



Dr. Sterling Emerson explains the reasons for building grad Houses in Monday's ground-breaking ceremonies. President DuBridge and Mr. Albert Ruddock, chairman of the Board of Trustees, are seated on the platform behind.

## Emerson Keynotes Grad House Start

Speeches, handshakes, and a tour dominated at the northeast corner of campus Monday as the three new undergraduate Houses were dedicated and ground was officially "broken" for the four grad Houses.

Dr. Sterling Emerson, acting dean of graduate studies while Dr. Bohnenblust is in Europe, delivered the principal address in the grad House ceremony. He discussed the importance of attracting the very best graduate talent to Caltech, stressing the role of adequate modern housing as a fringe attraction beyond graduate fellowships.

Emerson explained that it is hoped housing a great number of grad students together will stimulate contact with students outside one's own option and consequently broaden one's scientific outlook. He further noted the advantage of meeting students from several foreign countries.

Emerson also felt that housing the students just across the street from the main campus would induce them to spend more free time on their research projects.

No ground was actually broken in Monday's proceedings. President DuBridge, reminding the audience that the house across the field was his home, assured everyone that Mrs. DuBridge and he could personally vouch for the fact that bulldozers had already been hard at work. The bulldozers, he good naturedly explained, were very noisy, worked quite early in the morning, and scattered much of the dirt removed from the housing site in the form of dust around his lawn.

Mr. Page, Mr. Ruddock, and representatives of the Lloyd family greeted members of their respective new Houses in short speeches before dinner. They dined in Chandler dining hall with other trustees and top faculty representatives. After dinner talks were delivered by Dean Eaton, "Campus Living — Past

and Present," and Dr. Robert Huttenback, "The Caltech Philosophy of Student House Life."

The visitors then strolled through the new Houses inspecting the lounges and dining rooms and peering into many student rooms.



Mr. Albert Ruddock meets members of the new House named in his honor in Ruddock Lounge Monday night.

## Pauling Defends Stand Before Dodd Investigating Committee

Linus Pauling defended his stand against the Senate Internal Security Subcommittee in a speech on the Athenaeum lawn last Thursday to the accompaniment of about 500 cheering partisans. Pauling's speech, entitled "My Fight for Free Speech," was full of charges against the Subcommittee and the tactics used by the members of the Subcommittee in their attempts to get him to reveal the names of those who helped him circulate his petitions against nuclear weapons testing.

Pauling claimed that the Senate Subcommittee used "trickery, chicanery, and skullduggery" in questioning him. He stated that the investigators were not above using "a tricky line of questions in an attempt

## Oxy Bingle Man Swiped

Occidental transfer student Fred Hameetman turned on his former school mates last Tuesday night and led a charge that ended in the capture of Terry Gilliam, Oxy's Bingle Board Chairman. Gilliam, according to Hameetman, is the most important man on campus, as the Bingle Board does more in controlling the school than any other body. Gilliam, while blushing modestly, admitted that he was probably the most important man on campus.

The raid was accomplished by a crew of Page House initiation pledgemasters who were returning from an excursion to Pershing Square. The first attempt to capture Gilliam was only partially successful, for as Gilliam was being wrestled into the car by Hameetman, Tim Little was being captured by irate Oxy Bingle boys. On the threat of shav-

(Continued on page 3)

# Maxwell Taylor Slates National Security Speech

General Maxwell Taylor, U.S. Army, ret., opens the Caltech Carnegie lecture series next Wednesday evening. He will speak on "A Blueprint of National Security."

The former U.S. Army Chief of Staff is the first in the series of distinguished men of government and science to be brought to the campus by the Humanities Department under a \$300,000 grant from the Carnegie Corporation. The Department has decided to use the grant to provide lectures under the general topic of "Science and Government." The lectures for this year will center around the problems of armament control with respect to national policy and international relations.

General Taylor is slated to arrive on campus on Wednesday. He will be feted at a dinner at the Athenaeum that evening. Dr. DuBridge will introduce him to his audience at 8:15 p.m. in Culbertson Hall. He will meet with a faculty seminar on Thursday.

Taylor graduated from West Point in 1922. World War II found him actively engaged in the Sicilian and Italian campaigns. He was Superintendent of the U.S. Military Academy from 1945 to 1949. In 1949 he became Chief of Staff for Americans Forces in Europe. He remained in Army administration until 1953, when he became commander of the U.S. Eighth Army in Korea. He commanded U.S. and U.N. armed forces in the Far East until 1955. At that time he was made Chief of Staff of the U.S. Army, and served in that capacity until 1959, when he retired. He is now a director of the Mexican Light and Power Company and lives in Mexico City.

### Moch on Disarmament

The second lecture in the series will be presented on October 19. Jules Moch, the permanent French member of the United Nations Committee on Disarmament, will speak on "Why Disarmament Is Necessary and How to Control It."

Moch stresses that by "control" he means "inspection." This lecture should prove extremely interesting since most disarmament conferences bog down when problems of control are reached.

Moch was born in 1893 and took degrees in Marine Engineering and Law at the Ecole Polytechnique. He served in the French Engineering Corps in World War I and has been active in government since 1928. He was imprisoned by the Nazis when France was overrun, but was released in 1941 and made his way to England to join De Gaulle's army. Since the end of World War II he has been prominent in French government. He first served on France's delegation to the UN in 1947 and has been engaged in international affairs ever since.

### Nine Lectures

A total of nine lectures has

been planned for this term, all of them centering around disarmament. Among other lecturers will be Prof. K. A. Kissing of Harvard, Prof. W. Schilling of Columbia, and E. Katzenbach. Tentatively scheduled are Sir Charles P. Snow and Dr. James R. Killian.

## YMCA Heads Meet, Plan '60 Program

In a planning conference held near Malibu during the weekend, student YMCA leaders formulated the major "Y" policies for the year.

The executive committee decided on a few major changes from previous policies. The Upperclass Lunch Clubs will be dinner Clubs this year. The members will meet in Chandler Hall for dinner and lectures on public affairs by local speakers. The day and time for the Dinner Clubs have not been selected yet.

The Frosh Lunch Club will be run as in previous years. The members will meet at the training table (in the basement between Ricketts and Blacker) to eat and to listen to Caltech professors. The pros will discuss the activities that they are engaged in. Club day has not been chosen.

Activities sponsored by the Man and the Arts Commission will put added emphasis on the "Man" this year. Proposed programs include social science, psychology subjects, and sex lectures.

The Public Affairs Department of the YMCA will hold an election poll in the near future and sponsor lectures on the religion question in the election.

Faith and Life activities sponsored by the Y will again include visits by theological students, to be on campus second term.

At the present time the YMCA is engaged in its annual membership drive. The Y executive committee urges all Techmen to join. Says Secretary Paul Purdom, "You can join by simply signing a little card up in the Y office."

## Announcements

### CARAVAN

A car caravan to tomorrow night's football game in the Rose Bowl will form at 7:15 in Tournament Park.

The first pep rally of the season will be next Thursday night.

### STUDENT SHOP

Applications are now being taken for student shop membership. Dues are two dollars for the first year and one dollar each succeeding year. For application blanks see Burke, 38 Fleming; Smith, 31 Dabney; or Gatterdam, 218 Ruddock.

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## Editorial

## Pauling and Petitions

At the very close of the question period that followed Dr. Linus Pauling's speech a week ago Pauling made a couple of observations about the Caltech campus. He implied quite forcefully that he felt students should take a greater interest, as he has, in the affairs of the world outside of the science laboratory. We hope it has been clear that we have long supported this philosophy. Indeed, the main purpose of the California Tech itself is to let people know what is going on so that they will know where to start broadening their interests in any way desired.

However, we were somewhat disappointed by his ensuing reference to turning out for speeches such as his and joining organizations like Students for Peace and by the YMCA announcement of plans to circulate a petition of support for Pauling's fight against the Senate committee.

To us, Pauling presented only two or three facts amid a half hour of lofty world peace ideals and a personal attack on the motives and loyalty of a few Senators. On this basis alone we see no reason for any student to feel motivated to join organizations or sign petitions. For the supposedly intelligent Caltech student we do not think the mere spouting off of hastily formed opinions is the most effective participation in world affairs.

What is needed instead is a program which will help us understand not just what Pauling feels but whether he is justified in feeling that way and not just what his antagonizers are doing but why they are acting toward him the way they are. There are all sorts of practical questions concerning face-to-face international diplomacy and internal political and economic pressures on individual Senators and the government in general that are deeply influencing the Pauling hearings but which Pauling himself, at least last Thursday night, seems to ignore.

In view of this we would like to suggest that the Y strongly consider enlightening the students equally on all facets of the problem so that we can reach our own individual rational and mature decisions before signing petitions in blanket agreement with somebody else's opinion. We also feel that after all the facets have been considered we may decide that there is a far more effective way than petitioning for us to bring about any desired change.

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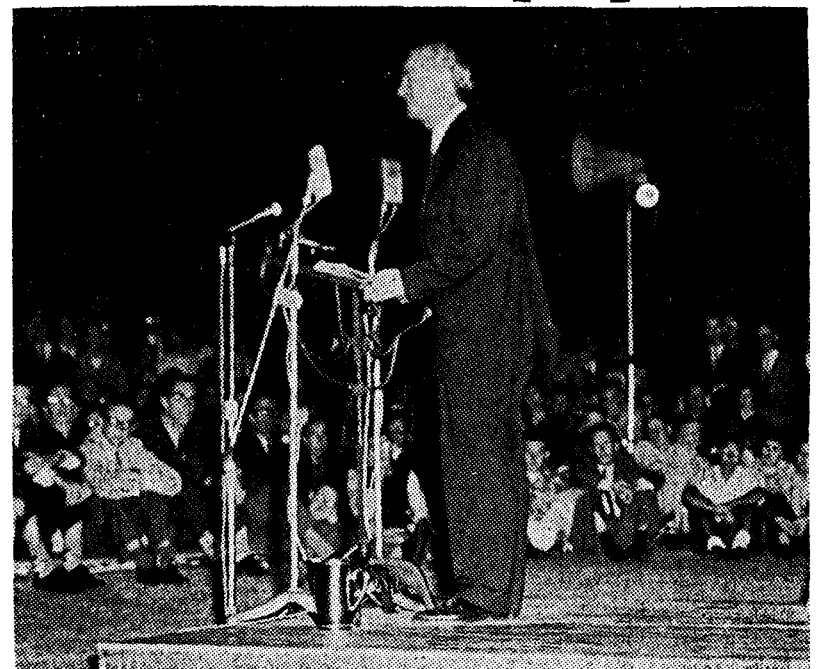
"Some people think I want to be a martyr, that I want to be put in jail for the good of some cause. There is not the slightest truth in that. I have a beautiful wife, and I don't like the idea of going to jail." Pauling also kept his wits about him when stating that he wished no favors. He said, "I made up my mind a long time ago that I will always try to think for myself, that I will not accept anything from anyone, not from the President, and not from the Pope."

One of the listeners to the speech asked Pauling if there was any Communist activity connected with the petition. To this Pauling answered, "Well, there may have been some Communist activity in getting the signatures of the 216 distinguished Russian scientists who signed the petition."

Pauling's petition was signed by 11,021 scientists from 49 nations. Although Pauling was allegedly called before the Senate Subcommittee to investigate possible Communist activity in getting his petition signed, he states that to date the Subcommittee has not asked him a single question on Communism. The Subcommittee has called on Pauling to appear on October 11, 1960, with the names of those who helped him collect the signatures. Pauling states that he will not comply with the demands of the committee. Pauling also has a "Writ of certiorari" before the Supreme Court. This writ asks for the Supreme Court to review Pauling's case and bring it up from a lower court. The decision will come on Oct. 10.

## Foreign Car Not Needed To Join Foreign Car Club

The Caltech Foreign Car Club will hold an organizational meeting Monday, October 10, at 7:30 p.m. in 206 Engineering Building. Rallies, trips, discounts, and fun are advertised features of membership. Anyone loosely connected with Tech is invited, and ownership of a foreign car is not necessary. See Mike Mann or Sam Ginsberg in 29 Spalding for further information.



Dr. Linus Pauling addresses huge gathering on Athenaeum lawn last week to explain his trouble with the Senate.

## Rudd Brown Will Address Dems In Dabney Tonight

Mrs. Rudd Brown, candidate for Congress from the 23rd district, will speak tonight at 7:30 in Debney Lounge. Her talk is being sponsored by the Caltech Young Democrats Club.

Mrs. Brown is the wife of Caltech geochemist Harrison Brown, and is running against Edgar Heistand, the Republican incumbent. She was defeated by him for the Congressional seat two years ago.

The Young Democrats held an election at their last week's

meeting. Eli Chernow was named president, and Dick Brandt state committeeman. Also invested with office was Robert A. Huttenback as faculty sponsor.

The club plans a circular-mailing campaign in the near future to get out voters for Mrs. Brown. Members will also provide rides for voters on election day. Anyone interested in doing this, or precinct work, should contact a member of the Young Democrats.

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# Campaign Issues Aired

BY TOM TISCH

Last night, as on many previous nights, I found myself thoroughly involved in a political argument — what is the course of the nation's society as opposed to what it should be; what should be the true role of the government in foreign affairs, again perhaps opposed to what it has been over the last few years.

The argument — discussion, if you will — began over who is the best man for President of the United States, Richard Nixon or Jack Kennedy. As a staunch Nixon supporter, the battle line was clearly drawn and the gauntlet thrown down.

One of the chief issues in the campaign is and should be the role of the United States in world affairs. Both candidates often skirt the issue by saying the U.S. must always be first in the world as a leader. Yet Senator Kennedy's action in wanting to apologize to Mr. Krushchev over the U-2 incident indicates at least uncertainty on his part about the best way to maintain this position.

Specific views, and the reasons behind them, should be stated upon such important questions as military and general economic assistance to foreign countries, the all-important question of disarmament procedure and how to best accomplish the latter without threatening the security of the U.S.

There is, too, the classic question of which party is better for the economy. This year, more than ever, the issues seem clustered around the central issue of government spending, and the elusive "rate of growth," so susceptible to statistical juggling, by either side.

The Democrats would have the federal government entering

strongly into the day-to-day activity of the nation's economy. They would also concentrate welfare, medical care, and school construction programs, and so forth under federal responsibility.

The Republicans, on the other hand, feel that a large share in effort in these directions should be made on the local and state level, where the problems are more accurately understood and the lag time between talking and doing is less because of less administrative complexity.

We also contend increasing government influence in the nation's economy has a stifling effect on individual creativity and personal initiative.

The Democrats claim that they are forging ahead with new economic policies based upon the most up-to-date theories presented by well-known economic advisers.

If this is so, then why have the Democrats resorted to a Farm Program which is a classic side-stepping of the issue, and moreover a throwback to the system that originally bred the problem. Republicans, while admittedly having trouble with the farm situation, are at least trying to alleviate the surplus problem and get the government out of the price-support business.

How about the all-important question of labor-management disputes? What should be the exact position of the government in these matters: An im-

partial arbiter? A middle man to throw weight in the direction of the group most undermanned? Or should it take sides, regardless of the issues at stake?

Finally, we come to the issue of the two individuals. We feel that the question of experience and judgment is a valid question. We also feel that Vice-President Nixon has a definite edge here. Senator Kennedy has never held the chairmanship of a major committee in the Senate.

Furthermore, he is the publicly acknowledged leader of his party; yet he failed, even with the "help" of the majority leader of the Senate, to implement his programs, for the simple reason that the party members do not accept him as a leader.

The questions I have raised here are all major issues in the campaign; it is the duty of all eligible voters to put some thought into the problems at hand and to become able to make a well-informed decision in the nearing election. It is to this end that I have written.

## Bingle Boarder

(Continued from page 1)

ing Little's head, an exchange was made, Little for Gilliam. However, in the scuffle Gilliam had dropped his wallet, and when he returned to pick it up, he was whisked away in Hameetman's black mariah.

Gilliam rested comfortably in the Page House storeroom Tuesday night.

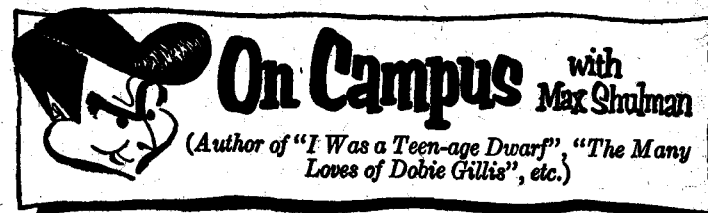
## Young Republicans Organize

Caltech Young Republicans have lacked definite organization in the past, but the current Presidential campaign has aroused campus interest to such a pitch that the Young Republicans (perish the thought) may even consider forming a club.

Larry Seely, a present junior, reports that the club may get on the road yet. Interested supporters or observers can contact

Seely in 114 Lloyd, or come to the organizational meeting the conference room of Lloy House at 8 p.m., Wednesday October 12.

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## WHAT TO DO TILL THE PSYCHIATRIST COMES

Once upon a time at the University of Virginia there was a coed named, oddly enough, Virginia University who was handsome and kindly and intelligent and ingeniously constructed and majoring in psychology. Virginia went steady with a young man on campus named, oddly enough, Oddly Enough who was supple and fair and lithe and animated and majoring in physics.

Virginia and Oddly enjoyed a romance that was as idyllic as a summer day, as placid as a millpond. Never did they fight—never, never, never!—because Virginia, who was majoring in psychology, did not believe in fighting. "Fighting," she often said, "settles nothing. The scientific way is to look calmly for the cause of the friction."

So whenever she and Oddly were on the verge of a quarrel, she used to whip out a series of ink blot tests and they would discover the true underlying cause of their dispute and deal with it in an enlightened, dispassionate manner. Then, the irritant removed, their romance would resume its tranquil, serene, unruffled course.



After six months of this sedate liaison, Oddly was so bored he could spit. He loved Virginia well enough, but he also believed that people in love ought to fight now and then. "It opens the pores," he said. "And besides, it's so much fun making up afterwards."

But Virginia would not be provoked into a quarrel. One night Oddly tried very hard. "Hey," he said to her, "your nose looks like a banana, and your ears look like radar antenna, and your face looks like a pan of worms."

"My goodness, we're hostile tonight!" said Virginia cheerfully and whipped 120 Rorschach cards out of her reticule. "Come," she said, "let us examine your psychic apparatus."

Oddly tried again. "You're fat and dumb and disagreeable," he said, "and you'll be bald before you're thirty."

"Humm," said Virginia thoughtfully and lit a cigarette. "This sounds like an anxiety neurosis with totemism, anagogic trauma, and a belt in the back."

"I hate you," said Oddly. "I hate your looks and your clothes and your toenails and your relatives and the cigarettes you smoke."

"Now, hold on, buster!" cried Virginia, her eyes crackling, her color mounting, her nostrils aflame. "Just keep a civil tongue in your stupid head when you talk about Marlboro! Nobody's knocking that filter, that flavor, that pack or flip-top box while there's breath in my body! It's a full-flavored smoke, it's a doozy, it's a dilly, it's a gas—and anybody who says a word against it gets this."

By "this" Virginia meant a series of combinations to the head and liver, which she now delivered to Oddly and turned on her heel and stormed away.

Oddly brought her down with a flying tackle. "I love you with all my heart," he said.

"And Marlboro?" said she.

"And Marlboro even more," said he.

And they kissed and plaited love knots in one another's hair and were married at Whitsuntide and smoked happily ever after.

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## Bemis Retires From ROTC

Leon Bemis, a member of the few that flew the original acceptance and test flights on the 17 Flying Fortress bombers that played a major role in bringing Germany to her knees in World War II, has retired after 23 years' service with the Air Force and Army Air Corps.

Since June, 1955, Bemis, now 42, served as sergeant major in charge of administrative work for Caltech's Air Force ROTC unit. This unit, which consists of about 65 cadets who drill, study aerial warfare, undergo flight indoctrination, and visit missile bases, is under the command of Maj. Francis R. MacKenzie, who today announced Bemis' retirement.

In his new capacity as a private citizen, Bemis will represent an electronics supply company as a sales representative. He will continue to live in West Covina with his wife Martha, and their four children.

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# SPORTS

## UCR Tops Beavers In Grid Opener

BY PETE METCALF

Caltech's hopes for victory in their first game of the season were damped Saturday as Riverside managed to get one more touchdown than the relatively inexperienced Beavers. Quarterback Pete Kettela led the UCR team to their 28-18 triumph over Caltech.

Led by Vince Hascall, Frank Marshall, and Dave Barker, Caltech made a good showing in a game which could have gone to either team. The Beavers gained 327 yards to Riverside's 380; this is one of the highest total offense figures for Caltech's team in recent years, and it indicates that Caltech will be a real scoring threat in future games.

Another encouraging aspect of Saturday's game was the fine pass defense shown by the local team. Riverside failed to complete any really long pass plays during the entire game; this is especially significant when one considers that most of the touchdowns scored against Caltech last year were made on long passes.

Caltech drew the first blood in the game as Joe Bocklage grabbed a Riverside fumble in the early minutes of the game, and, a few plays later, Frank Marshall passed to John Arndt for a touchdown. Marshall's try for the extra point failed.

Late in the second half Riverside struck back, marching 86 yards in 14 plays for the score. Pete Kettela kept the ball to

score the extra point.

A Caltech fumble on its own 28-yard line set up the second UCR touchdown. Pete Kettela scored from the three-yard line, but Tom Michaelson failed to score the extra point as the center of the Caltech line ganged up to stop him.

Caltech then marched to the Riverside one-yard line, but a determined goal line stand by UCR stopped the Beavers cold.

Caltech regained possession of the ball on the 50-yard line and drove to a first down on the UCR 13, but a fumble cost the Beavers another scoring opportunity.

Two plays later, Warren Blakely ran around the right end and went 83 yards for another Riverside touchdown. Pete Kettela passed to Gary Lindberg for the extra points.

On the first play after the

(Continued on page 5)

### Advocate of Dropsy Arrives on Campus

Would-be Caltech parachutists will have an opportunity to get jump-sick without leaving the ground. During the assembly hour on October 13, red-hot jump instructor Lewis Sanborn will give a short illustrated lecture on "Sport Jumping."

The lecture will include movies of free-fall taken from a helmet camera. Sanborn is from Parachutes Incorporated, a jump school located in Hemet, Calif. The talk is open to everyone.

## Frosh Teams Fight Against Inexperience

The most certain thing about Caltech's three fall frosh sports—cross-country, football and water polo—is the uncertainty of how well the teams will do. At this early stage none of the coaches would hazard a guess about his team's chances, but all three teams seem to show some promise.

The frosh cross-country team now has only seven members—the bare minimum needed for a team. The team does have one experienced man, Ed Lee, who won three cross-country letters in high school.

As usual the frosh football team does not have an abundance of experienced men to work with. Especially lacking among the 26 men who have come out are experienced guards and tackles, although there is an overabundance of good candidates for ends, such as Bill Schone, 193 lbs., 6 ft. 3½ in. Other experienced men are quarterback Bob Liebermann and tackle Tom DeKlyen.

The frosh water polo team has fourteen men out, making it the largest frosh water polo team since 1955. These men include two experienced men—Mike McCammon and Mark Kaufman—both of whom played goalie for three years on high school water polo teams. Encouraged by the turnout, Coach Emery hopes to be able to get a winning seven together for the first game at Orange Coast on October 11.



## Beaver Chips

By Noll

### First Term Sports Outlook Not Bad

Caltech's first-term athletic fortunes may surprise the skeptics, for this year's football, water polo and soccer teams all show promise of improving on last year's records. The water poloists could easily bag the conference championship.

The football team has the most problems to solve, as expected. Looking at the bright side first, the Beavers have as good a backfield as any team in the league, which is saying a mouthful. Vince Hascall's speed, Ed Cline's power and determination, and Dave Barker and Frank Marshall's quarterbacking are all excellent. Given a little experience, Barker could become the best quarterback in the league. The Beavers also have some excellent linemen. Jack Arnold anchors down one guard position with real skill, and Ross Carder is a fine tackle. Joe Bocklage at center can be counted on for consistently good play.

But there are weaknesses. John Arndt is of all-conference calibre at end, but there is no one else to play the position adequately. As in the Riverside game, if Arndt can't go 60 minutes, the opponents can run us to death around both ends, while when Arndt plays they can only run us to death around one end.

Another problem is the tackle spot, with only Ross Carder having shown much there this season. Hopes have soared since the Riverside game, however, as a transfer student, Dave Harding, who recently reported for practice, played excellently while he was in the game.

But the biggest problem is end. If the Beavers don't solve that one, they won't win much, if at all, in spite of the fact that the rest of the team is very good.

### Rocky In Water Polo

The water polo team doesn't have as much to worry about, but if they don't cure a few ills they will finish second instead of first. Marshall Buck, a good goalie last year, will still have to improve if the team is to be of champion caliber. The biggest problem is to replace all-conference guard Dave Tucker who graduated last year. But Tucker's loss is compensated for by the addition of Oxy's all-conference forward Fred Hameetman. A much-improved Tom Tisch at guard looks like a possible future all-conference pick, and Bob Ruby, the team's top scorer, should be even better than last year when he was picked all-conference.

These experienced players, plus some excellent sophomores, all spell success for the squad.

Soccer fortunes are the hardest to predict, due to the ruling allowing graduate students to play, but as far as can be told, the team should do very well. Just about everyone from last year's team is returning, now with an extra year of experience. Because most of the players have never played soccer before, this added experience is even more important than in the other sports.

The Beavers usually have a good defense, but always have problems scoring points themselves. If the team can forge a potent offense from their experienced material, and solve the perennial goalie problem, they can expect a good season.

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## THE THREEPENNY OPERA

MUSIC BY KURT WEILL • ORIGINAL TEXT BY BERT BRECHT • ENGLISH ADAPTATION OF BOOK & LYRICS BY MARC BLITZSTEIN

DIRECTED BY CARMEN CAPALBO  
WITH LOTTE LENYA

Designed by William Pitkin • Orchestra Conducted by Samuel Matlovsky

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## Football Opener

(Continued from page 4)  
kickoff, Frank Marshall threw a 60-yard pass to Vince Hascall to set up the second Caltech score. Frank Marshall drove in for the score from the one-yard line, but his attempt to pass for the extra point was incomplete.

Riverside then received the kickoff and drove 65 yards in nine plays to lead 28-12.

Dave Barker led Caltech on a 69-yard scoring march with

## Soccer Team Wins Opener

A promising season began last Saturday as the Caltech soccer team won its opening exhibition match at Biola College, 3 to 2. The game's outcome, however, was less in doubt than is indicated by the score, as the veteran Tech forward line was attacking during three quarters of the game. The Biola team scored twice on fast breaks against the inexperienced Tech defense. Joel Kwok, last year's most valuable player, was outstanding at center forward, as was Gary Ostereberg at left wing.

All those students who would like to play soccer on either the varsity or JV teams are urged to come out, especially those with previous experience, be they freshmen or graduate students. Soccer is the only varsity sport at Caltech in which graduate students may participate.

This Saturday the Caltech team travels to Riverside for its first league match.

## Waterpolo Team Debuts Against PCC, Alumni

The Caltech Varsity Water Polo team will open its 15-game 1960 schedule this Friday, October 7, against Pasadena City College in Alumni Pool at 4:15 p.m. On Saturday, the Webmen will take on the Caltech Alumni water polo team, consisting of such stalwarts as Don Wyburg (all-conference goalie in his prime), and Bill Davis (in his last season for the Alumni).

Hopes are up among team members for an opening victory against PCC to set them off well on the road toward a successful season. To date, the first string of the team has not been designated and the ability of the individual men has been about equally distributed between the Blue and White scrimmage teams. But Web Emery, coach of the squad, expects to weld together a tightly knit squad in the practice games prior to the conference schedule.

Next Tuesday the Emerymen will tackle Orange Coast Junior College on both the varsity and frosh levels in a 4:00 p.m. game at Orange Coast.

two 17-yard runs to boost his rushing average to 16.25 yards per carry. Frank Marshall again made the score from the one-yard line. The try for the extra point was incomplete.

Far fetched as this might seem, Caltech actually dominated most of the game. Most of the game was played in Riverside territory; Caltech fouled up on four chances for a touchdown; Riverside was in Caltech territory only twice when they failed to score, and one of these times made it only to the forty.

Caltech's most serious flaw was at defensive end. The Beaver's lack both depth and experience at this position. One hopeful note, however, was Carlos Johnson's performance at this position. He played the position for the first time in his life during the fourth quarter and looked quite good.

Tomorrow night Caltech meets Redlands in the Rosebowl. With Saturday's good showing, they may put a good scare into perennially powerful Redlands. They may even win!

## Blood Tracing Links Man To Ape

If anyone still doubts that man and the higher apes evolved from a common ancestor, let him compare their hemoglobin "fingerprints." They are virtually identical.

Chemists at Caltech are applying hemoglobin fingerprinting to genetic and evolutionary studies and in the solution of other biological problems.

Dr. Emile Zuckerkandl, Caltech research fellow, reported results of this comparison of the hemoglobin patterns of man and eleven adult animals of different kinds. The animals involved are the gorilla, chimpanzee, orangutan, cow, pig, sheephead fish, shark, lungfish, hagfish and a marine worm. These forms of life represent a very wide spread on the evolutionary scale.

Dr. Zuckerkandl has been doing this research for a year, with Dr. Linus Pauling, professor of chemistry, and Dr. Richard T. Jones, research fellow. The work is partly supported by the National Institute of Health.

The hemoglobin molecule consists of some 600 amino acid-building blocks attached to one another in a definite sequence, like beads in a chain. There are 21 different kinds of amino acids. In most animals, each hemoglobin molecule contains four separate chains.

The more related two kinds of animals are on the evolutionary scale, the more alike are the sequences of the amino acids in the various chains of their hemoglobin molecules. Also, the further the animals are apart in evolutionary progression, the more unlike are the amino acid sequences in their hemoglobin.

A molecule of hemoglobin is a very small thing—too small for its structure to be seen in an electron microscope. The molecule's amino acid building blocks are, of course, even tinier.

All these differently constructed hemoglobins perform essentially the same function—that

of carrying oxygen to the body cells. The exact relation between the amino acid structure and the function of hemoglobin is not yet understood.

"The fingerprint technique shows that man's hemoglobin is almost indistinguishable from that of the gorilla and chimpanzee," Dr. Zuckerkandl said. Judging by the hemoglobin fingerprint patterns, the adult human seems to resemble more closely an adult gorilla than his own human embryo. The human embryo makes a kind of hemoglobin that is different from that made by older persons.

The orangutan hemoglobin pattern differs very slightly from man, and the Rhesus monkey pattern slightly more so.

"The evidence suggests that the hemoglobin of man and the higher apes has changed very slightly since their common ancestor was alive, 10,000,000 to 35,000,000 years ago," Dr. Zuckerkandl said.



Telephone engineer Bill Pigott, left, and helicopter pilot plan aerial exploration for microwave tower sites.

## "I ENGINEERED MICROWAVE TOWER LOCATIONS ON MY FIRST ASSIGNMENT"

When Bill Pigott knocked on the door of Pacific Telephone, he had two big assets. One was an electrical engineering degree from Seattle University. The other was a craving to jump right into vital engineering problems.

It was not long before Bill was exploring Washington's rugged Cascade Range in a helicopter to find sites for microwave relay towers—part of a multimillion dollar telephone construction job. Today, it's considerable satisfaction to him to see these towers spanning the mountains, knowing that his planning helped put them there.

Other important assignments followed: engineering maritime radio systems, SAGE systems—figuring engineering costs for Air Force Titan missile bases.

"Our people respect a man's engineering training—you really get a chance to show what you've got on the ball," Bill says. "I was up to my neck in tough engineering problems right from the start."

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# Graduate Fellowship Applications Due Now For Optimum Results

Since about 80 per cent of Caltech graduates do further study, the subject of graduate fellowships becomes of pressing interest as students approach their senior year. What sort of grants are available? How much will they pay? How do you apply for them? How are the graduate fellows chosen? Though the scope of this article is necessarily limited, all of these questions except the last can be given fairly definite answers.

The largest single program as far as Caltech is concerned is that of the National Science Foundation. Last year, 26 Caltech graduates received grants under this plan. Of smaller proportions here were such programs as that of the Woodrow Wilson Foundation, primarily for social science and humanities graduates or prospective teachers, foreign grants such as the Fulbright and Rhodes Fellowships, and the grants of numerous corporations, smaller foundations, institutions, and individuals — usually to be used at a specific college or in a specific option.

How much can you get? The large national programs pay tuition and required fees plus travel and dependency allowances and from \$1300 to \$1700 for each fellowship. These are grants for one year only, not renewable. To continue them application must be made on the same basis each year. The smaller programs

(in number of grants) may pay this sort of amount, and sometimes more, specified cash awards, or allowances for specified expenses. These are sometimes renewable with satisfactory performance.

What are your chances of getting one of these grants? This seems to be the mystery. The Caltech Graduate Office comments simply, "The best students get them." From the form of application, however, it is safe to assume that the choice is made primarily on grades.

Application for fellowships are made either to the foundation or corporation granting them, or to the institution, when it is empowered to select the fellows. Such an application usually consists of a form, a full transcript, and recommendations from fac-

ulty members.

Sometimes tests such as the Graduate Record Examination or the Miller Analogies Test will be requested, but it is sure that grades with recommendations will usually be the major factor in selection. For the larger programs, applications are usually made early in the senior year, though for programs having smaller numbers of applicants the deadlines may be later.

On campus, information about specific fellowships may be obtained from the table outside the Graduate Office in Throop Hall and from the bulletin board in front of Dabney.

Once the applications are in and your grades are reported, that's about it. All you can do is wait; you've made your record and you must stand on it.

# Y Film Series Opens With Comedy Note

The Caltech YMCA Film Series will start this Sunday, October 9, with a program consisting of *The Lavender Hill Mob*, an English comedy starring Alec Guinness, and a "hilarious" Disney cartoon titled *Motor Mania*. This term the series will comprise four separate shows, each to be held in 206 Dabney at 7:30 p.m., alternate Sundays. The cost is 65 cents for a single ticket or \$1.50 for a series ticket for all four, which, as practically any GTA in math will tell you, is a saving of \$1.10. They are available at the Y, at the door, or from any one of the friendly representatives who will hound you for the rest of the week.

*The Devil and Daniel Webster* will play on October 23. Novem-

ber 6 will bring the motion picture adaptation of Erich Maria Remarque's novel of World War I, *All Quiet on the Western Front*. The final show of the term will be on November 20, William Faulkner's *Intruder in the Dust*.

The film series originally started as a grad student project, to serve as a showcase for some of the short "experimental" films that were prevalent in the 1930s. However, interest soon flagged on the part of the grads and the idea was taken over by the Y. As of now, there are two student managers, Lew Hemp-hill and Butch Lungershausen, who are responsible for everything but the deficit, which the Y makes up.

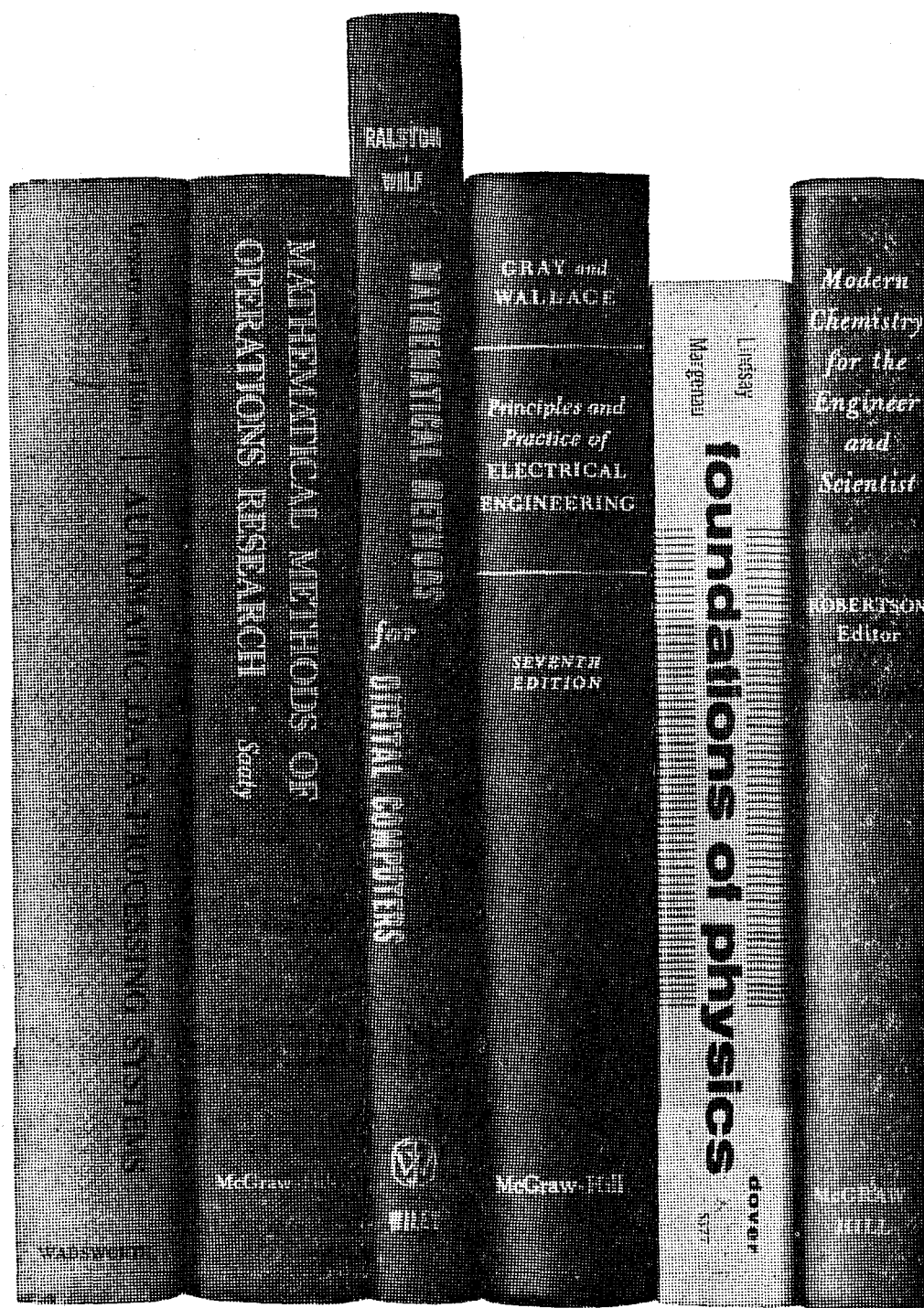
# New Faculty Added To Tech

Many new faculty members were added to the Caltech campus this fall. Among the faculty members were three full professors, two of them visiting for the year. The three professors are Alan J. Hodge, professor of biology, who received his Ph.D. from M.I.T. in 1952; Helmut Wielandt, visiting professor of mathematics, who is here from the University of Tübingen in Germany where he is a professor of math, and Adriaan C. Zaanen, also visiting professor of mathematics and from Leiden University in Germany.

Other new faculty members include J. Humblet (physics), who is a research associate; A. F. Hildebrandt (physics), H. D. Kumhaar, Dieter Gaier (math), T. A. Jacobs (jet propulsion), and L. Serle (astronomy), all senior research fellows. M. L. Weidenbeck is a new research fellow, while C. C. Feng (engineering), S. E. Hazlet (chemistry), J. H. Scott (chemistry), P. A. Walker (biology), and P. Yankwich (chemistry) are visiting associates.

R. V. Meghreblian is a new associate professor of applied mechanics. Meghreblian was past chief of the physical sciences division of JPL. Caltech also has four new assistant professors — these are E. T. Degens (geology), C. E. Helsley (geology), M. Mass (geology), and F. Zachariasen (physics).

C. E. Jacob is a new engineering lecturer, while W. P. Schaefer (chemistry), P. R. Baker (history), R. I. Conhaim (history), L. B. Koppell (chemical engineering), and E. Pinson (electrical engineering) are new instructors.



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