SOME STAR TRIVIA...

Well, we're heading into summer again, and as Halley's Comet slowly fades from view it's time to turn our attention back to the stars. And speaking of stars, how well do you know your constellations and stars? Oh, I know some of you know the sky like the back of your hands, but what about some of these facts...

The largest constellation is Hydra, with an area of 1303 square degrees. (Formerly it was exceeded by Argo Navis, but Argo has now been unceremoniously chopped up into a keel, sails and a poop.)

The smallest constellation is Crux Australis, with an area of 68 square degrees.

The constellation with the greatest number of stars above the fourth magnitude is Orion (5 stars).

The constellation with the greatest number of stars above the fifth magnitude is Centaurus (49 stars).

The only constellation with no star as bright as the fifth magnitude is Mensa. Next in order of 'dimness' come Caelum, Horologium and Sextans, each with only 2 stars above the 5th mag.

For stars above the fifth magnitude, the greatest 'star density' is Crux Australis, which averages out at 19.12 stars per 100 square degrees. Its nearest rival, Lupus, has a figure of only 9.58.

The least star density, excluding Mensa, is for Sextans (0.63 star per 100 square degrees).

The brightest star is Sirius magnitude -1.46.

The brightest star in the northern hemisphere of the sky is Arcturus, magnitude -0.04.

The only naked eye star which is said to have a greenish tint is beta Librae, though most observers will certainly classify it as white!

The reddest naked eye star is probably Mu Cephei, called by Herschel 'The Garnet Star', though optical aid is needed to bring out its color well. the reddest first magnitude stars are Antares, Betalgeux, and Aldebaran. Among the reddest telescopic stars are R Leporis and U Cephei.

Most powerful stars all of absolute magnitude -7.5 or brighter; Canopus, s Carinae, epsilon Aurigae, iota Scorpii, b Velorum, Rho Cassiopeiae, beta Doradus, Deneb, nu Cephei and 3 Puppis.

Least powerful stars are epsilon Indi, epsilon Eridani, omicron Eridani, and sigma Draconis.

And would you believe I calculated all of the above myself? (You're right...it was taken from The Guiness Book Of Astronomy Facts and Feats by Patrick Moore, 2nd edtion)

PRESIDENT'S MESSAGE

Saturday April 12th from around 11pm until 2:30am down at the Princeton Rest Area, somewhere between one and two thousand people came to catch a glimpse of Halley's Comet.

We had approximately six telescopes set up down at the rest area ranging in size from 3 inches to 12 inches. I want to thank everyone who came down to help show the enormous crowd of people Halley's Comet.

The comet itself was extremely *unimpressive*. There was no visible tail and the comet looked about like it did in October 1985. It was fairly bright and easy to pick out in binoculars.

Despite a poor show put on by the comet, we made a fairly good sale with Halley Comet Certificates. I had placed all of the certificates on a lawn chair, plus one certificate mounted on cardboard stuck to the back of the chair with a flashlight shining on it. I then walked around (carrying the lawn chair) to all of the telescopes shouting "Halley Comet Certificates certified by the Prairie Astronomy Club that *you* saw Halley's comet!!! Only $1.00!".

The crowd standing around the telescope would laugh, and some of the people would say 'now that's the American Way!'.
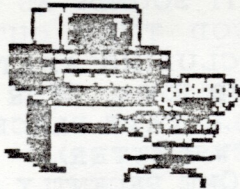
Plus, every time I walked by Russ Genzmers scope he would say 'Here comes that hotdog seller again...'.

But, despite this constant abuse by the crowd and club members, the club made $134.00! The whole evening was a lot of fun, and I'm sure everyone there would agree to that! I'll see you at the next meeting...

Andy Corkill

FROM THE EDITOR

Norma Coufal (our club librarian) is asking that club members make suggestions on what books to purchase for the club library. Norma recently received The Cambridge Astronomy Book from the astronomy book club and plans to graciously purchase another book in the very near future. If you have any suggestions as to what would be a good addition to the PAC library, please contact Norma at the next meeting.

PAC OBSERVATORY STEERING COMM WHAT'S GOING ON?

The committee has reviewed the questionaire results and has began searching for land properties that most closely approximate the qualities expressed by the PAC membership.

Committee members spent a Sunday afternoon checking six land properties. Four locations were found to be inadequate due to reasons such as too many trees, extreme public accessibility (likely vandalism), nearby houses (lights), low lying flood areas, and a pig farm!

Two locations, though, are interesting. The first and most interesting is what we called twin lakes; (the owner has not been located yet). It is two small lakes surrounded by hilly and flat pastures and spots of trees. The trees are pretty, but not in the way of viewing the sky. The observing site could be high among hills or on a flat meadow.

The property is accessible by an easement road that used to be a county road and has a gate. The road is also sided by fences.

Twin lakes is located three miles south of Firth and one and one half miles east of Hwy. S-34B. The land is not visible from the county road that intersects at the entrance gate.

The second interesting area is another lake with a gravel road that leads along one side and half way down the side of the lake to the dam.

The property is hilly with more trees than the first site and overseen easily from the county road. It is five miles west of Cortland and three miles northeast of Clatonia with no nearby highways. The owner is believed to live in Lincoln.

There is room for other sites to be considered and more should be. Out of fifteen sites there may be just one or two worth negotiating for.

Flyers are being distributed in small towns south, southeast, and southwest of Lincoln to let farmers know of our plans.

In the coming months the committees' goals will be to investigate more places at both day and night, and come up with specific proposals with $$ in mind so that you PAC members can vote on the final site selection.

Do you have any ideas of sites to check? Please let us know if you do!
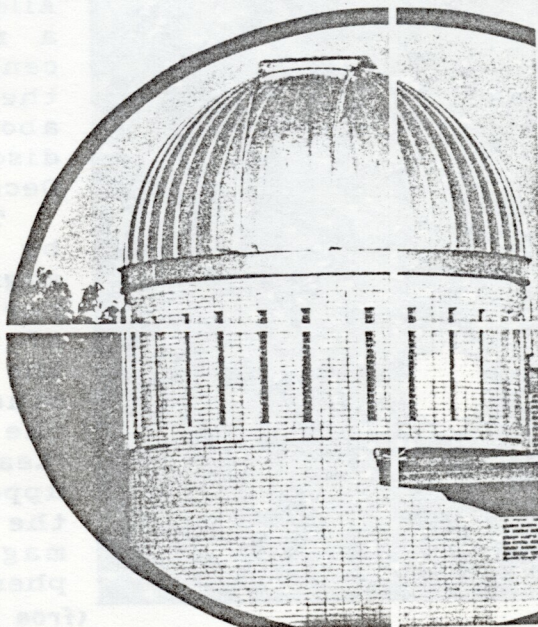
BEHLIN ENCOUNTER

DON'T FORGET THAT THE BEHLEN OBSERVATORY SPRING ENCOUNTER IS COMING UP ON MAY 17 RESERVATIONS FOR THE DINNER PART OF THE ENCOUNTER MUST BE MADE BY MAY 5TH AND CAN BE SENT TO...

PAC
P.O. BOX 80553
LINCOLN, NE 68501

OR YOU CAN BRING YOUR MONEY TO THE NEXT MEETING.

IT SOUNDS AS IF THERE WILL BE A GOOD TURN OUT FOR THE EVENT, INCLUDING AMATEURS FROM KANSAS AND IOWA. (FOR SPECIFICS ON WHAT WILL TAKE PLACE SEE LAST MONTH'S NEWSLETTER).

ONE RECENTLY ADDED EVENT TO THE OBSERVATORY ENCOUNTER IS AN OBSERVING CONTEST OR TWO. BOTH OF THE CONTESTS WILL HAVE PRIZES AWARDED, WITH ONE OF THE PRIZES BEING WORTH ABOUT $20.00!!! IN THE FIRST CONTEST, THOSE PEOPLE SPORTING TELESCOPES WILL BE ASKED TO SKETCH A SPECIFIED CRATER OF THE MOON. THE SECOND CONTEST WILL BE ANNOUNCED THAT NIGHT (*SO NO ONE HAS A CHANCE TO PRACTICE...*).

DEFINING ASTRONOMY

VAN ALLEN BELTS
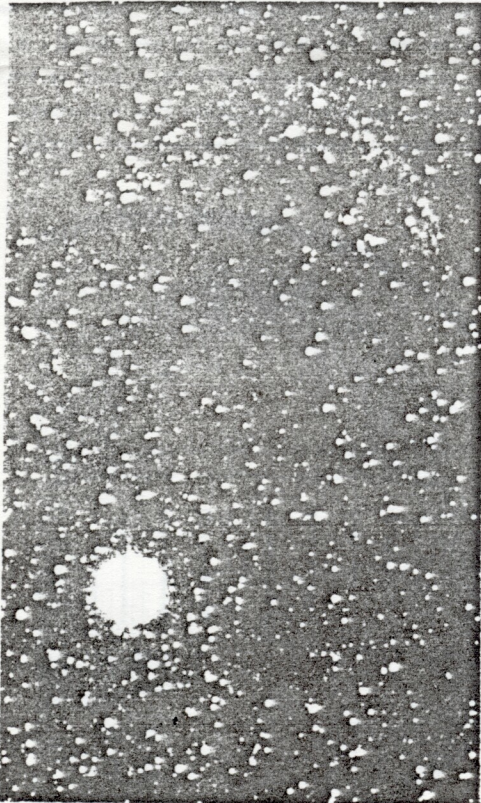
Radiation Belts, i.e. regions of charged atomic particles, which exist round the Earth and whose existence was first demonstrated by the US physicist James Van Allen as a result of an experiment carried on the US satellite Explorer I in 1958. There are two Van Allen Belts, the inner belt, centered at a radius (measured from the Earth's center) of about 1.6 Earth radii, and the outer belt, centered on a radius of about 3.7 Earth radii; the later was discovered by the US probe Pioneer 3 in December 1958.

They are doughnut-shaped zones formed by the lines of force of the Earth's magnetic field, and within which charged particles become trapped. A proportion of the particles, particularly those in the outer belt, originate from the Sun; others come from the interaction with the Earth's atmosphere of Cosmic Rays 'Leakage' of these particles into the upper atmosphere from those regions in the belts close to the north and south magnetic poles give rise to the phenomenon of the Aurora.

(from Dictionary Of Astronomy by Iain Nicols

OBSERVING CHAIRMANS REPORT

by David Knisley

We have two star parties this month. The first is on May 2nd and the second is on May 9th so come on out and bring a friend. Galaxies continue to dominate the spring sky with the constellation of Ursa Major being no exception. Look about a degree south and one degree east of Beta for the edge-on spiral galaxy M108. It should be visible in a three or four inch aperture as a dim cigar shaped patch of light with a faint star near the center. An eight or ten inch will begin to show the irregular dark detail along the edge of the galaxy. While looking for M108, you should also see M97 less than a degree south-east of M108. This is the famous Owl Nebula, a faint circular disk of light with two dark spots in it. This planetary nebula is visible in a four inch but the "eyes" are difficult to make out even in many moderate sized instruments.

Also in Ursa Major is the large face-on spiral galaxy M101. Located about five degrees east and a half south of Mizar, this object is a more difficult target than its listed 9th magnitude would indicate. It is frequently shown in textbooks but its visual appearance is rather disappointing to the beginner. It can be seen at very low power in a two inch richfield, but it shows little if any detail in telescopes under eight inches in aperture. An eight inch shows some mottling in the outer haze and the spiral structure can be glimpsed in a ten inch under good conditions.

Another famous spiral is M51, the Whirlpool galaxy in Canes Venatici. It is located about two degrees south and two and a half degrees west of Eta Ursa Majoris and can be seen in a good pair of 10x50 binoculars. A 2.4 inch refractor will show the galaxy along with its companion NGC-5195 and will also show the distinct nuclear region. The spiral arms of the galaxy can be glimpsed with an eight inch telescope and they are unmistakable in a ten inch.

A final challenge for you big telescope owners is the Coma cluster of galaxies located about two and a half degrees west and a half north of Beta Coma. The two main ellipitical galaxies NGC-4889 and NGC-4874 can probably be seen in a good six inch but most of the rest can only be seen in apertures of eight inches or larger. The view in a ten or twelve inch is fascinating with each main ellipitical surrounded by small cloud of tiny faint galaxies. There are some widely scattered spirals and small ellipiticals in an area of sky that is more than two degrees in diameter. How many galaxies can you see?

AT THE LAST MEETING..

Work times for Astronomy Day 1986 were handed out by President Corkill, and everyone was reminded that the date for the event was April 26th at Gateway Mall. It was also announced that on Saturday May 17th there will be a special night at Behlin Observatory, and that May 5th would be the deadline for reservations.

An amendment to the PAC bylaws was brought to the floor. The proposal was for the creation of an Honorary Membership which would allow the club to nominate and vote on a member of long standing to become an Honorary Member. Honorary Members would pay no dues, have regular voting rights, receive the club newsletter, but not receive Sky & Telescope Magazine. The membership present voted and the amendment passed. Immediately after the amendment passed, Philo Prell was voted into the PAC as an Honorary Member (congratulations Philo!).

The Omaha club is sponsoring a trip to Chicago on June 13,14, and 15th and the PAC is invited. Also, On April 12th and 13th at approx. 12:01am the PAC will try again at the Rest Area down by Hickman (hopefully better luck this time!).

It was announced that Mrs. Ed Woerner had died recently, and that the PAC was one of two recipients of a special memorial fund of about $300.00. Club members expressed their sorrow at the Woerner's loss and a grateful appreciation for the donation.

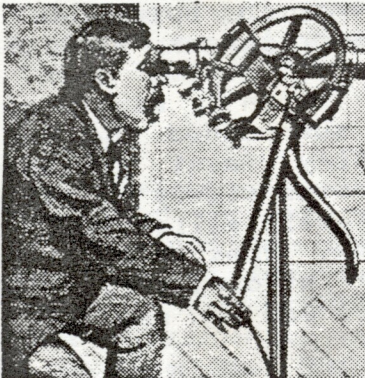Finally, there was a report on the club telescope..."Nothing done this month... but NEXT MONTH there WILL be a report and SOMETHING TO SHOW". Hmmm...

USA
22
Lightning Whelk

FIRST CLASS MAIL.

NEXT MEETING
APRIL 29TH 7:30PM

PAC MAY 1986 CALENDER

1. 1006: A supernova is observed in the constellation Lupus the Wolf.
   1682: Louis XIV and his court inaugurate the Paris Observatory.
   1949: Gerard Kuiper discovers Nereid, a second satellite of Neptune.
2. PAC STAR PARTY AT EARL MOSERS
   1780: William Herschel discovers the first binary star, Xi Ursae Majoris.
   1956: US Naval Research Laboratory detects high-temperature microwave radiation from Venus.
3. 1661: Johannes Hevelius observes the third transit of Mercury ever to be seen.
   1715: Edmund Halley observes total eclipse phenomenon, later to be known as "Baily's Beads."
4. 1783: William Herschel reports seeing a red glow near the lunar crater Aristarchus.
5. 1961: Alan Shepard completes the first US manned suborbital space flight.
6.
7.
8.
9. PAC STAR PARTY AT EARL MOSERS
10. 1910: William Huggins, spectroscopist and discoverer of the stellar nature of the Andromeda Nebula (M 31), dies.
11. 1871: John Herschel, discoverer and cataloguer of southern hemisphere stars, dies at age 79.
12. 1930: The Adler Planetarium in Chicago becomes the first to open in the United States.
    1964: The Soviet Union launches a three-man crew in Voskhod I.
13.
14. 1935: The Griffith Planetarium in Los Angeles becomes the third to open in the United States.
    1973: US Skylab space station is launched.
15. 1618: Johannes Kepler discovers his harmonics law.
    1836: Francis Baily observes "Baily's Beads" during annular solar eclipse.
    1963: Gordon Cooper completes 22 earth orbits in Faith 7 to end US Project Mercury.
16. 1571: Johannes Kepler, by his own calculations, is conceived at 4:37 a.m.
17. PAC BEHLIN OBSERVATORY SPRING ENCOUNTER 5PM
    1630: Italian Jesuit Niccolo Zucchi is first to observe two belts on Jupiter's surface.
    1836: Norman Lockyer, early astroarchaeologist and founder of NATURE magazine, is born.
18. 1910: Passage of Earth through tail of Halley's Comet causes near-panic.
    1969: US Apollo 10 is launched to later descend to within nine miles of lunar surface.
19.
20. 1665: Isaac Newton, at home in Woolsthorpe, starts development of his fluxions, a mathematical technique later called calculus.
21. 1897: The Yerkes Obsrvatory 40-inch refractor is used for first time.
22. 12 BC: A daytime meteor shower, possibly the Zeta Perseid shower that was later discovered by radio astronomers, is observed in China.
23. 1576: Tycho Brahe is given the island of Hveen on which to build the Uraniborg observatory.
    1962: Scott Carpenter orbits the earth three times in US Aurora 7.
24. 1543: Nicolaus Copernicus allegedly sees first printed copy of DEREVOLUTIONIBUS and dies.
25. 1961: President John F. Kennedy sets national goal for United States of putting a man on the moon.
    1973: Three teams of US astronauts begin taking turns living and working in Skylab, first orbiting space laboratory.
26.
27. PAC MEETING 7:30PM AT HYDE OBSERVATORY
28. 585 BC: A solar eclispe, predicted by Thales of Miletus, occurs during Persian-Lydian battle and ends fighting.
29. 1919: Albert Einstein's light-bending prediction is confirmed by Arthur Eddington's measurements during solar eclipse.
30. 1686: Christiaan Huygens uses 122-foot long refractor to view and draw
    the Straight Wall feature of the lunar surface.
    1971: US Mariner 9, the first satellite to orbit Mars, is launched.
31. Langhorne Clemens, on November 30, 1835, the year of an apparition of Halley' Comet. Since he came into the world with
    the comet, he had jokingly predicted he expected to leave with the same comet.
    The comet came back in 1910. After approaching within 55 million miles of the
    sun on April 20, it began its long journey of departure. Mark Twain went with
    the comet as prophesied. He died on April 21, 1910.

GLOBULAR.BAS

For those with IBM or compatable computers, heres a program written in basic that appeared in the April Sky & Telescope. As output it produces a nice graphic picture of a globular cluster containing any number of stars that you specifiy.

It has been modified especially for the IBM, and is courtesy of Compuserves Space Forum...

(EXAMPLE HAS 500 STARS)

```
1 REM MAKE A GLOBULAR
2 REM
3 REM FROM SKY & TELESCOPE APRIL 1986
4 REM MODIFIED BY DOUGLAS PIPPEL & DARRELL GREEN
5 REM              FOR THE IBM PC
6 REM
12 REM
13 SCREEN 1           ********
14 R0=20: R2=R0*R0: R3=R2*R0
16 P1=3.14159265#
18 C0=P1*P1*R3/4
20 R1=R0/SQR(2)
22 XM=200: YM=200'  ********
24 X2=XM/2: Y2=YM/2: S=5
26 INPUT "HOW MANY STARS ";T
27 REM
28 CLS: REM CLEAR SCREEN
30 FOR I=1 TO T
32 C=C0*RND: R=R1'  *********
34 REM
36 REM NOW FIND R
38 FOR K=1 TO 5
40 GOSUB 100
42 R=R+(C-C1)/D
44 NEXT K
46 REM 3-DIMENSIONAL PLACE
48 X=RND(1)-.5'  ************
50 Y=RND(1)-.5'  ************
52 Z=RND(1)-.5'  ************
54 S1=SQR(X*X+Y*Y+Z*Z)
56 IF S1>1 THEN GOTO 48
58 REM POINT IS NOW IN SPHERE
60 R=R*S1: X=X*R: Y=Y*R: Z=Z*R
62 GOSUB 200
64 NEXT I
66 END
68 REM
100 REM NEWTON-RAPHSON ITERATION
105 A=R/R0
110 C1=ATN(A)*.5*R3
115 A=1+A*A
120 C1=C1+R*.5*R2/A
125 C1=P1*(C1-R*R2/(A*A))
130 D=4*P1*R*R/(A*A*A)
135 RETURN
140 REM
200 REM 2-DIMENSIONAL PLOT
205 X=X*S+X2: Y=Y*S+Y2
210 IF X<0 OR Y<0 THEN 225
215 IF X>XM OR Y>YM THEN 225
220 PSET(X,Y)'  ***********
225 RETURN
```