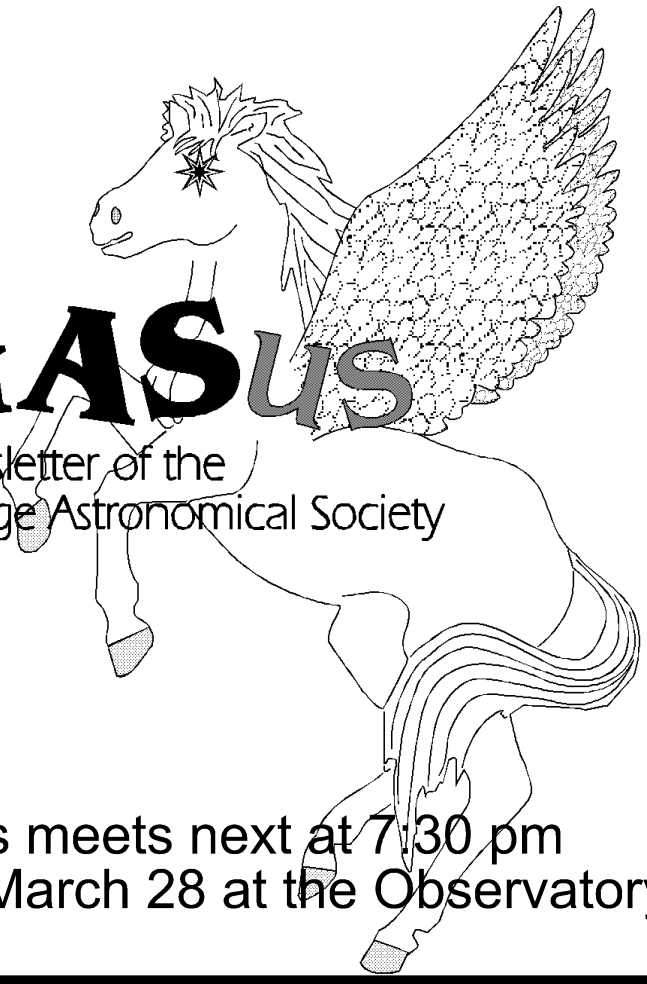
MARCH 2001 ISSUE #110



the PeGASus

Newsletter of the
The Prince George Astronomical Society

The pgas meets next at 7:30 pm
Wednesday March 28 at the Observatory

INSIDE :

the PeGASus is published monthly by the *Prince George Astronomical Society*.

Our pursuits are out of this world.
Our activities are astronomical.
Our aim is the sky.

Contributions to the newsletter are welcome.

Deadline for the next issue is

April 13

Send correspondence to
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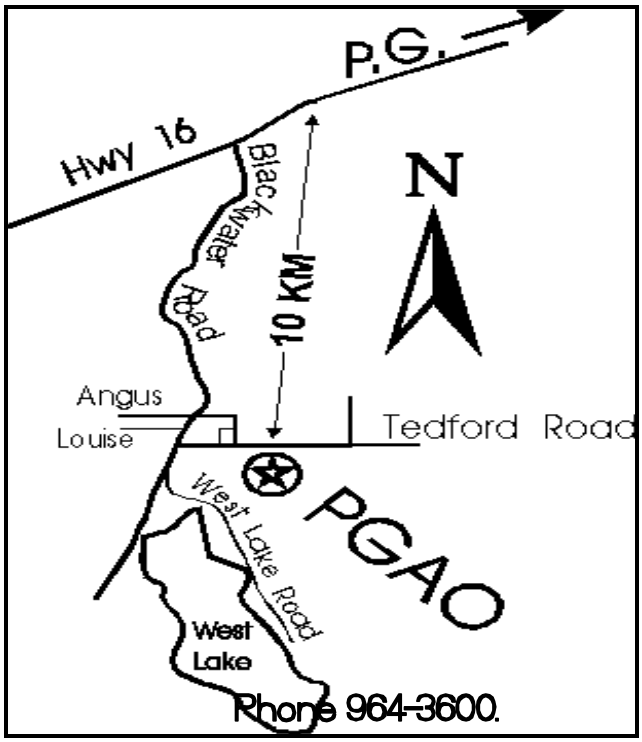

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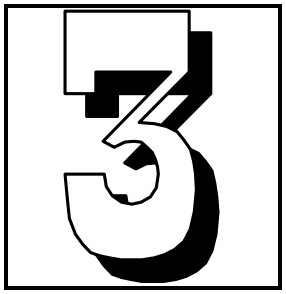


EDITORIAL

The Not-So-New Economy

by David Orenstein

What in 2000 may have been considered unthinkable has now happened: Sometime in the last week, Krispy Kreme achieved a higher market value than Red Hat. A high-fat triviality won out over what lots of people thought would be a huge technology revolution. A sure-fire sign that the New Economy is dead, right?

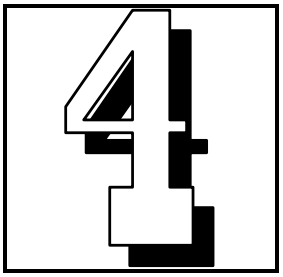
Not so fast. The only thing dead about the New Economy is the irrational exuberance. Yes, in the near-term the difficulty of launching an IPO or getting venture capital will hurt innovation. But the underlying technological engine of the New Economy won't stall. Why am I so sure? Well, it is not really new. It is far more durable and time-tested than one might think.

At the Association for Computing Machinery conference in San Jose Monday, the astrophysicist Neil DeGrasse Tyson offered the perspective of a man who thinks of time in billions of years.

Between 1985 and 2000, computer-equipped astrophysicists produced as much research as they had in the previous 90 years, he said. But in 1970, they had doubled the output of the prior 75 years and in 1955 had doubled the output of the 60 years prior to that. Tyson's explanation is that before computers pushed the latest boom, earlier technologies such as the photocopier pushed earlier ones. In fact, science was on a tear long before the Internet showed up. "They were waxing poetic in 1890" about progress, he said. "We are not unique."

The point is hardly that computing is worthless. To the contrary, doubling a doubling of a doubling is something that only computing could do. But the clear pattern here is that the era we live in now is part of a long steady trend line pointing up. While there is still call for exuberance, there was never a call for irrationality.

writer for Business 2.0.



Coming Events

If you are involved with any astronomical or otherwise scientific activity on behalf of the PGAS, please list the activity here.

The **PGAS.**
meets next March 28 , 7:30 pm at the Observatory

The Night Sky for April 2001

by Bob Nelson, PhD
Hi Folks,

As I write this, I am champing at the bit to reduce some data I took last night of the eclipsing binary DU Leonis, handily placed in the southeast to southern sky all evening. It's just as well it is so well placed, because I used my backyard telescope mounted on a Paramount (the Rolls- Royce of mounts), and used my new ST9e CCD camera equipped with BVRI filters. I'd like to tell you that it is working flawlessly, can put any object I select right on the CCD chip, and track all night if need be.

Well, I'm not there yet and, as usual with telescopes, I have to solve all my problems one at a time (sound familiar?). The objects in the sky to the south drift southward (the axis alignment needs tweaking), the 'mapping' (that determines corrections between the telescope's coordinates and the coordinates in 'The Sky' software) is unreliable (I think the RA encoder is not working properly, and it can't autoguide (likely the same cause). However, the drives work smoothly, I have my roll-off roof building working well, and I really appreciate the network connection between my three computers (thanks again, Paul).

I did, moreover, get some good data on V728 Herculis a couple of nights ago, and things look promising. The intermediate goal is to get things working at home, and then join you lot at the observatory on clear nights.

Anyway, here is what is happening in the sky next month:

PLANET ROUNDUP

MERCURY is a morning object all month, rising on the 15th at almost exactly the same time as the Sun. Although to the west of the Sun, Mercury (due to its orbital inclination) is below the ecliptic. Therefore, at sunrise, the two lie on a line parallel to the horizon, hence the same rise times.

VENUS is a morning object all month. Unfortunately, it's an unfavourable configuration for northern observers, so it's very low in the southeast at sunrise. Another challenge object. Doug?

MARS, in Ophiuchus, until April 19 when it passes into Sagittarius, rises at 1:36 AM on the 15th and is a 12" disk of magnitude -1.0. (It's getting bigger and brighter!)

JUPITER, in Taurus until July, sets on the 15th at 12:30 AM and is still visible!! (Get out there!) This month, it's a 34" disk of magnitude -1.9.

SATURN, in Taurus all year, sets on the 15th at about 11 PM (3 hours after the Sun) and is a 17" disk of magnitude -0.2. It's still visible!!

URANUS, in Capricornus all year, rises on the 15th at 4:26 AM and is a 3.4" disk of magnitude 5.9. Good for astronomers that stay up all night.

NEPTUNE, in Capricornus all year, arises on the 15th at 3:47 AM. Another morning object. As usual, it's a 2.3" disk at about magnitude 8.0.

PLUTO, in Ophiuchus all year, rises on the 15th at 11:27 PM and is a good target fopr those staying up late (but wait a month or two for a better position in the sky). As usual, it's a 0.1" disk at magnitude 13.8. Who will be the first in our group to get an image?

Daylight savings time returns on the night of March 31 / April 1. (Blaaaaat!!)

CONSTELLATIONS to look for in April (at 10 PM, PDT) are Central Hydra, Crater (Crt), Sextans, Leo and Leo Minor.

Central Hydra ("The Sea Serpent", not to be confused with Hydrus, "The Water Snake") is out of the Milky Way and contains two galaxies: NGC 3585 and 3621. The former is a 5.6' ellipse of magnitude 10.8; the latter, a 12' ellipse of magnitude 10.0. Easy pickings for our 24" telescope.

Crater ("The Cup") contains no star clusters or nebulae. (My cup is empty. Ha, ha!). Seriously, though, it does contain (according to Burnham) 11 variable stars, 14 NGC galaxies and one other galaxy. Note that its two uppermost stars (in the 4-sided figure that, to me, look like an outhouse with a slanted roof) point to Spica (Alpha Vir) up and to the left. A faithful companion in April skies.

Sextans ("The Sextant") - but shaped like a scalene triangle - contains numerous galaxies, but only the following are brighter than magnitude 11: NGC 2974, 3115, 3166, and 3169. The brightest is NGC 3115, which is a very bright galaxy (total magnitude 8.9) located some 20 degrees almost due south of Regulus and just south of the scalene triangle. Burnham's tells me that it is likely not a member of the great Virgo cluster of galaxies and is somewhat closer at around 25 million light years. The diameter is around 22,000 light years and its mass is some 24 billion solar masses. No supernovae have yet been observed in this galaxy.

Leo ("The Lion") is familiar to most of us. It's a constellation that actually resembles what it's supposed to be. The head of the beast, otherwise known as 'The Sickle' contains at its base the first magnitude star Regulus (spectral type B8, main sequence). It also contains numerous galaxies (almost to many to mention) M65, 66, 95, 96, 105, plus NGC 3628, 3384, 2903.

Leo Minor ("The Little Lion") contains galaxies NGC 2859, 3245, 3344, and 3486. The brightest is NGC 3344 at magnitude 9.9. Burnham's has no other information, except that it is a fine face-on spiral.

Clear skies,
-Bob

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

NEW BOOKS AT THE PUBLIC LIBRARY.

by Yvonne Whebell

ASTEROIDS: A HISTORY.

Written by Curtis Peebles. Smithsonian Institution 2000.

The author describes the history of the discoveries of asteroids and theories associated with them. Here's a couple of facts from the book, just for fun: shortest rotation period for an ansteroid yet discovered: 10.7 minutes. Longest rotation period: 47 days.

GLORIOUS ECIPSES: THEIR PAST, PRESENT AND FUTURE

.
By Serge Brunier and Jean-Pierre Luminet. Cambridge University Press, 2000.

A book with some gorgeous photographs, and maps showing total and partial eclipses to 2019, as well as text discussing lunar, solar and other eclipses within our solar system.

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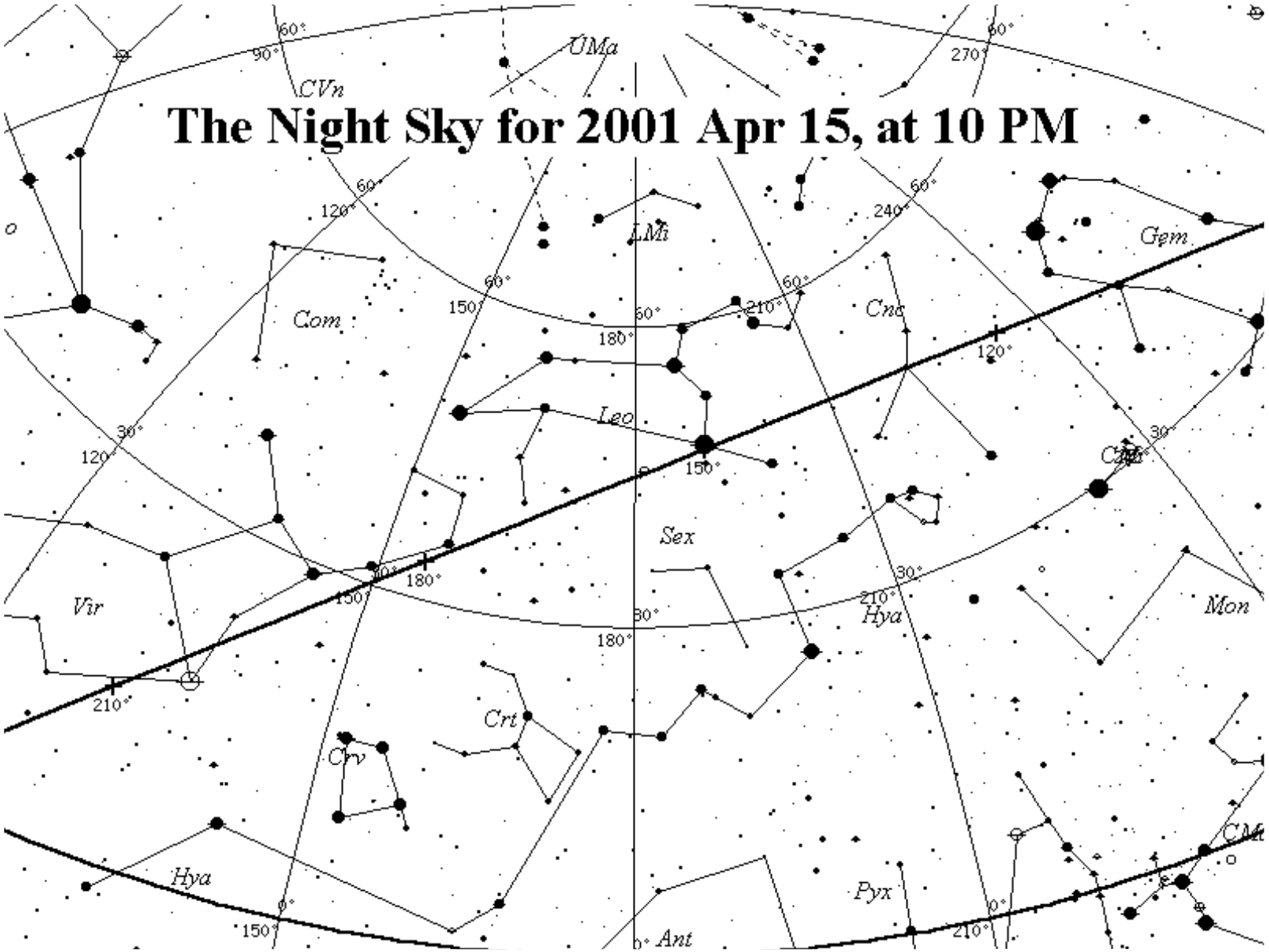


April Sky Map courtesy Dr Bob Nelson

The Chair

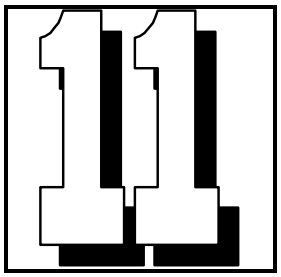
Thanks to Doug Wayland for this item. Doug found this web page and built the chair. His careful workmanship shows in the well crafted result, it also made a fine perch for me to "chair" the last meeting from! -- Gil

This observer's seat, fully adjustable in height and which folds compactly for transport, can be built in two or three evenings at a cost of about $35. This project was designed by Charles P. Carlson, following a concept developed by Dave Trott. Both are members of the Denver Astronomical Society. A special thanks to Bert Harless. At the bottom of the page will be a diagram of the seat supports and cross brace.

Materials List: Diagram on page 15

1 - 8' 2X4 stud; premium grade recommended
(should be straight and not subject to splintering)
3/4" plywood scraps: 1 - 10" X 13"
2 - 7" X 14"
1 - 1" X 1/8" aluminum bar, length at least 28"
1 - 3" door hinge
6 - 1" screws to fit door hinge
1 - 2 3/4" chest handle
4 - 1" screws to fit chest handle
1 - 3/8" X 5 1/2" hex bolt
1 - 3/8" locknut
2 - 3/8" X 2 1/2" lag screws
2 - 3/8" washers
2 - 3/8" X 2" lag screws
8 - 2" X 10 flathead wood screws
5 - flathead nails, at least 1" long
24" length of 4" wide adhesive-backed stair safety tread (3M product)
4" length of 3/4" rubber fuel tubing (from automotive store)
Velcro strips, approx. 12" long (from fabric store)
4 - large thumb tacks or similar fasteners, to fasten Velcro strips
1 - piece scrap cardboard, approx. 2" X 3"

Assembly Instructions



l. Cut the 2X4 into four lengths, as follows: 2 pieces 34" for front and back uprights, 1 piece 24" for lower crosspiece; leftover block to be used for seat assembly will be approximately 3 1/2" in length.

2. Bevel one end of each of the 34" 2x4 uprights to 22 1/2 deg.

3. Center and glue bottom crosspiece flush with the beveled end (long dimension edge) of one of the uprights; secure with the two 3/8" X 2 1/2 lag screws and 3/8" washers.

4. Cut the two seat supports as shown in diagram, and drill the 3/8" holes; this piece should be cut and drilled to precise dimensions for proper fit (this is the only piece where exact dimensions are critical).

5. Cut or trim the 10"X13" plywood piece to form seat; bevel one long edge to match angle of seat supports (approx. 30 degrees); round corners.

6. Center and glue the 3 1/2" 2X4 piece on the bottom of the seat, about 1 1/2" from back (beveled) edge as shown in diagram; fasten from the bottom of the 2X4 block with four of the 2" X 10 FH woodscrews in a square pattern, approx. 2" by 2".

7. Cut and glue a piece of cardboard to one side of the 2X4 block (the purpose of this step is to form a shim which will prevent the seat assembly from binding on the front upright).

8. Assemble seat as shown in photo and diagram, aligning seat supports and fastening them to the 2X4 block with the remaining four 2"X10 wood screws.

9. At this point, it is recommended that the wood parts be finished with several coats of a good quality polyurethane varnish or similar waterproof finish.

10. Lay out the front and back uprights, butting them at the square ends and with the shorter dimension formed by the bevels facing up; install door hinge to join square ends.

11. Close the uprights to a 45 degree angle; install the aluminum crossbrace on one side of the rear upright, using one 3/8" X 2" lag screws; install screw 2" from bottom end of upright, leaving slight slack so that the crossbrace freely rotates; install the other 3/8" X 2" lag screw at the corresponding location on the front upright, leaving enough slack so that the slotted end of the crossbrace snaps down to a snug fit.

12. Install chest hinge at top of front upright.

13. Trim the 4" stair safety tread to 3" wide; install on the front upright, starting about 3" from the top.

14. Slit 3/4" fuel tube; spread and install on rear edge of the seat between the seat supports using the flathead nails to secure;
hammer nails to tight fit against rubber to prevent rubbing against stair safety tread.

15. Slip the seat assembly in place against the front upright as shown in photo and install the 3/8" X 5 1/2" hexbolt through the holes provided; fasten with 3/8" locknut (but be careful not to overtighten the locknut so as to bend the seat supports and cause binding).

16. Overlap about 3" of the Velcro strips and fasten to the back of the rear upright; fit so that these form a strap to secure the seat in the folded position (Note: Some other arrangement with leather or cloth straps could be substituted).

17. Test procedure: Take the chair out under a dark sky, place behind the eyepiece of your telescope, adjust to a comfortable height, and enjoy the view!

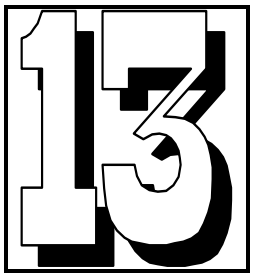
Comet C/1999T1 – McNaught-Hartley

By Brian Battersby

The most commonly used analogy to describe a comet is as a "dirty snowball". They consist mostly of frozen water, methane, ammonia and carbon dioxide along with chunks of rock. Comets are interesting to astronomers because they are thought to be the leftover debris from the formation of the solar system. Somewhere along the line from the early days of the solar system up to the present day the comets have been relocated into two distinct areas. The outermost of the two, the Oort cloud, surrounds the solar system extending a considerable way to the sun's neighbors while the Kuiper belt starts just beyond the orbit of Neptune and extends well beyond the orbit of Pluto. Comets that come from the Oort cloud come from such a large distance that they are basically one-time visitors to the inner solar system, because the comets from the Kuiper belt are so much closer they come and go in a predictable fashion. Halley's comet is the most famous example of a Kuiper belt comet. As a comet approaches the inner solar system heat from the sun begins to warm it. Once it moves within the orbit of Jupiter the gases locked in its icy nucleus begin to vaporize (sublimate). This causes jets of gas to stream out of the tumbling nucleus and bits of material to break away from the core. The microscopic grains that result form a vast cloud around the comet called the coma. The solar wind, charged particles streaming outwards from the sun, then push the coma into a tail, which streams out from the comet for millions of kilometers. The tail always points away from the sun regardless of the flight direction of the comet. When viewing a comet you will notice that there is more than one tail. The white tail is made up of dust while the blue tails are made up of gas. As with most gas and dust in space while the tails look like they are quite thick and substantial they are in reality extremely empty regions compared with the rich environment of Earth. I read somewhere that an astronomer once described a comets tail as the closest thing to nothing as you can get and still be something.

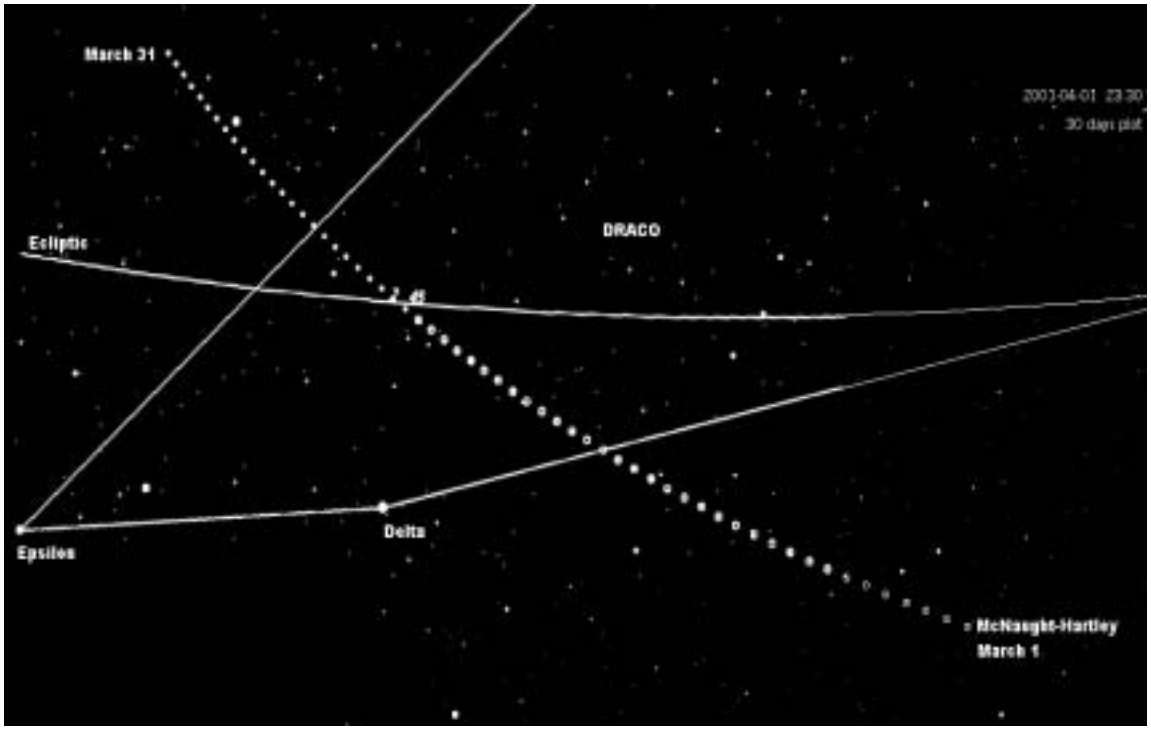
This month (actually since December) there is a comet within the range of our telescope named McNaught-Hartley. Robert McNaught of Siding Spring Observatory discovered it on a plate made on the 1.2m U.K. Schmidt Telescope by Malcolm Hartley on October 7, 1999. The magnitude was estimated as 15. The coma was strongly condensed with a diameter of 8 arc-seconds. They also observed a 1 arc-minute tail. The comet reached perihelion (The point in its orbit where an object is nearest the sun) on December 9, 2000 and had a maximum magnitude of about 7. McNaught-Hartley is currently speeding away from earth in the constellation Draco. At the beginning of the month it is 1.88 au from earth (2.07au from the sun) by the end of the month it is 2.19 au from earth (2.30 au from the sun). Below is a list of its magnitude and position on the celestial sphere. You can use the coordinates to generate finder charts from your favourite planetarium software. (To do this it is best to know the field of view of your finder scope and a low power eyepiece. The Fields of View for the 24" scope are: 3" Finder: 3.15 deg, 4" Finder: 1.27 deg, 60mm eyepiece: 0.355 deg) Hopefully during one (or all) of the member's nights this month (April) we will be able to find it. Theoretically this comet should be visible in a 6" telescope. Seeing as how I am now the proud owner of such a scope this theory will be put to the test. Good viewing and good luck!

April 6:	9.5 mag.	RA: 18:45.43	DEC: + 63d 31.6
April 16:	9.8 mag.	RA: 18:54.33	DEC: + 67d 32
April 21:	10.0 mag.	RA: 18:56.35	DEC: + 69d 15.7
April 26:	10.3 mag.	RA: 18:56.5	DEC: + 70d 49.1

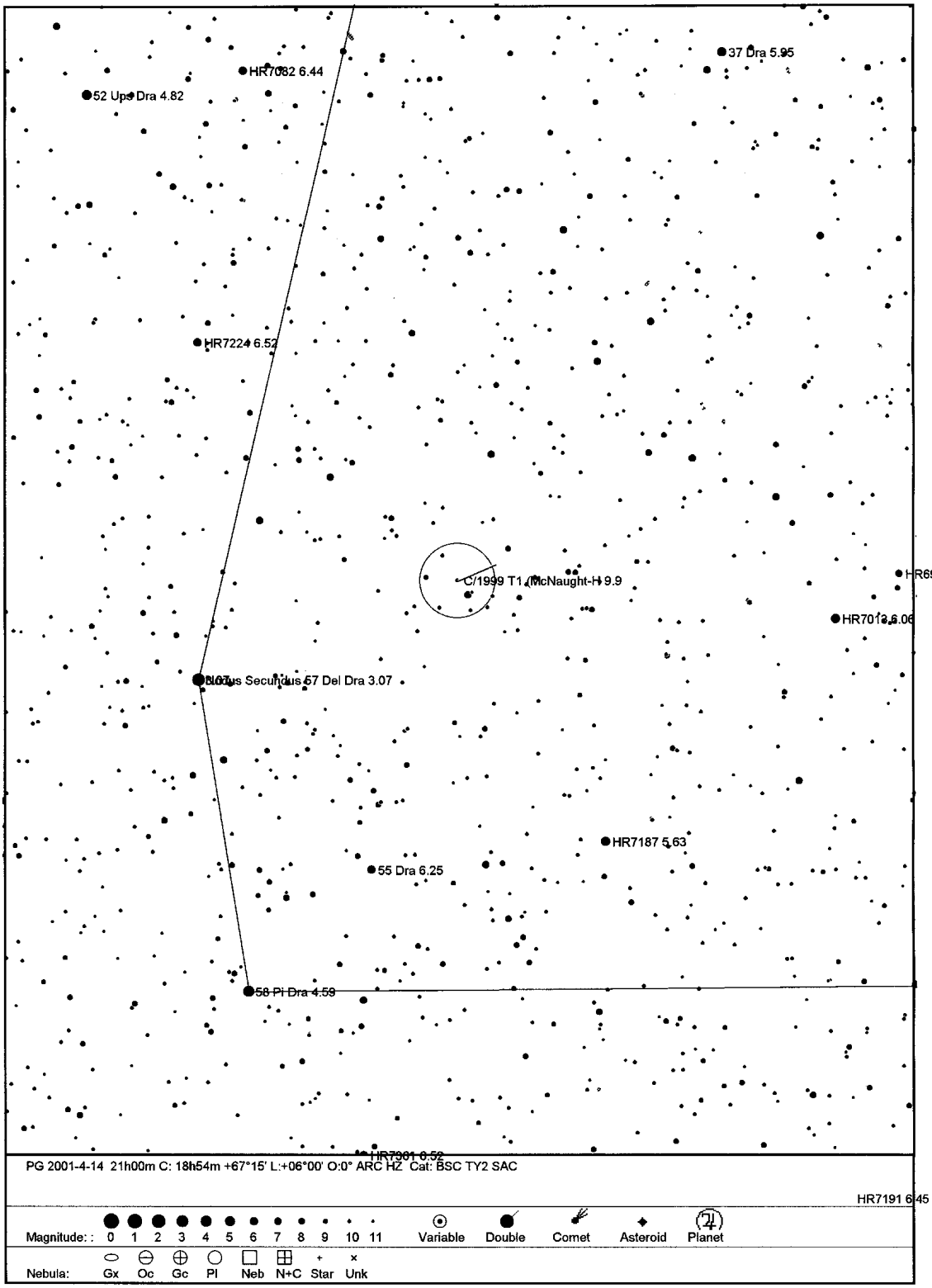


- You can find more info on this comet at:
  http://comets.amsmeteors.org/comets/lcomets/1999t1.html
- For detailed Orbital Elements and Ephemeris data go to:
  http://cfa-www.harvard.edu/iau/Ephemerides/Comets/1999T1.html
- This link takes you to an eyepiece power and field of view calculator:
  http://www.starshine.com/frankn/eyepiececalc.asp
  Note – the "Calculated True Field of View" is the number you want to use in your computer software to create

  a pointing circle the same size as what you see in your eyepiece.



Additional map on page 14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58 Pi Dra 4.59
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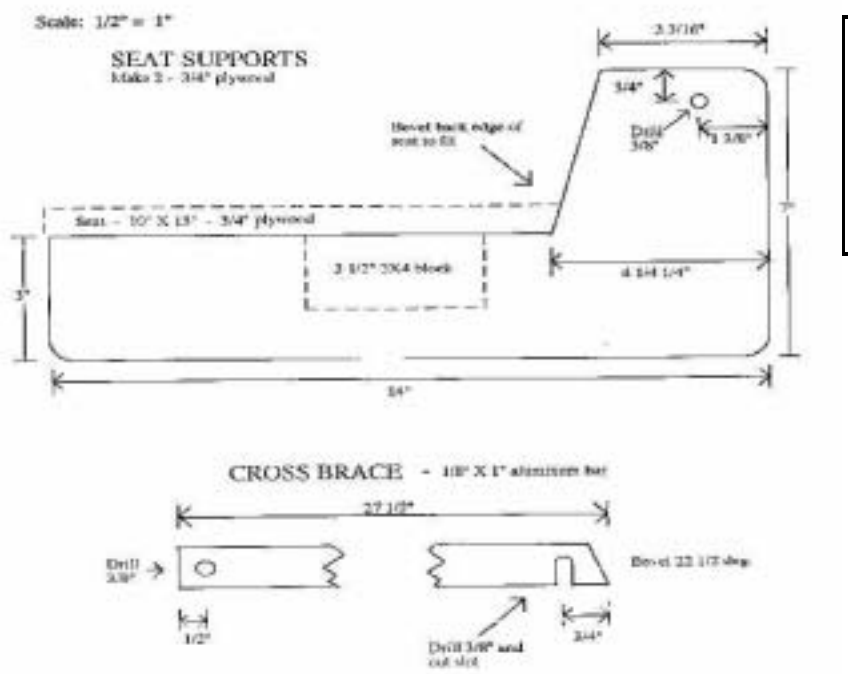

Sorry, diagram did not reproduce well, check website

http://members.tripod.com/denverastro/seat.html

PGAS CONTRIBUTORS

The PGAS would like to thank the following individuals, corporations and government agencies who, since 1991, have donated money, goods or services to the construction and operation of the Prince George Astronomical Observatory.

Ministry of Adv. Ed. Training and Tech.	$25,000
BC Science Council	16,000
BC Lotteries	3,900
Helmar Kotsch (Acme Mas.)	1,932
Northwood Pulp and Timber	1,665
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Canfor Polar Division	744
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Canfor Clear Lake	500

The greatest contributors to the construction and operation of the observatory are from PGAS members who have generously contributed their time to this project. The value of their contribution surpasses all external contributions.

The PGAS is a non-profit organization dedicated to the advancement of astronomy and science in general in Prince George and the neighboring northern communities. Donations of money or materials to the society are greatly appreciated and tax deductible.