As our cruise ship, the Fascination, loomed into the harbor of Oranjestad, the Dutch capital of Aruba, the palm trees graciously bowed to the warm tropical winds. Oranjestad's Dutch architecture, a child's playhouse of orange, yellow and blue, would host the February 1998 solar eclipse on this West Indian island off the coast of Venezuela.

The island buzzed in eager anticipation. Numerous astronomical groups positioned themselves at various optimal sites on the island or at sea. We all nervously watched as cascades of clouds jealously skirted across the sky, threatening to block our view of the spectacular event we had come thousands of miles to see. Those of us who chose to stay on the island took in the colorful shopping sites on Lloyd Smith Boulevard, and the white sandy beaches trimmed with palm tree walkways.

At our designated site on the beach front of Seaport

see SANDY on page 2

Solar Eclipse Cruise 1998 Aruba
by Sandy Kunz

A Tracking Mount for Astrophotography
by Clayton Kessler

As I was planning my recent vacation in Tucson, I realized that the ability to do some astrophotography while I was there was very important to me. Unfortunately I was flying, and luggage restraints precluded carrying my Meade 8" SCT. I spent a fair amount of time researching the portable alternatives.

At first, I thought I would build a classic "Barn Door" mount. I have seen these work very well with normal and wide angle lenses. Upon reflection I thought that a more sophisticated system would be more useful in the long run. There are several commercial camera tracking mounts available, and two had been reviewed in Sky and Telescope in the last year. More research!

The most highly regarded camera mount is the venerable Byers "Cam Track". This was apparently a very robust and accurate mount - and is no longer made. Judging by the cost of the "Cam track" on the used market, some of the components must be machined from solid gold! Lack of availability was the downfall for this mount. A search of Astromart showed many more requests to buy than offers to sell, and this is probably why the cost of the few available is so high!

Pocono Mountain Optics sells a camera mount that they call the "Series II German Equatorial Mount". This mount was reviewed in the March 1998 issue of Sky and Telescope. I read the review several times and came to the conclusion that the reviewer thought it was "OK" at best. The mount sells for $309.00 and does not include any kind of tripod or declination controls. The mount could not be guided and would only support 1 camera with a limitation on the lens focal length. There were no polar alignment aids built into the mount so a good polar alignment was difficult to achieve. I see, in the current adds that a quartz controlled drive is available - which brings the cost to $435.00. And a second camera adapter is available for an additional $24.95. The biggest problem with this is the lack of declination control and difficulty with polar alignment.

see LARRY on page 4

Mars makes its closest approach to Earth on May 1, making the month of April the best time to start observing this mysterious planet. The planet will reach 16.2 arcseconds in diameter, giving everyone a chance to see some of those dark surface markings and polar caps that we usually only see in books and past photos.

Intel, the company that produces a computer chip that every computer should have inside, really made a big splash. The PENTIUM III, the next improvement in computer chips, was designed to identify its owner when ever interrogated by an outside source. That fact

see Clayton on page 3
Village Resort we watched intently as the moon made "first contact" with the sun at 12:38 PM. The busy sounds of the tourists and vendors dropped to a humble drone. Through my protective Mylar glasses the world became a peculiar negative of the real world: the sun floating in an inky sky as the crater-edged lunar surface crept across it like a giant jagged inkblot. Partial eclipse had begun!

We watched anxiously for the next one-and-a-half hours as the sun slipped in and out of the clouds; disappearing for twenty minutes at a time. The total eclipse of the sun, known as totality, would last for only three minutes and six seconds; if the sky didn’t clear soon we could miss it entirely.

Just moments before totality, as the sun slipped behind the moon, a prismatic burst of light known as the "diamond ring" emerged to a chorus of cheers from the crowd below. Within seconds it sizzled away into brilliant beads of solar light, called Bailey's Beads, that escaped between the moon’s jagged edge of craters on its horizon.

As the last bead of light melted away the sun disappeared. The corona, the normally invisible halo of light around the sun, radiated around the circumference of the black moon. We abandoned our protective glasses and camera filters with shouts of appreciation to observe the celestial union of the sun and moon amidst the whirl of camera shutters clicking. A tingling chill swept throughout the crowd as the temperature dropped ten degrees in the shadow of the sun. Time stood still as the world slowed to a dream.

Suddenly the air filled with cheers and applause as the heavenly union split apart into a blaze of Bailey's Beads, Diamond Ring and columns of warming sunlight. We

Europe...August 11, 1999.

The thing that makes the Warren Astronomical Society a great are its members. We are very happy to announce the following new members who joined during February of 1999. Please extend them a warm welcome.

Steve Begovich Orion, MI
Jim & Mary Moffat Rochester Hills, MI
Frank J. Poma Fraser, MI

1 Year Anniversaries for April
Bill Bernauer Southgate, MI
Michael J. Narlock Sterling Heights, MI
Steven Wasson Livonia, MI
Victor Singh & Family Redford, MI

2 Year Anniversary for April
Ellis Boal Detroit, MI
The next thing that came to mind is the Apogee Multi Purpose Fork Mount. This was reviewed in the January 1999 Sky and Telescope. This is a small equatorial fork mount with an RA drive and declination slow motion controls. This mount is large enough to accept a Celestron C90 or a Televew Pronto. The mount comes with a light wooden tripod and a hole bored through the polar axis. This hole can be used to get a rough polar alignment and a drift alignment can finish the process. The RA drive includes a hand-box with variable drive rate controls and fast and slow buttons. This allows guiding in RA for astrophotos. Guide with what? The reviewer noticed that the polar bore hole was large enough for a 3/8" diameter screw. This allowed a camera tripod ball adapter to be bolted to the bottom of the RA shaft and a second camera to be mounted there. The reviewer mounted a C-90 to the fork mount and used it to guide photos of up to 25 minutes and up to 185mm focal length with a camera mounted to the ball head. The cost for this mount is $399.00 and I started to get very interested in it. The downfall on this mount is the tripod. A much heavier tripod would be needed to take accurate photos reliably.

As a result of my research, I felt that none of these mounts would satisfy my camera platform desires. I started a search for a used "Super Polaris" mount with RA and Dec motors. Unfortunately I was not able to find one in a timely manner that had a working drive system.

Time was beginning to get short and I had to make a decision. I had seen, in my cybertravels, numerous places that were selling a GEM mount made in Taiwan. This mount seemed to be everywhere from Orion Telescopes and Binoculars (the Skyview Deluxe mount) to the Europa Mount in Great Britain. Many small manufacturers were using this mount for 4", 6" and even 8" newtonians. I found, on the web, that Internet Telescope Exchange was offering their version of this GEM, the First Magnitude Model ITE EU01 Mount, with dual axis drives. I called Bill Burnett at ITE and discussed this mount with him. Unfortunately, the dual axis drives were not available, the drive manufacturer was located in the Florida Keys and heavily damaged by hurricane Georges. Bill did have a single axis drive available with a hand paddle for guiding. This I promptly ordered at a cost of $400.00.

A week later the drive hit my floor and I was very impressed when I unpacked it. The construction was robust and both RA and Dec seemed tight and precise. This mount is WAY beyond the normal, inexpensive, equatorial mount that comes with most mid priced scopes from Meade and Celestron. In size, the mount is slightly smaller than the venerable "Super Polaris" mount - maybe the size of the older Polaris. It includes worm gears on both axis and slow motion controls. A very nice feature is the polar alignment scope. The reticle shows Polaris with the proper offset and several of the stars surrounding the pole. The mount has fine adjustments in altitude and azimuth to ease the chore of polar alignment.

I quickly built a dual camera platform out of some 1/2" Lexan that I had laying around. I designed this in the shape of an elongated diamond. I included a machined dovetail bar in the center to attach a guide scope. This gave me the ability to attach my Orion "Short Tube 80" or my C-90 as a guide scope. Two cameras can be attached, one on each end. Balance is achieved in the normal way with a GEM and the counter-weight supplied was equal to the task. I really wanted to try the system out before the Tucson trip, to have a chance to work out any bugs. Unfortunately, Michigan weather being what it is there were no clear nights available for this.

This system is fairly compact but I did not want to carry this for the entire trip so I shipped the mount UPS to my folks' place in Tucson a week prior to my leaving. This worked very well as the mount arrived 5 minutes after I did and I saved my back to haul around golf clubs! A couple of days after my arrival I gave the system "first light" at the TAAA Empire Ranch dark site 30 miles from Tucson. The results were pretty good. The polar alignment scope, and the alt / az fine adjustments, allowed me to get a decent polar alignment quickly - but I had trouble finding the additional stars shown in the reticle. This resulted in some declination drift visible in the guide scope. If I were not quite so lazy, I would have done a drift alignment - but I am much too lazy for that. The Declination drift showed up as guiding error in the 200mm shots and to a lesser extent in the 135mm shots. A good drift alignment would have minimized this. Even better would have been a declination motor. A simple bump to the dec. axis once in a while would have made the use of 300mm and 400mm lenses possible. RA guiding was great. The motor adjusted well and held speed nicely. The Orion Short Tube is a 400mm focal length scope and my 9mm guiding eyepiece gives a 44x magnification. I did not notice any great amount of periodic error in the drive gears with this magnification.

All in all I am very pleased with this setup. I do plan to add a declination motor, which will allow more accurate guiding. I used the mount on three different nights and took about 70 astrophotos with it using two cameras simultaneously. All but a few (kick the tripod dummy!) came out very well and this gives me a wealth of negatives to scan and print. This will make a nice addition to my astrophotography arsenal and I will get a lot of use from it!
NASA’s Stardust spacecraft had a successful launch atop a Delta II rocket from Cape Canaveral in Florida, on Sunday, February 7, 1999, at 4:04 p.m. EST.

This is the first U.S. mission destined for a comet and the first-ever spacecraft sent to collect extraterrestrial material from outside the orbit of the Moon and return the sample back to Earth.

Stardust is on a path that will deliver it to Comet Wild-2 (pronounced "Vilt-2") on January 2, 2004. The spacecraft will gather particles of the nucleus of the comet. In addition the spacecraft will attempt to gather samples from a stream of interstellar dust that flows through the solar system. The particles will be captured in a glass foam called Aerogel. The samples will be enclosed in a clamshell-like capsule that will be dropped off for reentry in the Earth’s atmosphere in January 2006. Equipped with parachutes, the capsule will float to a pre-selected spot in the Utah desert, where it will be picked-up and delivered to scientists for analysis. Additionally, photographs and dust analysis will be performed during the fly-by of the spacecraft.

The comet travels a path from just outside Jupiter’s orbit to just inside the orbit of Mars. Due to the fact that Wild-2 originated from the Oort cloud, which extends beyond the orbit of Pluto, the Stardust mission will bring back matter from the deepest recesses of our solar system. The Stardust spacecraft will sweep through the comet’s coma (the ball of gas surrounding the nucleus of the comet) at 136,000 miles per hour. NASA will use the Aerogel “catcher’s mitt” to catch particles coming off of the comet. The “grains of sand” sized particles will hit the Aerogel with an extremely high velocity. The impact is so powerful that any other substance other than Aerogel would either vaporize the particles on impact or they would become so distorted that scientists would not be able to study them.

When the particles hit the Aerogel they will drill through the material, gradually slowing down, creating furrows that scientists will use to track the paths of the particles.

Aerogel is the lightest solid known; only three times the density of air. It can protect virtually anything from heat or cold. A block the size of a human weighs less than a pound yet could support a small car.

For more information check out the following websites: http://stardust.jpl.nasa.gov/ or http://science.nasa.gov/
PREIDENT STEVE GREENE opened the meeting at 7:30 with 22 members and 5 guests in attendance. The new guests introduced themselves and told a little about their interests in astronomy and how they found out about our club. Our website has been attracting a lot of new potential members to the WAS. One of our guests tonight remarked that we have a great website. Thanks to Jeff Bondono for his hard work at making our website so successful.

FIRST VP Chris Mehling announced that our program for the evening will be an explanation and discussion on cosmological terms. He reported that February's Macomb meeting and March's Cranbrook meeting are open for anyone interested in giving a program on any astronomy-related subject that they wish to speak on. Jack Szymanski will be doing a presentation on astrophotography at the March 18th Macomb meeting. Chris also reported February's upcoming astronomical events of interest as follows:

February 11, 1999-Pluto will be at its farthest distance from the Sun for the next several hundred years

February 16, 1999- Annual eclipse of the Sun in Australia

February 23, 1999- Conjunction of Venus and Jupiter

February 26, 1999- Mars will reach 11 seconds in diameter as observed from the Earth

SECOND VP RICK GOSSETT reported that he, Blaine McCullough and Joe VanPoucker were out at Stargate Saturday night along with about 35 scouts and guests. Rick described some difficulties he had with long exposure prime focus photos taken that evening. He added that he did have better success with the piggyback photos he shot. He passed around an album of pictures he took that evening. Finally Rick reminded us that there will be an Open House at Stargate on February 19-21st including a workshop on astrophotography.

PREIDENT STEVE GREENE reported on the work that he, Blaine McCullough and Bob Watt have been doing on putting together a working mirror grinder and polisher from parts that Bob Watt had purchased some time ago. A discussion followed on the type of machine it was and its mechanics. Clay Kessler described the different types of grinder machines in existence and added his knowledge of mirror grinders to the discussion. Kim Dyer stated that Agler Planetarium in Chicago has a working grinder as well as the Dayton Science Museum.

Doug Bock was asked to tell the new guests about Northern Cross observatory and he announced that his next Star Party is February 13, 1999 at Northern Cross.

He also informed the guests of the different star parties that occur over the year statewide and nationally.

Due to the upcoming event of Mars approaching opposition, Larry Kalinowski announced that the club has a Mars program in its computer software library. He also described the software library to the guests. He reminded everyone that there is a computer subgroup meeting every 4th Thursday at Gary Gathen's house. He concluded by asking the club's opinion on putting the club's entire set of programs onto CD-ROMs to be purchased at a more reasonable price than buying them disk by disk.

Doug Goudie gave us an update on the progress of Cranbrook's renovations. The Planetarium is due to open February 15, 1999. The Laser show should start on March 1, 1999.

PREIDENT STEVE GREENE announced the break at 8:40 p.m. The club reconvened around 9:30 p.m. and FIRST VP CHRIS MEHLING led a discussion on some cosmological terms focusing especially on spectroscopy and redshift. Lou Faix added some descriptive and informational input to the discussion.

PREIDENT STEVE GREENE adjourned the meeting at 10 p.m.

Macomb Meeting
February 18, 1999

BY BOB WATT, SITTING IN FOR LORI ANN WHO IS WITH MIKE ENJOYING THE DARK SKIES OF HAWAII.

MACOMB MEETING 2/18/1999

PREIDENT STEVE GREENE opened the meeting at 7:37 PM with 27 members & two guests Frank Poma & Mark Jacobisin who found us on our web site.

There is a proposal in the works to be presented to the Wollcott Mill authorities. Steve is asking for help in the drafting of this proposal, anyone wishing to help please sign the sheet that is available.

OFFICER REPORTS:

FIRST VP CHRISS MEHLING- Tonights program will cover double stars presented by Chriss, Cranbrook 3/1 will have news of the opening of the new planetarium, Macomb 3/18, Jack Szymanski will show slides of his many years in astro photography, Cranbrook 4/5, Rick
Kovari will give a program on his trip to Hawaii's observatories. Macomb 4/15 is open.

SECOND VP RICK GOSSETT- Stargate was open on 2/6, 3 members & 3 guests, on 2/13 had 2 members & 4 guests, these were scouts on a winter merit badge camp out.

Good news from Astrounion on the Internet, PLUTO remains a planet. Fish Lake will be March 19,20&21, fee is $40.00 for three nights, to be paid by 3/15/1999. Contact Norb Vance.

Stargate will be open on 2/19, 20 & 21, on 2/20 or 2/21 there will be a clinic on astro photography. Starting times for these dates is 6:00PM.

On 2/23 look in the southwest skies for Venus & Jupiter to put on a show about one hour after sundown.

Rick is open for Stargate ideas, call on any clear night or see him at the meetings.

Details were given for loaning scopes out at Stargate.

TREASURER JOE VANPOUKER- Joe went over items for sale, Messier Guide Catalogs, Astro League patches, David Levy's book "MORE THINGS IN HEAVEN and EARTH" which are signed by the author. We had in our treasury on Jan 1, $5163.03, income $196.45, expenses $188.73, for a total of $5170.75 on 1/31/1999.

CLAY KESSLER- Covered details of his two day trip to Arizona, had zodiac light both nights, fine weather, fantastic Milky Way, Humidity 6%, colorful stars, went to Kitt Peak, made a tour of the Stewart Mirror Lab at Arizona University, viewed a video on mirror making, Rodger Tanner gave his help on the trip, Clay joined the Tucson Am Astronomy Club, great trip!

MARTY KUNZ- Showed sunspot sketches made in the last few days.

DOUG BOCK- Had 8 people out for the meeting at his place, stayed till 1:30AM. Worked on the controller on his 12 1/5" scope.

Jack Kennedy's LX200 will be on the internet page March 13.

Kim Dyer- has circulars on transit information for our use.

Lou Faix- Has started work on his new residence in Arizona.

The break was at 8.30PM

Tonights Program: "DOUBLE STARS " by Chriss Mehling

Meeting ended at 9:55PM

Cranbrook Meeting
March 1, 1999

by Bob Watt

First VP Chriss Mehling opened the meeting at 7:50PM with 33 members & 3 guests, Steve Begovich, Scott Bennett & Jim Moffat.

OFFICER REPORTS:

First VP Chriss Mehling- the program this evening is going to be an historic event, we will be shown a program in the planetarium using the newly installed equipment.

Future programs are, Macomb 3/18, "ASTRO-PHOTOGRAPHY", CRANBROOK 4/5, Rick Kovari’s trip to astronomical sites in Hawaii, Macomb 4/5 open, on 7/7 at Cranbrook, "SOLAR ECLIPSES" by Ken Bertin

Second VP Rick Gossett- Stargate was open 2/19, 4 members & 1 guest, viewing conditions, falling snow, 2/20, 8 members & 25 scouts who were camped out to earn winter camping merit badges, viewing was very good, an astro-photography clinic was held, there was an awesome display of auroras that filled the northwestern sky for 45 minutes, also for good measure, a beautiful meteor, the evening ended at 12:30AM.

On 2/21 had 4 members & 1 guest, good conditions, more astro-photos. The 12 1/2" solar filter will be available on 3/13 for our use.

FISH LAKE will be on March 19,20,& 21, fee is $40.00, contact Norb Vance for details, On 3/20 an officer is needed to open Stargate, 4/9 & 4/10 there will be an open house at Stargate, subject will be Setting Circles. All scopes are in at Stargate.

Doug Goudie, on the second Monday of this month the Mineralogical Society will present Dr.Funkhousen with a program on galaxies, moons, moon rocks, & the demise of the dinosaurs, 8:00PM, no charge.

BREAK: 8:10PM

To nights program was in the planetarium, put on by director Jeff Bass. The new "Digi-Star" unit worked to perfection, Jeff put on a program that our members will not soon forget, it was stunning!!

Meeting ended at 9:40PM
Get the latest-breaking events information at the club’s home page. Follow the Upcoming Events link from http://www.eaglequest.com/~bondono/WAS/ and be sure to check the link at the bottom of that page to Doug Bock’s NCO Schedule of Events.

Sat 13 4:00 pm  NCO Club meeting with Vernal Equinox Star Party to follow at Doug Bock’s
Thu 18 7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209

Apr Mon 5 7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science
Fri 9  dusk  Observing at Stargate Observatory, rain or shine
Sat 10  dusk  Observing at Stargate Observatory, rain or shine
Thu 15 7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209
Thu 15- Sun 18  NCO Wilderness Spring Star Party at Doug Bock’s Boon site, west of Cadillac. BYO Everything.

May Mon 3 7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science
Thu 20 7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209
Fri 21  dusk  Observing at Stargate Observatory, rain or shine
Sat 22  dusk  Observing at Stargate Observatory, rain or shine

June Mon 7 7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science
Fri 11- Sun 13  16th Annual Summer Solstice Star Party at Doug Bock’s Northern Cross Observatory.
Thu 17 7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209
Sat 19  Club Picnic and Observing at Stargate Observatory, rain or shine

July Mon 12 7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science
Tue 13- Sat 17  ASTROCON ’99: The Astronomical League’s 52 Annual Convention, in Washington State
Thu 15 7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209

Aug Mon 2 7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science
Thu 19 7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209

Sept Sat 11 4:00 pm  NCO Club meeting with Autumnal Equinox Star Party to follow at Doug Bock’s
Mon 13 7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science
Thu 16 7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209

Oct Mon 4 7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science
Wed 6- Sun 10  NCO Wilderness Spring Fall Party at Doug Bock’s Boon site, west of Cadillac. BYO Everything.
Thu 21 7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209

Nov Mon 1 7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science
Thu 18 7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209

Dec Mon 6 7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science
Thu 16 7:30 pm  Annual Awards Banquet

Last month I submitted a Member’s Anniversary column to the WASP. It has been brought to my attention that some of the anniversary dates are wrong. After further inspection of the Membership Database, that was handed down to me when I took over the position of treasurer this year, it appears that there is a big gap in the dates listed for when a member joined. I would like to get this updated so we have an accurate record of our memberships. I am going to try and continue posting the members anniversaries with the information I have. If you see your name in the article and know that it is wrong please contact me with the correct information. Although phone calls are not a problem I would prefer an e-mail to joevp01@aol.com or that you get with me at one of the meetings. Thanks for your cooperation.

Corrections reported to me for this Month are: Doug & Robin Bock - 26 years with club.
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Key to times:
SunRise     MoonRise     SunSet     MoonSet

Detroit, MI

WASP
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P.O Box 1505
Warren, MI 48090-1505