After Nine Years, Koonin To Step Down as Provost

By MATTHEW WALKER

President Baltimore announced to the campus in a Friday afternoon e-mail that Professor Steven Koonin would be stepping down as Caltech’s seventh Provost after nine years on the job. Dr. Koonin will also be taking a leave of absence from his position to pursue a career in industry.

The Brooklyn native first came to Caltech as a member of the class of ’72. He successfully completed his degree in physics and moved on to MIT where he received his Ph.D. in physics in 1975. Koonin then returned to Caltech to join the faculty. After only a year on the job, he was awarded the Caltech Associated Students Teaching Award. He also received the Hombolt Senior Scientist Award in 1985 and the E.O. Lawrence Award in Physics in 1999 from the U.S. Department of Energy.

In 1981, Koonin became a full professor of physics. He served as the Chairman of the Faculty from 1989 to 1991 before he began his stint as vice president and provost on February 20, 1995. At nearly nine years, Koonin is Caltech’s longest serving provost.

When Koonin accepted the position of provost, he said, “Caltech is about extraordinary people doing extraordinary things. The opportunity to foster that process is one of the main attractions of the job. The biggest challenge facing Caltech is to continue to have explosive effects on science, technology and education, as we have in the past.”

During his nine years as provost, Koonin has had a chance to tackle his challenges and enjoy fostering Caltech’s extraordinary work. Once asked about what he hoped his legacy as provost would be, he responded, “I think having helped to hire good faculty and energizing and facilitating life for faculty and others on campus would certainly be one of the prime things.”

At the same time, the “identification and hiring of nurturing of new faculty has been one of the joys he’s had in the job. Since becoming provost, Koonin has hired 30% of the current faculty, by his own estimate.

Undertaking large projects has been another of his delights. Among his favorites was the Biological Sciences Initiative that he oversaw, heading it up, headed, beginning in 1998. This initiative was a three-year effort that learned that NASA’s Deep Space Network had received a post-landing signal from Spirit. The cheering resumed about three hours later when the rover transmitted its first images to Earth, delaying them through NASA’s Mars Odyssey orbiters. “We’ve got many steps to go before this mission is over, but we’ve retained a lot of risk with this landing,” said JPL’s Pete Theisinger, project manager for the Mars Exploration Rover Project.

Deputy project manager for the rovers, JPL’s Richard Cook, said, “I am very, very proud of this team and we’re on Mars.”

Members of the mission’s flight team at NASA’s Jet Propulsion Laboratory, Pasadena, Calif., cheered and clapped when they

Continued on Page 2, Column 1

JPL, NASA Triumphant After Spirit Successfully Makes Planetfall on Mars

By GUY WEBSTER and FRANKLIN O’KEEFE

January 4

A robotic geologist from NASA has landed on Mars and returned pictures of the red planet around its landing site in Gusev Crater.

Mars Exploration Rover Spirit successfully sent a radio signal after the spacecraft had bounced and rolled for several minutes following its initial impact at 11:35 p.m. EST (8:35 p.m. Pacific Standard Time) on January 3. “This is a big night for NASA,” said NASA Administrator Sean O’Keefe. “We’re back. I am very, very, very proud of this team and we’re on Mars.”

Members of the mission’s flight team at NASA’s Jet Propulsion Laboratory, Pasadena, Calif., cheered and clapped when they

Continued on Page 7, Column 1

Library Talk Radio Host Carves Niche Despite Heavy Conservative Influence

By KEVIN BARTZ

Detectors call him talk radio’s version of affirmative action. Supporters call him a man in a whor ehouse. Local 50,000-watt powerhouse KFI-AM 640 has among its ranks a radio—a lefty underling in a field that’s been chock full of righties ever since the Federal Communications Commission canned the Fairness Doctrine in 1987.

He’s Johnny Wendell, television actor, bar bouncer, L.A. Weekly crime-beat writer, rock ‘n’ roll aficionado. And now, he’s KFI’s self proclaimed “master blaster of disaster, the raw power, the full flower”—radio’s top-rated talker Sunday evenings from five to seven.

“My goal is not to get complacent, to be the butt-kisser of a contrarian as possible,” said Wendell. “It’s funny that it’s usually those hosts obsessed to the Republican party that talk about being independent. Don’t you understand that they’re not a bastis and suck up at the same time?”

Wendell, for his part, has spent his radio career running against the grain. Modern talk radio, as he puts it, “is just one GOP butt-kisser after another. It just can’t be taken seriously.”

Indeed, the objections are many for a progressive talker. A recent Pew poll pegged talk’s audience at nearly 70% conservative and at Neo Channel-owned KFI, every weekday host is a Republican. Wendell still remembers one of his first callers, an old man dabling “Commie, commie—you commie!” who said nothing else.

In a lineup dominated by the likes of Limbaugh and Laura, Wendell has his work cut out for him. “It’s about security. These people want to be reassured that they’re right,” said Wendell. “Americans have no idea what the Golden Rule means anymore.”

“Psychopaths take down buildings and now that’s a license to brutalize anyone and everyone. Why do these guys hate humanity so much?” Iraq had nothing in for us.”

It’s music to the ears of Wendell’s L.A. weekly crowd, perhaps, but more like nails on a chalkboard for an audience accustomed to 24 seven applause for White House foreign policy. But Wendell has a certain flair for handling those who’d “like to cut my head off.” At least that’s what KFI booster Jeff Cabot saw when he first invited the Weekly’s number one commenter, “Johnny Angel,” known then for his investigation of Secret Service intimiation of Bush’s opponents, over to the station’s

Continued on Page 6, Column 1

Audience Enjoys Musica Antiqua Koeln Concert

By LEA HILDREBRANDT

On Sunday, November 23, 2003, Musica Antiqua Koeln initiated the year’s Celeb Chamber Music concert series. The concert, starting at 3:30pm was held in Caltech’s sold-out Beckman Auditorium.

The program included Antonio Caldara’s “Sinfonia Concertata in C Major,” one of the first works to be given such a title and a hybrid form that draws from the sinfonia and sonata as well as the concerto. This piece was followed by Tomaso Albinoni’s Sinfonia in C Major and his Sinfonia G minor, published by his biographer Remo Giazotto and allegedly reconstructed from a fragment of a lost trio sonata by Albinoni found in a Dresden library in the 1940s.

Next was Antonio Vivaldi’s “In furore gitanijissime late,” which has an operatic style and links two da capo sets of contrasting tempo with a short plaintive reflective. After the intermission, the orchestra played a recently discovered trio sonata by Johann Christian Agosta and Contralto Nathalie Stutzmann in Giovanni Battista Pergolesi’s Stabat Mater. This piece, composed by Pergolesi in his final days, has been used in many movies including “Amadeus,” where it accompanied Salieri’s recollections of attending church as a child.

The audience, enjoying a great se lect of music and excellent perform ance, thanked the artists with plentiful applause. One member of the audience remarked after the concert that “this was a memorable afternoon.” I am sure that many more members of the audience agreed.

Unfortunately, this concert, especial ly the pieces by Vivaldi (for soprano and orchestra) and the piece by Pergolesi (for Soprano, Alto and orchestra) was also a reminder that Beckman Auditorium is a lecture hall- not a concert hall. The wonderful sounds produced by the artists could not resound because they were absorbed in the walls of the auditorium. While the concert was certainly enjoyable, the skill of the musicians could not be fully appreciated because of the acoustical limitations of Beckman Auditorium.

Musica Antiqua Koeln was founded as an ensemble in 1973 by Reinhard Goebel and was expanded ten years later to form a Baroque orchestra. The ensemble’s interna tional breakthrough came in 1979 with its debut performances at London’s Queen Elizabeth Hall and at the Holland Festival. Since that time, Musica Antiqua Koeln, with Goebel as concertma
Koonin’s Goals Included Maintaining Academic Quality, Nurturing Faculty

Continued from Page 1, Column 2
raised $111 million for the biological sciences. The focus of the project became the construction of the Broad Center, designed by James Freed. The initiative also procured funds for eight new professorships, as well as a variety of fellowships and research programs. Koonin also enjoyed the roll he played in the capital campaign that kicked off last year to raise $1.4 billion to upgrade campus facilities. He found a challenge in “bridging the transition between two fine presidents,” when President Baltimore more succeeded Thomas Everhart in 1997. Implementation of the Oracle business systems was another project that the provost enjoyed.

Several of the projects that the provost has worked on are still in progress, but he hopes that they will continue to fruition. One that Koonin helped to get off the ground is the 30 meter telescope. With recently obtained funds, he hopes that construction will be completed in 12 years as planned. He has high hopes for other programs seeded by the Moore foundation, including the brain imaging center and the astrophysics observation program.

Having played such a large role in the Institute’s academic programs, Koonin has gotten to know practically all 200 of my faculty colleagues on a very close, first-name basis. One of the things he’ll miss is the most is the interaction he has with his faculty. He’ll also miss the “overview of science and engineering [being provost] gives you.”

Asked what made him decide to leave the post, Koonin responded, “Nine years is a long time to do these jobs. It’s healthy for me and the institution [if I] do something else.” With over thirty years at Caltech under his belt, he certainly deserves a break. He took his last major sabbatical 15 years ago; in fact, at Caltech faculty members traditionally take a break every seven years.

The “provost is central to academic enterprise,” according to Koonin. He has worked “hard to maintain the standards of the Institute.” The goals of upholding the quality of research and educating the very best students are ones he has reached for and hopes the next provost will sustain.

Steve Koonin is a close friend; he is an outstanding provost and to have done the job so well for 9 years with such focus and intensity is a remarkable achievement.

Finding a new provost is an important job that will require careful deliberation by the faculty search committee appointed by the president. I see my primary job as acting provost to work to keep the Institute’s academic programs both teaching and research — as strong as they can be while the search committee does its job.

Over the next few weeks, I will be learning as much as I can from Steve about the job, from the division chairs about how, even in the short time I will be on the job, I can help them help their divisions achieve their ambitions in teaching and research and to encourage students, staff and faculty with my deeply held conviction that Caltech is and must continue to be a distinctive and special place to learn and work.

A Word From Interim Provost Ed Stolper

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Steve...
**Wilmot to Speak on Evolution of Diversity,Genomic Science,Africa**

By ROBERT TINDOL

Wilmot James, executive director of the California Institute of Technology’s Human Geoscience Initiative, will speak at the California Institute of Technology on Thursday, January 15 at 4 p.m. The event will be held in Ramo Auditorium in the center of campus and is free and open to the public.

The title of James’s lecture is, ‘Genomics and the Evolution of Human Diversity.” He will talk about the implications of the human genome sequencing effort for research and development in Africa, the emerging partnerships with global science institutions and fresh approaches to diversity.

James is also chairman of the Marine Biology Lecture, a science whose time is coming, chairman, co-founder or editor of 14 books, including "What Have We Done So Far in Science?" and "Future and Spirit of the Nation: Reflections on the End of History and Social Cohesion in South Africa; Nelson Mandela: Freedom and the Values in Education Initiative for the California Institute of Technology.

James holds a doctorate in sociobiology from the University of Wisconsin at Madison. He has also held visiting positions at Yale, Indiana University, the American Bar Foundation and served as an associate editor of the "California". The lecture is part of the President’s Lecture Series on Achieving Diversity in Science, Math and Engineering. The series was established to bring to campus speakers who have had successfully the series in science and technology. The event is sponsored by the Office of the President. The Office of Minority Student Education, Office of Diversity in the College of the Humanities and Social Sciences.

No tickets or reservations are required. Free parking will be available in the parking lot at 370 South Holliston Avenue, where directions to the auditorium will be provided.

Dr. Wilmot is currently the Moore Visiting Professor at Caltech. His lecture on human diversity and genomics takes place this Thursday.

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**ASCiT Minutes Dec. 9, Jan. 7: Elections, DVDs**

**WATSON LECTURE BY DR. HEATH**

By ROBERT TINDOL

Perhaps the earliest introduction to "nanotechnology" to the general public was the 1965 movie Fantastic Voyage, in which an entire submarine and crew were reduced to microscopic size and injected into a man’s bloodstream in order to destroy a life-threatening blood clot.

While the idea of shrinking a submarine remains firmly grounded in science fiction, nanotechnology—research into the development of materials and devices—whose science time is yet to come.

For example, in the area of diagnosing disease, a new wave of nanotechnologies is being developed that will revolution virtually every aspect of medicine. On Wednesday, January 14, at 8:00 p.m., James Heath, the Elizabeth W. Gilloon professor and professor of chemistry at Caltech and a leading nanotechnology researcher, will present the background, the early successes and the next couple of years. His talk, "Nanotechnologies is being developed—things that science time is about to come.

Imagine that a complete molecule of DNA is just a single atom, impossibly small, and a cancer patient could be confronted with the daunting challenge of finding and destroying a single cancer cell. By merging research at Caltech, the hope is that such a breakthrough will come in the very near future.

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Let’s face it: Caltech is definitely not the typical American college experience. There are no football rivalry games, no frat parties, classes are hard, there is almost always work to do, and many people can count the times they get further off campus than Old Town in a month on one hand. Then again, the American college experience is not the only kind in the world, nor the best as some would argue. In many places, there is no such thing as a board plan, on-campus dorms, or maid service for students. Some universities don’t rely on drudging through weekly problem sets and four hour exams to impart knowledge. There are even institutions where just going to class every day students are exposed to culture, architecture, and art that has existed for the better part of a millennium. Copenhagen University (KU) is one of these.

They say variety is the spice of life, and I’ve always agreed with that sentiment. My college years were supposed to be some of the most exciting and tumultuous years of my life. Whilearguably one of the best research institutions in the world, Caltech does not offer much excitement aside from academics. The intense workload often conflicts with the ability to go out to such an extent that proximity to the Los Angeles metropolis may seem daunting rather than alluring. These considerations and more heavily on my mind freshman and sophomore year, and contributed greatly to my decision to pursue a term of studying abroad.

A change of setting seemed the natural way to experience something completely new. I decided to apply for Copenhagen rather than the various programs in England because it was the furthest I could get away from Caltech and American lifestyle while still being able to navigate in society and progress in my physics option. I did not speak a word of Danish, but was assured (correctly) that nearly everyone in Denmark speaks English. Also, since KU gets over one thousand international students every year, many courses in science as well as humanities are taught in English. Copenhagen seemed like the perfect place to test the new experience I was looking for, but still similar enough to still be comfortable and sensible academically.

The exchange has lived up to its promise. During the first few weeks of the optional summer language course I met a wild and crazy group of international students from Australia, Germany, Poland, France, and Holland. The warm summer days were spent at waterside bars (the drinking age is 16), swimming, and exploring Copenhagen. The nights were much of the same: bars, dance clubs, or just sitting and talking in the town squares. The Danish students in the private dorm I moved into were immediately welcoming and friendly. In the first week I was already being invited to garden grill feasts and a variety of interesting parties. Once the academic year began, things quieted down a bit. While the predominantly law and political science major friends I had made seemed to never have work to do and started their weekend on Wednesdays, I was only able to join them once or twice a week. The cultural experiences continued though, with weekly lectures on Danish history and culture offered exclusively to international students and field trips to attractions such as museums, castles, and film festivals.

Coming to Copenhagen for a term turned out to be a great decision. I’ve met lots of new people, seen many interesting sights, experienced a different culture, and had opportunities to get out and have fun that I would not have had at Caltech. If you too have been thinking that your college experience has not been all you hoped it would be thus far, maybe a term in Copenhagen will be the adventure you seek, as it was for me.

When I got the opportunity to study abroad, I was a dream come true. I love to travel and meet new people, and I wanted to experience something different from Caltech. In the months preceding my flight to London, I tried to imagine what it would be like, what activities to do, what places to visit. I resolved to get involved in a variety of new activities, clubs, societies, and sports. At Caltech, I participated in the Caltech Christian Fellowship, ASCIT, and cross-country. My plans for London were to join a Christian club, try a new sport, audition for a part in the school theater production, play in the orchestra, go clubbing, attend parties, see many musicals and concerts, and anything else that would grab my attention while I was there.

But the need to open up to the unexpected was a significant lesson learned. It started by experiencing slight culture shock. The lack of a language barrier was deceiving—so much was different. The beginning weeks were much tougher than I thought they would be. I missed everyone and everything at Caltech. Although I had traveled before, there was never this feeling of homesickness and I started to more fully appreciate life in California. Being in England was outside my comfort zone, from the cold weather to the food to the manner of living. This was not necessarily a bad thing; in fact, it turned out to be a blessing.

I was still interested in doing a lot of activities, and so had great fun at the “Fresher’s Fayre,” the British equivalent of a club fair. I picked up a million pamphlets, decided that the “new sport” would be Lacrosse, signed up for drama club auditions, got a schedule of all the upcoming concerts, added my name to student discount mailing lists, and bought tickets for the fresher’s week parties, including the semi-formal Fresher’s Ball. And of course, I signed up for the Christian Union. This was going to be a lot of fun, I was set.

But circumstances began to remove one by one those things I had considered pursuing. I did not make it into the drama club, could not attend the concerts and shows, could not participate in Lacrosse, and had a conflict with the Fresher’s Ball. This was disappointing at first but soon new avenues opened up. I joined cross-country, Bath and Cambridge, Oxford, and Battle, and made a trip to the nearby cities of Paris and Brussels. I’ve also seen all the tourist attractions in London. UCL is situated in the heart of the big city, close to everything, including museums, parks, and shops.

So although this has not been the exact exchange adventure that I expected or planned, it has been a worthwhile experience. I have really enjoyed my classes. I have met a lot of fun British and international students.

Andrea found the busy environment of London a stimulating experience and used her free time to travel around the country. And I will return to Caltech with a greater appreciation for all that is there.
Ironing Out the Honor Code, Elections Approach

By TOM FLETCHER

Honor Code Survey

http://www.its.caltech.edu/~sur-veys/docs/Honor_Code.pdf

The graduate students have done a wide-ranging survey on quality of life. They presented the results at the faculty board meeting in December, with the most interesting, and frightening results relating to the honor code. The survey showed that around one quarter of graduate students had violated the honor code at some point in their time at Tech, and that the graduate students believed that honor code violations were more prevalent among the undergraduates.

In an attempt to examine the situation and defend the honor of the undergraduate student body, we will be hosting a parallel survey. Participation is important, and I ask that you all do so to ensure good coverage.

Upcoming Elections!

On Wednesday, at 8 AM, sign-ups for BOC Chair and ASCIT President will be posted. I encourage many of you to run to ensure a large field with a lot of competition. Posted along with sign-ups will be descriptions of the offices and the responsibilities they entail so you can know what you will be getting into. If you have any question of position and have any questions, talk to Galen or me. If you sign up for president, I ask that you contact me so that I can start “talking you on my rounds.” The survey showed that most of you will be getting into the new position without a clue, so plan an introduction to all the administrators and faculty you will need to work with next year.

If you are thinking about it, but not sure, let me assure you that it was worth it. While there will be long hours of driving to Glendale, and an occasionally infuriating meeting atmosphere, there is a lot for the next ASCIT President to do and how well they do it will impact student quality of life. Some of the issues the next President will have to handle include: rezoning both the UCSC and ITS labs to new locations while not decreasing the level of service Caltech students receive, keeping the fundrasing program for new student houses alive, laying the groundwork the next Student-Faculty Conference, dealing with the results of the honor code survey we will conduct, be they good or bad, supporting the CUE and the continual improvement of Caltech education, and doing all the important business as well. If any of these particularly interest you, I encourage you to run, as you will be instrumental in solving them. The next president will also most likely be responsible for helping to find a new provost, as well as a few student affairs positions.

Whom I Met With This Week

This past week was rather slow as everyone got their schedules set up. This past weekend, Galen attended an Alumni Association meeting in my place due to prior commitments. This coming week we will see meetings with the BoD, Margo Marshak, and a working group of the career center developing a leadership program.

The news of the provost’s resignation arrived during the writing of this column has caught a lot of us off guard. I am personally not sure of the ramifications yet at present, though I am concerned that this could slow getting funding for the new student houses. I do with Professor Koonin the best of luck in his new opportunity, and welcome Professor Stolper to the position.

As the Grad Council, with the most interesting, and frightening results relating to the honor code survey we will conduct, be they good or bad, supporting the CUE and the continual improvement of Caltech education, and doing all the important business as well. If any of these particularly interest you, I encourage you to run, as you will be instrumental in solving them. The next president will also most likely be responsible for helping to find a new provost, as well as a few student affairs positions.

Tom Fletcher

By HARRISON STEIN

Millions of fans rejoiced as the triumphant Return of the King concluded the most commercially successful trilogy in movie history. But even after the thrilling finale, there are questions about The Lord of the Rings’ place in history. Sure, if you read the new provost’s resignation arrived during the writing of this column has caught a lot of us off guard. I am personally not sure of the ramifications yet at present, though I am concerned that this could slow getting funding for the new student houses. I do with Professor Koonin the best of luck in his new opportunity, and welcome Professor Stolper to the position.

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The Lord of the Rings Trilogy Secures Spot in Film Lore With Fan Appeal

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As the Grad Council, with the most interesting, and frightening results relating to the honor code survey we will conduct, be they good or bad, supporting the CUE and the continual improvement of Caltech education, and doing all the important business as well. If any of these particularly interest you, I encourage you to run, as you will be instrumental in solving them. The next president will also most likely be responsible for helping to find a new provost, as well as a few student affairs positions.

Tom Fletcher

The Lord of the Rings Trilogy Secures Spot in Film Lore With Fan Appeal

By HARRISON STEIN

Millions of fans rejoiced as the triumphant Return of the King concluded the most commercially successful trilogy in movie history. But even after the thrilling finale, there are questions about The Lord of the Rings’ place in history. Sure, if you read the new provost’s resignation arrived during the writing of this column has caught a lot of us off guard. I am personally not sure of the ramifications yet at present, though I am concerned that this could slow getting funding for the new student houses. I do with Professor Koonin the best of luck in his new opportunity, and welcome Professor Stolper to the position.

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The Montecillo Foundation and Robert and Delphna Noland Summer Internships 2004. The Dirksen Congressional Center invites applications for grants totaling $35,000 to fund research on congressional leadership and the U.S. Congress. The competition is open to individuals with a serious interest in studying Congress. Political scientists, historians, biographers, scholars of public administration or American studies, and journalists are among those eligible. The Center encourages graduate students to apply and awards a significant portion of its funds for dissertation research for Ph.D. students to develop their research programs and organizations are encouraged to apply. There is no standard application form. Applications are accepted at any time. All application materials must be postmarked on or before February 1, 2004. Awards will be announced in March 2004. Complete information about eligibility and application procedures can be found at The Center’s Web site: http://www.dirksencenter.org/grants/researchaward.htm Frank Mackman is the program officer: fmackman@dirksencenter.org. The Center, named for the late Senate Majority Leader Everett M. Dirksen, is a private, nonpartisan, nonprofit research and educational organization dedicated to the study of Congress and its leaders. Since 1978, the Congressional Research Awards (formerly the Congressional Research Grants Program) has paid out $855,500 to support 315 projects.

One Act Theater (OAT) has received funding from the Ford Foundation to produce one-night presentations of new plays. This is an opportunity for student playwrights and directors to have their work presented at the West Coast Swing Dance Club at Caltech. The students will be given the opportunity to present their works in a professional setting, with guidance from experienced professionals. The plays will be produced by the students themselves, with the assistance of faculty and staff. The production will take place on Friday, March 5, at 8:30 PM, in the Ballroom Dance Club Room A. For more information, contact OAT at oat@its.caltech.edu.

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Jubilant JPL Staff Prepares Spirit To Exit Lander, Explore Surroundings

Continued from Page 1, Column 5

NASA chose Spirit’s landing site, within Gusev Crater, based on evidence from Mars orbiters that this crater may have held a lake long ago. A long, deep valley, apparently carved by ancient flows of water, leads into Gusev. The crater itself is the basin of Connecticut created by an asteroid or comet impact early in Mars’ history. Spirit’s task is to spend the next three months exploring for clues in rocks and soil about whether the past environment at this part of Mars was ever water-bearing and suitable to sustain life.

The flight team expects to spend more than a week directing Spirit through a series of steps in unfolding, standing up and other preparations necessary before the rover rolls off of its lander platform to get its wheels onto the ground. Meanwhile, Spirit’s cameras and a miniature identifying infrared instrument will begin examining the surrounding terrain. That information will help engineers and scientists decide which direction to send the rover first.

January 9

NASA’s Spirit, the first of two Mars Exploration Rovers on the martian surface, has stood up and extended its front wheels while continuing to help engineers and scientists gather new information about its neighborhood within Mars’ Gusev Crater.

Traces of carbonate minerals showed up in the rover’s first survey of the site with its infrared sensing instrument, called the miniature thermal emission spectrometer or Mini-TES. Carbonates form in the presence of water, but it’s too early to tell whether the amounts detected come from interaction with water vapor in Mars’ atmosphere or are evidence of a watery local environment in the past, scientists emphasized.

“We came looking for carbonates. We have them. We’re going to chase them,” said Dr. Phil Christensen, director of Arizona State University, Tempe, leader of the Mini-TES team.

Previous infrared readouts from Mars orbiters have revealed a low concentration of carbonates distributed globally, Christensen has interpreted as that the result of dust interaction with atmospheric water. First indications are that the carbonate concentration near Spirit may be higher than the Mars global average.

After the rover drives off its lander platform, infrared measurements it takes as it explores the area may allow scientists to judge whether the water indicated by the nearby carbonates was in the air or in an expected ancient lake.

“The beauty is we know how to find out,” said Dr. Steve Sugrue of Cornell University, Ithaca, N.Y., principal investigator for the mission. “Is the carbonate concentration in a fluffy dust? That might narrow the meteoric hypothesis. Is it concentrated in mixed or coarser material? That might force the water hypothesis.”

Spirit accomplished a key step Thursday in preparing for rolling off the landing platform. In the attempt, the flight team at NASA Jet Propulsion Laboratory in Pasadena, Calif., played Bob Marley’s “Get Up, Stand Up” as wake-up music for the sixth morning on Mars, said JPL’s Matt Wallace, mission manager.

In the following hours, the rover was raised by a lift mechanism under its belly and in front wheels were fully extended. Then the rover was set back down, raised again and set down one more time to check whether suspension mechanisms had locked properly.

Pictures returned from the rover’s navigation camera and front hazard-avoidance camera, plus other data, confirmed success.

“We are very, very pleased to see the rover is on the most critical part of the stand-up process,” Wallace said, adding that the rover’s steps include retracting the lift mechanism and extending the rear wheels.

A tour on airborne dust was taken by the airbag retraction motor Thursday evening did not lower puffed up portions of airbag material that are a potential obstacle to driving the rover straight forward to exit the lander. The most likely path for driving off will be to turn 120 degrees to the right before rolling off. This is something we have practiced many times. We are very comfortable doing it,” Wallace said.

The earliest scenario for getting the rover off the lander, if all goes smoothly, is Spirit’s 13th or 14th day on Mars, Jan. 16 or 17. “We’re proceeding in a measured, temperate way,” said JPL’s Peter Theisinger, project manager for the Mars Exploration Program.

“This is a priceless asset. It is fully functioning. It is in a beautiful scientific target. We’re not going to take any inappropriate risks.”

While preparing to learn more about what Mars rocks are made of, Christensen announced an educational project to involve school children and other people in getting Spirit landed in this area to search for evidence that there was once liquid water on Mars by any means.

From the side facing west-northwest on the planet — also the direction of an intriguing depression that scientists have dubbed Sleepy Hollow.

Current plans call for the rover to complete that tour in three steps.

On sol 10 — the night of Monday, Jan. 12, California time — engineers expect to sever the umbilical cord that connects the rover to its lander by firing a pyrotechnic device, the last of 126 pyro firings since Spirit separated from its cruise stage shortly before landing on Jan. 4 in U.S. time zones. Also on that day, the rover will execute the first of three parts of its turn when it moves clockwise (as viewed from above) about 45 degrees.

JPL

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Just call Matt Noonan at (626) 795-9511 or e-mail him at mmnoonan@pasadenawl.com. Matt will provide you with all the meeting information you need. If the meeting you decide to meet in Pasadena, you could be eligible to receive one of several fabulous prizes!

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Continued Below

The California Tech

JANUARY 12, 2004

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Beckman Limits Evident

Continued from Page 1, Column 5

ter, has been a regular guest at Eu-
oppean musical centers and has also

delivered numerous concerts tours

to the USA, Australia, South America and the People's

Republic of China.

Their exciting, milestone inter-

pretations of both unknown works

and familiar repertoire have brought

them wide recognition, as is docu-

mented by many prizes including

the "Artist of the Year" award by

the Deutsche Phonoakademie in

1981.

The next concert in this series, scheduled for January 25, 2004,
will feature the Tokyo String Qua-

tet with Joan Panetti. The remain-

ing concerts will feature the Cassat String Quartet with Hambur

ger Lucarelli (February 29), the Julliard Quartet (March 14), the Eroica Pi-

ano Trio (April 4) and Edgar Meyer (April 18).

The Coleman Chamber Music

Association was founded in 1904

by Alice Coleman (later Alice Coleman Bachtelder). In addition to

this annual series of six chamber

music concerts in Caltech's Beckman Auditorium, the associa-

tion's activities also include

a nationally recognized annual

competition for young chamber

music performers. The winners of

the 58th Annual Competition will

be announced at Caltech's Ramos Audi-
torium on April 25, 2004 at 3:30pm.

In addition, each year the associa-

tion also conducts sixty demonstra-

tion performances for children

grades K through 6 in San Gabriel Valley public schools.

Libbrecht and Photographer Team Up
To Unveil The Secrets of Snowflakes

By ROBERT TINDOL

PASADENA, Calif.—If you're still

shopping for a Christmas present to
give to that flaky uncle, how about
giving him the flakiest book in sci-

cence?

The Snowflake: Winter's Secret

Beauty, by California Institute of

Technology professor of physics Ken

Libbrecht and Wisconsin pho-

tographer Patricia Rasmussen, takes

an elegant look at the humble flake

down, from the viewpoint of the scien-
tist as well as the artist.

Containing numerous full-color

photographs, the book provides an

in-depth look at a frozen phe-

nomenon of nature that is still, perhaps

surprisingly, not completely un-

derstood.

Libbrecht believes the photo-mi-
tographs in the book are the best

that have ever been taken of snow-

flakes. He began his collaboration

with Rasmussen by building her a

special camera and hauling it half-

way across the country to her stu-

dio. She was already an avid snow-

flake photographer before contact-

ing Libbrecht-perhaps the world's

leading authority on snowflake for-

mation. But with a regular paycheck,

Pardy had the snow and the pho-
tographic know-how and I had the

optical knowledge," said Libbrecht

in a recent interview in his office

on the Caltech campus. "It was a

very successful collaboration."

"The proof is in the pudding," he

added. "The pictures are substan-
tially better than any snowflake

images that have ever been captured

before."

In addition to the many stunning

plates of snowflakes in dazzling

colors, the book also contains a

nontechnical discussion of crystal

formation in general, snow-crystal

symmetry, a "Field guide to falling

snow;" and, of course, a detailed

answer to the perennial question of

whether any two snowflakes are ex-

actly alike.

"The short answer is yes and no," said Libbrecht. "If you look closely enough,
there will always be differences, but sometimes you have to look pretty closely." In many cases,
there are very clear differences between snow crys-
tals and what's more, there are several very distinct forms the crystals can take.

In fact, this is one of the issues that Libbrecht ad-
dresses when using the ex-

perimental "cold cham-

ber" in his Caltech phys-

ics lab to create "designer

snowflakes." Depending

primarily on very subtle changes in

temperature and humidity, snow
crystals falling from the sky grow

into different shapes—small plates

just below freezing, pencil-like col-

dums of ice a few degrees colder

and large, crenate plates at about

15 C (5 F).

The ones most favored by pho-
tographers have names like "tel-

lar dendrites" and "sec-onded plates," some possessing a near-perfect symmetry that can put the best hu-

man-made glass channelizer to shame.

Libbrecht can grow these differ-
nent snowflake forms at will in his lab, but says there are still subtle issues that are of interest to physi-
cists who make it their business to control the formation of crystals of various materials.

A real-world application of re-

search on crystals is the growth of

semiconductors for our electronic
gadgets, which are made possible

in part by painstakingly controlling

how certain substances condense

into solid structures.

"In the case of snowflakes, there are pieces to the puzzle that are not

understood yet," Libbrecht says.

"But when you're a researcher, you're happy to see this. You don't

want to work on a problem that's already solved."

"For me, snow-crystal photography is an escape from the stress of mod-

cern life into a sanctuary of beauty

and wonder and solace. It's a treasure

hunt. It's a photographic harvest from

nature's bounty."

The Snowflake: Winter's Secret

Beauty, is now available in book-

stores and on the Web. The book is

published by Voyageur Press.

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