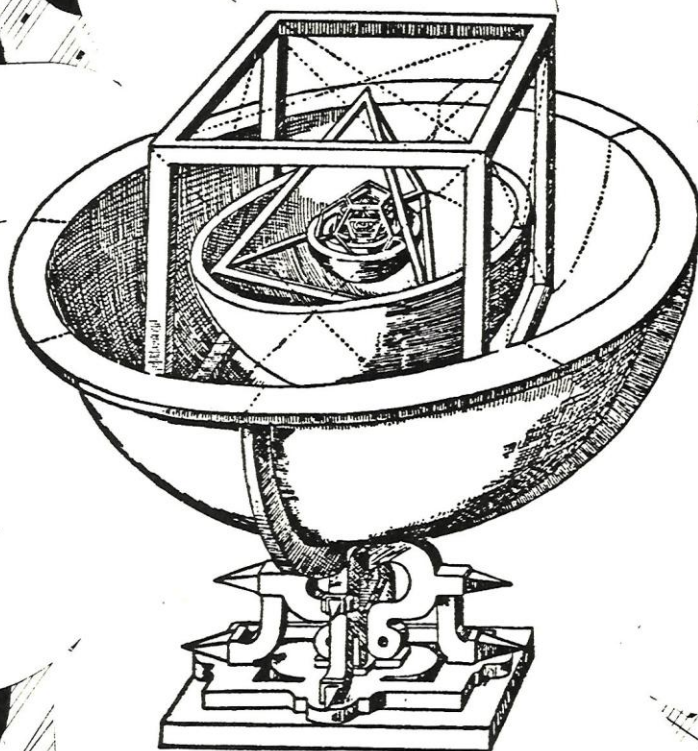


the

WASER

There is Geometry in the
humming of the strings.



There is music in the
spacings of the spheres.

PYTHAGORAS
5th century B.C.

JUNE
1972



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COVER BY: C. J. Edsall

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The W.A.S. holds correspondence (sometimes intermittently) with the following organizations. Others are encouraged to join this list:

DETROIT ASTRONOMICAL SOCIETY
DETROIT OBSERVATIONAL and ASTRONOMICAL ASSOCIATION
JACKSON ASTRONOMICAL SOCIETY (MISSISSIPPI)
KALAMAZOO ASTRONOMICAL SOCIETY
ASTRONOMICAL LEAGUE
The Miami Valley Astronomical Society

The characters in this paper are fictitious. Any similarity between them and any persons living or dead is purely coincidental.

NEWS ITEMS

By

Kenneth Wilson

A NEW PLANET-X

Joseph L. Brady, a mathematician of the University of California's Lawrence Livermore Laboratory, after four years of feeding mathematical models into a computer, has announced his theory of a new planet in our Solar System beyond the orbit of Pluto.

Brady analyzed the erratic tendencies in the orbit of Halley's Comet, which led him to theorize the existence of a new planet. Brady found that Halley's Comet has been as much as four days earlier or later than predicted for its return, thus indicating the gravitational effect of some unknown massive object.

From these perturbations in the orbit of Halley's Comet, Brady calculates that the new planet is three times as massive as Saturn and nearly 6 billion miles from the sun with a revolution period of 464 years. Its orbit is inclined 60° from the ecliptic and revolves in a retrograde motion. Brady calculates that the new planet X is now somewhere in the constellation Cassiopeia and he hopes that it will soon be found photographically.

As further evidence, Brady is presently calculating the effects that this new planet would have on the other known outer planets. If they correlate with the observed motions of these planets, his argument will be reinforced.

If this new planet is found, this could be the most exciting development in planetary astronomy in 42 years since Pluto was discovered by Clyde M. Tombaugh of the Lovell Observatory.

MORE MARINER 9 RESULTS

Scientists at the Caltech Jet Propulsion Laboratory in Pasadena, California have discovered that the northern polar cap of Mars is covered by a 2,000 mile wide top layer of frozen carbon dioxide (dry ice), where the estimated temperature is -150° F.

These findings explain the dynamic shrinking and growing of the Martian Polar Caps. As the summer temperatures on Mars rise, the upper layer of frozen carbon dioxide evaporates and the polar cap shrinks in size. During the Martian Winter the carbon dioxide refreezes on the lower layer of water ice on the polar cap, and the polar cap grows in size again.

THE MOON IS A DEAD PLACE WHERE NOTHING EVER HAPPENS

Last Saturday morning at 3:49 a meteor fell into the moon producing a crater something the size of a football field. No one saw it. On the moon it was night. Here it was night. But the lunar seismograph placed in Oceanus Procellarum during the Apollo 14 mission felt it with its electronic senses and told the earth about it. It felt the impact because it occurred only a few tens of miles from the instrument station in the Fra Mauro formation on the Western side of the Moon. Apparently, this kind of thing happens all the time. But as far as I know, it is the first lunar meteor fall of any size to be recorded.

Dr. Gary Latham of the Lamont-Doherty Geological Observatory at Columbia University, who apparently knows about these kind of things, said the meteor was a about 10 feet in diameter and impacted with a force of about 100 times that of the Saturn S-4B rocket stage that falls on the moon during each Apollo mission.

There was no immediate indication that the debris damaged the Apollo 14 experiment station, but dust may have collected on the instruments. If this happened thermal damage could result from the increased heat absorption during the lunar day. That's the way it goes.

-submitted by C.J. Edsall

Comet Bradfield (1972f)

By

Kenneth Wilson

The first comet to be discovered in over a year that is visible in amateur 'scopes, was discovered by William A. Bradfield of Adelaide, South Australia. Bradfield, a research engineer and a member of the Astronomical Society of South Australia, began searching for comets near the end of 1970. He used a 6-inch f/5.5 refractor with a Petzval photographic objective and a 26x Erfle eyepiece, yielding a field of approximately 2°. He does most of his comet hunting one or two hours before dawn. Before finding Comet 1972f, he had logged 80 hours in comet hunting. Last year he logged 180 hours.

Comet Bradfield reached perihelion distance of 0.9275 on March 27. It was estimated to be of magnitude 8.5 on March 30.73 by Albert Jones of Tahunanui, New Zealand using a 12½" reflector. He found no perceptible tail. Using variable star charts, he estimated the comet's magnitude to be 8.2 on April 1.72 and 2.72 in 11 x 80 binoculars.

Comet Bradfield is now a tenth magnitude object in Puppis, and is visible to observers in Michigan. Below are listed the orbital elements for Comet Bradfield from the IAU Circular 2400. Accurate observations, particularly magnitude estimates, should be sent to: A.L.P.O., Box 26, University Park, New Mexico, 88070.

COMET BRADFIELD (1972f)

T=1972 Mar. 27.7292 ET.

$\omega = 257^\circ.7166$

Q= 0.927469 AU

$\Omega = 159.5870$

1950

i = 123.6897

		α 1950	δ 1950	Δ	r	m ₁
MAY	13	7 ^h 32.2 ⁿ	-20°52'	1.042	1.223	10.0
	18	7 55.4	-15 11			
	23	8 13.7	-10 33	1.289	1.340	10.8
	28	8 28.8	-6 49			
JUNE	2	8 41.4	-3 47	1.570	1.460	11.6
	7	8 52.4	-1 20			
	12	9 02.2	+0 42	1.859	1.583	12.3
	17	9 11.0	+2 22			
	22	9 19.2	+3 45	2.143	1.708	13.0
	27	9 26.7	+4 55			

A LETTER FROM THE EDITORS

On May 5th a Messier Contest at Camp Rotary. First and second place were taken by Mike Potter and Bob Ross of the Kalamazoo Astronomical Society. They won even without the use of finder scopes. Why? Because THERE WERE NO MEMBERS OF THE W.A.S. IN THE COMPETITION!

We think that it is disgraceful that the W.A.S. didn't have one member who even attempted to find the objects!

After beating us up in their Star Bowl 195 to 185, and then beating us at our own Messier Contest simple because we had no one compete, the K.A.S. must have some pretty swelled heads.

The next Messier Contest will be this summer sometime. Let's hope we have a little better turnout from the W.A.S. then.

-THE EDITORS

Preliminary Announcement
of the One Hundred Thirty-Eighth Meeting
of the
American Astronomical Society

MICHIGAN STATE UNIVERSITY
EAST LANSING, MICHIGAN
15 - 18 August 1972

TENTATIVE PROGRAM

Tuesday, 15 August

0900	Council Meeting, Heritage Room, Kellogg Center
1300 - 2200	Registration, Akers Hall
2000 - 2200	Informal Reception, Akers Hall

Wednesday, 16 August

0830 - 1700	Registration, Akers Hall
0900	Address of Welcome
0930 - 1230	Scientific Sessions
1400 - 1700	Scientific Sessions
2000 - 2100	Henry Norris Russell Lecture Dr. Allan Sandage

Thursday, 17 August

0830 - 1700	Registration, Akers Hall
0900 - 1230	Scientific Sessions
1400 - 1600	Greenstein Committee Panel
1610	Annual Business Meeting
1930	Society Banquet, Kellogg Center

Friday, 18 August

0900 - 1200	Scientific Sessions
1400 - 1700	Scientific Sessions

The Division for High Energy Astrophysics plans a special meeting for the morning of 17 August from 10.00 to 12.00 hours. A feature of this meeting will be two review papers of general interest:

"Binary X-ray Stars" by H. Tananbaum, A S & E.

"Recent Work on White Dwarfs" by J. R. P. Angel,
Columbia University.

AAS PHOTO-BULLETIN SUBSCRIPTION. The AAS Working Group on Photographic Materials in Astronomy has found it necessary to charge a subscription for its **AAS Photo-Bulletin** in order to finance continued publication. To receive three 1972 issues containing practical information on all aspects of astronomical photography, send your name, address, and \$5.00 check made out to AAS Photo-Bulletin to:

DAVID W. LATHAM
Smithsonian Astrophysical Observatory
60 Garden Street
Cambridge, Massachusetts 02138

For a complete set of back issues from 1969 to 1971 (4 issues) include an additional \$3.00.

L. W. FREDRICK, Secretary
AMERICAN ASTRONOMICAL SOCIETY
LEANDER McCORMICK OBSERVATORY
BOX 3818, UNIVERSITY STATION
CHARLOTTESVILLE, VIRGINIA 22903

REGISTRATION REQUEST FORM

Make all checks payable to: Michigan State University and send with this completed form to: REGISTRATION SECRETARY

Department of Astronomy
Michigan State University
East Lansing, Michigan 48823

I plan to attend the 138th Meeting of the A.A.S.

I will be accompanied by my spouse. (If both husband and wife are Society members, please send separate Registration Request Forms.)

☐ Yes ☐ No

I will plan to use MSU housing accommodations and require space for _____ adults, _____ children of age 4-7, and _____ children three years old or younger; I will be using the accommodations for the following nights. _____

\$6.75 per person per day for singles

\$4.50 per person per day for doubles

Children of ages 4-7, \$2.25 each per night

Children of ages 3 or younger, no charge

I will require _____ adult meal tickets at \$11.30 and _____ children's meal tickets at \$5.65 (ages 4-7). (Meals for children three years old or younger are free.)

I plan to attend the Society Banquet on Thursday, 17 August, and require _____ tickets at \$6.50 per person.

In connection with the Greenfield Village Tour I require _____ adult tickets at \$7.50 and _____ youth tickets (ages 4-7) at \$5.00, and _____ children's tickets (3 years old or younger) at \$2.50.

In connection with the Kellogg Tour I require _____ tickets at \$2.00 per person.

Registration fee is \$8.00 for society members or guests introduced by Society members. Registration fee is \$2.00 for non-member spouses accompanying members.

Reservations must be received no later than June 30, 1972.

Prepayment for the items checked above is enclosed. (Your cancelled check is your receipt.)

Signed _____

Address _____

RECREATION:

The Astronomy Department has made special arrangements for free use of some MSU facilities. These include swimming pools, gyms, golf course and tennis courts. (Children under 14 are not allowed to use the swimming pools, except on specially designated nights.) Other on-campus facilities include ice skating, bowling, billiards, and bicycle paths. A special "Teen Room" and a Ladies Lounge will be available in the Akers Complex.

MEALS:

A special rate of \$11.30 is available for three meals on Wednesday, breakfast and lunch on Thursday, and breakfast and lunch on Friday. Individual meal tickets will be available at \$1.30 for breakfast, \$1.85 for luncheon, and \$2.30 for dinner. These meals will be in the Akers Dormitory cafeteria. Meals for children four to seven years of age are one-half price, and there is no charge for children three years of age or younger.

ACCOMMODATIONS INFORMATION:

The AAS Meeting headquarters will be in the Akers Complex, on the eastern part of the MSU Campus. All scientific sessions will be in the Akers Complex, and adequate housing accommodations are available in the dormitory.

Rates will be as follows: Singles: \$6.75 per person per day.
Doubles: \$4.50 per person per day.

Children four to seven years of age: \$2.25 each, per day.
Children three years of age or under: No charge
(No cribs or bassinets are available.)

Housing reservations may be made with the Registration Request Form (the last page of this Announcement). Please fill it out completely and mail to the REGISTRATION SECRETARY, Astronomy Department, Michigan State University, East Lansing, Michigan 48823.

AN UNSUAL OPPORTUNITY

The members of the Warren Astronomical Society have been invited by the president and secretary of the American Astronomical Society to attend their annual meeting/convention in Lansing this summer. It is, of course, a professional gathering, with most of the activity centered on the presentation of research papers concerning the work being done in astronomy today. Now, we know the kind of thing that generally happens when professionals come to read their papers at amateur conventions--this is often a sad affair. But will amateurs attending a professional convention find themselves hopelessly confounded in the deluge of equations and derivations which astronomers apparently recognize as nature? From my experience, I don't think this is the case at all. Astronomy is astronomy and astronomers are attempting to answer many of the questions all of us learn to ask about the universe after we start to examine it with some care. For a better idea of the kinds of topics discussed, look back through past issues of *Sky & Telescope* where a digest of papers presented at the AAS meetings is printed under the title: "American Astronomer's Report."

This kind of meeting may turn out to be particularly significant since many of the most important and well-known astronomers in their respective fields will be presenting new details of their researches.

A special session on Wednesday morning August 16 will be devoted to Interstellar Molecules with a review paper by David Buhl. A second special session on Wednesday afternoon will be devoted to The Stability of Stellar Configurations in General Relativity with a review paper by the famous cosmologist S. Chandrasekhar. A third special session on Thursday morning August 17 will be devoted to Stellar Evolution.

The deadline for room reservations at the university June 30.

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WANTED: a fiberglass or aluminum 'snow disc' of the type used for sliding down icy slopes in winter. To be used as a sound reflector for a directional microphone. If you have one of these lying about the house and would consider selling, trading, or donating your snow disc, please see Chris Edsall or call me at 755-9683.

CLUB AND OTHER NEWS

by
Kenneth Wilson

The W.A.S. held a good turnout at the Great Lakes Regional Convention May 12-13. This turnout was largely responsible for the election, at the business meeting, of Frank McCullough as Chairman of the Great Lakes Region for the '72-'73 year. Also elected was Larry F. Kalinowski, who was re-elected as treasurer of the Region.

Mike Potter, a good friend of the W.A.S. was elected as Regional secretary. Congratulations Frank, Larry, and Mike, maybe the Region will do something this year.

The revived "Great Lakes Star" was also presented and voted on. This revival was largely due to the efforts of our president, Frank McCullough. It received a favorable response and will be published quarterly. So, if you have anything to be contributed to be published on a region wide basis, let Frank know.

Frank is going to be quite busy, it seems. He is now not only president of the W.A.S., head of the Messier Group, and co-editor of this publication; but, also editor of the Regional paper and Chairman of the Region. Good luck Frank looks like you'll need it.

The 2nd annual Apollo Rendezvous & Telescope Fair will be held June 16-17 in Dayton, Ohio by the Miami Valley Astronomical Society.

Last year's Rendezvous was a great success and this year's promises to be even better. The new 19" Buchroeder reflector will be dedicated and used at the Apollo Observatory and its designer, Richard A. Buchroeder will speak. There will also be a flea market; door prizes; exhibits by individuals, clubs, and companies; planetarium programs; N.A.S.A. films and slide shows; best telescope awards; and, amateur and professional papers. Registration is only \$3.00 so, let's see the W.A.S. well represented.

Also coming up is the Great Lakes Invitational Meet in Ft. Wayne, Indiana on June 25.

It will be hosted by the Ft. Wayne Astronomical Society, Inc. and will feature: a flea market, telescope judging, paper sessions, an observing session at the Mt. Willig Observatory. Guest Speaker will be Carolyn Hurless of the AAVSO. Further information on this Meet will probably be available at the May 18th and June 15th General Meetings of the W.A.S.

Don't forget the July 16th Solar eclipse is coming up fast! If you still haven't made your arrangements, there is still room on the Kalamazoo Astronomical Society's air conditioned bus to Summerside, Prince Edward Island. Cost is only \$117 and includes: meals en route, two nights and a tour in Montreal, and the good company is free. Call Mike Potter now at 1-(616)-9413.

Arrangements are being made for a W.A.S. tour of the McMath-Hulbert Observatory one Sunday afternoon in late July or early August. This is one of the foremost Solar Observatories in the world, and it is located just north of Pontiac, Mich. (Practically in our backyard.). If you are interested in going, please contact Ken Wilson, at 268-9337.

Tim Skonieczny is now taking orders until May 25 for sets of six 2' X 3' color pictures of astronomical objects such as M42, the Triffid Nebula, the Andromeda Galaxy, the Pleiades, etc. These are the same pictures by the Hale observatories and others that are often seen in astronomical texts. They are available in a set of six for \$15.00 from the Hubert Scientific Company. Call Tim at 751-2649

Warm weather observing is here for the Michigan Observer once again. So, keep in touch for announcements of campouts and Messier Contests.

CLUB AND OTHER NEWS
(CONT.)

The Abrams Planetarium in East Lansing is presently showing a program based on Issac Asimov's short story "The Last Question", which was originally produced by the Strassenburg Planetarium. I got a chance to see it the weekend of the G.L.R. convention. This fantastic program is an absolute must for anyone who can possibly get a chance to see it. They have been constantly showing it to packed audiences. I cannot adequately describe this amazing show. It just has to be seen to be believed.

It will be shown until June 11th when the planetarium closes for the summer. When the planetarium is reopened on August 4th, the show will run until the 20th. Scheduled times for the pre-summer shows are Fridays (8:00 & 10:00 p.m.), Saturdays (2:30, 8:00 & 1:00 p.m.) and Sundays at 4:00 p.m. After the summer break shows are scheduled for Fridays (8:00 p.m.), Saturdays (2:30 & 8:00 p.m.), Sundays at 4:00 p.m. Admission for adults is only \$1.00 and children (5-12) 50¢. I highly recommend this program.

On Saturday, May 20th. Michigan State University will hold a free open house for the public at its new observatory housing a 24-inch reflector. Mike Potter of the Kalamazoo Astronomical Society has arranged for a small group of people to use the telescope after the open house. He invites any interested W.A.S. members to join him. A side trip to see the planetarium program "The Last Question" by Isaac Asimov at the Abrams Planetarium is planned (See above).

Frank McCullough plans a camp out at Bald Mountain Recreation Area near Rochester Michigan for the weekend following the May General meeting. Everyone is invited to join the camping and observing at a site away from the bright, bright lights of Warren and vicinity.

FROM THE "PHENOMENA"

Near his (Perseus) left, knee the Pleiades next are roll'd
Like seven pure brilliants set in a ring of gold.
Though each one small, their splendor all combine
To form one gem, and gloriously they shine.
Their number seven, though some men fondly say,
And poets feign, that one has passed away,
Alceyone-Celoene-Merope-
Electra-Taygeta-Sterepe-
With Maia- honor'd sisterhood-by Jove
To rule the seasons plac'd in heaven above.
Men mark them, rising with Sol's setting light,
Forerunners of the winter's gloomy night.
They guide the ploughman to the mellow land-
The sower casts his seed at their command.

-Aratus, third century B.C.

There are many leftover copies of the first issue of the "Great Lakes Star." If you would like a few copies, they are available free to anyone who wants them. See Frank McCullough.

Also, Articles are desperately needed. If you have any contributions, submit them to any member of the W.A.S.P. staff.

The Great Lakes Regional Convention

By

Frank McCullough

The Great Lakes Regional Convention on was held in Toledo, Ohio on the 12th and 13th of May. The whole event was called the Great Lakes Region of the Astronomical League Convention and the Great Lakes Astronomy Symposium.

The convention was a very exciting one giving the listener some or the best speakers in their fields.

Friday some of the members from the W.A.S. visited the Ritter Observatory which housed a 40" reflecting telescope. Also they saw a planetarium show. I was late so I missed it! We all ate at Big Boy's, along with our buddy from Kalamazoo, who else but Mike Potter. Mike had a light snack, consisting of 2 Big Boys and a chocolate shake, +or- French fries. That night we slept at Howard Johnsons, all five of us in a single room. I had no sleep that night and lived off No-Doz the next day. Have you ever seen a person extremely tired yet his eyes are so wide open that it looks as if his eyeballs are going to drop in your food? Well, that's how I felt.

Anyhow, the next day (Saturday), Von Del Chamberlain from Michigan State led off with a very good talk on meteors, called "Fire in the Sky". He had a movie of a meteor falling and a tape with sound of one falling, I believe in Ireland. Other invited speakers were Dr. John D. Krauss, director of Ohio State University's Radio Telescope, Richard Teske from McMath Hulbert Solar Observatory, Adolf Witt, astronomer from Ritter Observatory in Toledo and also Mark Christensen and Gerald Persha who had a lot of trouble with the synchronization of their slide show. The only thing I can say even with all the trouble they had is it's one of the greatest presentations out today. Another invited speaker was Frank McCullough from the W.A.S. I invited myself. No one else would if I didn't!

There is much more that can be told but the people that went know exactly what fun it is. So let's see more of ye, at the next one.

SALUTE OF THE MONTH

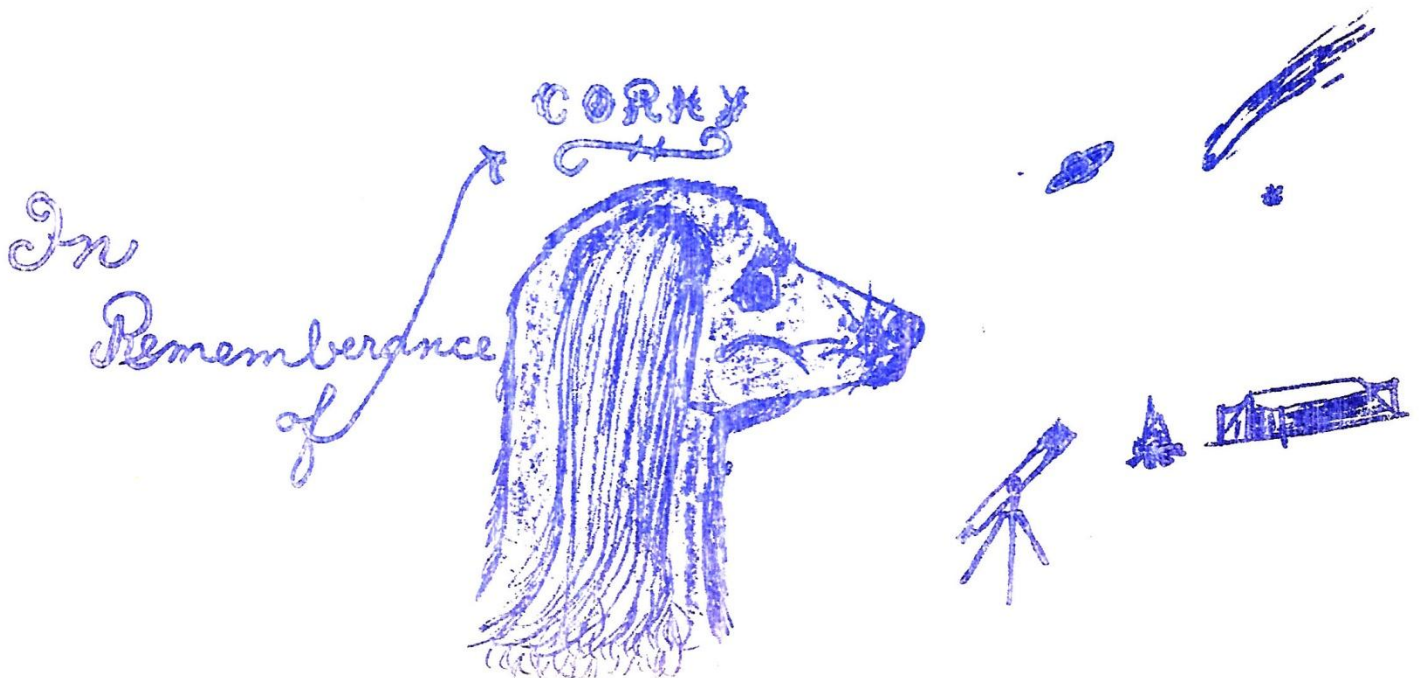
By

Ginny McCullough

The salute of the month goes to Corky McCullough, the Dog Star of the W.A.S. Some remember her from our camp outs and observing sessions at Camp Rotary. She also attended last year's convention at Oakland University. She was very pleased with the convention, she felt she had learned quite a bit. The only gripe she had was being rolled in a blanket and taken to our room (our room number was K.9) For the money we paid she thought it looked like a kennel. We did real well until we had to take her out. Everything went real well until we had to take her back to our room in the elevator and she started moving, people looked like they wanted out of the elevator. Diane and I looked at each other and laughed.

Others might remember her on our trip to Evert, Michigan. When a few of the members went in to town(?) and they came back expecting to get back in the tent. They didn't that once they left Frank alone in the tent that's the way Corky expected it to stay. They found it impossible to get into the tent until I called Corky out. She knew that Chris Edsall, Tim Skonieczny and Martin Myron had strobed her and they might try and harm Frank. She wouldn't forgive them for that, and can you blame her? As Tim put it, her eyes glowed for 60 seconds after he had gotten through strobing her. She may have forgiven them by now, but you have to admit it takes a big dog that won't bark on the subject! If they keep it up, they'll find that her bite is much worse than her bark. She's also been on other, bigger, events like the Mercury Transit and various other camp outs, star parties and working at the observatory.

For those of you who are wondering where Corky is and why she hasn't been around is because she's now living in New Orleans, Louisiana. She likes the weather and thinks she's a real HOT DOG!



The W.A.S. Uncovers the “Good Old Days”
The Messier Club’s Big Summer Outing for 1970
A Trip to Starry Evert, Michigan

A group of seven Messier Club members ventured to Evert Michigan for one of the most memorable trips in our life time. At the Messier Club meeting the members and I decided on a place to go for a weekend campout. We thought of Irish Hills, but ruled that out because of all the campers with the same idea. Then it was suggested by Chris that we camp just north of Windsor and drive until we found a good spot. So this was our plan until Donald Mission said we could camp out at his relatives’ lot at Evert, and am I glad we did. Our caravan finally got rolling around 2:30 a.m. Saturday morning. It was a lovely warm morning and the stars were out, yet the weekend weather forecast was not a good one. However, as determined amateur astronomers we ventured forth into a trip that turned from disaster to a FAAAAAN----TASTIC success. Our caravan consisted of my dog Corky, Marvelous Marty Myron, Careless Chris Edsel, Dominant Donald Mission, Disabled Diane Bargiel, my sister Violet Virginia McCullough, and me, Friendly Frank. Marty drove his luxurious Chrysler while I drove my 1963 bashed-in dent (But I’ll stick up for my Corvair, because it carried a 6” telescope and mount, a 2” refractor and mount, groceries, camping equipment, clothing, pillows, etc. We also fit three people and a dog in front and still had a little bit of comfort). Anyhow, to get on with the trip, we had driven nearly 100 miles when I looked out my window and saw the beautiful star clouds in Sagittarius. Never had I seen the southern sky like that except in the Carolinas’ on our way to the eclipse. We were nearly to Evert when the sun made its way to the horizon. It looked as if it were to be a spectacular sunrise from where we were driving.

I told Ginny to watch that in 25 minutes the sun would just be coming over the horizon. With 15 minutes to go, like a flock of black bats, clouds poured from the north, south, and west. With 2 minutes to go we were under an umbrella of gray clouds. We drove on until we reached the lot.

It was a very nice place with a river running alongside. The tents were pitched while a chilly breeze moved in. The only thing to do was to eat breakfast so the girls had the honor of cooking it. I’m sure it’s the last time they’ll ever cook breakfast for us again. The boys barked out the signals to the girls as to how they wanted their eggs fixed while the dog barked at them for barking at the girls. By the time breakfast was through I never realized how many different ways eggs could be made. As the girls cleaned the dishes, we boys, satisfied with our meal fell into a deep slumber. I was never to return for another four hours. (That was because I had no sleep for two days straight-- I’m crazy you know!) When I returned from the dead I found the girls cooking lunch. I felt terrible so I ate some lunch the girls made and felt worse. A chilly drizzle fell off and on all day yet we never lost our courage. We were proud to represent the W.A.S. at Evert, Michigan.

I went fishing later that day and while I was on the bank I saw a dying rainbow trout next to me. I thought, “Hey, what a cool gag!” I put the fish on my hook and proudly displayed my trophy. The fish was dead as a mackerel and as I showed them one said, “That’s nice;” someone else said “what kind is it?” I said, “It’s a rainbow trout.” You think they cared? No, they didn’t. So I through it back in and pouted on the bank.

Then there was a tug on my line and a fantastic battle went on between fish and man. I reeled in the fish in approximately three seconds and found that it measured about four and a half inches. I had enough fishing for the day and dug out my Norton's Atlas and Sky and Telescope to find my objects for that night.

As a drizzle fell upon my books and me, Chris walked over to me and asked what I was doing. I said that I was finding my objects for that night, and he broke into such laughter that it wasn't even human. He said it wouldn't clear up, and I told him that he didn't have faith because it was still early. As time moved on the clouds and drizzle remained. The sky started to darken. We went into town for a while and covered it in three minutes. They had a few stores, one bowling alley with around four or five alleys, and a big night spot which was called A&W's.

After returning to camp we roasted marshmallows and watched the fantastic fireworks Evert had to offer. They consisted of about 10 bursts of explosives and a fire bell that rang for about five minutes. We were trying to think of something to do to pass the night away, so my sister caught a tadpole. (Which I'm sorry to say passed away the morning of August 1). My sister's autopsy revealed that he turned all black before he died. The clouds still hung over our heads as it grew darker. Then, as if I had seen a ghost, I gasped, "There's a black spot!" The spot became a streak which then became a gap. It had moved from the northwest from the northeast and then BLAM! Venus popped through like a flash light. It was marvelous, but then disappeared. I said there were more black spots. Of course Chris never thought it would, but it did-- a giant gap opened up and as we all watched, we were swallowed up by the sky. Standing next to Chris, I heard him say, "Oh Mama Bear!" referring to the whole constellation of Ursa Major which was stupendous. Then it continued to cloud and open up again about ten times.

Finally it clouded up what looked like for good. So we went out and caught lightening bugs, and had a lot of fun. Diane was afraid to catch them when they landed, because she thought some prehistoric animal or some creature would bite her hands off if she reached in and caught one. All this time we were playing the "2001" soundtrack which shrieked across the fields, meadows and treetops. We caught about 10 and put them in a milk carton where Chris was waiting to take exposures of the bugs as they lit up the carton. (By the way, if you want to see the slides of the lightening bugs, he's got them).

Meanwhile time rolled by and so did the clouds--they opened up. We set up our equipment, which was a difficult task because we couldn't believe all the stars we saw, clear to the horizon. We could see the divides in the Milky Way. All of Sagittarius and Scorpius was seen easily naked eye. The only thing I can say for all of us is that it was exciting and breathtaking. Here we are members of an astronomy club and seeing stars at this perfection is like viewing a solar eclipse for the first time. (Yet if you live in Warren the stars at that stage would look as good as a solar eclipse, because we see the stars this way as many times as we are able to see a total eclipse--I hope you're not confused with that last statement). I won't go through all the things I saw that night, but I saw too much. In other words, I was like a pig rambling through the messier objects, gobbling them up as fast as I could find them. The reason I was like that is because I'm a resident of Warren, or I should say I was one. I just didn't have time for careful, serious observing even though I've managed to knock off about 15 objects. I stayed up late Sunday morning and called it quits around 3:30 a.m.

I was chilled to the bone so I bundled up with a sleeping bag, a couple of sweaters a couple of jackets, etc. I did not want to go in the tent and disturb the rest so like a bullhead I rolled up all the car windows and snuggled to sleep. The next thing I knew, I heard a tap on the car window, the sun shone brightly in a pure blue sky, and myself--I was ready to scream. I was a human roast being baked alive. I quickly opened the door, shed my wraps, and jettisoned myself out of the car where I felt sick and dizzy. Then Marty said to me, "Hurry up Frank, get ready because we're going canoeing. I told the guy we'd be there in 20 minutes." All I can say is that I sure wasn't in the mood for canoeing. We went though and paddled for 4 hours down the Muskegon River.

We had a hilarious time though. The crew consisting of Don, Marty and Chris had a few troubles when they lost control of their canoe, smashed into rocks, and hit the shore going full speed. I don't know how many knots they were going but I think Don picked up a few as he was ejected to the rear of the canoe when they had their FAAAN--TASTIC collision with mother earth. We did have some troubles that day for little did we know that when we rented our canoe we actually rented a "sponge". We stopped three times to dump or boat out. Then another time I decided to steer our vessel under a low tree hanging over the water. As we approached the branches I could see we were in trouble-- the water got shallower, I could see my sister's head-- then the 6' tree branch-- my sister's head-- then the branch-- then her head-- then the branch! Then I heard a scrambling noise from the front of the cane which was my sister trying to abandon ship. I heard a crunch, thump, scrape and saw my sister flattened on the floor of the canoe. Our oar was swiftly being carried downstream. Not liking to put my feet on the bottom of a river or lake unless it is made of sand, I ordered my sister to retrieve the oar. As she plowed her way downstream, I felt proud that she was my sister. Then as I lost sight of her I knew she was making headway. (I'm just teasing with that last sentence!) She did get the oar and we were off once again.

After we landed our boats we went back to camp and I caught another fish. I got out my atlas again and found some more objects for that night. Not one cloud all day and the day grew to a close. Chris, Marty and Donald prepared to drive off to a hillside to photograph the setting sun. Little did they know that tragedy would strike. At camp Diane, my sister and I watched the thin crescent moon and Venus in the sky. Further off on a large hill, sunset pictures were being attempted. This is where "careless" Chris gets his name. They had to climb to their observing site and when Chris decided to go back to the car, he also decided to take a faster route. As he carelessly made his way he lost his footing and plunged to his death. When they brought to camp, Chris had sunset shots and a badly scraped elbow.

Again we went into town and came back to observe the beautiful night sky. Remember I said there were no clouds all day and all night, yet moisture came from our beautiful sky, hampering telescope observation. We left around 11:30 p.m. Sunday July 5th. Before we left, we were delayed when Marty's car's brakes acted up on him. We left, keeping a moderate speed of 50 to 60 mph. On the way home a beautiful aurora lit the northern sky around Perseus and Auriga. So I let Diane drive my car from the passenger's side while I stuck my head out the window and watched the aurora. It was a nice drive home except for a few problems. One being that I got stopped by the Highway Patrol for no tail lights, the second-- I kept falling asleep at

the wheel, and the third--I got stopped by the Troy police and had to pay a \$4.00 ticket for no tail lenses on my back lights.

Yet this trip to Evert, Michigan will be filled with memories. Anyone is welcome to come on our outings. Just call for details.

The End?

Frank McCullough

OBSERVATIONAL ASTRONOMY

By
Frank McCullough

(M-4 and M-19)

Two objects which are very nice in a small telescope are the two globular clusters M-4 and M-19.

M-4 I found two years ago at Evert, Michigan. This cluster is very large and does not appear to have a bright concentration of stars at the center like most globulars. Instead it is quite large and spread out with all the stars being nearly of the same magnitude. This may be a sign of a very old cluster starting to disassemble.

If you do not have a good southern sky, this object can be very rough to find. This cluster is near the bright star Antares in the constellation Scorpius.

Co-ordinates are as follows: R.A.-16h-20min DEC.-minus $26^{\circ} 24'$

Look for stars α and δ . Look south of these two stars and M-4 will be the tip of a triangle formed by these three objects.

(magnitude 6th)

M-19 is a sharp globular, smaller than M-4, but because of its centralizing of stars near the center, M-19 looks brighter.

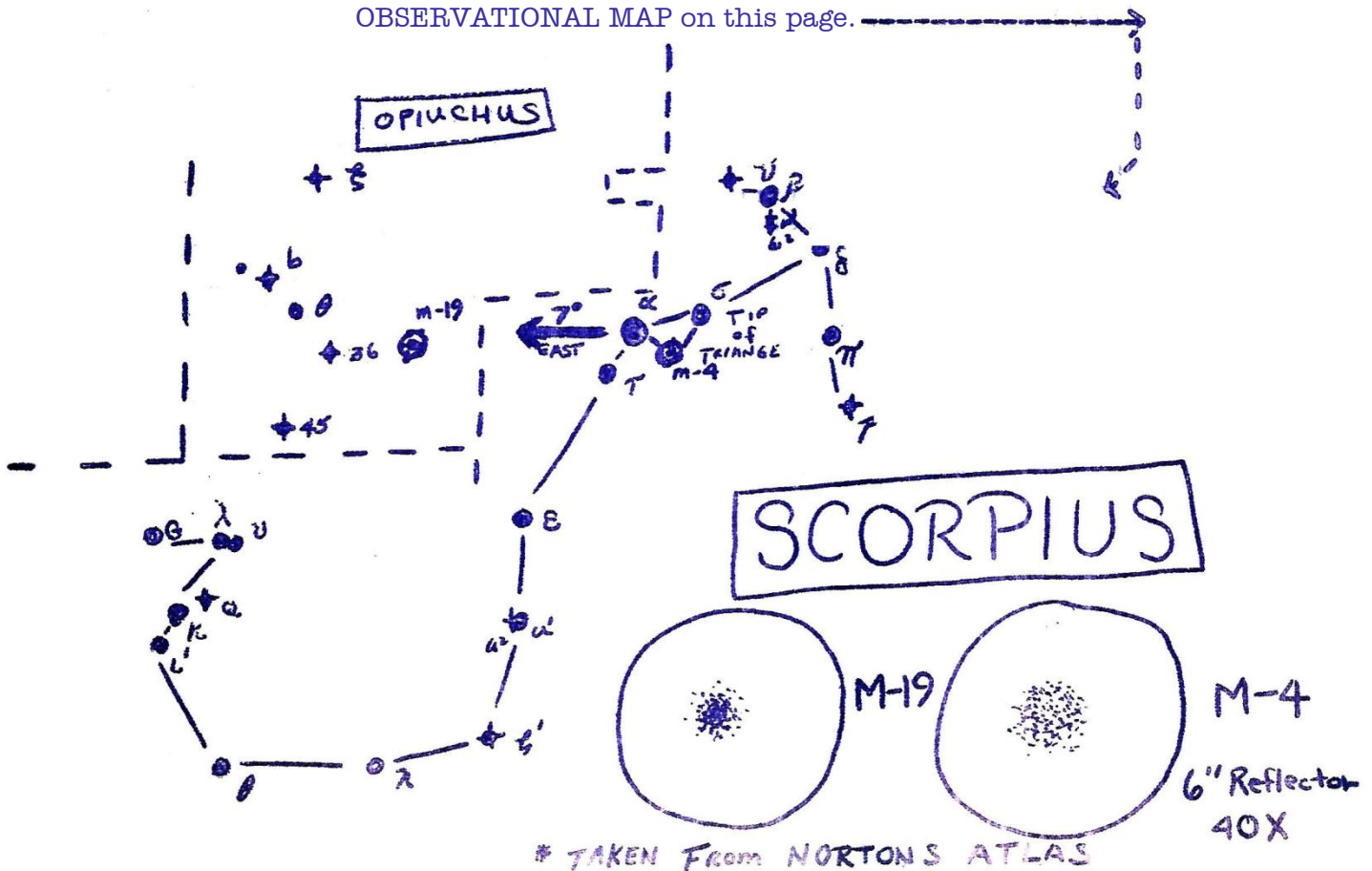
I found M-19 roughly at 4:00 A.M. on March, 1972, at Kensington Park. This sight has offered a much nicer southern view than any previous sight within an hour drive of Detroit.

Coordinates R.A.-17h 00min DEC.- minus $26^{\circ} 11'$

Magnitude-7th. M-19 is almost straight east of Antares.

This object is located in the constellation OPIUCHUS

OBSERVATIONAL MAP on this page.



CONSTELLATION OF THE MONTH

By Frank McCullough

HYDRA – (hi'-dra) – THE SEA SERPENT

Location-The head of Hydra, marked by a striking and beautiful group of stars, lies just below the Bee Hive in Cancer, and 6° south of α Cancrī. The group forms a Rhomboidal figure of five stars. See diagram of Cancer.

MYTHOLOGY

But lo! Afar another constellation,
They call it Hydra. Like a living creature
Tis long drawn out. His head moves on below
The midst of the Crab; his length below the Lion;
His tail hangs o'er the Centaur's self.

-Aratos

According to an old legend, the Hydra was the terrible monster that lived near the marshes of Lerna. The creature had many heads which were peculiar in this respect: as fast as one was cut off, two immediately grew in its place.,

Hercules and his nephew Iolaus sought the monster to slay it, and as fast as Hercules cut off a head, Iolaus seared the wound, with a hot iron, which prevented other heads from growing out.

The central head of the monster was supposed to be immortal, and this one Hercules buried under a rock.

The long extended and serpentine figure of Hydra somewhat resembles a wandering stream. This led the Egyptians to imagine that this constellation was the heavenly counterpart of their famous River Nile.

For the Telescope

For the teloscopists, see the double stars in Hydra cited under Chapters on Cancer, Corvus, and Crater.

The star ϵ Hydrae, in the Hydras head, is an interesting star. It was discovered to be a double by Struve. In 1888 Schiaparelli noted that the brighter component was itself a close double. The system is itself 135 light years distant. Its period is 15 years. The brighter pair are of 3.8 and 5.0 magnitude, separated at a distance of 0".2, and a 3rd component is separated from this pair at a distance of 4".

****TAKEN FROM OLCOTTS "Field Book of the Sky" ****

Map of Hydra on next page —————▶

Constellation of the Month