The Astronews

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July 2003

Celestial Rocks

by Tracy Latimer

Every year, like clockwork, Earth is visited by meteor showers. These cometary leftovers appear on schedule for a night or two, dazzling us with fireworks in the upper atmosphere, then vanish, leaving no trace. Sometimes we get unscheduled, more substantial guests; less than three months ago, Park Forest and other Chicago suburbs were pelted by celestial rocks.

Most of the meteorites that make it to Earth are not associated with meteor showers. The bits and pieces of debris that manage to survive passage through Earth's atmosphere are largely rocky bodies: remnants of asteroids, occasionally comets, or even more rarely, other planets.

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Inside this issue:

Upcoming Star Parties

Public Party	**July 5**	**Kahala Park**
Public Party	**July 19**	**Dillingham**
Club Party	**July 26**	**Dillingham**
Public Party	**Aug 2**	**Kahala Park**
Club Party	**Aug 23**	**Dillingham**
Public Party	**Aug 30**	**Dillingham**

Upcoming Events:

- The next meeting is 7:30 on July 1st at the Bishop Museum.
- **Sam Rhodes** next Planetarium show on Mon. July 7th.
- Moon .4° below Mars on July 16th.

President's Message

It has been suggested that the Hawaiian Astronomical Society acquire some slides that could be shown by our members before (or, in case of inclement weather, in lieu of) a star party or when a member is requested to give a talk to a school group, etc. At our June meeting I brought some slide sets for us to consider purchasing.

The slides I brought were from two sources that produce high quality slide sets: The Lunar and Planetary Institute (LPI) and the Jet Propulsion Laboratory (JPL). The LPI slides may be previewed at http://www.lpi.usra.edu/publications/slidesets/, and the JPL slide sets are available at http://www.finley-holiday.com/najpl.html where descriptions are given of the sets for sale. In addition, there are other slide sets at the http://www.finley-holiday.com/ site, including some that are of interest to astronomers.

There are also some DVDs available from Finley that are space related, and there are space-related picture CDs as well. As computers continue to proliferate, CDs and DVDs are becoming ever more useful as a convenient way to store, transport, and show images. The "Solar System" CD, for example, appears to contain 200 images. In general, the Finley site seems to have a good variety of slides at reasonable prices.

One additional source I know of is the Astronomical Society of the Pacific. Their products can be found at http://www.astrosociety.org/online-store/scstore/. Click on the "slide sets" link. These sets appear to be higher priced than some of the others, but there may be a wider variety of astronomical subjects covered. Please take a look at these sites and give me your recommendations. If anyone knows of additional sources for these products, please let me know, and I will pass that information along to the membership. ***Chris***

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Planets Close to the Moon

Times are Hawaii Standard Time

July 2, 13h, M 4.3° NNE of Jupiter
(38° from sun in evening sky)
July 14, 22h, M 4.9° SSE of Neptune
(160° from sun in morning sky)
July 16, 09h, M 4.3° SSE of Uranus
(141° from sun in morning sky)
July 16, 22h, M 0.40° WNW of Mars
(135° from sun in morning sky)
July 26, 14h, M 4.0° N of Saturn
(27° from sun in morning sky)
July 30, 18h, M 4.5° NNE of Mercury
(23° from sun in evening sky)

Venus is closer than 15° from the sun when near the moon in July

Other Events of Interest

Times are Hawaii Standard Time

July 3, 20h, Earth at aphelion (farthest from sun)
(1.0167 a.u. or 152,100,000 km)
July 5, 00h, Mercury at superior conj. with sun
(Passes into evening sky)
July 13, 09:20h, Full Moon
July 25, 17h, Mercury 0.36° NNE of Jupiter
(20° from sun in evening sky)
July 28, 20:52h, New Moon
July 30, 02h, Mercury 0.17° NNE of Regulus
(23° from sun in evening sky. Closest approach of a planet to a 1st Mag. star in 2003)

The Planets in July

☿ Mercury

Mercury is visible in the evening twilight during the last half of the month.

♀ Venus

Venus is too close to the sun to be easily observed in July.

♂ Mars

Mars is brighter (-2.3) and larger (20") than at any time since 1988 as it approaches conjunction.

♃ Jupiter

Jupiter starts the month about 40° from the sun, but by month's end sets before twilight ends.

♄ Saturn

Saturn is beginning to show itself low in the east before dawn.

♅ Uranus

Uranus is near Mars, rising a little before midnight.

♆ Neptune

Neptune rises before Uranus and Mars and can be viewed after midnight.

♇ Pluto

If you want to try to view the 9th planet, July and August are the best months of the year.

Meeting Minutes

by Gary Ward

The June 3, 2003 meeting of the Hawaiian Astronomical Society was called to order by President Chris Peterson at 7:37 at the Bishop Museum with 28 members in attendance. President Peterson thanked all the club members that supported National Astronomy Day at Barnes and Noble at the Kahala Mall. The hot spot of the day for over a hundred attendees was the chance to soak in some solar observations. Later in the day there were some good moon shots and the activities ended around 10:30 pm. The public really enjoyed the effort and many thanks again to our members supporting public efforts like this.

Old Business

President Peterson brought in some slide sets and opened up a discussion on whether some of these sets should be evaluated as candidates to support the request surfaced at the last meeting on purchasing slides for use at public demos. Further discussions on this subject will be held at subsequent meetings. At the end of the meeting a slide show was given on the slides Chris had brought with him for evaluation.

Results of last month¹s survey: It turned out that it was a 50/50 split on outside lectures vs club member presentations.

Upcoming outside lectures will include Steve Beletik and Vickie Harston. Other ideas for activities given in the survey were: Pot lucks, Bishop Star Party, swap meets, education, etc.

Barry Peckham stated that Kahala Star Parties are becoming so popular that more members with scopes are needed to meet the public demand. So load ‘em up and get them out there Star Gazers!

School Star Parties

There are no School Star Parties currently programmed for June. One request in July has been received and volunteers for this and possible others will be requested at our next meetings. Any new requests from schools or people who want to help out should be directed to Forrest Luke.

New Business

Another new moon was discovered orbiting Jupiter, bringing the total moons now to 61!

The beginning of Mars Mania has begun with the launch of Mars Express launched yesterday from Baikonur, Kazakhstan. The Mars Express mission will reach the red planet on Dec. 27 then examine it both from an orbiter with seven instruments and on the surface with a Lander named Beagle 2. The orbiter will point ground-penetrating radar at Mars for the first time, probing for evidence of underground water. This is just a precursor to the momentous skywatching event in Aug 2003.

All during the summer of 2002 Mars was pretty much out of view because of its close proximity to the Sun. But during the latter part of September it began to emerge back into view in the morning sky and is in full view, though for now it appears rather small in the sky and low on the horizon. However, this is only the beginning of what will turn out to be the most dramatic and spectacular Mars apparition you or any of your ancestors has ever had a chance to see. The Red Planet is getting progres-

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Meteor Log—July 2003

by Mike Morrow

July nights are spiced up due to darker northern nights, minor showers and early Perseid activity. There are some interesting and superbly Moon-free near-ecliptic showers late in the month and sporadic rates improve.

Thursday the 10th, the ***Pegasids***. Radiant: 22h40m +15°. Not many meteors are from this shower but from about 11PM to midnight local time hing should be seen. The Pegasids are faster moving than any other minor shower meteors.

Monday the 28th, the ***Pisces Austrinids***. Radiant: 22h44m -30°. New Moon on the 29th favors this minor shower. Rates are low and meteors are faint. Speeds are moderate. The radiant is from near Fomalhuat. Best time to observe the shower is after local midnight.

Monday the 28th, the ***Southern Delta Aquarids***. Radiant: 22h36m -16°. Radtes on this shower are about 10 to 15 and hour. No Moon will interfere with observations this year. Most are medium speed and faint but an occasional bright meteor may be seen.

Wednesday the 30th, the ***Alpha Capricornids***. Radiant: 20h28m -10°. Slow, bright, sometimes fireball-class meteors are typical shower members. Shower activity is normally weak, but the unexpected may occur at any time.

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

History of the H.A.S.

by Jay Wrathall

The HAS was organized in 1949 and met regularly until the mid-50s at McKinley HS. In addition to monthly meetings they sponsored star parties and other activities, had a treasurer, paid dues and operated much as we do today. Unfortunately, there is little information available about those early days. No regular newsletter was published and any meeting minutes have long since been lost. The club dwindled in membership by 1956 as many military families left the islands, but was rejuvenated by Dr. Earle Linsley in 1957. Dr. Linsley was president until the end of 1959 and began publishing a newsletter at the end of 1958. Since then we have a pretty good record of the activities and programs of HAS.

By 1960, the club was very active with a membership of about 60, (including Mike Morrow, the only member of the club from the early 60s that is still a member). Dues had just been raised from $1.00 per year to $1.50 per year and members were expected to subscribe to Sky & Telescope magazine, at a cost of $2.50 per year. By the end of the 1960s, the dues were still $1.50, but S&T had gone up to $4.50 per year. (Note – adjusting for the consumer price index would give equivalent prices today of $8.25 for dues and $15.25 to $22.50 for S&T.) The balance in the club treasury averaged about $250 (Equivalent to $1,350 today).

Regular monthly meetings were

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History: The 60's *(Continued from page 5)*
held on the first Tuesday of each month and the board of directors meeting was usually held at Kenny's at 6:30 pm, before the club meeting. (Sounds familiar, doesn't it?) A typical program – from May of 1960 was described in the newsletter as follows:

"Dr. Gordon A. MacDonald will speak of Hawaiian volcanoes. The talk will be illustrated with colored slides and motion pictures, and he is a very popular speaker. Dr. MacDonald, formerly in charge of the Hawaiian Volcano Observatory at Kilauea, is now professor of Geology and Geophysics at the University of Hawaii.

"LEO" will be the constellation of the month, and features of this zodiac constellation, now high in our northern sky, will be discussed. If time permits, we may have another short talk on another famous astronomer (Tycho Brahe) by Robert Jack."

Star Parties were held only a couple of times a year in the early 60s and 4 or 5 times a year by the end of the decade. However, most club meeting were followed by observing through the Planetarium's 12 ½ inch scope and members were invited to bring their own telescopes to set up after meetings.

The 1960s were a time of great changes in astronomy in Hawaii, and the club followed (and participated) in these developments with great enthusiasm. Included in these changes were the following: Construction and dedication of the Kilolani Planetarium. The club began holding their meetings there even before its dedication in December of 1961. Much of the early work on installation and operation of the 12 ½ inch telescope was done by club members.

Construction and dedication of a solar observatory of Haleakala, which was constructed and dedicated in 1962. The club made at least one field trip to this observatory in 1964.

Site preparation, construction, and dedication of the University of Hawaii's eighty-eight inch telescope on Mauna Kea. This telescope was dedicated in 1968 and speakers at HAS meetings regularly updated the club on progress as the site was chosen and construction progressed.

The establishment of the Institute for Astronomy at UH in 1967 to manage the University observatories on Mauna Kea and Haleakala. The club has had a close relationship with the Institute for Astronomy over the years. On several occasions astronomers at the institute were officers of the club.

Hosting of the annual meeting of the Western Amateur Astronomers by HAS in August of 1962.

Beginning of star parties for school children. In April of 1968 the Astronews reported that "Louis Miller and Willis Moore have been "commuting" to YMCA Camp Erdman with a carload of telescopes during the past month, providing a new experience for school children encamped there during 'School out-of-doors'."

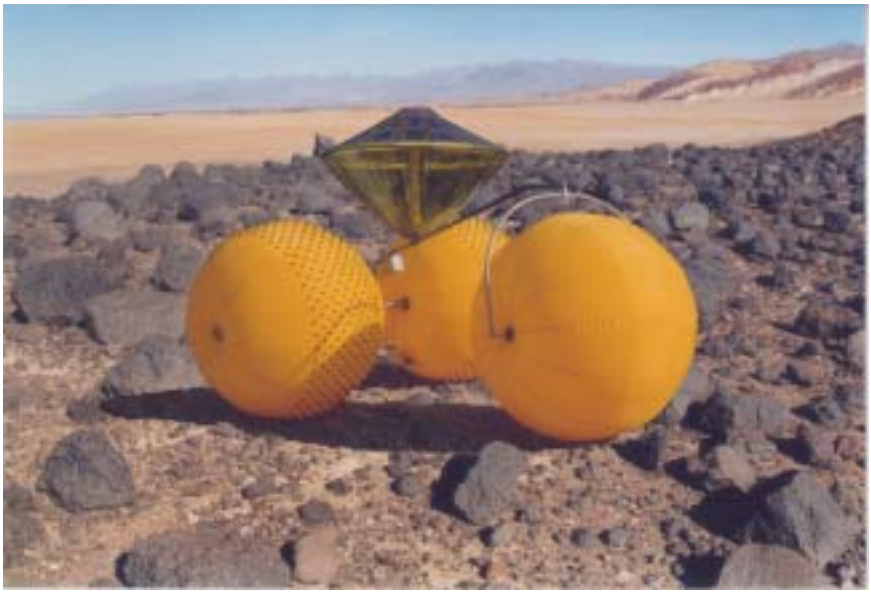
Club presidents during the 1960s were: 1960, Perry C. Cornutte; January to October of 1961, Robert Jack; November 1961 to June 1962, Mike Morrow; July to December 1962, George Bunton; 1963 Robert Britton; 1964, Ray Lanterman; 1965, James Banning, 1966, Will Kyselka; 1967 and 1968, Mike Morrow; 1969, Sam Fisk.

Monster Trucks on Mars

by Patrick L. Barry and Dr. Tony Phillips

We all know what Mars rovers look like now: Robotic platforms, bristling with scientific instruments, trundling along on small metallic wheels. Planetary rovers of the future, however, might look a little different-like miniature monster trucks!

Enormous, inflatable tires can easily roll right over the rocks and rugged terrain of alien planets, just as they bound over old cars like as many speed bumps.



The “Big Wheels” inflatable rover doesn't mind a few boulder-sized rocks, no matter what planet they're on!

That's the idea behind a novel concept for robotic planetary rovers known as the “big wheels inflatable rover.” Unlike rovers similar to the Sojourner robot that explored the surface of Mars in 1997 that depend on instructions sent from Earth or complex programmed intelligence to steer through rough terrain, this rover has three beach ball-like tires roughly five feet across that make it a true off-road vehicle.

“We sent this rover out to Death Valley, to a place called Mars Hill that has a general geological formation like Mars, and nothing could stop it,” says Jack Jones, the mastermind of the inflatable rover concept at JPL. “It just kept going and going and going.”

Lots of current research is devoted to developing advanced robotic intelligence that allows rovers to detect rocks in their path and maneuver around them. The alternative to such on-the-spot intelligence is tedium: Ground controllers on Earth working

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Retrograde

by Barry Peckham

The planets are fish
That swim real slow.
They can't beat the current,
As seen from below.
The stars in this river
Are jellies that glow.
And planets swim through them,
Aimed east as they go.

But once every Earth year
These fish take a break.
They swim a bit downstream
And loops that they make
Confused ancient thinkers
On what it could take
To explain this motion.
It made their heads ache.

So place yourself under
This scene that is ours,
With planet-fish swimming
Through jellyfish stars...
Self-luminous jellies,
Not jelly from jars!
And all so you'll picture
The motion of Mars.

*Ed. Note: This poem was written after attending Sam Rhodes' **The Sky Tonight** where Sam spoke about retrograde motion, and Clare Levin challenged Barry to write a poem to explain it.*

Big Wheels *(Continued from page 7)*

out the maneuvers by hand and waiting an hour or more for the instructions to travel to the distant planet.

A "big wheels" rover would need such computer intelligence to avoid very large boulders, but Jones asks, "Why worry about every little rock, pebble, and crack when you can just roll right over most of them?"

Jones imagines a scenario where multiple inflatable-wheel rovers could be sent out to explore the Martian terrain-easily and quickly traversing the rugged terrain. Samples gathered by the rovers could be returned to a central, stationary laboratory module for detailed analysis.

"The Martian surface is really very, very rough with a lot of rocks, and to be banging this laboratory equipment up and down over all of these rocks aboard the rovers doesn't make much sense," Jones says. "I suspect it might be better to leave it in a central location."

At the moment it's all very speculative; NASA currently has no definite plans to send inflatable rovers to Mars. But who knows, one day monster truck-like vehicles could be zipping over Mars' rough, red surface.

Kids can baffle their friends with a robot puzzle (including a "Big Wheels" rover) they make themselves at http://spaceplace.nasa.gov/robots/robot_puzzle.htm. For adults, find out more about NASA's inflatable rover program at http://www.jpl.nasa.gov/adv_tech/rovers/summary.htm.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Celestial Rocks *(Continued from page 1)*

To become a meteorite, a body that strikes our planet but originates elsewhere in space, a chunk of space debris, or meteoroid, must be captured by Earth's gravity. In the upper atmosphere, the potential meteorite begins to heat up from interaction with the first wisps of air. The meteoroid, fresh from its bath in the deep freeze of space, does not actually become hot beyond the first few millimeters of its surface, but the air around it rapidly becomes incandescent. At this point, our glowing rock has become a meteor. Friction begins to gnaw off pieces of the rock. If the rock tumbles freely, the surface can begin to scar with thumbprint-like hollows called regmaglypts. If it finds a stable orientation, like the heat shield on an old Apollo reentry capsule, the front will become smooth, almost flattened, with streaks of molten rock like rain on a windshield while the pitting process continues on the back side. The outer fraction of a millimeter will char, forming a fusion crust that can only occur from high-speed entry into our atmosphere. Now, continued buffeting by the air is slowing down our meteor from its cosmic speed to a point where it no longer is moving fast enough to leave a luminous trail. If our rock has not been consumed by this time, it will probably survive to impact Earth, and possibly be found by some lucky person as a meteorite.

Once a rock from space has made it to Earth and been found, scientists divide them into classifications depending on their composition. Meteorites can be divided into three main groups: stony, stony-iron, and iron. Most of the meteorites striking Earth are stony, followed by iron, and rarest of all, stony-iron. Stony-iron meteorites are the eye-catching ones.

There are two main types of stony-iron meteorites: mesosiderites, which are an admixture of stone and nickel-iron, and pallasites, a spectacular blend of olivine crystals in a web of nickel-iron. All meteoric iron contains some nickel. Iron meteorites are classified according to how high the nickel content is, which controls crystallization. The crystal patterns within iron meteorites can be revealed by etching polished slices in a weak acid

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Minutes *(Continued from page 4)*
sively closer to Earth with each passing night, and consequently it will slowly appear to grow larger and brighter. By late August 2003, when it will be about 191 million miles closer, the reddish point of light in our night sky will appear more than six times larger and shine some 85 times brighter than it appears now. At 11:51 p.m. HST on Aug. 27, 2003, Mars will be within 34,646,488 miles of Earth. This will be the closest that Mars has come to our planet in about 73,000 years. On Aug. 28, 2003, Mars will be at "opposition," the moment when the Sun, Earth and Mars will form a straight line; since we are closer to the Sun than Mars, this is also when we are overtaking Mars in our respective orbits. At the close approach, the Red Planet will be brighter than Jupiter and all the stars in the night sky, outshone only by Venus and the Moon! Consideration for establishing some H.A.S. public events needs to evaluated and debated in future meetings. Another suggestion that a H.A.S. Mar Madness T-Shirt should be design for this once in a life-time event. Under the topic of "Lucky You Live Hawaii and are a member of H.A.S," both Paul Lawler and Chris Peterson gave accounts of recent observing on the mainland and how fortunate we are to live here. Paul described his night out at a North Dakota Star Party where astronomical sunset was at 11:58 pm.

On 31 July 2003 our Letter of Agreement with Dillingham and H.A.S is underway to negotiate a new one for another year. Dillingham people made it clear that they will no longer allow overnight camping during H.A.S. Star Party nights/activities.

An update by John Galligher was given on Moon software. For the price of free one should download and evaluate ***Virtual Moon Atlas*** at http://astrosurf.com/avl/UK_download.html. This program is a only available for Windows users. Macintosh people can check out: http://www.physics.sfasu.edu/astro/software.html#macintosh

Barry Peckham challenged H.A.S. members to come up more interesting and simple ways to get astro ideas and concepts understandable to the public at large. Barry read a poem he composed that helped people under retrograde motion of the planets. Barry also inspired and challenged members to keep looking at new designs for telescopes. He showed a new design he is working on that will allow at 10 inch scope to come in at under 35 lbs in weight when done. After that he auctioned off a donated scope to club members with the winning bid of $70 to Tom Piper that will go into the club funds. Barry reported that according to the TV Show on the Discovery Channel, Black holes are "angry and ravenous." So beware!

Mel Levin suggested that we coordinate a Southern Cross Hanauma Bay event. More details need to be looked into before a formal motion is floored.

Joanne Bogan briefed us on the renovations to the planetarium. It will be renamed and reopened on June 29 as the Jhamandus Watumull Planetarium. At the conclusion of the formal meeting of H.A.S, Joanne Bogan treated members to the planetarium¹s latest show, the ISS (International Space Station) for the last time in the old seats.

Respectfully submitted,
Gary Ward, HAS

Celestial Rocks *(Continued from page 9)*
bath, and range from no pattern at all at the highest concentrations of nickel, to coarse bands several centimeters across. These patterns are called Widmanstatten bands, and are characteristic of most iron meteorites.

Stony meteorites can be themselves subdivided into chondrites and achondrites. Chondrites derive their name from primitive blobs of matter that coalesced from the dust cloud that formed our solar system, chondrules. The presence of chondrules in a rock, like nickel-iron, is one of the bench tests to determine if a rock is a meteorite. Stony meteorites also contain nickel-iron, usually only as flecks scattered through the rock matrix. Chondrites may be classified as high-metal (H), low-metal (L), or very low-metal (LL), depending on how much nickel-iron is present. A special subgroup of chondrites are the carbonaceous chondrites, which have high levels of carbon, and sometimes even more exotic compounds, like salt, amino acids, or water; carbonaceous chondrites are thought to possibly be cometary remnants too large to completely burn up as they strike the atmosphere. The other group of stony meteorites, the achondrites, is even more distinctive. In these meteorites, no trace of the original chondrites remains, because the parent body has been heated, shocked, or otherwise had them obliterated. The confirmed planetary meteorites from the Moon and Mars are achondrites; achondrites also are suspected to come from certain asteroids, such as Vesta or Hesphaeton, or possibly Mercury or Venus.

Why are meteorites so fascinating? When you pick one up, you are holding a voyager that has come from millions, perhaps billions of miles away in space. Meteorites are old; most of them date back to the formation of the Solar System and can give us valuable hints about the early accretion of the Sun and planets. Some even predate the Solar System, having come from outside, and tell us about interstellar conditions. The planetary meteorites, those from the Moon or Mars, contain information about those planets, sometimes from planets we have yet to get samples of, ourselves. Many of them have an otherworldly beauty, from olivine chunks in pallasites that rival a jeweler's display case, to delicate wrappings of metal like Saturn's rings around armored chondrules. For most people, this is as close they will ever get to traveling in space. They are touchable links to the universe beyond Earth.

School Star Parties

July 3rd - Bellows AFS military side, group camp area 4. Start time for viewing 8 PM. (I'll just need a couple of people. If you are not military, send me your name well in advance and I'll provide it to the gate guards to ease your entry. Church Group.

July 5th - Public Park on Lumiaina Street at the east end of the Waikele shopping Center. Start time 8 PM for viewing. Cub Scout Pack.

Contact Forrest Luke directly at 623-9830 or <lukef003@hawaii.rr.com>.

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