

THUMBS UP: ESO'S UPDATE ON COMET HALE-BOPP

by Thomas W. Kraupe
Submitted by Jack Dunn



If you have access to Internet, see the
Prairie Astronomy Club web page:
<http://www.4w.com/pac/>
E-mail us at: pac@infoanalytic.com
Omaha Astronomical Society web page:
<http://www.top.net/cdcheney>
NEKAAL web page: <http://world.std.com/~wic/>

I heard in November from friends at Tycho Brahe Planetarium of some European observations of Comet Hale-Bopp which were very encouraging. - J.D.

I recommend ESO's Comet-Hale-Bopp Homepage:
<http://www.eso.org/comet-hale-bopp/comet-hale-bopp.html>
(Richard West's brand new Comet Hale-Bopp Update).

This is a excerpted [and edited] summary of recent developments around this comet; **published on the ESO Web, November 28, 1996.** It is based on information received directly by email and also from International Astronomical Union Circulars.

"Although Comet Hale-Bopp is now very close to the Sun in the sky, observations continue in some places. They show that the comet continues to be very active. Several jets are visible on most images.

"At the same time, visual observers have noted a relative brightening, following a period of slow increase. The latest brightness predictions now place Comet Hale-Bopp somewhere between -1 and 0 magnitude at perihelion on April 1st. This is good news for all prospective observers, but we must still await the development during the next month, before we can be sure.

"Comet Hale-Bopp is now clearly brighter than 4th magnitude, as reported by several visual observers. Due to its extremely low position in the western sky, these estimates are difficult. The coma diameter is correspondingly uncertain. However, there is no doubt that the comet, as expected, is now beginning to brighten more rapidly.

"There are now quite a few websites with information about the brightness development of the comet, both in the form of light-curves and discussions about the current trend. Note in particular those compiled by Charles Morris, Herbert Raab, Alan Fitzsimmons and Mark Kidger.

"These sources now agree that the comet has recently accelerated in terms of brightness after a period of slowing down. The predictions now center around magnitude -0.5 at perihelion and most evaluations assume that the peak magnitude will in any case be negative."

Have a great time with a Great Comet in 1997!

JANUARY/FEBRUARY MEETING NOTICES:

PAC MEETING
TUESDAY, JANUARY 28th, 7:30 p.m.
at Hyde Memorial Observatory

NSP MEETING
THURSDAY, FEBRUARY 13th, 7:30 p.m.
at Mahoney State Park Lodge

FEBRUARY PAC MEETING
TUESDAY, FEBRUARY 23rd, 7:30 p.m.
at Hyde Memorial Observatory

At the January meeting, Stephanie Snedden is scheduled to present a program, "Quasars and Blackholes" about her and Martin Gaskell's work with quasars and a possible binary blackhole.

BRIEFS:

Would anyone be interested in the opportunity to help create the monthly calendar that appears on page four? I would still put the calendar together, so having access to a computer isn't necessary. Let me know if you're interested to write up monthly sky and historical astronomy events, as well as list club activities.

Also FYI, several pieces from our newsletter have been reprinted in *The Observer* newsletter of the *N.E. Kansas Amateur Astronomers' League* (Topeka), *The San Mateo County Bulletin of the San Mateo Astronomical Society* (California) and *The Cosmic Messenger of the Kansas City Astronomical Society*. The great number of good articles submitted by our members have made my editor job relatively easy. Thanks. - Bryan SchAAF

The Wall Street Journal had an excellent front page article on John Dobson and his telescope making movement. It was about Monday or Tuesday (January 14 ?).

I wonder what the effect of the article will be? Are investment bankers going to go off and start pushing glass?!
- Martin Gaskell

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MEETING ADJOURNED...

Secretary's Report by Liz Bergstrom



The 26 December 1996 meeting of the Prairie Astronomy Club was called to order promptly at 7:30 PM by President Doug Bell. As the planet Mars is in opposition with Earth, Doug brought a map of Mars to display. Then Doug asked if there were any guests in the audience. We had three guests. They were Larry Stepp who came to Lincoln for the holidays and who was our guest speaker, Donn Baker, who knew Larry, and William Leavitt. The club welcomed the guests.

Mark Dahmke said that the CD and video clips of the 1996 Nebraska Star Party were ready and that the price was \$15.00. He brought a few of the CD's with him to the meeting for those who had ordered the previous meeting. Mark will bring additional copies to the January 1997 meeting.

The president called for Site news. There was no news to report.

There was no treasurer's report as John Bruce was away on vacation.

Doc Manthey reported that the setting circle mark for the 14 inch Celestron scope in the telescope room was gone due to many freezing and thawing cycles during the years. Jerry stated that he would donate a chisel for making the setting circle. [The setting circle problem was resolved on the 28th of December 1996 by painting a white mark to indicate the setting circle mark.]

NSP news: Dave Scherping reported that the NSP brochures were well on the way and passed out current samples of the brochure format. He also stated that the next NSP meeting will (did) take place at Mahoney State Park on Thursday, 16 January 1997 at 7:30 PM.

Doug Bell mentioned that the family of Carroll Moore, one of the club's founding fathers, would like to place a memorial to Carroll at the Hyde Memorial Observatory. June Moore, Carroll's widow, suggested perhaps a sundial or a bench might be used. Maybe someone may have other suggestions for the memorial. If so, please contact Doug Bell.

No further business was brought up for discussion therefore the meeting was moved and seconded for adjournment so all could enjoy Larry Stepp's presentation on the updates of the Gemini Telescope Project in Hawaii and Chile.

The Gemini 8 International Project is the construction of two extremely large telescopes with the cooperation of the United States, Canada, Great Britain, Chili, Argentina and Brazil. One of the telescopes will be placed on the top of Mauna Kea in Hawaii and the other on top of Sierra Picone in Chili. Larry's group is responsible for the special silver coatings to be applied to the primary and secondary mirrors. Larry showed slides of the project buildings at the lower level and at the site on top of Mauna Kea. It was interesting to watch the moving of the large coating chamber with one large semi tractor pulling and the other pushing the trailer loaded with the chamber up the road specially

cut for the purpose to the top of the volcano. The Gemini Project telescope is not the only one on top of the volcano. There are also telescopes from several other countries. The Japanese facility is funded by Subaru. The symbol for the Subaru corporation is a design which represents the Pleiades asterism as the word Subaru means Pleiades in Japanese. Larry mentioned that the weather can be bitterly cold with snow at the top of Mauna Kea. the project in Hawaii should be finished in approximately eighteen months to two years. The total cost for the completed project in both Hawaii and Chili will be \$184 million with \$25 to \$30 million allotted to the construction, coating and placement of the mirrors. At the conclusion of the slide show Larry opened the floor for questions.

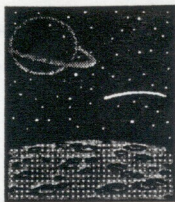
NOTICE: The Guy Ottewell 1997 calendars have arrived. They will be available for pick up at the regular meeting on 28 January 1997.

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: Regular Members...\$15/yr.; Family Memberships...\$17/yr. Address all new memberships, renewals, or questions to THE PRAIRIE ASTRONOMY CLUB, INC., P.O. BOX 80553, LINCOLN, NE 68501. For other club information contact one of the following: President Doug Bell (Lincoln) 489-8197, Vice President Ron Veys (Lincoln) 486-1449, Treasurer John Bruce (Lincoln) 483-0389. All newsletter comments and articles should be sent to: Bryan Schaaf, 1309 W. PLUM, LINCOLN, NE 68522 (or e-mail to schaafb@juno.com) ten days prior to the club meeting. Club meetings are held the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, Nebraska.

Steve Bornemeier is back
from his 6-month Mediterranean cruise and VERY glad to be back! His ship, the USS SAPAN, returned home the last weekend of December. He will visit Lincoln in March in time to observe Comet Hale Bopp. He is now building giant binoculars that he hopes will be ready to observe the comet in March. His address until June is 115 South Rainierda Crystal River, Florida 34429

Observing Chairman's Report

by Douglas Bell



For February observing

New Moon: February 7, 1997
Lunar object: The Cobra's Head
Planet: Hale-Bopp
Messier monthly: M 50
Top 40: Mars
Deep sky: NGC 1554
Challenge: Comet Crazies

Quote of the month: "Oh, What a foolish bird I've been!"
-Johannes Kepler concluding that orbits were ellipses, just as he had found, and discarded, years before.

Tip of the month: Spend a cloudy night with "The Martian Chronicles".

Lunar feature: The Cobra's Head (a.k.a. Schroter's Valley). The sharp eyed among you may recall that this has been here before.

To which I say, "Tough". It's cool. Something to look at when the Moon's almost full and you get one of those crystal nights that only happens near full Moon.

Planet of the month: Hale-Bopp
It may not be a planet, but at the rate that things are going it will be bigger than Pluto soon. I've seen estimates that it will be anywhere from -2 to +3 magnitude. Well, what's a factor of 100 among friends. In either case, we don't get these chances very often.

Messier Monthly: M 50
The only Messier in Monoceratos. Times are hard.

Top 40: Mars
Who can think of Mars without hearing Gustav Holst's "The Planets" in the background? Opposition is fast approaching. And while it doesn't get particularly big, it is high in the sky for better seeing. Follow it's movements from night to night even if you don't get the scope out.

Deep Sky: NGC 1554
HuBBleS VaRIaBle NebuLA ia a reflection nebula being driven by a variable star. It ranges from 8th to 13th magnitude. It's current magnitude is left as an exercise for the student.

Challenge: Comet Crazies
Here we go again! How will we put up with the loony toons that comets always bring out? Have patience, answer questions in a way that people can understand, and remember that you never know who's life you'll affect.

Astro trivia: Which astronomical body can be in inferior conjunction and opposition, but never in superior conjunction?
Last month's answer: Apollo 11's landing computer overloaded and nearly ended the landing attempt. (Gee Buzz, AOL's a little slow today!). By the way, Eagle landed with less than 30 seconds of fuel remaining having long since passed the point where they could abort with the ascent engine. When Mission Control said "30 Seconds", they meant "Land in 30 seconds or die trying."

Why Don't it Wobble?

The Earth's Balance Must Have Changed Since Columbus

from the Hubbard County Enterprise, June 14, 1897

Submitted by Rick Johnson

A New England scientist says there's going to be the dickens to pay if the rest of the Unites States continues to cart away granite and marble from the land of the Pilgrims and Puritans.

"It is not unlikely," says he, "that the equilibrium of the earth is already considerably disturbed, and that we shall shortly feel a pronounced wobble."

Of course, if there is to be a wobble anywhere we would prefer it in New England, but perhaps the outlook is not so desperate as at first glimpse.

The summer rush of people to the White mountains, Bar Harbor, Newport and a thousand other New England summer resorts must in a very great degree restore the weight which existed before there were quarries in New England.

And there is another thing. It is computed that there were in the western hemisphere, when Columbus set foot on it, not more than 1,000,000 human beings. There are now, at a very low estimate, 101,000,000.

These 100,000,000 of additional persons have increased the weight of the hemisphere some 5,000,000 of tons, in the roundest of numbers.

Surely there is an opportunity for a wobble in this state of affairs, and we ought to be conscious of it by this time.

If there has been no wobble an explanation should be demanded. Some man of science should rise to tell us why we don't wobble.

Nothing is more dreadful, says the Buffalo Courier, than this uncertainty when and where the commotion will begin. Probably only those who are holding to the car straps at the time will keep their feet.

TELESCOPE FOR SALE:

4 1/2" Meade reflector, model 4500

tripod, equatorial mount

2 eyepieces & 2x barlow

paid a little over \$900 for it, but will sell it for \$600

like new, only used 3 times

all instructions included

if interested contact Jim Carter, Omaha , 402-397-7662

or leave answering machine message at 402-733-8188

The Prairie Astronomy Club February 1997

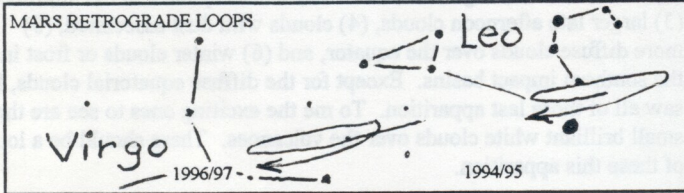
S M T W T F S

<p>1 In the news, 1978: Algae and fungi have been found inside rocks of Antarctica. Life could exist on Mars the same way.</p>	<p>Comet Hale-Bopp begins this month in the east at dawn about 6 degrees NNW of Altair. It traverses north-eastward across Sagitta, Vulpecula and past Zeta Cygni (Feb. 25th). How bright will it get? Predictions suggest that it will be brighter than zero magnitude, but we'll have to wait and see. Jupiter (mag. -1.9) eases into the morning sky gradually after diving into the evening twilight glare last month. On the morning of February 16th it will rise one hour before the sun. By the end of the month it will rise a half hour earlier and Uranus (mag. 5.9) will be just 2 degrees to the west of Jupiter. Use binoculars to see it. Venus (mag. -3.9) rises in the east-southeast just half an hour before the sun on February 1st. On the morning of February 5th Venus and Jupiter will be only 0.5 degree apart, with Mercury (mag. -0.1) to their upper right. The following morning the thin crescent moon will be near the pair. Venus sinks into the morning twilight throughout the remainder of the month. Saturn (mag. 1.0) and Mars (mag. -0.2) and brightening to -0.6) are the bright evening planets this month, low in the west-southwest after sunset and low in the east after 9:30 p.m., respectively. Mars rises at 7:30 p.m. by month's end. In the evening sky the constellations Andromeda, Perseus and Auriga are overhead. See if you can spot the Great Andromeda Galaxy, M31 with direct vision. More elusive to find is the 10th magnitude spiral galaxy NGC 891. To find it, aim a telescope at Gamma Andromedae, center it in the field of view and wait for 18 minutes for NGC 891 to drift into the field. Dark adaptation is important for seeing it. Try to glimpse its dark dust lane. Binoculars will show the brilliant stars surrounding Alpha Persei. They are collectively known as Melotte 11. Aurigae is well known for its trio of bright open clusters M36, M37 and M38, each with their own unique character. One half degree south of M38 is a littler cluster called NGC 1907 that can look like a galaxy when seeing is not good, so look for it when there are... <i>Clear skies!</i></p>					
<p>2 In the news, 1996: Astronomers say they've found the most distant galaxy known; 14 billion lightyears (discovered by the effect of gravitational lensing of a quasar)</p>	<p>3 One hr. after sunset: Moon 5 degrees N.E. of Saturn</p>	<p>4</p>	<p>5 45 min. before sunrise: Mercury 8 degrees below Moon 15 min. later: Venus-Jupiter pair rises in the morning twilight</p>	<p>6 Mars is stationary Morning: Moon 4 deg. above Venus-Jupiter pair</p>	<p>7 NEW MOON 9:06 AM In the news, 1995: Space shuttle Discovery rendezvous with Mir Space station 37 feet apart in prep. for docking next June</p>	<p>8 In the news, 1979: Early findings from Pioneer Venus spacecraft show that Venus is raked by fierce lightning and "mysterious surface chemical fires".</p>
<p>9 In the news, 1984: Two days ago, B. McCandless and R. Stewart flew free of Space shuttle Challenger with Manned Manuvering Unit and did the same today.</p>	<p>10 One hr. after sunset: Moon 5 degrees N.E. of Saturn</p>	<p>11</p>	<p>12 Jupiter 1 deg. N of Mercury 35 minutes before sunrise very low in the east-southeast</p>	<p>13 NSP MEETING AT MAHONEY STATE PARK LODGE, 7:30 PM Scheduled launch of Discovery space shuttle, HST maintenance mission</p>	<p>14 FIRST QUARTER MOON 2:57 AM TOMORROW: DEADLINE FOR NEWSLETTER SUBMISSIONS</p>	<p>15 In the news, 1984: Pioneer Venus spacecraft indicated that a volcano erupted on Venus in 1978 with a force 10x more powerful than any earth volcano in the past 100 years.</p>
<p>16 In the news, 1985: Several witnesses see a mysterious red, gold & white light floating across the sky near Alliance, NE. No one knows what it was.</p>	<p>17</p>	<p>18 In the news, 1996: NASA launched the Delta/Near Earth Asteroid Rendezvous spacecraft, which is en route to Asteroid Eros, due to arrive Feb. 1999</p>	<p>19</p>	<p>20</p>	<p>21 Moon at apogee, 243,830 miles 11:07 PM</p>	<p>22 FULL MOON 4:27 AM</p>
<p>23 In the news, 1978: Solar temperatures research shows that when sunspot activity goes up, temperature drops; the opposite of what's expected.</p>	<p>24</p>	<p>25 PAC MEETING 7:30 PM AT HYDE MEMORIAL OBSERVATORY</p>	<p>26 In the news, 1979: Observers in NW United States view a total solar eclipse. The next one visible from the U.S. will be Aug. 7, 2017.</p>	<p>27</p>	<p>28 30 min. before sunrise: Jupiter edges beyond morning twilight, a bout 10 degrees above S.E. horizon</p>	<p>Comet Hale-Bopp coordinates this month: 1st 19h 43m +16o03 7th 19h 59m +19o12 13th 20h 18m +22o47 19th 20h 40m +26o47 25th 21h 07m +31o09 28th 21h 23m +33o25</p>

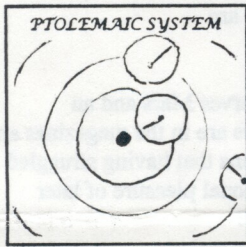
RETROGRADE MOTION...huh?

by Bryan Schaaf

Through the ages one of the most puzzling phenomena of the night sky has been the retrograde (backward) motion of the starry wanderers called planets. Mars, for example, has been moving across the night sky in the west-to-east direction since March 1995, but will be "stationary" like a star on February 6, 1997, then will move BACKWARDS for 2 1/2 months, only to become "stationary" again and finally resume the west-to-east motion in April. If you were to plot Mars' motion on a star map you would eventually see that the path traces a loop in the sky.

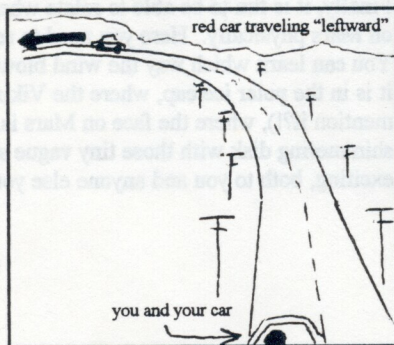


In the second century Claudius Ptolemy nearly perfected the theory that the planets follow complex orbits called epicycles to explain the strange backward motions. Although his geocentric model of the universe was an improvement for his time, the epicycles were not wholly adequate to explain all the observed motions and later "improvements" in the Ptolemaic System proved to be unwieldy.



Today, of course, we know that the planets follow ellipse-shaped orbits around the Sun and that even the Sun is not the center of the universe. Isn't it grand that the planets follow simple ellipse-shaped orbits around the Sun and all the observed planetary motions are explained by them? But... have you ever attempted to explain what causes that peculiar backward motion or have you been confused about this too? As a young fledging stargazer in the 1970's, I found that astronomy books that showed concentric circles (orbits) and crossed lines to illustrate planet retrograde motion against a starry sky didn't help me to understand it well.

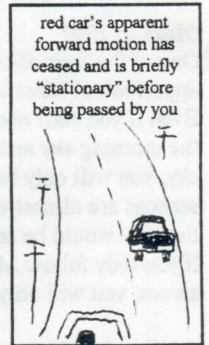
As with most astronomical concepts that seem confusing at first, it is often helpful to relate it to something that is commonplace in our everyday lives. Unlike Ptolemy's time, we have a tool that can help us understand. It is accessible to almost everyone and it is called a CAR!



Suppose you are driving your car (or you are a passenger) in the left lane on the interstate. Imagine the sun is at your left. Your rate of speed is a constant 70 miles per hour and a red car is traveling a mile ahead of you in the right lane at a constant 65 m.p.h. Up ahead, the highway curves to the left and you can see the red car moving along the highway. Which way is it moving relative to you? Remember, it is a mile ahead of you and the highway is curved to the left. The red car is

moving forward, but moving left or obliquely, relative to you.

Since your car is traveling 5 m.p.h. faster than the red car, you see that you are gaining on it. The distance between the cars is gradually closing and the highway is still curving to the left. As you approach the red car (now 1/2 mile ahead of you), what happens to the apparent motion of the red car? If you pay close attention (careful, you're supposed to be driving) you'll notice that the apparent leftward motion of the other car appears to be slowing down, relative to you.

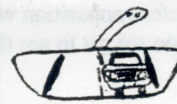


The closer you get to the red car, the slower the leftward motion becomes, until finally, the red car is nearly directly ahead of you in the right lane and it is briefly stationary (that is, it isn't moving obliquely from your direction of motion anymore). You just see that the red car has been growing bigger as you approached, because it is nearer to you.

Remember, you are still driving in the left lane and driving 5 m.p.h. faster than the red car that is in the right lane. Although the red car is still traveling at 65 m.p.h., it appears to be "moving backward" at a rate of 5 m.p.h. as you gradually pass it.

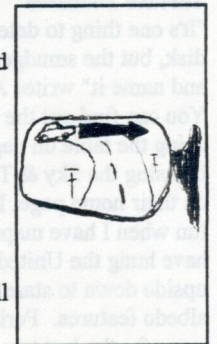
You have just passed the red car. It was "moving backward", but now that you are ahead of it, you must look in your rear-view mirror to see it. What has happened to its apparent motion as seen in your rear-view mirror? Since you are nearly directly ahead of it and traveling 5 m.p.h. faster, you see that the red car appears stationary, but gradually becoming smaller. It remains nearly directly behind you, in the right lane.

red car in the left lane as seen by rear-view mirror is "stationary"



From your forward seated position, the highway behind you curves to your left. As the distance between the cars steadily grows, you notice the red car trailing behind. Soon, as its direction of travel becomes more oblique to your direction of travel, the apparent forward motion of the red car gradually resumes.

You are 1/2 mile ahead of the red car, now located behind and to the left of you. As you traveled away from the red car, what happened to its apparent forward motion? If you look in your left-side mirror you'll notice that the apparent forward motion of the other car appears to be speeding up, as it travels ever more obliquely from your direction. One mile ahead of the red car the apparent forward motion of the red car will have readily increased. Its apparent size will be much smaller as the distance grows.



The previous paragraphs have sequentially covered forward, stationary, backward, stationary and forward motions WITHOUT any actual changes in the rates of speed. Now think of the left lane as the orbit of Earth and the right lane as the orbit of Mars. Substitute "leftward motion" and "forward motion" for "west-to-east motion". Now, I hope retrograde motion is understandable. Drive safe.

OBSERVING MARS IN 1997 (PART 2)

by Martin Gaskell

Mars in 1997

One of the facts about Mars that the books don't make plain is that each apparition of Mars lets us observe only a fraction of the Martian year. Even if you start observing when Mars is only 6 arcseconds across in the morning sky and keep going until it is similarly small in the evening sky, you will only be following one season on Mars. Since Martian seasons are almost exactly one season ahead of the earth's, this apparition you would be seeing from Martian May Day to Martian Labor Day. If you only follow Mars this apparition when it is 10 arcseconds or more across, you will only be seeing Martian June and July.

Another fact the books don't make plain is that at each opposition the orientation of Mars doesn't change much towards us. This apparition the tilt of Mars towards the earth will vary between about +24 and +22 degrees. This gives us about the best possible view of the northern polar regions of Mars (midsummer's day on Mars is only 3 days before opposition). On the other hand, we don't get to see the southern polar regions at all. Because of the orientation and Martian time of year, this is going to be a good apparition to observe the shrinking of the north polar cap. Unlike the southern cap, the northern cap never completely goes away. In a normal inverting telescope Mars appears to rotate from right to left. Each day we see about the same region of Mars, because the Martian day is only 37 minutes longer than the earth's day. Compared to the night before Mars will appear to be running slow. It takes more than a month for Mars to show a complete rotation if you only observe it at the same time. Before opposition we get to see the evening side of Mars. After opposition we get to see the morning side of Mars.

From all this I hope you can see that if you want to observe a particular region of Mars, at a particular Martian time of day, at a particular Martian season, the possibilities are very limited! Observers from all around the world are needed to get full coverage of Mars.

Surface Features

"It's one thing to detect a tiny, vague smudge on a tiny, shimmering disk, but the smudge becomes much more exciting if you can identify it and name it" writes Alan MacRobert in the January Sky & Telescope. You can find out the longitude of Mars you are looking at, either by using the table on page 87 of the January Sky & Telescope magazine, or by using the Sky & Telescope BASIC program MARS.BAS (available on their home page, I believe). I have found Mars observing a lot more fun when I have maps around to refer to. On my home office wall I have hung the United State Geological Survey (USGS) map of Mars upside down to stare at. Around it I have put Xeroxes of maps of the albedo features. Perhaps the most informative maps are the ALPO maps for the last two apparitions. The most recent one is in the January Sky & Telescope; the previous one is in the December 1994 issue. It is surprising how much change there has been from apparition to apparition and from the older maps.

Someday I intend to draw a map based on my own observations. It won't be of any scientific value, but it will give me pleasure and satisfaction. Last apparition I stuck little markers on my USGS wall map to keep track of which regions of Mars I have observed. Convert

ing positions on sketches to latitudes and longitudes is the tricky bit, but I have hit on a simple shortcut: using an expanding Xerox machine I can make the little globe grids Sky & Telescope prints each apparition be the same size as my sketches! Knowing the longitude of the central meridian I can easily read off the latitude and longitude directly.

Martian Weather

To me the attraction of Mars is that I can go outside and look at this little world, which undergoes changes so like the earth's. Mars is always changing and always unpredictable. One of the unpredictable things is the Martian weather. In the last few apparitions, with the advent of CCD imaging, we have appreciated that (northern) spring on Mars is a very cloudy time.

There are several main types of clouds: (1) morning fog and frost, (2) clouds over the high volcanoes - these usually form in the afternoon, (3) larger late afternoon clouds, (4) clouds with dust associated, (5) more diffuse clouds over the equator, and (6) winter clouds or frost in the southern impact basins. Except for the diffuse equatorial clouds, I saw all of these last apparition. To me the exciting ones to see are the small brilliant white clouds over the volcanoes. There should be a lot of these this apparition.

Clouds tend to appear in the same regions and the ALPO map in the January Sky & Telescope shows where these are.

More Fun

These days the Hubble Space Telescope observes Mars and an enormous number of Don Parker CCD images are in the magazines and on-line (see the ALPO homepage). This means that having struggled away with my little telescope, I get the additional pleasure of later comparing my sketch with "the right answer"!

It is also fun to see how what you observe compares with what others have found before. The most recent (1994-95) apparition had a significant overlap in Martian season with the 1996-97 apparition. The ALPO report on this is now available on-line. The 1982 opposition was almost identical to the 1996-97 one and the BAA report on the 1982 opposition was printed in 1995 in volume 96, issue 1, of the Journal of the British Astronomical Association (pp. 36 - 52). The British Astronomical Association has an order form for its journal articles on-line (they take US dollars).

Finally, it is fun to be able to relate what you see to what is happening on Mars physically. Here you need to read a modern book about Mars. You can learn which way the wind blows across Syrtis Major, how cold it is in the polar ice cap, where the Viking landers are, and (dare I mention it?!), where the face on Mars is. It all makes that tiny shimmering disk with those tiny vague smudges on it much more exciting, both to you and anyone else you show it to.

Mars Updates in January

by Martin Gaskell

January 6th: Here's your first Mars update of 1997. Finally it's clear and the weather situation last night was clearly pointing towards good seeing before dawn. I had Tel'Poke all ready to go and when I went outside at 7:00 I was not disappointed. I would put the seeing at 9 (on a scale of 0 - 10). I had borrowed a couple of eyepieces from the University to test, an 8-mm RKE and a 7.5-mm Sirius Plossl. Used with my homemade Barlow these gave magnifications of 320X and 340X respectively (significantly higher than the 250X I normally use with my 10.9-mm Ramsden). With the excellent seeing Mars stood the high magnification very well.

At 8.5" diameter in great seeing and with 320-340X magnification Mars was just too easy! (felt like I had to stand back a bit!) Just for curiosity I put in the 8-mm without the Barlow to get only 150X (typical of what many people use for a "high" power). The disc was then so tiny and all I could make out was the north polar cap.

So, what was Mars like this morning? The first thing I noticed was that the polar cap had shrunk a fair bit since early December. I haven't measured my drawings yet so I can't give you a figure in miles (or in degrees of latitude). The "melt line" round it was the most prominent I have seen this apparition. Mare Acidalium was very prominent towards the evening terminatory (remember that I couldn't see most of it in early December). Over the next few mornings Mare Acidalium will be coming into center stage. Chryse was on the evening terminator and I was fairly sure I could see a little white cloud on the limb from 7:30 a.m. onwards. It was much smaller than the large yellow/white patch that seemed to be over Chryse in early December. At the other end of the planet, there was a little lightening due to the south polar hood, but not as much as in December, it was barely visible this morning. There was a broad lightish region on the equator in the morning over Olympus Mons. I would put it down to an "equatorial" cloud rather than a localized cloud over Olympus Mons. There were no clouds over the other Tharsis bulge volcanoes (all very well placed this morning). There was a possible smaller cloud in the desert Arcadia over the volcanic dome Alba Patera.

After this week I'm probably going to quit dawn Mars observing. Mars is now fairly far over at dawn and at about 7:45 it is now running into trees in our garden.

January 7th: I had another look at Mars this morning between about 7:20 and 7:35 a.m. The seeing was good, but not as good as yesterday so I got by best views with my faithful Ramsden eyepiece at 250X. Part of the problem was that there was almost no wind and I could see my frozen breath wandering into the beam!

Mars looked more different from yesterday morning than I thought it would. The 10 degrees earlier longitude brought more things into view in the far south. The Argyre impact basin was bright at the south end of the planet as it went into the wintery twilight. It did not look blue, but it was not visible with an orange W 21 filter. This was a good demonstration for me of the virtues of using color filters for studying Mars.

For the first time this apparition I could see the southern maria. The one just below Argyre was the most prominent dark feature on the

planet, being darker than Mare Acidalium. Interestingly this region doesn't have a well-known name. It was much lighter on the old maps. It is between Margaritifer Sinus and Aurorae Sinus - somewhere around Mare Erythraeum on the older maps. It probably has a name, but I haven't got it straight. On the HST pictures of the 1994-95 apparition it was also the darkest region around there. Tomorrow and Thursday morning if it remains clear we will be seeing exactly the same region of Mars the HST imaged at opposition last apparition [the interest in this side of Mars is that the Mars Pathfinder landing site is just above (= S. of) Mare Acidalium.]

There was still a broad diffuse cloud over the Tharsis bulge volcanoes and possibly another one to the north of this. I wasn't very sure of this (the seeing was deteriorating), but the spot I marked it at on my sketch was exactly where Olympus Mons is.

January 17th: Mars was 9.3" across when I looked at it on Friday morning. That's almost two thirds of the size it will be at opposition. I actually saw a little more detail than I saw at opposition last time. The seeing was very good until the sun started shining on the earth's troposphere. I cranked up the power to 320X.

In the very best seeing I could just make out Sinus Meridiani and separate Sinus Sabeous from the lighter region above it (south of it). For folks with larger 'scopes this isn't hard, but it's pushing it for little old 6" Tel'Poke (can't wait to get that 8.5" mirror finished!). Mare Acidalium and Nilivac Lacus had their classical appearance. The Chryse desert above them was cloud-free. In fact, the whole planet seemed more cloud free than in early December, but I'm not sure whether that is because the northern hemisphere is now in late spring, or just that things appear sharper because Mars is closer. On Friday morning there was just one little cloud on the equator near the Tharsis bulge (but not over one of the volcanoes) and a larger white area at sunrise over the Tempe desert (to the left of Mare Acidalium). Both of these clouds, particularly the little one near the Tharsis bulge, stood out prominently in the light blue filter and hence must have been blue. They didn't actually LOOK blue without a filter.

Syrtis Major was setting and not really visible (just a slight shading). It would have been better placed this morning (Monday), but I got Tel'Poke stuck in some mud last night and I broke one of the wires to the drive motor while trying to move it. Observing in the mud before having to go to work wasn't very appealing, so I decided to give this morning a miss - a pity, since the seeing was probably very good. Some morning soon I'll have to get up earlier and try to see (and photograph) comet Hale-Bopp.

Vote on Dues increase:

At the January 28th PAC meeting we are expecting to vote on a motion which raises membership dues by \$5/year, eliminates the atlas site key fee, funds the Atlas Site through club dues and makes the Atlas Site equally accessible to all club members. The purpose of this proposal is to encourage Atlas site usage, make site access a general club benefit, and to recognize the fact that site funding is not totally separable from general club expenses. The increase also accommodates an expected rate increase from the Astronomical League.

At the November meeting there was much discussion over this proposal. However, we decided to postpone the vote until January in order to notify all members. Please come to the January meeting prepared to vote, so that we can keep additional discussion to a reasonable time. - Doug Bell

ASTRO MAN
By Dave Scherping

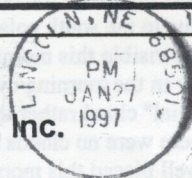
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**Next PAC Meeting
Feb. 23rd, 1996**

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