

Lick Observatory

Jim MacDonald

On several trips to San Jose, I planned to visit the Lick Observatory, but without success. My recent trip was beginning to look the same except that one of the grandkids got sick giving my son and I a free Sunday instead of a drive to Yosemite.

The observatory is located on Mt. Hamilton, up a narrow winding road populated that Sunday by numerous mountain bicycles and motorcycles. The road was constructed at a grade below 6.5% to accommodate horse-drawn wagons used in the original construction. The site is at the 4,029 foot level in the Diablo Range east of San Jose. It's named for James Lick, a San Francisco businessman who funded the observatory. (Note: his remains are

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Upcoming Star Parties

Club Party	Sep 3	Dillingham
Public Party	Sep 10	Kahala/Waikele
Public Party	Sep 24	Dillingham
Club Party	Oct 1	Dillingham
Public Party	Oct 8	Kahala/Waikele
Public Party	Oct 22	Dillingham
Club Party	Oct 29	Dillingham

Upcoming Events:

- The next meeting is at 7:30 p.m. on Tuesday, Sep. 6th at the Bishop Museum.

News Bulletin

The subscription rate for *Astronomy* magazine has been increased to \$34/year effective immediately.

President's Message

The discovery of a Kuiper Belt object that is almost certainly larger than Pluto has rekindled the debate over what should be called a planet. Currently about 97 A.U. from the Sun and shining at magnitude 19, the object should be larger than Pluto even if it reflects all the light that the Sun shines on it, even larger if it reflects less light.

Of course, this is not the first time that the question of what exactly qualifies as a planet has been raised. After Ceres was discovered on the first day of the 19th century it was presumed to be a planet. When its size was calculated and other similar objects were discovered in similar orbits, the term "asteroid" was coined. Of course, they are also called "minor planets."

Every so often we hear about the discovery of the "10th planet." While many of these "discoveries" are simply misinformation or total nonsense, a number of legitimate candidates for that title that have been discovered in recent years, mostly Kuiper belt objects that are considerably farther from the Sun and smaller than Pluto. Rather than designating any of these bodies as planets, some people have suggested "demoting" Pluto to less-than-Planet status. The International Astronomical Union, the body that is charged with assigning official names to celestial bodies and features on them, recently considered assigning a "Trans Neptunian Object" number to Pluto. That was not done, but even so there was no plan to strip Pluto of its planetary status.

Now that something larger than Pluto has been discovered, logic would seem to dictate that either it is a planet or Pluto isn't. People aren't always logical, however. Pluto has been called a planet for so long that it may be "grandfathered in." Scientifically, of course, it makes little

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The Astronomer is the monthly newsletter of the Hawaiian Astronomical Society. Some of the contents may be copyrighted. We request that authors and artists be given credit for their work. Contributions are welcome. Send them to the Editor via e-mail. The deadline is the 15th of each month. We are not responsible for unsolicited artwork.

Planets Close To the Moon

Times are Hawaii Standard Time

- Sep 6, 12h, M 1.6° SSW of Jupiter (35° from sun in evening sky)
- Sep 6, 20h, M 0.60° SW of Venus (40° from sun in evening sky)
- Sep 15, 00h, M 4.3° SSE of Neptune (141° from sun in evening sky)
- Sep 16, 13h, M 2.2° SSE of Uranus (164° from sun in evening sky)
- Sep 18, 17h, M 5.8° NNW of Mars (127° from sun in morning sky)
- Sep 28, 22h, M 4.5° NNE of Saturn (57° from sun in morning sky)

Other Events of Interest

Times are Hawaii Standard Time

- Sep 1, 22h, Venus 1.2° SSW of Jupiter (39° from sun in evening sky)
- Sep 3, 08:45h, Moon New
- Sep 6, 17h, Moon, Venus, Jupiter close together (Within 4.2° circle, 38° from sun in evening sky)
- Sep 14, 03h, Moon 1.2° from center of the Beehive Cluster (M44) (45° from the sun in morning sky)
- Sep 17, 16h, Mercury at superior conj. with sun (Passes into evening sky.)
- Sep 17, 16:01h, Moon Full
- Sep 22, 12:23h, Fall or Autumn equinox

Mercury is closer than 15° from the sun when near the moon in September.

Planets in September

<p> Mercury</p> <p>Mercury will be visible in the morning twilight during the first week of September.</p>	<p> Venus</p> <p>Shines very brightly near Jupiter in the west after sunset. They are a little over 1° apart on Sep 1.</p>	<p> Mars</p> <p>Rises about 10 pm, brightens to -1.7 magnitude, and will be 18" in diameter by month's end.</p>
<p> Jupiter</p> <p>Passes below Venus in evening sky – they are very close together at the start of the month..</p>	<p> Saturn</p> <p>Appears in the morning sky before sunrise, but still too close to the horizon for good viewing.</p>	<p> Uranus</p> <p>Is well placed for viewing late in the evening in Aquarius. Mag +5.8.</p>
<p> Neptune</p> <p>Near Uranus in the late evening sky in the constellation of Capricornus. Mag +7.9.</p>		<p> Pluto</p> <p>.Can still be viewed in the early evening in the constellation Serpens Cauda.</p>

The general membership meeting was called to order at 7:37 p.m. by President Chris Peterson. The meeting held in the Atherton Halau on the grounds of the Bishop Museum. Twenty-nine members and four visitors were present.

Donation/for Auction: President Chris Peterson announced that a Meade telescope has been donated to the club. This multi-coated refractor with tripod. Model # 31 has a 90 mm diameter and f ratio of f 1,000 mm. The telescope is in need of repair. It will be on display at September meeting and put up for auction in October as is.

Lacy Veach Day: The club will participate at this year's October 19, 2005 activity day at Punahou. We will set up at 7:30 and we will need members to help out at the table from 8:00 a.m. until around 1:00 p.m. Anyone interested in helping out is asked to contact Gretchen West. There will be a sign up at the September general membership meeting.

Another Planet?: The recent discovery of a planet sized (i.e., larger than Pluto) object within our solar system was discussed. The newest discovery tentatively named Planet 2003 US 313 is bigger than Pluto, is twice as far from the sun as Pluto (at 90 AU) and has an orbit that is 45° off the orbital plane.

Welcome to Visitors: Four visitors were greeted by Chris Peterson, and asked to introduce themselves.

School Star Party Report - Forrest Luke reported that there were no scheduled school star parties for the month of August.

Lecture at Planetary Data Center: The Planetary Data Center will have a planetary scientist, Dr. Jeff Gillis of the University of Hawaii as guest lecturer Tuesday, August 30, 2005. The title of his talk is *Lunar Basalts: The Hawaii Connection*. The lecture takes place in the Planetary Data Center, Rm. 544 of the POST Building at the University of Hawaii at Manoa.

Items for Sale: Jim MacDonald reports that member Tom Pico has a large number of items for sale, at reasonable prices.

Perseid Meteor Shower: A vote was taken by the membership that viewing of the Perseid Meteor Shower should take place at the Dillingham Airfield the evening of August 11. Members will meet at the Dillingham Field gate at approximately 8:00 pm.

Molokai Hanahou: Vice President Barry Peckham is organizing another trip to Molokai Ranch for viewing the dark nighttime skies the weekend of September 30, October 1 and 2. Although this is not a club sponsored trip, a number of club members have expressed interest in participating. Those interested should contact Barry.

Planetary Missions: President Chris Peterson reported briefly on the Messenger Mission to Mercury, the Mars reconnaissance orbiter, and the progress of the Space Shuttle and its recent mission to the orbiting International Space Station.

Guest Speaker: Members were fortunate to hear from Dr. Karen Meech about the Astrobiology Institute of the University of Hawaii. Dr.

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September has no major excitements like August, but it does have the year's best sporadic rates here and several mysterious minor showers.

Thursday the 1st, the **Alpha Aurigids**. Radiant 05h36m +42 deg. This drizzle generally has about 4 meteors an hour which are swift and sometimes bright. In 1936, 1986, and 1994 outbursts were observed with rates of 15 to 20 meteors an hour.

The other drizzles for the month are destroyed by the Moon. They generally produce about 2 to 3 meteors and hour and one is best observed by radio.

If you are interested in observing meteors contact Tom Giguere on Oahu at 672-6677 or write to: Mike Morrow, P.O. Box 6692, Ocean View, Hawaii 96737

President's Report (Continued from page 2) difference what an object is called. A planet, by some other name, will still have the same orbit and physical prop-

erties. Names are important to people, though, so we probably haven't heard the last of this debate.

Chris

Minutes (Continued from page 4) Meech spoke at length about **Water and Life in the Universe**. Dr Meech spoke of the chemistry which occurs in space, in nebulae, and in comets which allows molecules of water to form and be present throughout the universe. Dr. Meech gave an overview of the history of water on Earth over geologic history.

Dr. Meech caught everyone up with information on the project **Deep Impact** and its findings. She explained the reasons for the somewhat "fuzzy" pictures of the



probe's impact with Comet Temple I and indicated that more details regarding the mission will be forthcoming,

but that for the time being, NASA scientists are in the process of reviewing data and writing reports. Due to the huge public interest in the project and the probe, NASA has decided to continue funding post impact research with the still active probe. The meeting adjourned at 9:08 p.m. Refreshments were served.

Respectfully Submitted,
Gretchen West

Lick Observatory (Cont. from page 1) entombed in the base of the telescope.) This was the first mountaintop telescope site selected for its astronomical advantages rather than a convenient location. It was completed in 1888 and turned over to the University of California. The 36-inch diameter lens sits in a 58-foot long tube under a 75-foot, 90-ton, dome which was the world's

principle research tool is a 120-inch reflecting telescope that went into operation in 1959 continuing the spectroscopy research. The 36-inch refractor serves primarily as an item of historical interest. Early astronomers at Lick included Shelburne Wesley Burnham, James E. Keeler and Edward Emerson Barnard.

In addition to the great refractor,



largest telescope until the 40-inch Yerkes telescope was built by the University of Chicago at Williams Bay, Wisconsin, in 1897. Both of these refractors were constructed by Alvan Clark, a well-known 19-century telescope builder.

Lick's areas of scientific research began with cataloging double stars, astrometry (measuring star positions), developing a photographic atlas of the moon, and spectroscopy (the study of star's light to determine its chemical makeup). The observatory's current

the facility also has on display an electric generator donated by Thomas Edison which looks like it is still capable of producing electricity. Besides various pieces of optical equipment on display, they also have a working seismograph which recorded a small tremor while we were watching it. At that point, I jokingly asked my son if he had stomped on the floor.

Lick is still operated by the University of California Santa Cruz in addition to the Keck Telescopes on Mauna Kea.

Where Marvin the Martian and Pluto the Dog Came From

Barry Peckham

The Lowell Observatory is one of those legendary places, like Mt. Palomar and Kitt Peak, that have gained name recognition among those who love the night sky, but on Mars Hill, above Flagstaff Arizona, Percival Lowell's private observing spot is a very different sort of place from the other iconic observatories: more antiquated, more diminutive and classier than other giants of 20th Century astronomy. What other of these famous eyes-on-the-night has nestled itself in a visitor-friendly alpine park?

As its name implies, Mars Hill is not so much a mountain peak as a knoll overlooking downtown Flagstaff. When Mr. Lowell, the astrobon-vivant of Victorian America, made his site selection in the late 1800s, Flagstaff represented a few lanterns worth of light pollution. Lowell came on the train from Boston, but his choice of Flagstaff wasn't whimsical. It topped a list of late 19th Century accessible places with dark skies, good seeing and clear nights.

I made my visit to Mars Hill this past June in the company of HAS members Jane and Mojo, plus #1 sidewalk astronomer John Dobson. Seeing Dobson "in the house," a woman working the visitor center's front desk got giddy and panicky and let us know that we would have the cracker jack tour guide to show us around. She wasn't exaggerating. Our designated tour guide, who's name I failed to record, led our group of 15 to 18 visitors through half a dozen build-

ings and outdoor exhibits with no observable padding or pretending in her steady stream of trivia. In addition, she had Dobson to deal with and got a barrage of no-nonsense, need-to-know questions, not to mention the



Photo by Morris "Mojo" Jones

quips, jokes and anecdotes for which he is famous. There was no intimidation and no patronizing on either side of the inquiry. The exchange was very impressive.

And the Observatory grounds were beautiful. Lupines and columbine dominated the ground cover where sunlight pierced the pines. Walkways were well-swept and one straight path climbed a rise punctuated by a procession of planets, spaced away from a model sun in scaled distances. Pluto, of course, was included.

We visited the stony walled dome housing the 13" astrograph (telescope-camera) where Clyde Tombaugh did his Pluto search and



Marvin and Pluto (Cont. from page 7)
we got to look into the blink comparator used to make the planetary discovery before Tombaugh entered college as an astronomy student.

My biggest thrill was the back end of Lowell's 24" Clark Refractor. So many wheels and gears and finders (including a telrad)! It looks like a cartoon telescope. At the back end of this scope the myth of Martians was born. Lowell took his averted imagination on the lecture circuit and is

directly responsible for that crushing crowd at the Bishop Museum in August 2003, though he died years before the discovery of Pluto.

Marvin the Martian owes his existence to the delusions of Mr. Lowell, as do all cheap department store refractors. And did you know that Pluto was the winning entry in the "Name The 9th Planet" contest because the first 2 letters (and planet symbol) could remind us in perpetuity of Percival Lowell?

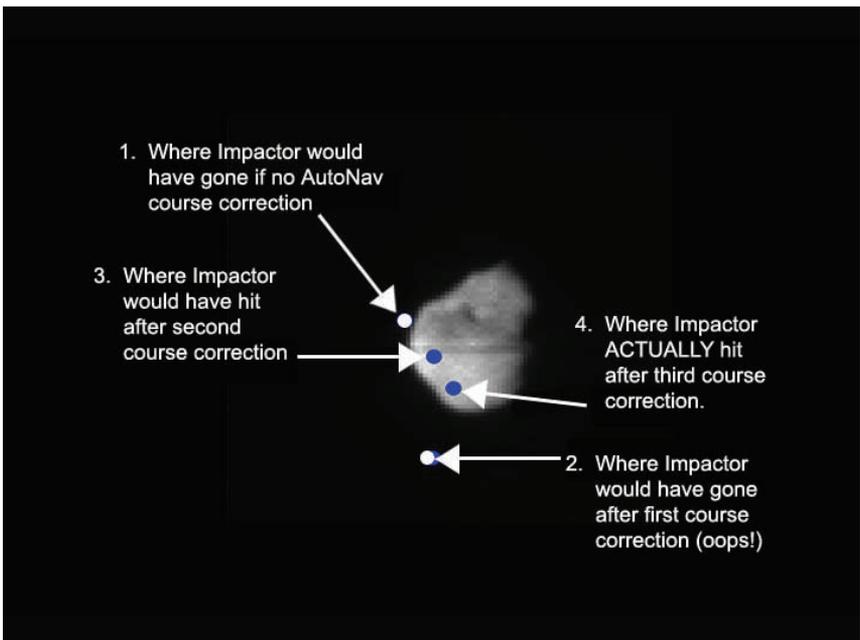
Picture this: Eighty-eight million miles from Earth, a robot spacecraft plunges into a billowing cloud almost as wide as the planet Jupiter. It looks around. Somewhere in there, among jets of gas and dust, is an icy nugget invisible to telescopes on Earth—a 23,000 mph moving target.

The ship glides deeper into the cloud and jettisons its cargo, the

gave scientists their first look beneath the crust of a comet.

That's navigation.

Credit the JPL navigation team. By sending commands from Earth, they guided Deep Impact within sight of the comet's core. But even greater precision would be needed to strike



“impactor.” Bulls-eye! A blinding flash, a perfect strike.

As incredible as it sounds, this really happened on the 4th of July, 2005. Gliding through the vast atmosphere of Comet Tempel 1, NASA's Deep Impact spacecraft pinpointed the comet's 3x7-mile wide nucleus and hit it with an 820-lb copper impactor. The resulting explosion

the comet's spinning, oddly-shaped nucleus.

On July 3rd, a day before the strike, Deep Impact released the impactor. No dumb hunk of metal, the impactor was a spaceship in its own right, with its own camera, thrusters and computer brain. Most important of all, it had “AutoNav.”

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Treasurer's Report

by Jim MacDonald

HAS Financial Report as of July 15, 2005

Initial Balance:.....	\$5,239.87
Receipts:	
Astronomy Payment.....	29.00
Donations.....	29.10
Dues Received.....	170.00
S&T Payments.....	164.75
Total Income:.....	\$392.85
Expenses:	
Astronews.....	299.83
Magazine Subscriptions.....	97.07
Postage.....	3.85
Refreshments.....	7.40
Total Expenses:.....	\$779.35
Ending Balance:.....	\$4,853.37

The club welcomes seven new members this month. They are **Brian Hill, Johannette Rowley, Zuzana Ray, Jeff Loar, Timothy, Ron** and **Nanette Sciulli**. In addition, many thanks to those renewing their membership and to **Jean** and **Toshio Taniguchi**, and **Timothy Sciulli** for their generous donations. Clear skies to all!

NOTICE: The subscription rate for *Astronomy* Magazine has been raised to \$34.00 per year effective immediately.

School Star Parties

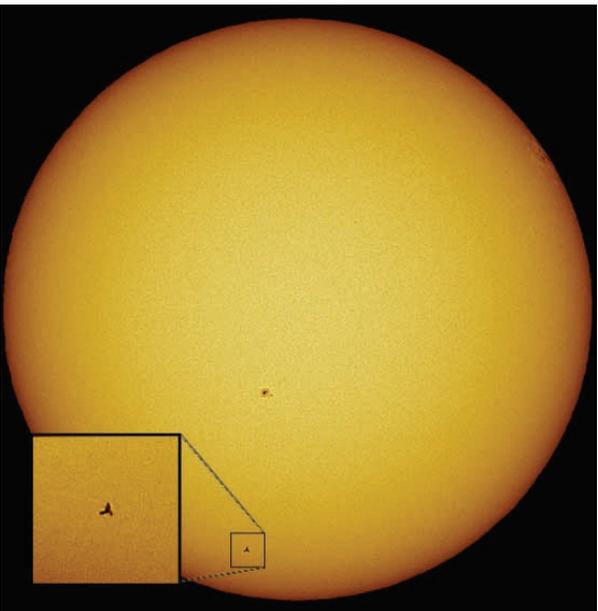
by Forrest Luke

School and Group Star Parties are being coordinated by Forrest Luke. If you are contacted for a school star party, please have the school contact Forrest directly by phone at 623-9830 or via e-mail at <lukef003@hawaii.rr.com>. As a reminder, upcoming scheduled school star parties are:

08 Sep 2005	Campbell High School (Ewa Beach)
09 Sep 2005	Iliahi Elementary (Wahiawa)
16 Sep 2005	Bishop Museum (4 scopes)
07 Oct 2005	Kauluwela Elementary (tentative)
07 Nov 2005	Campbell High School

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Reason #21 to own a PST . ISS and Discovery transit
the sun *(photo by Anthony Ayiomamitis)*