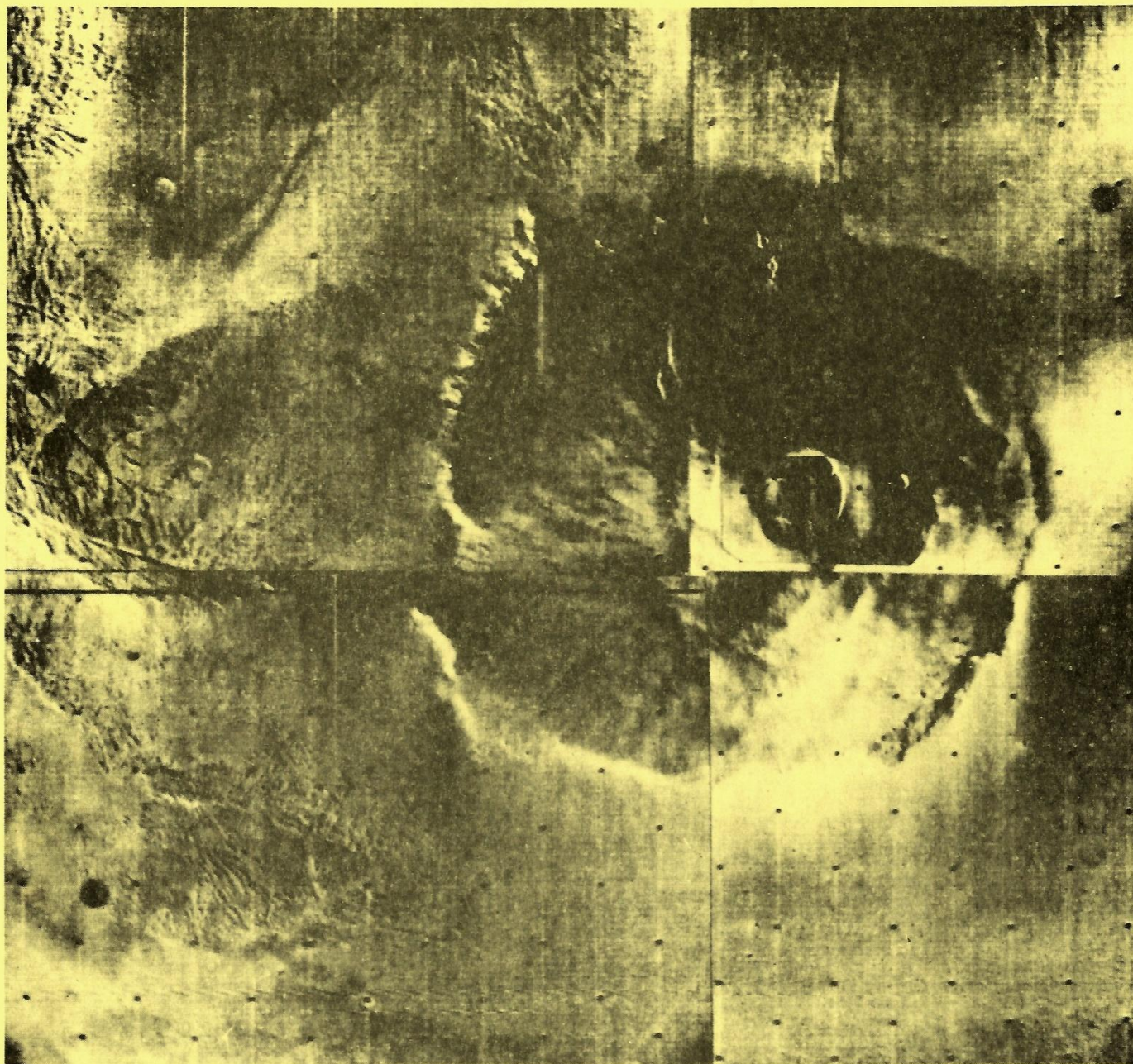


The "APPROACH" of MARS



The towering volcanic mountain in this Mariner picture is Nix Olympica, approximately 500 kilometers (310 miles) across at its base. It is more than twice as broad as the most massive volcanic pile on Earth, the 225-kilometer (140-mile) wide mountain that forms the

Hawaiian Islands. A large number of possible volcanic features have been identified on Mars, indicating that the planet may have or may have had a molten core. 72-H-141



The

WASP

SEPTEMBER
S M T W T F S
1
2 3 4 5 6 7 8
9 10 11 12 13 14 15
16 17 18 19 20 21 22
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30

FALL Meeting Guide OCTOBER

NOVEMBER
S M T W T F S
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30

1973 Warren Astronomical Society

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>Comet Kohoutek is coming</p> <p>7</p>	<p>1 Comet's APPROXIMATE MAGNITUDE 9.9</p> <p>8 Columbus Day Civic Holiday (Canada)</p> <p>15 COMET'S APPROX. MAG. 8.9</p> <p>22 Veteran's Day</p>	<p>2</p> <p>9</p> <p>17 1974 NATIONAL CONVENTION COMMITTEE MEETING IF NECESSARY 18th →</p> <p>23</p> <p>30 COMET'S APPROX. MAG. 7.7</p>	<p>3</p> <p>10 COMET'S APPROX. MAG. 9.3</p> <p>17</p> <p>24</p>	<p>4 MESSIER CLUB MEETING *791-8752</p> <p>11 ASTRO PHOTO MEETING *755-1857</p> <p>18th</p> <p>25 COMET'S APPROX. MAG. 8.1</p>	<p>5 COMET'S APPROX. MAG. 9.6</p> <p>KALAMAZOO MEETING H.A.S. Meeting</p> <p>12 H.A.S. MEETING FULL MOON</p> <p>19 GRAND RAPIDS MEETING H.A.S. MEETING MESSIER</p> <p>26 H.A.S. MEETING NEW MOON</p>	<p>6 Yom Kippur</p> <p>13</p> <p>20 COMET'S APPROX. MAG. 8.5</p> <p>27</p>

Messier Contest: Oct. 19th: StarGate Observatory

TELESCOPIC OBSERVATIONS
OF COME KOHOUTEK SHOULD START
THIS MONTH
IF FOUND USE "CALL LIST" - COMET CO-ORDINATES
IN SEPTEMBER W.A.S.P AND STAR
(* INFORMATION)

OCTOBER

***LETTER FROM THE EDITOR

Welcome back to another issue of the W.A.S.P.; or, as it is known around the League, Warren's astronomical version of yellow journalism.

To all of those who made it back after the convention, Alka-Seltzer does wonders for a hangover. To those who did not attend, you missed a great convention. Much credit and a W.A.S.P. salute of the month goes to Mike Potter who, despite his modest protestations to the contrary, ran a one man convention. Much thanks to all of the W.A.S. members who showed up to help us win the \$50 best participation award. But it wasn't just attendance that mattered. The W.A.S. gave the most and, in my opinion the best, papers during the convention. Papers were given by Louis Faix, Dave Harrington, Pete Kwentus, Frank McCullough and yours truly. Special thanks must go to Roger Civic who put a lot of work into assembling the W.A.S. exhibits. Many late hours were spent in both construction of the exhibit and reprinting of the photographs graciously supplied by many W.A.S. members. Thanks to these and other W.A.S. members we now have fifty more dollars in our badly depleted treasury which can be put toward some addition to our observatory or some other worthwhile and tangible improvement to our club.

I should also make note of the excellent slide talk given at the convention banquet by Robert E. Cox. It included many valuable insights into the history of amateur astronomy. I found Mr. Cox to be a very friendly and personable man always willing to answer any of your questions or to listen to your ideas.

P.S., Thanks to the D.O.A.A. for supplying \$50 worth of booze for the "Friday Night at Big Jack's". They also did a great job serving as bartenders.

One interesting outcome of the convention was the decision of the GLRAL to hold the 1974 national convention of the Astronomical League in Lansing Aug. 14-18. This convention will be co-hosted by the W.A.S. and the Kalamazoo Astronomical Society. Organizational committees for this convention have already been formed; so, if you want to help, we need you. Contact either Frank McCullough (791-8752) or Gerald Persha.

P.P.S., I must mention that the W.A.S. finally won a Star Bowl against Kalamazoo by one question. The KAS beat the Muskegon AS and the W.A.S. beat Grand Rapids to face each other in the semi-finals. Against stiff competition, the W.A.S., with the talents of Dave Harrington, Don Mission, and Louis Faix won. This win ended a two game losing streak against Kalamazoo.

Fair skies and good seeing

Ken Wilson,
Editor W.A.S.P.

OBSERVING SITE REPORT: PORT AUSTIN, MICH.

By Ken Wilson

During the last new moon (August 27th) I decided to get away from the bright city lights and see what dark skies really looked like again. So, loaded with telescopes, cameras and tents, Tim Skonieczny and I set out for the tip of the thumb of Michigan.

The reason I chose this site was that it is an area far enough away from bright cities that there is virtually no sky glow. In fact it is probably the only area like this that is also within a two hour drive from Warren. There are also two state parks with camping grounds in this area.

The ROUTE: It is very simple to get to. One just gets on M59 (Van Dyke) and head due north. Keep going until you get to Port Austin which is literally on the shore of Lake Huron. This drive takes about two hours. M59 is a two Lane black top road in good condition with speed limits usually around 65 M.P.H. To get to state parks, one simply heads west from Port Austin for approx. 5 miles to Port Crescent State Park or about 10 miles to get to the larger Albert E. Sleeper State Park.

THE observing conditions: Both parks were heavily forested from what we saw. Port Crescent had a more open area than did Sleeper, so we pitched the tent there. Our only problem was late campers returning in their cars at night with their bright lights on. I would suggest that the prospective observer/astrophotographer camp in the park and observe in one of the farm fields about a mile south of the park. These areas provide a more open tree-free sky with greater chance of getting away from the few headlights that do pop up in this sparsely populated area. We did not have time for this, but only had to interrupt our exposure a couple of times. Most amazing was the lack of mosquitoes during the night. They were active for only about a half hour after sunset, after which they disappeared for the rest of the evening. We did not use one ounce of repellent the whole evening!

The Skies: The skies were absolutely beautiful. I had not seen such dark skies since I went out West a couple of years ago. The only sky glow was from a faint Aurora in the north. I saw extensions of the Milky Way that I never saw before. These skies are perfect for long exposure astrophotography or just plain visual appreciation of the true beauty of the starry heavens.

Constellation of the Month

by

Frank McCullough

Well summer is about to leave us and already the chill of autumn is being felt. We somewhat hate to say farewell to our summer groupings and as our fond farewell we will recognize the small but conspicuous constellation, Delphinus: the Dolphin.

A legend is associated with it. Arion, the famous lyric poet and musician was sailing back from Corinth to Sicily when he was seized by the ship's crew, who coveted the prizes which he had won. Arion pleaded to be allowed to play one last tune on his cithara; this request was granted, and the music attracted a school of dolphins around the ship. Suddenly Arion flung himself into the sea, and one of the dolphins carried him safely to the port of Jaenarus. It is this dolphin we now see in the sky.

Delphinus is a small compact group not far from Altair. It has no star as bright as third magnitude, but it is never the less easy to recognize. A small telescope shows that γ is double, with a yellowish primary and a greenish companion of about $5\frac{1}{2}$.

Observational Astronomy

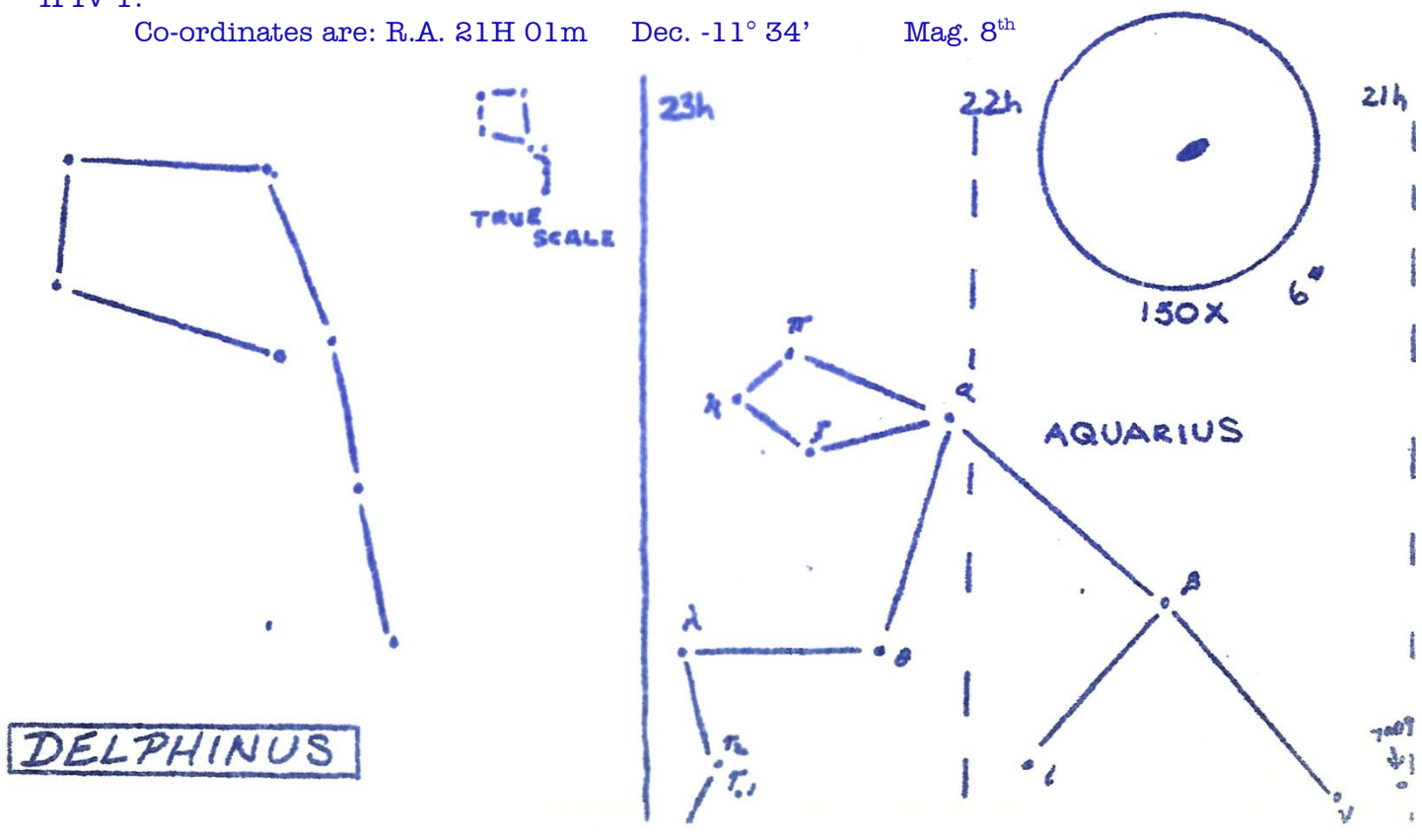
By

Frank McCullough

An object introduced to me by Mr. Dave Ther was the very intriguing Saturn Nebula in Aquarius. It is fun to find, because you have to take a roundabout route in finding it. The object has a title of N.G.C. 7009, and reveals one of the few colors found in distant objects, that color is green. Anyone finding this object should let me know so we can get a descriptive report from another observer. With it being highly elliptical, there is no mistaking this object, also giving the appearance of an over exposed exposure of Saturn.

To find, look one degree west of Nu Aquarii and is charted in Norton's Atlas as H IV 1.

Co-ordinates are: R.A. 21h 01m Dec. $-11^{\circ} 34'$ Mag. 8th



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USING THE STEREOSCOPIC ABILITY OF THE EYES FOR LOCATING STELLAR OBJECTS IN THE VIEWFINDER

A tip on sighting stars and planets quickly and accurately in the viewfinder by using the stereoscopic ability of the eyes. The method works only with stars and planets visible to the naked eye.

Sight the star or planet in the viewfinder with the right eye and sight simultaneously with the naked left eye the same object. Revolve the telescope using Right Ascension and Declination settings to bring the two images into conjunction. This places the star or planet squarely in the center of the eye-piece which a check in the eye-piece will verify once you have locked on the conjunct images. This method eliminates the need to sight a star or planet directly at the point of intersection of cross-hairs in the viewfinder. This is quicker and absolutely accurate. If a person trusted their ability to do this with extreme accuracy, then they could proceed to click the shutter cable on an already mounted camera, whether on the telescope or shot through the telescope without even checking the eye-piece for positive corroboration of the presence of the stellar object being aligned dead-center in the eye-piece or camera.

Shooting a comet using this method could be facilitated because one need not check to see if the comet is in position in the eyepiece, thus saving time--just align the two images and shoot away.

Bev. Bock

Submitted by Diane McCullough

HARVEST MOON COMES BEFORE AUTUMN BEGINS

The beginning of fall, the Harvest Moon, and several constellations are among the astronomical highlights of September, says University of Michigan Prof. Hazel M. Losh.

"On Sept. 23, the sun will rise and set almost exactly at the east and west points", she observes, "and when it crosses the equator at 12:21 a.m., an event known as the autumnal equinox, fall will officially begin." She explains that on the 23rd, day and night will be roughly equal. Thereafter however, the days will grow steadily shorter and the nights longer.

The Harvest Moon--the full moon that occurs nearest the date of autumnal equinox--will appear on Sept. 12 at 11:16 a.m. On the average, a full moon rises nearly an hour later each day, but this delay varies considerably during the year according to the angle that the

moon's path makes with the eastern horizon. In autumn this retardation is at its minimum--only 20 minutes.

"The Harvest Moon is very impressive not only because it gives a great amount of light in the early evening and the whole night through for an unusual number of nights", Prof. Losh points out, "but also because it appears both very large and very red while near the horizon."

Its large size is an optical illusion created through comparison with nearby terrestrial objects, while the reddish color stems from the actions of the earth's atmosphere upon the rays of light from the moon.

Rising in the early evening during September are three constellations closely linked in Greek mythology, according to Prof. Lash Pegasus, the Winged horse; Andromeda, the famous daughter of Cepheus and Cassiopeia; and Perseus, the Hero.

Thursday, September 13, 1973
Metro Detroit Shopping News

Pegasus, the easiest of the three to identify, rises almost directly in the east, the U-M astronomer explains. Its chief feature, a landmark of the night sky, is the "Great Square". The northeast corner of this square is a star of Andromeda. Andromeda stretches in a row of stars across the northeastern horizon. Above the third star from the Pegasus corner is the famous Andromeda galaxy, a universe believed to be similar to our own. Slightly north of Andromeda is Perseus, a K-shaped figure with the downward side of the letter pointing to a small group of stars.

Planets of September include Jupiter, shining brightly in the southeast in early evening, and Venus, glowing near the southwestern horizon just after sunset. Mars rises a little north of east around 10 p.m. and Saturn appears in the far northeast around 1 a.m.

THE 1973 TRANSIT OF MERCURY

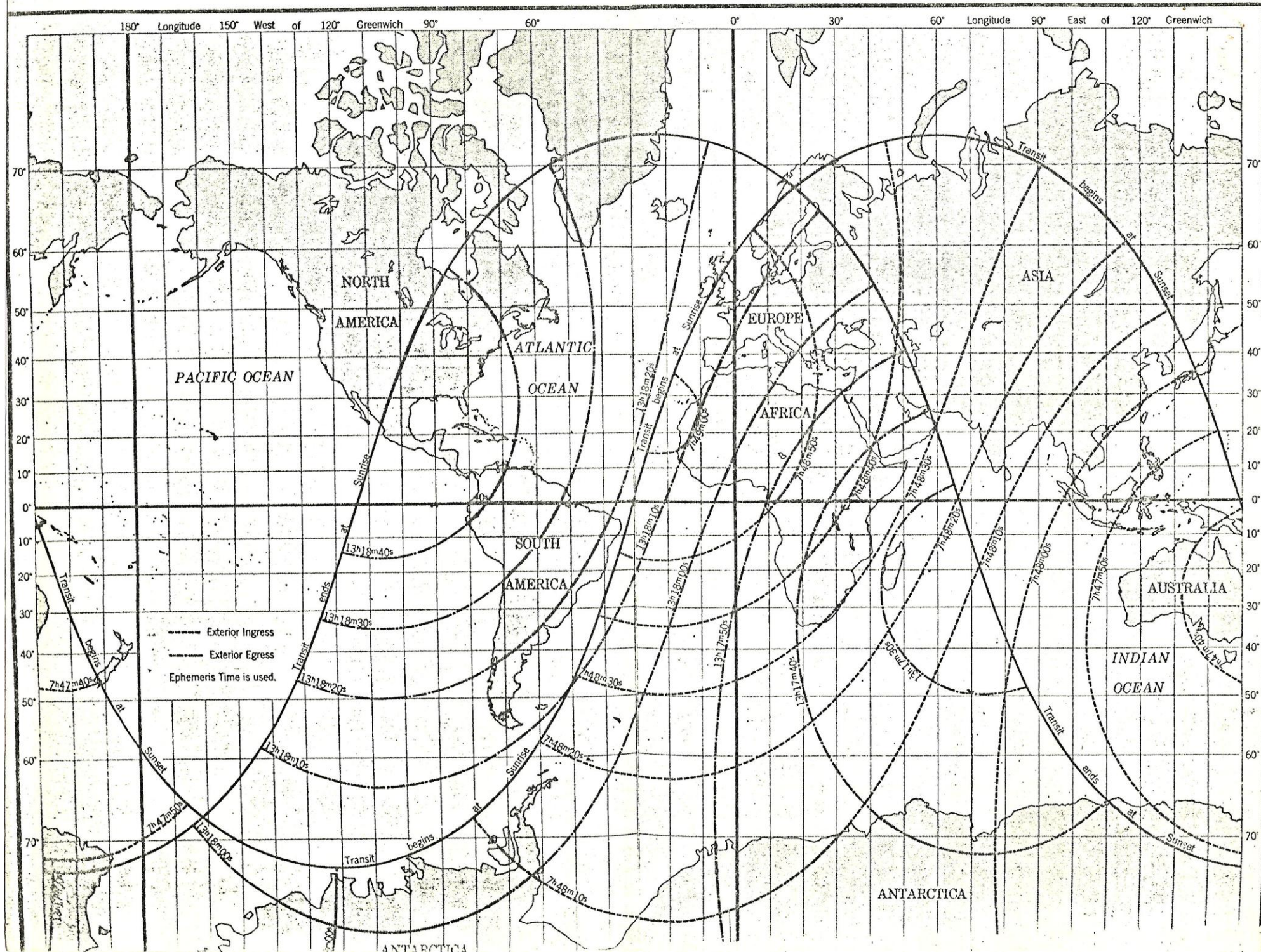
David L. Harrington

ABSTRACT

On 10 November, 1973, the planet Mercury will transit the sun, passing only 26.6" of arc from the center of the solar disk. This transit involves the passage of Mercury's disk very nearly along a diameter of the sun, with the angular separation between disk centers being the smallest of any transit this century.

This paper is concerned with computer calculations of local circumstances for numerous proposed observation sites in the United States. Included in these calculations are accurate contact timings and available observation times for the various sites. The predicted contact times are given in terms of Universal Time, Ephemeris Time and local time. Using the Ephemerides of Mercury and the sun, as well as the times of local sunrise, the available observation times from sunrise to contact IV are tabulated for numerous geographical locations. Based on these calculations, an optimum observation site on the eastern seaboard of the United States is discussed, and available observation times are compared to those in the Great Lakes region. Consideration is also given to the equipment required for observation and photography, and to techniques that can be utilized for making accurate contact timings.

TRANSIT OF MERCURY OF 1973 NOVEMBER 10



TRANSIT OF MERCURY 10 NOVEMBER, 1973 DELTA T = 43.90

UNIVERSAL TIMES OF GEOCENTRIC CONTACTS

CONTACT	UNIVERSAL TIME
1	7H 47M 34.80S
2	7H 49M 15.30S
3	13H 15M 42.60S
4	13H 17M 23.10S

GEOGRAPHICAL LOCATION	OBSERVATION TIME	LOCAL TIME OF SUNRISE	LOCAL TIME OF FOURTH CONTACT
FREDERICKTON, NEW BRUNS.	118.6 MINUTES	7H 19.3M MPST	9H 17M 55.05S MPST
ORONO, MAINE	113.3 MINUTES	6H 24.7M EST	8H 17M 55.85S EST
BRUNSWICK, MAINE	110.6 MINUTES	6H 27.4M EST	8H 17M 56.41S EST
NANTUCKET, MASS.	116.0 MINUTES	6H 22.0M EST	8H 17M 56.89S EST
QUEBEC, CANADA	97.9 MINUTES	6H 40.0M EST	8H 17M 56.19S EST
BOSTON, MASSACHUSETTS	109.7 MINUTES	6H 28.3M EST	8H 17M 57.01S EST
AMHERST, MASSACHUSETTS	104.0 MINUTES	6H 34.0M EST	8H 17M 57.42S EST
BETHANY, CONNECTICUT	104.2 MINUTES	6H 33.8M EST	8H 17M 57.71S EST
MONTREAL, QUEBEC	92.1 MINUTES	6H 45.9M EST	8H 17M 57.09S EST
ALBANY, NEW YORK	98.3 MINUTES	6H 39.7M EST	8H 17M 57.71S EST
NEW YORK, NEW YORK	101.6 MINUTES	6H 36.4M EST	8H 17M 58.09S EST
PRINCETON, NEW JERSEY	99.7 MINUTES	6H 38.3M EST	8H 17M 58.35S EST
PHILADELPHIA, PA.	98.4 MINUTES	6H 39.6M EST	8H 17M 58.56S EST
WILMINGTON, DELAWARE	96.9 MINUTES	6H 41.1M EST	8H 17M 58.72S EST
OTTAWA, ONTARIO	83.0 MINUTES	6H 54.9M EST	8H 17M 57.70S EST
SYRACUSE, NEW YORK	88.0 MINUTES	6H 50.0M EST	8H 17M 58.26S EST
GREENBELT, MARYLAND	93.6 MINUTES	6H 44.4M EST	8H 17M 59.15S EST
WASHINGTON, D.C.	92.8 MINUTES	6H 45.2M EST	8H 17M 59.23S EST
GENEVA, NEW YORK	84.9 MINUTES	6H 53.1M EST	8H 17M 58.50S EST
CHARLOTTESVILLE, VA.	88.7 MINUTES	6H 49.3M EST	8H 17M 59.74S EST
TORONTO, CANADA	73.5 MINUTES	7H 4.5M EST	8H 17M 58.91S EST
GREEN BANK, WEST VA.	82.7 MINUTES	6H 55.3M EST	8H 18M 0.01S EST
PITTSBURGH, PA.	78.0 MINUTES	7H 0.0M EST	8H 17M 59.69S EST
RICHMOND, FLORIDA	102.4 MINUTES	6H 35.6M EST	8H 18M 1.29S EST
COLUMBIA, SOUTH CAROL.	86.1 MINUTES	6H 51.9M EST	8H 18M 0.90S EST
CLEVELAND, OHIO	69.6 MINUTES	7H 8.4M EST	8H 17M 59.83S EST
BRONSON, FLORIDA	87.7 MINUTES	6H 50.4M EST	8H 18M 1.70S EST
COLUMBUS, OHIO	67.0 MINUTES	7H 11.0M EST	8H 18M 0.44S EST
DETROIT, MICHIGAN	61.9 MINUTES	7H 10.1M EST	8H 17M 59.97S EST
WARREN, MICHIGAN	61.5 MINUTES	7H 10.5M EST	8H 17M 59.93S EST
LAKE ANGELUS, MICHIGAN	60.4 MINUTES	7H 17.6M EST	8H 17M 59.94S EST
ANN ARBOR, MICHIGAN	59.4 MINUTES	7H 18.6M EST	8H 18M 0.12S EST
PORTAGE LAKE, MICHIGAN	58.3 MINUTES	7H 19.7M EST	8H 18M 0.13S EST
ATLANTA, GEORGIA	73.3 MINUTES	7H 4.7M EST	8H 18M 1.68S EST
JACKSON, MICHIGAN	56.7 MINUTES	7H 21.3M EST	8H 18M 0.26S EST
CINCINNATI, OHIO	63.0 MINUTES	7H 15.0M EST	8H 18M 0.89S EST
LANSING, MICHIGAN	55.0 MINUTES	7H 23.0M EST	8H 18M 0.18S EST
KALAMAZOO, MICHIGAN	51.9 MINUTES	7H 26.1M EST	8H 18M 0.47S EST
GRAND RAPIDS, MICHIGAN	50.2 MINUTES	7H 27.9M EST	8H 18M 0.32S EST
LOUISVILLE, KENTUCKY	59.4 MINUTES	7H 18.6M EST	8H 18M 1.32S EST
MUSKEGON, MICHIGAN	47.3 MINUTES	7H 30.7M EST	8H 18M 0.36S EST
BLOOMINGTON, INDIANA	54.6 MINUTES	6H 23.5M CST	7H 18M 1.28S CST

NASHVILLE, TENNESSEE	59.3 MINUTES	6H 18.8M	CST	7H 18M	1.87S	CST
UNIVERSITY, ALABAMA	61.4 MINUTES	7H 16.6M	EST	8H 18M	2.40S	EST
EVANSTON, ILLINOIS	44.1 MINUTES	6H 33.9M	CST	7H 18M	0.88S	CST
URBANA, ILLINOIS	45.9 MINUTES	6H 32.1M	CST	7H 18M	1.39S	CST
APPLETON, WISCONSIN	36.0 MINUTES	6H 42.0M	CST	7H 18M	0.46S	CST
WILLIAMS BAY, WISCONSIN	39.4 MINUTES	6H 38.6M	CST	7H 18M	0.90S	CST
MADISON, WISCONSIN	34.9 MINUTES	6H 43.1M	CST	7H 18M	0.91S	CST
OXFORD, MISSISSIPPI	51.4 MINUTES	6H 26.6M	CST	7H 18M	2.59S	CST
ST. LOUIS, MISSOURI	40.4 MINUTES	6H 37.6M	CST	7H 18M	2.01S	CST
BATON ROUGE, LOUISIANA	51.7 MINUTES	6H 26.4M	CST	7H 18M	3.32S	CST
RIVERSIDE, IOWA	29.7 MINUTES	6H 48.3M	CST	7H 18M	1.58S	CST
CEDAR RAPIDS, IOWA	27.8 MINUTES	6H 50.2M	CST	7H 18M	1.47S	CST
FAYETTE, MISSOURI	29.9 MINUTES	6H 48.2M	CST	7H 18M	2.23S	CST
MINNEAPOLIS, MINNESOTA	14.9 MINUTES	7H 3.1M	CST	7H 18M	0.91S	CST
DES MOINES, IOWA	21.1 MINUTES	6H 57.0M	CST	7H 18M	1.82S	CST
NORMAN, OKLAHOMA	18.3 MINUTES	6H 59.8M	CST	7H 18M	3.47S	CST
EDINBURG, TEXAS	30.3 MINUTES	6H 47.8M	CST	7H 18M	4.49S	CST
FORT DAVIS, TEXAS	0.0 MINUTES	7H 18.2M	CST	7H 18M	4.49S	CST
DENVER, COLORADO	0.0 MINUTES	6H 38.2M	MST	6H 18M	3.01S	MST
BOULDER, COLORADO	0.0 MINUTES	6H 40.1M	MST	6H 18M	2.94S	MST
READY						

DAVID HARRINGTON
WARREN ASTRONOMICAL SOCIETY

TRANSIT OF MERCURY 10 NOVEMBER, 1973 DELTA T = 43.90

UNIVERSAL TIMES OF GEOCENTRIC CONTACTS

CONTACT	UNIVERSAL TIME
1	7H 47M 34.80S
2	7H 49M 15.30S
3	13H 15M 42.60S
4	13H 17M 23.10S

DETROIT, MICHIGAN D.A.S.

+42 20' 00.0'' N. LATITUDE

+83 04' 00.0'' W. LONGITUDE

(LOCAL SUNRISE TIME: 7H 16.1M EST)

LOCAL CONTACT TIMES USING SECOND-ORDER EQUATIONS

CONTACT	UNIVERSAL TIME	LOCAL TIME
1	7H 48M 0.53S	2H 48M 0.53S EST
2	7H 49M 41.22S	2H 49M 41.22S EST
3	13H 16M 19.53S	8H 16M 19.53S EST
4	13H 17M 59.97S	8H 17M 59.97S EST

CONTACT	AVAILABLE OBSERVATION TIME
1	ZERO (OCCURS 268.1 M BEFORE SUNRISE)
2	ZERO (OCCURS 266.4 M BEFORE SUNRISE)
3	60.2 MINUTES AVAILABLE AFTER SUNRISE
4	61.9 MINUTES AVAILABLE AFTER SUNRISE

WARREN, MICHIGAN W.A.S.

+42 31' 30.0'' N. LATITUDE

+83 04' 00.0'' W. LONGITUDE

(LOCAL SUNRISE TIME: 7H 16.5M EST)

LOCAL CONTACT TIMES USING SECOND-ORDER EQUATIONS

CONTACT	UNIVERSAL TIME	LOCAL TIME
1	7H 48M 0.53S	2H 48M 0.53S EST
2	7H 49M 41.22S	2H 49M 41.22S EST
3	13H 16M 19.50S	8H 16M 19.50S EST
4	13H 17M 59.93S	8H 17M 59.93S EST

CONTACT	AVAILABLE OBSERVATION TIME
1	ZERO (OCCURS 268.5 M BEFORE SUNRISE)
2	ZERO (OCCURS 266.3 M BEFORE SUNRISE)
3	59.8 MINUTES AVAILABLE AFTER SUNRISE
4	61.5 MINUTES AVAILABLE AFTER SUNRISE

(LOCAL SUNRISE TIME: 7H 23.0M EST)

LOCAL CONTACT TIMES USING SECOND-ORDER EQUATIONS

CONTACT	UNIVERSAL TIME	LOCAL TIME
1	7H 47M 59.88S	2H 47M 59.88S EST
2	7H 49M 40.58S	2H 49M 40.58S EST
3	13H 16M 19.73S	8H 16M 19.73S EST
4	13H 18M 0.18S	8H 18M 0.18S EST

CONTACT	AVAILABLE OBSERVATION TIME
1	ZERO (OCCURS 275.0 M BEFORE SUNRISE)
2	ZERO (OCCURS 273.3 M BEFORE SUNRISE)
3	53.3 MINUTES AVAILABLE AFTER SUNRISE
4	55.0 MINUTES AVAILABLE AFTER SUNRISE

KALAMAZOO, MICHIGAN K.A.S.

+42 17' 00.0'' N. LATITUDE +85 36' 00.0'' W. LONGITUDE

(LOCAL SUNRISE TIME: 7H 26.1M EST)

LOCAL CONTACT TIMES USING SECOND-ORDER EQUATIONS

CONTACT	UNIVERSAL TIME	LOCAL TIME
1	7H 47M 59.42S	2H 47M 59.42S EST
2	7H 49M 40.12S	2H 49M 40.12S EST
3	13H 16M 20.02S	8H 16M 20.02S EST
4	13H 18M 0.47S	8H 18M 0.47S EST

CONTACT	AVAILABLE OBSERVATION TIME
1	ZERO (OCCURS 278.1 M BEFORE SUNRISE)
2	ZERO (OCCURS 276.4 M BEFORE SUNRISE)
3	50.2 MINUTES AVAILABLE AFTER SUNRISE
4	51.9 MINUTES AVAILABLE AFTER SUNRISE

GRAND RAPIDS, MICHIGAN G.R.A.A.

+42 58' 00.0'' N. LATITUDE +85 39' 00.0'' W. LONGITUDE

(LOCAL SUNRISE TIME: 7H 27.9M EST)

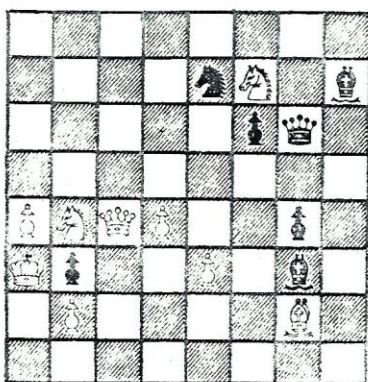
LOCAL CONTACT TIMES USING SECOND-ORDER EQUATIONS

CONTACT	UNIVERSAL TIME	LOCAL TIME
1	7H 47M 59.41S	2H 47M 59.41S EST
2	7H 49M 40.11S	2H 49M 40.11S EST
3	13H 16M 19.87S	8H 16M 19.87S EST
4	13H 18M 0.32S	8H 18M 0.32S EST

CONTACT	AVAILABLE OBSERVATION TIME
1	ZERO (OCCURS 279.9 M BEFORE SUNRISE)
2	ZERO (OCCURS 278.2 M BEFORE SUNRISE)
3	48.5 MINUTES AVAILABLE AFTER SUNRISE
4	50.2 MINUTES AVAILABLE AFTER SUNRISE

WITH ONLY ONE MONTH REMAINING IN THE SIX-MONTH CONTEST, DOUG BOCK CONTINUES TO LEAD WITH 120 POINTS. HOWEVER, FRANK M'CULLOUGH GAINED 22 POINTS ON DOUG, AS DOUG HAD TROUBLE WITH PROBLEM NO. 10. HE WAS NOT ALONE AS FRANK WAS THE ONLY ONE WHO GOT THE CORRECT SOLUTION. THE CONTEST IS NOW BETWEEN DOUG AND FRANK, SINCE THE REST HAVE BEEN ELIMINATED. THE ONLY WAY FRANK CAN WIN IS TO GET BOTH PROBLEMS 11 AND 12, WHILE DOUG IS MISSING BOTH. UNLIKELY, BUT POSSIBLE. IN ANY CASE, THE LAST TWO PROBLEMS ARE JEWELS.

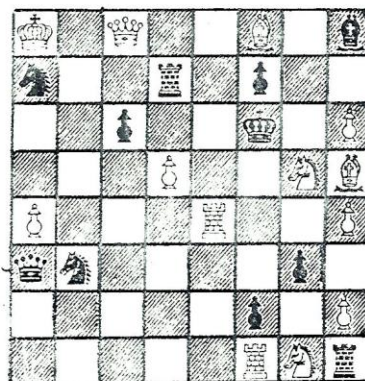
PROBLEM 11



WHITE MATES IN THREE

16 POINTS (NOT EASY)

PROBLEM 12



WHITE MATES IN THREE

24 POINTS (LAST BUT NOT LEAST!)

THE SOLUTIONS TO LAST MONTH'S PROBLEMS ARE AS FOLLOWS:

PROBLEM 9 SOLUTION

KEY MOVE: Q - R5

THREAT: NONE, WAITING FOR BLACK TO MOVE

VARIATIONS: IF 1)...., K x N
2) B - Q1

IF 1)...., K - N8 2) B - N6

IF 1)...., P - N8(Q) 2) Q - B3

IF 1)...., P - N8(N) 2) Q - R2

PROBLEM 10 SOLUTION

KEY MOVE: K x P/3

THREAT: N x P check

VARIATIONS: THERE ARE SIX VARIATIONS!

IF 1)...., N - B5 ch 2) K x P

IF 1)...., B - Q5 ch 2) K - K4

IF 1)...., R - B6 ch 2) K - B2

IF 1)...., Q x N ch 2) B x Q ch

IF 1)...., R - K1 2) K - Q3

IF 1)...., B x B 2) N x P ch

RANK	NAME	POINTS
1	D. BOCK	120
2	F. M'CULLOUGH	82
3	D. MISSON	67
4	K. WILSON	45
5	R. KWENTUS	7
6	ALL OTHERS	0

ASTRO-ALMANAC

By

Ken Wilson

Oct. /	EVENT
1	Moon 4°S. of Neptune at 8:00Mercury 1.2° S. of Venus at 4:00,
2	Mercury at aphelion, maximum Quadrantids
3	Lunar apogee (251,100mi.) at 19:00
4	First Quarter Moon at 6:32
5	
6	Moon 3°N. of Jupiter at 3:00
7	Twilight begins: 4:27, ends: 19:07 L.M.T.
8	Venus at aphelion
9	Max. Giacobinid meteor shower
10	
11	Full (Hunter's) Moon at 23:09
12	Beginning of Arietid meteor shower (thru 23)
13	Moon 7°N. of Mars at 8:00
14	Venus 4°S. of Neptune at 18:00
15	Lunar perigee (228,600mi.) at 21:00, Mercury at 145019 03, Venus at 161623 52 (Mag. -3.8), Mars at 021410 52 (Mag. -2.2), Jupiter at 202120 18 (Mag. -2.6), Saturn at 062122 16 (Mag. +0.2), Uranus at 132708 32, Neptune at 161619 42
16	Uranus in conjunction at 19:00, Mars nearest earth at 24:00
17	Saturn stationary at 2:00, Venus 1.9°N. of Antares at 6:00, Saturn 0.8°S. of Moon at 7:00, Twilight begins: 4:39, ends: 18:50 L.M.T.
18	Mercury at greatest E. elong. (25°) at 18:00, Last Quarter at 18:33
19	
20	
21	Maximum of Orionid meteor shower (18-23) at 8:00
22	Mercury at greatest hel. lat. S.
23	
24	Mars at opposition at 23:00
25	New Moon at 23:17
26	
27	Moon 0.1°N. of Mercury at 20:00, Twilight begins: 4:52, ends: 18:35 L.M.T.
28	Moon 4°S. of Neptune at 17:00
29	
30	Mercury at greatest hel. lat. S., Moon 3°N. of Venus at 2:00, Mercury stationary at 11:00
31	Lunar apogee (251,600mi.) at 15:00, beginning of Taurid meteor shower thru Nov. 6 th .

NOTE: All times are, unless otherwise noted, in 24-hour E.D.T.

Don't forget to subtract 1 hr. from listed time to get clock time after Daylight saving
Time has ended.

CONTRIBUTE TO
THE W.A.S.P. !!!