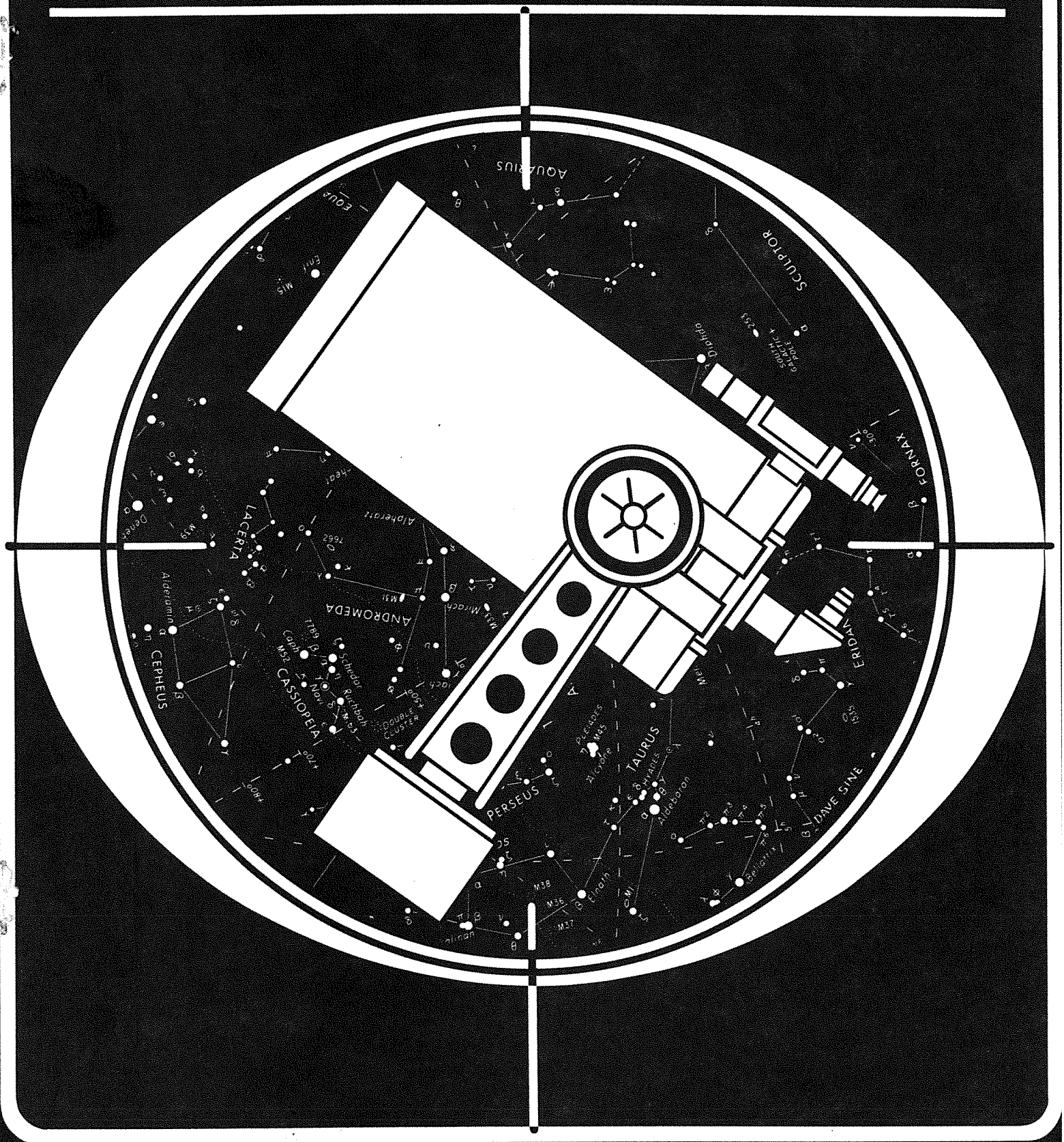
WINNICENTRICS

OFFICIAL PUBLICATION OF THE R.A.S.C. WINNIPEG CENTRE.



Vol 22, No. 3. W I N N I C E N T R I C S 1983
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MAY & JUNE MEETINGS

MAY 13th. 1983. FRIDAY.....8:30pm.

THIS MONTHS MEETING WILL BE HELD IN THE LOCKHART PLANETARIUM AT THE UNIVERSITY OF MANITOBA. THE PLANETARIUM IS ON THE SECOND FLOOR OF UNIVERSITY COLLEGE BLDG. MR. CHRIS RUTKOWSKI WILL BE PRESENTING A PLANETARIUM SHOW. " THE QUASAR DILEMMA. " SEE MAP ON PAGE 2b/. FOR LOCATION OF PLANETARIUM AND PARKING FOR THIS MEETING & ALSO FOR THE R.A.S.C. ASTRONOMY SEMINAR ON APRIL 30th.

ooOoo

JUNE 10th. 1983. FRIDAY.....8:30pm.

Room 217 Lockhart Hall, University of Winnipeg.

Dave Sine & Brenda Belkin will be presenting a visual lecture. This will be followed by two films on the southern skies. There will be free refreshments during the meeting.

WINNIPEG

CALENDAR

** WINNIPEG STARNITE.....To celebrate International Astronomy Day APRIL 23rd.

** R.A.S.C. ASTRONOMY SEMINAR..... APRIL 30th.
SEE PAGE 2a & 2b FOR MORE INFORMATION AND MAPS GIVING LOCATIONS FOR THESE ABOVE TWO EVENTS.

** RIDING MOUNTAIN NATIONAL PARK MASCON..... JULY 1st - 3rd. Public star parties and lectures on the evenings of the 1st, & 2nd. Solar viewing on the morning of the 3rd. These lectures will also be held on July 31st. weekend.

** PINAWA STAR PARTY..... Mr Paul Delaney has invited the Winnipeg Centre to attend a Star party at his residence in Pinawa on the evening of July 16th. For those travelling to Pinawa on the Friday night camping should be available at the AWANI PARK. Pinawa Reactor site. A tour of the reactor facility is being arranged for the Saturday morning.

CENTRE SCENE.

Well here we are again for another two month issue. Centre members have been very busy over the past few weeks arranging for the Astronomy Day Star Party and the Astronomy Seminar to be held later in April. See this issue for further information.

On a sad note, we will be losing our 1st Vice-President Mr Andrew Lawless for about a year while he goes to university in Spain. Good luck Andrew and thank you on behalf of the Winnipeg Centre for all the hard work that you put in at the Observatory and with the Winnicentrics, it is hoped that Andrew will liaise with a Spanish Astronomy Club through which articles could be exchanged between our magazine and theirs. Hopefully Andrew will also write a few articles for us as well.

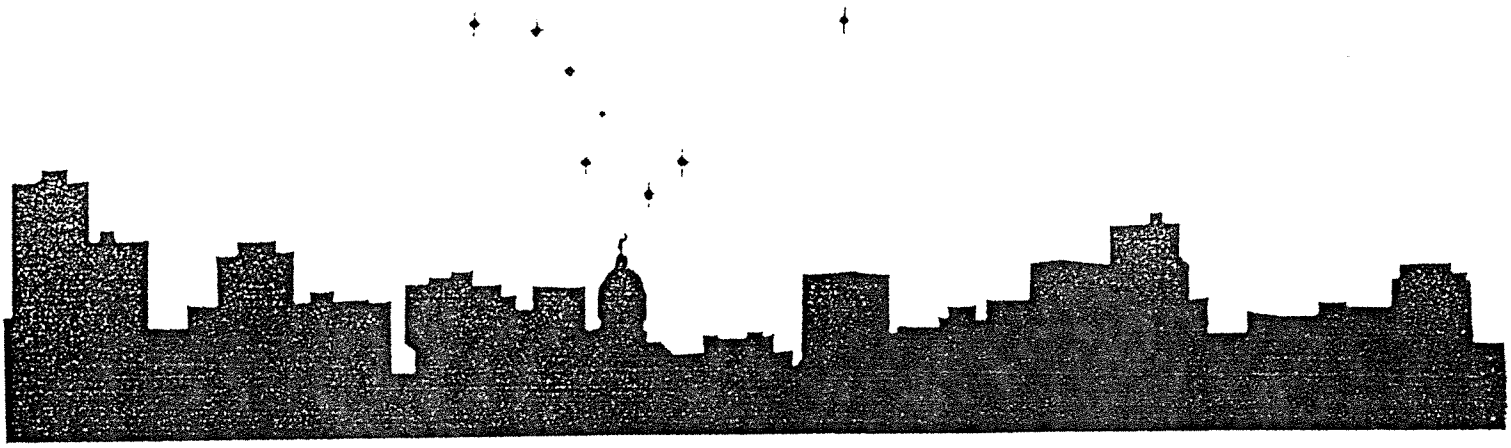
ooOoo

CONDENSED MINUTES OF THE MONTHLY GENERAL MEETING ON FEBRUARY 11, 1983.

There were 18 members and 2 guests in attendance.
The meeting was called to order by Mr Westcott at 8:35pm. Announcements were made with regard to Star Party at Pinawa, Astronomy Seminar to raise money for repair and upkeep of the observatory, Donations from centre members, Winnicentrics (size and format), council meeting to be held on Wednesday, 23rd of February.
The guest speaker for the evening was Mr. Ed Torz from the Manitoba Camera club. He discussed his favorite type of photography ie. black and white, and displayed a number of prize winning photographs while telling about the events leading up to the taking of them. The lecture was very interesting and a refreshing break from astrophotography.
The meeting was closed on a motion from the floor at 9:30pm. Members retired for coffee and donuts.

CONDENSED MINUTES OF THE MONTHLY GENERAL MEETING ON MARCH 11, 1983.

There were 23 members and 6 guests in attendance.
The meeting was called to order by Mr Westcott at 8:37pm. Mr Westcott discussed correspondence that had been received by the Centre over the previous month and told centre members what action had been taken with each. Minutes of the National Council Meeting and the last Centre Council Meeting were made available to members who wished to see them. The Astronomy Seminar program and speakers were discussed. The Centre Library at Glenlea has finally been cleaned out, you can now walk into the room.
The guest speaker for the evening was Past President of the Winnipeg Centre Mr Hans Thater. Hans did an excellent talk on planetology and geology. He showed many interesting slides and discussed the nature of some geological phenomena. He also compared various planets to each other and some to certain features on the Earth. A long question and answer period ensued. Meeting was adjourned by a motion from the floor at 10:17pm. We finally all left at 1:30am.



W I N N I P E G S T A R N I T E

The Winnipeg Centre of the Royal Astronomical Society of Canada, in conjunction with the Manitoba Astronomy Club, will be holding a Star Party on April 23rd at Lyndale Drive Park. Observing will commence at 8 p.m.

For more information phone 269-1499 after 6 p.m. or the Manitoba Planetarium during working hours. Admission Free.

* * * * *

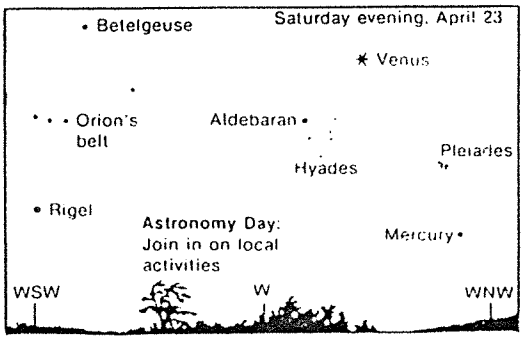
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA, WINNIPEG CENTRE
presents
APRIL 30th - ASTRONOMY SEMINAR

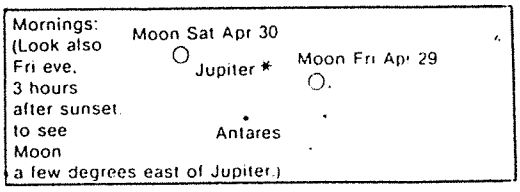
A seminar dealing with all aspects of astronomy will be held at the University of Manitoba on April 30th, starting at 1 p.m. There will be talks, a Planetarium show, hands-on workshops on Astrophotography, Buying your first telescope, Computers in Astronomy, etc. Solar viewing with white light and H-Alpha will be available throughout the afternoon.

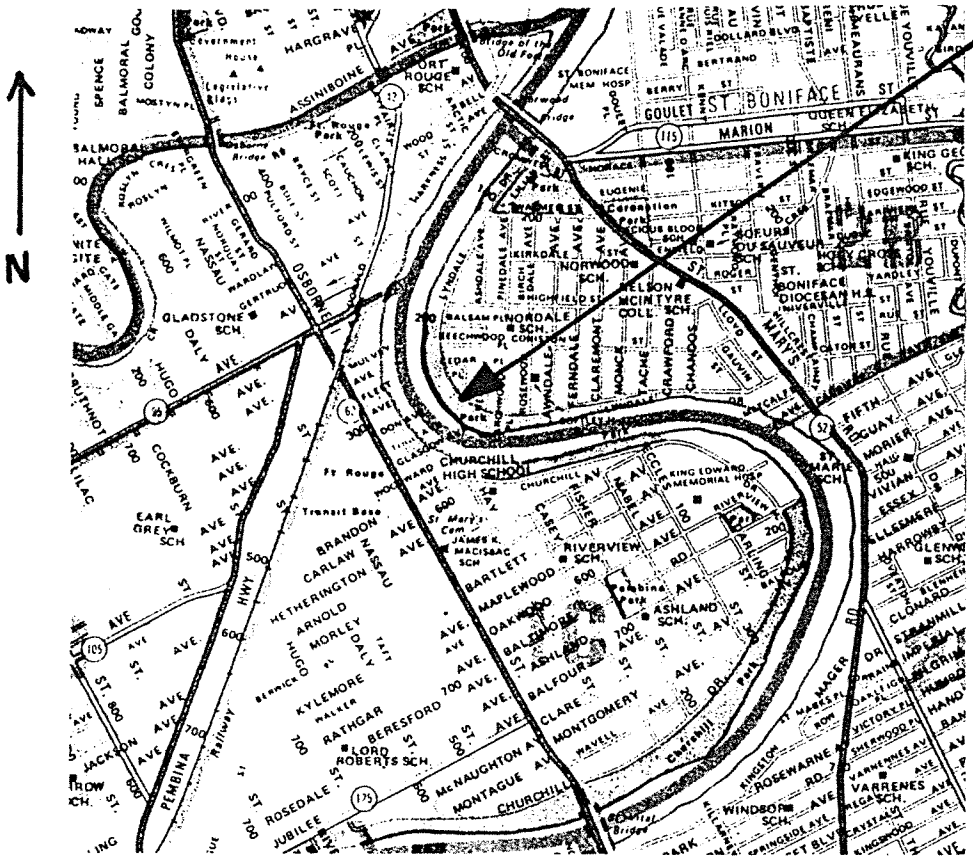
Evening star and planet viewing will commence at 8 p.m.

Registration: University College, 2nd Floor in front of the Planetarium between 12 and 1 p.m. Fee: $10.00. Phone 269-1499 for more info.

Come out and see the planets and stars through some of the largest telescopes available to amateur astronomers.






Lyndale Drive Park
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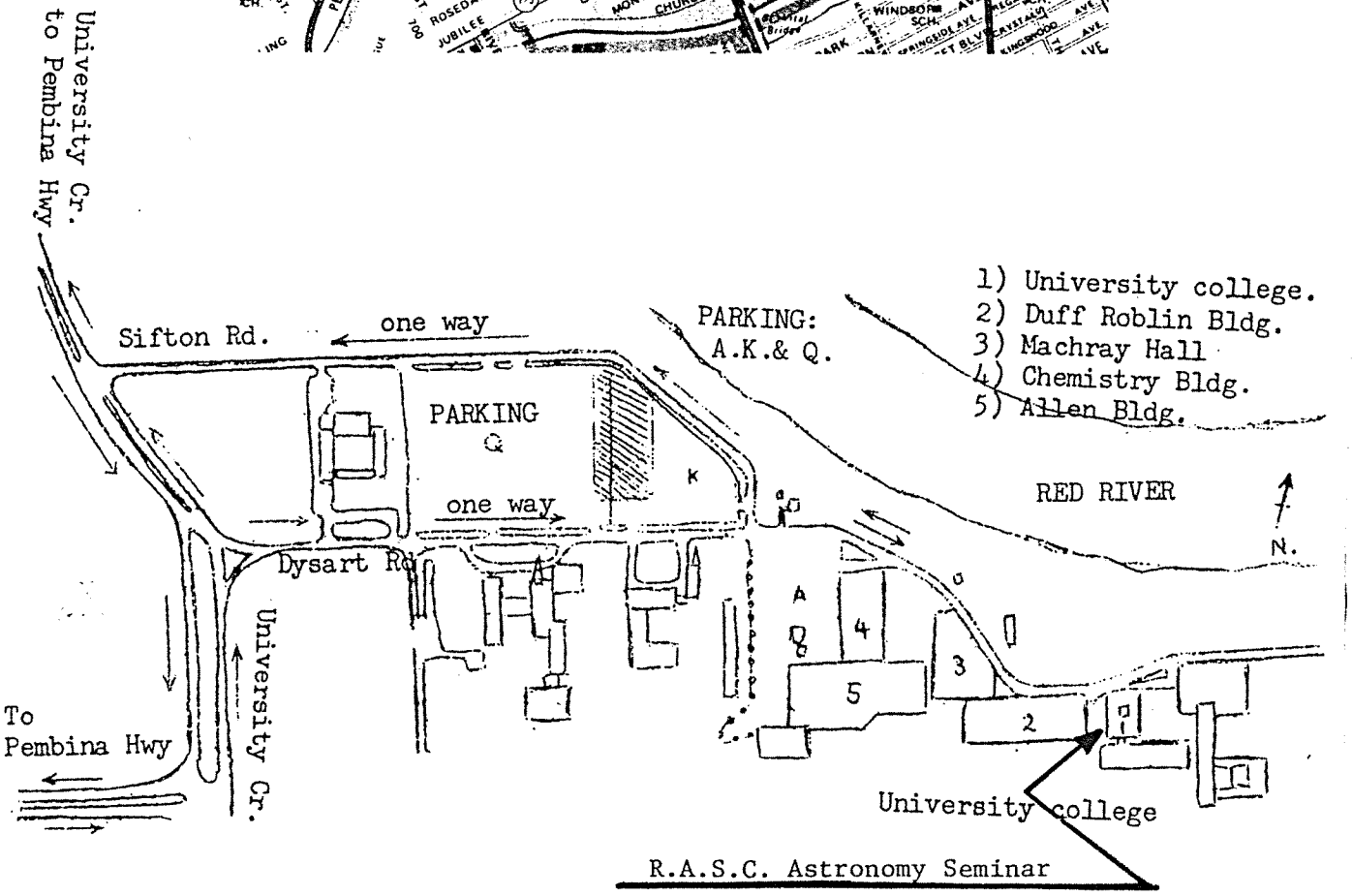
GOULET
MARION
ASSINIBOINE
GLADSTONE SCH.
CHURCHILL HIGH SCHOOL
RIVERVIEW SCH.
ASHLAND SCH.
NORWOOD SCH.
NELSON McINTYRE COLL. SCH.
EARL GREY SCH
ROBERTS SCH.
PEMBINA Railway
HWY 75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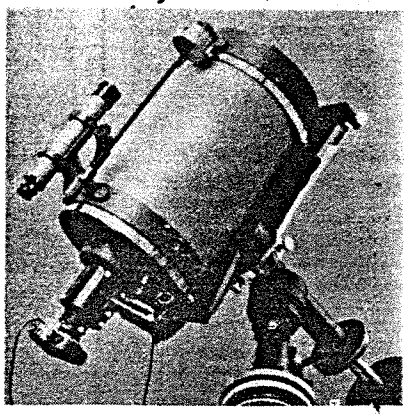

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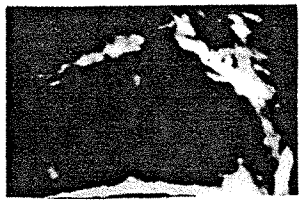
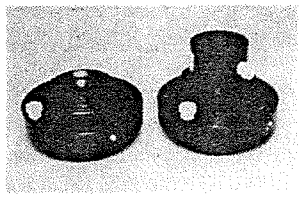
NEW LUMICON® PRODUCTS

SOLAR PROMINENCE H-ALPHA FILTER



Large Solar Flare of July 2, 1957

See Solar Prominences, sunspots and flares in the beautiful red of hydrogen alpha emission at 656nm. Filter bandpass is 0.5nm (0.1nm = 1 Angstrom in Deluxe Filter). Wavelength tunable. For both viewing and photography (has T-threads, 1¼" eyepiece adapter).



LUMICON Solar Prominence Filter for viewing, and with camera adapter attached.

LUMICON Solar Prominence Filter fits 2" diameter focusing mounts.....**$299**
Deluxe Solar Prominence H-Alpha Filter, 0.1nm (1 Angstrom) bandpass for high contrast. For 1¼" eyepiece and photography. State camera and telescope type **$499**
Deluxe Filter with 1.5" aperture, for both 2" and 1¼" eyepieces and photography .**$695**
3" off-axis metal mask for C-8 or Meade 2080 — required!.....**$68**
Adapter for 1¼" or 0.96" systems **$15**
Adapter for 2" eyepieces **$20**
Camera Adapter, (state brand) **$12**

"HORSEHEAD NEBULA" FILTER

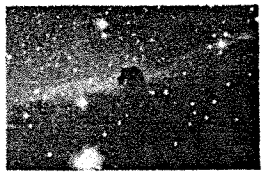


Photo by Dr J Marling 8" f/4.5, 20 min, hypered 2415

This specialized filter has ultra high contrast and is the only filter that allows good visual observation of very faint nebulae, such as the California Nebula or Horsehead Nebula. (For most other nebulae, the UHC FILTER is much preferred.) Filter transmission is 80-90% at the H-Beta 486nm line, bandpass is 9nm.
1¼" LUMICON H-Beta Filter **$69.50**
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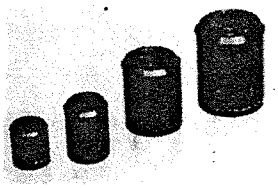

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10" Mead 2120	$1298	$1689	$1898
Celestron-11	$1395	$1893	$2583
Celestron-14	$3190	$4890	$5580

**Includes telescope, wedge, tripod. Special coatings: C-8, 2080 add $79; C-11, M-2120, add $140; C-14, add $215*

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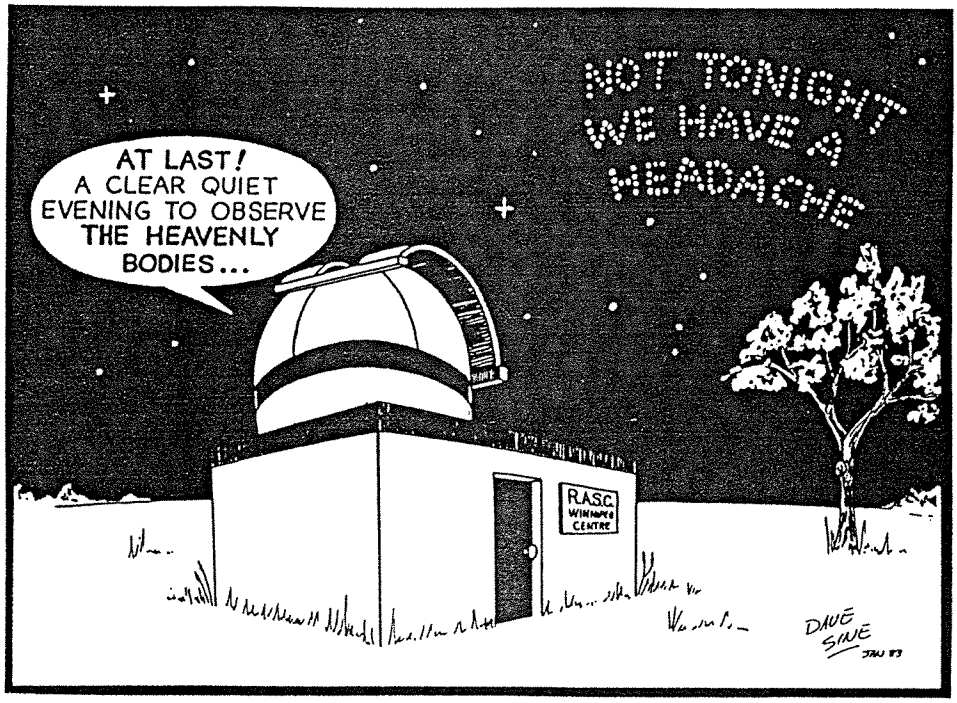
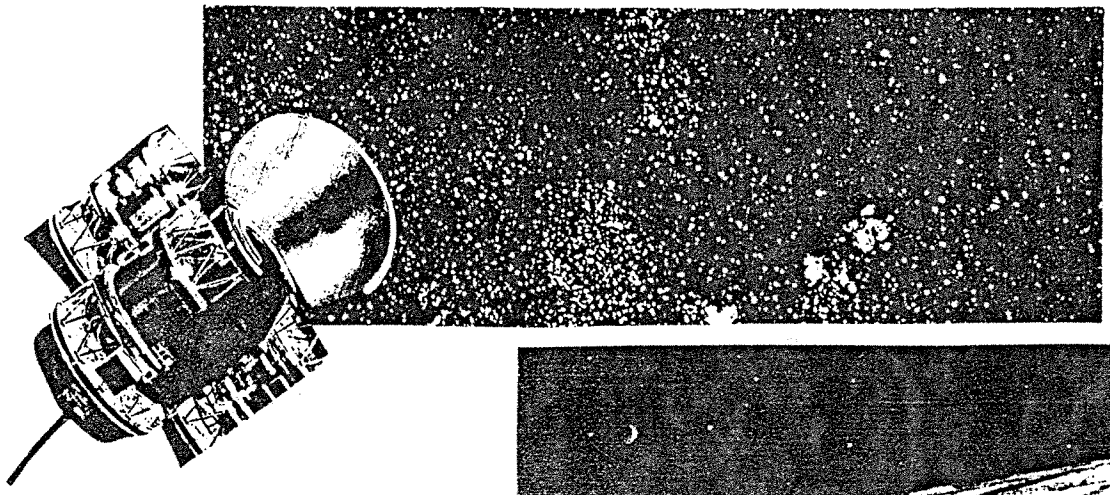
LANGUAGE.

SINE



A SEARCH FOR PLANET X



JOHN BERKEY

Astronomers hope that IRAS may answer a question that has haunted them since the discovery of Pluto 53 years ago: Does the solar system have a tenth planet, or perhaps a dim companion of the sun? Both skeptics and believers agree that if "Planet X" is out there, its heat is likely to register on IRAS's delicate sensors. Says Robert Harrington, a United States Naval Observatory astronomer who thinks the evidence points toward the existence of a tenth planet, "It ought to be quite conspicuous." IRAS scientists agree. They are planning a special computer search of the satellite data to look for undiscovered solar system asteroids or planets, which will move against the background of fixed stars during the course of the survey.

Harrington and his colleagues are following a trail of clues that began in the late ninteenth century, when astronomers found small discrepancies in the motions of Uranus and Neptune. They calculated that a ninth planet, two to seven times as massive as the earth, must be tugging on the two big planets from farther out. That prompted Clyde Tombaugh, an astronomer at the Lowell Observatory in Arizona, to begin a search that ended in 1930 when he spotted Pluto on a photographic plate.

Now it seems that Pluto may have been a red herring. The discovery in 1978 that it has a tiny moon, Charon, allowed astronomers to calculate the planet's mass, which turned out to be only one four-hundredth that of the earth—far less than was needed to cause the apparent perturbations. Harrington thinks that Pluto may be an ex-moon of Neptune, dislodged by an ancient encounter with the planet really responsible for perturbing Uranus and Neptune. He speculates that the planet, billions of miles beyond Pluto, would be a gaseous ball of methane and ammonia (see artist's conception above).

Could something else be tugging at those planets? Some astronomers, pointing out that roughly half of all stars are members of double-star systems, have suggested that the sun might have a dim, distant mate, perhaps a "brown dwarf"—a star too small to have ignited its thermonuclear fires.

One skeptic is Brian Marsden of the Harvard–Smithsonian Center for Astrophysics. He maintains that the perceived wiggles in the orbits of the outer planets are probably observational errors, not real perturbations. Neptune has not completed one trip around the sun in the decades since it was discovered, he notes, so its orbit is not as well known as those of many asteroids. "There is no need to postulate a large planet out there," he says. "The data are weak, but I wouldn't want to discourage a proper search." Neither would the IRAS astronomers.

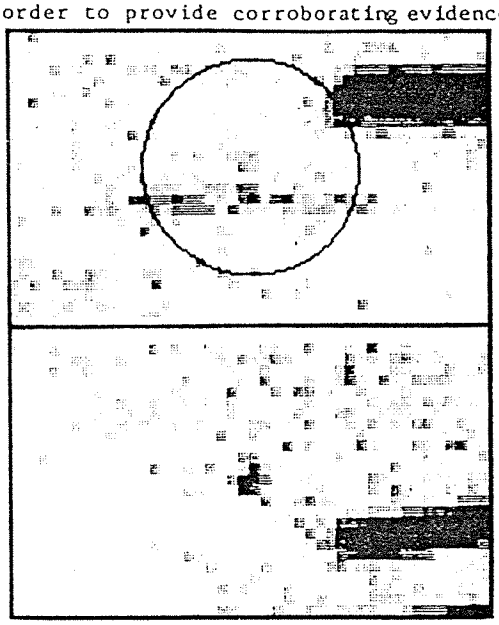
COMET NEWS

Is Comet Halley Already Active?

Reproduced here are two images of the newly recovered Periodic Comet Halley 1982i, recorded on 1982 Dec. 10.29 UT (top) and 1983 Jan. 14.25 UT (bottom) by Richard M. West and H. Pederson, European Southern Observatory, using a charge-coupled device (CCD) attached to the Danish 1.5 meter reflector at La Silla, Chile. These photographs were kindly made available to COMET NEWS SERVICE by Dr. West (discoverer of Comet West 1976 VI) in advance of their formal publication elsewhere. To record the extremely faint object, the telescope followed the comet's predicted motion by a computer-controlled, continuous offset, automatic guiding device. Thus the comet images are stationary, while the background stars are trailed. In both frames, north is at the top, and east is to the left. That the telescope is so relatively small is an extraordinary aspect of the observations — elsewhere the comet has been tracked only in apertures between 3.6 and 5 meters, since recovery at Palomar on Oct. 16 (CNS 83-1). Forty-five minute exposures uncovered the comet on both dates; two 12 minute trials had failed on Dec. 10. A broadband filter (3700 - 7800 Å) was used in both exposures.

The comet image appears round on Dec. 10, but a certain asymmetry was noted on Jan. 14, with a faint extension to the west, which may be real, or due to uneven guiding during the exposure. The images appear checker-board, as they are comprised of individual pixels ("picture elements"). By taking into account the sky background in each exposure, and disregarding minor color differences and differential atmospheric absorption, West and Pederson derived rough visual magnitudes of V = 24.5 ± 0.3 on Dec. 10 and V = 23.5 ± 0.3 on Jan. 14. They write, "Although our magnitudes are somewhat uncertain, it appears that P/Halley has become brighter by $\Delta m \sim 1.0 \pm 0.5$." The expected contribution from the comet's slight change in sun and earth distance over these two dates should only be $\Delta m = 0.15$. The error is large, but the astronomers conclude that the difference is probably real.

Because of the lack of detailed observations of comets at large heliocentric distances, it is not clear when they first become active. Some "new" comets, entering the inner solar system for the first time, are active at large heliocentric distance; some have attributed this to formation on the nucleus surface of highly unstable compounds from eons of bombardment by cosmic rays. However, on a periodic comet like P/Halley, this layer would long ago have been purged, so another explanation would be needed, such as volatilization of CO_2 ice. West and Pederson write, "The rather sudden brightening of P/Halley, taken together with the possible observation of an extended image, suggests that some kind of activity may have already begun in January 1983. In view of the faintness of the object, additional observations are obviously desirable in order to provide corroborating evidence."



Returning Periodics

The following periodic comets will be bright enough this spring and summer for viewing in binoculars or moderate aperture telescopes. P/Tempel 2, reaching perihelion June 1.54 UT, like P/d'Arrest is intrinsically brighter after than before perihelion; by early June it may be 3 mags. brighter than the forecast below. P/Tempel 1 may now be visible in moderate size telescopes,

1983 0^h UT	R.A. (1950)	Dec.	Δ	r	m_1
		P/TEMPEL 2			
Mar. 27	$20^h04^m.26$	$-13°36'.4$	1.679	1.551	13.1
Apr. 6	20 36.86	12 37.8	1.584	1.507	13.0
16	21 10.11	11 25.5	1.500	1.468	12.9
26	21 43.78	10 02.0	1.426	1.436	12.8
May 6	22 17.63	8 30.6	1.362	1.411	12.7
16	22 51.35	6 55.5	1.307	1.393	12.6
26	23 24.59	5 21.4	1.262	1.383	12.6
June 5	23 57.01	3 52.9	1.224	1.382	12.5
15	0 28.24	2 34.6	1.193	1.389	12.5
25	0 57.89	1 30.5	1.166	1.404	12.4
July 5	1 25.63	0 43.4	1.142	1.427	12.4
15	1 51.07	0 15.7	1.120	1.458	12.4
25	2 13.85	- 0 08.7	1.098	1.494	12.4
		P/TEMPEL 1			
Mar. 27	$13^h04^m.11$	$+15°16'.0$	0.843	1.811	12.5
Apr. 6	12 56.00	15 50.0			
16	12 46.92	15 46.2	0.759	1.712	11.9
26	12 38.80	14 54.8			
May 6	12 33.31	13 14.5	0.745	1.626	11.5
16	12 31.60	10 49.9			
26	12 34.19	7 49.1	0.778	1.558	11.3
June 5	12 31.02	4 21.1			
15	12 51.78	+ 0 33.9	0.841	1.512	11.3
25	13 06.11	- 3 25.0			
July 5	13 23.55	7 28.5	0.928	1.492	11.4
15	13 43.80	11 30.2			
25	14 06.58	15 23.0	1.039	1.499	11.7

CNS, McDonnell Planetarium

HALLEY'S COMET

Bulletin No. 1

Halley's Comet - the very name brings images of a great spectacle with fiery streamers crossing the sky or recalls stories by a parent or grandparent of an apparition many years ago. Since this most famous of all comets returns near the sun once every 75 years, it is normally a "once-in-a-lifetime" event and relatively few people alive today can recall the last appearance in 1910. Our chance is coming soon, in 1985-86, but the event may be regarded as a huge success or a complete disappointment, depending on what the viewer has been conditioned to expect.

Why is Halley's Comet so important? After all, there have been several hundred comets observed since the invention of the telescope. The history of Halley's Comet can be traced for more than 2,000 years and this was the first comet for which a future appearance was correctly predicted, by Sir Edmond Halley in 1705 for the return of 1758-59, but these facts alone would not make astronomers choose it for special study. It is because this is the only bright comet that exhibits a complete range of activity - solid nucleus, gaseous coma, dust emissions and enormous tail composed of both dust and electrified gas (plasma) *and* whose return can be predicted with sufficient confidence to plan observing programs and space missions years in advance.

Visually, Halley's Comet will be difficult to see at the coming return, especially from the latitude of Canada and from city locations. When closest to the sun and performing most actively, about February 9, 1986, the comet will be roughly behind the sun as seen from Earth. On its approach to the sun it will pass 93 million kilometres from Earth late in November 1985 when it will be a faint object well placed in the southern part of our sky for much of the night. The comet will still be more distant from the sun than the Earth at this time, however, and the level of activity is likely to be low, without a well developed tail.

The best time to observe Halley's Comet from Canada will probably be late December 1985 or early January 1986, although our weather conditions are not normally favorable at this season. As the comet approaches the sun it should brighten enough to be visible without binoculars if seen in a dark sky, but it moves steadily westward in the evening sky until it will become difficult to detect in evening twilight by mid-January.

Shortly after closest approach to the sun, mid-way between the distance of Mercury and Venus some 88 million km from the sun, Halley's Comet should be intrinsically active. The location in the sky is too close to the sun for it to be seen until early March and then it quickly moves deep into the southern sky. North of latitude 40° it will not be possible to see the comet more than 10° above the horizon (low in the southeast before sunrise) during March. By late April it has moved to the evening sky and is better placed for northern observers but it is already out to the orbit of Mars and the spectacular phases are likely to be over.

Observations of Halley's Comet from Canada will be a challenge, then, but one that many keen observers will surely meet. At most times it will certainly help to use binoculars or a small telescope and this may be essential for those with less than ideal observing sites.

What do astronomers expect to learn from studying Halley's Comet in 1985 and 1986? Let us consider our present picture of what a comet is and how it behaves. The accepted model for a comet is often called the "dirty snowball" model and its essential features have survived observational tests for 30 years. The nucleus of a comet is a small object, in most cases between 1 and 10 km in diameter. It is composed mainly of frozen volatile material which could include water ice, frozen carbon dioxide, methane and a few other substances. Opinions differ as to whether the innermost portions may form a sort of core or whether the nucleus is homogeneous throughout. There is now considerable evidence that the dominant component is ordinary ice but the relative abundances of the ices and the dusty materials mixed with them are uncertain. When a comet is far from the sun (beyond the orbits of Jupiter or Saturn) there is insufficient heat to vaporize the ices so there is no cloud of gas surrounding the nucleus and the characteristic tail simply does not exist at such distances. As the comet approaches the inner part of the solar system in its elongated orbit, the ices are warmed sufficiently to begin vaporizing (sublimation directly from solid to gas). Observations of this gas tell something of the chemical composition but the original molecules in the gas are usually broken up quickly by solar radiation and the dense coma which soon surrounds the nucleus is composed mainly of these secondary fragments. It becomes a detective problem to determine the original chemistry.

Along with the gas, a comet releases particles of dust, some of which we may eventually encounter as meteor particles. The nucleus is spinning, like most objects in the Universe, with typical periods of many hours. The "afternoon" side becomes the warmer side with more intense emissions of gas and dust from this side, leading to a rocket effect on the nucleus which is sufficient to affect the orbit. The fine dust particles are blown away from the coma by radiation pressure and form one part of a comet's tail. The other, more irregular tail, is a plasma tail formed by electrically charged gas particles whose motions are controlled by the solar wind with its appreciable and variable magnetic fields. All of this activity reaches a peak when the comet is closest to the sun and it is not rare for a comet nucleus to fracture into several pieces due to the stresses on it at this time. By observing the variation in all aspects of this activity as Halley's Comet approaches and then recedes from the sun, astronomers expect to find answers to some old questions about comets.

The most exciting discoveries during the coming apparition may well come from three space missions, sponsored by the European Space Agency, by the U.S.S.R. and by Japan. Attempts will be made to fly past the comet early in March 1986, when its distance from the sun is somewhat greater than that of the planet Venus. We may get pictures of the nucleus, estimated to be 5 or 6 km in diameter for Halley. Various instruments on board should return a multitude of data on the composition and other properties of the dust and gas leaving the nucleus. Other observations will be made from satellites in orbit about the Earth. An army of ground-based observers is already being organized by the International Halley Watch, with worldwide networks of observers in each of several specialties ready to cooperate in an all-out attack on the mysteries of these elusive visitors. Observing the comet from the backyard may prove difficult but this apparition of Halley's Comet will provide us with new insight into the earliest history of our solar system which should help our understanding of our place in the Universe.

Available through the cooperation of:

The Royal Astronomical Society of Canada
The Herzberg Institute of Astrophysics, National Research Council Canada
The National Museum of Science and Technology

SKY NOTES

APRIL 1983

17 — Moon is 14° farther east on each successive night this week. Moon is moving faster than average because it passes perigee, the near point in its orbit.

Evening: 18 — Castor, Pollux, Procyon. Watch Moon pass Pollux and Regulus this week. Moon high in WSW

Evening: 19 — Castor, Pollux, Moon approaching First Quarter. Procyon

20 — Venus, Aldebaran, Hyades, Pleiades. Evening: Venus 7° N of Aldebaran. Mercury. W WNW

21 — Mercury at greatest elongation, 20° from Sun. In contrast, Saturn is at opposition, 180° from Sun and visible all night. Look 9° E of Spica.

Saturday evening, April 23 — Betelgeuse, Venus, Orion's belt, Aldebaran, Hyades, Pleiades, Rigel, Mercury. Astronomy Day: Join in on local activities. WSW W WNW

Evening: 24 — Venus, Aldebaran, Pleiades, Mercury. Mercury fades rapidly this week. When will you last see it? W WNW

Moon 25 — Spica, Saturn. Evening: ESE SE

Evening: 26 — Spica, Saturn, Full Moon tonight. ESE SE

27 — Morning and late evening: Jupiter 5½° N of Antares, the second of three conjunctions between them in 1983.

Evening: 28 — Venus, Aldebaran, Hyades, Pleiades, Mercury. W WNW

Mornings: (Look also Fri eve, 3 hours after sunset, to see Moon a few degrees east of Jupiter.) Moon Sat Apr 30, Jupiter, Moon Fri Apr 29, Antares

CURRENT SKY INFORMATION:
Call (517) 332-STAR

MAY 1983

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Evening: 1 — Venus. Watch Venus pass between Bull's horns early this week. Aldebaran, Pleiades (use binoculars). W WNW	Evening: 2 — Northern horn, Southern horn, Aldebaran. W WNW	Evening: 3 — Venus, Aldebaran. W WNW	4 — At sunrise this morning, Moon is just over 90° west of Sun and hasn't yet reached Last Quarter. Note Moon appears slightly more than half full.	Evening: 5 — Venus, Bull's horns, Aldebaran. W WNW	Morning: 6 — Jupiter, Antares, Head of Scorpius. Jupiter-Antares pass due south together, 3-4 hours before sunup. SW	7 — Aldebaran is getting lower each evening. On what date will you last see it? Next week it will get too difficult to observe; Sun enters Taurus one week from today.
Morning: 8 — Moon. E	Morning: 9 — Moon. E	Morning: 10 — Old Moon rising (use binoculars). E	11 — Moon isn't visible today or tomorrow. Look for thin crescent on Friday, starting within half an hour after sunset. Its age will be 29 hours from East Coast, 32 hours from West.	12 — New Moon 3:25 p.m. EDT (12:25 p.m. PDT), not visible. Using binoculars early tomorrow evening, try for Aldebaran near Moon.	Evening: 13 — Venus, Bull's horns, Betelgeuse, Young Moon in WNW, Aldebaran. W	Evening: 14 — Venus, Moon, Betelgeuse. W WNW
Evening: 15 — Venus, Moon, Bull's horns, Betelgeuse. W WNW	Monday and Tuesday evenings, May 16 and 17: Near perigee, Moon moves 14° in 24 hours, while Venus goes 1.1°. Moon May 17, Pollux, Castor, Moon May 16, May 17, Venus, May 16, Procyon	18 — Evening: Moon, not quite 90° east of Sun, hasn't yet reached First Quarter phase. Moon, Regulus in SW	19 — Evening: Moon, now more than 90° east of Sun, has passed First Quarter. Moon, Regulus	20 — Next week, Earth overtakes Jupiter on May 27 and Uranus the next evening. See May 24, 27, 28.	21 — Pleiades, in conjunction with Sun today, are lost in solar glare for several weeks around this date.	
Tonight and tomorrow, look for Saturn and Spica near Moon. See next box to right. 22	Sunday and Monday evenings, May 22 and 23: Moon, May 22, Saturn, Moon May 23, Spica in SSE	24 — Within a week, four objects take turns at opposition: Moon on May 26, Jupiter on May 27, Uranus on May 28, and Antares on May 31.	25 — Evening: Moon, Jupiter, Antares. ESE SE	26 — Evening: Moon rises within a few minutes after sunset and remains in view rest of night. Jupiter, Full Moon, Antares. ESE SE	27 — End of twilight: Jupiter at opposition, Antares, Moon. SE	28 — Uranus 180° from Sun tonight. It appears as a 6th-magnitude "star" 1½° SE of (below) Jupiter. Use binoculars or telescope. Look before moonrise (about two hours after sunset). Moon brightens sky for rest of night.
Sunday evening, May 29: Venus 4° S of Pollux. Twins, P, C, Venus, Procyon. P = Pollux C = Castor. W	30 — Each evening, watch changing alignment between Venus and the Gemini Twins. On what date will Venus line up with Castor and Pollux? Find out by observation.	Tuesday evening, May 31: Twins, P, C, Venus, Procyon. W				

Bright Planets: Venus is well up in west at sunset and is most prominent evening "star" as darkness falls. This month Venus sets farthest north and latest, as much as 3½ hours after sunset. Jupiter, next in brilliance, rises in SE within 2½ hours after sunset on May 1. In late May Jupiter has already risen at dusk and is up all night. Saturn, in SE sky at dusk, is 7°-8° left of Spica and half a magnitude brighter than that star. Saturn passes due south about 4½ hours after sunset on May 1, and 2 hours after sunset on May 31. **Telescopic views:** Venus shows gibbous phase, 7/10 full on May 2, 6/10 full on May 26. Saturn's rings are tilted 15°. Jupiter has large disk, ¾ arc minute across, four bright satellites, and Uranus only 0.8° to 1.7° away.

Robert Victor and Jenny Pon

Sky Calendar, Abrams Planetarium, Michigan State University
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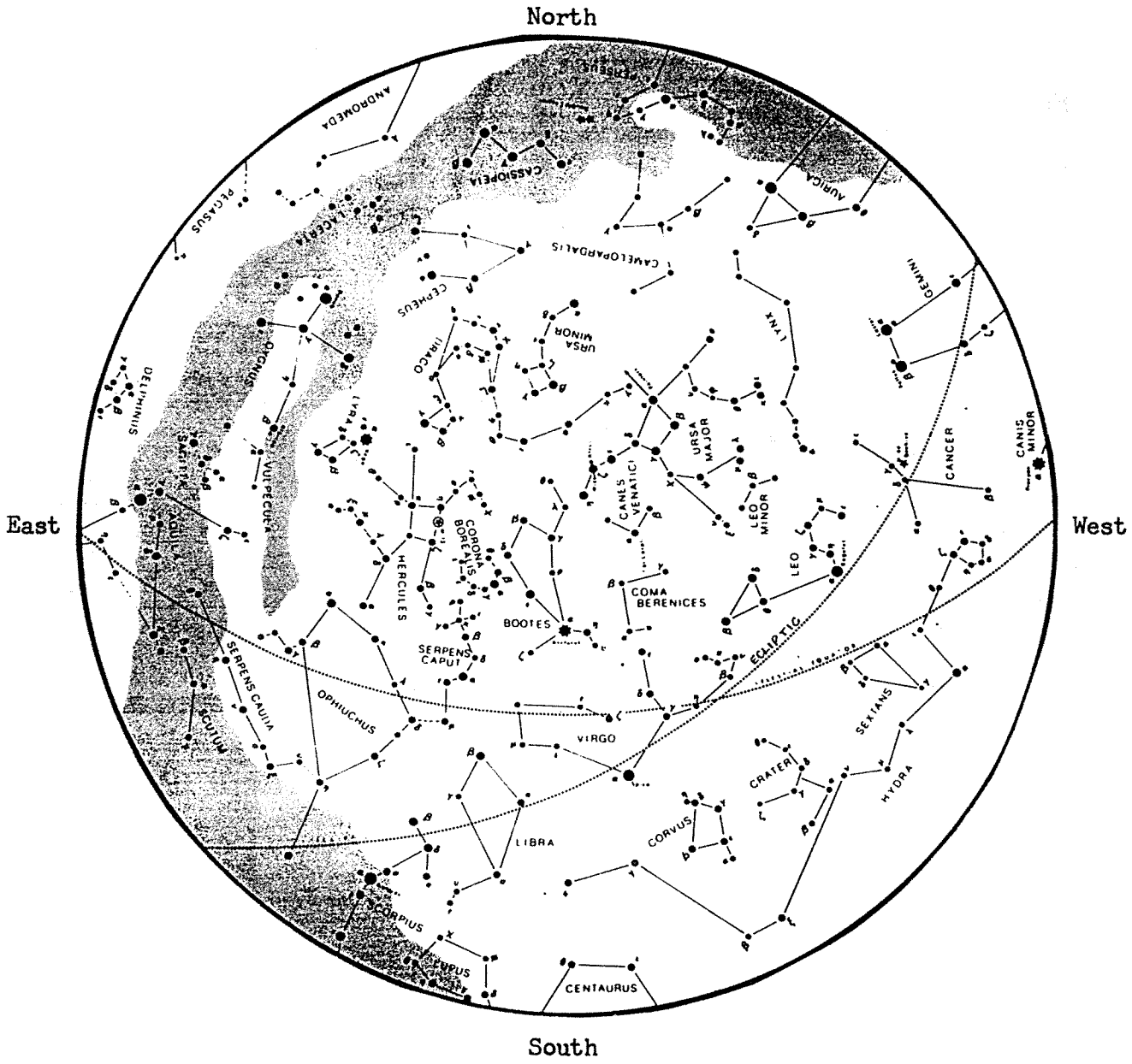
Magnitudes: Venus −3.6 to −3.8; Jupiter −2.0 to −2.1; Saturn +0.4 to +0.6; Uranus 5.8. **Motions in May:** The **Sun,** going 30° east, crosses from Aries into Taurus May 14. **Venus** goes 34° east, slightly increasing its angular distance to Sun to 45°. Crossing from Taurus into Gemini, Venus passes between the horns of the Bull on May 2 and 4° south of Pollux on May 29 (see diagrams). During week of May 8, Venus passes 2.4° north of the solstice in Gemini (the place near Castor's foot where Sun will appear on June 21), and so has its northernmost setting of this year six weeks before the Sun does. **Jupiter** begins May 5½° N of Antares and 6.2° E of Beta Scorpii, the topmost of the three bright stars in the Scorpion's head. Jupiter retrogrades (moves west) 3.6° in May, and at month's end is nearly 7° from Antares and just 2.6° E of Beta Scorpii. There will be a close encounter between Jupiter and Beta late next month;

Faint **Uranus,** near Jupiter all month, is 1.3° SW of the bright planet on May 1, 0.8° S of it around midmonth, and 1.7° SE of it on May 31. **Saturn** retrogrades 2°, moving to within 7° ENE of Spica.



Discoveries & Recoveries

1983b PERIODIC COMET PONS-WINNECKE (1819 III). E. Everhart, U. Denver, and T. Seki, Geisi, Japan, independently recovered this 19th-magnitude object on plates exposed Jan. 12 and 19, respectively (IAU CIRCULAR 3765). This periodic (P = 6.36 yr.) is too faint this apparition for observation in moderate size telescopes.

1983c PERIODIC COMET BOWELL-SKIFF. Edward L.G. Bowell discovered this 16½ magnitude new periodic comet on exposures by Brian A. Skiff with the 0.33-meter photographic telescope at the Lowell Observatory Anderson Mesa Station (IAUC 3773). Too faint for moderate aperture telescopes, the comet reached perihelion about 1983 March 15 at a distance q = 1.94 AU (Marsden, IAUC 3775). The period, 15.2 years, is somewhat uncertain, and Dr. Bowell informs us that the object may approach Saturn within 1.5 AU shortly after 1990. Bowell is discoverer of C/1980b.

This star map is for June/July. Hold the map overhead and turn it so that the directions marked around the map's horizons match the true directions. Try to find the brightest stars and star formations first, then the fainter ones. Any planets that are visible will appear as bright stars, close along the ecliptic.

If you are interested in finding out more about any aspect of astronomy or in joining an astronomy centre, Please contact the R.A.S.C. Winnipeg Centre for those 14yrs old and above. Under 14yrs should contact The Manitoba Astronomy Club, c/o The Manitoba Planetarium, 190 Rupert Avenue, Wpg, MB. R3B ON2.

R.A.S.C. Winnipeg Centre. P.O. Box 215, St James Post Office, Winnipeg, MB. R3J 3R4.