

# New comet may give a heavenly show

By JEAN PEARSON  
News Science Writer

A comet more brilliant than any star in the sky may be traveling across the evening heavens next winter.

During Christmas week, it will pass behind the sun. Then it will emerge and possibly become bright enough to be seen in daylight by mid-January.

That's the word from the Smithsonian Astrophysical Observatory which serves as the international clearinghouse for astronomical discoveries.

The comet, scientists at Smithsonian Observatory pre-

dict, may turn into "one of the most striking astronomical sights of the century."

ITS POTENTIAL for being spectacular is based on the speed in g celestial object's apparent size.

Only an exceptionally large chunk of ice and dust streaking through the dark depths of the solar system could be detected at its great distance — some 400 million miles from earth — and nine months before its closest approach to the sun.

The new object in the sky was discovered March 7 by

Dr. Lubos Kohoutek at the Hamburg Observatory in West Germany. It is called Comet Kohoutek in the tradition of naming all major comets for their discoverers.

Best known for his studies of planetary nebulae, the Czechoslovakian astronomer was looking for an asteroid when he found the comet.

**WHAT HE NOTED** was a very faint object without any discernible tail moving against the background of stars in the constellation Hydra.

The object was only a whi-

tish dot that could not be seen with the naked eye.

Dr. Brian Marsden, of the Smithsonian Observatory, has plotted the comet's orbit about the sun based on additional observations by Kohoutek as well as Smithsonian and Japanese astronomers.

Its closest approach to the sun will be on Dec. 27. The comet could have naked-eye visibility for some six weeks before and after that date.

At present, it is visible only to those observers with a telescope having a mirror of at least 12 inches in diameter.

It will be visible only by tel-

frozen gas and dust traveling in long looping orbits around the sun.

Some loops are small enough to bring the comet back into view within 25 years and some so great they may be visible only once that a date of return can not be calculated.

Halley's comet travels in an ellipse that brings it back to a brush with the sun every 76 years. A comet sighted in 1811 may require 3,000 years to make a return visit and a comet sighted in 1864 is expected to take two million years.

escape until June, disappear and then reappear as a morning object, becoming visible to the naked eye about mid-November. My mid-December it will become about as bright as the brightest star in the sky, Sirius.

The comet should achieve its best visibility as a celestial object a bit brighter than Sirius after passing behind the sun during Christmas week and have "an exceptional tail," Dr. Marsden predicts.

But as he also notes, "Some very promising comets of the past have fizzled out."

Comets are made up of

## Once-in-10,000-Year Comet Will Appear in November

By RONALD KOTULAK  
Chicago Tribune

CHICAGO — The Perseid Meteor shower now visible in night skies is only a warmup for the next celestial show — an event which occurs only once every 10,000 years.

Starting in November, a comet will be treated to the appearance of a giant comet which will light up the earth brighter than the full moon.

"It may be the best comet ever recorded in history," said James Seevers, an assistant astronomer at Chicago's Adler Planetarium.

The comet, which is estimated to have a diameter of more than 100 miles, was discovered in March by a Czechoslovakian astronomer. Dr. Lubos Kohoutek, in East Germany.

"Astronomy buffs who are now enjoying the Perseids really have something to look forward to," Seevers said.

THE PERSEIDS are the debris, believed

to be made of dust particles and ice crystals, left in the trail of a comet which passed near the earth in 1862. The Perseids are visible each August as the earth passes through the debris.

The particles are about the size of grains of sand. When they enter the earth's atmosphere at about 42 miles a second they burn up from the friction and appear as shooting stars.

The meteor display is named for the constellation Perseus, the Hero, where they are believed to have originated. They will be visible in the night sky through Tuesday.

The Kohoutek comet will be much more spectacular than Halley's comet, which will be visible in 1986, after a 75-year absence. The Kohoutek comet will be seen first in November, and will remain in sight for several months, glowing brightly in the night sky. It will make its closest approach to the earth in January, when it will be 75 million miles away.

Comets  
1973



THE  
**wasp**  
SEPTEMBER



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The Warren Astronomical Society holds correspondence (sometimes intermittently) with the following organizations. Others are invited to join the list:

THE ASTRONOMICAL LEAGUE  
THE DETROIT ASTRONOMICAL SOCIETY  
THE DETROIT OBSERVATIONAL AND ASTRONOMICAL ASS'N  
THE JACKSON (MISS.) ASTRONOMICAL SOCIETY  
THE KALAMAZOO ASTRONOMICAL SOCIETY  
THE LANSING ASTRONOMICAL SOCIETY  
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THE OGLETHORPE ASTRONOMICAL SOCIETY  
THE OLYMPIC ASTRONOMICAL SOCIETY  
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

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A letter from the editor

Another fine summer of warm weather observing is coming to a close. But, don't put that telescope into cold storage so that you can hibernate for the winter, because the best is yet to come.

First of all, what will probably be the most spectacular comet of the century will become bright in November. Near perihelion, Comet Kohoutek may become almost as bright as the full moon with a tail possibly over 30° long. More details elsewhere in this issue.

On November 11<sup>th</sup>, there will be a transit of Mercury to be viewed. There won't be another one for another 13 years, so don't miss it!

Pioneer 10 will start sending back pictures of Jupiter at the end of this year. And, since we have never sent a single space probe so close to Jupiter before, these pictures should be very revealing.

Also, if you have a taste for going south, there will be an annular eclipse of the sun on Christmas Eve over South America. By a lucky coincidence, this will occur just about 4 days before comet Kohoutek reaches perihelion. This should present an awe-inspiring sight.

And, don't let me forget the coming opposition of Mars in October.

So it looks like a busy fall and winter for those of you who aren't afraid to put on your overcoat and gloves. For those of you who are afraid, I say, you deserve it when everyone else shows the pictures of and tell about these coming events.

Clear skies and good seeing



Kenneth Wilson  
Editor W.A.S.P.

## A special thanks

Many societies have been very faithful in the sending of their newsletters. Indiana, Oglethorpe, Lansing, Grand Rapids, Kalamazoo, Jackson (Miss.), Olympic Scope, Northern Lights, all these people and clubs I have the greatest respect and admiration for. Hopefully I will get a few letters out thanking you once again, but since this does reach the clubs I am referring to, I again say thank you.

Frank McCullough  
Chairman Great Lakes Reg.  
President Warren Astro. So.

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Larry Kalinowski, Walt Roudebush, Lou Faix, Roger Civic, Dave  
Harrington, and James Trombly.

## Return

Articles such as Constellation of the Month, Observational Astronomy, will continue next issue. African Eclipse and the Regional Convention have nullified any attempt to give a good detailed article.

## Editorial Viewpoint

We are about to go a convention with all the excitement and color that can be expected from an amateur organization. At the convention the W.A.S. will present four papers, a slide presentation, four large displays, entries in the Messier Contest, Quiz Bowl, and Sunday we will be on the brink of winning top honors at the convention in Kalamazoo.

You may be surprised also to find the W.A.S. co-host of the 1974 National Convention, which would not even be considered if not for the very thing I'm going to mention.

The Warren Astronomical Society is very fortunate in having a highly intelligent, helpful, outgoing group of individuals who have worked alone and as a group shaping our organization into one of the finest societies in the Great Lakes Region and I'm sure, the United States. If you have come to the conclusion I think very highly of these people, well, you're right, I do. They are deserving of this letter or any other thing you may hear of them later on.

Pete, Dave, Diane, Larry, Ken, Tim, Chris, Paul Strong, Paul Helfenstein, Don, Lou, Bev, Doug, Roger, Jerry, Kim, Margaret, Jean, Jan, Walt, all of these and a few either who left their mark when they left or are just starting to.

Now you may say sounds like corn! Yet people have told me what a great job I am doing as President. You are the people who make my job easier and make me look good. So please excuse me for giving credit where credit is due.

## What Makes a Successful Astronomical Society?

by

Kenneth Wilson

Warren Astronomical Society

In my several years as an active amateur astronomer, I have been a part of and observed several local amateur organizations. It is my opinion that the success of these organizations had nothing whatsoever to do with money, size of membership, number of observatories, number of large telescopes, fancy meeting places, or any of the other superficial trappings aspired to by most organizations. Instead, it is the dedicated effort put forth by a few individual members that has meant success.

Examine your own society. Usually it is two or three (maybe more as with the W.A.S.) who do all the work while the rest of the membership does little more than attend the meetings. They arrange meetings, set up star parties, get speakers, publish the society's papers and in general kindle the fire of life that keeps an amateur society going.

See if you can spot these people. They are the most valuable commodity a club can have. Don't do anything to alienate them because I have seen too many clubs die when they leave. And if you aren't one of them, make yourself one. You can't expect to just pay your few dollars each year and have a great organization laid at your feet. You must be part of it. Don't just suggest that something be done in your society, do it! Otherwise, it probably won't get done at all.

In closing let me repeat these magic words: "Success in any organization rests on the individual people that comprise it."

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QUOTATION OF THE MONTH: "A man gazing on the stars is proverbially at the mercy of the puddles on the road." -Alexander Smith

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### Kohoutek Is Koming!

As everyone who reads "Sky & Telescope" knows, Comet Kohoutek 1973f should be making a spectacular appearance during December of this year and January of next year. According to Brian Marsden of the Smithsonian Observatory, Kohoutek "...could be the most spectacular comet of the century." Near aphelion, Kohoutek should be at least a telescopic daylight object.

Included in this issue is the ALPO Ephemeris for the comet from Oct. '73 to May '74. On it: Delta=Comet's dist. from earth in A.U.; R=the comet's solar dist. in A.U.; CES=Ang. dist. from sun in °; TL=Millions of miles per degree of tail length; PA=Pos. Angle of tail;  $M_1$  and  $M_1^*$ =Predicted total magnitudes after Marsden and Morris respectively;  $M_2$ =Mag. of nucleus; ALT and TIME=Max dist. above Horz. when the sun is at least ten degrees below the horiz. and the time of this Alt. (MT and ET indicate that comet will only be visible during morn. twilight or even. twilight respect. or daylight.

Also included in this issue is an ALPO comet form for recording your observations so that they will be of some scientific good.



## ALPO EPHEMERIS FOR COMET KOHOOTEK 1973f

DATE	RA	DEC	DELTA	R	CES	TL	PA	M <sub>1</sub>	M <sub>1</sub> *	M <sub>2</sub>	ALT	TIME
Oct 73												
1	10 <sup>h</sup> 29 <sup>m</sup> 0	-0° 40'	2.862	2.052	30	19	275	9.5	10.2	13.4	12	4 <sup>h</sup> 55 <sup>m</sup>
5	10 35.9	-1 25	2.768	1.986	32	17	276	9.2	10.0	13.2	14	4 59
10	10 45.1	-2 25	2.649	1.902	34	15	278	8.8	9.7	12.9	16	5 4
15	10 54.8	-3 29	2.526	1.816	36	13	279	8.4	9.4	12.6	18	5 9
20	11 5.2	-4 39	2.401	1.728	38	11	280	8.0	9.1	12.3	20	5 14
25	11 16.5	-5 56	2.274	1.639	40	10	281	7.5	8.7	11.9	21	5 19
30	11 28.7	-7 19	2.146	1.547	41	8	282	7.0	8.4	11.6	22	5 24
Nov 73												
4	11 42.2	-8 49	2.018	1.452	43	7	283	6.5	7.9	11.1	23	5 30
9	11 57.3	-10 29	1.890	1.355	44	6	283	5.9	7.5	10.7	23	5 35
14	12 14.2	-12 18	1.764	1.254	44	5	283	5.2	7.0	10.2	23	5 40
19	12 33.7	-14 18	1.641	1.150	44	5	283	4.5	6.5	9.7	22	5 45
24	12 56.5	-16 28	1.523	1.042	43	4	283	3.7	5.9	9.1	20	5 50
29	13 23.4	-18 47	1.413	.928	41	3	281	2.8	5.2	8.4	18	5 55
Dec 73												
4	13 55.7	-21 10	1.314	.809	38	3	279	1.7	4.5	7.7	15	5 59
9	14 34.7	-23 26	1.232	.682	36	3	276	.5	3.6	6.8	11	6 3
14	15 21.9	-25 15	1.171	.546	28	2	272	-1.1	2.5	5.7	7	6 7
16	15 43.2	-25 44	1.155	.489	25	2	270	-1.9	2.0	5.2	4	6 9
18	16 6.0	-26 1	1.143	.429	21	2	268	-2.7	1.4	4.6	2	6 10
20	16 30.4	-26 3	1.137	.367	13	2	266	-3.7	.7	3.9		MT
22	16 56.5	-25 47	1.136	.304	14	2	264	-5.0	-.1	3.1		MT
24	17 24.6	-25 10	1.133	.239	10	3	262	-6.5	-1.1	2.1		MT
25	17 39.6	-24 41	1.140	.208	8	3	262	-7.4	-1.7	1.5		MT
26	17 55.3	-24 5	1.140	.180	5	4	263	-8.4	-2.4	.8		MT
27	18 11.8	-23 21	1.136	.157	2	8	271	-9.3	-3.0	.2		MT
28	18 28.8	-22 30	1.126	.144	1	13	45	-9.9	-3.4	-.2		ET
29	18 45.7	-21 35	1.107	.144	4	4	65	-9.9	-3.4	-.2		ET
30	19 1.8	-20 41	1.081	.158	7	2	67	-9.3	-3.0	.2		ET
31	19 16.6	-19 49	1.052	.181	10	2	68	-8.5	-2.5	.7		ET
Jan 74												
1	19 30.5	-19 0	1.021	.210	12	2	68	-7.6	-1.9	1.3		ET
2	19 44.0	-18 13	.992	.241	14	2	68	-6.8	-1.4	1.8	1	17 48
3	19 56.2	-17 26	.965	.273	16	2	67	-6.0	-.9	2.3	3	17 49
5	20 20.5	-15 52	.917	.337	20	2	67	-4.8	-.1	3.1	7	17 50
7	20 44.3	-14 13	.878	.400	24	1	66	-3.8	.5	3.7	10	17 52
9	21 7.9	-12 30	.848	.461	28	1	66	-2.9	1.1	4.3	14	17 54
11	21 31.3	-10 40	.826	.519	32	1	65	-2.2	1.5	4.7	17	17 55
13	21 54.5	-8 45	.812	.576	36	1	65	-1.6	2.0	5.2	21	17 57
18	22 50.0	-3 52	.812	.710	45	1	64	-.2	2.9	6.1	30	18 2
23	23 40.0	0 43	.853	.835	54	2	65	1.0	3.7	6.9	37	18 7
28	0 22.9	4 36	.925	.953	60	2	66	2.0	4.4	7.6	43	18 13
Feb 74												
2	0 38.0	5 56	.961	.998	62	2	66	2.4	4.7	7.9	45	18 15
7	1 11.4	8 44	1.064	1.108	65	2	67	3.3	5.4	8.6	48	18 20
12	1 39.3	10 56	1.181	1.214	68	3	69	4.1	6.0	9.2	50	18 25
17	2 2.8	12 39	1.306	1.316	68	3	70	4.9	6.6	9.8	52	18 31
22	2 23.0	14 0	1.439	1.415	68	4	71	5.6	7.1	10.3	52	18 36
27	2 40.5	15 7	1.575	1.510	68	4	73	6.2	7.6	10.8	51	18 42
Mar 74												
4	3 4.6	16 29	1.798	1.658	66	5	74	7.1	8.3	11.5	50	18 50
9	3 17.8	17 10	1.939	1.747	64	6	76	7.6	8.7	11.9	48	18 55
14	3 29.9	17 45	2.080	1.834	62	7	77	8.0	9.0	12.2	46	19 1
19	3 41.1	18 15	2.221	1.920	60	8	78	8.5	9.4	12.6	44	19 6
24	3 51.5	18 42	2.361	2.003	57	9	79	8.9	9.7	12.9	41	19 12
29	4 1.4	19 4	2.499	2.085	55	10	80	9.3	10.0	13.2	39	19 17
Apr 74												
3	4 8.9	19 20	2.609	2.150	52	12	81	9.6	10.2	13.4	36	19 22
8	4 17.9	19 38	2.743	2.229	50	13	82	9.9	10.5	13.7	34	19 27
13	4 26.6	19 54	2.876	2.307	47	15	83	10.2	10.7	13.9	30	19 33
18	4 34.9	20 8	3.005	2.384	44	17	84	10.5	11.0	14.2	27	19 39
23	4 42.9	20 19	3.131	2.460	41	19	85	10.8	11.2	14.4	24	19 45
28	4 50.7	20 29	3.254	2.535	38	22	86	11.1	11.4	14.6	21	19 51
May 74												
3	4 59.7	20 39	3.397	2.623	34	26	87	11.4	11.7	14.9	17	19 59
8	5 6.9	20 45	3.511	2.696	31	30	88	11.7	11.8	15.0	13	20 5
13	5 14.0	20 50	3.621	2.768	28	35	90	11.9	12.0	15.2	10	20 11
18	5 20.8	20 54	3.727	2.838	25	41	91	12.2	12.2	15.4	6	20 17

## BY

Ken Wilson pulled out another victory Friday night to find himself only beaten once since the contests were started. Unfortunately Dave Harrington, Roger Civic, and Doug Bock were not available to add to the competition.

Ken jumped out to a two object lead with Larry holding second. Then Lou and Bev started clicking and passed Larry jumping into second place hot on Ken's heels. Ken and the team of Lou and Bev were tied for first as the elusive M-4 was yet to be found in the smog and lights of Detroit. No one had found it and for the first time I was called upon to see if the object could be found. I found it in my 6" and the contest continued. Finally Ken thought he found it and it turned out he did, wrapping up first place. Another was finally picked as M-4 was to be lost to us for the rest of the night. Lou and Bev found the last object to take second place, while Larry took a few minutes longer to finish in third. As for Pete and his son (Pete was our former second place winner) he said they just couldn't find them. CONGRATULATIONS to Ken Wilson, the team of Lou Faix and Bev Bock, and Larry Kalinowski.

If you remember a car load of K.A.S. members drove to Stargate Observatory for a Messier Contest against the members of the W.A.S. and none of our members showed up except for Ken who managed to come late and still salvaged third place. This is rematch time boys and girls! I would like to see the first three names on the certificates have Warren Astronomy Society after them. It's time to make up for that dark day at Stargate.

2<sup>nd</sup>--- Lou Faix and Bev Bock

3<sup>rd</sup>--- Larry Kalinowski

[illegible]

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## NOTES FROM AN APPRENTICE ASTRONOMER'S LOG BOOK

By Lou Faix

As a part of my hobby, I have been observing and recording the regressional movements of the major planets. The purpose of collecting this data was to determine if I could retrace the steps of the founder of modern astronomy, Copernicus, and deduce the same logic by which he established the sun-centered universe and determined the orbits of the visible planets. These notes repeat the two-year process I have used in calculating the orbital period of Jupiter.

Since March 1972, I have been making measurements of Jupiter's position on the celestial sphere. Every clear night, the telescope was aligned on Polaris, Altair and Sagittarius Lambda. These stars provided a convenient and close reference check for both right ascension and declination. The collected position data was then plotted as shown on the following graph. The westward regressional drift can be easily recognized.

The sidereal time at midnight was calculated from data in Samuel Brown's book, "All About Telescopes", and also plotted on the graph. Opposition is assumed to occur on the dates the regression curves and sidereal time line intersect. From this graph, it was determined that 404 days elapsed between consecutive oppositions (June 24, 1972 to August 2, 1973). The chart also gave the right ascension angle of the oppositions, even though no observations were made on either exact date.

Using the celestial coordinates of right ascension and declination at opposition, it was possible to determine the actual distance the planet Jupiter had traveled along the ecliptic. Two methods were used; drafting three dimensional projection and spherical geometric. A close correlation at  $33^{\circ}45'$  was obtained. The orbital period was then estimated by proportioning the arc traveled and the time.

$$\begin{array}{rcl} 404 \text{ days} & = & 33.75^{\circ} \\ X & & 360^{\circ} \\ \hline x & = & 4,305 \text{ days or } 11.81 \text{ years} \end{array}$$

This value corresponds closely to the published period of 11.86 years. The variation may be real or due to observational and opposition timing errors. Continuation of this study for at least six years will produce period values which should make it possible to calculate the eccentricity of the planets orbit.

The collected data also indicates the planet is below the ecliptic and descending. Additional observations will make it possible to determine the node points of Jupiter's orbit.

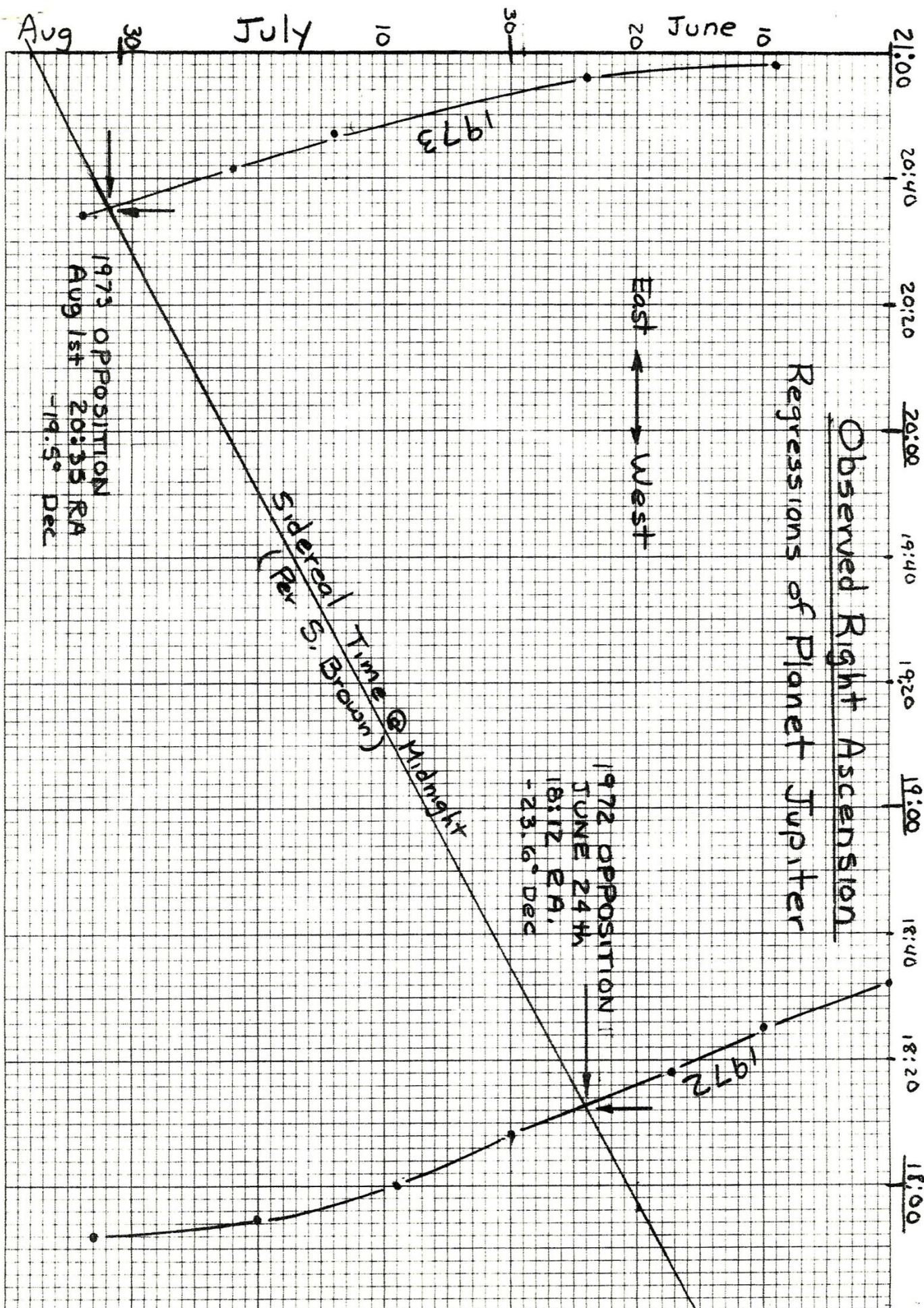
An interesting deviation from published data is the variance in the synodic period. Dr. D. H. Menzel gives a value of 398.9 days compared to the graph's 404 days. The variance could be caused by the fact that the observations were made during the summer months when Earth is near aphelion and at its slowest orbital velocity. Observations in future years will determine if the synodic period varies with the seasons and Earth's positions at opposition.

Data is still being collected on the positions of Venus, Mars and Saturn.

- Planet watching is fun! -
- Planet measuring is fun too! -



# Observed Right Ascension Regressions of Planet Jupiter





# September 1973 W.A.S. Meeting Guide

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3	4	5	6 Messier Meeting  791-8752	7 DETROIT MEETING  KALAMAZOO ASTRO. Soc. meeting	8
9	10	11	12	13 Astro Photography Meeting	14 DET. meeting	15
16	17	18	19	20 W.A.S. General Meeting 8:00 MACOMB College 8-311 791-8752	21 GRAND RAPIDS ASTRO. Soc. meeting  DET. meeting	22
23 30	24 OAKLAND MEETING	25	26	27	28 DETROIT meeting	29

## ASTRO-ALMANAC

By  
Ken Wilson

<u>SEPT. /</u>	<u>EVENT</u>
1	
2	Mercury in superior conjunction at 16:00
3	Venus at descending node, Moon 4°S. of Neptune at 22:00
4	First Quarter at 11:22
5	Venus 0.8°S. of Uranus at 19:00, Lunar apogee (251,200mi.) at 23:00
6	
7	Venus 2°N of Spica at 01:00, Twilight begins: 3:44, ends: 20:10 L.M.T., Beginning of ε Perseids meteor shower (thru 15 <sup>th</sup> ) radiant: 040436.
8	Moon 3°N. of Jupiter at 20:00
9	
10	
11	
12	Full (Harvest) Moon at 11:16
13	
14	
15	Mercury at 121000 11 (mag. in sun), Venus at 135812 47 (Mag. -3.6), Mars at 023111 17 (Mag. -1.6), Jupiter at 202020 21 (Mag. -2.2), Saturn at 061622 19 (Mag. +0.3), Uranus at 132007 51, Neptune at 161319 33
16	Moon 6°S. of Mars at 7:00
17	Twilight begins: 3:59, ends: 19:48
18	
19	Mars stationary at 9:00, Last Quarter at 12:11
20	Warren Astronomical Society Meeting at 8:00 at M.C.C.C., Room B311, Moon 1°N. of Saturn at 01:00, Lunar perigee (229,700mi.) at 18:00
21	Mercury at descending node
22	Autumnal Equinox (Autumn begins) at 24:21, Aurigid Meteor Shower (radiant 045642)
23	
24	
25	
26	New Moon at 9:54
27	Pluto in conjunction at 9:00, Mercury 1.4°N of Uranus at 17:00, Mercury 1.4°N. of Spica at 20:00, Moon 6°S. of Uranus at 24:00
28	Moon 4°N. of Mercury at 1:00, Jupiter stationary at 10:00
29	Moon 2°S. of Venus at 24:00
30	Uranus 3°N. of Spica

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## ASTROPHOTOGRAPHERS

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