East Valley Astronomy Club

April *Newsletter* *1994*

EVAC HIGHLIGHTS

The March 30 meeting was an excellent one with Arizona Highways photographer Frank Zullo as the main speaker. As most of you are aware, Frank took the pictures for the April Arizona Highways article about Arizona astronomy clubs. Frank showed several slides that were not published with the article. He discussed some of the techniques he uses to obtain his photos. Frank also discussed simple techniques for astrophotography that are easy to do and require a minimum of equipment, such as star trails and piggyback photography.

On the afternoon of April 2nd, EVAC held a board meeting at the home of Fannie and Leon Knott. The board and officers discussed several upcoming events such as Galaxy '94 and the public star parties at SCC and Gold Canyon School. At the time of this writing, of course, all of these events are history. The board and officers decided to resurrect the "phone committee." Each officer and board member was given a list of club members to call to notify of upcoming events.

The board also discussed how to better organize the monthly meetings. No major changes were made to the general format we use now. Business and miscellaneous items will be done first, followed by a break, followed by the main speaker. The board decided that it was important to end the meeting promptly at 9:30 and that the break should be ten-minutes long. As far as speakers were concerned, the general consensus was that the majority of the speakers should be amateurs rather than professionals. Of course, input from all club members is welcome. If you have ideas on some programs you would like to have for the monthly meeting, please contact Don Wrigley.

The local star party at Florence Junction on April 2nd was a great success, with over a dozen telescopes and about 30 people. The few high clouds stayed well to the north throughout most of the evening, but started to move in around midnight. Unlike the last two local star parties, the artillery range to the south was silent. We were pleased to have several new faces show up at the star party and certainly hope they will become "regulars."

The following weekend, April 9th, was the Messier Marathon, sponsored by Saguaro Astronomy Club and held at EVAC's new Arizona City Site. The turnout was outstanding! At least 31 telescopes were scattered across the clearing and an estimated 40 people attended. As the sun set, however, the sky looked less than promising as high clouds covered over half the sky. They rapidly moved off as darkness fell and the race began. Toward early morning, clouds again moved in, but they didn't stop several determined observers from snagging the last few objects. EVAC members Leon Knott, Don Wrigley, Frank Kraljic and Manfred Alber took first place with 107 objects. It was an enjoyable evening of observing for all who attended, whether or not they participated in the marathon. Thanks to everyone who made this year's Messier Marathon a resounding success!

APRIL'S SPEAKER

The speaker for this month's meeting will be EVAC member Frank Kraljik, who will discuss his research on asteroids.

UPCOMING EVENTS

EVAC Business Meeting
April 27, SCC Room PS172, 7:30pm

Local Star Party
May 7, Florence Junction Site and Carefree Site

Sentinel Stargaze
May 7, Sentinel Site

Deep Sky Star Party
May 14, Vekol Road Site

SENTINEL STARGAZE

On May 7th, Saguaro Astronomy Club will once again hold the "Sentinel Stargaze," a spectacular evening of deep-sky observing under some of the darkest skies in Arizona. The event is to be held at SAC's Sentinel site, about 20 miles west of Gila Bend. To get to the site from the east valley, take I-10 south to Maricopa Road. Exit and turn south on Maricopa Road and continue all the way to S.R. 84. Turn right on S.R. 84 and continue another five miles or so to I-8. Take I-8 west past Gila Bend to the Sentinel exit. Turn south after exiting the freeway, cross the railroad tracks and drive for another two miles. The site is to the east (left) and is marked by white rocks. See the map on the last page of the newsletter.

If you want to go, please plan on arriving well before dark. From the east valley, you should allow at least 2½hours. The site has no facilities. The usual deep-sky star party rules apply: no white lights after dark, no campfires and park your vehicle in such a way as to minimize disruption if you plan to leave early. Although it's quite a drive, the dark skies make it well worth the effort. The weather has not cooperated the past two years, but the law of averages says we're due for a change.

DON'T MISS THE ECLIPSE!

If you have even glanced at an astronomy magazine in the past three months, you are probably aware of the upcoming annular solar eclipse on May 10. This will be the last eclipse whose centerline crosses any part of the United States for another 18 years. EVAC is planning a trip to southeastern Arizona to observe the eclipse. In addition, we are planning a deep sky star party on the evening after the eclipse and possibly day excursions to some points of interest in southeastern Arizona. As of now, exact details are not available, but if you are interested, please contact Ted Heckens at 827-1524.

Even if you are not able to make the trip to southeastern Arizona, you will still be treated to a deep partial eclipse from your own backyard. In Phoenix, the eclipse magnitude (fraction of the Sun's diameter covered by the moon) will be 0.87. If skies are clear, Venus should be easily visible 28° east of the Sun. You may want to try for Mercury 12° east of the Sun if the sky is clear. Watch for changes in the appearance of the landscape around you. Although the sky will not darken as in a total eclipse, it will become deep blue and the landscape will take on a strange silvery appearance. Here are the times of the stages of the eclipse from Phoenix:

First Contact:	7:44am
Maximum Eclipse:	9:06am
Last Contact:	10:41am

From southeastern Arizona, the times will be a few minutes earlier, but will be fairly close to those listed above.

To observe the eclipse safely, you must take precautions. Eye damage can occur quickly and is often permanent. Do not look at the Sun directly without proper eye protection, such as a commercial solar filter that fits over the objective of your telescope. For naked-eye observing, you can use a No. 14 welder's glass or an aluminized mylar filter. Another safe way to observe the eclipse is to project the image through a telescope or pinhole. Remember to cover your finder if you are using your telescope to observe the eclipse.

COMING CELESTIAL ATTRACTIONS

Besides the solar eclipse, there will also be a partial lunar eclipse on the 24th. The eclipse will not be very deep; at mid-eclipse, the Earth's shadow will extend only one-fourth of the way across the Moon's disk. The partial eclipse will last 1 hour 46 minutes. Here are the times of the various stages of the eclipse:

Moon enters penumbra:	6:18pm
Partial eclipse begins:	7:37pm
Mid-eclipse	8:30pm
Partial eclipse ends:	9:23pm
Moon exits penumbra:	10:43pm

The beginning of the penumbral eclipse will be invisible, since it will occur in daylight with the Moon below the horizon. The beginning of the partial phase should be visible, however.

We would like to hear of your observations of both the solar and lunar eclipses. Send in your observations and we will try to publish them in the newsletter!

EVAC Officers

President	Bob Kelley	451-8876
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The Ancient Maya and the Sky: The Jaguar Sun

by Réka Fromm

In the minds of the ancient Maya the world of the stars was as alive as the world of humankind. Their universe was made up of three domains: Heaven, being the arch of the starry sky, Middleworld (the human world) and the Underworld, called Xibalba. These regions didn't form a three-layered world though. The Maya didn't even consider them to be three distinct regions, as they believed that all dimensions of existence were interrelated. They visualized all three domains alive and filled with sacred power. The sky was represented by a great crocodilian monster, called the Cosmic Monster, which made the rains when it shed its blood. The center of the Universe was believed to be the Middleworld, the human place of existence. From the representations in their drawings it seems that they saw it as a region floating in a primordial sea. Its principal axis was considered the path of the sun as it moved from east to west on its daily journey.

Heaven and Underworld were believed to be rotating around the human place of existence. From these two, the Underworld or Xibalba was considered the more important one. Actually, it was perceived more like an "Otherworld", parallel with the human world, but normally unseen. This was the place where shamans and the Maya kings could pass through while in their ecstatic bloodletting trance. It was the world where humans were believed to go after death, where their deities, ancestors and other mythical figures lived. Xibalba was Underworld only during the day though, represented in some drawings as the perfect mirror image of the human place of existence with its inhabitants living foot to foot with humans. At sunset, through rotation, Xibalba became the night sky. It gave humans the chance to understand it; all its animals, plants and deities became visible in the starry night for those who could understand. All the stars and constellations, planets and the moon were seen as these living beings who interacted with the cycles of the Middleworld. Sky patterns reflected the actions and interactions of the gods, spirits and ancestors with the inhabitants of the human world.

Their gods were the celestial bodies. The most important ones were represented by the most visible objects, the Sun, Moon and Venus. In the Maya imagination, they were related to each other, the Sun and Venus being twins, while the Moon was believed to be the Sun's wife. Unlike the ancient Greeks who created their gods with human forms, the Maya chose the physical characteristics of animals to represent theirs. One of the most important Mayan gods, the War God, was created in this anthropomorphic manner. Combining the most important celestial body with the most powerful, most beautiful of their animals, the jaguar, this god became the Jaguar Sun. Jaguar Sun masks are present on the facade of many ancient pyramids, Temples of the Sun. They appear in all known periods of the Maya civilization, beginning with Cerros, one of the very first Maya cities, and ending with Chichen Itza and Mayapan in post-classic times.

These temples were the places where the prisoners of war were sacrificed, as offerings to the Jaguar Sun. It was considered a heroic, but also useful way to die, called flowery death. Warriors who died in battle or were sacrificed to the Jaguar Sun were considered to have a better chance to get through all the obstacles of Xibalba and live happily in the other world.

This imagery was not exclusive to just the Mayan temples; the Jaguar Sun image and concept of warfare were also linked to the infamous ballcourts. These I-shaped ballcourts were the scene of the deadliest sport of the ancient Maya: the ballgame. Played with a solid rubber ball, this game became the fundamental metaphor of life and death, death and rebirth for the Maya. This metaphor, the belief in life after death, originates in the their legend of the Hero twins, the Sun and Venus.

According to the myth, the Hero Twins were the offspring of an older set of twins who had been defeated and sacrificed by the Lords of Death for making too much noise while playing the ballgame. As the Lords of Death hung the skull of one of the twins in a tree it impregnated one of the Lord of Death's daughters, who found it. So she became the mother of a new set of twins, Hun-Ahau (Venus) and Yax-Balam (the Sun-Jaguar). After many adventures these new twins started to play the ballgame, just

like their forbears. They became good players and in turn they also disturbed the Xibalbans, who lived under the ballcourt. They too were called to answer for their behavior. Unlike the first set of twins, they survived all the trials designed to defeat them, thus outwitting the Lords of Death. However, they couldn't get through all the struggles unharmed. At one point Yax-Balam, the Sun Jaguar, died, losing his head. But he was resurrected by his brother, who put the head and the body back together, bringing him back to life. Probably here originated the Maya belief in resurrection, especially after death by decapitation.

Impressed by the possibility of resurrection, the Lords of Death also wanted to be decapitated and brought back to life again. The twins answered to the first part of their request, but they never resurrected the Xibalbans. By defeating them, they were granted the most important places in the Otherworld, reigning in the sky as Venus and the Sun.
The legend ends here. But not the Maya knowledge about these celestial bodies. They knew about the solar year and they had a fixed calendar of 365 days to determine it. It was a very close approximation for the phenomenon, and they probably even realized the discrepancy. It is not known yet if they also knew how to correct it, no found evidence suggests it. But there are still so many clues in the jungle, waiting to be discovered. There are still so many unknown things about the Maya and their Universe...

A Place in the Sun
by Robert Kerwin

Less than 100 miles west of Phoenix lies the remnants of an obscure chapter in astronomical history. Scientist and laymen alike have long believed that the sun influences Earth's climate. In the late 1800's one such scientist was Samuel P. Langley, who believed that an accurate measurement of the amount of solar energy reaching the Earth (the "solar constant") could aid in weather forecasting. In 1887, he led an expedition to 14,000-foot Mount Whitney in California's Sierra Nevada mountains to measure the solar constant.

Dr. Charles G. Abbot, Langley's student, looked for additional sites with clear skies and low humidity from which to continue the study of the solar constant. In June of 1920, Abbot traveled to the tiny community of Wenden, Arizona to investigate 5,681-foot Harquahala Peak as a potential site for a solar observatory. Abbot was favorably impressed with the low humidity and clarity of the air. Construction of the observatory began shortly thereafter and was completed that autumn.

The headquarters for the project were established in Wenden and a base camp was constructed in Squaw Canyon, about 12 miles east of Wenden. Burros were used to haul lumber, sheet metal, equipment and supplies up the arduous four-mile trail to the summit. Until the rain collection tanks could be built, burros were also used to haul water to the summit. After completion of the observatory, Abbot remained as operator and was joined by his assistant, Frederick A. Greeley that autumn.

Harquahala Peak Observatory was unusual in that it had no telescopes. The primary instrument was a recording spectrometer-bolometer, an electronic thermometer that Abbot claimed to be accurate to a millionth of a degree. Supporting this instrument was a battery of other instruments. A theodolite measured the sun's altitude. Two pyrheliometers, mercury thermometers with shutters that opened and closed at set intervals, measured the sun's energy from both direct and scattered rays. A pyrometer, an electronic instrument, rounded out the arsenal and measured heat from the atmosphere around the sun. The operators collected measurements from each of the instruments, manually computed the information and then sent it to Washington where it was compared with similar measurements from an observatory in Chile.

The observatory fell into disrepair in December 1920 while Abbot was absent. Several of the instruments were damaged in storms, the water tanks started leaking and one of the walls of the building sagged. Abbot and Greeley once again had to haul water, supplies and materials to repair the structure.

Abbot was called back to Washington in January of 1921, shortly after the repairs were completed. Dr. Alfred Moore replaced Abbot and remained on the summit with his wife Chella until 1925. Greeley remained as Moore's assistant until May of 1923. During this time, Moore made several improvements. He added metal siding to the

observatory for better protection from the elements and even built a croquet court. Communication between the observatory and the outside world improved considerably, going from Morse code transmitted via a heliograph (a device that transmits signals by reflecting light from the sun) to a radio-telephone to a wire telephone over a period of three years.

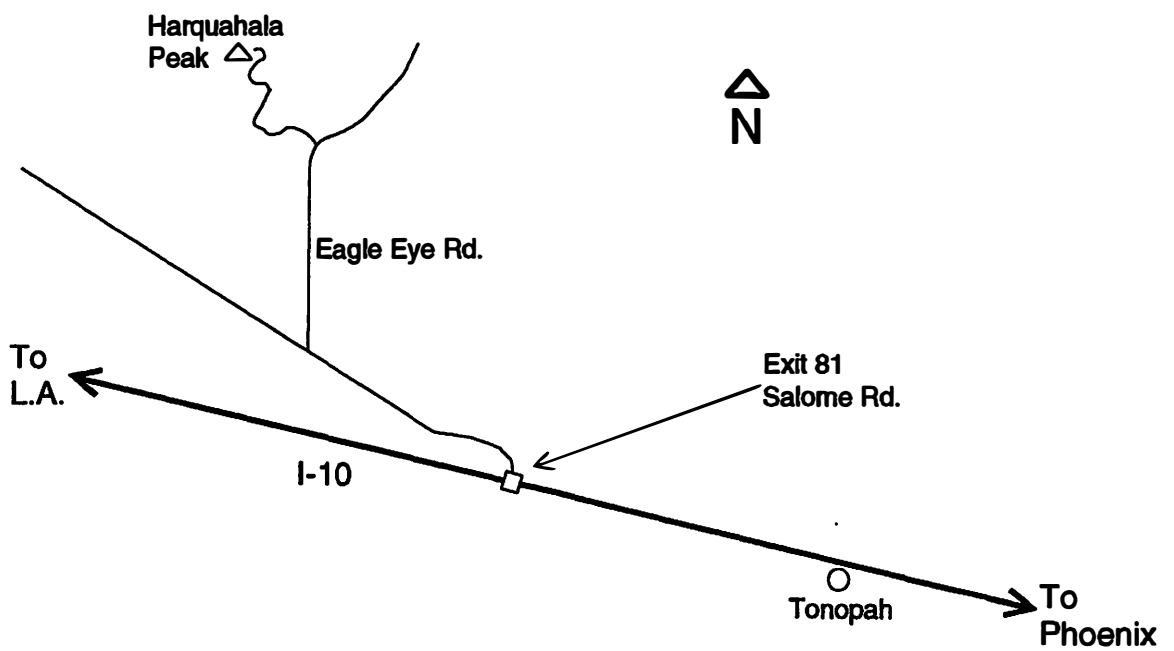
In 1925, the Smithsonian decided to close the facility because of decreased visibility, extreme weather conditions and difficult access. In 1975, Harquahala Peak Observatory was listed on the National Register of Historic Places, and in December of 1979, the structure was stabilized to prevent collapse.

Not much is left of the observatory today. One of the two buildings remains intact, a dilapidated sheet metal and adobe structure surrounded by a chain-link fence to ward off vandals and to protect the curious from the dangers associated with the decaying structure. Sharing the top of the mountain with the observatory is a microwave communication facility used to control water flow in the Central Arizona Project canal. The view from the summit is spectacular and is certainly worth the drive. To the north, the checkerboard pattern of farms can be seen and the town of Wenden is visible to the west. If the atmosphere is relatively clear, the steam plumes from the condensers at Palo Verde can be seen to the east.

To get to Harquahala Peak, take I-10 west to Salome Road. Turn right on Salome Road and continue for nine miles to Eagle Eye Road. Turn right and continue north for 8.5 miles to the access road, which is clearly marked. The dirt road to the peak winds through a canyon for about five miles, then begins to climb. After another three miles, the road reaches the top of a ridge and begins the steep, rough ascent to the top. The last two miles of the road are rough and four-wheel drive is required. Plan at least an hour to traverse the 10.5 mile road to the summit.

Although Harquahala Peak certainly is not impressive in terms of astronomical instrumentation, it is interesting from a historical perspective. The view from the summit, of course, is spectacular. Standing atop the summit, one can only imagine what life must have been like for those scientists of 70 years ago who called this rugged peak home. They, like the instruments they tended, briefly enjoyed a place in the sun.

Harquahala Peak Observatory



The Young Moon: A Clear and Crescent Stranger

by Don Wrigley

For many amateurs, lunar observing doesn't even begin until first quarter or afterwards, when the moon stands high in the sky at sunset, and some of the more celebrated lunar features (such as the straight wall, and the alpine valley) come into phase. Those who neglect to observe the crescent moon, however, are missing out on some of the moon's more fascinating points of interest.

"The crescent moon just barely hangs over the horizon at sunset, and the seeing is just horrid," is the excuse I hear all too often for scorning the lunar crescent. It is true that throughout much of the year the crescent moon is not in a very favorable position for clear observations; but in spring the ecliptic rides high in the evening sky, placing the crescent moon sufficiently high in the sky to allow useful observations, and the clear crisp air of the season offers some of the best seeing of the year.

Springtime, then, is prime time for lunar observers, and observations should begin by the second or third day after new moon. Though the moon appears only a thin crescent at this time, there is still much to be seen, and all without the distracting lunar glare that begins at around first quarter, forcing those with larger apertures to either employ filters or to restrict their views to the areas quite near the terminator. The crescent moon can be viewed in its entirety well through day 5 (at which point it can no longer correctly be called a crescent).

What, then, should we be looking for? The early crescent phase is a good time to glimpse the rarely seen giant craters Gauss, Neper, and Humboldt. Of the three, Neper, at 85 miles in diameter, is the "smallest". Its location, just east of the Mare Crisium, makes it relatively easy to identify. Gauss, with a diameter of 112 miles, is just twice as wide as the celebrated crater Copernicus, and is quite easy to identify in the east north-east part of the crescent, and is not to be confused with the larger, more flooded Mare Humboldtianum, which lies considerably further to the north.

The crater Humboldt (diameter 125 miles) just east of the crater Petavius, in the southeast quadrant, and is one of the most impressive sights on the moon. Seen from an oblique angle, it offers a truer perspective on the relatively shallow depth of "Copernicus" type craters than obtained from the face on view we are accustomed to.

The most prominent feature of the crescent phase is the Mare Crisium, which may be seen partially or in its entirety, depending on how early in the phase observing begins. In any case, if you are used to seeing this feature only during the first quarter, you will not be prepared for the remarkable appearance of its great walls, which seem to tower above the flooded plains of the mare, in sharp contrast to their appearance just a few days later, when they lose all relief. Seen with the terminator passing through its center, it gives the impression of being a supergiant crater rather than a mare. Its position, just north of the lunar equator, makes it an excellent point of reference for describing the location of other lunar features. Thus, it is not uncommon for lunar observers to use expressions such as "two Crisium lengths north (or whatever direction) from such and such crater, mountain, rille, or other such feature.

Just north of the Mare Crisium lies the ancient flooded crater Cleomedes. The floor of this 100 mile diameter crater is laced with a number of tiny cracks and rilles which provide a good test of your telescope's resolving power. To the north of Cleomedes is the considerably younger and smaller crater Burkhardt, an interesting specimen in that it sets atop two older similar sized craters, whose remains jut out from either side of Burkhardt like two giant ears- an effect which gives the crater a somewhat comical appearance.

Next in line, as we move northward, is the crater Geminus, whose 53 mile diameter makes it a good match with the more widely observed crater Tycho. Though somewhat older than Tycho, its terraced walls
and central mountain peak give it a very similar appearance. If we look to the moon's southern hemisphere, at approximately the same latitude south as Geminus is north, we come upon one of the moon's most interesting features. The Rheita Valley is a wide depression, over two hundred miles long, which seems to emanate from the direction of the Mare Nectaris, and appears to consist of a number of discreet, but overlapping craters which are aligned in a nearly perfect row. In addition there is another, somewhat narrower depression, which lies on its eastern boundary, and runs another hundred miles in a more southerly direction. Once thought to be of volcanic origin, the formation has never been easy to explain, although

current thinking deems it to be the result of the impact that created the Nectaris basin.

Near the western entrance to the Rheita Valley lies one of the moon's oldest and most enduring features. The crater Janssen is a large (122 miles in diameter) double walled crater that lies just south of the Rheita Valley, in line with two 50 mile wide craters: Metius, which lies directly between the crater Janssen and the Rheita Valley, and whose borders nearly touch both features, and Fabricius, which lies just within the outside wall of Janssen. The floor of Janssen is flooded and cracked (some say the crater is nearly as old as the Moon itself), and bears the scars of eons of impacts, all of which makes it an interesting spot for telescopic investigation.

Moving northward again, we conclude our crescent lunar tour with four giant craters, which all lie along the same line of longitude. Their names and approximate diameters are, from south to north, Funerius (81 miles), Petavius (100 miles), Vendelinus (100 miles), and Langrenus (85 miles). Try to catch the terminator as it crosses all four of these craters in a row with the Mare Crisium, and the craters Cleomedes, Geminus, and Edymion to the north. It is a sight not soon forgotten, and might just make a lunar observer out of the most ardent deep sky devotee!

EVAC Sweeps Marathon!

by M. Leon Knott

Members of the East Valley Astronomy Club dominated competition at the second annual Messier Marathon, sponsored by the Saguaro Astronomy Club and held at EVAC's new Arizona City site on April 9 - 10, with the capture of all First Place positions.

The Marathon, an annual attempt to see all 110 Messier objects in one night of intensive observing, started with high winds and a questionable weather forecast. However, as the sun set, the wind lay and clouds began moving out, giving good skies with just a bit of haze superimposed upon the dark, clear background of the Arizona heavens.

For most, the marathon began with an awe-inspiring view of the domes on Kitt Peak, illuminated brilliantly by the light of the setting sun. Nothing so motivates amateur observers as the proximity and sight of this world famous observing complex.

Two other sights captured everyone's imagination. The supernova in M51, the Whirlpool galaxy, was nicely placed near the nucleus of this marvelous face-on spiral. Some observers, making magnitude estimates, placed the supernova's brightness at around 13th magnitude. More than one observer however, managed to see the outbursting star with instruments as small as four inches diameter.

Even more incredible was the sight of Comet McNaught-Russell, placed high in the sky in the constellation Auriga. Some observers were able to barely detect this bright comet with the unaided eye. This comet, on its way back out into the outer reaches of the solar system, was moving fast enough that motion was detectable. Throughout the early evening, when lulls in the marathon permitted, both of these objects were soundly scanned by one and all.

In all, nearly 40 people and over thirty telescopes were set up for the night. Of those present nearly half, or twenty different persons, participated in the marathon. Those not involved in the actual competition were busy observing personal lists of objects as well. They obviously felt unequal to the rigors of competition and possibly even felt that a sense of defeat might accompany their attempt. It is important at such times, to remember that in such an event, the Universe, with a capital "U" is the prime opponent, not those other observers manning telescopes.

After an intensive night of observing, frustration and accomplishment, four different amateurs were able to report observations of 107 Messier objects. The four, tied at first place were M. Leon Knott, Don Wrigley, Manfred Alber and Frank Kraljic. Leon was the only first place winner using as his sole instrument, a pair of 25 X 100 binoculars. As a small token toward a handicap, Leon observed and logged an additional 78 objects, among them such difficulties as NGC 2359, Hubble's Variable Nebula-NC 2261, the "BUG" nebula in Scorpius and numerous globular clusters as well. His most difficult Messier object was reported as M72, a very faint (at the time of observation at any rate) globular in Capricornus.

Don Wrigley used his 8 inch Meade f6 reflector and a 10 inch f6

scope built by Leon Knott. Don's expertise in observing the Virgo Cluster, and in using setting circles for object location, made his obtaining 107 M objects a casual walk in the shade.

Manfred Alber, using a 13.1 inch f4.5 reflector with digital setting circles, also bagged 107 of the elusive quarry. Manfred captured his objects solo, giving him reason to take particular pleasure in his first place position.

On the other hand, Frank Kraljic, at 15 years of age, may be one of the younger first place winners to ever place. Frank, protégé of Leon and Don, used Don's eight inch f6, and Leon's 10" f6 to track down all 107 objects. Occasionally having recourse to Leon's large binoculars for sweeping up needed objects, he was a pleasant companion to those placed near him. Both Leon and Don report that they certainly take pride in Frank's accomplishments and continue to wish him the best in astronomical career and goals. All four of these first place winners are EVAC members and we wish to congratulate them heartily on such an important win in the Arizona Astronomical Olympics.....

Second place was captured by SAC member and newsletter editor Paul Dickson, with 106 objects. Using his newly refigured 8 inch f4.5 telescope, on an unusually high (and thus particularly good for M object chasing) mount, Paul missed first place by failing to observe just one object, M76, the Little Dumbbell near Cassiopeia. Paul, member of the Telescope making class and frequent visitor to EVAC meetings and activities also deserves congratulations for a fine night of observing.

Third place went to Bob Gardner, SAC president, observing with a 10 inch reflector. At this point, while not certain, it appears that no winning position was obtained using a Schmidt-Cassegrain telescope. Bob viewed an impressive 104 Messier objects, ten more than seen by last year's first place winner.

Fourth place was shared by three members of the Tuscon club. Les Reese, Jena Scott and Stevin Aiden were able to pilot a 4 inch Genesis telescope to observations of 101 objects. They certainly proved that diligence and dedication are more important than aperture when seeking these classy objects.

Ten other astronomical athletes managed to snare over fifty of these Messier objects, a satisfying and decent night's work in any venue. Our congratulations to all the competitors and a big, GOOD LUCK NEXT YEAR!!!!!

1994 EVAC Schedule

Meeting	Local Star Party	Deep-Sky Star Party
April 27	April 2	April 9
May 25	May 7	May 14
June 22	June 4	June 11
July 20	July 2 & 30	July 9
August 24	August 27	August 6
September 21	---	September 3
October 19	October 1 & 29	October 8
November 16	November 26	November 5
December 21	December 31	December 3

Other events include:

May 10: Annular eclipse trip near Douglas, Arizona.
July 18-23: Shoemaker-Levy 9 impact.
October 8: All-Arizona Star Party at the new Arizona City site.

All meetings are held in room PS172 at Scottsdale Community College. The local star parties are held at two sites, Carefree and Florence Junction. Deep-sky star parties are typically held at the Vekol Road site.

The Deep Sky Notebook

by Robert Kerwin

A Field of Galaxies in Canes Venatici

All observers eventually get the desire to leave behind the biggest and brightest objects for a while and explore the "backroads" of the skies. Perhaps driven by a sense of adventure or just the desire to see something that hasn't been talked about, photographed and researched ad infinitum, these observers seek fresh territory. I was in just this frame of mind one day while I was scanning chart 7 of Sky Atlas 2000. I happened across an interesting-looking group of galaxies in western Canes Venatici and decided to explore further.

The region is about eight degrees south of η Ursae Majoris. On Tirion, it appears as an oval, 5° x 2° region containing 11 galaxies. On Uranometria, the field loses a lot of its cohesion, partly because the atlas shows many fainter surrounding galaxies and partly because the group is split onto two charts. In an eight-inch scope, all the galaxies plotted on Tirion are visible, along with many others. Uranometria is a necessity for identifying the many galaxies in this area. To navigate from object to object, I simply use each galaxy as a guidepost to the next. An eyepiece that gives a one-degree field works very well for this type of "galaxy hopping."

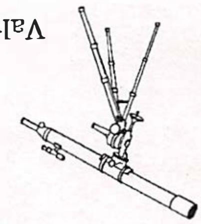
A good place to start is with **NGC 5383**, at the northern edge of the field. Located about seven degrees south and two degrees east of η Ursae Majoris, this galaxy is a fairly easy object for an eight-inch telescope. It appears as a roughly two arc-minute long glow oriented southeast-northwest and containing a small, bright core. About one degree southeast of NGC 5383 is **NGC 5362**. This galaxy appears considerably fainter, is elongated east-west and has no central brightening. Only one degree south is a much brighter target, **NGC 5371**. This galaxy is about four arc-minutes long and 1.5 arc-minutes wide and is slightly brighter toward the center. With averted vision and higher powers, you may also notice a faint nucleus.

Only 30 arc-minutes to the east is a fascinating group of galaxies. I managed to find all five in my eight-inch reflector, but two were quite difficult. The group is shaped roughly like a right triangle. The brightest component, **NGC 5353** is at the right-angle vertex. This galaxy is elongated southeast-northwest and appears about 1.5 arc-minutes long and about half as wide. It has a bright, broad central region surrounded by a glow that fades rapidly to the background. Immediately to the north of NGC 5353 is NGC 5354 and about five arc-minutes further north is NGC 5350. Both galaxies should be fairly easy for medium-size telescopes. Southeast of NGC 5350 are the two faintest galaxies of the group. NGC 5355 is only magnitude 13.1 and NGC 5358 is even fainter, at magnitude 13.8.

About one degree southwest of the NGC 5353 group is a trio of galaxies. **NGC 5326** is the most conspicuous of the three. It is about 1.5 x 0.6 arc-minutes in size and oriented northwest-southeast. It contains a bright central region and a stellar nucleus. About 30 arc-minutes to the east is NGC 5337. It is smaller and fainter than NGC 5326 and is oriented at a right angle to it. About 15 arc-minutes southeast of NGC 5337 is NGC 5346, a very difficult object in my eight-inch scope.

Almost three degrees southeast is our final destination, a pair of interacting galaxies, **NGC 5394** and **NGC 5395**. NGC 5395 is the brightest of the two and appears elongated north-south with a star on the south end. The surface brightness increases slightly toward the center, but there is no nucleus. NGC 5394 appears as a very feeble glow just to the northwest of NGC 5395.

Name	Type	Mag	Dimensions	Const	SkyAtlas	U2000	R.A.	Dec
NGC 5383	galaxy	11.4	3.2' x 2.2'	CVn	7	76	13h 57m	+41° 51'
NGC 5362	galaxy	12.3	2.2' x 0.9'	CVn	7	76	13h 55m	+41° 19'
NGC 5371	galaxy	10.6	4.1' x 3.2'	CVn	7	76	13h 56m	+40° 28'
NGC 5353	galaxy	11.0	2.8' x 1.9'	CVn	7	76	13h 54m	+40° 17'
NGC 5326	galaxy	11.9	2.0' x 0.9'	CVn	7	110	13h 51m	+39° 34'
NGC 5395	galaxy	13.0	1.7' x 0.7'	CVn	7	110	13h 59m	+37° 25'
NGC 5394	galaxy	11.4	2.7' x 1.2'	CVn	7	110	13h 59m	+37° 27'



Valued EVAC member since 1/17/92!

EVAC/Robert Kerwin
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APR 21 1994

Sentinel Site