



SATURN IS UP, DOWN, AT MAXIMUM AND MINIMUM

When it was first observed through a telescope by Galileo in 1610, he knew it looked different than the other planets, but his telescope could not reveal its true nature. So to establish his priority of discovery, Galileo used an anagram to announce his observation of its uniqueness. The uncoded message read: "I have observed the highest planet to be three bodied."

Forty-five years later, the Dutch astronomer Christiaan Huygens, using a better telescope, was able to reveal the true nature of the highest or most distant of the then known planets. It was surrounded by a thin ring. Galileo's three bodies were really a poorly resolved image of the planet Saturn and its surrounding ring.

Saturn's ring immediately grabbed hold of the attention and imagination of astronomers and stargazers, and never let go.

Telescopes improved with time, and these improved telescopes provided improved images of the ring. The ring was discovered to have gaps within it. Saturn's ring was actually a system of rings.

Astronomers and stargazers of the space age couldn't wait to get to Saturn. The views of the planet and its rings sent back by NASA's Voyager 1 and Voyager 2 flybys of 1980 and 1981 were spectacular. They revealed a planet surrounded by an exceedingly complex system of almost 1000 ringlets composed of billions of small chunks of ice.

The same planet Saturn has returned to our evening skies after a long absence of many months. It will appear in our spring night sky, all night long. And it will remain in our early evening skies at least until the end of August. The Saturn season will end when the planet once again becomes lost in the glare of the sun.

Saturn is now in opposition with the sun. This means that Saturn and the sun are separated by 180 degrees as seen from earth. The ringed planet is in the opposite part of the sky as the sun. So as the sun sets, Saturn rises, and as the sun rises, Saturn sets.

The word "planet" means "wandering star." Saturn will look just like a very bright star in the constellation

Scorpius the Scorpion. It will be seen as a star above and twice as bright as the reddish star Antares, which is the brightest actual star in Scorpius.

Saturn is the slowest of the naked eye wanderers. It takes 29.5 years to move completely through the 12 constellations of the zodiac. This works out to a 2.5 year constellation transit time. This year it is right in the middle of Scorpius. Last year the planet was farther west of its present position. Next year it will be farther east.

This Saturn season and the next offer excellent views of Saturn's rings through small telescopes and even binoculars since the rings are near maximum tilt. Saturn is best viewed with binoculars and telescopes around midnight for then it has risen to its maximum altitude above the murky, disturbing effects of our dirty and active atmosphere.

The tilt of the earth's axis of rotation allows the sun to move yearly from the northern hemisphere in the winter to the southern hemisphere in the summer, and across the equator in spring and autumn. In the same way, the tilt of Saturn's rotational axis allows earth observers to view Saturn's rings from above, below and edge-on over a 29.5 year period.

We are looking down on the rings and the northern hemisphere of Saturn this year. The extra light being reflected off the rings makes Saturn appear 1.4 times brighter at this opposition in comparison to an opposition when the ring system is seen edge on. It is also at its brightest now, because at opposition Saturn is at its minimum distance from the earth.

So, if you look up at Saturn, you look down on the planet, and see it at its maximum brightness and minimum distance.

(Courtesy of Compuserve's Naked Eye Astronomy Section)

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OBSERVING CHAIRMANS REPORT

This month's star party is on Saturday, July 5th due to the holiday on the 4th. This month has some real celestial fireworks ready for the patient observer, starting with the opposition of Mars on the 10th. On the evening of July 17th (July 18th universal time), late in the evening, Antares will be occluded by the gibbous moon. With all this going on it will be a wonder if anyone will be doing much deep-sky work. If you can possibly tear yourself away from Mars, you might try looking at the wonderful assortment of star clusters that the mid-summer sky has to offer. Start your viewing with M56, a little observed but fairly easy globular cluster located 2.5 degrees south and three degrees east of Gamma Lyrae. It can probably be glimpsed in a good three inch telescope, but an eight inch will be required to see any of the component stars in the cluster.

For those of you with rich-field telescopes or binoculars, try finding the famous "Coathanger", located about eight degrees south of Alberio (Beta Cygni). It is well over a degree in size, so use very low power to see this remarkable cluster. On the eastern edge of this group is a small and very faint open star cluster NGC 6802. It can be seen in a six inch as a very faint fuzzy cigar shaped patch of light. I have seen a few of its stars in an eight inch at high power, but even larger instruments must be used to fully resolve it.

Back in Cygnus, look one

by

David Knisley



degree south and three degrees east of Delta for the large open cluster NGC 6866. It is a collection of several sub-clusters of moderate and faint stars and is worth a long look with at least a six inch. Less than a degree north and a bit east of Gamma Cygni is the "Stickman Cluster", NGC 6910. A good target for small to moderate instruments, the cluster consists of a circle of stars with a line of stars running away like the body of a man. As a final target, those of you with six or eight inch telescopes will want to look about 1.5 degrees south and two degrees east of Iota Cygni for the small planetary nebula NGC 6826. Low power will show its small bluish-green disk, but high magnification will show an overlapping two shell structure with some faint tiny dark spots in the outer shell.

David Knisely

IMPORTANT MEETING NOTICE...

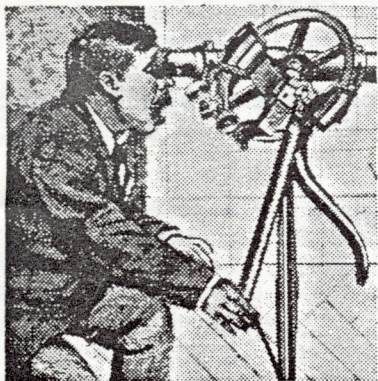
There will be some important information conveyed at the next meeting concerning the PAC Observatory. It seems an excellent site has been found somewhere down toward Firth. There will no doubt be some major decisions made. Please do your best to be on hand so that your opinion can be heard.

FOR SALE...

George Allen from the OAS has some items for sale (all are new in the box):

1. 20mm Meade Research Grade Erfle 1 1/4 in. \$65.00
2. 10 in. f4.8 mirror, perfect new Meade, 6:1 thick \$350.00
3. 7mm Meade Research Grade Ortho in box new \$50.00
4. 9mm Kellner eyepiece, threaded, new in box \$25.00
5. 1ix80 Meade Binoc. \$225.00
6. 2x Meade Barlow \$30.00

THE PRAIRIE ASTRONOMER
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HICKMAN NE 68372
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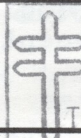
ANNUAL STAR PARTY...

The Annual PAC Star Party will be at Wagontrain Lake again this year. The date is set for August 9th with a potluck dinner starting at 6pm. The PAC will provide the beverages again this year. Make sure you note the date on your calender.

NEW MEMBER PACKETS:

Just to let you know, I will be working on the New Member Packets and have a report in the next newsletter. Dave has sent me some great suggestions and I'll be combing back issues of Sky & Tel and Astronomy for more ideas. I will again be unable to attend the PAC meeting this month because of class (hopefully the last time this summer).

John Lortz



USA
22
FIGHT TB
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FIRST CLASS

Calico Scallop

NEXT MEETING
JUNE 24TH 7:30PM

PAC JULY CALENDER

1. 1847: Amateur astronomer M. Hencke discovers Hebe, his second asteroid and the sixth known at the time.
2. 1644: William Gascoigne, introducer of telescopic sights, is killed at age 24 during Battle of Marston Moor.
3. 1841: John Couch Adams decides to determine the position of an unknown planet by the irregularities it causes in the motion of Uranus.
4. 1057: The Crab Nebula supernova is recorded by Chinese and Japanese astronomers.
1819: William Herschel makes his last telescopic observation, the comet of 1819.
5. PAC STAR PARTY AT EARL MOSERS
1687: Isaac Newton's PRINCIPIA is published by the Royal Society in England.
6. 1476: Regiomontanus (Johannes Muller of Konigsberg), compiler of ephemerides and tables, dies.
7. NEW MOON
1668: Isaac Newton receives his M.A. from Trinity College, Cambridge.
- 8.
9. 1595: Johannes Kepler discovers the inscribed perfect geometric solid "construction of the universe."
10. 1847: Urbain J.J. Leverrier and John Couch Adams, codiscoverers of Neptune, meet for the first time at the home of John Herschel.
1910: Johann Galle, discoverer of Neptune with the telescope, dies.
1962: Telestar, the first privately funded satellite (by American Telephone and Telegraph), is launched.
11. 1909: Simon Newcomb, celestial mechanics authority, dies.
1979: US Skylab enters atmosphere over Australia and disintegrates.
- 12.
13. 1762: James Bradley, third Astronomer Royal and discoverer of the aberration of light, dies.
14. 1965: US Mariner IV, the first Mars probe, passes at a distance of 6,100 miles and takes 22 close-up photographs of the Martian surface.
15. 1662: Charles II grants a charter to establish the Royal Society in London.
1944: Greenwich Observatory is damaged by World War II flying bomb. 1975: US astronauts and Soviet cosmonauts meet in space to share meals and conduct news conference.
16. 1746: Giuseppe Piazzi, discoverer of Ceres asteroid, is born. 1969: US Apollo 11, first manned expedition to land on the moon, is launched.
17. 1850: Harvard Observatory uses a 15-inch refractor to take first photograph of a star (Vega).
18. 1921: John Glenn, first astronaut to orbit the earth, is born.
19. 1846: Charles Edward Pickering, pioneer American spectroscopist, is born.
20. 1969: US Apollo 11 relays the news that "the Eagle has landed," as first manned expedition lands on the moon.
1976: US Viking 1 lands on Mars at Chryse Planitia, first Martian landing.
21. FULL MOON
1961: Virgil Grissom makes second US suborbital space flight.
1969: US astronauts Neil Armstrong and Edwin Aldrin take first human walk on moon.
22. 1826: Giuseppe Piazzi, discoverer of first asteroid, dies.
23. 1972: US Landsat 1, satellite to photograph earth's surface resources, is launched.
24. 1673: Edmund Halley enters Queen's College, Oxford, as an undergraduate. 25.
26. 1963: US Syncom 2, first synchronous communications satellite, is launched.
1971: US Apollo 15 is launched as first manned lunar expedition to include a rover land vehicle.
27. 1501: Nicholaus Copernicus is formally installed as canon of Frauenberg Cathedral (Frombork).
1801: George Biddle Airy, seventh Astronomer Royal, is born.
28. 1851: A total solar eclipse is captured on a daguerreotype photograph at Konigsberg, East Prussia.
1964: US Ranger 7 is launched for lunar impact between Mare Nubium and Mare Cognitum.
29. PAC MEETING 7:30PM HYDE OBSERVATORY
1958: President Dwight D. Eisenhower signs into law the National Aeronautics and Space Act of 1958.
30. 1971: US Apollo 15 lands on Mare Imbrium.
31. 1964: US Ranger 7 takes 4,316 pictures before crashing on moon.

GLOBULAR CLUSTER UPDATE

BY RICK JOHNSON

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1 ***** GLOBULAR CLUSTER COMPLEX R VERSION *****
2 '
5 T1=VAL(LEFT$(TIME$,2)):T2=VAL(MID$(TIME$,4,2)):T3=VAL(RIGHT$(TIME$,2))
7 TM=T1*3600+T2*60+T3
10 RANDOMIZE TM/1.318364-32768!:CLS:SCREEN 2
14 R0=20:R2=R0*R0:R3=R2*R0
16 PI=3.14159265# : TWOPI=PI*2
18 C0=PI*PI*R3/4
20 R1=R0/SQR(2)
22 XM=639:YM=199:RATIO=2 ' ADJUST RATIO TO GIVE A ROUND GLOBULAR
24 X2=XM/2:Y2=YM/2:S=2.5 ' S CONTROLS MAGNIFICATION, LARGER S=HIGHER POWER
26 INPUT"HOW MANY STARS";T
28 CLS
30 FOR I=1 TO T
32 C=C0*RND:R=R1
38 FOR K=1 TO 5
40 GOSUB 100
42 R=R+(C-C1)/D
44 NEXT K
48 ANGLE=RND*TWOPI:Y=SIN(ANGLE):X=COS(ANGLE)
55 S1=.841471-SIN(RND)
56 'IF S1>1 THEN 48 NOT NEEDED AS S1 CAN NEVER EXCEED 1
60 R=R*S1:X=X*R*RATIO:Y=Y*R
62 GOSUB 200:IF NOPLOT THEN 32
64 NEXT I
66 END
100 A=R/R0:C1=ATN(A)*.5*R3:A=1+A*A:C1=C1+R*.5*R2/A:C1=PI*(C1-R*R2/(A*A)):D=4*PI*
R*R/(A*A*A):RETURN
200 NOPLOT=1:X=X*S+X2:Y=Y*S+Y2:IF X<0 OR Y<0 THEN 225
210 IF X>=XM OR Y>=YM THEN 225
216 IF POINT(X,Y) THEN 225
220 PSET(X,Y):NOPLOT=0
225 RETURN
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