within the Missile Division, are conducting creative research well in advance of existing technology in the space sciences.</p>
 <p>Propulsion systems and concepts at the Rocketdyne Division (Canoga Park, California) (McGregor, Texas)</p>	<p>Rocketdyne is engaged in ideas-to-hardware development of propulsion systems. Hi-thrust liquid propellant engines, built by Rocketdyne, have powered most of the missiles used for military and civilian space projects including Atlas, Jupiter, Thor, Redstone, Explorer, Discoverer, Pioneer, Juno, and others. Under development at present are two super performance liquid systems. While leading the nation in liquid propellant</p>	<p>systems, the division is under contract for high energy solid propellant motors and unique accessory equipment. Solid propellant operations are located at McGregor, Texas. Other propulsion system concepts are actively under development employing the principles of ion energy, nuclear energy, plasma jets, arc-thermodynamic and magnetohydrodynamic systems.</p>