ORWELL ASTRONOMICAL SOCIETY IPSWICH

JULY 1991

SOCIETY NEWS

1 COMMITTEE MEETING

The next committee meeting will be on Saturday 6th July, with a start at 7.30pm in the club room. As usual this is an open meeting and any member who wishes to attend will be welcome.

2 ASTRONOMY CONVENTIONS

Information about three astronomical conventions have been received. At the present time it has not yet been decided if these will be made a society excursion.

The Oxford University Astronomy Society is holding a Astronomy Symposium at Oxford University on Saturday 16th November.

On the 7th of September there is a National Astronomy and Space Flight Show at the Paradise Circus complex in the Birmingham City centre

3 FAS CONVENTION

The FAS will be holding a convention at Cambridge on saturday 21st September. People who wish to attend please contact Roy Gooding. At the present time I have no more details.

NIGHT SKY

All times GMT

SUN Rises approximately at 03.40 - 04.20
Sets approximately at 20.20 - 20.00

MOON

MERCURY Mercury will be at greatest eastern elongation on 25th (270). Mag 0.4.

VENUS Venus will be visible in the evening sky. By mid month it will be setting at about 21.30. Mag. -4.4

MARS Mars will be dificult to find this month. It will be in the evening twilight.

JUPITER Jupiter will be setting only a little over an hour later then the sun this month and will be in a bright twilight sky.

SATURN Saturn will be rising a few minutes after sunset this month. Mag.0.3 Opposition is on the 27th. It is near the border of Capricornus and Sagittarius.

URANUS Uranus is in Sagittarius, and will be rising before sunset. Mag. 5.7

NEPTUNE Neptune is also in Sagittarius, and will be rising before sunset about the same time as Uranus. Mag. 7.9

Jupiter's family

By J.Walsh

Very bright in the night sky is the planet Jupiter. Just past opposition now and with it's great red spot and its small ring system,(unfortunately not visible from earth), plus it's retinue of satellites makes this planet one of the most intriguing and interesting of the many wonders of the solar system.

We have talked about Jupiter before and this time we will discuss it's family. It's 16 moons make almost a solar system of their own. From the smallest which at its widest is only 9 miles across to the mighty Ganymede at over 3,200 miles in diameter and is the largest of all the moons in the solar system.

Most of Jupiter's moons are theorised to be little more than captured asteroids from the belt of asteroids between Mars and Jupiter. These are rocky little irregular worlds of no more than 124 miles(200Km) at their widest.

The other 4 moons are planet-sized, these were bright enough to have been discovered with the early telescope of Galileo in 1610. It was these moons that the Voyager probes were targeted to observe from close range before moving on to the outer solar system. The information they collected and sent back was superb.

The closest of the Galileans to Jupiter is Io, this was billed as the star of the Jupiter encounter. The first close up pictures of Io resembled a giant pizza, orange and yellow blotches with dark red and black markings. No other satellite before or discovered since looks even slightly similar. What is more, Io has active Sulphur volcanos shooting molten Sulphur and sulphurous gasses up to 150miles(241Km) high. One of the stunning facts to come from the observations was that the volcanic material was being ejected at a temperature of 377°C, and this was into a world whose temperature was a chilly -230°C. It was also the first time that active volcanoes had been discovered beyond the earth.

Why is Io so active? It has been theorised that the reason for what must be the most spectacular volcanic pyrotechnics in the solar system is tidal. Io is constantly being pulled in different directions by the combined gravitational tides of Jupiter and Europa. This is because Europa has an orbital period of approximately twice Io's. So on every orbit of Europa, Io gets pulled by two tides.

This effect heats up Io's core to the point where it liquefies and the pressure builds up. When the pressure is partially released by a weak point in Io's crust the liquefied Sulphurous lava vaporises and erupts forth, with huge force. This is why Ionian features are named after hellish or volcanic places. Like Io's largest volcano Pele, named after the Hawaiian goddess of fire.

Europa the next satellite out from Jupiter, handles the tidal forces differently. Being further from Jupiter the main tides are less but passing Io twice every orbit still brings up enough of a tide to heat its core. The surface of this satellite looks like a cracked boiled egg, with fault lines criss-crossing the surface. It has been suggested that the surface crust could be made up mostly of water ice, this could be covering an immense planet sized sea of water and hydrocarbons. The surface is constantly being cracked by the tides pulled up by its passage past Io. This resurfaces the outer layer with fresh ice from the water beneath.

Ganymede and Callisto didn't have the same surprises in store as Io and Europa, these looked more like the moons we have been used to seeing. Although ice covered they are heavily cratered. These worlds are not as dense as the inner Galileans and so impact craters can through up huge ring like shock ridges that in some cases stretch out to almost half way round the small moons. The surfaces of both these satellites are made of solar radiation darkened hydrocarbon ices with lighter areas caused by ejector from geologically more recent impacts.

The rest of Jupiters satellites are small irregular and either icy or rocky. They are called as are the inner Galilean moons after lovers from Greco/Roman mythology.

Listed below are the 16 known moons of Jupiter.

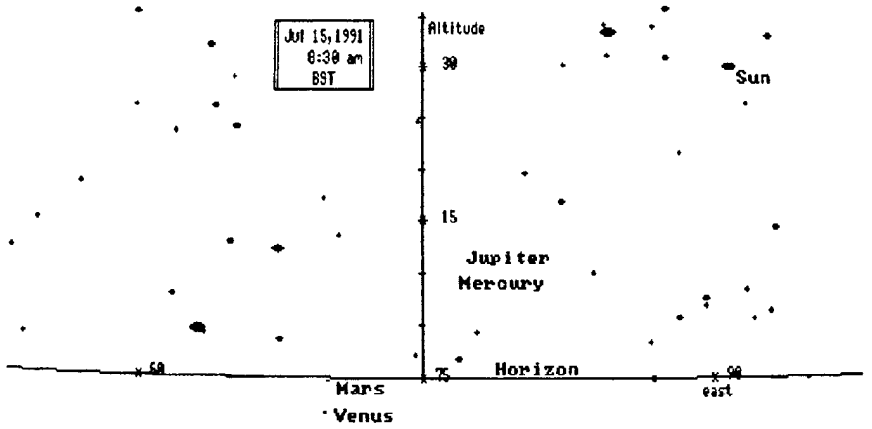
Name of moon	Diameter	Average distance out from Jupiter
Metis	25miles(40.2Km)	79,448Miles(127,832Km)
Adrastea	15miles(24.1Km)	80,109miles(128,895Km)
Amalthea	106miles(170.6Km)	111,780miles(179,854Km)
Thebe	50miles(80.5Km)	137,862Km(221,819Km)
Io	2,254miles(3,626.7Km)	262,062miles(421,658Km)
Europa	1,950miles(3,137.6Km)	416,691miles(670,456Km)
Ganymede	3,266miles(5,255Km)	664,470miles(1,069,132Km)
Callisto	2,981miles(4,796.4Km)	1,170,585miles(1,883,471Km)
Leda	9miles(14.5Km)	6,889,310miles(11,084,699Km)
Himalia	115miles(185.4Km)	7,122,870miles(11,420,697Km)
Lysithea	22miles(35.4Km)	7,271,910miles(11,700,503Km)
Elara	47miles(75.62Km)	7,290,540miles(11,730,478Km)
Ananke	19miles(30.6Km)	12,854,700miles(19,074,212Km)
Carme	25miles(40.2Km)	13,879,350miles(22,331,874Km)
Pasiphae	31miles(4.9Km)	14,487,930miles(23,311,079Km)
Sinope	22miles(35.4Km)	14,512,770miles(23,351,046Km)

Jupiter-Mercury Conjunction - July 1991

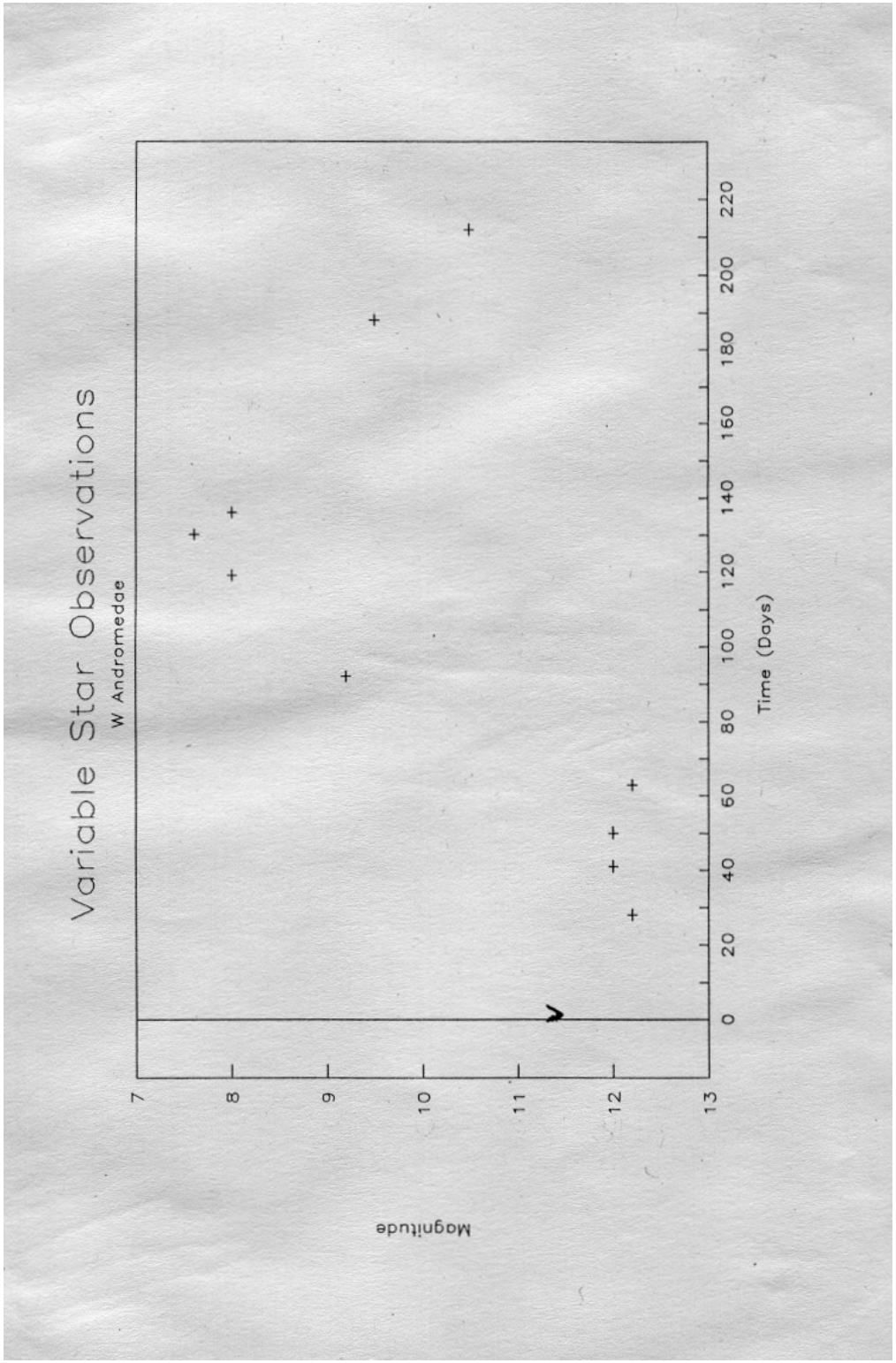
David Payne

After the appalling weather in June you will probably want to give up trying to observe planetary conjunctions. All of the interestijng events mention in last month's article were hidden behind cloud often with accompanying rain!

The most interesting conjunction in July is between Jupiter and Mercury on the morning of the 15th. This is going to be a difficult event to observe regardless of whether cloud intervenes or not. The closest approach seems to occur between 06:00 and 07:00 o'clock BST, according to the computer program I use. Unfortunately Jupiter and Mercury are below the horizon at this time both rising at about 07:00 BST. When they do rise the Sun is of course well up and setting circles will probable be required to locate the two Planets. The RA and declination of Jupiter on the morning of July 15th at 08:30 BST is : RA = 9hrs 20mins and DEC = 16 degrees 22 mins. The position of Jupiter, Mercury and the sun at this time is shown on the chart below.



At the conjunction closest approach is about 5 arc minutes with Jupiter extending a diametwr of about 30" and Mecury nearly 7". If these objects can be located in a telescope a reasonable power can be used to darken the background sky glow. I would recommend using an orthoscopic eyepiece giving about 50 times magnification for the initial search if your setting circles are accurate, if not try slowly scanning the area and reduce power if necessary. Once located it should be possible to observe both planets together using powers up to 100 and possibly even 150 times using good eyepieces with around a 50 degree apparent field of view (remember magnification = apparent field divided by real field so that even at 150 times a 50 degree field eyepiece will give a real field of 20 arc minutes).



PROGRAMME FOR JULY

DAY	DIRECTORS	SECTION	PHONE No.s
Mondays from 8.00pm		GENERAL OBSERVATION SECTION	
1-8	Mr R Newman	[redacted], Felixstowe, IP11 9DY.	Tel. Fel.[redacted]
15-22 29	Mr J King	[redacted], Felixstowe, IP11 9LQ.	Tel. Fel.[redacted]
Tuesdays from 8.00pm		GENERAL OBSERVATION SECTION	
2-9	Mr R Newman	[Address above.]	Tel. Fel.
16-23 30	Mr J King	[Address above.]	Tel. Fel.
Wednesdays from 8.00pm		NEBULA AND FAINT OBJECTS SECTION	
3-10	Mr M Cook	[redacted], Ipswich, IP4 5PZ.	Tel. Ips.[redacted]
17-24 31	Mr D Payne	[redacted], Wickham Market, IP13 0SD.	Tel. W.M[redacted]
Fridays from 8.00pm		PLANETARY AND LUNAR SECTION	
5-12	Mr P Richards	[redacted], Ipswich, IP4 1QB.	Tel. Ips.
19-26	Mr R A Lobbett	[redacted], Felixstowe, IP11 8UJ.	Tel. Fel.
	Mr G Marriott	[redacted], Ipswich, IP4 4JB. [Assistant Director]	Tel. Ips.[redacted]

All nights are open to all members, but, on nights other than Wednesdays, ring directors to confirm. Directors will also be able to tell you if a group visit is taking place. All sections observe anything of interest, but the title indicates the main specialism.

Lectures and other events : COMMITTEE MEETING

The next committee meeting will be on Saturday 6th July at the observatory starting at 19.30. As usual this will be an open meeting and any member may attend if they wish.

1991 COMMITTEE

CHAIRMAN	D Payne	[Address above.]	Home: [redacted] Work:
VICE CHAIRMAN /VISITS CO-ORD	D Barnard	[redacted], Ipswich, IP4 5PP.	Home: Work:
SECRETARY	R Gooding	[redacted], Ipswich, IP1 6AE.	Home: Work:
TREASURER	M Nicholls	[redacted], Capel St Mary, Ipswich, IP9 2EX.	Home: Work:
MAINTENANCE CO-ORD	M Cook	[Address above.]	Home: Work:
JOURNAL CO-ORD	E Sims	[redacted], Ipswich, IP1 4HA.	Home:
LIBRARIAN	P Richards	[Address above.]	Home: Work:
EQUIPMENT CURATOR	J King	[Address above.]	Home:
SPECIAL EVENTS CO-ORD	A Smith	[redacted], Ipswich, IP4 5RZ.	Home: Work: