JOURNAL OF THE ORWELL ASTRONOMICAL SOCIETY

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Editorial:- Unforseen problems of cost have cropped up with this Journal and for those members who want to receive this Journal, the cost for this may have to go up as from the next A.G.M.. All members will receive this Journal and future editions unless they say to me that they definitely do not want it. Limited numbers of back-dated issues are available.

Apollo-16 is scheduled to land on the moon this month. I have access to a large number of photographs from american space probes, for a full list of some 200-250 pictures, see me. Prides are:- 10"x8" B&W @ 22½p each. 20"x16" B&W @ 75p each, on stiff cardboard. 2"x2" glass mounted slides @ 22½p each, unmounted slide positives @ 9p each.(I have mounts for these available for a couple of p each.) These slides are all black & white, A few colourslides are available at 22½p each Pictures were taken by:- Rangers 7 & 9; Surveyors 1,3,5,6,&7; Lunar Orbiters I-V; Apollos 7-15; and Gemini-4.

Observing Planet Venus:- Venus is now well seen in the evening sky in the west-south-west after sunset. In many text-books it is written that Venus exhibits moon-like phases, which are visible through a small aperture telescope. This is theoretically true, however because of the physical properties of glass, it is often difficult to make out the phase in a refractor of less than about 2½", 65mm aperture, because of the many multi-coloured halos surrounding the planet. To overcome this difficulty very effectively, a piece of coloured glass or coloured transparent plastic such as a photographic camers filter, can be used, held up against the eyepice. Perhaps the most useful colours in this respect are green, blue or red. Coloured filters such as these, will block off all coloured halos around the planet allowing only one colour of light through(indeed, that is why they are called filters!) and improving clarity enormously. Some telescope eyepieces have threads inside them specifically for screwing in coloured filters, and these are very useful.

Venus was exactly at Half-full phase(dichotomy) when it was at greatest elongation east of the sun on April 8th. Venus data follows:-

Date	R.A.	Declination	Magnitude	Phase
April 13th	04h 26.0m	+26°24'	-4.0	0.488
" 23rd	05h05.0m	+28°55'	-4.4	0.418
May 03rd	05h39.2m	+27°35'	-4.2	0.5[illegible]346
May 13th	06h05.4m	+27°28'	-4.2	0.44264

Maximum brilliancy will occur: May 11th

By the end of April, Venus should appear as a crescent through a telescope.

"What's Up?" The night sky in April:- The only planet seen well this month is Venus,(see previous article). Mercury is too close to the sun, although theoretically you might be able to see it as a morning star under good conditions.. Mars & Saturn are both in Taurus, not very far from Venus, but drawing closer to the Sun, and Mars is so far from Earth that it shows no apareciable disk in a telescope. Mars sets at 23h40m G.M.T and Saturn at 21h G.M.T.. Jupiter is a morning star, visible in the south-east before down, its is in Sagittarius rising after midnight. It is moving direct in the sky and should reach its stationary point on April 25th, and then will start to move retrograde.

The April Lyrids meteor shower occurrs between April 19th and April 24th, reaching a maximum of about 15meteors per hour on the 21st April. although this is a rather low maximum, the meteors are brilliant, and its is well worth going outside for an hour or so, into the garden, to watch them. A useful occupation would be to record the track of each meteor seen, and the taime it was seen, with its brightn ss in magnitudes, and send the observation either to me or to the BAA. Occassionally , with luck, you may see a fireball. These are not very common, and last minutes.

as opposed to ¼-a few seconds, which ordinary meteors last. If one of these is seen, the exact time of start and finish, and its track either against the background of stars or in R.A and Dec from a star map, should be recorded and sent at once to me, or the BAA. If sent to the BAA, your report will be useless unless you state your exact latitude and longitude, or O.S. eight figure grid reference(preferably the former).

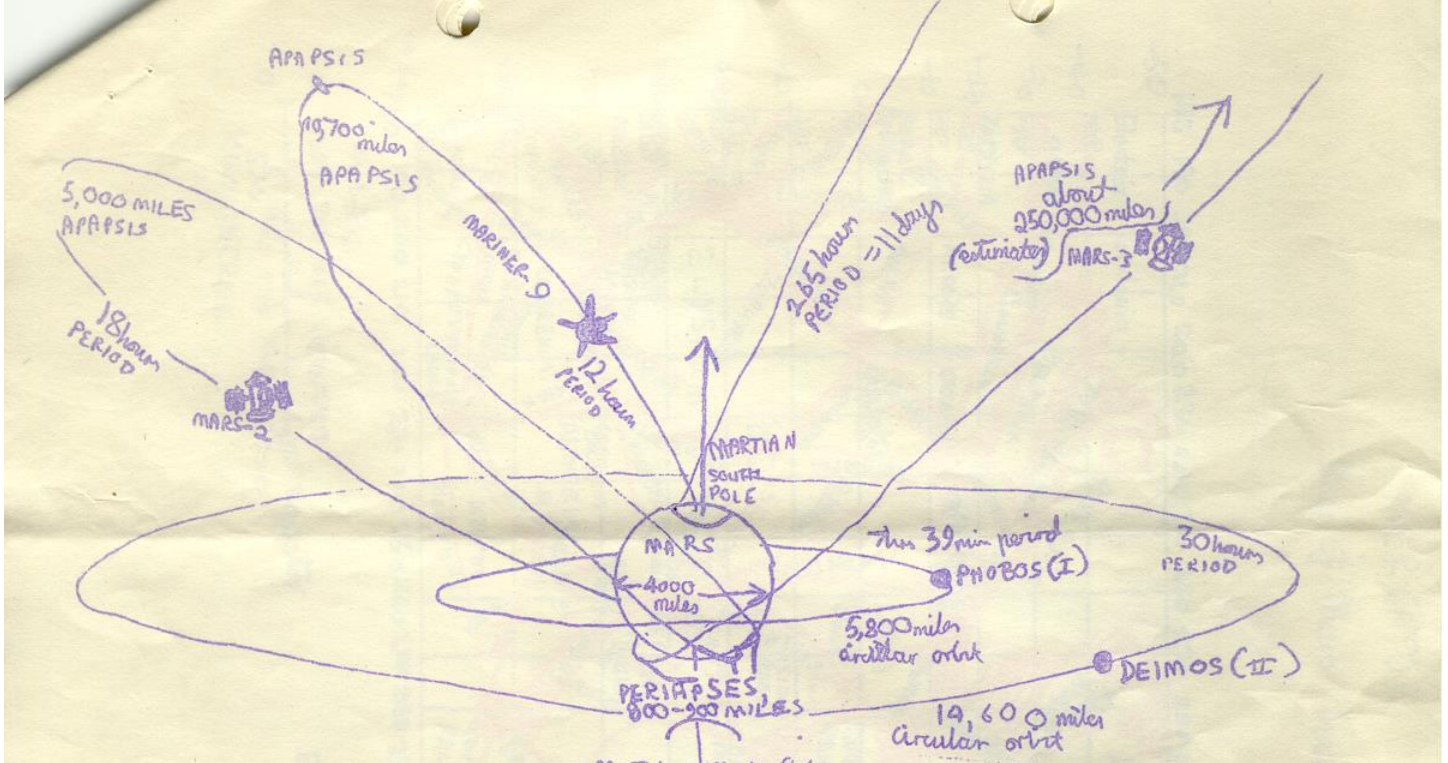
The BAA are Organising a Weekend Residential Course OF ASTRONOMY, ANYONE INTERESTED CONTACT ME AS SOON AS POSSIBLE, IT IS IN WINCHESTER, HANTS.

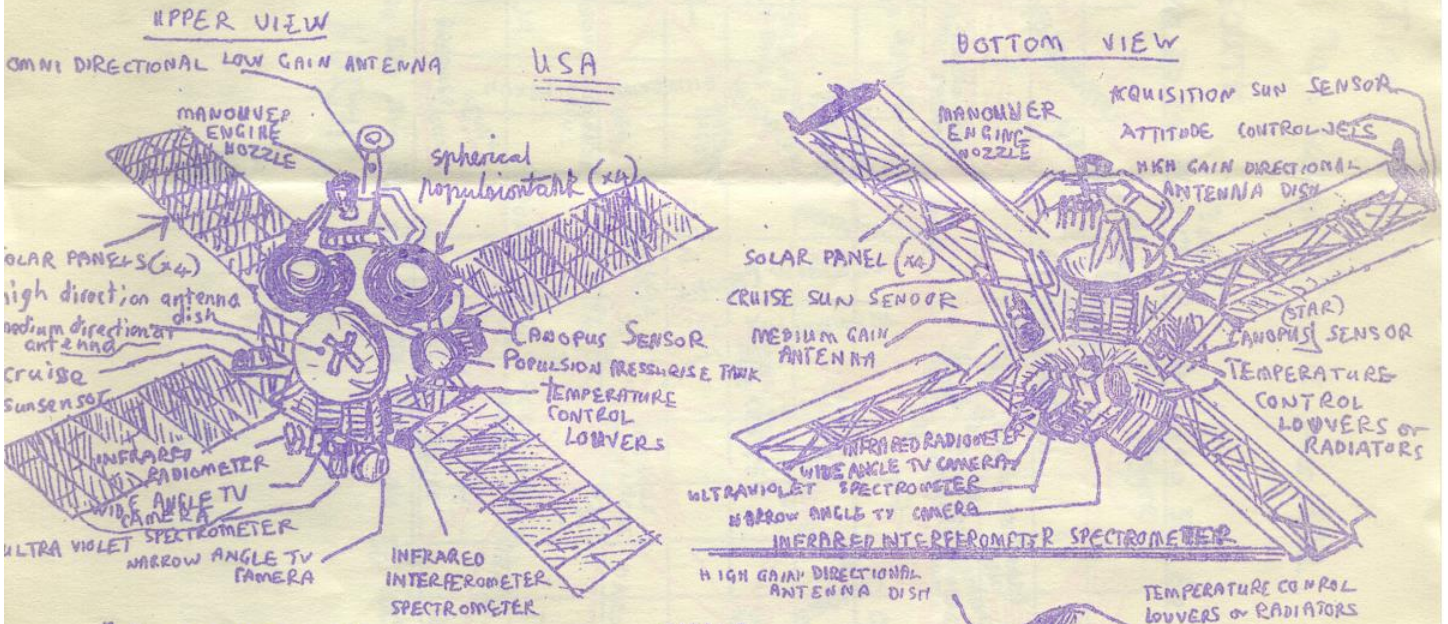
The 1971 Mars Probes Two American and three Russian probes were launched in 1971, in order of launch: Mariner-8/H(USA, Failure); Cosmos-419(USSR, Failure); Mars-2(USSR, Success); Mars-3(USSR,Success); Mariner-9(USA, Success).

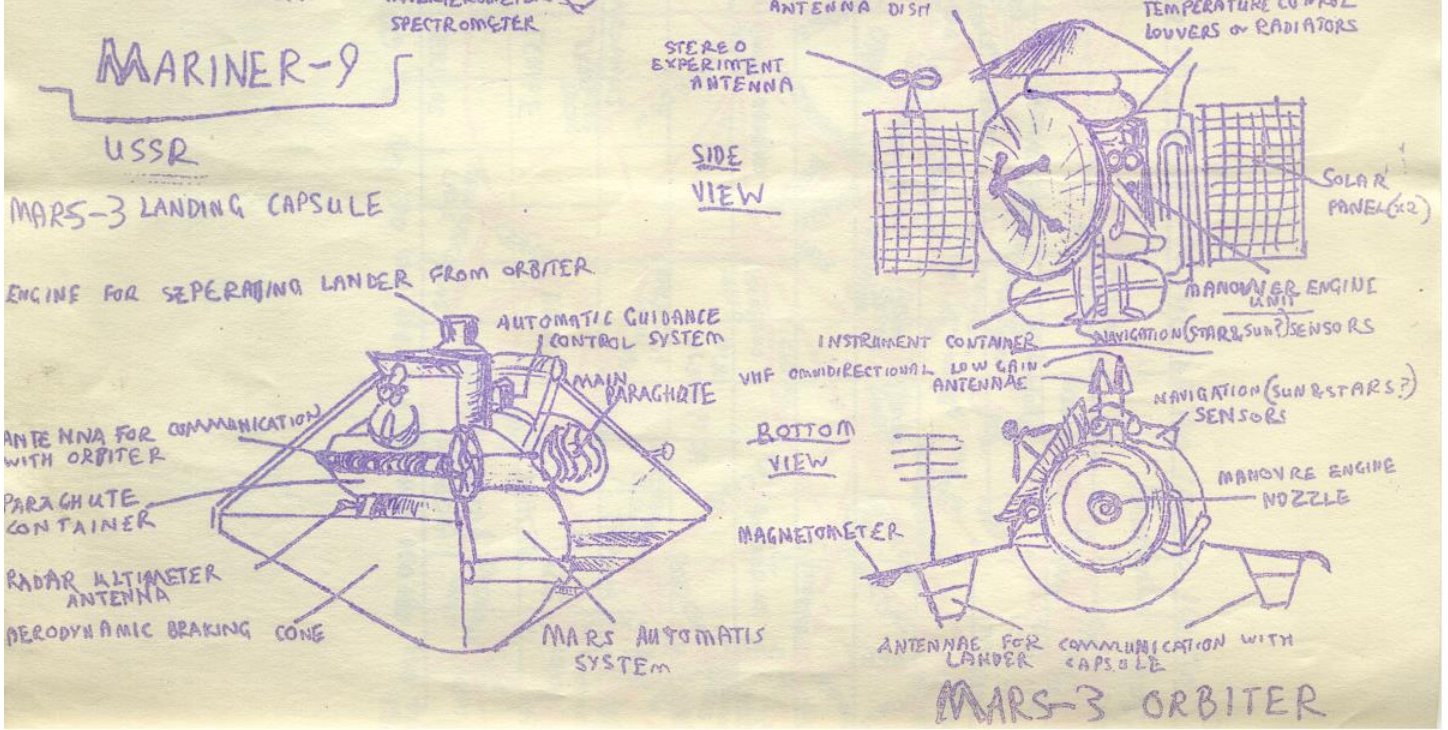
Mars-2 reached Mars on November 27th 1971. It then split into two sections one parachuted down to the Martian surface, but crashed because its final retrorocket failed to soften the fall, and the other half successfuly went into orbit about Mars, 862miles(1,380km) to 15,700miles(25,000kms) altitude, 18hrs period, 48°54' inclination to Martian equator. On Decemver 2nd 1971, Mars-3 aslo arrived at Mars, and like its predecesor, split in twain. One half parachuted into the Martian atmosphere, like before, heated up in the atmosphere as usual, then its parachute successfully opened its fall on to Mars was cushioned by a rocket. and it became the first man-made object to land on to Mars intact. However, it only transmitted from the surface of Mars for 20seconds, and contact was not regained with it. It landed at Martian co-ordinates: Lat 45°S, Long 158°W, between the regions known as Electris and Phaetonis, visible on the map. The other half of Mars-3 successfully went into orbit about Mars, taking 11 days per orbit, sweeping donw to 900 miles altitude, the apapsis was not announced. The two orbiters were still operating at the time of writing, sending back data on : composition, pressure & properties of the Martian atmosphere, day and night surface temperatures , surface characteristics, composition of the Martian soil . Mars 2 3 carried the following equipment:- 1) IR Radiometer, of two tiny telescopes, one pointing at Mars, the other pointing away into outer space, it weighs little more than 1kg, 2¼lbs, measures down to -100°c by IRemission at 8-40 microns wavelength. 2)Relief of planet explored by measuring optical thickness of Martian atmosphere in CO_2 absorption band 3) Visible light photometer with coloured filters 4) Measuring faint water absorption lines in spectrum of Martian atmosphere to detect the water vapour, it can easily detect the amount of H_2O gas along a track 1metre long in a room on Earth, about the same amount as found along a line passing through the entire thickness of the Martian atmosphere 5)Radio-telescopes receive radio waves in the 8metre band from Mars measuring intensity and degree of polarisation of them, from areas 100-150km across. 6)Multi-channel UV photometers measuring intensity of Martian upper atmosphere "airglow" in UV spectrum; resolving into resonance lines of Hydrogen, Oxygen and Argon.

The two Mars probes are perfomring jobs like Mariner-9(which was shut down on March 18th for a rest until early June) sending back many photographs with two cameras, one with a narrow angles(4°) telescopic lens, and the other a wide angle mapping camera. The film taken was automaticaly developed aboard, and each frame scanned by a pinpoint of light and the appropriate radio signals reproducing each picture sent back to Earth.

Measurements show very little water vapour in the Martian atmosphere Exercise movement or electron temperature is lower than Earth's.Atomic Hydrogen and oxygen has been found in the upper Martian atmosphere. A Hydrogen corona was located between 10,000 & 20,000 km altitude, while oxygen was detected at up to 600-1,000 kms altitude. Individual areas on Mars' day side have temperatures not exceeding minus 15°c. On the night side there are "hot spots" 20-25°c warmer than the surrounding regions. In one radio transmission from the probe, temperature was measured along a strip from Lat 58°S, Long 330° to Lat 30°N, Long 190°; the highest temperature on this line was minus 20°c and this was near noon!! 70°F or frost at midday near the equator. Some places on the night side were as cold as minus 90°c. The photometer saw sharp differences in brightness of the surface using red, blue & near UV(3000Ang Us, to 7000Ang Us)coloured filters. Measurements in red showed a sharp fall in brightness near

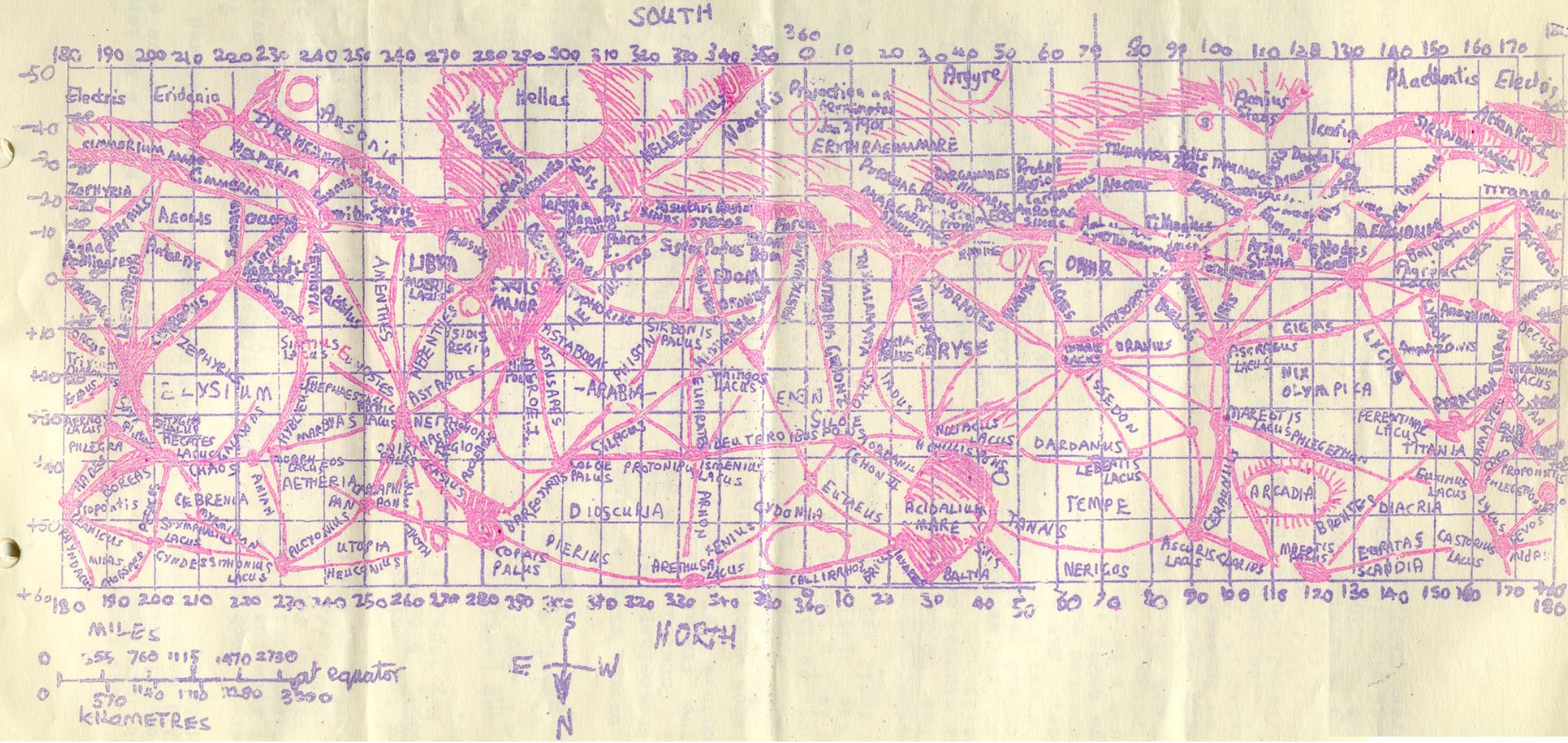

APAPSIS
19,700 miles
APAPSIS
5,000 MILES
APAPSIS
18½hour
PERIOD
MARS-2
MARINER-9
12 hours
PERIOD
2.65 hour
PERIOD = 11 days
APAPSIS
about
250,000 miles
(estimate)
MARS-3
MARTIAN
SOUTH
POLE
MARS
4000
miles
Then 39 min period
PHOBOS (I)
30 hours
PERIOD
5,800 miles
circular orbit
DEIMOS (II)
PERIAPSES
800-900 MILES
14,600 miles
circular orbit
Martian North Pole
To Martian Pole Star: Deneb or α CYGNI
RA approx 20h 40mi
Dec approx +45°


UPPER VIEW
OMNI DIRECTIONAL LOW GAIN ANTENNA
USA
MANOUVER ENGINE NOZZLE
spherical propulsion tank (x4)
SOLAR PANELS (x4)
high direction antenna dish
medium directional antenna
cruise sun sensor
INFRARED RADIOMETER
WIDE ANGLE TV CAMERA
ULTRA VIOLET SPECTROMETER
NARROW ANGLE TV CAMERA
CANOPUS SENSOR
POPULSION PRESSURISE TANK
TEMPERATURE CONTROL LOUVERS
INFRARED INTERFEROMETER SPECTROMETER
BOTTOM VIEW
MANOUVER ENGINE NOZZLE
ACQUISITION SUN SENSOR
ATTITUDE CONTROL JETS
HIGH GAIN DIRECTIONAL ANTENNA DISH
SOLAR PANEL (x4)
CRUISE SUN SENSOR
MEDIUM GAIN ANTENNA
(STAR) CANOPUS SENSOR
TEMPERATURE CONTROL LOUVERS or RADIATORS
INFRARED RADIOMETER
WIDE ANGLE TV CAMERA
ULTRAVIOLET SPECTROMETER
NARROW ANGLE TV CAMERA
INFRARED INTERFEROMETER SPECTROMETER
HIGH GAIN DIRECTIONAL ANTENNA DISH
MARINER-9


USSR
MARS-3 LANDING CAPSULE
ENGINE FOR SEPERATING LANDER FROM ORBITER
AUTOMATIC GUIDANCE CONTROL SYSTEM
MAIN PARACHUTE
ANTENNA FOR COMMUNICATION WITH ORBITER
PARACHUTE CONTAINER
RADAR ALTIMETER ANTENNA
AERODYNAMIC BRAKING CONE
MARS AUTOMATIS SYSTEM
STEREO EXPERIMENT ANTENNA
SIDE VIEW
TEMPERATURE CONROL LOUVERS or RADIATORS
SOLAR PANEL (x2)
MANOUVER ENGINE UNIT
INSTRUMENT CONTAINER
NAVIGATION (STAR & SUN?) SENSORS
VHF OMNIDIRECTIONAL LOW GAIN ANTENNAE
NAVIGATION (SUN & STARS?) SENSORS
BOTTOM VIEW
MANOVRE ENGINE NOZZLE
MAGNETOMETER
ANTENNAE FOR COMMUNICATION WITH LANDER CAPSULE
MARS-3 ORBITER

MERCATOR PROJECTION

Map of Mars based on BAA Mars section 5th report, year 1902



Mars' limb, and a gradual drop near the terminator, while a large bright cloud(dust storm?)was detected at Lat 15°S, Long 220°, which was some hundreds of Kilometres long.

All co-ordinates in latitude and longitude can be looked up on the map of Mars.

C.F.R.

For Mariner-9. look up the following references from magazines available on request from the reference section, Ipswich Borough Library. Flight International, Thurs March 2nd 1972 vol 101,no 3286, page 334. Science Horizons, Feb 1972, no 131/// New Scientist 24Feb 1972, Vol 53, no.784, page 420./// New Scientist 20 Jan 1972 Vol 53, No.779, Page 128. All these articles are illustrated with pictures and diagrams.

Meetings of the Society Planetary Section(Director Mr.David Bearcroft tel Ips [redacted], [redacted] Ips) meets alternate Thursdays, April 13th, April27th, May 11th, At around 8-15pm B.S.T.(19.15hrs G.M.T.)at the Observatory.

Lunar Sections Meetings every Wednesday excepting 19thApril & 10th May. Director is Mr.Roy M.Cheeseman, [redacted], Ipswich.

Stars and Nebulae Section, every Saturday, 8.30p.m. B.S.T.(19.30hrs G.M.T.) Director Mr.Richard Hazelwood, tel Ips [redacted], [redacted], Ips.

Club night every Friday evening at the Observatory.

Norwich astronomical Society meets at Suckling hall at 7.30p.m. Saturday April 15th, Norwich. Also on Saturday May 20th at Wymondhon Secondary School in the afternoon and at Wymondham Methodist Church Hall, Town Green, Wymondhom Norfolk at 7.30p.m. B.S.T..

Places worth visiting in London are: The London Planetarium Baker St/Marylebourne St, London W1; Burlington House Piccadilly, London W1V 6nL which is the BAA registered office. The BAA meets at 23 Saville row at 15.00G.M.T on the last Wednesday of each month. Saville Row is in London W1, and is the Scientific Society's Lecture Th Theatre of the Civil Service Comission Building. BAA meetings will be on the 26th April and 31st May.

ADVERTISEMENT:

For Sale; One 76.2mm(Just over X 3inches)aperture astronomical refracto equatorially mounted on wooden tripod, manual slow motion adjustments, both axes(ie both RA & Dec')FIVE eyepieces giving wide range of magnification from 60X right up to 600X, Barlow lens to double magnification and re-invert image; sun screen for projecting and observing the sun in complete safety; star diagonal(zenith prism), camera daptor. £55 o.n.o.
Anybody interested should contact Graham Fussell, [redacted], Ips. Tel:Ips [redacted].

Through such a telescope the phases of Venus, phenomena of Jupiter's satellites, rings of Saturnabundance of sunspots, bands of Jupiter, polar caps of Mars can all be seen.

ERRATA to March 1972 J.Crw.Ast.S. Vol:1 No:2
Page1:Probe to Jupiter. Para.2, line11 should read; "..photographed by a level DIVISION,an..." ///Page1:Probe to Jupiter, Para2,last complete line should read,"...an image of the raster type.."//Page2: Omit first word (Centaur).///Page2:Apollo-16, para2,line3, should rread:"..M31Galaxy in [redacted] NEBULA,the..."///Page3:Russian Moonprobe,para4,line2 read,"the edge of a RANGE of mountains..."///Page3:Russian moonprobepara5,line7 read: "...earth.The SPHERICAL container..." ///Picture Page:Map of Suffolk: for LADLEIG read WADLEIGH. &for MANNIGTREE read MANNINGTREE.
Page5:Meetings :Norwich Astronomical Society:for LACS CLUB read LADS CLUB. For EASRTH read EARTH.

STOP PRESS

The Orwell Astronomical Society has been officially invited to the Norwich Astronomical Society meeting of Saturday April 15th. at 7.30 p.m. B.S.T. at Suckling Hall, St. Andrews, Norwich. It should be interesting and worth attending if members can get up there by train or by car.

B.R. Train timetable Ipswich - Norwich April 15.

Leave Ipswich	17.56	----- arrive Norwich		18.50
" "	18.45	----- " "		19.30
" Norwich	23.45	----- " Ipswich		00.55
				April 16.

Addendum to Astronomy Notes:-

I must add these three important events:-

1) April 3/4

There is a possibility of a fireball over England on about these two days. Anybody who happens to see it (if it occurs at all) should forward:-

a) R.A. or position of start of track.
b) R.A. and Dec. or position of finish of track.
c) Accurate time of start.
d) Accurate time of finish. (± 1 minute) } G.M.T. of course
e) Magnitude, colour, any other data.

2) April 22/23.

At 23.02 G.M.T. Earth will pass 0.004 A.U. (about 400,000 miles) from the node of Comet Grigg/Skjellerup. It is possible that a meteor shower will be visible on this date.

Coupled with the April Lyrids, and possible fireball and comet Grigg/Skjellerup, it should be a good month for meteor observers. (For this only the best of all optical equipment is necessary).(The human eye!)

3) May 15.

There will be a graze occultation or very close pass to Mars by the Moon at about 20.50 to 21.00 G.M.T. (add one hour to correct for B.S.T.). This is a comparitively rare occurence and is worth watching with telescope or binoculars.

C.F.R.

On the evening of Tuesday 18th April, in the BBC programme "On Camera" there will be a six minute extract showing the interior of the Norwich Astronomical society Observatory. The whole programme is about Hobbies.

C.F.R.