

Volume L.

Beavorators In Clean Sweep At Stockton Speech Tourney

"Federal Aid to Education" Discussed by Stone and Gardner, Fairall and Kurland, Breiman and Rudin

Caltech silver-tongued debaters and extemporaneous speakers made a clean sweep of events at the College of the Pacific Speech Tournament, held last Friday and Saturday at Stockton, Calif.

Hot Subject

"Federal Aid to Education" was the hotly discussed question of the tournament, which offered Caltech teams of Stone and Gardner, Fairall and Kurland, in the lower division, and Breiman and Rudin in the upper division victories in four out of the five debates in which each participated. Since no team took all five of its debates, three out of the five teams tying for first place were from Caltech.

Three Out of Four

Caltech teams, as a group, won three out of every four contests, in which they participated, an average considerably above that of any other college.

Brown Knows

George Brown, speaking on the general subject of Communism showed that he knows his topics well by winning all three of his extemporaneous speech rounds to tie for first place. His third round talk was "Can the Capitalist Nations Combat Communism by the Same Propaganda Methods Used by Communists?"

Tech Held Up

Leo Breiman and Bernard Rudin also held up the home team's standing by winning two out of their three extemporaneous speech rounds and getting a second in the third. In Lower Division Ollie Gardiner and Ralph Stone made creditable showings.

Excel In Extempore

The Tech extemporeneaus speakers as a whole did very well. The average rating of their speeches was between first and second, higher than that of any other school's speakers.

Representing Caltech at Stockton were Leo Breiman, Bernard Rudin, Ulrich Merten, Oliver Gardner, Ralph Stone, John Vrolyk, Allen Beek, Ray Brow, Bob Kurland, Dick Fairall, Clem Savant, and George Brown.

Eleven Schools

Eleven Colleges and universities were represented at the two-day festival: Caltech, Chico State, UCLA, Bakersfield J.C., University of Nevada, Reedley College, San Jose State, Los Angeles City College, College of the Pacific, Weber College, and Pasadena College.

Own Tourney

Next term the speech squad will hold its own tournament at Caltech, January 14-15. Teams from UCLA, USC, Redlands, Pepperdine, Nevada, Stanford, Pomona, Occidental, and many other western colleges and universities will attend.

More

The California Bankers' Association will hold a debate with Caltech on January 20th. Other tournaments will be held at Redlands and Bakersfield.

Bookstore Offers Pictorial Calendar

The bookstore has on sale a pictorial calendar of Caltech which should be very suitable for Christmas gifts to friends of Caltech students. It contains thirty-four pictures of the campus and student activities. Cost is \$1.00 over the counter or \$1.10 mailed anywhere in the U.S.

Campus Calendar

THURSDAY, DECEMBER 9—
12:00 Y. Upperclass Luncheon, Training Table
12:15 Throop Club Meeting
4:00 Math Club Meeting, 27 Crenin
7:25 Y. Cabinet Meeting, Y Lounge
FRIDAY, DECEMBER 10—
11:00 Assembly, Red Nichols Jazz Band
7:30 Caltech Musicals, Dabney Lounge
MONDAY-TUESDAY, DECEMBER 13-14—
Exams
DECEMBER 17-JANUARY 3—
Vacation-Merry Christmas!
MONDAY, JANUARY 4—
Registration
TUESDAY, JANUARY 4—
Classes Start

CALIFORNIA TECH

California Institute of Technology

Thursday, December 9, 1948

No. 10

Fall Athletic Squads Honored At Banquet

Presided over by the genial Dr. Chester Stock, the annual Fall Athletic Banquet held Monday night honored members of Caltech's varsity and freshman football, cross country, soccer and water polo teams. First item on the agenda was a hearty steak dinner, the next Dr. Stock's introduction of the guests.

Guests

Among the guests were coaches Roy Dennis of Oxy, Fuzz Merritt of Pomona, and Chief Newman of Whittier; members of the press, and faculty members. Unfortunately Jack Geyer, who was scheduled guest speaker, was unable to attend.

Award

Winner of the Wheaton Trophy was Don Hibbard who was presented the award by Coach Mason Anderson. The trophy goes to the student most outstanding in sportsmanship, moral influence, and scholarship. Selection is by ballot of the players on the first two counts. Last year's winner was Milt Strauss. Signal-caller Bob Funk was named captain for the '48 squad.

Special Mention

Singled out for special mention were Byron Karzas and Forrest Allinder, two men who have been out consistently over the past years and given a great deal to the ball club despite a small amount of time in actual games;

(Continued on Page 6)

Wildwood Lodge Scene Of Fling For Throop, Ricketts

The grand climax of a big social season of Throop Club and Ricketts House was an enormously successful barn dance held jointly at Wildwood Lodge last Friday night. The treacherous mountain trail called Mt. Gleason Road was braved by about one hundred couples and an indeterminate number of stags, whose presence could only be inferred by the sobs and moans of men who had not seen their dates for hours.

Feature Events

Feature events of the evening were the crew and flamer contests. Ricketts beer-guzzlers took the crew race easily from a fighting, but inexperienced Throop squad. Eighty-eight seconds was enough for the Ricketts ten to down a total of 120 ounces of brew. Throop came back to win the flamer contest from a Ricketts pair whose professional finish was slightly tarnished by much elbow-bending. Croswhite and Woody starred for the winners with Moss and Fox competing for the losers.

Combo Contributes

The Dabney Combo contributed to the success of this affair by providing exceptionally audible music. Although nearly everyone tried to drink the place dry, the supply appeared inexhaustible. The party broke up early Saturday morning to the accompaniment of female voices saying, "You rest, honey, I'll drive us home now."

Workers Needed For Rose Parade

For those of you who will stay in or near the Institute during Christmas vacation, the Placement office has several jobs concerning the Rose Parade.

Flower Tying

Students are wanted to put flowers on the floats from Tuesday, December 28 through Friday, December 31. You may work from eight to sixteen hours a day at \$1.00 an hour, but \$48.00 is the maximum to be earned. Students' wives are also eligible.

Program Selling

Also men are wanted to sell official programs for the Rose Parade New Year's morning from 4 a.m. to 11 a.m. Here is a swell chance to pick up a few extra dollars during the holidays. If you are interested see the Placement Office immediately.

Sterling Sends Thanks To Techmen

The following is a letter to student presby Stan Barnes from President Elect of Stanford, J. Wallace Sterling.

Dear Stan:

No message of good wishes that I have received gave me greater joy and comfort than that from you on behalf of the Caltech students. I should like them to know, through you, that they have made the major contribution to what have been eleven of the happiest years of my life. I shall miss them all, but in missing them shall carry with me a very warm memory of happy days and good men. I hope you will tell them that if they find themselves near where I happen to be I hope they will give me the pleasure of seeing them. I may not always remember their names, but an announcement that they are Caltech men will open my door.

Thank you again for your kindness.

Sincerely yours,

J. E. Wallace Sterling

Red Nichols And Five Pennies To Play At Assembly Friday

Famous Recording Star Slated For Last Program Of Fall Term

Nichols Band Former Home of Benny Goodman, Artie Shaw, Jimmy and Tommy Dorsey, Charlie and Jack Teagarden

The featured attraction at 11:00 tomorrow in Culbertson Hall will be Red Nichols and his Five Pennies. Said to be one of the finest jazz combos on the coast, Nichols is currently drawing overflowing crowds at "The Hangover" in Hollywood.

As a popular figure in ball-rooms, night clubs, and musical shows, he has gained fame for the best in popular music. Such notables as Benny Goodman, Jimmy and Tommy Dorsey, Charlie and Jack Teagarden, Artie Shaw, Gene Krupa, and the late Glenn Miller have graduated from his groups, and his influence contributed to the stellar success of Hoagy Carmichael. At the age of nineteen Red Nichols made some of the first jazz discs in the record industry, and these are still considered tops as collectors items.

Since Three

Having played the trumpet since he was three years old Red Nichols can provide some really mellow horn. His jazz is known for originality, and he has a remarkable capacity for improvisation. His show tomorrow with a six piece combo of jazz talent promises to be one of the best entertainment events of the year.

The show was arranged for the student body by the Rally Commission, and for those of you who want to hear some classic arrangements of really fine jazz, you will have an opportunity tomorrow that many disc jockies would give their last needle for. It will be a welcome relief before the last ditch snaking for finals starts.

In the third quarter, the Surveyors having recovered a blocked kick, drove down to within 12 yards of the Geology uprights; but after throwing in their sturdy defensive team, the geologists held for four crushing (Continued on Page 3)

Blackerites Dance, Dine Lavishly At Christmas Formal

The term's social activities on the Southeast corner of the campus were climaxed Saturday night in a genteel atmosphere of candlelight, flowers and soft music as the men of Blacker formally ushered in Yuletide with their annual Christmas dinner-dance.

Superb Dinner

Following Miss Huck's superbly presented steak dinner, Blacker men and their guests enjoyed an evening of dancing amid a Christmas theme in blue, set off by a ceiling-height, snow-laden, blue-lit tree, and the glow of the traditional Yule log. Overlooking the dancers was a large Santa Claus replete with cotton beard, the artistic creation of Miss Joanne Cragin and Hugh Stoddart, Blacker's ace artist.

Enjoyable Hours

On the evening before House members and their dates spent several enjoyable hours cutting evergreen boughs, stringing lights, and throwing soapsuds "snow" about in preparation for the Saturday evening event.

Board Announces Hundred Dollar Increase In Tuition

New Rates to Be Effective Next September; Scholarship Funds Increased to Help Needy

Tuition for all students at the California Institute of Technology will be increased from \$500 to \$600 a year, effective September, 1949, the Institute Board of Trustees announced today. Rapidly rising costs in all categories of education, research and maintenance have exceeded income to such an extent that serious operating deficits have resulted, the board said in commenting upon its action.

Long Study

The action of the board was taken after a long study of the problem of seeking additional income to meet these rising costs. It was pointed out that during the past fiscal year, income received from students paid only 28% of the costs of the educational and research program of the Institute, even after all large special research projects supported by the government and industry were eliminated. Even under the new rates tuition payments will pay less than one third of these costs. This increase is in line with that of other privately endowed colleges and universities who have been forced to make comparable or even larger tuition increases to meet rising costs, the board said.

Still Deficit

Even though this increase in tuition fees will bring an estimated \$120,000 in additional funds, it will provide only a little over one-third of the estimated deficit for next year, the board said. This money will be used to increase scholarships, maintain faculty salaries, and reduce the estimated budget deficit.

More Scholarships

Simultaneous with its vote to increase tuition, the board also voted to increase the scholarship funds to help, within the limits of said funds, students unable to finance fully this additional cost. It was also pointed out that substantial loan funds are available at the Institute which have not been utilized fully in recent years because of the scholarship aid rendered under the GI bill. These loan funds will be available to assist students in financing their educational expenses.

Statement by DuBridge

In announcing the increase of \$100 in Institute tuition rates for all students for the coming year Dr. DuBridge made the following statement addressed to all Caltech students:

"It is with sincere regret that we are forced to announce an increase in tuition rates for all students beginning in the fall of 1949. The Board of Trustees and the Administration have sought for every possible way which would make the tuition increase unnecessary. While there have been many generous responses to our appeals for funds they have not been sufficient to yield the necessary income.

Some Hardship

"We know that some students will encounter hardship in meeting the increased rates, although others will find it less difficult. Every effort will be made to assist students who need financial aid to meet these increased costs either through scholarship or loan funds. We do not feel that it will be necessary for any wor-

(Continued on Page 2)

The California Tech

Published every Thursday during the college year except during examinations and holiday periods.

CALIFORNIA INSTITUTE OF TECHNOLOGY
1201 East California Street, Pasadena, Calif.

Subscription rates \$1.50 per year

Entered as second-class matter Nov. 22, 1947, at the Post Office in Pasadena, California, under the Act of March 3, 1879.

Offices: Lower Fleming
Telephone: SYcamore 6-7121 Ext. 180
Distributor of Collegiate Digest

Jim Hummel, Editor

EDITORIAL STAFF

Managing Editor.....	Earl Hefner
Sports Editor.....	Thorne Butler
Feature Editor.....	Bob Kurland
News Editor.....	Eric Johansson
News Staff.....	Fred Drury, Bruce Stowe, Woody Brattnober, Ollie Gardner, Dick King, Bill Wright, Tony Malanoski, Stu Goldman, Carl Price, Wayne Herzig
Rewrite Staff.....	Bob Haufe, Chief Lee Ross, Alex Drapes, Charles Steese, Bruce Stowe, Bob Kurland
Special Writers.....	Fred Wood, Paul Saltman, Dick Schuster, Stan Boicourt, Dick King
Sports Staff.....	Dale Krause, Erle Brown, Leon Michaelson, Woody Brattnober, Bill Harris, Stan Boicourt, Dan Lemay
Photographers.....	Hugh Stoddart, Chuck Wallance

BUSINESS STAFF

Manager	Bill Bradley
Circulation Manager.....	Win Soule
Business Staff.....	Charlie Steese

THE SQUARES' CIRCLE

ERROR

Editor: California Tech

The assertion was made last week in "Talking It Over," that Tau Beta Pi was going to keep two of its pledges from playing in a basketball game scheduled for 7:00 p.m. last Friday, Dec. 3, at Redlands, by requiring them to attend a banquet that same night.

If columnist Saltman had checked his facts with me, I would have told him that: a) It is not required, but only desirable, for all initiates to attend their initiation banquet, since it is being given in their honor.

b) It is required for all members of Tau Beta Pi to be formally initiated. (Tau Beta Pi Constitution Art. 8 Sec. 1 b.) The initiation was held between 5:00 p.m. and 6:00 p.m. last Friday.

c) If an elected pledge is not initiated in December for any reason, he will be initiated in April.

Signed: Kent M. Terwilliger
Pres. Tau Beta Pi

MIX-UP

Dear Sir:

4 December 1948

This communication is to clarify in the minds of all men on campus (who don't know) that there are two KINGS who are living in the Student Houses. The fact is that these two KINGS are not brothers, do not live in the same House, and have very slight resemblance to each other—excluding the fact that they have all their classes together and are often seen together. Lately there has been some confusion among the readers of the California Tech resulting in "misimpressions." This situation must be remedied. When Dick is the "first name," they do not mean Dan, and vice-versa. Dick

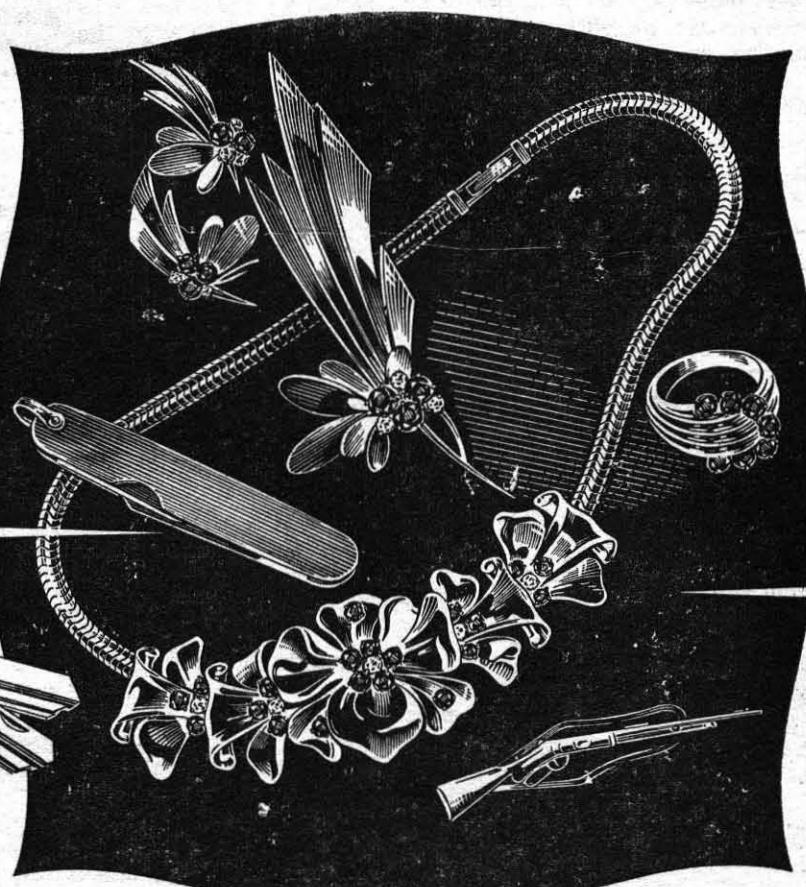
does not desire to be confused with the Washington Monument Club; and Daji has equal desire not to be confused with the geniuses—Tau Bates—Tau Bate for Dick, and Tau Sig for Dan.

Respectfully respectively,
DANIEL W. KING
RICHARD G. KING

Beautiful and practical gifts from our wide selection



* Onyx Intaglio, \$73



Brock & Co.

LOS ANGELES
115 WEST SEVENTH STREET • VA 4141
BEVERLY HILLS
9520 WILSHIRE BOULEVARD • CR 6-1106

An Editorial

The Snake Pit...

We want to say something concerning the attitude that some people seem to have concerning what the "outside" world thinks of us. There are a few men on this campus who feel that the local Pasadena citizens think of Caltech students as rather odd ducks who do nothing but sit between San Pasqual and California and study. One person, newly connected with the Institute, said the other day that some of his friends had given him only a few months before he became as odd as the rest.

He was jumped on right then. We don't believe that this is the common attitude in Pasadena and we are backed up by most of the faculty and students. We feel that this man should check up on his facts before he spreads any more tales.

Caltech men are bound to have some sort of reputation for being the type who do a lot of studying, you can't get away from that in any engineering school. But most of the local citizens realize that Caltech represents more than a mind foundry. This school compares very favorably with even liberal arts colleges in number of extra-curricular activities. At Stanford for example, the fraternity houses have only three dances per term while the dormitories have only one per term. The number of available social functions at Tech exceeds one per week on the average.

We have some sort of athletic contest almost every week and a dance or other social function in each of the houses on the other night of the weekends. The other available activities equal, if they do not exceed, those enjoyed at other colleges.

In athletics for example, the number of men who participate is a very large percentage of the student body. Anyone who attended the athletic banquet last Monday knows that a large number of frosh were out for frosh sports. The lineup of men on our bench at the varsity games speaks for itself.

In music, we have a glee club and orchestra that do surprisingly well, considering that this is not a college where one would expect to find many men talented in music. The turnout for the assembly last week shows that interest in music is not confined to those who actually go out for these groups.

But what do outsiders think of these things? Outside of the one instance mentioned above and the case of one high school girl who thought that Caltech men were "drips" (we hardly need worry about that since she probably applied that phrase to anything that did not interest her directly) we have never heard of any unfavorable comment concerning Caltech. In asking around, it was found that of the faculty who have been living in Pasadena for many years, none was able to remember any large scale unfavorable comment.

The turnout for our football games is a case in point. A good part of the crowd at our football games is composed of people who have no relationship to the school. It seems unlikely that people who looked down on Caltech would come out of their way to sit on the Caltech side of the stands at one of our games.

Another argument for the respect that Pasadena citizens have for Caltech is the vote at the late Tournament Park election. Of course the school did a lot of personal campaigning, but still the vote showed that a very large number of Pasadena citizens were on our side. We had to have a two-thirds majority, and we got it easily. There are few cities where the citizens will vote away part of their property just to make a school a little better place for the students. The number of Caltech students who come from Pasadena families is quite small, yet the people of Pasadena voted us the park in a very decisive fashion. Of course they didn't give the park to us, we have to pay for it, but still it was city property and was turned over to our use.

All in all, it seems unlikely that Caltech has as poor a reputation as some of us seem to think. In fact, if we go around telling each other how little the people of Pasadena think of us, we are bound to hurt ourselves. If we develop the attitude that we are considered nothing but snakes, we will gradually turn away from outside contacts, and thus make our own predictions come true.

Let's be sure of our facts before we start talking about the attitude of people toward Tech students.



HAROLD O. GRONDAHL

Representing

NEW YORK LIFE INSURANCE
COMPANY

234 E. Colorado St., Pasadena

Phone SY. 2-7141



* Cowboy clip, rubies and diamonds, \$990

• LES BREWINS

Aide-toi, le ciel t'aidera

Last Monday evening the Athletic banqueteurs enjoyed (1) a steak dinner and (2) a number of tolerable cigars. One of the unexpected highlights of the evening was a not-too-short biography of each member of the Frosh Football Squad thoughtfully provided by Ed Preisler. Think of it: a steak dinner, cigars, and a magnificent soliloquy—all for \$0.75.

Toastmaster Chester was rating his scanty ration of stogies. Mused Dr. Stock, "It would be nice if my wife had another baby." Frosh Captain Woody promptly suggested, "God helps those who help themselves."

La debauche

Ricketts and Throop had their little fling in a dive heretofore frequented only by thirsty geologists. Judging by the number of stags, Ricketts mistook the barn dance for a Bakersfield J. C. Exchange. The Throop men took two out of three Class A Flamers, Fox flubbing ignobly with a Class B. One thing we can say for Carl, though; he kidnapped Boyd Gage's woman for the evening.

It gives us unbelievable pleasure to report that Victor A. J. "Morning Star" Van Lint has once again seen the path of light and virtue. We feel sure that our admonitions to him recently were instrumental in rescuing Victor from the ways of Sin. In other words our chorister is coming in before two a.m. now.

Les Femmes—nous les aimons!

A charming tradition has been established among the frosh of that famous Ricketts den of iniquity, Levez-Vous Votre Allee. They have been passing word of an admirable wench so convincingly that each member has dated her once. Only once, you see, because each frosh was so filled with that old one-for-all-and-all-for-one spirit, that none had the heart to keep such a good thing to himself. Finally, Dave Hanna was last on the merry-go-round, and he, strangely enough, felt no compunctions against reciting the true state of affairs. Seems as though the wench has a loose mandible. All seemed very interesting at the start of the evening, but as the night wore on the femme failed to ware out, rather the torrent of talk varied with the square of the time. That's it fellas, stick together.

Another girl we're very fond of this evening is Earl Hefner's date. We think that was a right

smart Santa she drew for the Blacker Decoration Party Friday night.

The following night, in passing, we are happy to report that Marion Rinehart and Fred Drury were both throwing the close clutch on their dates.

But before this benevolent attitude carries us away, our bronze bananas of the week go to Bill Wright who has become almost respectable and Don Jennings who cheered all with his riotous good humor Friday night.

Cherchez la femme!

J. C. Kariotis after the skating party Friday night was passionately dancing with Jim la Fleur's raincoat. This unseemly behavior may possibly be explained if Ginger were hidden 'neath the dark folds.

The Brothers Karzas were vainly searching for women this weekend. Perhaps Jay Montgomery can give them some advice. Of course, we don't know if there's anything to it, but the other M's in Fleming complain that never a day goes by without a letter for Monty from an L. A. lovely. Why don't you bring her around, huh, why doncha?

Daves Warren and Hayward along with six other Dabneys have found the woman on campus. Hayward's Audrey was particularly kind to him after the hapless lad achieved a point 8 Well-Digger's coldness while sliding across the skating rink.

Regardez la femme!

All the frustrated Fleming upperclassmen balefully observed Ronny Kremer's date at their Christmas Dance. What a luscious thing—and in Fleming, too. Maybe Ronny will be another Al Eschner (*sacre bleu!*)

Thorne Butler reports that his woman has been simply dying to get in this iniquitous column for months. Glad to oblige:

Lou Remy

Occidental Sophomore
Orr Hall—Cleveland 6-9524
Nice blonde from San Marino
5'-11"

La femme est mobile

Fred Wood has a sad tale. His date last Friday ended in a flat tire in front of his woman's home. After a few moments, the young lady yawned, forsook Fred in his hour of trial, and went to bed.

Fred Elmer, a long-time sufferer from fickle women, celebrates the Removing of the Cast tomorrow. It's none of our business, Ann Davis, but Fred has not been ignoring you these past

(Continued on Page 3)

Where There's Coke There's Hospitality



Ask for it either way... both trade-marks mean the same thing.

BOTTLED UNDER AUTHORITY OF THE COCA-COLA COMPANY BY
COCA-COLA BOTTLING CO. OF LOS ANGELES

© 1948, The Coca-Cola Company

Beautiful and practical gifts from our wide selection



* Onyx Intaglio, \$73



Brock & Co.

LOS ANGELES
115 WEST SEVENTH STREET • VA 4141
BEVERLY HILLS
9520 WILSHIRE BOULEVARD • CR 6-1106

* 14k gold
Fed. Tax Incl.

* Two-key case, \$76 Platinum knife, \$90 * Brooch and earclips, rubies and diamonds, \$1450 * Necklace, sapphires and diamonds, \$1200

* Ring—rubies and diamonds, \$495

* Rifle tie clip, \$32.50

GEOLOGISTS

(Continued from Page 1)
power plays and following that were never in great danger.

The Geology Department held a preliminary departmental skirmish with the Geology Grads administering an 18-0 thrashing to the Junior Geologists. Flush from this series of victories, the Geology Department reports that it will accept football challenges from any other on-campus organization.

LES BREWINS

(Continued from Page 2)
six weeks; the poor cripple has been noble.

En grade contre la femme!

The old lover himself is braving Scripps again this weekend after an absence of two years. Good luck, Smoot.

Wilson Bradley with the aid of Chuck Walker is straining for a future award of the week, as well as a permanent throne on the Washington Monument. Our boys are heading for La Ciudad de Mexico over Xmas vacation. Strange coincidence: Bradley's lost love will be in Mexico City for Christmas.

A l'enfer les femmes!

The annual Caltech Finals Eve Dance will be held at Claremont Saturday night. All houses save Blacker (Jack Marshall may be the single idiot exception) will be represented.

Hapless Bill Whitney's birthday party was celebrated at Toll

Voget & Cathey

MEN'S CLOTHING
FURNISHINGS

Fridays till 9:30 p.m.

459 East Colorado Street
Sy. 2-3871 - Pasadena 1

**Student Concert
Hailed By Tech**

A great improvement was seen in the campus musical life last Friday. The combined Glee Club and Orchestra assembly revealed hitherto hidden talents of the men of Tech.

Improvement

The orchestra and Glee Club had roughly the same enrollment as they did last year, when they also gave assemblies. All those present agreed that the two organizations have improved a great deal, however. The improvement is credited to the new director of the two organizations, Mr. Lauris Jones.

Recruiting

All those interested in joining either the orchestra or the glee club are invited to attend the first rehearsals next term. These rehearsals are held at 7:30 and 9:00 p.m. respectively on Wednesday evenings in Culbertson.

Hall last week. The children went through their song and dance of everybody sing! clap your hands! stand up! clap your hands! sit down! eat cake!

Our particular ire this week is directed at Don Shepherd. Last Friday night he started what may be a dangerous precedent by dating a Scripps woman in the Duesenberg avec chauffeur. We'll admit it was a cleverly arranged affair, but mon Dieu, Don, not Scripps! The delicate touch was provided by the date who chirruped at the town car, "My, it's cute!"

Faiblesse—ton nom est 'femme'

We were deeply grieved at the news from the Griffith Park Zoo this week. After the earthquake, Sasa, the only pregnant elephant in the zoo's history, had a miscarriage. Our only consolation is that the Claremont Zoo, nearer the epicenter, did not—to our imperfect knowledge—suffer any such catastrophe.

"Bugs" In 200-Inch May Delay Use Until Next Fall, Committee Says

The Hale 200-inch Telescope at the Palomar Observatory may not be in operation until next fall, it was announced today by the Observatory Committee. At the same time the committee listed some of the problems which have already been overcome and others that are yet to be solved before the telescope will get into operation.

Bugs

Since the latter part of December, 1947, when the first test photographs were made in the Optical Shop at Caltech, it was found that the outer edge was too high by about 20 millionths of an inch. However, there was reason to believe that when the mirror was placed in the telescope in a horizontal position the edge would probably sag by about this amount. Consequently the decision was made to accept the mirror without further correction, since if the edge were overcorrected it would be much more serious than the present under-correction.

Grief

"Mostly," Dr. Bowen said, "our major difficulties have concerned the mirror and its supporting mechanism, although at one time a chatter developed in the right ascension mechanism which gave us a lot of grief. "This trouble," he said, "had to be overcome before accurate tests of the mirror could be made." The trouble was remedied and the job of determining how the mirror was behaving under actual operating conditions began.

Tests taken with a Hartmann screen over the end of the telescope—this screen makes it possible to measure the shape of all parts of the mirror with an accuracy of one or two millionths of an inch—revealed that the mirror was not holding its form as it should. A long series of adjustments and tests of the 36 support mechanisms which were designed to maintain the mirror's correct figure in all positions, showed that they were not working properly. There was too much friction in these mechanisms to allow the free balance that was necessary. Last summer, following dedication of the observatory, each of the 36 support levers was modified. Subsequent tests revealed that the friction had been reduced sufficiently to remove this trouble.

rror's correct figure in all positions, showed that they were not working properly. There was too much friction in these mechanisms to allow the free balance that was necessary. Last summer, following dedication of the observatory, each of the 36 support levers was modified. Subsequent tests revealed that the friction had been reduced sufficiently to remove this trouble.

Way Too High

When the final tests of the mirror were made in the Optical Shop at Caltech, it was found that the outer edge was too high by about 20 millionths of an inch. However, there was reason to believe that when the mirror was placed in the telescope in a horizontal position the edge would probably sag by about this amount. Consequently the decision was made to accept the mirror without further correction, since if the edge were overcorrected it would be much more serious than the present under-correction.

Too Expensive

Although every test known to science was used in figuring the mirror in the optical shop, a true picture of how it would behave under actual operating conditions could not be determined until it was in the telescope, Bowen said. When the optical shop was built, this problem was given very careful study. To do in the optical shop what could be done in a telescope would have required adding a 125-foot tower to the building at a pre-war cost of more than \$100,000. Such a tower would have had to be solid and completely insulated. It was decided that this would not be necessary. "I think we would still make the

(Continued on Page 4)

THE EVENING CONCERT

Presented by the Southern California and Southern Counties Gas Companies Radio Station KFAC

8-10 p.m.

Program for the Coming Week**THURSDAY, DECEMBER 9, 1948**

TOCCATA AND FUGUE IN F MINOR, by Bach-Cailliet. Philadelphia Orchestra conducted by Eugene Ormandy (8).

SYMPHONY NO. 9 IN D MINOR, by Bruckner. Munich Philharmonic Orchestra conducted by S. von Hausegger (53).

VITYA VRONSKY AND VICTOR BABIN, Duo-Pianists.

Suite No. 2 for Two Pianos, by Rachmaninov (20).

Sonata No. 5 in C Major for Two Pianos, by Bach (12).

SCUOLA DI BALLO, by Boccherini-Francaix. London Philharmonic Orchestra conducted by Antal Dorati (17).

LEGENDE, by Dvorak. London Philharmonic Orchestra conducted by Sir Thomas Beecham (4).

FRIDAY, DECEMBER 10, 1948

Weekly Feature Concert—A Night at the Ballet THE PERFECT FOOL—BALLET MUSIC, by Holst. London Philharmonic Orchestra conducted by Sir Malcolm Sargent (10).

FANTASTIC TOYSHOP—BALLET, by Rossini-Respighi. London Philharmonic Orchestra conducted by Eugene Goossens (25).

CARNAVAL—BALLET SUITE, by Schumann. London Philharmonic Orchestra conducted by Eugene Goossens (23).

GAYNE—BALLET SUITES 1 and 2, by Khatchaturian. Philharmonic-Symphony Orchestra of New York conducted by Efrem Kurtz (35).

GISELLE—BALLET, by Adam. Royal Opera House Orchestra of Covent Garden conducted by Constant Lambert (18).

SATURDAY, DECEMBER 11, 1948

NORMA, by Bellini. Famous Soloists, Chorus and Orchestra of The Turin Opera Company conducted by Vittorio Gui.

MONDAY, DECEMBER 13, 1948

THE DAUGHTER OF THE REGIMENT—OVERTURE, by Donizetti. Berlin State Opera Orchestra conducted by Walter Lutze (8).

SYMPHONY NO. 2 IN B FLAT MAJOR, by Schubert. Columbia Broadcasting Symphony conducted by Howard Barlow (24).

JESUS MARIA SANROMA, PIANIST.

CONCERTO IN A MINOR FOR PIANO AND ORCHESTRA, by Padewski. Boston "Pops" Orchestra conducted by Arthur Fiedler (31).

SINFONIA CONCERTANTE IN E FLAT MAJOR (K.297b), by Mozart. Philadelphia Orchestra conducted by Leopold Stokowski (35).

SLAVONIC RHAPSODY, by Dvorak. London Philharmonic Orchestra conducted by Sir Thomas Beecham (13).

TUESDAY, DECEMBER 14, 1948

ATHALIE—OVERTURE, by Mendelssohn. National Symphony Orchestra conducted by Dr. Heinz Unger (8).

SYMPHONY No. 1 IN D MAJOR, by Dvorak. Cleveland Orchestra conducted by Eric Leinsdorf (36).

JASCHA HEIFETZ, Violinist.

CONCERTO IN D MAJOR FOR VIOLIN AND ORCHESTRA, by Beethoven. NBC Symphony Orchestra conducted by Arturo Toscanini (39).

TRANSFIGURED NIGHT, by Schoenberg. St. Louis Symphony Orchestra conducted by Vladimir Golschmann (29).

WEDNESDAY, DECEMBER 15, 1948

ZAMPA OVERTURE, by Herold. Philharmonic-Symphony Orchestra of New York conducted by Efrem Kurtz (8).

SYMPHONY No. 103 IN E FLAT MAJOR (DRUMROLL), by Haydn. The Halle Orchestra conducted by Leslie Heward (25).

CARLO TAGLIAUBI, BARTONE (24).

Selections

JOB—A MASQUE FOR DANCING, by Vaughan Williams. B.B.C. Symphony Orchestra conducted by Sir Adrian Boult (43).

ALCINA SUITE, by Handel. Paris Conservatory Orchestra conducted by Felix Weingartner (12).

THURSDAY, DECEMBER 16, 1948

THE UNINHABITED ISLAND—OVERTURE, by Haydn. Indianapolis Symphony Orchestra conducted by Fabien Sevitzky (8).

SYMPHONY No. 2 IN C MAJOR, by Alfano. Symphony Orchestra of Turin conducted by Fernando Previtali (32).

ALFRED CORTOT, Pianist.

SYMPHONY ETUDES, by Schumann (24).

SYMPHONY No. 3 IN C MAJOR, by Karl Philipp Emanuel Bach. NBC String Symphony Orchestra conducted by Dr. Frank Black (11).

DON QUIXOTE, by Richard Strauss. Gregor Piatigorsky, Violoncellist. Pittsburgh Symphony Orchestra conducted by Fritz Reiner (38).

FRIDAY, DECEMBER 17, 1948

Weekly Feature Concert—A Program of American Music

COMES AUTUMN TIME—OVERTURE, by Sowerby. Eastman-Rochester Symphony Orchestra conducted by Howard Hanson (6).

SYMPHONY No. 3 IN A MINOR, by Hanson. Boston Symphony Orchestra conducted by Serge Koussevitzky (36).

PORGY AND BESS—EXCERPTS, by Gershwin. Lawrence Tibbett, Baritone. Helen Jepson, Soprano. Chorus and Orchestra conducted by Alexander Smallens (29).

APPALACHIAN SPRING, by Copland. Boston Symphony Orchestra conducted by Serge Koussevitzky (25).

THE PLOW THAT BROKE THE PLAINS, by Virgil Thomson. Hollywood Bowl Symphony Orchestra conducted by Leopold Stokowski (14).

J. Paul Sheedy* Switched to Wildroot Cream-Oil Because He Flunked The Finger-Nail Test

LOOK how popular Sheedy is since he switched to Wildroot Cream-Oil. So—don't monkey with other hair tonics—get Wildroot Cream-Oil right away. A little bit grooms your hair neatly and naturally without that greasy, plastered-down look. Relieves annoying dryness. Removes loose dandruff. Helps you pass the Finger-Nail Test. Non-alcoholic Wildroot Cream-Oil contains Lanolin. Get a bottle or tube today at any drug or toilet goods counter. And have your barber give your coconut professional applications. Considering what Wildroot Cream-Oil does for your appearance, the cost is peanuts!

* of 327 Burroughs Drive, Snyder, N. Y.

Wildroot Company, Inc., Buffalo 11, N. Y.

**a giant
on the
farm****Products of the laboratory
are saving time, toil, money
for the American farmer**

Through chemistry, farmers are gaining control over many of nature's uncertainties. Costly losses of crops and livestock are being curtailed or prevented. Efficiency is increasing. New applications of chemistry to agriculture are becoming more important than ever as demands for more production increase.

Today, new organic insecticides and fungicides help control insects, plant diseases and blights that threaten crops. Seed disinfectants and protectants help guarantee bountiful harvests by protecting crops in the critical period after planting. Plant hormones hold fruit on trees until fully ready for picking.

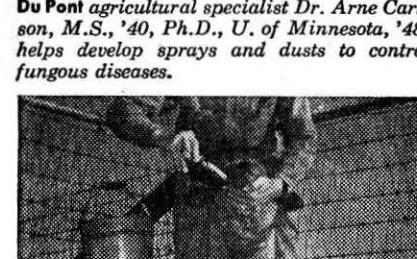
Days of labor saved

Du Pont weed killers and explosives accomplish in minutes tasks that used to take hours or days of back-breaking labor. With 2,4-D farmers can kill weeds without harming certain crops. Dynamite removes stumps, digs ditches for draining and irrigation, and loosens the soil to forestall erosion.

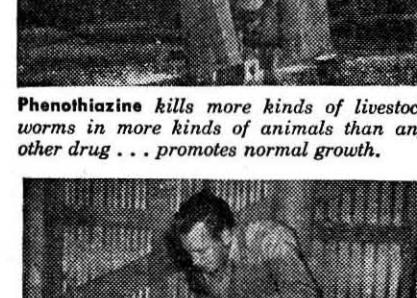
New fertilizer formulations meet the changing nutritional requirements of plants during the growing season. Thus the farmer has better control over crop development, and he can utilize his materials, labor and



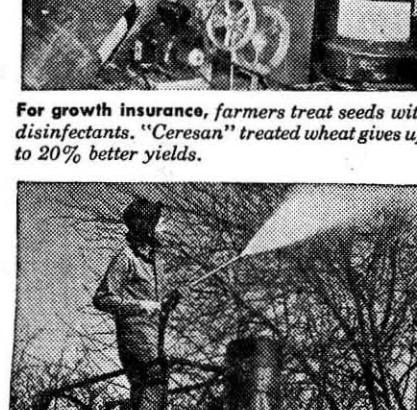
Du Pont agricultural specialist Dr. Arne Carlson, M.S., '40, Ph.D., U. of Minnesota, '48, helps develop sprays and dusts to control fungous diseases.



Phenothiazine kills more kinds of livestock worms in more kinds of animals than any other drug . . . promotes normal growth.



For growth insurance, farmers treat seeds with disinfectants. "Ceregan" treated wheat gives up to 20% better yields.



Spraying orchards controls infestations of insects or plant diseases . . . or holds fruit on the trees until it is fully ready for picking!

Find out more about Du Pont and the College Graduate

"The Du Pont Company and the College Graduate" is just off the press in a completely revised edition. Fully illustrated, it describes opportunities in research, production, sales, and many other fields. Explains the plan of organization whereby individual ability is recognized and rewarded. Write for your copy today. Address: 2518 Nemours Building, Wilmington 98, Del.



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

More facts about Du Pont—Listen to "Cavalcade of America" Monday Nights, NBC Coast to Coast

Happy Finals!**Who Dealt This Mess**

By Carl Fox

An extremely useful but little practiced art is that of making safety plays. In many cases the plaintive "But partner, look at the lousy split we got!" is but another way of saying, perhaps without realizing it, "How little foresight I used." Consider the following hand. Many Declarers will lead up to the Ace and end up, down one, bemoaning the fate that gave them a 4-0 trump split.

S A 9 4 3			
H 0 9 7 2			
D 6 5 3			
C K 6			
S Q J 8 5	N	H J 8 6 4	
H 10 3		E D 10 7 2	
D A K Q J 8 W	E	C J 7 5 4 3 2	
C 9 8			
S		S K 10 7 6 2	
		H A K 5	
		D 9 4	
		C A Q 10	
Dealer—South			
North-South vulnerable			
Bidding	S 15	W 2D	N 2S
			E P

The mere fact that North's support was a free bid was sufficient for South to go directly to game. West opened the King of Diamonds and follows with the Queen and Ace, Declarer ruffing the third round. The big problem that now faces Declarer is the play of the Spade suit. He must insure against the loss of two tricks, regardless of the distribution of the suit, however unusual it may be. Consideration of the possible holdings will show that the one actually encountered is as adverse as possible.

The proper play is not to lay down either the King or Ace and expect a split but to lead low toward the board, intending to insert the nine. Consider the results of this play with various possible holdings.

If West shows out the Ace is played and a low Spade returned to the King-ten. Regardless of

"BUGS"

(Continued from Page 3) same decision today," Dr. Bowen said.

Not Enough Sag

Under actual operating conditions, the astronomers found that the mirror was not sagging at the edge as much as had been expected. When it was found that the support system had to be modified, there was reason to believe that this might also serve to control what had now become a "turned-up" instead of a "turned-down" edge. Subsequent tests revealed that this condition was corrected to some extent but not sufficient to assure the accuracy sought.

Additional tests of both the mirror and its support system were made. A new factor showed up. It was found, Bowen said, that the mirror was not adjusting uniformly to temperature changes. Actually the outside edge of the mirror was adjusting itself to temperature changes more rapidly than the portion of the mirror nearer the center. As a result, the edge was turned up by different amounts, depending upon the temperature to which the mirror had been exposed during the preceding 24 hours. It is here, said Bowen, that the "bugs" problem now stands.

Fans

What can be done about it? Several things, the astronomers say. One solution, and the one that will be attempted first, will be to devise a means of equalizing the air temperature beneath the mirror and inside the mounting point sockets with air about the outside edge. A system of small fans may be installed inside the cell which holds the mirror so as to circulate inside air enough to get equalized change.

There is also a possibility of insulating the outside edge, but previous attempts at this sort of thing with other telescope mirrors have not proved too satisfactory. However, it will probably be tried.

Grind

If, however, air circulation or insulation, or a combination of the two, does not provide the solution, it will probably be nec-

essary to remove some of the glass from a portion of the mirror about 18 inches wide around the outer edge. This area represents about 30 percent of the total mirror surface. This will mean removing the mirror from the telescope and additional polishing of this particular area.

If such polishing is required it will be done at the observatory. It will not be necessary to bring the mirror back to the optical shop at Caltech, Bowen said. It is estimated that a minimum of six months would be required to do this. It would involve frequent tests of the mirror in the telescope to avoid any possibility of removing too much of the glass. Actually the maximum amount to be removed will not be more than a few milions of an inch.

New Problems

"We have always known there would be problems which we could not anticipate," Bowen said. "Obviously we couldn't tell ahead of time what all our troubles would be, but we knew some would show up. They always do in any new piece of equipment, and the more intricate and complicated the instrument the more 'bugs' you can expect."

"I might point out that it was a year and a half after the 100-inch mirror went up to Mt. Wilson before the telescope was put into operation and it was nearly ten years before that mirror was thoroughly satisfactory at all times. We are trying to do an even more difficult job at Palomar.

"It is this accuracy we are going to get with the 200-inch mirror that will make the Hale Telescope 'pay off' for it is on nights of 'good seeing' that it will do its best work. It is then that we will be able to get out to the billion light-years for which it was designed. There may be no more than twenty such 'good seeing' nights in a year. When they occur we expect to be ready to take advantage of them. We are shooting at a maximum, not just a 'good enough' accuracy. We have better than that already."

**WHEN YOU ARE HUNGRY
WHEN YOU ARE THIRSTY
or
WHEN YOU JUST
NEED RELAXATION**

IT'S THE

SKIP INNBeer - Plate Lunches
1352 E. WALNUT
Open Till 2 A.M.**Ice Skating'**

Daily 2:30 to 5, 7:45 to 10:45
Sat. & Sun. Morn. 10 to 12:30

Skates for Rent

Instructions

Pasadena Winter
Gardens

171 South Arroyo Pkwy.

...GIFTS FOR MEN

- ... Wool Argyle Sox
- ... Cashmere Sweaters
- ... Study Robes
- ... Gabardine Slacks
- ... Sport Coats
- ... Sport Shirts

HOTALING'S

TWO STORES FOR MEN

54 E. COLORADO ST.

921 E. COLORADO ST.

PROVE CAMEL MILDNESS FOR YOURSELF!



According to a Nationwide survey:

MORE DOCTORS SMOKE CAMELS THAN ANY OTHER CIGARETTE

Doctors smoke for pleasure, too! And when three leading independent research organizations asked 113,597 doctors what cigarette they smoked, the brand named most was Camel!

Jobs Announced In Civil Service For All Options

The Placement Office has released the following list of summer and permanent civil service jobs. It will be of interest to all sophomore and junior engineers, chemists, mathematicians, metallurgists, physicists, and geologists, and to all seniors and graduates.

Federal and State Civil Service Jobs—Summer & Permanent Naval Laboratories

Chemists and Applied Chemists—Seniors: Junior Professional Assistant examination of the Federal Government for P-1 rating. **Closing date—Dec. 21, 1948.** If you are interested in filing for this examination, please make your interest known to the Placement Office and arrangements will be made for an opportunity to discuss the matter with a representative of the Federal Government. This examination covers Federal positions located in California, Arizona, and Nevada, as well as other areas, and includes positions at the Navy Laboratories located at San Diego, Point Mugu, and Inyokern, California.

U. S. Bureau of Standards

Engineers, Chemists, Mathematicians, Metallurgists, Physicists, Meteorologists, and Geologists—Sophomores and Juniors: SP-4 and SP-5 Student Aid (Trainee) Summer positions. Openings in Washington, D. C., Virginia, and Maryland.

(Continued on Page 6)

Dabney Advances In IH Tenpinning

Dabney House moved up to a second-place tie with Throop Club in this Monday's Interhouse Bowling League at the Pasadena Bowling Courts. The Darbs also grabbed both team honors this week as their Number One team notched high series of 2082 while their Number Two outfit was firing high game of 738. Ricketts House came out on top in the win-loss columns, however, by taking six games this time, while Dabney won five, Fleming won four, Blacker won three, and Throop won only two out of eight games. Present standings:

House	Won	Lost	Pct.	Ave.
Ricketts	45	19	.703	154
Throop	33	31	.516	148
Dabney	33	31	.516	130
Blacker	29	35	.453	135
Fleming	20	44	.312	129

Bratnaber High

This week's honor roll was again headed by Woody Bratnaber of Ricketts as he posted games of 199-187-182 for top 568 total. Sid Stone of Ricketts was second with a 187 game and 507 series, and John Kostelac of Throop took third with a 188 game and 482 series. Other big games were rolled by Duane Neverman of Throop, 194; Jim La Fleur of Dabney, 190; and Ralf Erickson of Throop, 187. Hot-shot Ray Heggland of Throop was having a bad time as he lowered his average six pins, failing to break 140 in any game.

Half-Way Reached

The circuit has reached the half-way point, and will disband until January tenth of next year.

(Continued on Page 6)

CROWN

129 N. Raymond, Pasadena
SY. 6-5100
Doors Open 12 M., Cont. Daily

**SAMUEL GOLDWYN presents
DANNY KAYE
VIRGINIA MAYO**

A SONG IS BORN

COLOR BY TECHNICOLOR
—Plus—



Prove for yourself what throat specialists reported when 30-day smoking test revealed

NO THROAT IRRITATION due to smoking CAMELS!

MAKE YOUR OWN 30-DAY CAMEL MILDNESS TEST.
Smoke Camels, and only Camels, for 30 days. Prove for yourself just how mild Camels are!

Hundreds of men and women, from coast to coast, recently made a similar test. They smoked an average of one to two packs of Camels a day for 30 days. Their throats were examined by noted throat specialists. After a total of 2470 examinations—these throat specialists reported not one single case of throat irritation due to smoking Camels!

But prove it yourself...in your "T-Zone." Let **YOUR OWN TASTE** tell you about the rich, full flavor of Camel's choice tobaccos. Let **YOUR OWN THROAT** give the good news of Camel's cool, cool mildness.

Money-Back Guarantee!

Try Camels and test them as you smoke them. If, at any time, you are not convinced that Camels are the mildest cigarette you ever smoked, return the package with the unused Camels and we will refund its full purchase price, plus postage. (Signed) R. J. Reynolds Tobacco Company, Winston-Salem, North Carolina.

Bass Honored In All-Coast And Little All-American

The widest recognition given any Caltech athlete in recent years was awarded to Manuel Bass, Stellar tackle on the Beaver football team. Manuel was named first string on the All-conference team for the second year, first string on the United Press Little All-Pacific Coast selections also for the second year, and second string on the Associated Press Little All-American. Bass, who led the whole Beaver team on actual playing time this season, thus wound up his football career in a blaze of glory.

Other Men

Sharing the All-Conference Honors with Bass, were End Don Hibbard and Guard Craig Marks, both boys earning first string berths on the Conference squad. Hibbard, another senior, repeated at the All-Conference position he was awarded at the end of last season. Marks, a junior, appeared on the Conference ratings for the first time.

Another of Coach Mason Anderson's linemen made good as Bob Walquist was awarded the second string All-Conference tackle post. The Moose, also a senior, was handicapped all season by a severe finger injury.

All Seniors

The three seniors, Bass, Walquist, and Hibbard, have been playing ball together for three years at Tech. Marks has earned only one previous letter on the Tech team, and hangs his hat in Dabney house. Don Hibbard and Dennis Long are Tech's first four-year lettermen, both having earned varsity letters while they were freshmen in 1945.

Oxy Places Four

Oxy placed four men on the first string Conference rating, and four on the second team. Pomona put two men on the first team, two on the second. Whittier and Redlands each placed only one man on the first team, while Redlands failed to put a man on second team and Whittier placed three.

The teams were selected by the Conference coaches and are as follows:

(Continued on Page 6)

Beaver Sports



Action shot for the December 3rd Tech-Pomona soccer battle at Tournament Park. The rugged Beavers are shown in the process of annexing their only win of the season, 3-0. Caltech players pictured are Barry Schuyler (goalie), Dick Fairall (in mid-air with Pomona man.)

Shin Skinners In First Victory, Drop Pomona 3-0

Last Friday at Tournament Park, the Caltech soccer squad, playing as a club in their post-

year, including the Redlands brawl, he would have seen a sum total of about 100 yards gained around Don's end.

About the other sheep dip that he has scattered so liberally about his column all that needs to be said is "I hope it isn't too dark up there." There wasn't a better defensive end in the Conference last year, than Hib. If the literary meathead would have been to a few games last

season game, walked all over Pomona; the final score being 3-0. In spite of rain, cold, and a sloppy field it was a hard fought game.

Ott Stars

Although most of the game was played in Pomona's half of the field, the Engineers were unable to score in the first half. In the third quarter the Beavers scored their first goal, following up with two more in the final period. Scoring men were Karel Ott who made two and Ernie Weber, who made one. Taken as a whole, both teams played extremely well, and it was the best game played by the Engineers.

More Games

Although the season is officially over, the squad hopes to play several more games next term, all of them away.

Engineers Clinch Cross Country Crown Undefeated Season Featured By Fast Times And Low Scores

Caltech's cross-country squad won the Southern California Conference championship in dual meet competition last Saturday by sweeping their race with Oxy 15 to 49. This gives the team a record of four wins and no losses in conference matches, for an undisputed championship. This is the first time since 1941 that Redlands has not carried off the honors in this sport, and is also the first time since the war that Tech has had the conference champs in any sport.

Mason Wins

Led by sophomore Pete Mason, who defeated Redland's Ed Livengood, 1947 conference champ, in a thrilling finish, the Beavers also swept honors in the four-way meet with Oxy, Redlands, and Santa Barbara. Tech's low winning score was 27 points, with 52 for Redlands, 80 for the Gauchos, and 81 for Oxy.

Walter Houtz

Walter Houtz of Santa Barbara, a former PCC boy, was third, followed by Creacy of Redlands. Then came five Techmen:

Jack Marshall, Bob Cobb, Don Peterson, Dick Cornelius, and Brad Houser. It is interesting to note that seven Beavers crossed the finish line before the third man from any other team was in.

Conference Meet Saturday

This Saturday at 10:00 in Tournament Park, the Conference meet will be held over the four mile course. Competition for individual honors will be keen, as Redland's Ed Livengood attempts to repeat his win of last year.

Five seniors will be running their last grueling race for Tech. They are Jack Marshall, Don

(Continued on Page 6)

Arizona State Tops Tech In Overtime; Then Take Tourney

Last Thursday night our Beaver Varsity basketball squad played their best game to date only to be edged out 47-39 by Arizona State from Flagstaff in a thrilling overtime contest. It would be hard to single out any Tech players for special mention, for the entire squad played heads up ball. Ted Bowen tossed in 12 points to lead the Beavers. It might be mentioned that the lads from A.S. went on to win the tournament, the second annual affair.

The orange and white started out with a zone defense, a switch from last year, that had the mountain boys puzzled all evening. Arizona took an initial lead of about 4 digits and held it up until the last couple of minutes. In the final 1½ minutes with our Bevoboy 6 in the red, Saltman dropped in two quick field goals. Then, with only 20 seconds left and after we had taken the ball out of bounds rather than attempt a foul shot, Cox passed to Dick Brewer who swished one from just over the mid-court line. Little Dick then missed one free throw when he was fouled, and the game ended in a 38-38 tie. The half tote was

(Continued on Page 6)

BOWL PROGNOSTICATIONS

GAME	ATHLETIC DEPARTMENT		SPORTS STAFF	
	Coach Anderson	Hal Musselman	Goon Saltman	Thorne Butler
Rose Northwestern California	Northwestern 6	Tie	California 7	Northwestern 13
Cotton Oregon SMU	SMU 12	Oregon 6	SMU 6	Oregon 2
Sugar N. Carolina Oklahoma	Oklahoma 6	Oklahoma 7	N. Carolina 2	Oklahoma 12
Raisin Occidental Colorado A&M	Colorado A&M 7	Occidental 6	Colorado A&M 21	Colorado A&M 18
Shrine East West	West 6	West 3	East 7	East 14

PASADENA BOWLING COURTS

970 East Colorado
Headquarters of Caltech Bowlers
Open 11 a.m. to 1 a.m. SY. 3-1341
Special Student Rate before 6 P.M.
except Saturday, Sunday, and Holidays
20c Per Line

CALTECH BARBERS

on California Near Lake



881 E.
Colorado

Fowler & Schrader

Open Fri. &
Sat. Nites

HOUSE JACKETS

Corduroy and Flannel
Men's Distinctive Fashions

881 E.
Colorado

Fowler & Schrader

Open Fri. &
Sat. Nites

Learn To Ski Special

TRY THIS ON YOUR POCKETBOOK

SKIS—Ridgetop With Edges
BINDINGS—Cable, Good Brands
POLES—Metal

All for 24.95

BOOTS—Husky with Backlacing
Wraparound Ankle Strap
Airfoam Reinforced Uppers

This and Items Above 44.95

SKI SWEATER SPECIAL

Values to 11.95

Now 6.95

Bob Stone, Mgr. Ski Department

CHAMBERLAIN ATHLETIC CO.

27 South El Molino

Sy. 6-4161

Next to Pasadena Playhouse

YOUR COLLEGE SPORTS SHOP

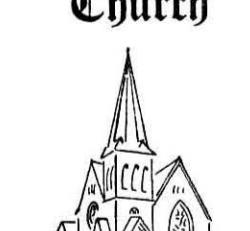
Headquarters for Sporting Goods

WYNN MACE

Tennis Shop

Phone SYcamore 6-5804
912 EAST CALIFORNIA ST.
Pasadena, Calif.

Caltech Students Welcome at Neighborhood Church



A Church of Liberal Religion
225 West California Street
SUNDAY WORSHIP 11 A.M.
REV. CURTIS BEACH
MINISTER

7,200 years
of college...and still learning

THE Bell Telephone Laboratories is known as a leader in communications engineering. On its staff are 1,622 engineers and scientists with college degrees. Among them they have 7,200 years of college training...and they are still learning.

They study many things. How to speed your voice across the street or around the world. How to keep your voice natural in tone and volume. How to make central office equipment capable of switching your call even faster. How to produce in laboratories the materials which are hard to get in their natural form—quartz, for instance. How to conserve the scarce metals which go into wire and cable, by making one circuit carry many conversations.

From such studies they learn how to make your service better and better, and keep its cost low.

BELL TELEPHONE SYSTEM



JOB ANNOUNCEMENT

(Continued from Page 4)

CLOSING DATE: February 1, 1949.
 Mr. Hedberg, representative from the Bureau of Standards will be in the Placement Office, 120 Throop Hall after 10:00 to discuss the opportunities presented.

Mathematicians, Metallurgists, Physicists—Seniors and Graduates: P-1 rating examination—**CLOSING DATE JUNE 30, 1949.** Those interested should see Mr. Hedberg Friday morning as examination is sponsored by the Bureau of Standards. Please contact Placement Office before December 10, 1948 for appointment.

Potomac River Naval Command

Chemists, Engineers, Mathematicians, and Physicists—Sophomores and Juniors: Trainee program. Examinations for sub-professional duties in above fields. Employment for school vacation periods. SP-4 and SP-5 ratings. **CLOSING DATE FOR FILING JANUARY 12, 1949.**

P-1 rating examinations for Engineers, Mathematicians and Physicists open until further notice. Permanent.

Positions open in Washington, D. C., Maryland, and Virginia.

Public Roads Administration

Civil Engineers—Grades SP-4, SP-5 and Grade P-1. CLOSING DATE FEB. 23, 1949. Summer and Permanent positions. Highway Engineer Training Program in which young engineers are trained in the fundamentals of Highway Engineering. They desire men who have completed two and three years of CE as well as those who are to graduate in 1949. The training course for graduates covers three years but those whose work is satisfactory will be promoted to the P-2 grade, \$3,727.20 per annum, upon completion of the second year of training.

California State Personnel Board

Announcing a new program for the recruitment of college graduates for junior professional

Notice!

There will be an issue of the paper the first week of next term. It will, however, appear a day late.

The deadline for copy will be Tuesday at 7:30 instead of the usual deadline, Monday at 8:30.

The paper will not be responsible for the condition of copy turned in after the deadline.

positions with the State of California. Positions open in Sacramento and Los Angeles. Examinations to be completed and students notified of their standing before graduation. Senior and graduate students may then be certified for state civil service jobs after they complete their studies in June.

Final Filing Date	Position	Salary
January 29	Junior Civil Engineer	\$310.00
February 12	Junior Electrical Engineer	\$281.00
February 12	Junior Mechanical Engineer	\$281.00
February 5	Junior Structural Eng. Draftsman	\$310.00
January 29	Junior Aquatic Biologist	\$243.00
February 12	Junior Chemist	\$268.00

If you will please contact the Placement Office AS SOON AS POSSIBLE, leaving your name with us, we shall let you know the exact time that representatives will be on the campus to discuss and answer any questions you may have concerning any one of these Civil Service Examinations.

ARIZONA STATE(Continued from Page 5)
 23-21 in favor of the Beavers.

We bogged down during the overtime, only scoring one point, while the altitude men from Flagstaff put on a terrific drive for 9 points and the game. Cisneros and See scored 16 and 14 points respectively for Arizona, and their brilliant playing led them on to the tournament title.

On Saturday our Beavers came up against Chapman College in the consolation semi-finals. The limber lads were too stiff and Chapman took them handily, 45-32. Our boys really slowed in the second half, for Chapman led at halftime by a score of only 19-16. Melton of Chapman opened up our zone defense by dropping in long shots from outside the zone, and we never recovered our poise. Knees Bowen was again top for us with 10 digits.

ENGINEERS CLINCH(Continued from Page 5)
 Peterson, Dick Cornelius, Doug Brown, and Bill Basham.

In the Frosh meet last Saturday, Barnes of Oxy took first, but led by Bill Pilkington, the Beavertabees won out 26 to 30 to gain second place in the conference. The Frosh conference meet, a three-mile preliminary to the varsity affair, will furnish interesting competition between several youngsters who have turned in better times than many of their varsity teammates.

ATHLETIC BANQUET(Continued from Page 1)
 Bob Funk, a great signal caller; Bob Walquist, who overcame a great handicap by sheer determination; John Kariotis, a great fighter; Dennis Long, the most consistent player on the team; Don Hibbard and Manuel Bass, easy to coach, and both unselfish players; Dave Powell, the man who gained most from football. Also complimented for a great job was Al Hook, team manager.**Retirement**

Pete Mehringer, Beaver line coach, also spoke briefly on the team. Doc Hanes, who announced his coming retirement, received a big hand. Doc has been coaching at Caltech for the past twenty-five years. He said he'll be around to look things over.

Praise Spirit

President Lee A. DuBridge told the crowd that he was proud of the spirit shown at the games, both by the players, and the student body. In answer to the recurrent rumors about dropping football DuBridge said that it will be continued as long as the students desire the sport. He also spoke on plans for the new athletic facilities. The purchase of Tournament Park is nearly complete, the Alumnae drive has netted one third of its goal, and a new drive is being launched. Architects have been contacted to draw up tentative plans for the buildings.

BASS HONORED

(Continued from Page 5)

First team—
 Ends: **Don Hibbard (CIT)**, Bill Pearson (Oxy). Tackles: **Manuel Bass (CIT)**, Fred Farrand (Pom), Guards: **Craig Marks (CIT)**, Bill Payne (Whit). Center: Chip Armstrong (Oxy). QB: John McColl (Pom). HB: John Trump (Oxy). HB: Chuck Hackelman (Red). FB: Bob Ingersoll (Oxy).

Second Team:

Ends: Ryerson (Whit), Schwenk (Oxy). Tackles: **Bob Walquist (CIT)**, Chilcott (Oxy). Guards: Ingersoll (Oxy), Fortney (Pom). Center: Conde (Whit). QB: Tucker (Whit). HB: Sanders (Oxy). HB: Frieze (Oxy). FB: Colbath (Pom).

FROSH SPORTS ROUNDUP

(Continued from Page 5)

Muir team on the 30th and found them just that—fast. Watching a 21 to 16 deficit at halftime inflate to a 57 to 32 defeat at the final gun, the Preisler men picked themselves off the floor and journeyed back to Techland a startled group of players.

Last Friday night, however, we saw a decidedly more impressive display of what can be done when the Freshmen played a local Marine Reserve outfit. Although losing 56 to 42, they showed in themselves a much greater aptness than they showed in the Muir game. High scorer for the Baby Beavers was Mihaelson with 15 points followed by Granger, 8, and Snider, 6.

DABNEY ADVANCES

(Continued from Page 4)

Name	House	Ave.
Woody Bratnaber	T	189
Ray Hegglund	T	170
Bob Benton	R	163
Carl Fox	R	162
Andy Check	R	159
Sid Stone	R	152
Ralf Erickson	T	152
Bill Culbertson	D	151
Gene Mooring	T	150
High Games to date:		
Ray Hegglund	T	232
Woody Bratnaber	R	227
Andy Check	R	224
Bob Benton	T	216
Howard Cohan	B	212
Carl Fox	R	210
Gene Mooring	T	206
John Holmes	R	202
Dave Baron	B	200
High Series to date:		
Woody Bratnaber	R	599
Andy Check	R	584
Ray Hegglund	T	580
Sid Stone	R	548
Carl Fox	R	535
Bob Benton	T	529
Dick King	D	509
John Holmes	R	507
Howard Cohan	B	505
Dave Baron	B	500

SINCE SEPTEMBER 20, 1948

10,408 COLLEGE STUDENTS

HAVE CHANGED TO

CHESTERFIELD

THERE'S A REASON:

*They're Milder**Chesterfield***Oak Knoll**

Cleaners

THREE DAY**Cleaning Service****FOUR-DAY LAUNDRY**Rain or shine we're
ALWAYS on time.

Special Features

Peraseptic, cleaning,
mothproofing service,
tailoring and repairing.

Pressing While You Wait

"Service With a Smile"

902 East California Street
(4 Doors East of Lake)

SY. 3-6704

"GIVE 'EM BY THE CARTON"
—says Arthur Godfrey:

Always Buy CHESTERFIELD

MORE COLLEGE STUDENTS SMOKE CHESTERFIELDS than any other Cigarette . . . BY LATEST NATIONAL SURVEY

Copyright 1948, LIGGETT & MYERS TOBACCO CO.