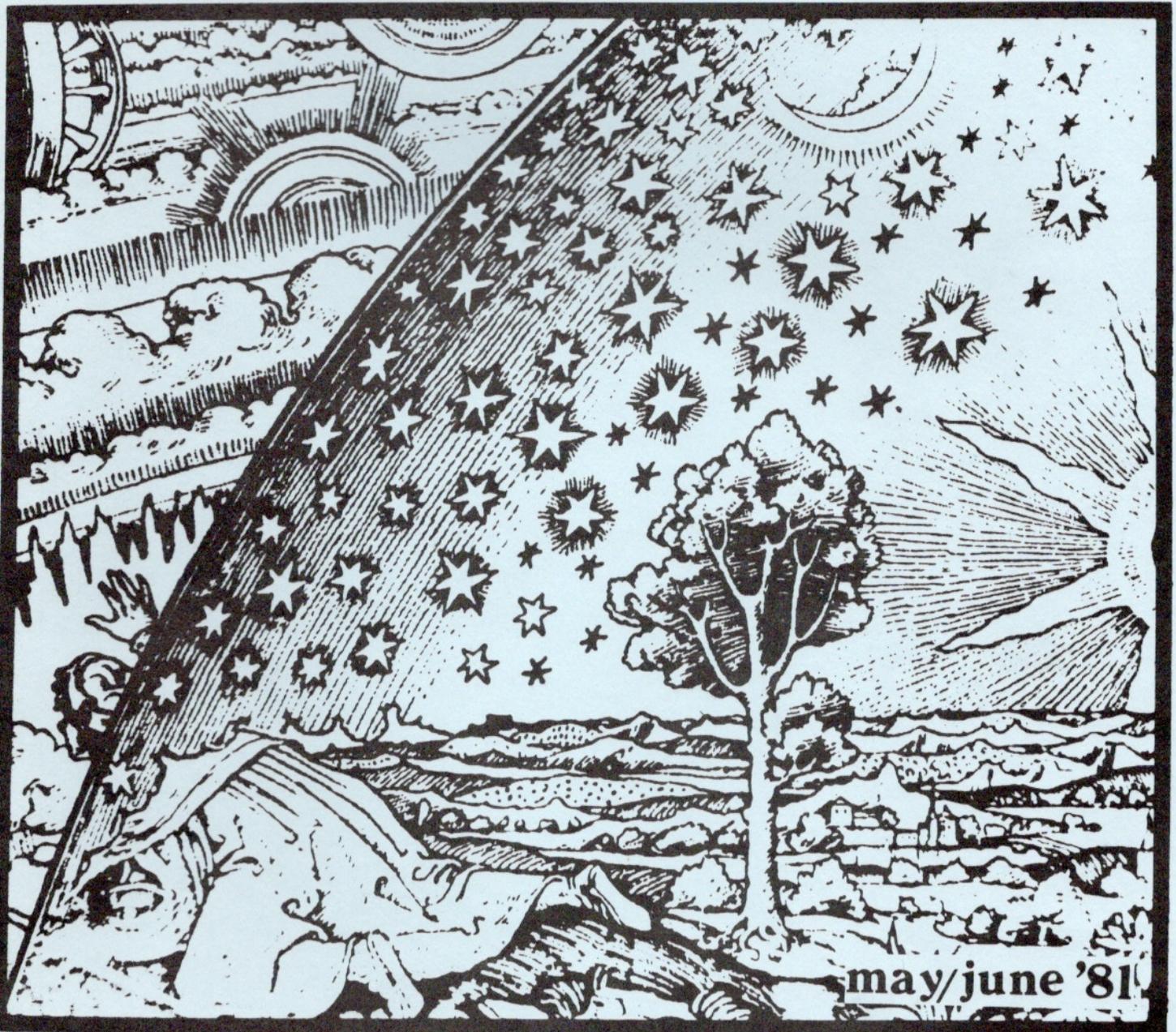


NOVA NOTES



Editor's Message

I hearby disclaim any responsibility for any mistakes made in the layout and artistic impressions of this issue of Nova Notes. This is a back-handed way of thanking Jody LeBlanc and Chris Worhtington for volunteering to handle these matters for me. Thank ya! Thank ya!

The reason they are having to do my editorial duties for me is because I am working the 'graveyard shift' at 'Tim Horton's' and my leisure time is at a premium(sleeping-eating).

For the above reason this edition of Nova Notes may appear to be rather skimpy and is almost bound to have appeared in your mailbox after the dinner.

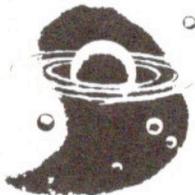
What it lacks in quantity it makes up in quality as once again I have received articles of outstanding worth.

I have decided that I will continue to publish(I promoted myself) NN's on a bi-monthly basis throughout the summer months,so keep those articles coming in.

Nova Notes not withstanding there has been a decided swing in the centre towards apathy. This is a NO NO! Your executive tries very hard but they can't do everything they would like to for the centre without your help (ya you!).

Articles for Nova Notes should be submitted to me not later than July 10, September 18, and November 20 for the next three issues of NN's, either at the monthly meeting or mail them to:

Glenn Graham
99 Sunnybrae Ave.,
Halifax, N.S.,
B3N 2G8



"NOVA NOTES"

SUBSCRIPTION RATES FOR 1981/1982

NOVA NOTES is available to non-members of the Halifax Centre, R.A.S.C. at a rate of 35¢ per single issue or \$2.00 for six issues per annum.

Printed Courtesy of the N.S. Museum.

Letter To Editor:

I have just finished reading the latest issue of Nova Notes. I liked the appearance of number 1, and number 2 is even more attractive. The diagrams, sketches and photos are good. One suggestion: I found that issue 2 was easier to handle and looked better when bound with three staples along its left edge.

I note from your editorial that there were several comments on the first issue, constructive and otherwise. Don't let the latter ones bother you at all. You are off to a good start and are making a real contribution to the Center.

Sincerely,

Roy(Bishop)

“changes in executive”

As most of you know by this time your executive is undergoing major upheavals at the time of my writing this, April 30th.

First, Walter Zukauskas has resigned from his position as Observing Chairman because he didn't feel he could devote enough time to the job. Secondly, because of the sickness of his mother Peter Edwards has found it necessary to resign as President. Our sympathy goes out to Peter and Michael Edwards and we wish their mother a speedy recovery. The Secretary of our centre, Murray Cunningham, is in hospital. His stay there will hopefully be a very short one.

Temporary replacements have been appointed. Michael Boschat is the Observing Chairman for the rest of the term of office. David Tindall has graciously agreed to temporarily wear the hats of both Secretary and President, which shows how dedicated he really is, as he is still also the V. President.

We are sorry to see so many of our executive being replaced as up until this time they were doing a first-rate job of filling their positions. We look forward to the time when they feel up to returning.

“cover story”

The cover is a picture of medieval man sticking his head through the vault of the night sky to see the complicated mechanism used to control the motions of the stellar objects. Notice that the Earth is flat and is the central object in the engraving. The mechanism, as well as can be determined from the engraving, seems to be reminiscent of the Ptolomeic system of deferents and epicycles (wheels revolving about wheels). If anyone has more exact knowledge of the cosmological beliefs of the era or of the history of this exquisite looking engraving I would be more than happy to receive them. Write me at 99 Sunnybrae Ave., Halifax, Nova Scotia B3N 2G8 or phone 443-8349.

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The Current R.A.S.C., Halifax Centre Executive

,EFFECTIVE JANUARY 1 to DECEMBER 31, 1981

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"meeting matters"

3

March Meeting - Halifax Centre

Roy Bishop was the guest speaker. The date for this meeting was very significant - March 13th This very day in Bath England, the home of William Herchel becomes a museum.

On this day in 1930 Pluto was discovered.

On this date in 1855 Percival Lowell was born.

On this date 200 years ago - 1781 William Herschel saw and described URANUS.

Uranus was a Greek God and was related to Zeus and to the Muses. The motto on the crest of the R.A.S.C. says - "Quo Ducit Urania". The best loose translation of this would be - "Wherever the Inspiration of Astronomy Leads".

The biography of Herschel is well known. He was a musician, organist and composer. He was an AMATEUR astronomer. He was the first president of the Royal Astronomical Society. Optics were poor at that time so Herschel ground his own telescopes out of speculum metal. It was with a 6" Newtonian instrument that his painstaking survey of the sky showed him the disk of Uranus. He measured its diameter. He presented his findings 10 days later. After several months the proof that it was a planet was seen through its motion. That November he received the Copley Medal. That December he was made a Fellow of the Royal Society. The professional astronomers had missed discovering Uranus because their efforts were directed primarily to positional astronomy for navigation. Herschel stopped his full time music and became a private astronomer to George III. (Herschel had originally wanted to call Uranus Georgium Sidus)

Herschel also described double stars. He conjectured the

position of our solar system in space. He was working on parallax measurements for the stars. He was greatly praised by Messier.

Uranus is just visible to the naked eye - at least Roy Bishop has seen it. A small telescope or binoculars will show it as Simon Newcomb described it - a pale greenish object.

Uranus is 19.2 Astronomical Units from the sun. Its orbital period is 84 years. Its axis is tilted more than 90 degrees. We are now looking at its south pole. It is made up of light material similar to Jupiter and Saturn. The surface is frozen methane. There are 5 satellites; but consider this William Herschel saw two of them! There are also 9 very narrow rings.

Then in typical Roy Bishop splendour we were treated to a spectacle that we would recommend to other Centres. Gustav Holst composed an orchestral suite called "The Planets". The section called Uranus lasts 6 minutes. The computer simulated movie of Voyager 1 by J.P.L. and N.A.S.A. also lasts 6 minutes. We played them together and it was a most spectacular ending for this meeting.

Centre Meeting - April 10

The speaker was Glenn Graham and his title was "An Astronomers View of Astrology". Glenn began by using a toy spinning top to illustrate the precession of the equinoxes. The wobble of the top is very similar to the wobble of the earth's axis which rotates once every 25,780 years. (ed's note, it has been pointed out to me that this analogy is in fact not valid) This is a particularly appropriate time to consider the precession of the equinoxes because we have just passed the vernal equinox, i.e., the first point of Aries, which is actually in Pisces and is about to go, in a few years, into Aquarius.

This amount of precession, Glenn told us, amounts to 50" a year and in the year 2100 A.D. the North Celestial Pole will be less than 1/2 degree away from Polaris. This is the closest Polaris will get to being the pole of the celestial sphere.

So much for astronomy, now for astrology . . . or at least Glenn's attempt at demolishing astrology. He made the following points: 1) Constellations do not exist; they are purely an effect of projecting the stars' positions onto the celestial sphere. 2) The Zodiac (ecliptic) - the path apparently taken by the sun - consists of the constellations through which the Sun passes; these constellations have different sizes and the sun doesn't pass through the centers of each, so the Sun doesn't spend an equal time in each. Furthermore, 3) the Sun passes through the constellation, Ophiuchus, but this is not a constellation belonging to the Zodiac, it is not a sign. 4) Because of the precession effect referred to, the first point in Aries, or the Vernal Equinox, was indeed in Aries in 100 B.C. However, that was 2000 years ago and that is very far off now, in fact the Sun enters each sign 29 days later today than it did in 100 A.D. The tropic of Cancer is now in Gemini and so on.

Glenn then went on to tell us how astrology in recent years has become quasi-scientific in that computers and calculators are now used to cast horoscopes, to calculate the positions of the Sun and the planets in the sky. In elaborating some of the finer points of astrology, e.g., the 12 houses, ascendants, and various things of that kind, he revealed to all of those present that he was born in a cusp! This no doubt makes one a sceptic.

After a series of slides of various items such as Ben Wick's horoscope (created by Ben Wicks not of him) the questioners in the audience came up with a few more points taking down the astrological point of view. 1) The effect of latitude on the rising and setting of objects is not corrected for. 2) Someone thought that the moment

of conception might well be more relevant to one's fate than the time of birth (Best not to mention names ed.) 3) It was pointed out that astrology does keep people's minds off more destructive things. 4) It was asserted that the horoscope in the Chronicle-Herald is the best part of that newspaper - there seemed to be wide agreement for this statement, although the cartoons did, I think, come a close second. 5) It was asserted that more money was spent on astrology than on astronomy in total, and this is probably true. All in all, it was perhaps too bad that there was no one in the audience who was prepared to defend astrology. The final score was astronomers: 35, astrologers: 0. (Not quite they do have all the money ed.)

Our Observing Chairman, Walter Zukauskus, unfortunately had to resign because of other commitments. The runner up in the executive elections last year, Michael E. Boschhat has agreed to take Walter's place. We wish him every success in this endeavour. Our Secretary, Murray Cunningham, is presently in hospital and we wish him a speedy recovery. These minutes were taken by David Tindall who is solely responsible for any errors and omissions.

David Tindall

GERMANY: NORTHERN LIGHT STUDY

Four 45m high by 30m wide cylindrical parabolic reflectors will be used to study the Northern light phenomenon. Special antennas built in Norway by German companies are to be placed into operation in the near future.

The gigantic 850 ton antenna, built by Krupp in Duisburg in cooperation with two other companies in Norway, will contribute to the scientific research done in this project. Also, nuclear energy research may benefit from the findings since the instability of plasma will be one of the questions under study.

Submitted by Michael Edwards

"observing notes"

On April 12/13 we had a beautiful aurorae that started at apx. 8:35 pm and lasted well after midnight. It started out in the north and worked it's way to the south. Overhead was the coronal arc which had rays extending in all directions covering over 70 degrees of the sky. There were various pulsations of green and red; although the moon was up it did not interfere too badly. At midnight the coronal arc burst forth giving a spectacular display of rays one of which was 5 degrees wide and bright blood red. To me this was one of the best displays since 1968.

I observed the sun the next day and saw the cause: a huge spot group on the solar surface.

To those who wish to purchase a pair of large binoculars you can write to either Mr. Don Alexander, 403 Melrose Ave., Verdun, Quebec, H4H IT2 or to Mr. Barry Mouzar PO Box 8942, Station A, Halifax N.S. B3K 5M6. You should get 11X80's as they give a wider field and brighter images than my 20X's, but do not forget they cost!

Due to an accident my 20X80's are now a monocular but it still works well and many objects can be seen such as the following: M1, M81, M82, M65, M66, M51, M109 and M97. It is, of course, best to have a clear dark sky to bring these objects into view.

Those who missed Comet Panther can still see it, possibly, on the 11th of April it passed between Polaris and the North Celestial Pole. I saw it on the 8th at mag. 8.7. Here are it's coordinates for April:

- April 1 7h 51m 67 54 N
- April 6 7h 57m 62 53 N
- April 11 8h 2m 58 12 N

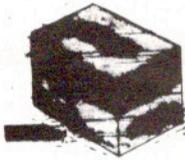
As the new Observing Chairman I would like to stress that one cannot see astronomical phenomena unless one goes outside! Those who missed the aurorae missed a treat, so go out on clear nights and observe, be it meteors, aurorae, or what have you.

For any info. you may want contact me at 6363 Liverpool St., Hfx., N.S. B3L 1Y1.

Good Observing!

Michael Boschat





ASTROPHOTOGRAPHY

BY JODY LEBLANC

Most amateur astronomers begin their foray into astrophotography with one of the most difficult subjects: high resolution photography of the moon and planets. At the same time many amateurs ignore a much easier photographic target, the sun.

The reason the sun is a much more accessible subject is simple. Unlike almost every other astronomical object, the sun does not present the problem of insufficient light. To boot, things are made even easier by the sun's large apparent size and the simplicity of solar photography technique.

Basically, solar photography is simply an extension of visual solar observing technique. One uses the same "projection" concept, as has been previously detailed in NN's. (Most recently in the last issue). The main concern is to get a sufficiently contrasty solar image on the projection card. Hence, it is definitely worthwhile if you're using a simple "shade card" to cast a shadow onto the projection card, to replace the shade card arrangement with an enclosed projection box. This will combat the effect of ambient non-directional light on the projection image and will improve visual observing as well. To further limit stray light, the "peephole" should be made as small as practical.

One hint, applicable to visual as well as photographic observing is to use a projection surface made of a non-exposed, well fixed piece of glossy printing paper. This provides a very smooth, reflective surface and a clear solar image.

To take a solar photograph, set up the camera (on a tripod for convenience) next to

the "peephole" where you usually place your head for visual observing. Try and have the camera pointed at the projected image at as much of an oblique angle (as straight on) as possible. This will keep any angle of view distortion (most evident on full-disk photographs) to a minimum.

An SLR camera is the most convenient for this, as SLR's usually focus closer and permit critical focussing and centering of the image, along with continuous viewing. The image should be monitored, either through the camera or directly, so that the shutter can be fired at an opportune moment of "good seeing". Non-SLR cameras can certainly be used, but pay special attention to both focussing and framing.

Quite accurate exposures can be determined by taking a close-up reading of the projected image with either a built-in, through-the-lens light meter, or a hand-held, reflected-type light meter. Both during metering and exposing it is a good idea to cover up any light leaks by tossing a dark cloth (a coat, for instance) over the photographer, camera and projection box in a manner reminiscent of old fashioned view cameras.

Films for solar photography should have both fine grain and high contrast. For colour slides Kodachrome 25 or 64 work well, while for colour prints any 100 ASA film is suitable. A better but more expensive route for colour prints (which suffer from lack of contrast) would be to shoot Kodachrome and have prints made from the slides. This would insure sufficient contrast.

For black and white, my favorite by far is Kodak High Contrast Copy Film. Kodak suggests a daylight rating of ASA 64, but I've found ASA 32 to be more realistic. This film should be developed in a contrasty

developer such as Kodak D-19 or Dk-50. When printing, don't be afraid to use #4 or even #5 paper to emphasize detail.

Any small telescope from 2" through 6" aperture is suitable for solar photography. Telescopes larger than 6" need expensive equipment such as full aperture filters to deal with the increased light and heat. When starting out, begin with full-disk pictures, (use an eyepiece that gives about 40X) which will give the brightest, most contrasty images. After this stage is mastered, try photographing enlarged sections of the disk for detail in sunspot groups.

Two final warnings: don't use an eyepiece with cemented elements for solar projection (use a Huygenian for refractors - or Ramsden - for reflectors) and under no circumstances use any eyepiece filter that may have come with your telescope. If you have one, practice your throwing arm and pitch it into the nearest garbage can. Better safe than sorry!

FLYING SAUCER REVIEW

“UFO over People's China!

“A strange object hovers over the outskirts of Kaifeng, Hounang province, China mainland, on the morning of October 23, 1961, watched by several people. The object appeared low in the sky and occasionally moved slowly and sometimes was almost stationary. They stopped work and gazed upwards, when Chang Ching-lai, a young engineer, managed to snap a few pictures with a camera. They watched it for about 7 minutes, until it disappeared out of sight.”

UFO Fever!

The English-language edition of the Tokyo Mainichi Daily News of Saturday December 6, 1980, carried a UPI item from Peking which reported that:— “The official Xinhua news agency said Thursday that people in all walks of life have been gripped by curiosity toward unidentified flying objects.

VIRGO: The Virgin

This month's constellation, Virgo, is a large constellation visible to the south after sunset. Virgo, the Virgin, has been associated with several maidens throughout ancient times. She is generally drawn with a palm branch in her right hand, an ear of wheat in her left hand, and represents innocence and virtue. In the Oriental version of the constellation, Virgo was a sun-burnt damsel with an ear of corn in her hand. She has even been figured with the Scales (Libra) in her hands, and thus has been considered the goddess of Justice, Astraea, daughter of Jupiter and Themis.

The brightest star in the constellation is Spica, which marks the ear of wheat in the Virgin's hand. This summer two other objects will out shine Spica in this constellation. They are Jupiter and Saturn. These two planets are marked on the constellation map in their respective positions for June first. They are easily found within the large kite-shaped part of the constellation, slightly above and between Zaniah and Zavijava. Jupiter, the brighter of the two, will pass 1.2 degrees south of Saturn (approximately two moon diameters) on July 30th and then will pull away to the east. By the end of October, Jupiter will pass Spica, while at that time Saturn will only be nearing Apami Atsa, and will not approach Spica until early in 1982. Both planets will be too near the sun to be seen in October.

Inspection of Virgo with a telescope will yield the densest collection of galaxies in the entire sky. These can be found in the region enclosed on the east and south by the right angle triangle formed by Vindematrix-Porrina-Zavijava, and by Denebola in the constellation Leo to the west. The galaxies cover a region more than six degrees in diameter, or twelve moon diameters across. This huge grouping of galaxies is called the Virgo cluster of galaxies and contains thousands of galaxies, most of which require a large telescope to observe. A small telescope should still reveal many more galaxies in this region than the number of stars found by the naked eye in all of Virgo. The Virgo cluster, which includes galaxies of all types, is about 6.5 million light years across and is about 65 million light years away from us.

Norman Scrimger.

"ETC."

IS SPACETRAVEL POSSIBLE ?

The Laws of Physics As They are now understood appear to trap us near our own sun. It would take one of today's spacecraft a million years to reach even the nearest stars. To reach those stars within a human lifetime would require traveling near the speed of light (186,000 miles per sec. or 300,000 km per sec.), a speed beyond even nuclear-powered ships.

But there is another approach to interstellar exploration. When you telephone a friend across the country you - or rather your words - travel at the speed of light. With the help of television equipment, your images will do the same. Existing technology could manage the transmission of smell, taste and touch as well.

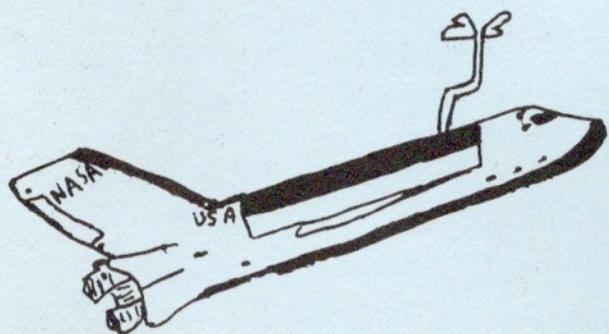
It's just a small leap to interstellar travel, at least to stars where there is a cooperative civilization. The main barrier is time. It

takes more than eight years for a signal to go to the nearest star and back. Exploration requires an independent robot at the other end. And what better robot than a flesh and blood copy of yourself?

Soon biochemists will be able to read off the genetic code of a human being. Send that information, coded on a light beam, together with instructions on how to synthesize the other components of a human egg cell, and your clone could soon be enjoying an Alpha Centuri sunrise. Of course, exchange visits could be arranged, too.

The idea of light-beam travel can be pushed into even more speculative realms. In principle, your double's brain could be programmed with your memories and present state of mind. For him or her it would be like awakening after an instantaneous journey through space. T.P.

Reprinted from Today magazine



I knew it was a bad idea to let Nova Scotia design the grasping mechanism!

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