CALTECH NEWS

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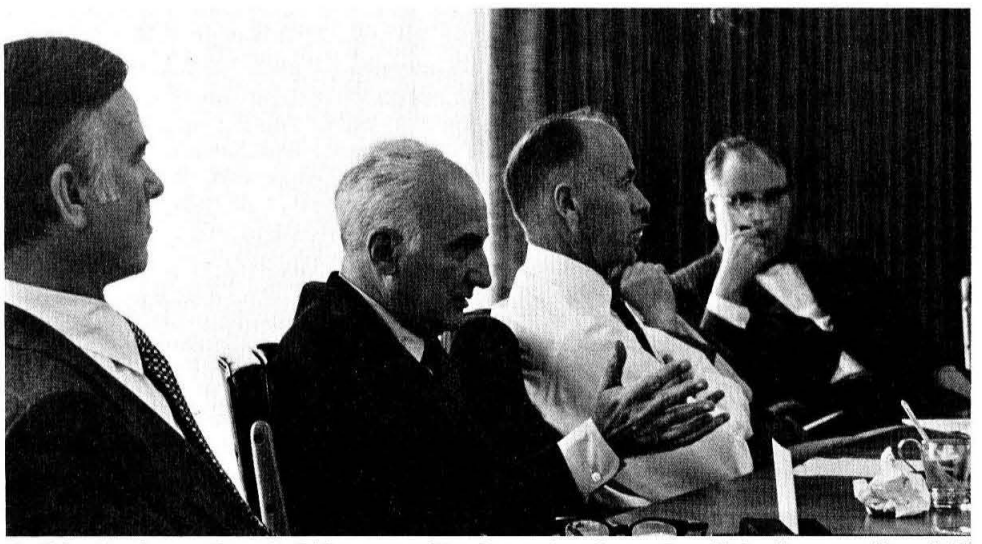


Participating in meeting of visiting committee for engineering and applied science are (from left) Henry Singleton, Simon Ramo, PhD '36, Stephen Bechtel, and Dr. Paul Chenea.

Visiting committees share knowledge with divisions

"As a group, the members share an enormous fund of knowledge about modern engineering—where it's going and what the new opportunities will be. They give us excellent advice about making our programs relevant to the trends emerging in industry."

This is the way Francis Clauser, chairman of the division of engineering and applied science, describes his division's visiting committee—one of three such groups that visited Caltech this spring. The others met with the division of geological and planetary sciences and the division of the humanities and social sciences.

Each division at Caltech now has its own visiting committee whose members include representatives from business, industry, and other universities. Each committee also includes a member of Caltech's board of trustees.

"Another of the visiting committee's contributions," Clauser says, "is the encouragement of evaluation within the division. As we prepare for our meeting with the committee members, we are led to think very carefully about what we've been doing and what we are planning to do. Their sophistication and knowledge makes this self-evaluation a valuable process for us."

Robert Huttenback, chairman of the division of the humanities and social sciences, says, "The visiting committee members bring a fresh and very helpful point of view to discussions about our programs. We could easily become too ingrown, and we benefit greatly from letting the winds of outside scrutiny blow through.

"Their focus isn't hindered by their involvement with campus problems of budgetary issues," he adds. "Even if a committee member points up just one or two concepts we hadn't considered, he makes a real contribution."

At a recent meeting with the visiting committee for the division of geological and planetary sciences, Robert Sharp, professor of geology, reviewed the division's history and Barclay Kamb, division chairman, described activities in geophysics, geochemistry, and planetary science.

The committee also heard faculty reports on graduate and undergraduate education and research within four areas of geology—petrology and mineralogy, geochemistry of water and ore-forming fluids, geobiology and sedimentology, and regional geology and tectonics.

Continued on page 2

Editorial chief of L.A. Times to give talk at alumni dinner

Anthony Day, editor of the editorial pages of the *Los Angeles Times*, will be the featured speaker at the annual dinner meeting and class reunion of the Alumni Association, June 1, at the Athenaeum. His talk will be entitled, "How the *Times* Determines Its Editorial Policies."

Officers of the Alumni Association for 1973-74 will be installed. They include: President—Stuart M. Butler, BS '48; vice president—Raymond L. Heacock, BS '52, MS '53; secretary—Stanley T. Wolfberg, BS '38; treasurer—Fred A. Wheeler, BS '29; directors—Rea A. Axline, BS '31; G. Louis Fletcher, BS '56, MS '57; John D. Gee, BS '53; Robert B. Grossman, BS '33; Richard A. Karp, BS '64; Leon T. Silver, PhD '55.

Members of the Class of 1973 who are joining the Alumni Association will be special guests at the dinner.

Alumni will be taken on a tour of the campus at 4 p.m. Then a social hour in the Athenaeum will precede dinner at 7 p.m. Wives of alumni will attend a separate dinner off campus.

At a special luncheon meeting at the Huntington-Sheraton Hotel, members of the class of 1923 will be inducted into the Half-Century Club. Also attending the luncheon will be members of classes that graduated prior to 1923.

Other classes holding reunions on campus at 5:30 p.m. include 1968, 1963, 1958, 1953, 1943, 1938, 1933, and 1928. Because it held a reunion on Homecoming Day, the class of 1948 is not planning a reunion. The class of 1938 is planning a special reunion on May 11 at the Huntington-Sheraton Hotel.

Roger Sperry selected for 1973 Passano Award

Roger W. Sperry, Hixon Professor of Psychobiology, was selected as the 1973 recipient of the $10,000 Passano Award, one of the most coveted prizes in medicine.

Sperry's selection was based on his research concerning surgically separated hemispheres of the brain. This research has shown that each hemisphere has a distinct mind of its own, and a specialized way of perceiving—the left hemisphere dealing with language and the right with synthesizing information and with certain forms of creativity.

Academy of Engineering elects Brooks, Hudson

Two Caltech faculty members, Norman H. Brooks, PhD'54, professor of environmental science and civil engineering, and Donald E. Hudson, BS'38, MS'39, PhD'42, professor of mechanical engineering and applied mechanics, have been elected to the National Academy of Engineering. This is the highest professional distinction that can be conferred on an American engineer.

Their election brings to 11 the number of Caltech faculty who are members. The Academy was established in 1964 as a parallel organization to the National Academy of Sciences. Its total membership stands at 429.

Brooks, who is also Caltech's academic officer for environmental engineering science, has long been active in research on hydraulics problems related to water quality management, fluid turbulence and diffusion, and density stratified flows.

He is experimenting with laboratory hydraulic models of large thermal outfalls. His research is aimed at finding the best ways to return to the ocean warm water that has been used to remove heat from power plants, without adversely affecting the marine environment.

Brooks has acted as special consultant for more than 30 different governmental agencies and consulting firms, mostly on design problems of outfalls for sewage and cooling water discharges.

A pioneer in earthquake engineering, Hudson has a long record of service to federal and state agencies. He helped design instruments that are now widely used for recording ground motions during earth shocks. These instruments provide information vital in designing quake-resistant buildings, bridges, and dams.

National math champs

Caltech wins Putnam Competition

For the second straight year, Caltech's math team placed first in the national Putnam Mathematical Competition.

The team members, juniors Arthur Rubin and Michael Yoder, and senior Bruce Reznick, outdistanced rival teams by a wide margin. Their scores averaged 61 percent, compared with 32 percent for second-place Oberlin and 30 percent for third-place Harvard.

Sixteen hundred and eighty-one students from 322 colleges and universities in this country and Canada took part in the taxing six-hour examination. Stretching from 9 a.m. to 5 p.m., with a two-hour break for lunch, the test consisted of 12 problems designed to measure ingenuity, creativity, and analytical power.

Bruce Reznick, who had competed in three previous Putnam competitions, said this year's was the most difficult.

"Last year I scored 70 out of a possible 120 and placed ninth; this year I scored 55 out of 120 and placed seventh," he said.

In order to do well on the Putnam, says Reznick, "You need a devious mind, the capacity to be absurdly clever in a short period of time, and the ability to write rapidly.

"You have to think double-jointedly, for you must consider several approaches to a solution at the same time. Generally, the approach that seemed the least promising is the one that will work. If there were an obvious way to work a problem, it wouldn't be on this test."

The final preparation of the utmost importance, says Reznick, is to get a good night's sleep. "You can expect to be in a daze when it's over," he added, "and I've found it helps to go to a party the following night."

Gary Lorden, BS'62, associate mathematics professor, and a former Putnam contestant when he was an undergraduate, was the competition supervisor.

With the satisfaction of a basketball coach reviewing next season's returning players, Lorden commented, "Caltech should do very well next year, for we'll have two winners back. There is only one senior on this year's team."

Rubin and Yoder won prizes of $250 each for placing among the top six contestants, whose individual standings are not revealed. Reznick won $100 for placing seventh.

Only 12 of the 1,681 contestants scored over 38 percent, and five of the 12 were from Caltech. In addition to the three team members, the five included freshman James Shearer who ranked 10th, and sophomore Dave Dummitt, 11th.

Caltech has won first place five times during the 33 years of the competition's history, and has placed high in the standings on many occasions.

Lorden explained that the $500 prize received by Caltech for the team's victory is placed in a fund to finance prizes for excellence in research projects by undergraduate mathematicians.

Gary Lorden, BS '62, associate professor, checks work of math champions (from left) Bruce Reznick, '73, Arthur Rubin, '74, and Michael Yoder, '74. —Photo by Ed Norgard

Student views

New ASCIT president wants action

An interview with new ASCIT president Mark Johnson, '74, by Ed Schroeder, BS'70.

What are the main things you hope to do as ASCIT president?

Johnson: For one thing, I would like to do something to give students better housing and food. Although we have a money problem at the moment, I would like to see more social activities. Then I feel that ASCIT, the student government, has become too far removed from the students. We will have a corporation meeting to tell all ASCIT members about our plans and to hear their ideas. There is a communications problem among the students and the faculty and the administration that we have to work on.

How do you think student housing can be improved without raising the costs?

Johnson: I think we can provide more alternatives. For example, I think the Institute could build an undergraduate apartment building with endowment funds and get an adequate return on its investment. Cooperative housing has also proved a good idea. We should have two more houses with room for 10 to 12 people.

As ASCIT president, do you think you can really speak for the students and do you think the administration and faculty will listen?

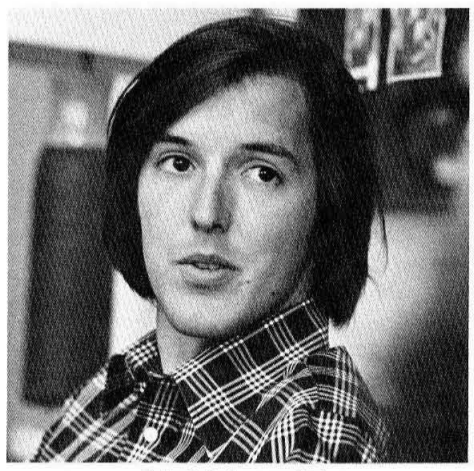
Johnson: Well, I don't try to kid myself. About half the students voted in the election, and of that half about 50 percent voted for me. So that means I was elected by 25 percent of the students. Of course I can't speak for everyone, but I try to represent their views as well as I can. And I do believe the faculty and administration are listening. For example, take the humanities proposal. We polled the students and we had an ASCIT representative on the curriculum committee. We proposed ideas and some of them were adopted. I think we were very effective with our input.

There has been a good deal of controversy lately about the Humanities and Social Sciences requirement. What is your position on that?

Johnson: First, I don't think that we should have an HSS requirement at all. But most students would disagree with me on that, I think. If we are going to have a requirement, I don't think we should exclude any HSS course from counting toward it. So I think that the curriculum committee's proposal on the composition of the 108 humanities units is a very good proposal.

What are some of your other concerns with academic issues?

Johnson: I'm very interested in the grading system. As I wrote in the *California Tech* recently, I feel that the grade 'F' should be removed from transcripts at Caltech and be replaced by a 'no-credit' system where no permanent record would be kept of a student failing a course. I also like Professor Richard Dean's idea of having more broad, general seminars at Caltech since the subject matter of most of the courses here is very "deep." It would be very good to have seminars in which you could see how your work ties into other things.



Mark Johnson, '74

What long-range changes would you like to make in academics at Caltech?

Johnson: Well, here you start discussing things that we, the current board of directors, can't do. The first thing we can't do is abolish Institute requirements and keep option requirements. Since we can't do that, we might fall back on the position of making Institute requirements all pass-fail. Academic matters around here often seem to be handled in a weird way. As a math major, I can't understand why mathematics and applied mathematics should be in different divisions. Why couldn't we have a division of mathematical sciences? Some of the option requirements at Caltech also seem unusual to me.

What do you see as the role of the ASCIT board of directors at Caltech?

Johnson: Our real function has to be to obtain the greatest good for the greatest number. There are things we have to be concerned with. Right now I'm concerned about the honor system. Somehow it seems to have become limited to merely academic matters. I think that it should be more important than that. If students take more initiative here, I think they will be granted more responsibility. I think it's important that ASCIT have policies that our student representatives on faculty committees can work for. We need more communication with our representatives and more feedback from them, and we need to choose these people carefully.

What are some of the other things you and the BOD would like to see done.

Johnson: We'd like to see if we can turn the bookstore into a student cooperative. We'd like to see more faculty-student interaction, and to help accomplish this we are putting together a faculty-student tennis tournament. Individual faculty members and students will schedule their own matches. Maybe we can do more of this sort of thing. We would like to revive the teaching-quality feedback group, which compiled information on courses and instructors. We'd like to have parties. Even if the first three ideas failed, maybe some people would be interested in the fourth.

Do you think students are losing interest in traditional social events like Interhouse?

Johnson: I do think interest in big events like Interhouse is decreasing. But I think there is more interest in small events such as a trip to Catalina or alley parties where about 15 people get together and you really have a chance to get to know people. The $4,000 the Gnome Club gave us for a bus will help us to arrange more of these smaller events. We'll also be using the bus to make shuttle trips to Scripps. We have a list of approved student drivers and any group of students can rent the bus for 10 cents a mile. We have budgeted $750 a year for major repairs and depreciation.

How else could alumni help you?

Johnson: Well, they are already doing a lot. Beside the Gnome Club, the Alumni Association has contributed money for freshman camp and for several ASCIT projects. I would really like to see more alumni come to dinner in the student houses. I think that is a great way to get communication going between alumni and students. We're working on that now. I hope all alumni will feel welcome to call the house presidents any time. It is through the houses that I think we can build our closest ties.

Visiting committees help divisions

Continued from page 1

ENGINEERING AND APPLIED SCIENCE

Stephen D. Bechtel, Jr., president of the Bechtel Corporation, is chairman of the visiting committee for the division of engineering and applied science.

Other members are: R. Stanton Avery, chairman and chief executive officer of Avery Products Corporation; Dr. Paul Chenea, vice president, Research Laboratories, General Motors Corporation; William Clayton, president, Clayton Manufacturing Company; Dr. Donald N. Frey, chairman of the board, Bell & Howell Company.

Robert Hansberger; Dr. Louis T. Rader, MS'35, PhD'38, chairman, department of electrical engineering, University of Virginia; Dr. Simon Ramo, PhD'36, vice chairman, TRW, Inc.; George S. Schairer, vice president, The Boeing Company; Dr. Henry E. Singleton, chairman and chief executive officer, Teledyne, Inc.; Edward E. Tuttle, BS'28, president, Essick Investment Company; and Dr. Abe Zarem, MS'40, PhD'44, management and engineering consultant.

THE HUMANITIES AND SOCIAL SCIENCES

Lew Wasserman, president, MCA Inc., is chairman of the visiting committee for the division of the humanities and social sciences. Other members are: Robert O. Anderson, chairman, the Atlantic Richfield Company; Frank Capra, BS'18, retired film director; Dr. Richard S. Crutchfield, Institute of Personality Assessment, UC-Berkeley; John S. Galbraith, department of history, UC-Los Angeles; Stanton G. Hale, chairman, Pacific Mutual Life Insurance Company; William A. Hewitt, chairman, Deere & Company.

Deane F. Johnson, O'Melveny & Myers; J. Stanley Johnson, BS'33, MS'34, retired businessman; Frederick G. Larkin, Jr., chairman and chief executive officer, Security Pacific National Bank; John R. Meyer, department of economics, Yale University; William H. Riker, department of political science, University of Rochester; James E. Robinson, chairman of the finance committee, Indian Head, Inc.; Claude M. Simpson, department of English, Stanford University; and C. Lee Walton, Jr., managing director, McKinsey & Company.

GEOLOGICAL AND PLANETARY SCIENCES

Louis E. Nohl, investment manager, is chairman of the visiting committee for the division of geological and planetary sciences. Other members include: Philip H. Abelson, president, the Carnegie Institution of Washington; Allen F. Donovan, senior vice president, Technical Aerospace Corporation; Rollin Eckis, MS'30, vice chairman of the board, International Division, Atlantic Richfield Company.

James W. Glanville, MS'46, '48, partner, Lehman Brothers; Earle M. Jorgensen, chairman and chief executive officer, Earle M. Jorgensen Company; William M. Keck, Jr., director, Superior Oil Company; Frederick G. Larkin, Jr., chairman and chief executive officer, Security Pacific National Bank; John G. McLean, BS'38, chairman and chief executive officer, Continental Oil Company.

H. W. Menard, BS'42, MS'47, professor of geology, UC-San Diego; Henry T. Mudd, chairman of the board, Cyprus Mines Corporation; Rudolph A. Peterson, chairman, the executive committee, Bank of America Center; Frank Press, chairman, department of geology and geophysics, Massachusetts Institute of Technology; N. Allen Riley, president, the Chevron Oil Field Research Laboratory; and Richard R. Von Hagen, president, Lloyd Corporation, Ltd.

James Bonner awarded Richard Tolman Medal

James F. Bonner, professor of biology, has been awarded the Richard C. Tolman Medal of the American Chemical Society's Southern California Section.

According to the citation, Bonner received the honor because of his contributions to fundamental chemistry, biochemistry and plant physiology, his outstanding texts in plant biochemistry, and his success as a stimulating teacher and example to his students.

The award is named for the late Richard Chace Tolman, a distinguished Caltech chemist. Bonner joins two other Caltech faculty members, chemists A. J. Haagen-Smit and Ernest H. Swift, as Tolman Medal winners.

ALUMNI EVENTS

May 4

San Diego Chapter Meeting. Crown Room, Hotel Del Coronado. Social hour, 6 p.m.; dinner, 7 p.m. President Harold Brown will be the speaker.

May 7

New York Chapter Meeting. Princeton University Club, 15 West 43rd St., New York. Social hour, 6 p.m.; dinner, 7 p.m. Dr. Irving S. Bengelsdorf, director of science communication, will talk on "Of Men and Chromosomes."

May 8

Washington, D.C., Chapter Meeting. Blackie's House of Beef, 22nd and M Streets, N.W., Washington, D.C. Social hour, 7 p.m.; dinner, 8 p.m. Speaker, Dr. Irving S. Bengelsdorf, "Of Men and Chromosomes."

May 16

Detroit Area Meeting. The Recess Club, Fisher Building, Grand at Second Street, Detroit. Social hour, 6 p.m.; dinner, 7 p.m. Speaker, Dr. Irving S. Bengelsdorf, "Of Men and Chromosomes."

May 17

Chicago Chapter Meeting. Pyrenees Restaurant, 10035 Skokie Boulevard, Skokie, Ill. Social hour, 6:15 p.m.; dinner, 7 p.m. Speaker, Dr. Irving S. Bengelsdorf, "Of Men and Chromosomes."

May 23

Dallas-Fort Worth Area Meeting, Dallas. The Coronado Room, the Inn of the Six Flags. Social hour, 6 p.m.; dinner, 7 p.m. Speaker, Dr. Irving S. Bengelsdorf, "Of Men and Chromosomes."

May 24

Houston Area Meeting. The Junior League Tea Room, 625 West Loop South, Houston. Social hour, 6:30 p.m.; dinner, 7:30 p.m. Speaker, Dr. Irving S. Bengelsdorf, "Of Men and Chromosomes."

June 1

Annual Dinner and Class Reunions. Half-Century Club luncheon, the Huntington-Sheraton Hotel, 12 noon; campus tours, 4 p.m.; social hour, the Athenaeum, 6 p.m.; dinner, 7 p.m. Speaker, Anthony Day, editor of the editorial pages, the *Los Angeles Times.*

CALENDAR

Fri. & Sat., May 4 & 5, 8 p.m. Beckman
ERICK HAWKINS DANCE COMPANY. $6-5-4-3.

Saturday, May 5, 8 p.m. Ramo
THE HUNTER MEAD MEMORIAL CONCERT, by the Caltech Band. $1.50.

Tuesday, May 8, 8 p.m. Ramo
YOUNG CONCERT ARTISTS SERIES: Rolf Schulte, violinist. $3.

Fri. & Sat., May 11 and 12, 8 p.m. Beckman
SPRING JUBILEE, featuring the Caltech Glee Club. $2.

Monday, May 14, 8 p.m. Beckman
EARNEST C. WATSON CALTECH LECTURE SERIES: "The ABC of Cancer," Leroy E. Hood, assistant professor of biology, Caltech. Free.

Saturday, May 19, 11 a.m. and 2 p.m., Beckman
CHILDREN'S SERIES: Films for Children. Children, $1.50; Adults, $2.

Tuesday, May 22, 8 p.m. Beckman
Pianist VLADIMIR ASHKENAZY. $6.75-5.75-4.50-3.50.

Saturday, June 2, 11 a.m. and 2 p.m. Beckman
CHILDREN'S SERIES: "The Aman Folk Ensemble." Children, $1.50; Adults, $2.

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Photographer: Floyd Clark.

Shoemaker's paddlers battle nature

by Winifred Kennedy

When Gene Shoemaker, professor of geology, offered to lead a six-day divisional field trip to explore a mysterious part of the Colorado River, he had no trouble in recruiting volunteers. There were 46 in his party when he left for the Colorado on March 10. The group included people from all areas of the geology division—faculty, students, secretaries, and their wives and husbands.

The amateur river rats were lured by Shoemaker's reputation as an unexcelled host of outdoor expeditions. They also had visions of floating down the Colorado in warm spring sunshine, telling stories around a blazing campfire, and sleeping under the stars.

Shoemaker more than lived up to everyone's expectations as a guide. But what started out to be an educational pleasure trip turned out to be a first-class struggle with the elements. And by the end of the expedition, everyone in the group had learned the meaning of endurance.

Shoemaker picked out a 50-mile stretch of the Colorado that he was confident his inexperienced companions could safely navigate in three days. Although this section between the mouth of Peach Springs Canyon and the entrance to Lake Mead is tamer than some other sections of the river, Shoemaker's main purpose in choosing it was because of the mystery that surrounds the region.

He explained that a gap of seven million years is missing in the geological record of this particular section of the river. An analysis of the rocks found in the stream bed and the formations on the canyon walls shows evidence of the Colorado's existence 10 million years ago and three million years ago, but no trace of the river between those years.

After learning something about the geology of the region, the group invaded the eight rafts that would each carry six passengers down the river. Some of the more appropriate names given the craft by their occupants were: "Shoemaker's Ship," the "Robert E. Leak" (three patches on the bottom), the "Deliverance," and the "African Queen."

Shoemaker gave his companions a brief orientation on running the rapids—all to be encountered on the first day—and then the floating expeditionary party cast off with "Shoemaker's Ship" in the lead. The rapids loomed ahead after less than a minute on the river.

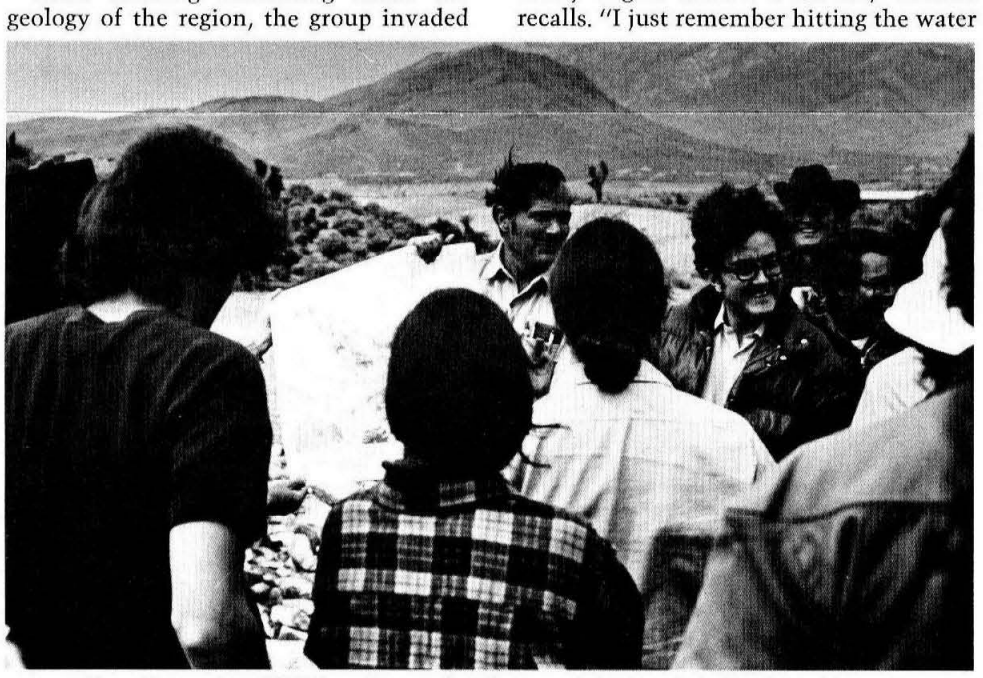
"Those rapids sounded pretty scary," said graduate student Duane Champion, in describing what went through his mind that morning. "Inside the canyon, the roar of the water echoes and is magnified, and the sound rushes back at you. When we came to the third rapid we couldn't see the bottom. All we could see was the water churning and the waves splashing up and we didn't know what was underneath.

"The crew in boat number two watched Gene and did a reasonable imitation of his maneuvers. And boat number three did a pretty good job of imitating boat number two. But by the time you got back to boats four and five, all bets were off. Boats were going straight through the middle of the V (where the waves are the highest and fiercest) and boats were going sideways and flipping around in the water."

Three members of the party were thrown over the edges of their boats into the water. All hung onto safety ropes and were hauled back into their rafts soaking wet but without injury. One of the three who went overboard was Eldon Haines, visiting associate professor.

"We were rocking and tipping at uncanny angles when I went out," Haines recalls. "I just remember hitting the water and hanging onto a safety rope. I was too scared to make much noise.

Geology division flotilla of eight rafts drifts down the scenic Colorado River on field trip.



Gene Shoemaker, BS '46, professor of geology, explains terrain before launching rafts.

"Earlier, I'd been selected helmsman for our boat. The others discovered where I was, as they were waiting for me to give orders to avoid some rocks on the opposite wall. Needless to say, I was in no position to give orders."

The first day of rapid-running adventure ended with a peaceful night. The next morning was calm and sunny as the party floated along a quiet portion of the river. Then, in the early afternoon, it began to rain.

"We were all soaked by the time the rain finally let up around five o'clock," Champion said. "We found a campsite, built fires, and started drying out. Then someone asked, 'What's that sheet-like thing at the end of the canyon?' Someone else said, 'That's rain.'

"A few moments later the storm front came through our campsite at 70 miles an hour and incredible things happened. I was holding my sleeping bag and was blown on my back. Two camp fires were picked up and dispersed to the wind—sticks, fire, and all.

"The rain kept coming down—a cold, pelting, whipping rain. Somehow we were able to keep most of our fires going, even though we were using soaked wood caked with mud."

Haines recalls, "A good thing happened to me through this experience. As about 12 of us were standing there in the rain, huddled close to each other around a fire, I felt a sense of disaster at first. I wondered how things could possibly get worse.

"Then it occurred to me that a million years ago men withstood much worse storms with less equipment. I realized the worst that could happen was that we'd stand there all night in the rain and feed the fire; that the next day we'd be tired, but all right.

"It was at this point that the feeling really began to grow within the group that together we could handle almost any problem we'd have to face."

The final day on the water brought the group to Lake Mead. There they encountered a 30-mile-an-hour headwind blowing across the lake against them, with waves eight inches high. To row to the other side of the lake was almost an impossibility.

"The fellows in our boat said, 'OK, let's do the Volga boatmen scene,' " Champion recalls. "We had a long bowline, so we jumped in the water and began towing the raft, as we walked around the edge of the lake. We saw the fellows in another raft doing the same thing."

By towing or superhuman rowing efforts, several of the rafts were brought to their destination. Shoemaker sent a motorboat out to tow the others in.

"Our last night out was clear," Champion said. "We felt good. We were almost back to civilization. About 10 o'clock we went to sleep out in the open. The stars were beautiful. Around midnight we heard a little pattering sound and felt some drops.

"It came down until around 6:30. I decided to lie on my right side all night to keep at least half of me dry. By morning that side was so tired I could hardly move."

That day Shoemaker and his seasoned bunch of river rats packed up and headed back to Pasadena. Everyone was dead tired, but the only health casualties were a case of laryngitis and a few sniffles.

Was the trip worth it? Would they do it again?

Haines says, "Sure, there was some relief that the trip was over, but there was much more regret. In the modern world we don't have much need for one another at a physical level, but on this trip we became a closely knit community because we had to share a lot of equipment and work so closely together. I don't think any of us will forget that.

"I still dream a lot about being on the river and the people I was with. For me, three elements of the trip are welded together. There's the river itself, with its own deep, driving spirit. There's the topography of the canyon, with its fantastic age and the long process that went into creating it—the mystery inside its walls. And there are the relationships that developed within the group—the affinity we felt for each other in that situation."

And Champion says, "When we were out there and a fellow would ask, 'Hey, do you want to go again?', you'd feel like hitting him. But now that we're home, I think most of us want to go again. We had a rough time with the elements and we endured it. Now we can say, 'We're right in there, Mother Nature.' And that gives you a good feeling.

"We were all allowed to keep our oars and I don't think anyone would have left his. I don't know what I can use mine for—it's too long for anything except another trip on the river.

"I wonder whether letting us keep our oars was Gene's way of saying, 'Come on, you guys. Let's go again.' "

Charles Almquist to receive Thomas J. Watson Fellowship

Charles Almquist, a senior majoring in engineering, has been selected to receive a $6,000 Thomas J. Watson Fellowship for a year of independent study overseas.

Caltech is one of 35 colleges and universities that is asked to nominate four outstanding seniors by the Thomas J. Watson Foundation. The foundation was established in memory of Thomas J. Watson, father of Caltech trustee Thomas J. Watson, Jr.

Each of the students nominated was required to submit a proposal.

"My goals are to study technological management in Europe and to learn a foreign language," Almquist said. "I want to find out how European companies develop specific technologies, such as the Concorde supersonic plane being built in France. I want to find out where the idea came from and how it develops to the final product."

"I am particularly interested in fluid mechanics and I hope to visit laboratories in France, England, and Germany. I will probably report on three or four projects during the year."

To prepare for his trip to Europe, Almquist is learning French from Ricketts House R.A., Francois Morel and his wife Nicole.

"Francois and Nicole tell me I'll have no trouble learning enough French to get around," Almquist said. "And I plan to live for the first three months in a small country town in France where I'll have to speak French all the time. I think that's the only way to learn a language."

If he has the time, Almquist should also be a welcome addition to the local track team in his French town. He has been an outstanding member of Caltech's squad for four years and holds the school record in the 440 hurdles.

After he completes his year in Europe, Almquist plans to work for a Master's degree in engineering at MIT, where he has already been accepted. Members of the Class of 1973 should have no trouble keeping up with his activities in the future, since he was recently elected the permanent class secretary.

Placement Assistance To Caltech Alumni

The Caltech Placement Service may be of assistance to you in one of the following ways:

(1) Help you when you become unemployed or need to change employment.

(2) Inform you of possible opportunities from time to time.

This service is provided to alumni by the Institute. A fee or charge is not involved. If you wish to avail yourself of this service, fill in and mail the following form to:

Caltech Placement Service
California Institute of Technology
Pasadena, California 91109

Please send me: (Check one)

☐ An application for placement assistance

☐ A form indicating a desire to keep watch for opportunities although I am not contemplating a change.

Name .....

Degree(s) ..... Year(s) .....

Address .....

.....

PERSONALS

1928
J. LLOYD BOHN, PhD, emeritus professor of physics at Temple University, has been invited to the Max Planck Institute for Nuclear Physics in Heidelberg, Germany, for a seven-week, information-sharing project to study microscopic particles of space dust. Bohn is the developer of the micrometeorite counter in Explorer I that was first launched into orbit around the earth in 1958.

1932
RAYMOND H. GRIEST, MS'33, PhD'37, has retired from his position as technical director in the aero systems division of Hughes Aircraft Company.

1933
DAVID L. CLARK, formerly general manager of General Motors Corporation in Los Angeles, has now retired.

1937
R. BRUCE LOCKWOOD is now president of Lockwood-Singh and Associates in Culver City. He was formerly vice president and chief geologist of Maurseth, Howe, Lockwood and Associates.

1938
JACK JOHANNESSEN was a senior electrical engineer with Lockheed Corporation in Burbank, and is now a design specialist for Lockheed in Ontario.

1939
BERTRAM YOOD, MS, is now a professor of mathematics at Pennsylvania State University. Formerly, he was on the faculty at the University of Oregon.

1944
HOLT ASHLEY, Ex'44, on leave from the Stanford faculty, is the director of the office of exploratory research and problem assessment at the National Science Foundation in Washington.

CHARLES S. COX was appointed chairman of the ocean research division of Scripps Institution of Oceanography at La Jolla. He has been a professor of oceanography at Scripps since 1955.

EDWARD A. GOLDSMITH was named manager, technical operations, for the nuclear service division of Westinghouse Electric Corporation in Pittsburgh. He has worked for the company in atomic power since 1955.

WILLIAM R. HAMILTON is now president of the Baron Blakeslee division of Purex Corporation in Santa Fe Springs. He was formerly president of Baron Blakeslee, Inc., in Chicago.

1945
BRUCE R. VERNIER has moved to Anaheim as manager of marketing and planning for Northrop Services. He was laboratory manager for Northrop in Houston.

1946
CHARLES R. RUSSELL has joined the faculty of California State Polytechnic University in San Luis Obispo as a professor of mechanical engineering. He was a research engineer for General Motors Research in Santa Barbara.

JAY W. STUART, Jr., MS'48, AE'51, is now a hydrodynamicist for Aerojet General Corporation in Tacoma, Washington. He was a consultant to the Skill Conversion Project of the National Society of Engineers.


Bohn, '28


Vincent, '46

HARRY L. VINCENT, JR., MS, has been elected executive vice president of Booz, Allen & Hamilton, Inc., international management consultants. Vincent, who was a group vice president and director, moved from Washington to Chicago to assume his new position.

1948
ROBERT ZACHARIAS, MS'49, formerly head of systems engineering for the A.C. spark plug division of General Motors, is now a senior systems engineer with TRW Systems in Redondo Beach.

1949
FRED H. NICOLAI has moved from Los Angeles to New York, where he is exploration coordinator for Texaco, Inc. He was assistant to the senior vice president of Texaco.

DON E. SIX has been appointed assistant general manager for exploration in Texaco's producing department in New Orleans. He was exploration coordinator for the company's exploration department in New York.

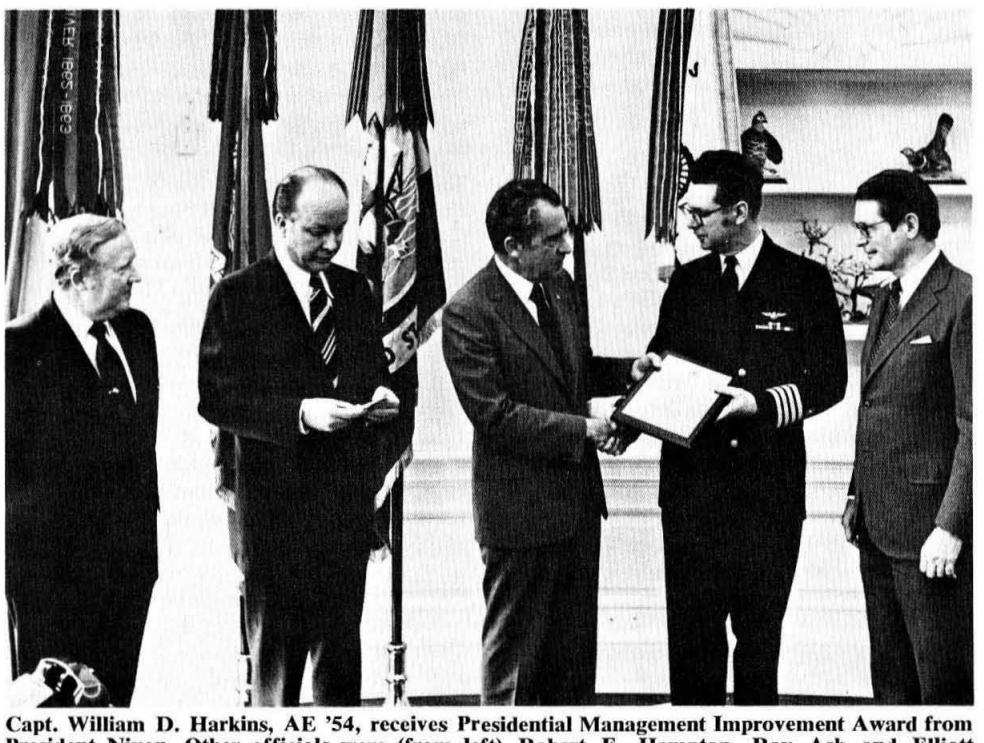
GENE D. SIX has been named associate of National General West, Inc., a real estate investment firm in Pasadena. He was formerly coordinator of instructional programs and services for the Pasadena Unified School District.

1953
RICHARD M. JAFFE is currently attending Stanford Business School where he is majoring in finance and marketing. He has also written a new book, *A Clear Introduction to FORTRAN IV*. Before entering Stanford he was head of operations research at Systems Development Corporation.

1954
WILLIAM D. HARKINS, AE, a Navy captain, was presented with the Presidential Management Improvement Award by President Nixon. Harkins received the award for his leadership and management improvements while he was commanding officer of the Naval Air Rework facility in San Diego.

1956
DAVID J. ALLEN, BS'63, writes, "After 15 years as an engineer in the aerospace industry I have decided to change my career. I plan to go into winemaking and to prepare myself I am now a graduate student in enology at UC Davis."

GORDON L. CANN, MS, PhD'61, has been elected president of Technion, Inc., in Monrovia. Previously he was a visiting scientist at Technology, Inc., in Dayton, Ohio.


Capt. William D. Harkins, AE '54, receives Presidential Management Improvement Award from President Nixon. Other officials were (from left) Robert E. Hampton, Roy Ash and Elliott Richardson.

ERIC B. WARD, formerly head of the Office of Science and Technology in Washington, is now president of Eric B. Ward and Company in San Marino.

1958
WARREN V. BUSH, PhD, has moved from Walnut Creek, California, to Houston, Texas, where he is a senior research engineer for the Shell Development Company. He was a group leader in the technical department of Shell's Martinez refinery.

1959
RITCHIE B. CORYELL, MS, a systems scientist at JPL, is on assignment to the National Science Foundation as program manager in the office of systems integration and analysis in Washington.

1960
NOEL W. HINNERS, MS, is now deputy director and chief scientist for lunar programs for the National Aeronautics and Space Administration in Washington. He was department head of lunar exploration for Bellcomm, Inc.

1961
NICK S. MOREZ is now an assistant professor of mathematics at California State University, Humboldt. He held a similar position at San Diego State.

VICTOR L. YEN, MS, formerly sales manager for Optical Coating Laboratory, Inc., has joined Optoelectronics, Inc., in Petaluma as marketing manager.

1962
SCOTT E. GILLES, MS, is a staff scientist for Martin Marietta Corporation in Denver. He was a member of the technical staff of Aerospace Corporation.

HUGH KENDRICK, MS, formerly a physicist with Gulf Atomic General, Inc., is now a scientist with JRB Associates, Inc., in McClean, Virginia.


Don Six '49


Jaffe, '53

1963
WILLIAM C. GIAUQUE has completed his graduate studies at Harvard and is now an assistant professor at the Naval Postgraduate School in Monterey.

JAMES M. SAGAWA is now an advisory systems analyst for IBM in Palo Alto. He was a consultant for software systems with IBM in England.

RICHARD E. SEARS, formerly a senior engineer for Standard Oil of California in San Francisco, is now a design representative for that company in Weston, Massachusetts.

NICHOLAS J. TURRO, PhD, professor of chemistry at Columbia University, has been awarded the National Fresenius Award for 1973 by the Phi Lambda Upsilon Chemical Honorary Society. The award is made annually to a scientist under 35 who has "made notable contributions in chemical research, education, and/or administration." Turro has been a pioneer in the development of a detailed understanding of how photochemical reactions occur.

1965
HAROLD T. LARSON, MS, PhD'70, formerly a research associate at Rice University, has been appointed assistant professor of physics at Grand Valley State College in Allendale, Michigan.

ALBERT B. PINCINCE, MS, PhD'68, has been promoted to vice president of Environmental Engineers, a subsidiary of Camp Dresser and McKee, Inc., an international environmental engineering firm in Pasadena.

ALVAH T. STRICKLAND, MS, has moved from Hawaii to Curtis Bay, Maryland, as a project engineer for the Naval Undersea Research and Development Center.

ANSEL F. THOMPSON, JR., MS, PhD'68, a project manager for Roy F. Weston, Inc., has returned from work in Italy and is now at West Chester, Pennsylvania.

1966
DARIO IACUELLI has been promoted to vice president of Management Analysis Center, Inc., in Cambridge. He joined the firm in 1972 as a consultant.

TOM R. MILLER, who received his PhD from Stanford in 1972, is now a NIH Research Fellow in the department of physics at the M. D. Anderson Hospital in Houston. He will enter the University of Missouri Medical School in Columbia next fall.

BALDOMERO M. OLIVERA, JR., PhD, formerly a professor at the University of Philippines College of Medicine, is now an associate professor of biology at the University of Utah in Salt Lake City.

RICHARD D. ROCKE, PhD, is now a senior staff engineer with Hughes Aircraft Company in Fullerton. He was an assistant professor at the University of Missouri.

1968
ROBERT L. BELL, MS'71, has been promoted from project engineer to special products manager for the Endevco Corporation in Livermore.

BRAD L. HOLIAN has received his PhD in chemistry from UC Berkeley and has joined the Los Alamos Scientific Laboratory to work as a postdoctoral fellow with the theoretical division.

WILLIAM W. MILLER, PhD, is now a senior biochemist with Beckman Instruments, Inc., in Fullerton. He was formerly pollution control coordinator for the DuPont Company.

1969
FRANK I. C. CHU, PhD, is now general manager of Coe and Dru Company in Los Angeles. He was a senior research engineer for General Motors Corporation in Santa Barbara.

L. FERNANDO FERNANDEZ, PhD, formerly an associate group director for Aerospace Corporation, is now a program manager for R&D Associates in Santa Monica.

JERRY MAR, PhD, is now a physicist for Intel Corporation in Santa Clara. He was a member of the technical staff of Bell Laboratories.

ROBERT D. SMALL, MS, PhD'72, has been appointed an assistant professor of mathematics at the University of New Brunswick in Canada.

1970
KENNETH M. JASSBY, PhD, finished his postdoctoral research at Caltech and is now a senior lecturer in materials science at Tel Aviv University in Israel.

ARTHUR OGAWA has been appointed senior project engineer of the electronics division of Micon Industries in Oakland. He completed his graduate studies at UC Berkeley.

CARL CHRISTOPHER REED has been released from the Air Force and will do graduate work in applied mathematics as a teaching assistant at Cornell University next fall.

BOBBY L. ULICH, MS, received a PhD in electrical engineering from the University of Texas and has been appointed assistant director of the Tucson division of the National Radio Astronomy Observatory.

1971
WILLIAM G. CRISS earned an MBA from the University of Chicago and joined the Ford Motor Company as a financial analyst for the product development group in Dearborn.

OBITUARIES

1921
GARNETT H. BARNSDALE, of a heart attack in 1972. He was retired and living in Glendale. Barnsdale had been an employee of the Pacific Telephone and Telegraph Company for many years, and is survived by his wife, two sons, a daughter, and four grandchildren.

1944
JACOB W. DUBNOFF, PhD, of cancer, May 30, 1972. He was a professor at the University of Southern California. Previously he had been a senior research fellow at Caltech and an associate professor at Loma Linda University.