THE JOURNAL OF THE ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

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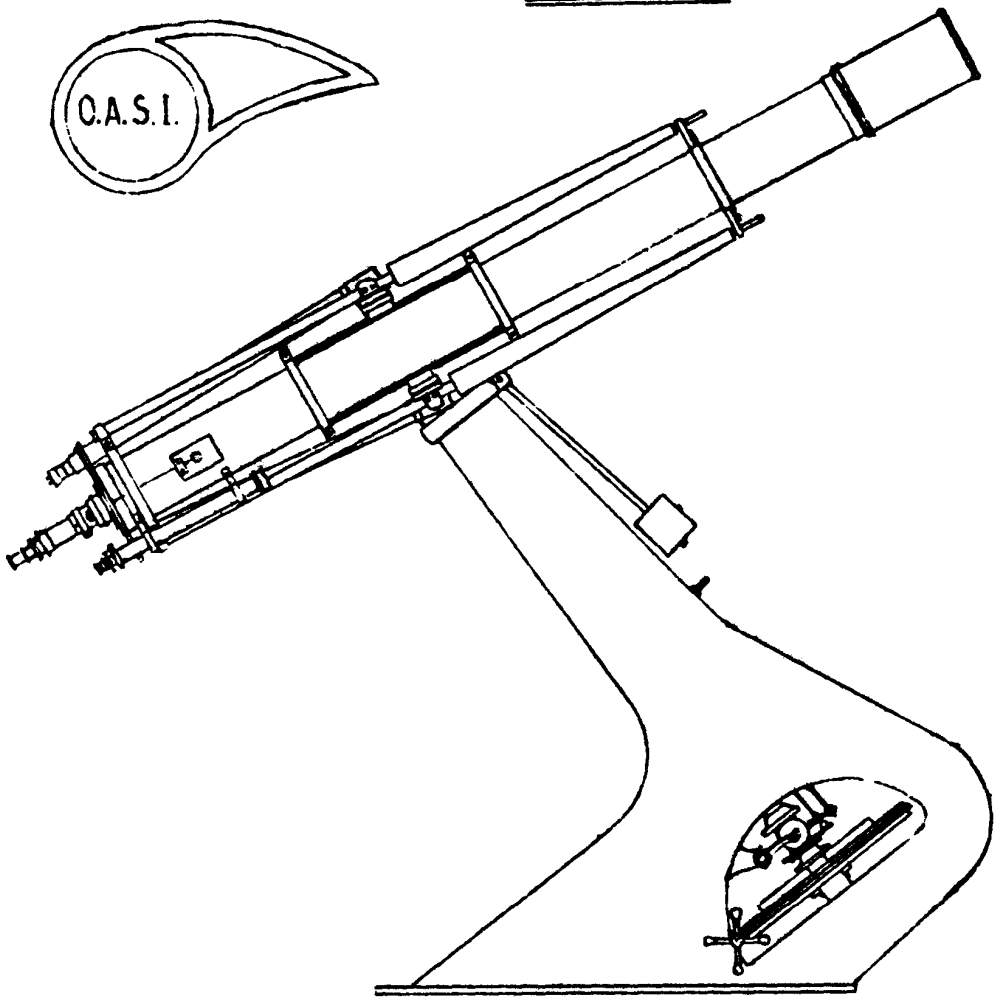
Producer: Situation Vacant

Your submissions of items for the Journal will be welcome.

OCTOBER 1979



The Orwell Park Observatory 10-inch Astronomical Telescope at Nacton near Ipswich

NEWS REVIEW

Aug 9th , BLACK HOLES THE POWER-HOUSES OF GALAXIES.?

According to a Dr Minas Kafatos of George Mason University, large Black Holes could be causing the large output of energy from active galaxies and quasars. The Black Holes are typically put at masses of a million to a billion times that of the Sun, (2 x 10^{30}kg). Dr Kafatos says that it is theoretically possible to extract energy from the region surrounding a Black Hole, a region called the ergosphere, by processes known in the theory of Relativity as "Penrose Processes". Apparently, objects could approach the Black Hole and split into two. One half would approach the Black Hole at half the speed of light, and the other would fly out with more energy than it had after it split. The extra energy comes from the rotational energy of the Black Hole. Dr Kafatos put forward his theory, after observations of Cygnus A, which although a 'radio galaxy', seems more like a quasar.

- N.A.S.A.

Aug 3rd, TO BE BUILT-SENSOR FOR MILITARY SPACECRAFT

Hughes Aircraft under a contract from SAMSO, will build a microwave imaging sensor for application on U.S. meteorological satellites. The sensor, for the first time, will be able to see through clouds and inclement weather. The ∅ 10.8 m contract calls for a flight on a satellite around 1982. The sensor works by recording the emission of microwave elecromagnetic rediation from such objects as icebergs, the sea and land masses etc. The 45 kg package should provide 'timely' information to military commanders anywhere in the world.

-Hughes Space & Communications Group.

Aug 4th , PIONEER VENUS CLOCKS 5832 HOURS AROUND VENUS.

Pioneer Venus was the name of a recent N.A.S.A. mission to the planet Venus. On August the 4th, the Orbiter clocked 5832 Hrs, or one Venusian day. (1 Venusian day = 243 Earth Days). The Orbiter has discovered large amounts of primordial Argon in the planets' atmosphere, causing current theories to be revised. Instruments have also detected what seems to be the largest mountain range in the Solar System, as well as the largest Rift valley. In February ,N.A.S.A. decided to extend the mission another Venusian day. However, the makers, Hughes NASA Systems division, has noted there is still enough propellant aboard for another day beyond that.

-Hughes Space & Communications Group.

Further details may be obtained by writing ;
S.Harvey, [redacted], Needham Market, Nr Ips IP6 8A

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JOURNAL PRODUCER'S NOTES:

Well here we are again still under our emergency system and still awaiting for someone to take over the job of getting the Journal made up ready for printing. If you are interested please contact me as soon as possible.

It might have confused some members the address I gave last month in the Journal but regular visitors to the Observatory know that my main address is still [redacted], Ipswich, IP4 5QA but as I now work away from Ipswich my 'pad's' address is [redacted], West Hanningfield, Chelmsford, Essex to which all correspondence should be addressed as I only come home to Ipswich some week-ends.

Still on the theme of addresses please note that our Secretary MR. M. BARRISKILL has now moved to [redacted] Ipswich.

Regarding my request for stamps to cover postage of the Journal half a dozen members kindly sent me stamps or stamped addressed envelopes. If you are going to send stamps they will be very much appreciated but please ONLY SEND STAMPS as I can supply the envelopes.

I was somewhat sad that out of our membership of over 90 that at the meetings arranged to discuss the Open Day only two new faces turned up and I hope that at the Open Day (if it has not already passes by the time you read this) lots and lots of members will be available to help.

Articles are still required for the Journal and if you have anything of astronomical interest please send them to me at West Hanningfield. Cuttings out of various papers/magazines will be most welcome as we only purchase one paper (~~to look at heavenly bodies on page 3~~) and you might buy a paper which covers something astronomical which is not in my paper. So please send these cuttings to me, giving the paper's name and date.

Royston Cheesman

THE NIGHT SKY AS SEEN FROM ORWELL PARK IN OCTOBER

Cassiopeia dominates the zenith this month, while pegasus and Andromeda dominate the meridian during late evening. This is the best time of year to locate the very inconspicuous Pisces and Cetus, running side by side to the south-east of the square of Pegasus. Early October is also the best time to view Fomalhant, the 1st magnitude member of Pisces Australis sitting just above the southern horizon during late evening. The Summer Triangle of Deneb, Vega and Altair now fills the western sky, while over to the east Perseus, Auriga and Taurus are in full view. Triangulum and Aries are easily found between Pegasus and Taurus.

THE SUN

Sunrise is at 06h 10m at the beginning of the month, changing to 07h 00m at month-end. Sunset changes from 17h 30m to 16h 30m. The sun moves from Virgo to Libra during the month.

THE MOON

Full Moon	5d 19h 35m	New Moon	21d 02h 23m
Last Quarter	12d 21h 24m	First Quarter	28d 13h 06m

OCCULTATIONS

Star	Phase	Mag.	Time
**3064	D	6.0	1d 18h 47.3m
878	R	5.5	11d 2h 51.8m
3325	D	6.7	30d 22h 1.8m

D = Disappearance R= Reappearance
Stars listed according to Zodiacal Catalog (ZC) numbers
** Denotes time is correct for latitude and longitude of Greenwich

THE PLANETS

Mercury reaches greatest elongation east on the 29th, but will be setting only half an hour after the Sun.
Venus is an evening object, also setting half an hour after the Sun, at mag. -3.4
Mars is rising just before midnight, at mag +1.3 in Cancer
Minor Planet Ceres reaches greatest brilliance of mag 7.9 on the 4th,in Cetus. RA 1h 09m Dec -8° 48'.
Jupiter is rising around 01h 30m in Leo at mag - 1.4
Saturn is rising around 0300h at mag. +1.3 between Leo and Virgo.

MUTUAL PHENOMENA OF JUPITERS SATELLITES

Octoberis a favourable month for these phenomena. In the event column, I = Io, II = Europa, III = Ganymede and IV = Callisto. O = Occulation, E = Eclipse, P = Partial and A = Annular. (e.g. II P means that Io partially eclipses Europa) Times given are for mid-phenomena, and S.D. is the semi-duration (in seconds) which is the time from start to mid-phenomena.

Event	Time d.	h.	m	S.D.
I E II P	1	03	05	180
I O II P	1	04	24	190
III E II P	3	13	08	170
I E II P	4	16	17	180
I O II P	4	17	40	170
I E II P	8	05	28	180
I O II P	8	06	54	140
III E II P	10	16	42	90
I E II A	11	18	39	170
I O II P	11	20	09	80
I E II A	15	07	49	160
I E II P	18	21	00	150
I E II P	22	10	09	140
I E II P	25	23	19	130
I E II P	29	12	27	120

Source: BAA Handbook 1979. All times are UT (= BST - 1h)

FROM OTHER JOURNALS

Life on Mars - Another Straw to Clutch

The discovery of two 'puddles' of water on Mars has demonstrated that the planet is not entirely the arid desert it has been described as of late. The two areas were first noted by Robert Huguenin of the University of Massachusetts in 1973, when they brightened as Mars made it's closest approach to the Sun. Assuming the patches are caused by water released during the day to produce frost overnight, the topsoil must contain 5% water by weight. The areas, called Lacus and -wait for it- Noachis Hellespontus, are just south of the Martian equator, in the warmest region on Mars, The discovery has been confirmed by the Viking Orbiter, which recorded 10 - 15 times more water vapour over the two sites than over any other place on Mars

If the water is present as pure ice, it would be in liquid form only during the warmest half of the Martian year, and then only for a few hours a day, but if it is present as brine, it could remain in liquid form during the day all year round. This latter condition could support many terrestrial organisms, says Huguenin, and the two sites could be the only places on Mars where life might still linger on from earlier times when water was more abundant.
(New Scientist 23rd Aug)

METEOR NOTES by David Barnard.

This month we have the ORIONIDS SHOWER at maximum on October 21st. These meteors have fine trains and originate from a multiple radiant. ZHR = 30, and the Moon does not interfere this time round.

The normal limits of this shower is from October 16 through until October 26th. The radiant is at 0624hrs R.A. and Dec. is +15°.

Minor Showers

There are two minor showers this month:-

1. The Xi Arieds, Maximum on October 11th, normal limits October 2nd to the 16th.

2. The Epsilon Geminids, Maximum on October 21st, normal limits October 14th to the 26th.

Both these minor showers are very weak with a ZHR at maximum of only one meteor every hour or so.

METEOR SECTION MEETING

On Saturday 20th October we will hold a meteor count for the Orionids. Meet OUTSIDE the Levington Ship public house at 9p.m. irrespective of weather conditions.

Everybody and anyone are invited to come along to this meteor count to observe one of the best meteor showers of the year.

NOVEMBER JOURNAL

Any articles you may have which you would like to be put into the November Journal should be sent to arrive no later than 22nd October to R.M. Cheesman, [redacted], WEST HANNINGFIELD, Chelmsford, Essex.

STATUS by Simon Harvey

In brief, over 600 high and low temperature tiles are being fitted each week, consistent with the present schedule to launch in January of next year. All three SSME's have been installed, RCS tests have been initiated and the Orbital Maneuvering System pods are now being readied for acoustic vibrational tests.

SPACE SLED BEING PREPARED FOR SPACELAB MISSION BY S. Harvey

A reduced Space Sled concept has been approved by ESA, The Sled, to be used as a tool for monitoring the bodies reaction to weightlessness in zero-g, will be mounted on one rail inside the Spacelab pressure module. A Test Operator will have complete control over the Sled, except if the subject gets dizzy or 'sea' sick. The rail has crushable shock absorbers at either end which should prevent serious accident - should it occur.

ESA News.

N.A.S.A. TO BEGIN REGULAR ASTRONAUT RECRUITMENT

Applications for Astronaut training will be requested by N.A.S.A. October 1st through December 1st. There are a number of conditions to be met before prospective candidates are allowed to go aloft. Pilot candidates must have at least a B.Sc. in Biological, Physical or Engineering Science or mathematics. You must be between 64 and 76 inches tall, pass a physical, and have at least 1,000 flight hours in high performance aircraft. U.S. citizens will take first priority (due to Federal Government regulations).

N.A.S.A.

OUT OF THIS WORLD - QUITE LITERALLY

The first phase of the International Solar Polar Mission has began with development and design of the U.S. spaceprobe. Under the ISPM agreement, N.A.S.A. will build one probe and E.S.A. the other. Both will be launched by Shuttle in 1983 with the aim of examining the Sun from the North and South pole regions. They will both use the influence of Jupiter to bring them out of the plane of the ecliptic, each passing 180 million miles above and below the Sun respectively. It will take upwards of 3½ years before they send back data. (The project was previously called 'Out of Ecliptic', and E.S.A.'s contribution was called 'Exosat').

TRW D&SS

EXPERIMENTS SELECTED FOR LAGEOS SATELLITE

The Laser Geodynamics Satellite (LAGEOS) put into orbit on May 4th 1976, is to be used by 25 investigators to study the movements of the Earth. The last few years have been spent working out the exact perameters of the Satellite's orbit. In order to find out about such things as continental drift, polar wobbles, plate tectonics and gravity variations, Lasers will be 'fired' at the satellite and the time taken for them to return to Earth recorded. The craft has no electrical equipment, but will reflect the Laser pulse back upon its incident path by means of any one of the 426 optical reflectors.

N.A.S.A.

VIKING LANDER 2 - STILL WORKING - DISCOVERS UNUSUAL FROST ON MARS.

VL 2 surprisingly is still working in 'Utopia', has photographed Martian Frost again. Although Mars is in the grip of winter, there are no clouds to be seen anywhere. The winter in 1977 was associated with clouds. The clouds are thought to be the principal cause of frosts. The finding has made scientists speculate that dust particles in the atmosphere pick up bits of ice. These then fall to the ground and the Carbon Dioxide in the ice then evaporates away in the Sunshine. This leaves a layer of frost only one thousandth of an inch thick. The observation is one of the many that are being made by the Viking Lander, 3 years after it landed on Mars in the summer of 1976.

N.A.S.A. (9th August, 1979)

SIDEREAL CLOCK.

Mr. E.H. Collinson who used the Orwell Park Telescope during the 1930's and who is the Director of the Mars Section of the B.A.A. has kindly given the Society a very nice mechanical sidereal clock. The clock is quite old and has a face of about 6" in diameter and is at the moment with Mr. D. Bearcroft for cleaning up and checking over before it goes up to the Observatory.

On behalf of Orwell Astronomical Society (Ipswich) I would like to thank Mr. Collinson for his gift of this clock to our Society.

R.M. Cheesman

A GOD DISGUISED BY DISTANCE

by Simon Harvey.

Saturn is said to have been a Roman God who ruled the world in an age of plenty and innocence before Jupiter. When Rome was at its peak, the planet Saturn was still only a speck in the heavens that moved in a curious way similar to only four other such specks.

Today we know much more about Saturn, and our knowledge has been advanced by telescopes of all sizes since the time of Galileo. The first major discovery was that of the rings, made by Huygens a few years after Galileo noted that the planet had a 'flattened' shape through his telescope. Studies by G.P. Kuiper have suggested that the rings are composed of ammonia gas. Indeed, if the rings were solid or were composed of say an ice ring, theory tells us it would break up. The evidence seems to suggest that the ring system is the remains of a body that approached too close to Saturn and was torn apart by gravitational forces. However, mystery still surrounds the physical properties of the rings - 20km thick, yet 272,000 km in diameter.

The belts of Saturn's atmosphere are less pronounced than on Jupiter, no doubt due to its greater distance from us. Still, it may stand to reason that because it is further away from the Sun than Jupiter there is less atmospheric heating and therefore less turbulence. There is nothing on Saturn to compare with the Great Red Spot on Jupiter, though they both have smaller white spots that are similar in appearance.

As regards composition, the colder temperature means that the lighter molecules have less energy to enable them to escape Saturn's gravitational field. On the other hand, larger molecules may be at such a low temperature that they may join to form liquids or even solids.

Saturn has ten moons discovered to date, all orbiting outside the rings. The most interesting is Titan, being planet-sized and having an atmosphere. The atmosphere was discovered by occultation methods, and spectographs have shown it to consist probably of methane. Calculations have shown that if Titan's temperature were to rise by 38°c the atmosphere would leak away.

This month should bring us closer to solving some of Saturn's mysteries, with the Pioneer flyby sending back photographs and other data. This will be augmented soon by the two Voyagers, so it can be said that we are at least overcoming the greatest enemy to our science - distance.

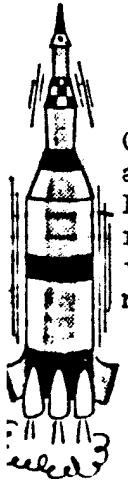
(Pioneer Saturn's timetable may be found in August's Journal and all times are PDT and you should add 8 hours to convert to G.M.T.)

DATES FOR YOUR DIARY

by Charles Radley.

Planetary Probes	Event	Date
Voyager 1	Saturn Flyby	1980 Nov.12th
Voyager 2	Saturn Flyby	1981 Aug.21st
Galileo	Launch (Space Shuttle)	1982 Jan.
Galileo	Mars Flyby	1982 Apr.
Solar Polar	Launch (Space Shuttle)	1983 Feb.
Venera X	Launch (from U.S.S.R.)	1983 Spring
Venera X	Balloon in Venus atmosphere	1983 Autumn
Venus Orbiting Radar	Launch (Space Shuttle)	1984 Dec.
Solar Polar	Jupiter Flyby	1984/5 winter
Venus Orbiting Radar	Venus orbit insertion	1985 Spring
Comet Prober	Launch (Space Shuttle)	1985 June
Galileo	Jupiter orbit insertion	1985 July
Comet Prober	Halley's Comet flyby	1985 Dec.
Voyager 2	Uranus flyby	1986 Jan
Galileo	Mission ends	1986 early
Venus Orbiting Radar	Mission ends	1986 or later
Comet Prober	Comet Tempel 2 rendezvous	1988
Voyager 2	Neptune flyby	1990

Other planetary probe missions are being studied for cost and feasibility, including a possible Saturn orbiter, Lunar Polar orbiter (POLO by ESA in 1985), Mars soil sample return mission, and possible asteroid probes. However the governments concerned have not yet committed the necessary funding.



"Damn!—I've left my cigarettes behind!"

Aug 15th - PIONEER SATURN MAKES MAJOR MANOEUVER BEFORE ENCOUNTER

On August 15th, some two weeks before the Saturn encounter, Pioneer Saturn was ordered to make a 1.1 degree turn to the left. The two - one secomd burns of PS' thrusters, allowed NASA technicians to maximise the quality of data transmitted at Saturn, and keep the communications passage open under the inflence of the planets gravitational field.

-N.A.S.A. Ames Research center.

Aug , 27th , SPACESHIP COLUMBIA UNDERGOING MODIFICATIONS.

The 'Columbia', presently awaiting the first manned Shuttle launch at Kennedy Space Center, has been comprehensively tested for any faults in the flight control electronics and onboard computers. Thermal Protection tile placement is said to be proceeding at the scheduled rate, getting nearer all the while the magic figure of 23,000. The next major milestone is the Hot firing of the Auxiliary Power Unit. The APU's provide power for the payload, as well as for the operation of the body flap, main engine gimbal & control subsystems, landing gear brakes, steering etc.

.....Meanwhile, all three Space Shuttle main engines have been installed, having passed the 520 second firing time requirement for launch to orbit. They are at present undergoing checkouts while the Shuttle is still in the Orbiter Processing Facility.

-Rockwell Space Systems Group.

Aug 27th , SAMSO TO BE REORGANISED.

The Space and Missiles Systems Organisation of the U.S. Airforce , will, from October 1st, be split into two organisations -The Ballist Missiles Office and the Space Service Division. Secretary of the Airforce Dr Hans. M. Mark said the move would have the minimum impact on SAMSO programs.

-Rockwell Space Systems Group.

Aug 27th , PIONEER SATURN MAKES FIRST MAJOR DISCOVERY.

Pioneer Saturn (PS), has discovered that there is some material in the Cassini division. How much has still to be established. Dr Tom Gehrels, University of Arizona, says there is still a major chance of discovering material between Saturn and the rings, and outside them.

-N.A.S.A. Ames Research Center.

Aug 17th , LEASAT ANTENNA ARRAY IS TESTED.

Tests of the UHF antennas are now underway of the new LEASAT satell ites. LEASAT stands for Leased Satellite Services, and will be the first contractor owned communications satellite network to do just that - to the U.S. Navy. - Hughes Communication Services In

MEETINGS AT OBSERVATORY FOR OCTOBER

TUESDAYS from 7p.m. Planetary Section.
Directors: Mr. J. Hood, [redacted]. Ipswich.
Mr. J. Ranson, [redacted]. Ipswich. Tel [redacted]

October 2nd 16th 30th

TUESDAYS from 7p.m. Solar & Lunar Section
Directors: Mr. J. Hood, [redacted]. Ipswich
Mr. M. Barritt, [redacted]. Ipswich.

October 9th* 23rd
*9th Visit to Observatory by Westerfield youth club

WEDNESDAYS from 8p.m. Nebulae & Faint Objects Section
Directors: Mr. D. Payne, [redacted]
Wickham Market, Phone Wickham Market [redacted]
Mr. M. Cook, [redacted]. Ipswich, Tel [redacted]

October 3rd, 10th, 17th, 24th & 31st.

FRIDAYS from 8p.m. Variable Stars Section
Directors: Mr. R.S. Manning, [redacted]. Ipswich,
Tel. [redacted]
Mr. M. Siggers, [redacted], Ipswich.

October 12th 26th

SATURDAYS from 8p.m. General Observations Section
Directors: Mr. M. Barriskill, [redacted]. Ipswich
(note new address not on 'phone yet)
Mr. R. Adams, [redacted], Ipswich
Tel. [redacted]

October 6th 13th 20th

SATURDAYS Meteor Section
Director Mr. D. Barnard, [redacted]. Ipswich
Tel. [redacted]

ORIONIDS METEOR WATCH SATURDAY OCTOBER 20th

Meet OUTSIDE The Ship Inn, Levington
at 9p.m.