

President's Message

by Dave Knisely

VACATIONS ARE NICE! I just got back from visiting one of our remaining charter members Rick Johnson at his cabin on Minnesota's Big Mantrap Lake, and we did the three things we like to do most: 1. Observing, 2. Computer work, and 3. Fishing (I'm not sure how much I like fishing, since I only hooked a couple of small ones). We had good Auroras on the first two nights, but it was cloudy and rainy for the rest of the trip. Oh well, I guess I will have to wait until the next star party to see anything.

Don't forget our Atlas Site cleanup day on Saturday, September 28th. We will gather at about 9:00 a.m. with shovels, rakes, saws, and other implements of destruction, to get the site ship-shape. If we can get the trees removed, we will be closer to setting up our Astrophotography shelter on the north side of the pad.

I want to thank Ron Debus for his fine program at the August meeting on the construction of his ten inch Dobsonian. We need more people to put on programs like this (see what you miss by no coming to the meetings?). The September meeting's program should be on the July total solar eclipse, so be sure and attend. Also up at the September meeting will be the opening of nominations for club officers. The election will be held at the October meeting. If you know of anyone who you think would make a good officer, please put their name in for nomination. SEE YOU AT THE MEETING!!!

The Prairie Astronomer

c/o The Prairie Astronomy Club, Inc.

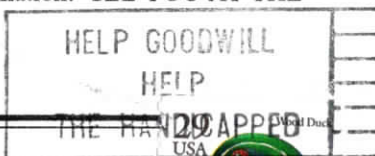
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Next Meeting September 24 , 1991



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THE *Prairie Astronomer*

A PLANETARY GRAND TOUR:

VENUS — A BEAUTIFUL ENIGMA

by Carolyn Collins Petersen

So far in our planetary exploration, we've found that Mercury is a hostile, unwelcoming planet with little to recommend it for manned exploration. But, it's close to the Sun, so we'd expect dangerous conditions. It seems likely that as we move away from the sun, the less dangerous the planetary conditions might be. What about a planet a bit further out? What about Venus? This brilliant planet shines in the sky, an enigmatic world. That brilliance earned Venus the mistaken nickname of the "morning" or "evening" star, since it appears in morning twilight or evening dusk.

We've known for years that Venus is cloud-covered, but what lay beneath those clouds was the subject of our wildest imaginings. Only recently have we had a spacecraft in place to study Venus — and that craft is the Magellan probe — on a one-year mapping orbit of the planet. Before we get to the results of the first few months of Magellan's mapping, let's continue the imaginary exploration of the Solar System that we began on Mercury, and indulge in some speculation of our own about this world.

We can assume that since Venus is covered with clouds, it has an atmosphere. We can't tell what the atmosphere is made of just by eyeballing it. To find out, we have sent robot probes to sniff the atmosphere for us.

The clouds of Venus reflect sunlight back into space. That might make it very cool and dark on the surface, just as the Earth's surface cools and darkens underneath our clouds. Our earliest probes detected some water in the Venus clouds. On Earth, clouds also contain water in the form of vapor, and when they release that vapor, it is in the form of condensed drops of water. We experience this as rain.

If we watch the clouds of Venus over a period of days, we can see that there is movement, at least in the upper cloud decks. This implies wind, and other atmospheric disturbances such as lightning.

So, imagine this world — a murky, humid, windy and stormy place — and ask yourself the big question: What sort of life could exist here?

Many science fiction writers wrote about dinosaurs and jungles existing on a steamy, tropical Venus. Robert A. Heinlein, in a short story called "Logic of Empire", imagined a murky, swampy world where human labor colonies flourished, and the only form of intelligent life was a lizard-like creature that lisped when it talked. Perhaps dinosaurs could live on such a fantasy world, but the reality of Venus doesn't include them. As we descend through the atmosphere of Venus, we find that the atmosphere is not something we'd even be able to breathe! Water does exist in this atmosphere, but we also find great quantities carbon dioxide. Add to that the corrosive chemicals sulfuric acid, hydrogen fluoride, hydrogen chloride, and sulfur dioxide. This is certainly not the life-giving mix of gases that WE (or probably ANY life forms) depend on for life!

It is windy in the top layers of the Venerian clouds — around 120 miles (200 km) per hour, but the wind seems to calm as we get nearer to the surface. Close to the surface we find large amounts of carbon dioxide — deadly to humans — and the wind has slowed down to only 3.2 km (2 mi.) per hour.

The biggest surprise for those who expect to see dinosaurs and swamps here is that Venus is a hot, dusty, dry, rocky world, with a surface gravity nearly that of the Earth's. Magellan's radar scans reveal a cratered, cracked world, with some regions dominated by volcanic flows.

There are no pools of water, no palm fronds, no saurian life forms reaching out to greet us with a "Take us to your leader" (or the Venerian equivalent). It is hot because the clouds do not screen out all of the visible light and infrared radiation from the Sun. That radiation reaches the surface and is reflected back as heat. Yet, the heat is trapped under the clouds, raising the surface temperature to 450 Celsius (850 F). The atmosphere near the surface is under pressure from the clouds above. Scientists have calculated that the atmospheric pressure on the surface is 100 times that of the Earth's. Without a pressure suit, a person standing on the surface of Venus would be crushed instantly, if they didn't fry or die of acid inhalation first.

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc., and is free to all club members. Membership status and expiration date are listed on the mailing label. Membership dues are: Junior Members and Newsletter Only Subscribers...\$10/yr; Regular Members...\$26/yr; Family Memberships...\$29/yr; Address all new memberships, renewals, or questions to THE PRAIRIE ASTRONOMY CLUB, INC., P.O BOX 80553, LINCOLN, NE 68501. For other club information contact one of the following officers: Dave Knisely (Pres)223-3968, Eric Hubl (V.Pres)423-6267, Ron Veys (Sec)486-1449, Lee Thomas(Treas)483-5639, Jack Dunn (2nd V. Pres)475-3013. All newsletter comments and articles should be sent to Newsletter Editor JOHN LORTZ, 12023 PARKER PLZ #105, OMAHA, NE 68154 no later than 10 days before monthly club meetings. Club meetings are held the last Tuesday of each month at Hyde Observatory in Lincoln, NE.

Observing Chairman's Report

by Dave Knisely

THE NEXT SCHEDULED STAR PARTY WILL BE FRIDAY, OCTOBER 4TH AT THE ATLAS SITE. The early Autumn skies offer us a few remaining Milky-Way objects plus a number of bright galaxies. About four and a half degrees east and 3/4 north of Rho Cygni is the interesting open star cluster NGC 7209. It is moderate in size with six or eight inch apertures revealing irregular sinuous star chains with a red star near the center. About 80 of its component stars are visible in a ten inch. Also in the area is NGC 7296, located just over half a degree east of Beta Lacertae. Visible in a four inch under good conditions, this cluster consists of a moderate to small fairly rich group of faint stars arranged in a right triangle.

In Pegasus are several interesting galaxies. One of the brightest is the tilted spiral NGC 7331, located 4.3 degrees north and one west of Eta. Visible in a three inch as a faint fuzzy oval, this galaxy shows hints of detail in an eight, with a ten inch aperture revealing some patchiness on the ends. The galaxy does have a dark lane along the west side which is sometimes visible in a ten inch. Those of you with very large instruments will want to look just under a degree to the south and a bit west of NGC 7331 for Stephan's Quintet, a group of five very faint galaxies in a very tight group. I have glimpsed two or three of its members in an eight inch under very good conditions, but none of the group is spectacular. Also in Pegasus is the barred spiral galaxy NGC 7479. It is located about three degrees south of Alpha Pegasi and is visible in a six inch as a very faint fuzzy oval patch with diffuse outer edges. An eight inch will show hints of the central bar through the middle, while a ten will sometimes show one of the two spiral arms.

Down south in Aquarius is the largest planetary nebula in the entire sky, NGC 7293, located 1.25 degrees west of the faint star Upsilon Aquarii. Known as the Giant Helical Nebula, this object is visible as a small faint fuzzy patch when viewed in a good pair of 7x50 binoculars. This nebula is half the size of the full moon, but is very faint and needs very low power in a telescope to be seen at all. Richest field telescopes equipped with nebular filters like the Orion Ultrablock or Lumicon OIII will show the nebula easily as a fuzzy doughnut of light. Faint hints of the helical detail are visible in a ten inch when the OIII filter is used.

Of course, now you should look at the great spirals M31 and M33. But many people don't know much about the third best spiral in the sky, NGC 253, located four degrees north and two west of Alpha Sculptoris. Easily visible in 7x35 binoculars as a small faint fuzzy streak, this galaxy will show detail in an eight inch. Using moderate to high power will reveal hints of dark patches, especially in moderate to large apertures. In a ten inch, I have used up to 200x to reveal the dusty nature of this tilted spiral. It is well worth the look.

Up north in Cassiopeia is the open cluster M52, located about 5.5 degrees west and 2.5 degrees north of Beta Cassiopeiae. It is a moderate sized group of stars which is rather compact and difficult to resolve in small instruments. It has brighter stars on the west side with a ten inch showing about 50 member stars with a prominent yellow one on the west edge.

As a final target, look about half a degree to the south-east of 13 Andromedae for the small planetary nebula, NGC 7662. Small telescopes will show it as a fuzzy 9th magnitude star-like object, with large instruments revealing its striking bluish color and some interesting detail. An eight inch shows a vague two-shell structure with an inner polygonal shell and a faint outer circular shell.



TELESCOPE MAKING

John B. Lortz
Francis L. Gowin
David Knisely

Daniel Neville
John W. Johnson
Mark Urwiller

The VeysFamily (Apparently "The" is a heavy reader!)

If you are taking any of these magazines on the club, but you are not listed here, the publisher has already misplaced you. If you are subscribing as a civilian and wish to convert to the club plan, now is the time—we'll figure a prorated price for you.

If you understand ANY of this, you are automatically qualified to run for Club Treasurer in the next election!

FOR THOSE YOU LIKE TO PLAN AHEAD... WAY AHEAD!

Jackie Wade, who is Chairing the Mid-States Region of the Astronomical League, informs us that the date for the 1992 convention in Kansas City has been set: June 19-21, one week after full moon. Those who attended the last convention held in KC will recall it was an excellent event, held at Vila College which will be the 1992 site as well. Mark calendars now—we'll want a good turnout to see how it's done...PAC has volunteered to host the 1993 convention in Lincoln!

For Sale!

TELESCOPE FOR SALE

12 1/2 inch Meade Research Series Newtonian with 16 eyepieces (including Naglers).

Approximately 8 years old. Equipped for astrophotography: Dual axis drive corrector and 3-inch photo guide telescope. The telescope cost about \$2,000 new, the eyepieces about \$1,000. Owner is commencing classes at UN-Kearney and needs the money. He says the only flaw is cosmetic: The polished aluminum mounting cracked, but has been welded. Best offer. Jim Demary (308) 236-7533.

ANOTHER TELESCOPE FOR SALE (IS THIS AN EPIDEMIC, OR WHAT?)

6-inch Meade Reflector f/5 with finder scope.

Includes 27mm and 9mm 1 1/4 inch eyepieces (the latter is partially cracked), equatorial tripod, slow-motion controls, setting circles. Approximately 3 years old with little use. Asking \$300 (negotiable). Contact Don Mares, 1314 N. 42nd, Lincoln (466-6696)

The surface of Venus is flat compared to the Earth's. The lowest point is only 3,758 miles (6,048 km) from the center of the planet, while the highest elevation is 3,766 miles (6,062 km) from the center. The highest mountain on Venus is named Maxwell. It rises almost seven miles above a plateau called Lakshmi, on a "continent" called Ishtar. There are other mountains on Venus, not nearly so high. From radar maps, we have determined that these mountains could be shield volcanoes.

Craters on the surface are all larger than 5 kilometers across. This implies that only the largest space debris survives passage through Venus' thick, corrosive atmosphere. Some craters are oddly-shaped. Other craters are nearly obliterated by volcanic flows that rose to the surface when the crater formed.

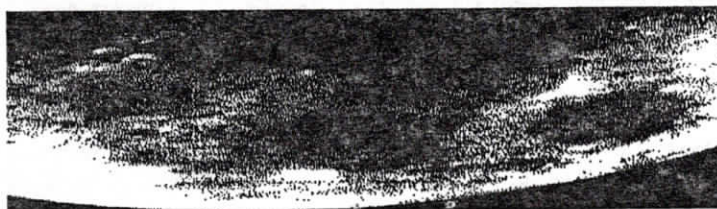
Magellan has completed one-fourth of its mapping mission, and more exciting finds are sure to result.

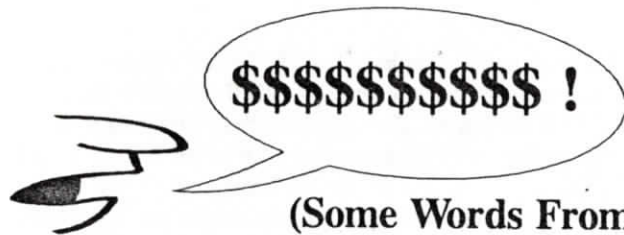
Living on Venus would require a colonist to live underground, like a mole. Venturing "outside" would require heavy pressure suits. Droplets of corrosive acids would eat into metal shelters. Colonists on Venus would most likely have to use an Earth calendar to keep track of time. The planet rotates very slowly, completing one revolution in 255 Earth days. Thus, if you were born on Venus, at the end of one Venus day, you would be nearly 8 Earth months old! Yet, you would also be over one Venus year old, since Venus revolves around the sun every 225 Earth days.

Exploration of Venus, done by the U.S. and the U.S.S.R.'s Pioneer and Venera spacecraft over the past twenty years, and now the Magellan mapping mission have shown — once and for all — that Venus is hardly the swampy planet of dinosaurs that we hoped to find.

The late George Abell, in his book "Exploration of the Universe", summed up Venus pretty well. "The modern exploration of Venus has shown it to be very different from the Earth and hardly well named for the love goddess: Venus is an absolute hellhole! ... it would not be a nice place to live! It would not even be a nice place to visit!"

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(Some Words From Lee...)

RASC HANDBOOKS

Yes, it's time to plan for 1992 observing! The 236 page 1992 RASC Handbooks will be published in November, so we need to get our order in by October 15. Good news: The Canadian government has relented and is not charging U.S. buyers the burdensome General Sales Tax (7%). Bad news: Prices are going up from last year anyway (or is that news to anybody?).

If you buy a single copy from RASC yourself, it costs \$14.50. Buy from the Prairie Astronomy Club and get it for just \$10.00! But, as Jean Dixon says in those loathsome cable TV commercials for her 900-horoscope number, "You must act now!". We need to order at least 10 to get the discount price.

Either bring your money to the September meeting or mail a check for \$10 to the club post office box by October 10, 1991.

IT'S RENEWAL TIME FOR ASTRONOMY/DEEP SKY/ TELESCOPE MAKING SUBSCRIPTIONS TOO!

To prevent lapses in subscriptions, our order must be mailed by October 15. If you want to renew (or place a new subscription) to any of these magazines at the club rates, the club treasurer MUST receive your payment by October 10 (so bring it to the September meeting or mail it to the club's post office box by that date.)

Prices have increased on these subscriptions too:

Magazine	1-year	2-year
Astronomy	\$16.00	\$32.00
Deep Sky	\$10.00	\$20.00
Telescope Making	\$10.00	\$20.00

Note that subscriptions are for a calendar year. Also, Kalmbach Publishing is allowing 2-year renewals at club rates (unlike the past), but there is no additional discount for the longer term. You might lock in the lower rate by subscribing for two years, but since the prices just got jacked up by \$2.00 per

year on all magazines, another increase isn't likely again next year anyway.

It's admittedly difficult to determine exactly how much money you're saving by subscribing to these magazines through the club—but you are saving money. For example, ASTRONOMY lists its one-year subscription price at \$24 on the masthead, but in advertisements offers 1 year at \$21, "\$9 off single copy prices." However, single copies sell for \$2.95, which would be \$35.00 for 12, or "\$14.00 off single copy prices." Using my math you'd save a whopping \$19.40 "off single copy prices" by subscribing through the club. Of course, only the Exceptionally Wealthy (and/or Exceptionally Stupid) by any magazine at the "single copy price". Using ASTRONOMY'S math, you'd save \$14.00 "off the single copy price" by subscribing through the club. Just comparing their \$21 rate to our \$16 rate, you save \$5 per year. Their three-year rate is \$55 (or \$18.3333-to infinity-per year), so you'd still save \$2.3333 per year at the club rates.

To answer the inevitable question: No, you cannot substitute ASTRONOMY for SKY & TELESCOPE as a part of your membership. Our agreement with Sky & Tel prohibits such shenanigans. Sky & Tel is a "benefit" of your membership. The opportunity to subscribe to Astronomy, TelMaking and Deep Sky at reduced rates is an additional benefit.

Here is the current subscriber list according to Kalmbach Publishing:

ASTRONOMY

Delmar Motycka	John Bruce Jr.
John B. Lortz	Steve Bornemeier
Francis L. Gowin	Richard P. Johnson
The VeysFamily	(the Park Rapids, MN Johnson, not
(who IS this guy "The", anyway?)	the one in Lincoln, NE)
Donna Woudenberg	Dennis Dunn
Daniel Neville	Bev Hetzel
L. L. Thomas	Holly Myatt
	Carroll Moore

DEEP SKY

John B. Lortz	Mark Urwiler
Cedric Gibb	Bev Hetzel
L. L. Thomas	
Richard P. Johnson	

(still in Park Rapids, but he won't be when this list gets sent in.
We're taking bets on how Kalmbach will screw him up this year!)