Feynman On the Shuttle

by T. Gould

The Caltech Student Club hosted a lecture given by Richard P. Feynman on the Rogers’ commission report of the Space Shuttle disaster, last Tuesday afternoon. Begun by his former student Dr. Albert Hibbs, the Caltech physics professor spent nearly an hour-and-a-quarter from Beckman Auditorium to Dunley Hall to the podium. His students, however, Feynman addressed over the course of employees, undergraduates, and graduate students. He is as always simple and concise in words, so much so as to risk losing an audience steeped in the verbosity of modern technical communication. To attempt to paraphrase Feynman is a futile effort to distill the purest information.

He began with a quick review of the technical details of the Shuttle failure covered so extensively by the media. Here, as in the entirety of his lecture, Feynman entered the exemplary efforts of the Propulsion Laboratory. After accepting an invitation to join the Rogers’ committee, Feynman submitted himself to a rapid fire briefing by JPL engineers which in retrospect revealed essentially all of the problems which would subsequently take the committee months to uncover. Feynman displayed a copy of his notes from that briefing, the second line of which stated the difficulties of the infamous O-rings.

Some of Feynman’s most insightful contributions to the four month investigation were those concerning the nature of human rather than material failure. There was a very deep and surprising confusion on the part of the managers concerning the statistical inference among the NASA managers as to what Feynman referred to as the “p-value.” The management’s assessment of the Shuttle’s probability of failure was tacitly based upon its probability of success. If a launch was considered less of a risk, the next flight was considered dangerous was later deemed a success, the next flight was considered dangerous was later deemed.

Feynman went on to counter a great discrepancy between the estimates of the probability — provided by the JPL engineers and those given by engineers of the time — as how few people work in an area, they still need to look at the applications.

Feynman believes that the interesting considerations of his work with the Space Shuttle disaster, last Tuesday afternoon. Introduced without fanfare by his former student Dr. Albert Hibbs, the Caltech physics professor spent nearly an hour-and-a-quarter from Beckman Auditorium to Dunley Hall to the podium.

Feynman’s audience on this afternoon was privy to his theory on the interplay between the human and the technical personnel. There was a common goal and as importantly a common means with which to achieve it. With the passage of the space program through the Apollo era, it became necessary for the space program’s administrative personnel to evolve into saviors for new and far-reaching projects. Future projects had to be not only technically possible, but economically realistic in the eyes of an increasingly cautious Congress.

Feynman believes that the interests of the administrative and technical personnel began to diverge, eventually leading to an environment in which a subtle and dangerous confusion could exist. In an era of potentially enormous scientific projects financed on the national level, future managers are faced with the challenge of being technologically astute as well as objective and receptive toward the work of their personnel.

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Protesters From Tech Arrested For Trespassing in Nuclear Zone

On Mother's Day, May 10, eight people from Caltech participated in a protest at the Nevada Test Site against the U.S. government's policy of continued nuclear testing in the face of a Soviet offer of a bilateral nuclear test ban. Four of the Caltech graduate students Erica Harvey, Ann Heil, and Kris Potter, as well as sociologist Riley Greer were among over 500 people arrested for committing acts of civil disobedience by trespassing on the site. Because many were arrested more than once, a total of 746 citations were issued for trespassing. Also participating in the action were graduate students Jonathan Nagler, Bob Sweeney, and Peter Gray; as well as recent alumnus Mark Cohen.

The Caltech people attended the action out of a sense of conviction that traditional means of lobbying the government to end testing have been insufficient. Ann Heil explains her motivation. "I went to Nevada because I have a deep-felt desire to take over the world, and to coordinate direct action against testing. The Caltech group among them, climbed over the fence surrounding the test site. It was a surrealistic scene as the four from Caltech scrambled underneath the fence and began walking hand-in-hand into the desert, bringing to mind scenes out of "Road Warrior". A helicopter descended from overhead, and a camouflaged dune buggy and a motorbike converged on the four, driven by security guards in camouflage. The guards handcuffed the four and herded them toward waiting buses.

The protesters were issued citations for trespassing. Many protesters chose not to give their names to the police, and some gave symbolic names such as Mother Earth. Erica Harvey and Kris Potter chose not to reveal their names, but instead each handed the issuing officer a permit from the Shoshone Indians granting them permission to be on the test site. This was done in sympathy with the Shoshone people, who claim that the test site land was taken from them unfairly in violation of treaties with the US government.

The Mother's Day action followed an earlier action on February 5 of this year at which three Caltech people, including Mark Cohen, Ann Heil, and Peter Gray were arrested. Also among the 438 arrested in the February action was Carl Sagan, Martin Sheen, Rev. Tom McDonald of the Southern Christian Leadership Conference, and several others.

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THE CALIFORNIA TECH

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15 MAY 1987

OPINION

THE CALIFORNIA TECH

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Pasadena, California 91125
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Welcome Home, Alumni

by Jeff Tekanic

Tomorrow is Alumni Seminar Day, and if you were like me before I became involved in planning this event, your reaction probably was: "So what?" Fair enough. I can understand that, but I feel you have the right to know why approximately 1500 alumni and prospective students will be descending upon the campus at 8:00 tomorrow morning.

For the past 50 years, the alumni of Caltech have used Seminar Day as their own opportunity to flock back to the campus and get back in the classroom. The professors, who have been asked to give the lectures, are speaking on topics they wish to talk about (rather than being assigned to lecture a required course).

Each speaker will give a 40-minute lecture twice in the day (see schedule printed in this issue) and all undergraduate and graduate students are encouraged to attend. For more information on the lectures themselves, contact the Alumni House or your House president.

OK, so maybe you slept through the whole day of lectures, is there anything left in the day? Why yes, there is a Alumni Association-sponsored catered barbecue in front of Winn Student Center, with the Seven House Crew Race to follow. Again all undergraduates are invited and encouraged to attend free of charge. We only ask that you pick up a BBQ ticket from your house president or the MaSH's office. If the presidents have not informed you of the BBQ, please yell at them for a while.

Graduate students are also invited to attend and should contact Tony Shjillum to obtain a ticket.

Beckman Auditorium

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
<th>Speaker(s)</th>
</tr>
</thead>
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<tr>
<td>8:15 a.m.</td>
<td>Session I</td>
<td>Return to the Red Planet, The Gender Gap, Breaking Waves and their Effect on our Coastline</td>
<td>A. Albee, M. Konishi, E. Raichlen</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>Session II</td>
<td>Neural Circuit Computer for Complex Decisions, From Nanofabrication to Quantum Dots</td>
<td>J. La Belle, J. Hopfield, K. Vahala</td>
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<tr>
<td>12:00 p.m.</td>
<td>Session III</td>
<td>Collaborating with the Soviets in Planetary Science, The Birth of Quasars?—Ultraluminous Galaxies</td>
<td>A. Ingersoll, B. Soifer</td>
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REGISTRATION — Danbury Lounge

PLACE NORTH OF CALIFORNIA
The Inside World

Mike Hingle

"There's Shuttle at name's WALK s' (because of m ture while walking). Needless
the
a
Space
sure enough, his pant leg supported his claim. (Later, he told me that it was just
adjective is the enemy of the noun."

long series of walks
on my way home from the
36x1158
end of the term.

feel it fair that my name be connected with such shoddy journalism. I also think they
good for me. I think that my ultimate goal should be my own happiness and, since I'm
not really happy here, it seems the obvious choice.

my team only finished fourth. Good going, social team. I'm looking forward to the

many of us here it is a sort of love-hate relationship that we have with the school, and

a lot harder for me if I couldn't get away in my car once in awhile and completely forget

信号 changed and I was about a third of the way across when I noticed this group of

It was a sweltering California June morning, and a bunch of us were waiting to be

"And guess what I keep in this pocket."

"This was a little bit of shoe polish. "Just replaced it."
'I was surprised at its alcohol
content, and it's cheaper beer. Best of all, it makes the girls go crazy. I thought it just
might soften up your first day."

Continued speaking, but he broke off suddenly in mid-sentence and focused his
eyes over my left shoulder. For the next few minutes, he failed to acknowledge my ex­

ience, as he began to ogle (and I do mean ogle) the chick who had appeared behind

in his knapsack, and was only slightly reluctant to inquire.

He walked around and around her, studying her from every possible angle.

He thought so. He walked around and around her, studying her from every possible

"Hello, my name's Laura."

"An
in
knowledge
pays
the best
interests.

Work, Starting a Business, U.S. Postage
books in all. Books like The
Center, Tech Can Do

Your Government has published thousands of books
depth of government and
to join me and others in an effort
to a tasteful addition to Old
in Old Pasadena? PPC, Art Center. Tech Can Do It

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Arex Reilly has won the SURFCUBE "Guy of the Year" Award every year since 1983.

"An investment in knowledge pays the best interest."

"This was a little bit of shoe polish. "Just replaced it."

"I was surprised at its alcohol
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depth of government and
to join me and others in an effort
James Olson Named Trustee

(CNB) - James E. Olson, chairman and chief executive officer of American Telephone & Telegraph, has been named to the Board of Trustees of Caltech, Chairman Ruben F. Mettler has announced.

"We are delighted that Mr. Olson has agreed to serve as a Caltech trustee," said Dr. Mettler. "Caltech is now facing a number of important challenges and we plan to put Mr. Olson's leadership ability to good use."

James Olson, 61, is a native of Devils Lake, North Dakota. He has worked in the telephone and telecommunications business since 1943 when he was hired as a splicer's helper with the Northern Western Bell Telephone Company in Devils Lake, N.D. Twenty-three years later, Mr. Olson had moved up through the ranks of the company to become vice president and general manager in its Iowa area. He was transferred to Indiana Bell in 1970 as vice president of operations, and became president of that company two years later.

In 1974 Mr. Olson assumed the presidency of Illinois Bell, and in 1977 became executive vice-president of A&T headquarters in New York City. He was made vice-president and chief officer for astronomy in 1972 and was appointed chairman of Caltech's Division of Physics, Mathematics and Astronomy in 1973. From 1978 to 1980, he was director of the Hale Observatories.

Dr. Schmidt made astronomical history in 1963 while studying quasars—bright, star-like objects whose spectra of light were unlike those of any known stars in the Milky Way Galaxy. His crucial contribution was to recognize that the light from these mysterious objects had undergone a very large red shift, significantly larger than any red shift observed far beyond the Milky Way, billions of light years from earth. On the evidence of the spectra, Dr. Schmidt and other astronomers determined that quasars were the brightest and most distant objects ever discovered.

Mr. Olson has agreed to serve as a trustee of Caltech since 1981, will be the first holder of the endowed chair, established last year with a grant from the Flintridge Foundation. James Olson Named Trustee

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More Inside World

Discoverer Of the Red-shift Of Quasars Is Mosely Professor

(CNB) - Astronomer Maarten Schmidt, whose discovery of the red shift of quasars ranks as one of the premier achievements of modern astronomy, has been named the Francis L. Mosely Professor of Astronomy at Caltech, Ruben F. Mettler, chairman of the Caltech Board of Trustees, has announced. Dr. Schmidt, who has been the Institute Professor of Astronomy at Caltech since 1981, will be the first holder of the endowed chair, established last year with a grant from the Flintridge Foundation.

Dr. Schmidt’s research in modern astronomy has been named the Francis L. Mosely Professor of Astronomy at Caltech since 1981, will be the first holder of the endowed chair, established last year with a grant from the Flintridge Foundation.

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Robert Scheer Speaks About USSR Glasnost

by Huy Cao

Robert Scheer, a columnist for the Los Angeles Times, spoke about what is called the new glasnost, or openness, in the Soviet Union. The lecture was sponsored by the Distinguished Speakers Fund and the World Affairs Forum, which, according to the little t, does not endorse any specific political viewpoints.

Mr. Scheer forewarned the audience, "I am not an expert on the Soviet Union." But, he has made three trips to the Soviet Union, the most recent one being about two months ago.

He said that he doesn't think anyone can say what permanent changes will be brought about by Mikhail Gorbachev's glasnost, and that he's no exception. His lecture, he said, was based on his opinions and observations.

"I don't have the competency to interview people on the streets, to find out what really goes on in the factories, and so forth. What I want to say is largely based on conversations with influential Soviets, the reformist-minded leadership . . . ."

"Let me just say that I consider this to be the most exciting time in my life. My life has been dominated by the Cold War, and I think it kills many opportunities in our own society," said Mr. Scheer.

The opportunity to end the Cold War has a lot to do with changes in the Soviet Union, he said. His view is that the changes are partly due to a new "post-Stalin" generation of leaders. Secondly, the changes stem from the use of the "scientific method," a rejection of the shoddy Lyenkovism of previous Soviet science.

One sign of the openness, says Scheer, is the muckraking in the Soviet press. Another is new freedom for the masses, evident even at nightly rock concerts.

Scheer speculated that the changes, the "new thinking" in terms of domestic reform in the Soviet Union, could be because of what he views as the failure of Soviet foreign policy. Their foreign policy has brought neither the prestige nor the power that the Soviet Union has been seeking, and because of this thinks Scheer, they are turning to internal reform.

"It seems to me that in the rethinking of the foreign policy connected with domestic needs, there are lots of possibilities... It seems to me that the core is a sense that the East-West confrontation should not be at the center of driving relations."

Mr. Scheer predicted that the question for "our mutual civilization" would be: "Which society requires a state of tension in order to feel a sense of national cohesion, purpose?"

"What good is it to have a democratic society," he asked, "if it requires a state of Cold War? Is that not a sad reflection on a democratic society?"

Reflecting on his expectations for changes, Scheer said, "I don't expect that the Soviet Union will suddenly become a benign society continued on page 10
Millions filled the floor and danced to Scandalous sounds.

**at the ASCIT FORMAL**

**Scandal at the Ath**

by Nancy Drehwing

No, a waiter didn’t spill soup in Feynman’s lap. Scandal was the band that played for an enthusiastic group of almost 140 people at the Spring Formal at the Ath last Friday. This band was a last minute switch from the band originally booked, Restless — whose lead singer contracted laryngitis that morning (Nancy nearly became a second casualty due to heart failure upon hearing this). However, Scandal played a wide variety of danceable tunes and was well received by everyone except the Pasadena Police Department, who had gotten noise complaints. Thus the volume was turned down temporarily until the final song, “You Gotta Fight For Your Right To Party.” Good thing it was the last song.

I hope that everyone enjoyed themselves . . . and no sympathy for those of you who weren’t there. You all missed out on a fun time — if you don’t believe it, just check out the pictures!

Amazing Jeff, our fearless leader, concludes that he holds a fine vintage of Pasadena tap water.

Karen and John attempt to ignore the camera while Brett and Kyuson “watch the birdie.”
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SPORTS

Track Tricks Terminate

Beavers Finish a Winning Season

by Road Runner

After completing a very successful dual meet season with an impressive winning record of nine wins and six loses, the blazin' beavers were primed and ready to achieve their best performances at the SCIAC championships which were hosted by Pomona-Pitzer.

At the prelims, on Friday May first, both Andrew Stevens and Konstantin Othmer qualified for the 400m final in 56.63s and 53.44s respectively. At 800m, John Beck ran 1:59.41 which was just fast enough to grab up the last qualifying spot, while Sean Hillyard ran his best effort of the season in 2:02.62.

The 3000m steeplechase final was contested on Friday with Ray Hu finishing eighth in 11:21.6. Another final was the women's Discus in which Dee Morrison finished eighth with a throw of 38'3". This was far below her school record setting performance of 102'2" the previous week.

Due to an ankle injury, Dave Gates was unable to participate in the long and triple jump competitions where he had been sure to score points. Instead he ran the 200m in 23.91. Additionally, Tom Tetzlaff clocked 24.25 to record his fastest time ever.

Things heated up considerably on Saturday for the finals. The 1500m was contested under a blazing sun and the times were slow. However, John Gehring came ready to run and lowered his personal best of 4:05.81 despite the conditions. He missed sixth place by less than a second. Alex Athanasopoulos was eighth in 4:11.13.

Freshman Randy Ralph placed fourth in the conference in the high jump with a leap of 6'6" to establish himself as a force to be reckoned with in the future. He just missed clearing 6'7" and it appears that he's got the school record of 6'6½" in his sights.

John Beck also scored points as he placed fifth in the 800m final in a personal best time of 1:55.34. This was an exciting race, he coming from eighth place after 400 meters to kick past those three runners down the stretch.

Andrew Stevens also scored by clearing a six footer in the high jump. His time of 52.52 seconds is very respectable considering that he had to dodge a hurdle which had inadvertently been left in his lane.

Additional notable performances in this meet were Gao Mao's in the shot put with a throw of 33'7", Darin Acozin's and Gary Bloomberg's times in the 5000m of 17:34.9 and 17:14.5. Mark Carlin and Chandra Raman threw the javelin to personal bests of 107'1" and 119'5" and Dee Morrison threw the shot put 37'7½".

To cap off the meet in the fashion, our 4X400m relay team consisting of Alex Athanasopoulos, John Beck, Tom Tetzlaff, and Sean Hillyard ran the fastest time of the year in 3:27.00 in the conference final.

A select few athletes continued their competition for one more week in the Oxy Invitational on Saturday May ninth. At this twilight meet, in a last chance attempt at achieving national qualifying standards, Alex Athanasopoulos won his heat for the 400m with John Beck in hot pursuit at 1:55.08. Alex came within a hair second of qualifying and might well have done it had he been seeded into a more competitive heat.

John Gehring ran 4:08 in the 1500m and Randy Ralph cleared 6'2½" in the high jump. Andrew Stevens placed third in heat 400 meters in 52.99. Eric Smith continues to show promise as he cleared 6'0½" and opened the height in the pole vault so instead he anchored our 4X400m relay team to a season's best time of 3:26.8. John Beck ran a 49.8 second 400 meter split while Athanasopoulos and Scott ran their usual steady performances. Dee Morrison threw the discus 96 feet.

The 3000m steeplechase controlling heat of 400 meters in 52.99. Eric Smith continues to show promise as he cleared 6'0½" and opened the height in the pole vault so instead he anchored our 4X400m relay team to a season's best time of 3:26.8. John Beck ran a 49.8 second 400 meter split while Athanasopoulos and Scott ran their usual steady performances. Dee Morrison threw the discus 96 feet.

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Patterson Elected To National Academy

(CNI) — Caltech geochemist Clair Patterson, who established the age of the earth and alerted the modern world to the dangers of lead pollution, has been elected to the National Academy of Sciences (NAS), it has been announced by the Academy in Washington, D.C. Dr Patterson is senior research associate in geochemistry at Caltech.

"Clair Patterson is one of the most imaginative and creative scientists I have known," said Caltech’s vice president and provost, geophysicist Barclay Kamb. "His thinking and imagination are so far ahead of the times that he has reached the age of the earth at the now widely accepted figure of 4.6 billion years and for his discovery that lead pollution from automobile exhaust had reached unacceptable levels in the earth’s oceans and atmosphere. Working in ultra-clean, lead-free laboratories at Caltech, he is investigating the continuing hazards posed by lead contamination of the earth’s oceans, air, and marine life.

Election to the Academy is considered to be one of the highest honors that can be bestowed upon an American scientist or engineer. The Academy, founded in 1863, is a private organization charged with acting as an official advisor to the US government. Dr Patterson’s election brings to 59 the number of NAS members currently in the Caltech faculty.

Dr Patterson received his AB in 1943 from Grinnell College, his MS in 1944 from the University of Iowa, and his PhD in 1951 from the University of Chicago. He joined Caltech in 1952 as a research fellow and was appointed senior research fellow in 1953. He became a research associate in 1971 and senior research associate in 1973.

Dr Patterson is senior research fellow in 1953. He has been recognized for establishing the age of the earth and for his discovery that lead pollution from automobile exhaust had reached unacceptable levels in the earth’s oceans and atmosphere. Working in ultra-clean, lead-free laboratories at Caltech, he is investigating the continuing hazards posed by lead contamination of the earth’s oceans, air, and marine life.

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Caltech Sex Discrimination from page 1

Scheer on USSR from page 6

in every respect. Nor do I expect that
we will have no points of conflict,
but nor do I expect that there will
be serious things to criticize...I'm
merely saying that something very
exciting, something very different is happen­ing in the Soviet Union. We ought to pay
attention, and we ought not to dismiss
what is happening, because to dismiss
it might prevent it from happening. At some
point, there has to be a response [by the
West].

Mr Scheer, near his conclusion, quoted
Noam Chomsky. On a local radio station, Chomsky hypothesiz­ed that the United States continues the East-West tension because "the
United States needs an enemy." He ended by saying, "It seems
to me we should be thinking seriously about the response of this
country and whether we are prepared to change the rules of the
game."

One of the first questions Mr Scheer received involved "active
measures" by the Soviet Union. The US has been behind various
disinformation campaigns against the US, one charge being that the
AIDS virus is a product of US biological weapons development. Other Soviet charges include that the CIA killed Samantha Smith, the
US irradiated women protesters in Great Britain, the CIA was behind the
Jonestown massacre, and the US was behind the assassination of
Olof Palme of Sweden.

Mr Scheer was asked if the con­tinutation of disinformation didn't reflect insincerity on the part of the
USSR. He responded, "The essence of the Cold War is not that we
think that everybody ought to adhere to the same standard of hu­man behavior. When we talk about

the Cold War we're talking about when one society in some
tangible way threatens the security of another society...For
you young toplad to remember its original formulation, it was an
international Communist conspiracy with a time table to take over the world!... To insist that the Cold War continue until the Soviet
Union become a society that we believe the sincerity of your
intentions."

The Rules

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**Art & Literature**

Church-State Conflict — Church-state issues are one of the most sensitive topics in our society. In a lecture sponsored by the American Historical Association and the American Academy of Religion, Harry V. Jaffa, Ph.D., Orange, will discuss "Church-State Conflict in Civil War America." The lecture begins at 8 pm in Wm. L. Moody, Jr. Auditorium. For more information, call the Career Development Center, x44-1318.

**Science & Technology**

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Chamber Music Tonight

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TUESDAY NIGHT Concert Series
Study shows that music can improve brain function. Chamber Music Tonight will be a series of performances by some of Caltech’s finest student musicians. Program highlights will be the beautiful "Trios in D Major" and "Sonata for Flute, Oboe and Strings" by Mendelssohn, as well as a delightful trio for violin, 'cello and piano by Martinuzzi. In addition, there will be performances of Beethoven’s exciting "Music for Brain In- struments," a quartet by Telenman and trio by Ninix.

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Accidental Nuclear War? —
On Monday, May 18 8 at 8 pm in 24 Beckman Labs, STBSIE (The Society to Reduce International Violence on Earth) and the Graduate Student Council (GSC) will present Clifton Johnson of Stanford University. Mr. Dennis Stanfill, who heads the Defense of Defense, which can easily lead to accidental nuclear war. Mr. Johnson is a friend of the New Times, Worcester, Mass. and will discuss current U.S. nuclear policy, the Congressional issues concerned, and safety controversies to the current policy. For more information contact Michael Lichter, 516-577.

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