I am pleased to report that in the second year of SSP / Socorro, all 36 students successfully completed their orbit determinations. Students obtained 31 measurable films; teams borrowed a third film as necessary. Unfortunately, the weather was more typical this year: local “monsoon season” hit by the fifth week of the program.

Although I investigated and described in class the use of Gaussian orbit determination, I ended up teaching the “regular” Laplacian method used in recent years at SSP. The main reason I did not further pursue Gauss’s method is that I have not yet found any decent, full derivations of the method.

For the first scientific field trip, to the Very Large Array, Dave Finley of the National Radio Astronomy Observatory gave us a guided tour of one of the dishes and the control center. In the last week, US Navy Capt. Mary Miller ’73 organized SSP’s first-ever overnight field trip, to White Sands Missile Range. We visited Trinity Site, High Energy Laser Systems Test Facility, Missile Park, and the Control Center. We had dinner at the Officers’ Club and slept in the gym. The next morning started with an early morning rocket launch, then we continued to Apache Point Observatory where the D-

(Continued on page 2)
Socorro Academic Director’s Report (continued from page 1)

We were usually able to reach about 15th magnitude in clear skies by using unhyped Tmax 400 speed film. John Briggs ’76 again supplied both measuring engines. We’re thrilled that John has started a new job at Tech’s Magdalena Ridge Observatory.

These talented individuals joined me on the staff: Dr. David Winch (Associate Academic Director) taught physics and math. At one point he split the class into teams to produce 15-minute presentations on topics of their choice in physics. Donna Mong (Residential Counselor) brought experience dealing with teenagers in a residential school setting, and acted as our primary liaison with the Tech administration. Branwen Schuettpelz ’99 was an outstanding Lead TA and made this group the most functional and friendly I have ever known. Sam Arons ’99 and Lissa Ong ’99 were driven to give the students the best possible experience at SSP, in every respect. They both gave a TA lecture: Lissa on Jupiter’s icy moon Europa, and Sam on a proposed wind farm. Phil Oakley, although not an alumnus, enthusiastically embraced the academic and social culture of SSP.

Finally I also want to thank everyone at New Mexico Tech, but especially Dr. Dan Klinglesmith for his essential assistance with everything at Etscorn Observatory, and Laurie Tennen of Residential Life for her help with every other aspect of life at Tech.

Ojai Academic Director’s Report (continued from page 1)

Several of the guest speakers stuck around to do more. Notably, Dr. Greg Lyzenga engaged students in observing an asteroid transit, and Van Snyder ’63 inspired 12 students to witness, from campus, the pre-dawn launch of the Aura satellite at Vandenberg. Following long tradition we visited Jet Propulsion Lab (hosted by Dr. Stuart Stephens), Mt. Wilson Observatory, and area beaches.

We couldn’t have done it without Residential Counselor Jackie Smith, who professionally and efficiently handled student behavior issues (such as sleeping in lecture), and logistics of field trips and guest speakers. She also dealt with health problems including a case of mononucleosis and two twisted ankles.

The four TA’s did a great job. In addition to all of their routine duties, each found a unique role. Lead TA Victor Tsai ’99 showed tireless enthusiasm, organizing the observation schedule, proper motion corrections, measuring, and QOD assignments. Tuan Do brought much-needed experience with the IDL programming language and Victor gave the programming lectures and tutorials, and thanks to them, student OD programs were especially well-written this year. Tiffany Titus ’99 graded most of the HW assignments, and helped resolve issues in the girl’s dorm. Justin Kao ’00 organized sports tournaments, dances, games, and movies. (Justin, by the way, is the first post-Thacher alumnus to return as a TA.)

Last but not least, Mike Adams, Juan Juarez, and the rest of the staff at Happy Valley School went to extra efforts for us, and we can’t thank them enough.

In summary, I personally had a sense of accomplishment, and great joy from my interaction with the students. They entered the last week with a lot of energy, and finished on an emotional “high”, the result of the 24/7 support provided by our terrific staff. Everyone felt a sense of togetherness and professionalism, reflected in their eagerness to keep in touch after leaving Ojai.

[Editor’s note: Dr. Sivron’s wife Nava and daughter Carmel accompanied him to Ojai. Only weeks after returning home, Nava died of breast cancer. Everyone who knew her will remember her wonderful spirit.]
The colleges enrolling 52 SSP’ers from the Class of ‘03 (plus four from ‘02) reads like one of those “best in the world” lists.

**Pat Milhelich ‘02** (Stanford) and **Yvonne Yamanaka ‘03** (Duke) each scored 11 acceptances (and turned down the college the other chose). Between them they also received offers from Yale, MIT, Caltech, Princeton, Rice, Cornell, Univ. of Chicago, and several others.

<table>
<thead>
<tr>
<th>College</th>
<th>Applicants</th>
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<tbody>
<tr>
<td>Boston Univ.</td>
<td>Lisa Wang</td>
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<td>Brigham Young</td>
<td>Nathaniel Major</td>
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<tr>
<td>Brown</td>
<td>Janaki Kibe, Alex Rosenthal, Aaron Eisman</td>
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<td>Cal Poly-Pomona</td>
<td>Alan Duran</td>
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<td>Caltech</td>
<td>Jared Hudgins, Sean Mattingly</td>
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<td>Carnegie Mellon</td>
<td>Anna Ly</td>
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<td>Columbia</td>
<td>Ahmet Kizilay, Russell Spitzer</td>
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<td>Cornell</td>
<td>Melissa Horowitz, Jaret Lee</td>
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<tr>
<td>Duke</td>
<td>Simon Kwak, Yvonne Yamanaka</td>
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<td>Florida Intl. Univ.</td>
<td>Raul Chinga</td>
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<td>Harvard</td>
<td>Andrei Munteanu ’02</td>
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<td>Harvey Mudd</td>
<td>Karen Brown ’02, Hyung-Joo Park</td>
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<td>Johns Hopkins</td>
<td>Mireille Gomez</td>
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<td>Lafayette College</td>
<td>Derya Meral</td>
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<td>MIT</td>
<td>Pawan Deedwaniya, Lydia Gu, Anthony Jones, Austin Oehlerking, Bob Zhao</td>
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<td>Olin College of Engr.</td>
<td>Hosam Banaja</td>
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<td>Princeton</td>
<td>Peter Combs, Yufei Liu, April Frieda</td>
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<td>Reed College</td>
<td>Christine Deyo</td>
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<td>Rensselaer Polytechnic Inst</td>
<td>Kyle Crawford</td>
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<td>Southern Methodist</td>
<td>Chris Christensen</td>
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<td>Stanford</td>
<td>Patrick Milhelich ’02, Frederick Wulff ’02, Eloy Ivan Balderas, Huong Thai, Roseanne Warren</td>
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<td>SUNY Buffalo</td>
<td>Michelle Dietz</td>
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<td>Texas A&amp;M</td>
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<td>UC Berkeley</td>
<td>Alex Early, Anne Narayan</td>
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<td>UC San Diego</td>
<td>Sara Thi</td>
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<td>Univ. of Chicago</td>
<td>Susie Kim, Annelise Pitts</td>
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<td>Univ. of New Mexico</td>
<td>Amanda Townsend</td>
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<td>Univ. of Penn.</td>
<td>Jeffrey Lawi</td>
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<td>Univ. of Washington</td>
<td>Laura Grupp</td>
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<td>USMA - West Point</td>
<td>Jeffery Taylor</td>
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<td>Vassar</td>
<td>Reese Isaacsoson, Ana Popovska</td>
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<tr>
<td>Yale</td>
<td>Kristen-Elise Brooks, Gabe Billings, Eve Burstein, Yigit Dula</td>
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**2004’ers Say**

“SSP is more than academics. Friendship, solidarity, and trust in each other are what make me be proud to be an alumnus.”
— Firat Erel, Istanbul

“This experience has had an indescribably awesome impact on me.”
— Nicole Clark, Baltimore

“I learned that you can be really smart but cool at the same time!”
— Teressa Van Diest, Palmer, Alaska

“By the end I was so tired that orbital determination actually seemed fun.”
— Brian Sampson, Carlsotta, California
Guest Speakers Star Again

**Ojai Campus**

- Dr. Gregory A. Lyzenga, Prof. of Physics, Harvey Mudd College: “High Powered Rocketry for Fun and Learning”
- Dr. Christopher Wyman ’94, Asst. Prof., Univ. of Iowa: “Computer Graphics from a Researcher’s Point of View”
- Dr. Anthony Newman, Instr. of Philosophy, Tufts Univ.: “Philosophical Perplexities in Empirical Science”
- James Randi, Founder, James Randi Educational Foundation: “Search for the Chimera”
- Dr. Charles Zender ’81, Prof. of Earth System Science, UC Irvine: “The Atmospheric Physics of Climate Change”
- Dr. Jay M. Pasachoff, Prof. of Astronomy, Williams College: “Eclipses, Occultations, and the Transit of Venus”
- Dr. R. Paul Butler ’77, Staff Scientist, Carnegie Inst. of Washington: “Extrasolar Planets”
- Dr. Scott Pace ’75, Chief Technologist for Space Communications, NASA: “The Vision for Space Exploration”
- Dr. Larry Sverdrup, Senior Scientist, O Ethanix, Inc.: “Mad? Science”
- Dr. Philip D. Nicholson, Prof. of Astronomy, Cornell Univ.: “Recent Discoveries of Planetary Satellites: 138 and Counting...”
- Dr. Van Romero, VP, Research, New Mexico Tech: “The Physics of Explosions”
- Dr. Paul Pottinger, Sr Fellow, Allergy & Infectious Diseases, Univ. of Washington: “The Science and Conquest of Malaria”
- Dr. Eileen V. Ryan, Project Scientist, Magdalena Ridge Observatory: “Collisional History of the Vesta Family of Asteroids”
- Dr. Penelope Boston, Director, Cave and Karst Studies, New Mexico Tech: “Caves from Earth to Mars and Beyond”
- Dr. Terry C. Lowe, Program Manager, Los Alamos National Labs: Closing Address

**2004’ers Say**

“It’s a world where science is cool.”
— Jameson Neff, Bothell, Washington

“A n experience like SSP cannot be put into words. It’s exhilarating, exhausting, emotionally uplifting and simple incredible ... the most amazing six weeks of my life.”
— Ariadne Medler, Kealakekua, Hawaii

“Y ou’re in another universe for six weeks -- where you learn about everything, about life.”
— Helen You, Chelmsford, Mass.

**Socorro Campus**

- Dr. Galen Gisler, Researcher, Los Alamos National Labs: “Simulating Asteroid Impacts”
- Shiloh Sison, PhD Student / Design Engineer, UC Davis / Analog Devices: “Seeing Inside the Body: the Physics of Medical Imaging”
- Dr. Larry Sverdrup, Senior Scientist, O Ethanix, Inc.: “Mad? Science”
- Dr. Philip D. Nicholson, Prof. of Astronomy, Cornell Univ.: “Recent Discoveries of Planetary Satellites: 138 and Counting...”
- James Randi, Founder, James Randi Educational Foundation: “Search for the Chimera”
- John Briggs ’76, Magdalena Ridge Observatory: “Antarctic Odyssey: Winter-Over at South Pole Station”
- Dr. Van Romero, VP, Research, New Mexico Tech: “The Physics of Explosions”
- Dr. Paul Pottinger, Sr Fellow, Allergy & Infectious Diseases, Univ. of Washington: “The Science and Conquest of Malaria”
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- Dr. Penelope Boston, Director, Cave and Karst Studies, New Mexico Tech: “Caves from Earth to Mars and Beyond”
- Dr. Terry C. Lowe, Program Manager, Los Alamos National Labs: Closing Address
I am enclosing my donation to the only independent science enrichment program managed and funded by its own alumni:  

☐ $1000  ☐ $500  ☐ $250  ☐ $100  ☐ $50  ☐ $25  ☐ $______

Credit to (name) _______________________________ Year ______  

☐ Alum  ☐ Parent  ☐ Faculty  ☐ Friend

My email address: ___________________________________________________________________________

Earmark my donation for:  ☐ Unrestricted  ☐ Abell Scholarship

☐ My employer will match my gift  

Employer: _______________________

(enclose matching gift forms)

Return this form with your check, payable to Summer Science Program, Inc., c/o Henry Lichstein, 544 Dryad Rd, Santa Monica, CA 90402. Please correct your name and address, if necessary, on the back, or using the online form at www.summerscience.org/connect. Thank you!

It’s also safe and easy to donate on-line, using a credit or debit card, at www.summerscience.org/donate. Summer Science Program, Inc. is designated a 501c(3) nonprofit corporation by the Internal Revenue Service. Donations are tax-deductible according to law.

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R E U N I O N  D A Y  I N  O J A I

Over 50 alumni and their families joined students and faculty for Reunion Day fun, food, and festivities, coordinated by Adam Thodey ’91. The Class of ’94 made an especially strong showing for their 10th Reunion.

At the alumni vs. students softball game, Steve Cotler ’60 hit a three-run triple, on the way to a lopsided 20-3 victory. The students remembered this later in their class T-shirt design: “You know you’re at SSP … when students can’t beat 60-year-olds at softball.”

After a delicious outdoor buffet dinner, featured speaker James Randi described his work as the nemesis of all forms of pseudoscience, spicing his presentation with magic tricks. He had given a presentation to the Socorro campus just the day before.

Students huddle before the softball game vs. alumni. They also painted their faces. It didn’t work.

C H A I R M A N ’ S  L E T T E R  ( c o n t i n u e d  f r o m  b a c k  p a g e)

classic research project in astrometry has stood the test of time.

These files contain dozens of letters (onionskin carbons…who remembers those?), brochures for each year, photographs, and applications from every student who ever attended. Think of it, alumni: we have, in your handwriting, the essays you wrote and the answers you gave.

In our second post-expansion summer, 72 SSP’ers from 22 states and 7 foreign countries learned a lot of physics and math, had fun, and stayed up very, very late to complete their ODs. They also matured, gained self-confidence, and built friendships that will last a lifetime.

Future rocket scientists at Missile Park, WSMR

Alumni and friends are key to SSP’s continued success. We are an alumni-run, alumni-supported organization. SSP’s new fiscal year has just started — don’t forget to make a donation!

Field trip to the planetarium in Albuquerque.

2 0 0 4 ’ E R S  S A Y

“I have made the best friends I could ever make, and have found out that my true career does indeed lie in science. Thank you!!”

— Jyotsna Venkataramanan, Mexico City

“SSP became who we are, and we became SSP.”

— Shuo Han, Diamond Bar, California

“I have grown and matured. This program has taught me to believe, work hard, and achieve”

— Jen Loong, Richmond, British Columbia
2004’ers Say

“Now I understand why the alumni care so deeply about the program.”
— Min Hwang, Lima, Peru

“SSP has changed my life. (Yes! The cliché phrase!) There is no way I’ll look at my life in the same way I did before. Simply knowing that people like this exist is amazing.”
— Irene Martinez, St. Paul, Minn.

CHAIRMAN’S LETTER
BY STEPHEN L. COTLER ’60

This past summer we received an unexpected gift from Thacher School: ten linear feet of files, telling the story of SSP’s history through the handoff to alumni in 1999. The first document is dated just 18 days after Sputnik was launched in October, 1957. It is a letter from Newton Chase, Headmaster of Thacher, to Wallace Sterling, then President of Stanford. In essence the letter says, “Dear Wally, I have this really great idea….”

Over the next year, Chase found more support from Caltech, Pomona College, and Harvey Mudd. Caltech agreed to operate the program and asked its Freshman Dean Foster Strong and Pomona’s Prof. Paul Routly to teach. The tuition was set at $200.

Their original idea was simply to teach college-level physics and math. When satellite manufacturer Hughes Aircraft got involved (Howard Hughes was a Thacher alumnus), the curriculum switched to satellite observation. Students would be given an orbit, then asked to find the satellite and photograph it.

But Prof. Routly had an even better idea. Just weeks before the Class of 1959 arrived at Thacher, he convinced the Executive Committee (chaired by Caltech Prof. Richard Sutton) that the inverse -- derive the orbit from the observations -- would be more intellectually and pedagogically appropriate. He was right, and that (Continued on page 7)

Team 7 has a little fun up at the dome in Socorro.