

showing over 50 members.

As a final challenge, take a look with a six inch or larger aperture for the "Ring-Tail" galaxy, NGC 4038, located about 1.3 degrees south and 3.4 degrees west of Gamma Corvi. It will appear as a moderate to small faint fuzzy oval with a slight protrusion on one end. A ten inch under good conditions will show some patchy ring like detail in the main oval, and will make the protrusion turn into an extended "hook".

A Note from the Editor:

This is a special note to let everyone know that the newsletter will be arriving sooner on your doorstep starting in April. Because many of you have been getting the Prairie Astronomer on the day of the meeting or even the day after, I'll be sending out the newsletter about 4 days earlier from now on. This means that I will need all articles for the letter about 10 days before each monthly meeting instead of the usual 7 days.

Also, since next month is the 30th Anniversary of the Prairie Astronomer, I'll be publishing a special newsletter commemorating the history of the club. Anyone who has any special memories they would like to include in the April newsletter is invited to drop me a note.

The Prairie Astronomer
c/o The Prairie Astronomy Club, Inc.

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Next Meeting March 26, 1991

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THE *Prairie Astronomer*

Lincoln Premiere of "The Astronomers" at this Months Meeting

By special arrangement with Mueller Planetarium and KCET-Los Angeles, the program for this month's meeting will be an advance showing of the first episode of the forthcoming (and already acclaimed series) "The Astronomers". Funded by a substantial grant from the Keck Foundation (yes, the same outfit that donated the bucks to build that big telescope on Mauna Kea), "The Astronomers" is a series of six one-hour programs containing (according to the press blurb) "an unprecedented assemblage of world-renowned scientists, with episodes examining areas including dark matter, cosmology, quasars, planets, the life of stars, and astronomy's future."

The first episode is titled "Where's the Rest of the Universe?", and discusses the search for missing matter that has been a major research preoccupation of the astronomers and cosmologists. As will be typical for this series, the program emphasizes the personalities (other than Carl Sagan, who is about the only "astronomer" the public knows about) who do astronomical science.

This episode will have its broadcast premiere on PBS April 15th, but we'll have an opportunity to view it in its entirety, as taped from an advance satellite feed, at the club meeting March 26th.

Please note the new format of the meetings, as announced by President Knisely. Business meetings will start promptly at 7:30 p.m., and will be concluded in 30 minutes. The program will begin at 8:00 p.m. Members and guests interested only in the program and social activities can plan on arriving by 8:00 p.m. Those interested in club business should be present promptly at 7:30 p.m. when the business meeting is gavelled into session.

A Planetary Grand Tour

by Carolyn Collins Petersen

Editors Note: Last month, as I was scanning the astronomy and space forums on CompuServe, I happened upon a series of articles concerning our solar system written by Carolyn Collins Petersen. I contacted Carolyn for authorization to reprint the articles and she kindly granted me permission to do so. (She also asked that she be put on the newsletter mailing list which I quickly agreed to do!)

The series is called "A Planetary Grand Tour" and Carolyn is in the process of publishing a book which will contain much of the information the articles present. To date there are twelve sections, and I will be printing them in their entirety over the next year. I hope you enjoy them!

INTRODUCTION -- CHILDREN OF THE UNIVERSE

"Stars scribble in our eyes,
the frosty sagas, the gleaming cantos
of unvanquished space."

-- Hart Crane

Stargazing is a ritual as old as human culture. On a clear, dark night we step outside for a moment, and raise our eyes to the sky... and suddenly our souls are touched by the splendor of the stars. We -- who are the descendants of generations of astronomers -- wonder at what we see, and question the cosmos -- why is it? how was it formed? can we explore it?

In answer, the universe dangles tantalizing stellar treasures before us. It dares us to come out and dig them up. And then, preposterously, it challenges us

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Observing Chairman's Report

by Dave Knisely



THE NEXT SCHEDULED STAR PARTY WILL BE FRIDAY, APRIL 12TH AT THE ATLAS SITE. The great "window" out of the Milky Way is now open, and galaxies are in season. Start your extragalactic journey with the bright galaxies M81 and M82. M81 is located about two degrees east and 3/4 north of 24 Ursa Majoris, and is visible in a good pair of 7x30 binoculars as a tiny fuzzy spot. This tilted spiral is a pretty sight in moderate apertures, but shows little obvious detail other than the bright milky nucleus and faint outer haze. Under excellent conditions, an eight inch will sometimes show faint indications of the spiral arm, with a ten inch showing the south arm most clearly. M82 at first glance looks like an edge-on spiral in almost any telescope, although it is classed as an irregular. Located less than a degree north of M81, this galaxy does show considerable dark detail in an eight inch or larger aperture when moderate to high power is used.

Leo offers several bright and interesting galaxies for your viewing pleasure. NGC 2903 is a nice spiral located about 1.5 degrees south of Lambda Leonis, and is visible in binoculars. A six inch shows a definite nuclear region and irregular elliptical outer haze, while larger instruments will show hints of structure. A ten inch shows the portions of the arms and extensive mottling over the entire oval disk of the galaxy. Also in Leo is the bright trio of galaxies M65, M66, and NGC 3628, all located about halfway between the stars Iota and Theta Leonis. M 65 appears as a moderate sized faint elongated fuzzy spot when viewed in a 60MM refractor, with larger instruments making the center brighter. A ten inch will hint at a dark lane along the east side. M66 shows a bit more detail, with a six inch making it look a bit asymmetrical. An eight inch reveals hints of one of the spiral arms on the west side of the nucleus in addition to some mottling. In a ten inch, both arms are vaguely visible with the west one looking like the arm of a crab. The third galaxy in the trio, NGC 3628 can be seen in a four inch if you look to the north of M65 and M66. It appears as a faint narrow streak of light, with an eight inch sometimes showing the narrow dark lane which runs across the nucleus. Also in Leo is NGC 3521, a faint spiral located about half a degree east of 62 Leonis. Although visible in a good three inch, this galaxy shows little detail except for its rather elliptical shape in small apertures. An eight inch shows a small core nucleus and two faint outer fans of haze extending out east and west of the center, while a ten inch will occasionally reveal patches on both ends.

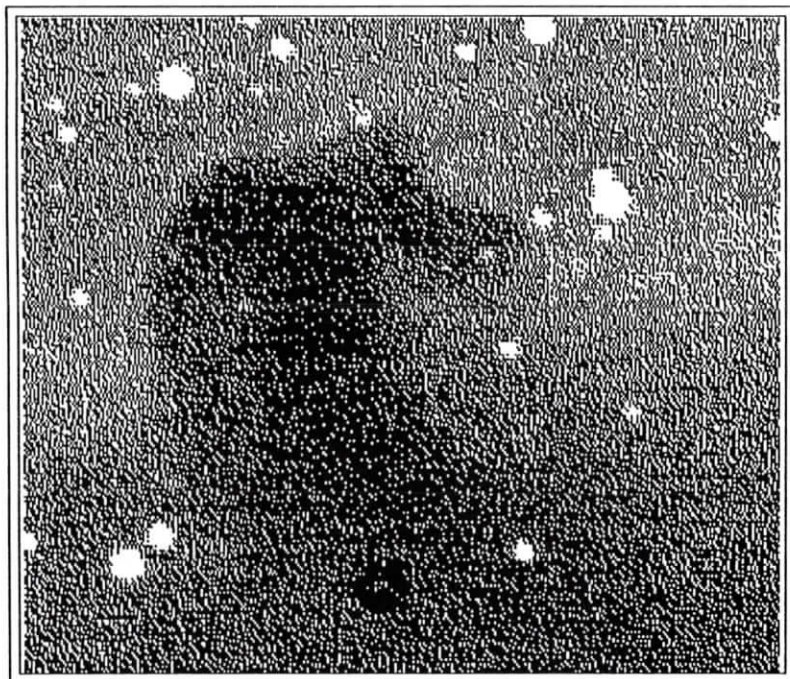
If you are a little tired of galaxies, take a break with a look at a distant open cluster, M67, located two degrees west of Alpha Cancri. Visible in binoculars, this cluster is a rich and roughly circular group of stars, with an eight inch

If you imagine yourself as a typical early seafarer, then the stars become your navigation guides around the known world. Sail too far north or south, and the stars become less and less familiar. Don't recognize the sky? Watch out! Here be sea monsters!

From many such observations, the science of astronomy was born. Yet, today, we have little need to go out and chart the skies. We have calendars, watches, and compasses. We can call time and temperature, rather than run outside and check the sundial to see what time it is. These things have freed us from the need to *use* the stars -- now we can gaze at them, study them, and find out what makes them tick.

NEXT MONTH: "A Star Is Born"

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Questions and Answers...

WHAT ARE THE BEST BINOCULARS TO USE FOR ASTRONOMY UNDER \$100?

Dave Knisely replies:

Binoculars are among the best instruments for casual observing, with almost any sized unit helping over viewing with the naked eye alone. ``Try before you buy'', is about the best advice I can give. For Astronomical use, my personal choice is a pair of 7x50 or 10x50 Porro prism units. They offer good light grasp without being too heavy to hold for long periods of time. All the optical surfaces should be multi-coated, and should preferably use prisms made of BAK-4 glass for best light transmission. They should have individual focus on at least one eyepiece, and be collimated well enough so you don't get a headache when looking through them. Low cost binoculars tend to vary in quality from fair to awful, and usually use the cheaper BK-7 glass prisms, which are somewhat less light efficient. You can tell the prism's glass type by holding the binoculars up to a brightly lit surface or the daytime sky and looking at the light coming out of the eyepieces from a foot or so away from the eye. If the prisms use BAK-4 glass, the eyepieces will show a disk of light which looks round and evenly illuminated. If the prisms are BK-7 glass, the edges of the disks will have a diamond or squarish outline where the illumination falls off suddenly.

Bausch and Lomb offers a very nice pair with BAK-4 glass prisms for a bit over \$100, and you may be able to do better from a camera outlet as far as price is concerned. Orion Telescope Center has several pairs ranging in price from about \$85 to over \$300. I have a fairly good pair of 10x50 Traq binoculars which I got from a local retail outlet during a sale for \$35.00, but I had to look through a few before I purchased one. They use BK-7 glass, but they perform fairly well in spite of the prisms. 50mm binoculars retailing for less than \$50.00 often yield slightly fuzzy images and often do not hold collimation very well. They also tend not to stand up under much punishment. You must try them out in the store before you lay down your money. Even if they show objects fairly well in the store, they may still show defects at night, since your eye's pupil opens up and lets more light in. Avoid cheap ``wide-angle'' binoculars, as their edge of field definition tends to be a little poor. Typical, a good pair should have a true field between five and seven degrees at most. Also avoid inexpensive roof prism binoculars, since the collimation requirements for these units are very tight. A really good roof prism pair will normally be in the \$200-\$500 range, so save your money. And whatever you do, DO NOT GET FIXED-FOCUS BINOCULARS! They may be all the rage, but their performance leaves a lot to be desired. So pick up your binoculars and start enjoying the heavens!

Sky & Telescope News

MARCH 8, 1991

EAST-COAST FIREBALL

A big story this past week was a brilliant fireball that grazed the Earth's atmosphere early on Wednesday, March 6th. Witnesses from West Virginia to Maine saw the dazzling, multicolored object at about 2:55 a.m. Eastern time. One observer said it resembled a giant Scud missile. An airline pilot near Philadelphia called it "the mother of all meteors." Whatever. Reliable sightings note that the blazing fireball took up to 30 seconds to fly across the sky. That would make it an unusually low-velocity object -- in many ways similar to a blazing daylight fireball that appeared over the Rockies on August 12, 1972.

No one has yet found any meteorites delivered by Wednesday's passage, and perhaps no one ever will. According to Walt Webb of Boston's Museum of Science, the witnesses he's spoken to all say the meteor was visible to their east or south. Thus, chances are that any falling pieces dropped in the Atlantic Ocean. Conceivably, the object simply slipped in and out of the atmosphere before moving on into interplanetary space.

VENUS NAMES SOUGHT

NASA is inviting the public to help pick names for some 4,000 new craters and volcanoes on Venus that are being discovered by the Magellan orbiter. By established convention, the planet's landforms commemorate notable women -- but not political or military figures -- who have been dead for at least three years. Send your submissions to Venus Names, Magellan Project Office, Mail Stop 230-201, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, California 91109. Include dates of birth and death and a short rationale for your choice.

MARCH 15, 1991

SPOTTED SATURN

Saturn, in Capricornus, is now emerging from dawn's glare in the east. French astronomers reported finding two large ovals on the planet's equator in late February. These are presumably related to the Great White Spot that erupted there last September.

MARCH 22, 1991

VENUS' SURFACE

A major meeting of planetary geologists took place this week in Houston, Texas. Two of the hottest topics there were fresh results about Venus from the Magellan spacecraft and news of a giant crater in Mexico.

Since last September Magellan has been using radar to probe the surface of cloudy Venus while orbiting the planet. Previous 73 images released by NASA have revealed vast lava plains, contorted mountain belts, and scores of irregularly shaped craters. But only in recent weeks have the mission's scientists been able to piece enough of the radar echoes together to get some idea of how the planet looks on a large scale. Prior to Magellan's arrival, there had been hints from past missions that Venus at one time underwent plate tectonics, analogous to continental drift on Earth. This crustal recycling process is the dominant mechanism by which heat escapes from Earth's interior. However, to date Magellan has not turned up any evidence for plate tectonics on Venus. Instead, our sister world appears to cool itself primarily through volcanism -- by eruptions of lava directly onto its surface and by the creation of subterranean hot spots that radiate heat outward.

DINOSAUR CRATER?

The other big story from Houston concerns the now-famous impact on the Earth 65 million years ago that many scientists hold responsible for the widespread destruction of life here. For about a decade geologists have been combing through satellite photographs and other data looking without success for the telltale crater formed by the massive blast. Now, however, there is a growing consensus that the crater may lie buried half a mile under the northern tip of the Yucatan peninsula in Mexico. As related by geologist Glen Penfield, the proposed crater is named Chicxulub [CHIK-zoo-loob], after the town nearest its center. It's a Maya word that loosely translates as "tail of the devil." Penfield actually discovered the feature, possibly 250 kilometers across, in 1978. But only within the last year has it come to the attention of impact specialists. They aren't yet absolutely sure that the buried circular feature is an impact crater. But many lines of evidence point to the Chicxulub feature as the site of the big blast that did in the dinosaurs.

with impassable distances. Recently, we've made a few tentative steps to the stars. As Carl Sagan once put it, we've stepped from the shore and waded out, maybe ankle deep, into the cosmic ocean.

In a tremendous leap of faith and technology, we walked the dusty plains of the Moon. We've sent robot explorers to probe beneath the clouds of Venus, Jupiter, Saturn, Uranus and Neptune. We've stirred the rusty sands of Mars with robot arms, and used electronic eyes to record the volcanic upheavals of a tiny world called Io.

Still, our telescopes peer outward, studying the stars and galaxies that surround us. Using complex, sensory instruments, we look far out into space, and back into time, continuing our age-old search for an understanding of the universe.

It's a lot to take in, all at once. The first-time stargazer, staggering out into the backyard with books, binoculars, star charts, coffee thermos, doughnuts, personal cassette player, and a blanket, might feel overwhelmed at the "trappings" of astronomy. In truth, you need none of these things to just look at the stars. It's a simple act -- you lie down on the grass, look up at the starlit sky -- and you're "doing" astronomy.

In the same way, and for millions of years, humans have been "doing" astronomy. In fact, for much of history, the ability to read the sky was -- literally -- a survival skill.

If you imagine yourself as a typical, observant early hunter-gatherer -- one who observes the skies on a daily basis, you might notice a pattern to the happenings in the sky. If you're really smart, you begin to correlate those events with things that happen on the Earth. +3

First, you might notice the phases of the moon, and measure the length of time the sun and moon are in the sky, keeping accurate records of this information over long periods of time. In the same way, you chart the appearance of stars and star-groups (constellations) in the sky throughout the year. Over time, you might notice that certain stars are up during the spring and summer when the weather is warm, and the time is right for planting. Other stars appear only during fall and winter, when the weather turns cold, and vegetation starts to die.

Adding that information to your other observations, what you would come up with would be a calendar. And that calendar would be your guide for planting, hunting and harvesting. You would know that, for instance, the first late evening appearance of the star Spica would herald the coming of spring.

Likewise the first appearance of the Pleiades star cluster in early October would warn you to get your harvesting done.