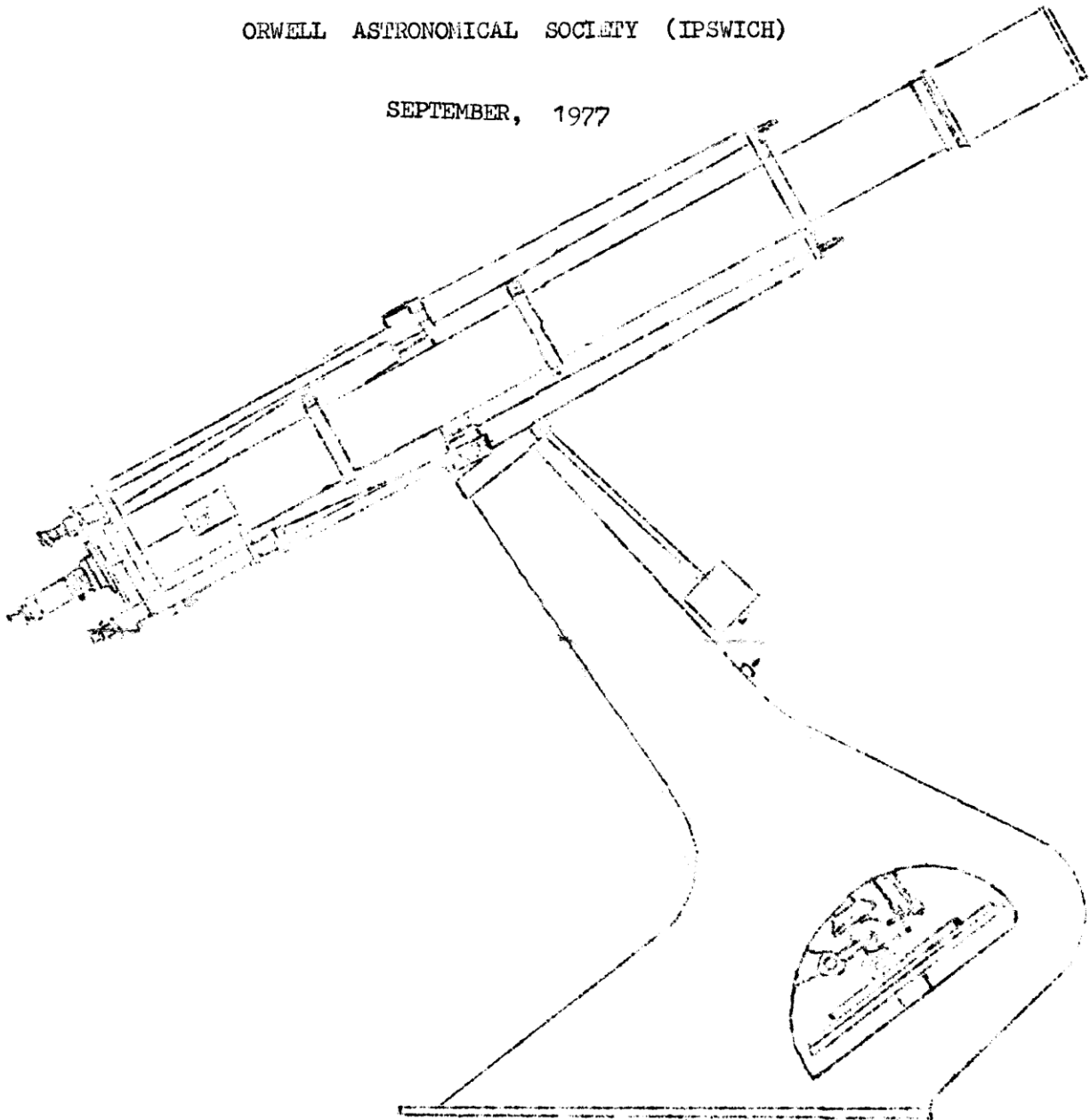


Journal  
of the

ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

SEPTEMBER, 1977



Editor: Mr. Mark Howe,

BURY ST. EDMUNDS,  
Suffolk.

'Phone Bury St. Edmunds

## THE NIGHT SKY as seen from Orwell Park this month.

The Great Square of Pegasus is due South at midnight, with Cassiopeia further to the North and almost in the zenith. The three most Western stars in the 'W' (or 'M') of Cassiopeia are almost indistinguishable as far as magnitude goes although two of them, alpha and gamma, are slightly variable and alpha is reddish in colour. To the South is the constellation Pisces, the distinguishing feature of this constellation being the circle of stars just below the Great Square. Owing to precession the "First Point of Aries" now lies in Pisces (and is soon to move into Aquarius - hence the silly song about 'the age of Aquarius'.)

## THE SUN

Sunrise is at 05h10m and Sunset at 1850 at the beginning of the month (in Leo) and they change to 0610 and 1730 respectively at the end of September (in Virgo).

## THE MOON - Phases

Last Quarter	Sep. 5d14h33m
New Moon	Sep. 13d09h23m
First Quarter	Sep. 20d06h18m
Full Moon	Sep. 27d08h17m.

## Occultations

Star	Phase	Mag.	Time
523	R	6.5	4d03h58.2m
650	R	5.7	5d01h24.7m
*1410	R	5.3	11d04h34.1m
2658	D	5.4-6.2	20d19h12.7m
2826	D	4.0	21d19h28.0m
3269	D	4.3	25d00h33.7m
257	D	4.5	29d05h18.1m

D=disappearance, R=reappearance, \*denotes double star. Stars are listed according to Zodiacal Catalogue (ZC) numbers.

## THE PLANETS

Mercury. According to the BAA the best conditions for observing Mercury occur this month. It may be seen as a morning star in the latter half of the month at approximately mag. -0.5; greatest elongation of  $18^{\circ}$  occurs on the 21st.

Venus is waxing as a morning star, although its magnitude is decreasing (at around -3.4) since it is receding from us and hence appearing to grow smaller.

Earth passes through the Autumnal Equinox on September 23 at 03h30m.

Mars may be seen in Gemini this month at mag. 0.9. It will be in conjunction with the much brighter planet Jupiter on Sept. 4th. at 22h when the separation will be  $0.5^{\circ}$ .

Jupiter is in Gemini at mag. -1.8.

Saturn is now visible as a morning star in Leo at mag. 0.8. On September 18 it will be in conjunction with Venus at 13h (dist.  $0.4^{\circ}$ ).

Mars To Have Rings

Studies of grooves on the surface of Mars' major moon, Phobos, have revealed that it may soon (on astronomical time-scales) be broken up by tidal stresses to produce a ring system similar to those of Saturn and Uranus. Tidal stresses are caused by the gravitational pull of Mars having different strengths at different distances from the centre of the planet. The presence of these cracks or grooves could also be explained by the impact of a large meteorite (there is a very large crater on Phobos) but calculations by scientists at the Jet Propulsion Laboratory show that the tidal stresses theory is more likely.

X-Ray Bursters

The theory that bursts of X-Rays from certain binaries is caused by cyclotron emission has been given support by observations of Her X-1 with the British satellite Ariel 5. A team of astronomers from Imperial College, London have observed a strong emission line in the X-ray spectrum of Her X-1 and calculated the size of its magnetic field assuming that the radiation is due to cyclotron emission (that is the emission of radiation by charged particles being accelerated in a magnetic field). The result agrees with the value calculated by other means, and the results are supported by observations by a scientist of the Max Planck Institute in Munich.

(Both reports due to Nature-Times News Service.)

Giant Meteorite → A giant meteorite split into two pieces before it hit Madagascar last month, according to the Sunday Times. One of the fragments made a crater more than  $\frac{1}{8}$  mile across

TUNGUSKA EXPLAINED - At 07h17m on June 30 1908 an explosion with a radiant energy of around  $3 \times 10^{16}$  joules ( $7 \times 10^{17}$  calories) devastated a 1000 square-mile region of forest in Tunguska, Siberia. It was seen from up to 300 miles away, and whole herds of animals were killed by the shock. Moreover, when a Russian expedition went to the centre of the explosion site in 1961 they found evidence that some kind of nuclear reaction had taken place.

Various theories have been put forward to explain the occurrence but none have so far fitted all the facts. The explosion could not, have been due to a meteorite impact since no meteoritic material was ever found at the site. One explanation offered was that a piece of antimatter came into collision with the Earth's atmosphere and (as is wont to happen in these sort of situations) mutual annihilation of matter and antimatter took place. An even farther-fetched theory is that the explosion "was caused by an unknown spaceship's energy-pile bursting" (von Deniken - a non-scientist, by the way).

It now seems that the blast was due to a collision with a small comet, as has been hypothesised previously. But this time the claim is backed up by calculations made by Dr. John Brown of Glasgow University and Dr. David Hughes of Sheffield University. The fact that the comet was not observed before the event is explained by its small size - about 40m in diameter - which means that it would only have been visible (in the dawn sky) for an hour before impact. The radioactivity was caused in the same way as nuclear effects are caused in solar flares - in which one would also not expect to find radioactivity because of the low temperature of the particles.

These calculations represent almost conclusive proof that this 70-year-old mystery was caused by an ordinary comet after all.

Last month's two meteor counts (Perseids and the Kappa Cygnids) were a complete wash out by bad weather. This makes the total of eight consecutive watches abandoned because of rain and cloud.

There is not a lot of meteoric activity this month, the next strong shower being the Orionids which is in late October, but below I have made notes of the minor showers this month:-

1. Sept. 8th - Delta Piscids, Radiant R.A. 8hrs, Dec. +12° Normal limits Sept 5 - 11th
2. Sept. 30th - Xi Piscids, Radiant R.A. 23hrs, Dec. +2°, Normal limits Sept 27th to October 3rd. Sun's geocentric longitude (ecliptic) is 187°.
3. Sept. 30th - Rho Cygnids, Normal limits Sept 27th to Oct. 2nd. Radiant 325hrs, Dec. +45°, Sun's geocentric also 187°

These are the only showers this month but we will however be holding one meteor watch in September, this being on Saturday September 3rd, 1977. Meet at 9p.m. OUTSIDE the Golf Hotel, Foxhall Road, Ipswich. This watch will be, weather permitting, to observe sporadic meteors.

Finally a fireball seen by Mr. M. Barraskill has been submitted to me. Here are the following details in case anyone else saw it and if you did please contact me as soon as possible.

The fireball was seen near Crane, Ltd, Ipswich on the morning of 11th August at 01.37hours B.S.T. (i.e. 0037hrs U.T.). It was a Perseid fireball passing from Cepheus into Draco with a magnitude of -3, then suffered a terminal flare of possibly -11. The train was visible after the fireball ended for about 45 seconds. This was an extremely bright fireball.

WHEN the weather was favourable, the Perseids seem to have given quite spectacular displays this year. I saw half a dozen the other Thursday night in a quarter of an hour so, though only of about magnitude +3. If anyone has noted any Perseid this year, I shall be pleased to receive any report forms and I will forward them on to the B.A.A. meteor section director.

DO NOT FORGET The Sporadic Meteor Count on SATURDAY SEPTEMBER 3rd at 9 P.M.

Meet outside the Golf Hotel, Foxhall Road, Ipswich

irrespective of weather conditions

If all the members of the O.A.S.I. come to this we all might have enough Puff to blow the clouds away if there are any about that night!

#### VOYAGER REPORT - by R.M. Cheesman

The 20th August saw the launch from Cape Canaveral of the first Voyager to Jupiter, Saturn, Uranus, possibly Neptune before it leaves our Solar System. The second Voyager is to be launched on about 3rd September which will also go to the planets but will arrive there earlier as it will be following a different flight-path.

The Voyagers carry eleven different scientific programmes and also carry a gramophone record made out of copper which has recorded on it a baby crying, a speech by President Carter and over sixty different languages recorded at the United Nations plus many other things. The voyagers do not, however, carry a gramophone on which to play the record because of the weight problem and as one scientist said that if the voyagers are intercepted in space then the 'people' if they had enough intelligence to intercept the voyager it should not take them long to work out how to play the record and quickly 'knock up' a gramophone.

The Voyagers are bigger and heavier (by about 2,000lbs) than previous missions and amongst the various experiments to be carried out is to investigate the meteorology of Jupiter, the Red Spot, to investigate why Jupiter, according to scientists and astronomers, is getting smaller; also the flight path is computed so that the craft will fly past the Moons of Jupiter and of Saturn and fly through the rings of Saturn.

The two unmanned Voyagers carry very advanced T.V. cameras but we will have to wait until 5th March, 1979 before the first Voyager reaches Jupiter, using the gravitational pull of Jupiter the Voyagers will swing onto Saturn arriving on the 12th November 1980 and Voyager Two on 27th August 1981. Leaving the Saturnian system the Voyagers will arrive near Uranus in 1986 and Neptune during 1990, before leaving for deep space. During their thirteen year flight they will have covered over 30 Astronomical Units in distance, and both craft have been built to last at least 40,000 years

information from B.B.C. News at 9 and I.T.N. News At Ten

A full report of these two Voyagers can be found in 'New Scientist' 18th August, 1977 Vol 75 No 1065 Pages 400 to 403 - phot copy in the Observatory

Matters Arising:

Last month I wrote about the N.A.S.A. Space Telescope. Roy Cheesman raised a query about its cancellation. However I can say for sure that it will go ahead. According to "Aviation Week & Space Technology" (July 25th, 1977 Vol 107, Number 4, pages 20 to 22) both the Jupiter Orbiter Probe and the space Telescope have a green light. The U.S. Government have given N.A.S.A. the full \$36 million requested for Space Telescope. Jupiter Orbiter (to be launched 1981 or 1982) is getting \$17.7 million, \$3 million less than N.A.S.A. wanted.

As for the Halley's Comet and Mars probes, N.A.S.A. has not yet put in a request for funds.

ANGLES OR LENGTHS?

Rereading my S.T. article of last month I have noted the following. Readers may have been confused between my abbreviations for arcseconds and inches measurements. I will now clarify:- numbers of 5" or under are 'arcseconds' (sixty arcseconds make one arcminute, sixty arcminutes make one degree). Larger numbers (e.g. 200") refer to telescope apertures in inches. In future I will try to use both inches and metric (e.g. 200 inches equals 5 metres)

Incidentally, let me elaborate on the parallax method of measuring stellar distances. The Earth orbits the Sun at a distance of 93 million miles. This is used as a baseline for performing triangulation; in one year the nearby stars appear to describe little circles in the sky as a result of parallax. The diameter of each little circle is the PARALLAX of each star. A hypothetical star at a distance of one 'PARSEC' from us would have a parallax of one arcsecond. Parallax measurements must be made six months apart to get a full 186 million mile baseline. One parsec is about 3.259 light years. One light year is the distance light travels in one year. Light travels at 186,000 miles per second, about 300,000 kilometres per second. All this is explained more fully in 'Norton's Star Atlas' of which all members should have a copy, but if you have not got one a copy is in the Observatory.

CORRECTION

My final sentence of my article "Trips to Mars and Halley's Comet in last month's Journal should contain the word 'yet' and not 'jet'. Alas shortage of helpers means that in my effort to produce a regular news service and producing a Journal every month full of up to date information the Journal occasionally contains misprints.

COMING SOON

The winter season of Society lectures is coming up. To run in conjunction I would like to write a series of articles: A preview of each lecture will contain a short biography of the speaker, some background material about the topic of his talk, and a list of suggested reading. After each lecture I intend to produce a summary of the talk plus my comments.

LONDON SPACE COLONIZATION LECTURE

One of my non-astronomical interests is space Colonization, and I imagine there are other readers also interested. The originator of this idea is N.A.S.A.'s Dr. Gerald K.C. O'Neill, a Princetown physicist. I was delighted to learn that Dr. O'Neill is giving a lecture to the British Interplanetary Society, entitled 'Electromagnetic Rocketry and the Humanization of Space'. It will be on Thursday 29th September at 8.30 in the Botany Lecture Theatre, University College, Gower Street, London W.1. Wild horses will not stop me attending!

Some of you may have a copy of O'Neill's book "The High Frontier" published by Jonathan Cape at £5.95. If you have please contact me and I will get it autographed for you. The book was reviewed by Ian Ridpath in New Scientist, 9th June 1977 page 393. Incidentally Ian has recently reviewed "Colonies in Space" by T.A. Heppenheimer (published by Van Nostrand Reinhold at £9.75) see New Scientist July 28th.

A biography of O'Neill, written by Ian Ridpath appeared in New Scientist, 23rd June 1977 page 718, with a summary of his ideas on Space Colonization.

If you do not have a copy of "The High Frontier" dash into town and order it now and send it to me at 'Orchard Lea' Bourne Hill, Wherstead, Ipswich and it may arrive in time for me to have it autographed for you.

See you all at the OPEN DAY on Saturday 24th September,

Charles Radley.

## ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

## ORWELL PARK OBSERVATORY.

Over the last year many new members have joined our Society so I thought that again I would publish a list of rules for using the Observatory.

CLUB NIGHTS AT THE OBSERVATORY

A list of club nights held at the Observatory is published in the monthly Journal, in Saturday's edition of the Ipswich 'Evening Star' under 'Youth & Adult Activities' and also in the Ipswich 'Evening Star' during the week under 'What's on in Ipswich'.

NOISE

We are guests at Orwell Park School and our good relationships with the Headmaster staff and pupils has been built up over many years. You are therefore requested to **KEEP AS QUIET AS POSSIBLE** so that we do not disturb the staff and pupils of the school. Remember that all people are not interested in astronomy and do not keep up to the weird hours of the night!

ENTRANCE TO OBSERVATORY

We are only authorised to use the entrance to the observatory by the carpenter's shop to the east of the school and we must keep to the observatory and tower. If you have any visitors who might arrive late make arrangements to meet them outside the main gates of the school at a predetermined time so that they do not wander into the school.

TOILETS

We have been given permission to use the boys downstairs lavatory by the squash court.

CAR PARK.

We have been asked by Mr. Belle, Headmaster of Orwell Park School, to keep off the tarmac car park next to the carpenter's shop as this area is now used as a roller skating ring. Park your car on the grass or on the concrete area next to the carpenter's shop.

TELEPHONE

There is a coin box telephone in the school which should only be used for time checks and emergency use only. The evening's director will authorise you to use it and show you where it is. We do not accept telephone calls through this 'phone'!

DOME SHUTTER

Only members authorised by the Society's Committee may open or close the Observatory shutter.

SECURITY

If you see any person about the school who you do not recognise or any person who arouses suspicion challenge them and if necessary report the matter to the evening's director or direct to Mr. Belle or one of his staff immediately.

LIBRARY

We are now establishing a fairly good library of books, cuttings from papers and other societies journals. Some of these papers and books are for reference only and should not be taken away from the Observatory. These books and papers are clearly marked 'For Reference Only, NOT TO BE TAKEN AWAY'. All library books which can be borrowed should be signed for when taken out and signed back when they are returned.

DIRECTOR'S RESPONSIBILITIES

It is the responsibility of the evening's directors for:-

1. Keeping everyone as quiet as possible so that the people of the school are not disturbed.
2. Opening and closing the dome shutter.
3. General safety of members and visitors to the Observatory and seeing that everybody leaves the premises.
4. At the end of the evening ensuring that all lights are out, doors are locked and that there is no risk of fire through smouldering cigarette ends.
5. Ensuring that there is no smoking in the Observatory.

Any problems at the Observatory, i.e. shutter sticking should be noted in the log book. Anything serious should be reported immediately to:

- or
1. Mr. R.M. Cheesman, [redacted], Ipswich
  2. Mr. D. Bearcroft, [redacted], Ipswich, 'phone [redacted]
  3. Mr. D. Brown, [redacted], Ipswich, 'phone [redacted]

*R.M. Cheesman*  
Chairman, Orwell Astronomical Society  
(Ipswich)

Nigerian geologist Muo Chuku-Ike, now in his final throes of preparing his PhD thesis at London's Imperial College of Science and Technology has come up with some remarkable findings indicating that the bulge of North West Africa, from Algeria through to Morocco and down to Nigeria, was caused when the Earth was young by a gigantic impact with a meteorite.

The event may have occurred well over 1000 million years ago when the Earth was young when Africa and America were still joined together in a huge land mass. It has long puzzled geologists why the continents split away as they did and why the huge North West African coastline bulges in a semicircle into the Atlantic for it would have made more sense had it split along a linked series of straight line faults.

Mr. Chukwu-Ike and his co-workers at Imperial College now believe that the cause was a meteorite over 100 miles across which hit the Earth with such ferocity that the Earth was lucky to survive for such a meteorite to arrive today the devastation would be dreadful.

information from July edition of 'Townswoman'

full report on the Notice Board in the Observatory.

SOCIETY'S NEWS by R.M. Cheesman.

Before we go much further just a BIG REMINDER that the OPEN DAY is on SATURDAY 24th SEPTEMBER, 1977 from 2p.m. and that we need your help to make the day successful.

MARRIAGE.

We have the pleasure of reporting that Mr. N. Gage, [REDACTED], Felixstowe, director of our General Observations Section, was married to Miss Lynn Aldous of [REDACTED], Felixstowe on Saturday 27th August, 1977.

We all wish them the very best of happiness.

DRAW TICKETS.

All the Draw Tickets should now be out, if you have not received any, or would like further supplies please contact Mrs. P. Long, [REDACTED], Ipswich or Mr. R.M. Cheesman, [REDACTED], Ipswich A.S.A.P.

All counterfoils, unsold tickets and money should be returned either to Mrs. Long or Mr. Cheesman by not later than 17th September.

LONDON VISIT.

We still have some seats left on Saturday 1st October for our London visit to the Science Museum and other places of interest in London. If you would like to come, even if it is only for the ride, please contact Mr. R.M. Cheesman, [REDACTED], Ipswich by Saturday 10th September. Cost of 'bus will be approx £2.50 per person.

NEWS ITEMS

One or two members have taken notice of the little note I put in the last two months Journal regarding news of astronomical interest in newspapers and books. If you have any press cuttings please send them to the editor, or if later by the 20th of the month send direct to Mr. R.M. Cheesman. If you would like them back please say so when you send them.

OPEN COMMITTEE MEETING.

We are again holding an Open Committee Meeting at the Observatory on FRIDAY 2nd SEPTEMBER, 1977 at 8p.m. to which you are all invited. We hope to finalize the Open Day arrangements at this meeting.

OPEN DAY

If you already did not know! the Open Day this year is on SATURDAY 24th September starting at 2p.m. We still have a lot of work to do in preparing the Observatory so if you can help please come along on a Wednesday evening or on a Thursday when Mr. Bearcroft is scheduled to be at the Observatory. Not only do we want you help on the day but in getting the place ready so please make the effort to help! Last year we had too few members doing too much and things got a bit out of hand.

If you have a telescope, any astronomical equipment, books, pictures, in fact anything of astronomical interest and would like to put them on display at the Open Day please bring them along or contact Mr. R.M. Cheesman who will arrange to collect them. They will be well looked after especially if you come along with them!

programme for September, 1977.

At Orwell Park Observatory, Nacton.

WEDNESDAYS from 7p.m. Solar, Lunar & Planetary Section  
 Director Mr. R.M. Cheesman, [REDACTED], Ipswich.

7th September  
 14th "  
 21st "  
 28th "

THURSDAYS Double Stars Section from 8p.m.  
 Director Mr. D. Bearcroft, [REDACTED], Ipswich, Tel. Ipswich [REDACTED]

15th September, 1977  
 29th "

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

2nd September  
 16th "  
 30th "

FRIDAY 2nd September from 8p.m. OPEN COMMITTEE MEETING  
 Open Committee Meeting to which all members are invited to finalize  
 arrangements for the OPEN DAY

FRIDAY 23rd September from 8p.m.  
 Special meeting to get Observatory ready for the OPEN DAY  
 arranged by Mr. R.M. Cheesman, [REDACTED], Ipswich  
 AS MANY MEMBERS AS POSSIBLE PLEASE TO HELP.

\* SATURDAY 24th SEPTEMBER, 1977 OPEN DAY from 2p.m.  
 From 10a.m. getting Observatory ready for the afternoon

2p.m. Observatory OPEN DAY officially starts

2.30p.m. History of Orwell Park and the telescope, Mr. R.M. Cheesman  
 3.15p.m. Illustrated talk on THE GALAXY by Mr. J. Deans  
 3.40p.m. " " THE SOLAR SYSTEM by Mr. R.M. Cheesman  
 4.00p.m. " " RADIO ASTRONOMY By Mr. D. Payne  
 4.20p.m. " " U.F.O.s by Mr. J. Hood

6.00p.m. History of Orwell Park and the telescope by Mr. R.M. Cheesman  
 6.30p.m. Illustrated talk on Optical Telescopes  
 6.50p.m. " " Mars by Mr. D. Bearcroft  
 7.15p.m. " " Meteors by Mr. D. Barnard

7.35p.m. Grand Draw

8.45p.m. in the grounds of Orwell Park, 'The night sky' by Mr. D. Barnard  
 and other members of the Society.

Refreshments available from approx 2.30p.m. until 7p.m.

ORWELL PARK TELESCOPE and another telescope engaged in Solar Work during the  
 daylight and observing the night sky when it gets dark.

Various members equipment on display throughout the afternoon and evening.

PLEASE NOTE that the times above are approx and the Telescopes are  
 used provided it is not raining!

POSTERS advertising the OPEN DAY are at the back of this month's Journal.  
 Please put them in a prominent position to advertise the Open Day. Further  
 supplies can be obtained for putting in factories, offices, libraries, etc. from  
 Mr. R.M. Cheesman, [REDACTED], Ipswich.

MEETINGS OUTSIDE THE OBSERVATORY:

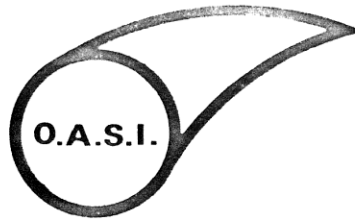
METEOR SECTION Director Mr. D. Barnard, [REDACTED], Ipswich, Tel. [REDACTED]

SPORADIC METEOR COUNT on SATURDAY 3rd SEPTEMBER from 9p.m.

Meet outside the Golf Hotel, Foxhall Road, Ipswich at 9p.m.

LONDON VISIT on Saturday 1st October to Science Museum etc. Names to R.M. Cheesman

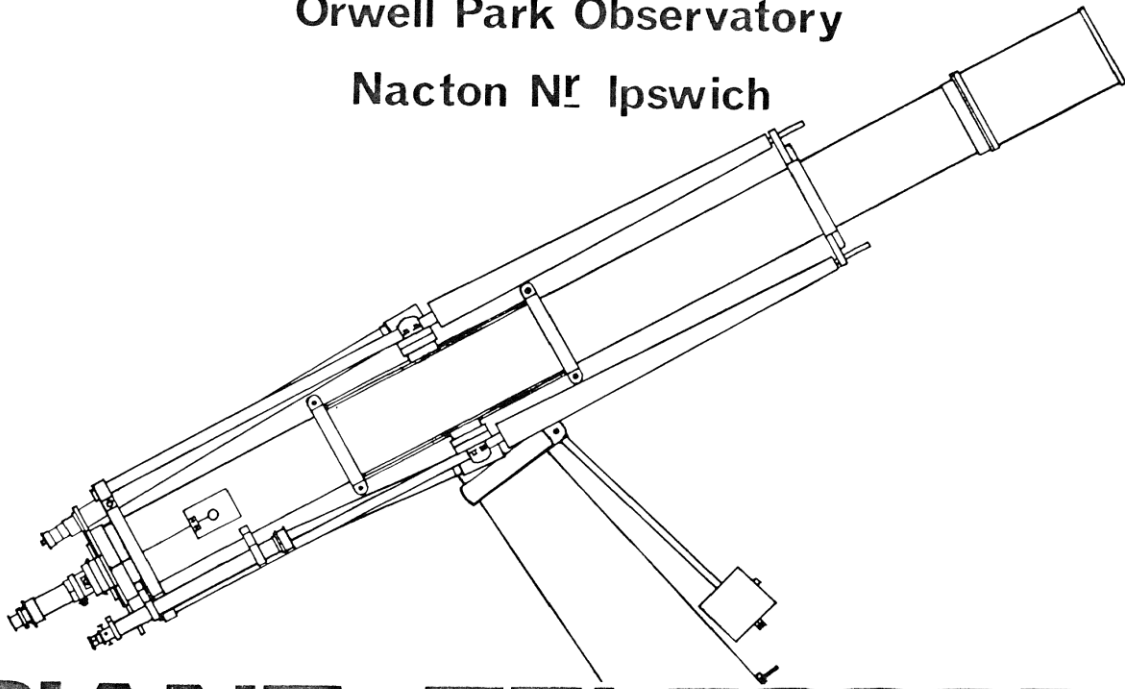




**Orwell Astronomical Society (Ipswich)**

**Orwell Park Observatory**

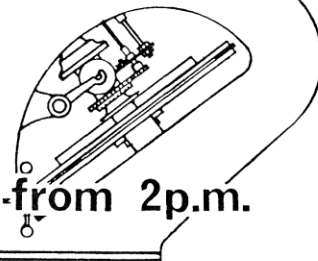
**Nacton Nr Ipswich**



# **GIANT TELESCOPE OPEN DAY**

On

**Saturday 24th September 1977 from 2p.m.**



**Illustrated talks during the  
afternoon and evening**

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**REFRESHMENTS**

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**Open during the evening for viewing the  
heavens through the 10" O.G. telescope**

(Weather Permitting)

**Admission Adults 15p  
Children 5p**

Secretary: Mr. M. Stow,  
13 Ladywood Road,  
Ipswich.