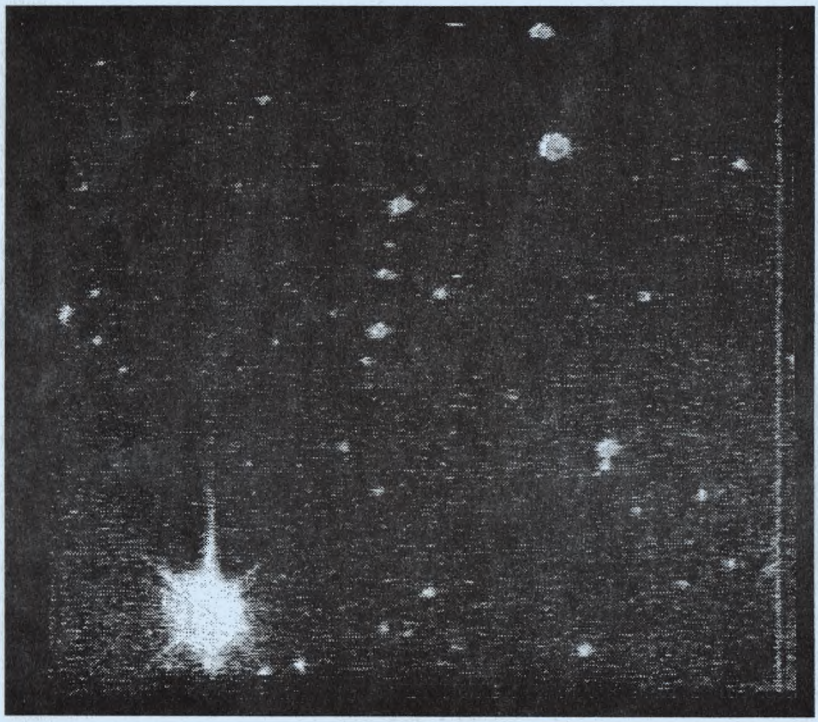
NOVA NOTES



Halifax Centre

July–Aug 1990
Volume 21
Number 4

1990 Halifax Centre Executive

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Notice of Meetings

Date: Weekend of **July 28th**
Place: Broad Cove Campground, Cape Breton Highlands National Park.
Topic: The Cape Breton Astronomical Society is hosting a public star party. The Broad Cove Campground is equipped with a wide range of facilites including an ampitheatre, beach, etc. The have a dark sky observing site up on a glacial plateau which is incredibly dark and clear as it is above any local summer fog. For more info and to reserve a campsite call John Fraser at 563-7555.

Date: Saturday, August **11th: P.M.**
Place: Oakfield Provincial Park (off highway #2 between Wellington and Enfield). There are two provincial parks along this stretch of highway, Laurie Park is south of Oakfield Park.
Topic: **R.A.S.C. Family Barbecue and Perseid Party!** Come on out and bring your own BBQ, food, liquid refreshments and games! Starting at **9:00 P.M.**, the public will be coming out for our second annual Perseid meteor watch. We had over two dozen people show up last year and it wasn't even clear! If you are staying and the rest of your family isn't, you might want to arrange for a ride back to the city with a fellow member. The BBQ will go ahead whether it is clear or not. Be sure to bring warm clothing, and a lawn chair or blanket to relax on.

Date: Friday, August **17th** - Monday, August **20th.**
Place: Fundy National Park, New Brunswick
Topic: **NOVA EAST '90!** See elsewhere in this issue for more details.

Halifax Planetarium Public Shows

At the time of publication, the schedule for summer shows at the planetarium was unavailable. Please contact the Nova Scotia Museum for times.

The Planetarium is in the Dunn Building, Dalhousie University.

Note: The above list is tentative and subject to change.

About the cover:

The cover shows the first image obtained from the Hubble Space Telescope! The exposure time was thirty seconds and was taken to test the coarse guidance focussing. The expected resolution was 1.5 arc-seconds and the actual resolution was 0.7 arc-seconds. The faintest identifiable star is 14th magnitude. Many thanks to **Greg Roberts**, a mechanical student at T.U.N.S. who downloaded it from a NASA satellite.

Editor's Report
Patrick Kelly

I received a note from **Len Larkin** the other day. He has two comments on the last issue of NOVA NOTES.

> *I am writing concerning David's latest book review - 3D star maps. I agree wholeheartedly with David - this is a great little book! There is another interesting thing aspect of this book besides the 3D maps. The celestial sphere is divided into North and South sections and most stars and most stars to the third magnitude are displayed in colours according to their spectral types. The colours in these computer-generated maps are very clear and I find them a great help when checking out stellar colours on photos that I have taken. It also can be used quite effectively with the "Brightest Stars" section of the Observer's Handbook.*

On another front, he has a comment on the "decade/century" debate which started as a result of a letter to GAZER.

> *I did look up the definitions in dictionaries and was surprised to find such ambiguities in such a simple concept. I know many people who get confused when reference is made to the 1800's as the 19th century. ... Perhaps it is time to add another centurial word to the language - one to describe Christian Era centuries and the other to cover 100 year periods anytime.*

The first issue of the Discovery Centre's newsletter, *Discovery*, contains an astronomy column by **Dan Falk**. He also has a column called "Do You Share a Birthday With..." which looks at the birthdays of famous scientists. The first issue talks about Leonardo Da Vinci (April 15th for those of you who are curious).

The June issue of *Sky & Telescope* featured a pair of pictures that allowed one to get a "stereo" view of the orbit of Comet Austin relative to that of the Earth. Those of you who were not able to make it to the April meeting (Member's Night) may be interested to know that our own **David Chapman** had beaten them to the punch! He passed out "stereographs" of Comet Austin's orbit as well as that of the inner planets and showed how to use them. His were produced by using a feature of the *Voyager* computer program (for the Macintosh!) that allows you to view the solar system from any point within it. He ran the planets (and comet) forward and backward in time with the tracking option on. This produced complete circles for the planetary orbits as well as the elliptical path of the comet. He then set the time to the point of closest approach of the comet and printed the view. The next step was to

move to a slightly different position and repeat the previous steps. Lastly, the two prints had to be mounted side by side to produce a pair of images. Having been able to get the 3D illusion to work, both Doug and I were most surprised to note how the orbits seemed to float in front of the background stars. For those who could not make that meeting, I've reprinted David's stereograph in this issue.

I have decided to try a new feature in **NOVA NOTES**, but it will require some input from members to help make it a success. If you read *Deep Sky* , you may have noticed a feature where one of their contributors writes up some of the neat stuff that is in the "real" astronomical periodicals, such as the *Astrophysical Journal* and the *Astronomical Journal.* However, I can say from experience, that these articles tend to be very dry and full of equations that make triple integrals look like Jethro Bodine's ciphering! However, there are quite a few "non-astronomical" periodicals which often have articles related to astronomy. Some examples include,*National Geographic, Discover,* and *Scientific American.* What I plan to do is to give a quick description of astronomy related articles from these sources. I subscribe to the first two periodicals mentioned, so I'll keep track of those, but I would appreciate hearing from others who might subscribe to other magazines or pick up the occasional issue of a magazine because of an astronomical item. I've decided to call the column *Periodical Picks* , unless someone else can venture something better!

You may have read in the *National Newsletter/Bulletin* that life members of the Society could now get a life member's certificate (suitable for framing). This was done as a Centennial project by the Halifax Centre and came about because of a suggestion made last year by **Alex Norman**. All life members of the Halifax Centre will receive one. Many were presented at the banquet in May and the rest of our life members should receive theirs in the mail shortly.

In an effort to stimulate interest in astronomy in the smaller urban areas of the Maritimes, the executive has decided to adopt a new policy of rebates to qualifying astronomy clubs. Members of these affiliated clubs who are also R.A.S.C. members will get a portion of their membership fees returned to their local club to help them in providing refreshments, etc. In return, we can save money by mailing newsletters, handbooks, etc. to one central location. This policy will start in the fall and will be based on the number of eligible members who have renewed by January 1st. In the interim, we have approved a grant of $75 to help the Nova Central Astronomy Club in Truro.

Also along the financial lines, the executive has decided to establish a scholarship fund for high school students. The award

is to be called *The R.A.S.C. Halifax Centre Science Fair Award for Astronomy* and will be awarded to the high school student with the best astronomy or astronomy related project in the annual provincial science fair. The prize will consist of an amount of money to be determined from time to time, but will start at $100. We would like to make this another Centennial Project for the centre and are looking for donations to build up the principal amount to be used for this award. The Centre will match donations from members on a one to one basis up to $1000. Donations should be made payable to the "Royal Astronomical Society of Canada" and sent to National Office. Be sure to state that the donation is for the Centennial Fund and to specify that the money is to be directed to the Halifax Centre. All members who make donations will get credit in *NOVA NOTES* and will receive income tax receipts.

Members are reminded that the centre has several telescopes which are available to members who would like to borrow them. Contact **Doug Pitcairn** for details.

Earlier this year, **David Griffith** who is a school teacher at Port Mouton Consolidated School near Liverpool had applied for a grant from the Program Development Assistance Fund. This fund is administered by the Nova Scotia Teacher's Union. We received a letter from him on May 1st to let us know that his request was approved. He will receive $2000 which will be used to purchase a portable planetarium. Unlike the usual inflatable kinds, the "Einstein" planetarium uses a cloth dome which is hung from a single hook in the ceiling.

This year's annual banquet was a great success with forty-five people turning out. (That beats the old We had an excellent talk by **Brian Segal**, who must also hold the record for the most astronomical puns delivered in less than an hour! There were a few new twists as well that added to everyone's enjoyment. **Ralph Fraser** thought that we should have a group picture and was able to get one arranged after the talk was over. We are still debating whether he used a 15 or 30 second exposure!

Our esteemed president, **Mary Lou Whitehorne**, then presented life membership certificates to those life members who were present, In addition, several "non-executive" members were honored with awards:

Walter Zukauskas - Ho-Hum Astronomer of the Year
Phyllis Kennedy - Best Cookie Maker
David Turner - Most Abstentious Executive Member
Harvey Slaunwhite - Most Decorated Telescope
Mark Starzomski - Best Trivia Question
Lloyd Whitehorne - Most Tolerant Spouse
John Connelly - Comet Hunter of the Year at Risk of Divorce
Bill Thurlow - Most Whacked Out Messier Hunter Ω

Astronomy Literature in Bangor

Len Larkin

When I began astronomy, one of the biggest problems was finding suitable star charts and reference material. It seemed that the available material was either too detailed or just didn't have what I was looking for. And who wants to pay for charts that may be totally unsuitable? After using several star atlases, I finally ordered the Deluxe Sky Atlas 2000.0 and still consider it my favorite.

However, sometimes I need some very specialized information and so I come to the heart of this article - resources for the armchair astronomer. For anyone who travels to Bangor, Maine there awaits a treasure of astronomy literature in the library at the University of Maine in Orono (a few miles up Route 95 from Bangor). As regards astronomy reference material, it far exceeds anything in Saint John or Fredericton. Let me show you some of the interesting items that I have found there.

STAR ATLASES (see Note 1):

- Norton's Star Atlas (the old version)
- Atlas Australis (1950.0)
- Atlas Borealis (1950.0)
- Atlas Eclipticalis (1950.0)
- Sky Atlas 2000.0 (Deluxe colored edition)
- Atlas Stellarum (1950.0)

As you can see, many of the best star atlases are available (with the exception of Uranometria 2000.0). I have actually used Norton's, Sky Atlas 2000.0 and Stellarum at this library.

The Australis, Borealis and Eclipticalis atlases (all by Antonin Becvar) are listed in the files but I haven't actually seen them at the library. These three atlases (apparently out of print nowadays) cover the complete sky and have the novelty of stars being color-coded according to their spectral type.

Hans Vehrenberg's Atlas Stellarum is an awesome photographic atlas and because of its size, would make an excellent substitute for a weightlifting program! This atlas takes some getting used to because of its large image scale and the total lack of designations on the individual charts (other than R.A. and Dec. coordinates). Luckily, there is lots of information in a supplementary booklet to help you find your way. Also, there are transparent grid overlays for locating objects. The coordinate system is for equinox 1950.0 but this shouldn't be a bother if you are just looking for deep-sky objects. You do have to know the coordinates of the object that you are looking for, and a regular

atlas is a great help in hunting down objects. Star clusters show up very well and many other deep sky objects can also be found.

STAR CATALOGUES:

- Catalog of Stars Within 2 Deg. of the North Pole (1905)
- General Catalog of 33,342 Stars (1937). Dudley Observatory, Albany, N.Y. 5 vol. Epoch 1950.
- The Bright Star Catalog (Hoffleit and Jaschek, 1982). 472 pages. 9100 stars, limiting magnitude 6.5.
- Michigan Catalog of Two-Dimensional Spectral Types for the HD Stars. 3 vol., 97,000 stars. 1975-1982. Declinations -26° to -90° degrees. Cerro Tololo Observatory y.
- Sky Catalog 2000.0, vol 1 & 2.
- General Catalogue of Stellar Radial Velocities, R.E. Wilson, (1953).
- Mount Wilson Catalogue of Photographic Magnitudes in Selected Areas 1 - 139 (1930)
- Ptolemy's Catalogue of Stars; a Revision of the Almagest (1915).
- Ulugh Beg's Catalogue of Stars; rev. from all Persian manuscripts in Great Britain (1917). Includes a vocabulary of Persian and Arabic words.

Out of all the above catalogues, I would only use a couple for general star information. The Bright Star Catalogue and both volumes of Sky Catalog 2000.0 are excellent. The BSC, while only reaching magnitude 6.5, has more information on any particular star and its excellent printing is very easy on the eyes. Both volumes of Sky Atlas 2000.0 (which I own) list all stars as faint as magnitude 8.0, and have separate listings for binary, double and variable stars as well as a good variety of deep-sky objects. If you have an interest in the historical side of astronomy, the books on Ptolemy's and Ulugh Beg's star catalogues would be quite interesting. The information in most of the older catalogues should be taken in perspective, as it may be outdated, but these books can still be interesting as they give us a window into astronomy of that period.

GALAXIES:

- A Catalog of Southern Peculiar Galaxies and Associations (Arp and Madore, 1987). Vol. 1 lists 7000 objects. Vol 2 has selected photos. Declinations of -22° to-90°.
- A Revised Shapely-Ames Catalog of Bright Galaxies (1981). Galaxies brighter than 13.5 mag included.

- Nearby Galaxies Atlas (Brent, Tully, 1988). Different symbols for different types, red-shifts are represented by different colors. No stars.
- The Hubble Atlas of Galaxies (Sandage, 1961)
- Color Atlas of Galaxies (James Wray). This photo atlas contains five to six observatory photos per page in order of ascending NGC #.

A large selection of galaxy photos can be found in these books while the Nearby Galaxies Atlas is a true atlas (resembling my Sky Atlas 2000.0).

DEEP SKY OBJECTS:

- ESO / Uppsala Survey (1982). 18,000 deep-sky objects. -17° to - 90° declination.
- Catalogue of Star Clusters and Associations (Budapest,1970). Flash cards (1543 in a box). Also a supplement (1981).
- Catalog of the Central Stars of True and Possible Planetary Nebulae. (Observatoire de Strasbourg, 1982)
- The System of Open Star Clusters and Our Galaxy, Alter (published Praha, Czechoslovakia, 1963).
- Atlas of Deep-Sky Splendors (Vehrenberg, 1983).
- Revised NGC (Sulentic, Tifft, 1973)
- Burnham's Celestial Handbook. 3 vols.

Doesn't a star cluster catalogue from Budapest containing "1543 flash cards" pique your interest? Unfortunately, I didn't have time to check it out; the only books in the above list that I did peruse were the Vehrenberg atlas and Burnham's. The Atlas of Deep-Sky Splendors is not truly a comprehensive photo atlas as only 1300 square degrees out of a possible 41,253 (per *The Observer's Handbook*) are covered. However, Vehrenberg has managed to capture 300 deep-sky objects (including the complete Messier list) on wide-field photos reaching 17th magnitude. Burnham's, of course, contains a lifetime of observing information (organized alphabetical by constellation).

OTHER:

- Atlas of the Ultraviolet Sky (Henry and Landsman, 1988). The sky in visible and UV light (each set of charts displayed left and right respectively, throughout the atlas). UV charts are a display of 156.5 nm wavelength images. Taken with the Hopkins Ultraviolet Telescope.
- Atlas of Solar Magnetic Fields (1959-1966) - Houcy, Bumbo, Smitt.(size: 275 mm x 750 mm!). Approx. 100 sheets in a heavy cardboard box. Charts are Mercator projection maps of the Solar Photosphere.

- Catalog of Meteorites (Graham, 1988). Over 2500 listings. Many listings detail observations of the meteor and recovery of the meteorite.
- A 1400 MHz Sky Atlas (1986). Declination +82° to -5°. Twelve plastic overlays. A radio telescope atlas.

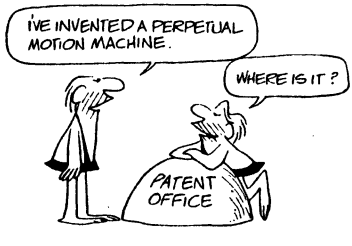
The Orono library contains the majority of astronomy reference material but I did find the large SAO star catalog on a recent visit to the U of M library in Portland, Maine (as listed below).

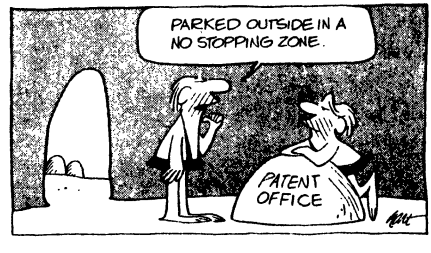
LIBRARY: University of Maine at Portland:

- Star Catalog (Smithsonian Astrophysical Observatory, 1966). 4 vol. 258,997 stars to approx 9th mag. Contains mags, positions, proper motions, spectral types.

Well, those are some of the gems of astronomical literature that I have found. I've searched out rather esoteric reference material but there are also lots of mainstream astronomy books (many of specific interest to amateurs). The card index at the Orono library is computerized on the "user friendly" URSUS system. So, if you find that friends or family enjoy the Bangor shops more than you, on your next trip why not desert them for a few hours of astronomical browsing?

Note 1: If you are considering purchasing a star atlas, I strongly recommend reading an article in the November 1988 issue of *Sky and Telescope* (p. 509) titled "Selecting a Star Atlas". It compares the top atlases available. If your interest is photographic star atlases, you might read an article in the November 1967 issue of *Sky & Telescope* (p. 284) which compares the photographic atlases that had been previously published up to that time. Here can be found some information on apparently the first photographic star atlas, the Carte du Ciel. Never completed, this Paris-directed project begun in the 1880's has left over 2000 very unique prints as a legacy t;o astronomers. It was a most ambitious project, reaching 14th magnitude while attaining an image scale more than double that of the Palomar Observatory Sky Survey! Ω





Moon, Mond, Monde

David Bunbury

Several months ago, while reading an article on the Moon, I was struck by the fact that the German word for moon, *mond*, is very similar to the cooresponding English word. However, the French word that appears to be the cognate, *monde*, means "world" , while *lune* is used for moon. I thought that some strange word shift had occurred to transfer the meaning of *mond* in French from "moon" to "earth".

On consulting Hubert Spekkens, who is an English professor at Saint Francis Xavier, I learned the following explanation. In one brnach of Indo-European, the original word for moon , *menes*, was supplanted by other words derived from the notion of "brightness". In Latin, this word was *luna*, whence comes the FGrench *lune*. This still leaves the problem of where *monde* comes from.

The Greeks origianlly used *chaos* in the sense of the universe as an orderly arrangement. By Hellenistic times, it was used for "world". The Romans started using *mundus* (related tot heir adjective for clean and elegant) as a literary imitation of the Greek word *cosmos*. So, *mundus* also came to be used for "world" and in due course, ended up as the French word, *monde*.

Not too suprisingly, in the original Indo-European language, *menes* meant month as well as moon, and in this meaning, the word persists in Latin and French as *mensis* and *mois* respectively. Lastly, it is worth noting that *menes* itself appears to be derived from the word for "measure", as time in those days was measured by the Moon. Ω

Periodical Picks

Patrick Kelly

Discover - February 1990

- *When Galaxies Collide*, p.51: Computers now allow astronomers to model galactic interactions in great detail. The artilce includes a nice set of twelve "snapshots" from one of these simulations shows how two spirals can merge to form an elliptical galaxy in only 2 billion years.
- *Tuning Up the Shuttle*, p. 58: A photo essay with about a dozen pictures showing what happens to the shuttle between flights.

National Geographic - March 1990

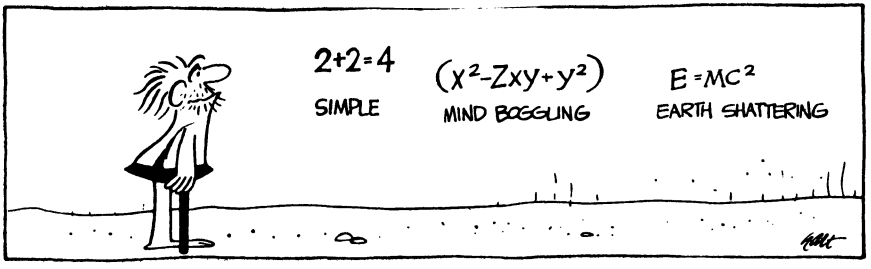
- *America's Ancient Skywatchers*, p. 76: A nice introduction to archaeoastronomy (or astroarchaeology... the correct name is still in dispute!). Covers relics and creation myths of the Inca, Maya, Navaho and Anasazi peoples, including some of the legacies passed down to today.
- *The Enigma of Time*, p.109: A look at time, how we define it, how it affects us and current attempts to explain what it is.

Discover - May 1990

- *Gravity's Revenge*, p. 54: A look at the results from a computerized orrery and how "chaos" in the solar system means that orbits are not stable over long periods.
- *Flipping the Field*, p. 28: Current thoughts on what causes the periodic flips in the Earth's magnetic field.
- *Zero-G Blues*, p. 74 : The ongoing research into how human bodies are affected by long periods of time in space.

Discover - June 1990

- *The Great Annihilator*, p. 68: A report on the search for the explanation of the source of gamma rays that is located at the center of our galaxy. The source radiates the equivalent energy of 10,000 suns, at the wavelength of 511 keV and is due to matter-antimatter annihilation.



Notes From Across the Causeway

John Reppa

1990 has been an active year for the Cape Breton Astronomical Society. We have plenty to report to you folks on the mainland. The winter was mighty cold, however we managed to host the Cape Breton County Winter Festival Star Party on Sunday February 18th. It was -32°C and still over forty people showed up to have a telescopic view of the sky. Objects showcased were Jupiter, M45, M41 and, of course, M42. The evening was highlighted by a fireworks display. Everyone had a good time, even our society chairman, John Fraser, who had his face frostbitten.

As we moved into spring, we lost Raymond Auclair due to a job transfer. His talents and contributions will be missed by all who knew him.

National Astronomy Week was the highlight of the spring season. Displays were set up in two malls all week long. We signed up twenty new members which brings our paid membership up to thirty-four. We have also had lots of radio and newspaper interviews and the public response has been great! We ended the week with another fantastic public star party.

On May 28th, we gave a lecture on telescope optics followed by an observing session for the students of St. Joseph Elementary School. Everyone was pleased and the school presented our society with a donation.

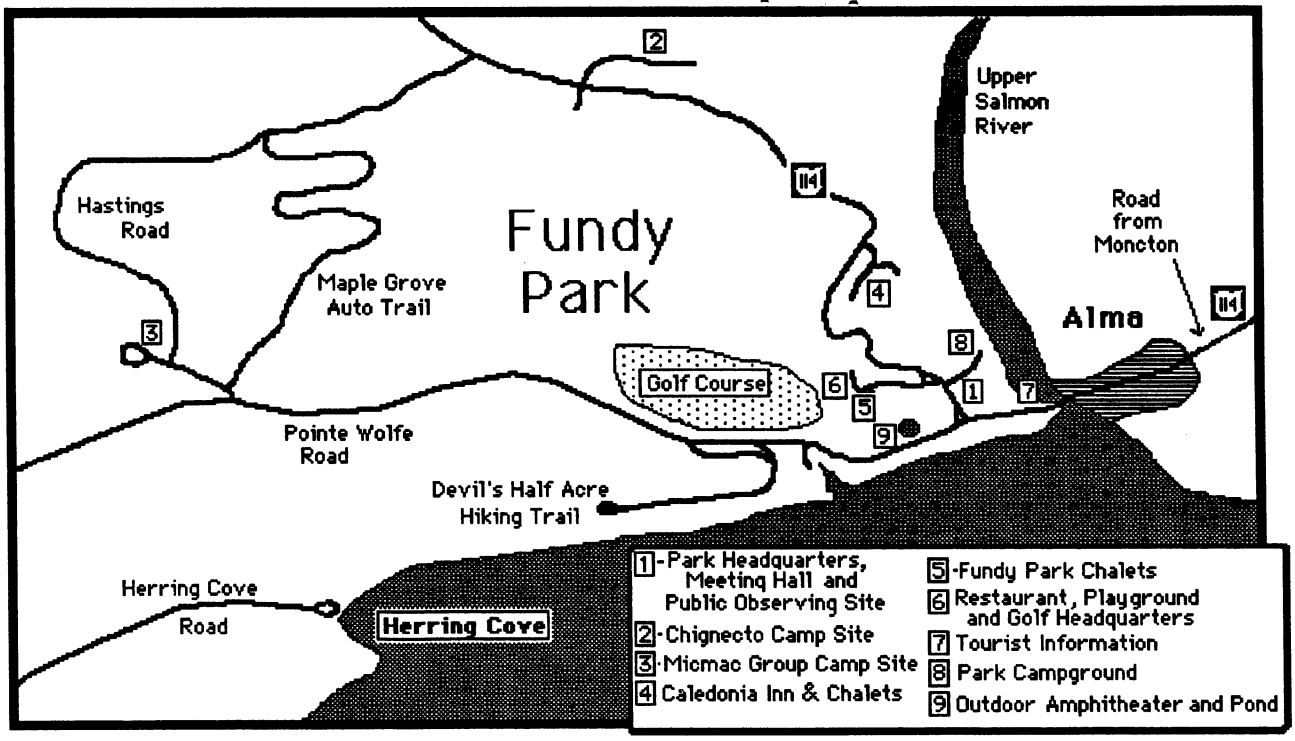
Now, as we move into summer, we hope that some NOVA NOTES readers will come to join us for our first Highland Star Party. This event takes place on the July 28th weekend at the Broad Cove Campgrounds in Cape Breton Highlands National Park. The camping facilities are the best and park naturalists say that the skies are the darkest anywhere!

Interested parties should contact John Fraser by writing to him at the following address:

Sydney Parks and Recreation Department
P.O. Box 730
Sydney, Nova Scotia
Canada
B1P 6H7

or calling him during the daytime at (902) 563-7555. See you there! Ω

There is nothing more deceptive than an obvious fact. -Sherlock Holmes in 'The Boscombe Valley Mystery'


Fundy Park
Upper Salmon River
Road from Moncton
Alma
Hastings Road
Maple Grove Auto Trail
Golf Course
Pointe Wolfe Road
Devil's Half Acre Hiking Trail
Herring Cove Road
Herring Cove
2
114
4
3
8
6
5
1
7
9
1-Park Headquarters, Meeting Hall and Public Observing Site
2-Chignecto Camp Site
3-Micmac Group Camp Site
4 Caledonia Inn & Chalets
5-Fundy Park Chalets
6 Restaurant, Playground and Golf Headquarters
7 Tourist Information
8 Park Campground
9 Outdoor Amphitheater and Pond

NOVA EAST '90
Schedule of Events
Doug Pitcairn

Once again, the Halifax Centre of the R.A.S.C. and the Saint John Astronomy Club will be jointly hosting NOVA EAST. I have included a schedule of events and a map which shows the Park layout and how to get to Fundy. More detailed maps of the park are available at the information centre which is just over the bridge from the village of Alma.

There is no registration fee for this event, but there is the usual Park entrance fee of a few dollars. Those who choose to camp at the group campsite will not have to pay camping fees, as these are waved in lieu of our Public Observing Sessions.

There are two kinds of accommodations available. For those who prefer camping, we have a large site in the Micmac Group Campground. There will be enough room to accommodate all who wish to come. For those who prefer to be a bit more civilized, there are two inns in the park. One is **Fundy Park Chalets** which has 29 housekeeping units. It features a licensed dining room and lounge, coffee shop, shower, B&W TV and heated pool. Rates are about $50 per night (1989 prices) Phone: (506) 887-2808 or (506) 433-2084. The other is **Caledonia Highlands Inn and Chalets** which has 44 units,showers and color TV. Rates are about $55 (1989 prices). Phone: (506) 887-2930. In addition, there are several motels in the small village of Alma, right beside the park.

As this event is listed in both **Sky & Telescope** and **Astronomy** magazines, we are starting to draw people from all over. In addition, the park publicizes the public star shows and talks, so we hope to have a good turnout for all of the events. The later date this year will hopefully assure us good clear skies, as this is the best observing "window" our weather allows. Last year, there were dozens of 8 inch and larger telescopes, as well as various homemade gizmos and scopes. Don't be shy if you have no scope, there is always an eyepiece to look through. I never met an owner of a large scope who didn't like to show off views. Anyone will find lots to do at night and during daylight hours. The Park is one of the oldest in Canada, and is well established with dozens of walking trails and entertainment facilities for all ages, including an excellent golf course, restaurant, lounge, swimming pool and playground right in the park.

Another thing that we are adding this year will be an electrical generator at the Micmac Campground. Thus we will be able to use a slide projector, so if any of you have slides that you would like to show, bring them along!

As with any star party, the more who attend, the better it is. We are having some new NOVA EAST '90 T-shirts made up and will have them for sale again this year. I hope to see you there. Ω

Date	Time	Event	Location
Friday August 17th	All day	Arrival and camp setup	Various locations
	21:00 - 23:00	Public observing (3 or 4 volunteers)	Assembly Hall
Saturday August 18th	Morning	Free time	Anywhere
	12:00 - 14:00	Corn boil and weiner roast	Micmac Campsite
	14:00 - 17:00	Scope setup Group photo session Swap shop & gab session	Micmac Campsite
	17:00 - 19:00	Private suppers	Wherever
	19:30 - 21:00	Public talks* If clear, 4 talks followed by observing If cloudy, 6 talks followed by telescope display	Assembly hall
	21:00 - 23:00	Public observing (3 or 4 volunteers)	Assembly Hall
Sunday August 19th	All day	Free time	Anywhere
	21:00 - ??	Private observing	Micmac campsite
Monday August 20th	All day	Departures and farewells	Various

* The public talks that are already confirmed are listed below. There will be other talks as well, but they are not finalized at this date. Any member who would like to give one of the public talks should contact me as soon as possible.

Larry Bogan - *The Collision Theory of the Moon's Formation*
Patrick Kelly - *The Summer Planets*
Doug Pitcairn - *Life Out There!?*

In addition, we will need several members to volunteer with the public observing sessions.

Fundy Park Maps

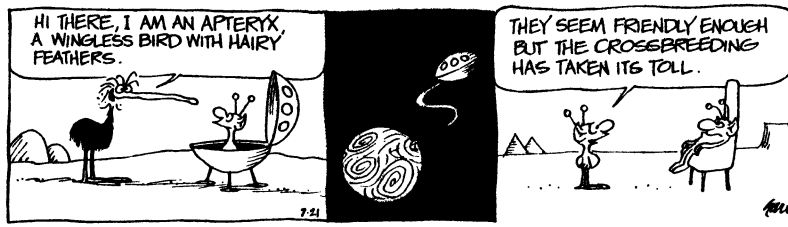
The Bridgewater Bolide

Doug Pitcairn

Last April 27th, the evening shift of the Michelin plant in Bridgewater ended at midnight. As several hundred workers were leaving the factory, many of them were quite startled by brilliant lighting-like flashes of light. Those who looked up were treated to one of nature's spectacles. A large meteor was ripping across the heavens. Some of the comments from eye witnesses were; "blazing fireball", "too bright to look at", "left smoking trails", "made a roaring sound", and "scared the hell out of me!". We can only sigh with envy at those who were fortunate enough to see this obviously impressive bolide. As a result of several articles in the local papers, I have received many reports from other people in this area who witnessed the event.

There was a distinct possibility that the object might have survived its flight and landed near Bridgewater. It had been hoped that there might be enough observations made over a wide enough area to triangulate the path of the object and thus deduce its resting place. However, an important clue to the puzzle came last week, when I received a letter from a Mr. Pico, a teacher at Chester High School, who witnessed the meteor while camping near Milford, Annapolis County. He included a copy of a topographical map showing where they were camping, along with a line marking the path of the bolide. Sure enough, when extended back, the line passes over Bridgewater.

It seems the meteor was still airborne at this point, and heading in the direction of Digby. I am very interested in hearing from anybody in the Digby area who heard any reports or who witnessed this spectacular meteor. If nobody saw this apparition in the Digby area, the meteor likely impacted somewhere north of Kejimkujik Park, in a rather remote area of our province. This obviously greatly reduces the chances of recovering any fragments. Sigh! Extrapolating the course of the meteor places it directly aimed at Bill Thurlow's cottage south of the town of Digby. Hey Bill! Have you been out to check what's left of your cottage lately? Ω



Observing Licenses and Infractions

Dave Clyburn
reprinted from **Stardust** - Edmonton Centre

Lately, at Waskehegan, observing sessions have become more and more chaotic. In order to maintain order and discipline at the observing site, the following measures will be instituted.

Henceforth, no one shall be permitted to observe without a proper license. Licenses are obtainable only from me and Randy Pakanat at the following prices. Don't let Bob Breckenridge sell you a worthless counterfeit:

Moon license	$1000.00
Planet license	$500.00
Galaxy license	$20.00
Planetary nebulæ	$10.00
Orion Nebula	$1000.00
All other diffuse nebulæ	$2.50
M13	$1000.00
All other globulars	$1.50
Open clusters and double stars	free
Comets and meteors	Three for $1.00

As well, novice observers must obtain a learner's permit at a cost of $50.00. Licenses will be revoked and additional penalties assessed for the following observing infractions:

Observing too quickly.

A speed limit of 5 objects per hour must be adhered to in the Waskehegan parking lot. As well, all objects observed must be sketched and sketches must be made available for inspection.
Penalty: Confiscation of eyepieces

Observing without a license.

Penalty: Buying all licenses.

Operating a dangerous telescope.

Includes wiring telescope tube to high voltage generator to create giant "dew zapper" effect.
Penalty: Actually observing with said telescope.

Operating a telescope in an unsafe manner.

Includes setting up the scope immediately next to someone and banging him on head while moving the tube.

Penalty: Being locked in vehicle for remainder of observing session.

Reckless use of headlights, dome lights, etc.

Penalty: Confiscation of headlights, etc.

Stunting.

Includes claiming to observe invisible objects.
Penalty: Thirty days solar observing.

Observing visible detail in invisible objects.

Penalty: **Immediate promotion to position of Centre president.**

Reckless Observing.

Includes: Claiming to see objects not actually being viewed (e.g. exclaiming "The Cocoon Nebula is really bright!" when telescope is pointed at Andromeda Galaxy) and viewing objects with inappropriate eyepieces and filters (e.g. scanning the Pleiades at 900x with an O III filter).
Penalty: Confiscation of observing eye.

Impaired observing.

Includes: Arriving at site with large aperture telescope with intention of observing some object that set months before and searching for deep-sky objects with planetary aperture stop in place.
Penalty: Russ Sampson's introductory astronomy class.

Dangerously transporting club telescope.

Includes attempting to take 17.5" to observing site with a hatchback, snowmobile, motorcycle, go kart or donkey.
Penalty: Asking Bob Drew!

Parasitic observing.

Includes obtaing field for object being looked for through someone else's Telrad to avoid bother of star-hopping.
Penalty: Observing all objects on the "Challenge List" without assistance.

Failing to use averted vision.

Penalty: Thirty days solar observing.

Consistantly arriving at observing site without a telescope.

Note that an offender may also be charged with impersonating an observer.
Penalty: Slowly, imperceptibley becoming more and more like Peter Ceravolo. Ω

Observing with King Kong

(A Diary of the Saint John Astronomical Society's Spring Trip to Fundy National Park)

David Driscoll

Monday March 19th

King Kong (Tom Anderson's 12" f/9 Newtonian (the one that Doug Pitcairn needed the ladder to use)) is put into my station wagon and driven to the office for the night. On the way, I find that the view to my right is blocked completely. My boss's only comment Tuesday morning is "What the hell is that?".

Tuesday, March 20th

Fundy Park confirms that there are shelters available at no charge. According to the park official, "We do not take money from the insane."

Wednesday, March 21st

The first day of spring comes, complete with sleet and blowing snow. King Kong is strapped onto the roof of my four-door grocery getter with a garbage bag over its (his?) head. We are taking the scope to a machine shop out of town.

Thursday March 22nd (3:00 A.M.)

The mount is almost finished. The legs are not attached. The scope has not been balanced. The mounting brackets are not made. Tom has to get up for work at 6:00 A.M. I have to be in Fredericton by 10:00 A.M. The new mount may not be finished, but we are. I intend to sleep as soon as I get home from work and so does Tom.

Friday, March 23rd

Tom Anderson and Dave McCurdy get the legs on the mount. The mounting brackets are subject to technical difficulties. The balance has not been checked. I spend the night chasing a herd of Cub Scouts in another part of town. The Saturday deadline gets closer.

Saturday, March 24th (morning)

Tom's plan is to complete the mounting brackets today. Tom's kids' plan is to go to the museum. The kids win.

Saturday, March 24th (afternoon)

The 4:00 deadline has come and gone. The brackets are not working. We decide to use nylon straps of duct tape to hold the scope on the mount. The balance has still not been checked.

Saturday, March 24th (after dark)

We have arrived! We go to the administration office to arrange for a place to stay, just like we were told to do. What the guy didn't tell us was that nobody works in the park except from Monday to Friday, 9:99 - 5:00.

A park resident informs us that there is one open cookhouse

shelter and one enclosed cookhouse shelter in Headquarters Campground. There is also a shelter on the ski trail in Chignecto South. He suggests that we find a place that we like and move in - "That's what everyone else does."

The enclosed shelter in HQ Campground is occupied by a couple from Saskatchewan. The open shelter is drafty. This is not a shelter without draft sealing, this is a shelter without a wall. We head from the Chignecto ski shelter. It takes us thirty minutes to find it.

Saturday, March 24th (10:30 P.M.)

We have really arrived. Two cars, two kids, three adults, four scopes, binoculars, charts, sleeping bags, food, gas stove, coffee and a large load of scrap metal and bearings.

There is no water. The nearest water is back at the administration building. We will do without coffee for as long as we can hold out. A fire is made, kids are fed, scopes are assembled (4.5" f/8, 8" f/6, 13" f/4.5). King Kong's mount is assembled.

Kay arrives. This is a smart lady! She brings water. Kay has explored the entire park in her search for us. She doesn't say how long it took, but it is a a big park.

King Kong is ready for its field test. In the rush to finish, the polar alignment adjustment is left out and the mount is welded solid. This is a mistake. Polar aligning this mount manually, could give you a hernia.

Also in the rush to finish, the balance is not checked. We really should have checked the balance. We strap the tube onto the mounting bracket. The scope overbalances the counter weights. We take the counterweights off of the 8" scope. King Kong still overbalances the counterweights and the 8" is out of commission. We take the covers off of the wood stove. We take firewood from the wood pile. We stuff six cast iron stove lids and six pieces of firewood into a large nylon sack and hang it from the counterweights. The scope balances, but just barely.

Also in the rush to finish the brake assembly is left off of the declination axis. The declination axis has very smooth motion. It really needs the brake.

Also in the rush to finish, the brake assembly on the R.A. axis is not installed. The R.A. axis has very, very smooth motion. It really, really needs the brake. But we manage without the brakes and see lots of neat stellar stuff and cosmic wonders.

We also tested the mount for vibration. First we tap the mount... nothing happens. Next, we thump the mount... nothing happens. Finally, we kick the mount as hard as we can without breaking our toes... the image moves less than a quarter field, but it doesn't shake. I think we must have moved the mount. The only way that we can generate any vibration is to hit the counterweight shaft where the nylon sack full of logs and stove parts is hanging.

The vibrations damp out in less than two seconds.

Sunday, March 25th (2:30 A.M.)

Clouds roll in. Kay goes home to feed her baby. We take King Kong apart. It is packed into and onto the car in less than thirty minutes. We have seen a minor aurora and lots of deep sky objects. We have also concluded that a Telrad finder is a most useful, if not necessary, item.

Sunday, March 25th (6:15 A.M.)

Kids kicked out of sleeping bags. Coffee on. Gear packed. Snow falling!? I must be back in Saint John by 9:00 A.M., but it has been a worthwhile trip.

Addendum

During a Tuesday night postmortem of the trip, Tom and I decide to weigh the mount and scope. Here are our results:

Mount and "new" counterweights	365 lbs.
Telescope (mirror and tube)	65 lbs.
Mount additions (brakes, etc.)	20 lbs.
TOTAL WEIGHT	**450 lbs.**

We have also come to the conclusion that the King Kong telescope and its mount are very useful for added traction in snow, when installed over the rear axle of a four-door grocery-getter! Ω

Astro Ads

FOR SALE: VARIOUS EYEPIECES

Meade 25 mm MA $30
Bausch & Lomb 16.3 mm Erfle..... $30
Bausch & Lomb 32 mm Plössl $25
All three above $75

Meade 6x30 finder with bracket.... $25

All in excellent condition
Call David Griffith - (902) 677-2145 (Liverpool)

FOR SALE: BAUSCH & LOMB 4000 SPOTTING SCOPE

- finder scope
- erecting prism OR diagonal
- BRAND NEW
- padded case
- 30 mm eyepiece
- $350

Call Doug Pitcairn - (902) 420-7604 (day) 463-7196 (night)

FOR SALE: 8" f/6 NEWTONIAN TELESCOPE

- equatorial mount
- hand ground mirror
- 8x50 finder
- excellent optics
- 2" focusser
- two eyepieces
- asking $800

The mirror was hand ground by a California physicist. Joe and Doug have startested it and found it to be of excellent quality.
Call Doug Pitcairn - (902) 420-7604 (day) 463-7196 (night)

Comet Austin in 3D

David Chapman

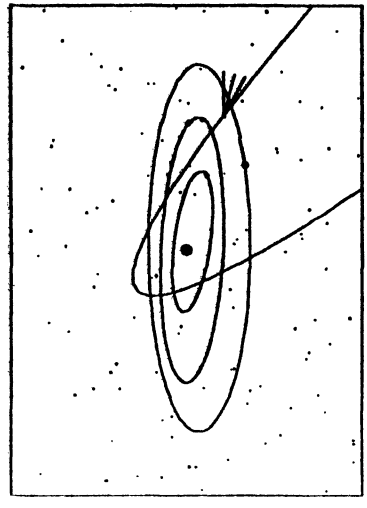
By the time you read this, Comet Austin should be well upon us and may have become the "comet of the century" or just another brighter-than-usual comet. *[Editor's Note: Guess which one is right!]* The view offered here is an imaginary view: imagine you are out in space, four times as far from the Sun as the Earth, and looking down on the inner three planets from 17° above the Earth's orbital plane. The accompanying stereo view presents the orbits from this perspective and places the planets and the comet in the correct position at the time of closest approach to Earth: 25.17 May 1990 UT.

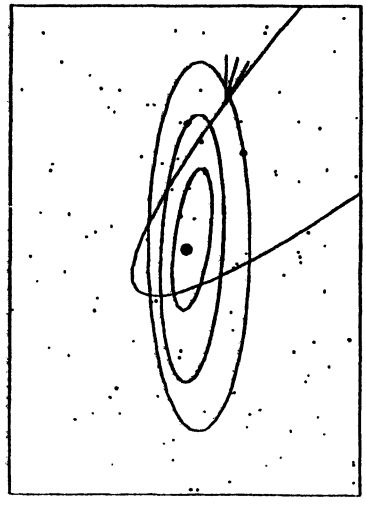
Some people will be able to form the stereo view unaided; others may have difficulty. For those myopic persons who need glasses to focus on distant objects, try forming the view without your glasses.

Hold the page about eight inches in front of your nose and try to blend the left and right images. It may help to focus on a distant object first and then slowly bring the image into your line of sight.

The pair of images were produced using version 1.2 of the *Voyager* computer program for the Macintosh computer.

Relax and good luck! Ω





Stars Passing in the Night

Bob Seleski
reprinted from **Starseeker** - Calgary Centre

Our Sun presently resides within a collection of stars that are strung out in a long sweeping arc. At one end, this parade of glowing globes joins with billions of other stars to form the nucleus of the Milky Way galaxy.

But present computer studies have shown that instead of all the stars staying within each "arm", they continually migrate from arm to arm. At any one time, most of the stars are within an arm,giving it a relatively solid look. And, we can see the results of this gypsie-like wandering. By analyzing the light from nearby stars, it will be noticed that some are approaching us and some are receding from us. One remarkable demonstration of this fact are the drawings one comes across occasionally of the asterism "The Big Dipper" from the past to the future. It has only taken a few dozen centuries for the figure to distort appreciably!

Let's consider this movement close to home. As I mentioned before, some stars are approaching us. How close will they ever come before leaving for some other distant region?

A good starting place for the answer is the nearest star to us (present company of Old Sol excluded), Alpha Centauri. It is actually a triple star system, but we will only consider Alpha Centauri A for simplicity. It is currently approaching us at 34 kilometres per second, or 122,400 kilometres per hour! Even at this fast pace, it will take 38,000 years for it to reach it's closest approach. At that time, Alpha Centauri will be only 2.9 light years away and will appear to be almost as bright as Sirius.

Well, speaking of Sirius, what are it's future plans? It too is approaching us, at 18 kilometres per second and will be at it's closest in 60,000 years. At that time it will appear twice as bright as now, matching Jupiter's brilliance!

So far, so good. When is the soonest that any star will make its nearest approach? This answer lies with a dim star; one that is, none the less, fairly famous. It is Barnard's Star. This star is hauling along at 141 kilometres per second! 507,000 kilometres per hour! (Although fast, the record belongs to another star; Kapteyn's Star at 293.5 kilometres per second or just over a million clicks an hour!) However, even at it's closest approach, in 8800 years, Barnard's Star will never be visible without a telescope.

Another dim star is also approaching and will actually get a bit closer than Barnard's Star (3.85 light years) at it's closest. This is Ross 248, but it is a little known curiosity.

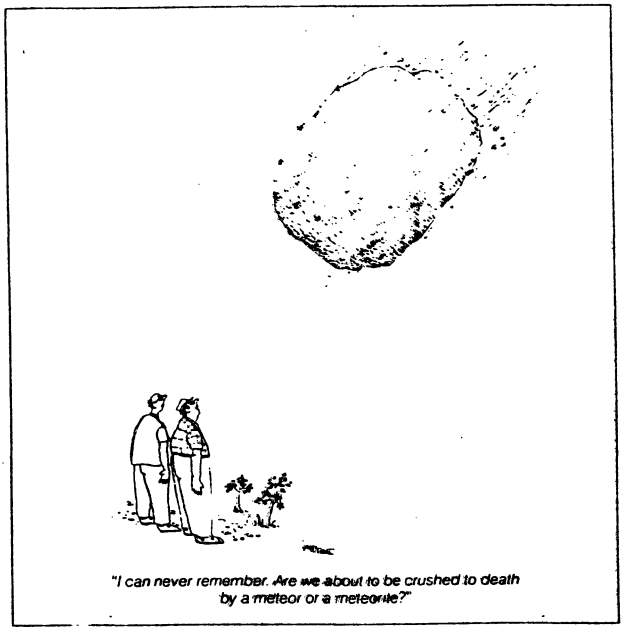
An interesting note to this treatise. The second brightest

star in the sky is Canopus. If you ever examine old satellite pictures or get interested in things like the old X-15 Rocket Plane, you may have noticed something called a "Canopus Tracker". It is a navigational device designed to home in on this star to fix positions. Viking would never have gotten near Mars without it! But why Canopus instead of Sirius? It turns out that there are few stars near Canopus whereas Sirius has several bright stars nearby, which could confuse the tracking device.

Anyway, Canopus was nearest us some 1.4 million years back. It was then only 17 light years away, and shone as brightly as Venus at her brightest!

Here's something to ponder after you've finished reading this article. In the 1950's, a Dutch astronomer named Jan van Oort, advanced the notion that comets come from a giant sphere about one or two light years in diameter centered around the Sun. Nearby stars perturbed the icy bodies out there into orbits nearer the Sun. This notion is now widely accepted; in fact, some calculations place 10 to 100 billion potential comets lying within what has come to be known as "Van Oort's Cloud"!

In keeping the computers amused at the Jet Propulsion Laboratory, it was discovered that at least one star will approach us to within one parsec (3.26 light years) every 200,000 years. It is these stars, according to Van Oort's notion, which provide us with the dozen or so comets we enjoy yearly. Ω



"I can never remember. Are we about to be crushed to death by a meteor or a meteorite?"

Gawker's Report

compiled by Pat Kelly

Time: Saturday, January 27th, 1990
Place: Beaverbank observing site
Observer(s): Jason Adams, Ian Anderson(?), Phyllis Kennedy, Ken Ledez, Jim MacGuigan, Larry Parker, Mary Lou Whitehorne, Joe Yurchesyn
Equipment: C-8, Meade 2080, 6" refractor, 90mm & 60mm refractors, 8" dob, 2 pairs of binocs, 8 pairs of eyeballs.
MVM: 6.0
Weather conditions: Cold and breezy
Seeing: Very good
Comments: Eat your eyepieces out, all you souls who missed out on a great observing session! After four hours there was only the slightest hint of frost on the charts and none on corrector plates!-M.L.W.

Objects Observed:

Planets: Jupiter: much detail - festoons in N. equatorial belt, great red spot, hint of S. equatorial belt, two other belts and polar region darkening visible
Planetary Nebulae:
Nebulae: Rosette with its open cluster,M43, M42, M78, M1, M97, (looked but couldn't see the Horsehead), NGC 2024
Globular Clusters:
Open Clusters: Pleiades, Hyades, M36, M37, M38, M44, M67
Galaxies: M81, M82 (dust lanes!), M101 with SPIRAL STRUCTURE!, M108, M109, M51 with more SPIRAL STRUCTURE!, NGC 2976, NGC 3077 (these were bright and easy),

◊◊

Time: Friday March 2nd, 1990 (and well into the 3rd)
Place: My backyard (Charleston, Queens County)
Observer(s): David Griffith
Equipment: Meade MTS-SC8, Astroscan RFT
Weather conditions: Clear, not too cold, some early haze. Observing improved in the wee hours of the morning.
Comments: A great night for galaxy hopping! Clear skies (and may Austin be with us!)

Objects Observed:

Planets: Jupiter (still only one clear equatorial belt)
Planetary Nebulae: M57, M97
Nebulae: M42, M43, M78, Rosette (only faint outer wisps)
Globular Clusters: M3, M13, M53, M68
Open Clusters: M35, M36, M37, M38, M41, M44, M45 (awesome in

the Astroscan), M67, M93, Mel 111
Galaxies: M51, M58, M59, M60, M61, M64, M65, M66, M81, M82, M84, M85, M86, M87, M89, M94, M95, M96, M98, M99, M101, M104, M105, M106, M108, M109, NGC 2903, NGC 3079, NGC 3384, NGC 3389, NGC 3536, NGC 3628, NGC 3705, NGC 3953, NGC 4244, NGC 4278, NGC 4283, NGC 4293, NGC 4395, NGC 4490, NGC 4527, NGC 4559, NGC 4565, NGC 4631, NGC 4654, NGC 4656, NGC 4657, NGC 4866, NGC 5033, NGC 5195
Meteors: six glimpsed over a six hour period, none spectacular.

The dates of the best observing periods can be found in the "Calendar of Events" inside the back cover. These dates assume a latest start time of 11:00 P.M. and a minimum observing time of one hour. Any clear night in this period is likely to find people at Beaverbank. If you wish to double check to see if anyone is going out, please call the Observing Chairman or the Second Vice President .Members are invited to submit their observations to the Editor for inclusion in "Gawker's Report". Please list all information in a format similar to that of the column Ω

Ask GAZER

GAZER

Dear GAZER:

I just inherited a Questar telescope from my eccentric aunt. However, a clause in her will says that I can only keep it if I sell all of my other scopes. Is a Questar so good that I could use it as my only scope? I already have what I consider to be a good telescope, but now I've got the executor on my case? What do you think I should do?

Anxious in Antigonish

Merciful heavens, I was wondering how long it would take for a "Quakstar" question to come up. I must admit that I have never looked through one myself, but there is sufficient evidence that they are not all they are cracked up to be. Having been a long time subscriber to *Sky & Tel*, I have watched numerous ads for people trying to unload their Questar's off on other amateurs at close-to-new prices. I've gone back through the last five years worth, and about 10% of the ads have been for Questars. Now, comes the big question! Are 10% of all new telescopes sold Questars? If so, it would be reasonable that 10% of amateurs are selling them. While it is nice to imagine that 10% of us are rich enough, my guess that the actual percentage is considerably less than 1%. In addition, if Questars are so good, one would expect that a smaller than usual percent of owners would actually sell them. I'd hang on to the scope I have and try putting an ad in S&T. You would actually have an advantage as you could ask less, since you aren't trying to recoup money that you spent! Ω

NOVA NOTES INDEX

July-August 1990 **Volume 21, Number 4**

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HALIFAX CENTRE - R. A. S. C.
1990 CALENDAR OF EVENTS

June

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14		16
17	18	19	20	21	22	**23**
24	25	26	27	28	29	30

July

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	**28**
29	30	31				

August

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	**11**
12	13	14	15	16	**17**	**18**
19	**20**	21	22	23	24	25
26	27	28	29	30	31	

September

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19		21
22	23	24	25	26	27	28
29	30	31				

Key to calendar:

Regular and
Observer Group Meetings: **bold and shadowed**
Special days: **bold**
Possible observing sessions: underlined

Special Days:

June 23 - Jupiter 1.6° S. of the Moon
July 28 - South Delta Aquarid meteor shower
July 28 - Mercury 0.04° N. of Regulus
August 11 - R.A.S.C. BBQ and Perseid Watch
August 12 - Perseid meteor shower
August 12 - Venus 0.04°N of Jupiter
August 17-20 - NOVA EAST '90

Note: Events may occur in the early morning of the following date.

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