

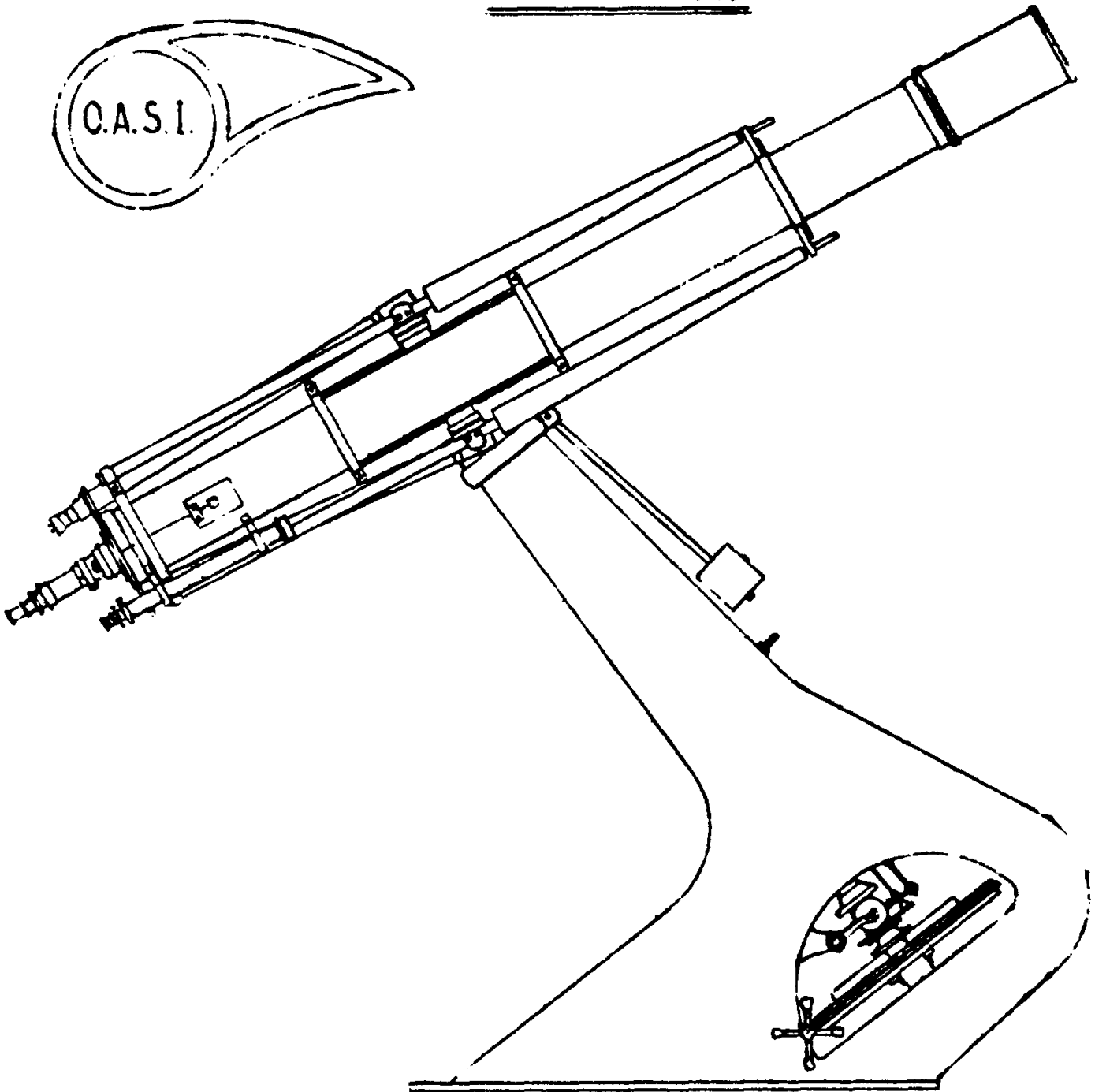
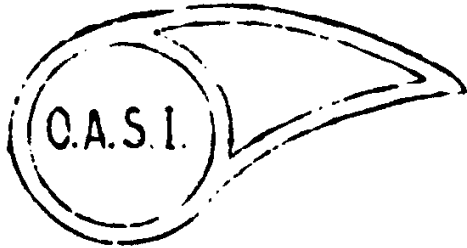
THE JOURNAL OF THE  ASTRONOMICAL SOCIETY (IPSWICH)

Editor: Mr. Paul Bart, , Ipswich IP1 6PP 'Phone Ipswich 

Producer: Situation Vacant

Your submissions of items for the Journal will be welcome.

SEPTEMBER 1979.



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

ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

SEPTEMBER, 1979

As you will notice as you read through this month's Journal that it has been typed with the normal typewriter as Mr. Roy Adams has resigned as our Society's Journal Producer and our emergency service has yet again come into operation.

On behalf of the Society I would like to thank Roy for his excellent production of our Monthly Journal over the last eighteen months or so. He transformed the Journal from a load of sheets of paper into a 'book-like' Journal which the Society has been proud of and the envy of all other amateur societies. The Journals have been full of up to the minute astronomical news and we hope that we can continue to carry on the good work that Roy started.

The production of our Journal relies heavily upon the contributions to it by our members. A few members contribute on a regular basis and it would be nice to see other members getting their name in print.

If you would like to send items for the Journal please send them direct to Mr. R.M. Cheesman, [REDACTED], [REDACTED], WEST HANNINGFIELD, Chelmsford, Essex, CM2 8LQ. The deadline for the October Journal is the 17th September. If possible the articles should be typed on paper this size so that they can go straight into the printing machine. Handwritten articles should be written in a fairly clear hand with 'funny names' in CAPITALS so that the person typing it up does not have to refer to other books to get the spelling correct (the emergency producer's typewriter does not spell very good at the best of times).

Also it would be a great help if as many members as possible would send a load of stamps to Roy Cheesman for posting the Journal as the Journal will, until further notice, be produced at West Hanningfield.

Your help in these matters will help us considerable, not only while the emergency system is in operation, but when our new Journal Producer takes over.

VACANCY: JOURNAL PRODUCER(S)

APPLY: A.S.A.P. to either R.M.Cheesman or M. Barriskill.

The Night Sky as seen from Orwell Park during September.

Cepheus and Lacerta occupy the zenith during late evening this month, bordered by the unmistakable Cassiopeia and Cygnus to the east and west of it respectively. The less obvious constellation of Aquarius is on the meridian at midnight, with another inconspicuous constellation, Capricornus, directly south-west of it. Pisces is well into the sky by midnight in the south-east, below the square of Pegasus, while to the north-east Perseus and Auriga are becoming prominent after mid-night. Over to the west Hercules can still be found directly below Vega, with Aquila to the east of it.

THE SUN

Sunrise is at 05h10m at the beginning of the month changing to 06h10m at month-end. Sunset changes from 18h50m to 17h40m. The Sun moves from Leo to Virgo during the month.

THE MOON

Full Moon 6d 10h 59m New Moon 21d 03h 47m
Last Quarter 13d 06h 15m First Quarter 29d 04h 20m

OCCULTATIONS

<u>Star</u>	<u>Phase</u>	<u>Mag.</u>	<u>Time</u>
**2825	D	6.4	2d 19h 32.0m
491	R	6.2	11d 03h 43.9m
626	R	6.4	12d 01h 51.2m
635	D	3.9	12d 03h 11.4m
635	R	3.9	12d 04h 15.1m
2763	D	6.7	29d 18h 43.7m
*2773	D	6.1	29d 20h 42.3m
2774	D	6.3	29d 20h 52.7m

D = Disappearance R = Reappearance


Stars listed according to Zodiacal Catalog (ZC) numbers
* denotes double star, ** denotes time is correct for latitude and longitude of Greenwich.

ECLIPSE

If anyone should be lucky enough to find themselves in the Western half of North America or in Australasia on Sept. 6th they will have the added bonus of a total eclipse of the Moon.

THE PLANETS

MERCURY will be in superior conjunction on the 13th, and will be an evening star thereafter, but too close to the sun for observation.

VENUS is also an evening star, also too close  the sun for observation.

EARTH - Autumn equinox is at 23d 15h 17m

MARS is rising an hour after midnight, at mag. 1.5 in Gemini.

JUPITER is a morning star, rising nearly 4 hours before the sun by month-end at mag. -1.3 in Leo.

SATURN is in conjunction on the 10th and will not be seen this month.

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

METEOR NOTES by David Barnard.

There are only three minor meteor showers this month:-

1. The Delta Piscids - max on 8th Sept, Normal limits Sept. 5th to 11th.
2. The Xi Piscids - Max Sept. 30th, normal limits September 27th to October 3rd.
3. The Rho Cygnids - Max also on Sept. 30th, normal limits September 27th to October 2nd.


All three showers are very weak with a maximum of only one meteor ever hour or so.

The PERSEID METEOR WATCH which was held on 11th was fairly well attended for once (six people turned up) but unfortunately the weather was unfavourable. Football was played by the edge of Levington creak with the 'pitch' illuminated by car headlights. Kick-off was at mid-night but the match ended abruptly after one member got a very muddy foot!

Because of no major meteor showers this month and the close proximity of the Open Day at the Observatory we will not be holding a meteor watch this month and look forward to the next major shower The Orionids in late October.

GRAZING OCCULTATION REPORT by A.J. Smith.

On the night of 15-16th August the annual grazing occultation expedition took place. Those attending were M. Cook, D. Barnard, W. Brieske R. Adams and myself. We arrived at the selected site which was the highest ground along the graze track, just north of Bildeston at 00.30am and found to our surprise that the sky was extremely clear, except for the customary small? patch of cloud covering the area of sky to be observed. Once a particularly bright landing light situated on the nearby Wattisham R.A.F. Base had been switched off, we observed the Andromeda Nebula and held an inpromptu meteor count. (Several Perseids were seen).

As usual  graze passed by unobservable, and only when we arrived back in Ipswich at about 0200 am were we able to see quite clearly the Moon and 2c 671. Perhaps we shall have better luck next year..... (I seem to have heard that some where before!!!!)

NEWS FROM OTHER JOURNALS by P. Burt

A NEW POWER SOURCE FOR SATELLITES? The next generation of communication satellites may have their power provided by a flywheel spinning at 40,000 r.p.m. During the next eighteen months the French company Aerospatiale will be developing the flywheel for Intelsat, and it is hoped that the device will replace conventional electric batteries in satellites of the mid 1980's. Present satellites have a life of about seven years, which is the life of the batteries which store energy for when the satellite is on the dark side of the Earth, and cannot use its solar cells for the power. The new flywheel should have a life of fifteen years, thus doubling the life of the satellites. The wheel will be about 40cm in diameter, and made of Kevlar, a strong but very light epoxy material. Its storage capacity will be similar to that of present day batteries (around 30 watt hour/Kg).

Solar cells will provide the power to set the wheel spinning, and this energy would then be tapped for the maximum 72 minutes the satellite is behind the Earth. For maximum friction losses the wheel will be suspended on magnetic bearings.

(New Scientist)

ARTICLES TO READ by F. Burt.

"Voyage to the Giant Planet" - New Scientist July 19th.
An account of the new discoveries made by Voyager 2, including an incredible centre-spread of colour photos of Big J and its moons.

"Taking the Lid off Cosmology" New Scientist 16th August.
Another one for the cosmology connoisseur. This one recaps the whole of present knowledge about the Universe, its origin and evolution.

ORWELL PARK CLOCK by Messrs. Barnard & Cook.

The Clock Tower in the grounds of Orwell Park was built in 1859 for Col. G. Tomline by Adam Thompson of London and those members who have visited the Observatory will notice the Clock Tower is situated between the Observatory and the school's swimming pool.

For many years this clock has not been working because of necessary repairs to the clock mechanism and the fact that hundreds of birds over the past years have made their homes here.

Restoration work has now been underway for over six-months and if you have been to the Observatory you will have noticed that the clock now works. We have been working on the clock every night for over six-months and even spent some week-ends sorting the clock out. At the time of writing the clock is accurate to within one second a day, the quarter-hour chime has now been repaired and the tuner which the clock uses to chime tunes should be working as soon as we can obtain some steel springs for the re-set mechanism. The clock has 16 bells all in very good condition considering that they are over 100 years old.

ANOTHER MAJOR DISCOVERY BY PIONEER VENUS by Simon Harvey

The Pioneer Venus Orbiter, still circling Venus taking measurements of all aspects of the planet and it's atmosphere, has discovered two giant impact craters. Both are several hundred miles in diameter and have a central peak. Unlike other craters of similar size, both are in a lowland region. The craters were discovered by the Radar Mapper positioned on the side of the Orbiter vehicles 'bus'.

A NEW DESIGN IN EARTH STATIONS by Simon Harvey

You can now buy your own Earth Station for about £5770 (\$13,000). The ES is completely self contained, can swivel through 360°, and changes in elevation from 0 to 70 degrees. It has a unique ability of expanding from 5 to 6 metres in diameter to obtain extra gain to the receiver, Just how the increase in diameter is achieved, I do not know, although I get the impression the reflector is blown up like a balloon. It has two antenna feed options - a Cassegrain and a Focal point system. The system will first be used in the cable T.V. industry whence it gets it's name - CATV.

HELPING INCREASE WORLD FOOD PRODUCTION by Simon Harvey

Everyone has heard of communication satellites in space, space telescopes, Spacelabs, and Solar power stations, but now plans are being drawn up to place a greenhouse up there. N.A.S.A.'s Ames Research Centre gave a contract to Lockheed to develop a payload to fly aboard the Shuttle in which 96 plant seedlings would be monitored as Oxygen and Gravity were varied. The aim is to decrease the amount of lignin in plants. Lignin has no food value, and by decreasing it, it might be possible to give us more to get our teeth into.

source - Lockheed MSC

THE COMMUNICATION SATELLITE INDUSTRY - SOME QUESTIONS

AN UNBANNED

by Simon Harvey.

Until a few years ago the only method of inter-continental communication were telephone cables and microwave links. Today we have satellites to handle the large increase in communications traffic.

On April 6th 1965, the first of these satellites, called 'Early Bird' was launched, enabling live Transatlantic T.V. to become a reality. The small satellite, although only capable of carrying 240 two-way phone calls (and the T.V. channel) increased transatlantic communications traffic by 66%. On June 18th that year, it kept communications flowing when an undersea cable snapped.

Today we have come from the primitive 'Early Bird' (or Intelsat I series) to the Intelsat IV - a series of satellites, which operate in the Pacific, Atlantic and the Indian ocean regions. Each satellite, launched by Atlas Centaur rockets, can handle 6,000 two-way 'phone calls and 20 simultaneous T.V. channels. A major characteristic of this series of satellites is their 'spot beams'. Instead of radiating the transmitted signal to the entire surface area below it, the signal is directed to a small area, allowing the same frequency to be used in a number of places. The satellites amplify the signal transmitted by the Earth station using what are called 'Travelling Wave Tubes' (I would like to hear from anyone who knows how these work). To save weight, engineers are now thinking of using Gallium Arsenide field effect transistors in their place.

In 1977 the Intelsat organisation gave a contract to the Ford Group to build a new generation of satellites, Intelsat V. These will each have a capacity of 12,000 'phone calls, and will be placed into orbit by both the STS and Ariane. The great increase in capacity over the Intelsat IV-A series is due mainly to polarizing the radio waves. Thus you can use the same frequency twice, since the electromagnetic vibrations are at right-angles to each other. The frequencies used will be 14/11 GHz. and 6/4 GHz. In order to prevent the satellites from wandering, it is stabilized in all three axis. If the sensors discover a $\frac{1}{2}$ degree variation in any direction, the altitude will be corrected by little hydrazine thrusters.

An important factor in international space co-operation stems from the fact that Intelsat, being an international organisation, has chosen a contractor that has sub-contracted integral parts to other foreign companies, including Aerospatiale and G.E.C.-Marconi.

Of course, there are many other communications satellite networks. The Marisat series is used by ships all over the world for communications purposes. The receiving and transmitting antennae on board ships are gimballed to compensate for pitch and roll of the ships. There have been many national networks such as Comstar, Westar, Anik, Syncom and Palapa to name but a few.

The years ahead will see the continuation of the boom in satellite communications. A major change will be a shift from analog to digital transmission, already begun in American Satellite Corporation. Satellite Business Systems, a new company formed by I.B.M. Comsat and Aetna Life and Casualty, will soon have its three satellites in orbit. Communication rates by satellite will soon have left the kilo-bit range and entered the mega-bit era. This will bring with it even lower communication costs, and more transmission of data from computer to computer.

One U.S. president said that communication is the only way to bring world peace. If this is so, the communications satellite industry will be doing an ever more important job in the years to come.

TROUBLE AHEAD FOR VOYAGER 2 ? by Simon Harvey

During the Jupiter Encounter of Voyager 2, two instruments seemed to have suffered radiation damage. The spacecrafts only remaining command receiver (the others have since failed), will not lock onto the frequency of Earth transmitted radio signals. As Voyager 2 is constantly changing speed due to gravitational effects, so radio messages received by it seem to change in frequency (due to the Doppler effect). It is this failure that is causing worry. Probably more important from our point of view, the imaging photo-polarimeter, the instrument that sends us pictures of the planets and satellites, seems to be having trouble with its filter wheel. Various colour filters seem to be missed every rotation of the filter carrying wheel, meaning observations at some wavelengths may be impossible. However, JPL say that colour photometry may still be possible.

information N.A.S.A. JPL 30th July, 1979.

OPEN DAY POSTER ENCLOSED.

Please place the poster advertising our Open Day in your window or local shop. Further copies can be obtained from David Barnard, Roy Cheesman or from the Observatory

GALVOPTICS, LTD., ARTERIAL ROAD, BASILDON, ESSEX.

by R.M. Cheesman.

On Tuesday afternoon, 24th July, 1979 I had the pleasure of a conducted tour of the above company who specialise in scientific optics and electronic instruments.

I was only interested in the optical side of their business and the manager kindly shew me around the part of the factory which makes optical instruments, which included optics for surgical instruments, photography, windows for aircraft and all optics for telescopes. At the factory they had dozens of machines which cut mirrors for telescopes from rough sheets of thick glass; these round blanks were then placed on a machine which could grind about a dozen mirrors at once, grinding them to a predetermined f-ratio before finally being polished and aluminised.

Also on other machines, eye-pieces were being made while the next machine was making glass filters not only for astronomical use but for use in optical instruments in hospitals, steel works and for photographic instruments.

Galvoptics is only a small company situated in the Old Police Garage in Basildon and employs about twenty people but their products are shipped to all parts of the world.

If any member is thinking of having their mirror aluminised, or if they are thinking of making a reflector, Galvoptics can supply all your requirements. An example of their aluminising cost is for an 225mm (8.9") mirror:- Removing of old coat, silica overcoated, double aluminising is £13.92 plus postage and packaging. A full price list of their products and services is in the Club Room at the Observatory, further copies can be obtained from me.

If you send your mirror away to another company for aluminising then it could end up at Galvoptics as they do aluminising for many of the big names in the astronomical world.

To save on postage and packaging, as Galvoptics is on my way to work, I could take it to them and collect it for you. This would (a) save you postage, etc. and they would do the necessary work for me within a few days so that your telescope would only be out of commission for approx one week.

South East Essex Astronomical Society visit to Observatory:

On Saturday 28th July the S.E.E.A.S. visited us at Orwell Park after spending the morning in Clacton-on-Sea on their yearly 'day out'. On the Friday a small gang of helpers cleaned up the observatory during the evening before quenching our thirst at the local 'Ship'. David Barnard and Martin Cook took the complete day off work to help to get the observatory ready. On the Saturday morning M. Barriskill and R. Cheesman invaded Tesco for food and drink to satisfy about sixty people. After a quick lunch at the Ship it was a case of 'all hands to the sandwiches' before our visitors arrived at 3.15p.m.

It was hoped to have 'tea on the lawn' but Orwell Park, like the rest of Gt. Britain, was invaded by greenfly so Mr. Angus, the School's Headmaster, allowed us to use the School's library.

At 3.15 our forty-five guests arrived, some by the coach while the others came by car from their holidays around the East Coast. After a guided tour of the Observatory and School grounds we had tea. We had catered for forty-five members of the S.E.E.A.S. plus about twenty of our members who we had anticipated would come along to help - where were you???. After first, second and in some cases even third helpings there still was some food left. With full tummies our guests again walked around the Observatory, school grounds and some even ventured to the Orwell banks, fighting off green-fly as they went!

After a very enjoyable afternoon they boarded their coach and cars to make their way home again.

Peter Laycock has written to me thanking the Orwell Astronomical Society for our hospitality and asked that we convey the S.E.E.A.S.'s thanks to all the members who helped in making their day such an enjoyable one.



Well.... apart from the notice of the meetings at Orwell Park Observatory for September and the very important notice about the Open Day on the back page I hope that our first Journal under the OASI emergency service meets with your approval. My thanks go out to our Editor Paul Burt and many members who have submitted a wealth of information for this Journal and I must apologise to many who have sent in items that I have not been able to include them (or parts of them) this month. Rest assured that we will try again next month but in the meantime keep sending them in.

Royston Cheesman.

MEETINGS AT OBSERVATORY FOR SEPTEMBER.

TUESDAYS from 7p.m. Planetary Section

Directors: Mr. J.Hood, [REDACTED]. Ipswich
Mr. J. Ranson, [REDACTED]. Ipswich.Tel [REDACTED]

Sept. 4th, 18th and October 2nd

TUESDAYS from 7p.m. Solar & Lunar Section

Directors Mr. J. Hood, [REDACTED]. Ipswich
Mr. M. Barritt, [REDACTED]. Ipswich.

September 11th and 25th

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]

September 5th, 12th, 19th, 26th

FRIDAYS from 8p.m. Variable Stars Section.

Directors. Mr. R.S.Manning, [REDACTED]. Ipswich Tel. [REDACTED]
Mr. M Siggers, [REDACTED], Ipswich.

September 14th

SATURDAYS from 8p.m. General Observations Section.

Directors: Mr. M. Barriskill, [REDACTED]. Ipswich
Mr. R. Adams, [REDACTED] Ipswich
Tel. [REDACTED]

September 1st, 8th, 15th and 22nd.

SATURDAYS

MEETINGS AT OBSERVATORY AT 8PM. TO ARRANGE 'OPEN DAY'

SEPTEMBER 8th and on the 22nd

Every member invited to come along to these two
meetings.

SATURDAY 29th SEPTEMBER 1979.

OPEN DAY AT OBSERVATORY.

FROM 2p.m.

This month, as no doubt you are all aware, we are holding our Open Day at the Observatory. This 'Open Day' to the general public has a three-fold effect:

- a. It enables people to come along to the Observatory and look through one of the largest privately owned refractors in the country.
- b. It encourages new members.
- c. It helps to finance the running of our Society.

Last year we did not have an Open Day and with the problems of the Journal in the early part of '79 and with the ever increasing costs of books, affiliations, insurance, etc. our finances took a down-turn. Every effort by all members is necessary to make this a successful day and YOUR (yes YOU) help is required if only for a couple of hours or so.

Much work is still to be done at the Observatory to get it ready so if you could help before or on the day please do so. Work parties are always at the Observatory on the nights advertised under the 'Meetings at the Observatory' for September.

THERE WILL BE SPECIAL MEETINGS to talk about the arrangements for the Open Day at the Observatory on Saturdays September 8th & 22nd at 8p.m. if you cannot make these dates but can help on or before The Day contact Roy Cheesman or M. Barriskill.

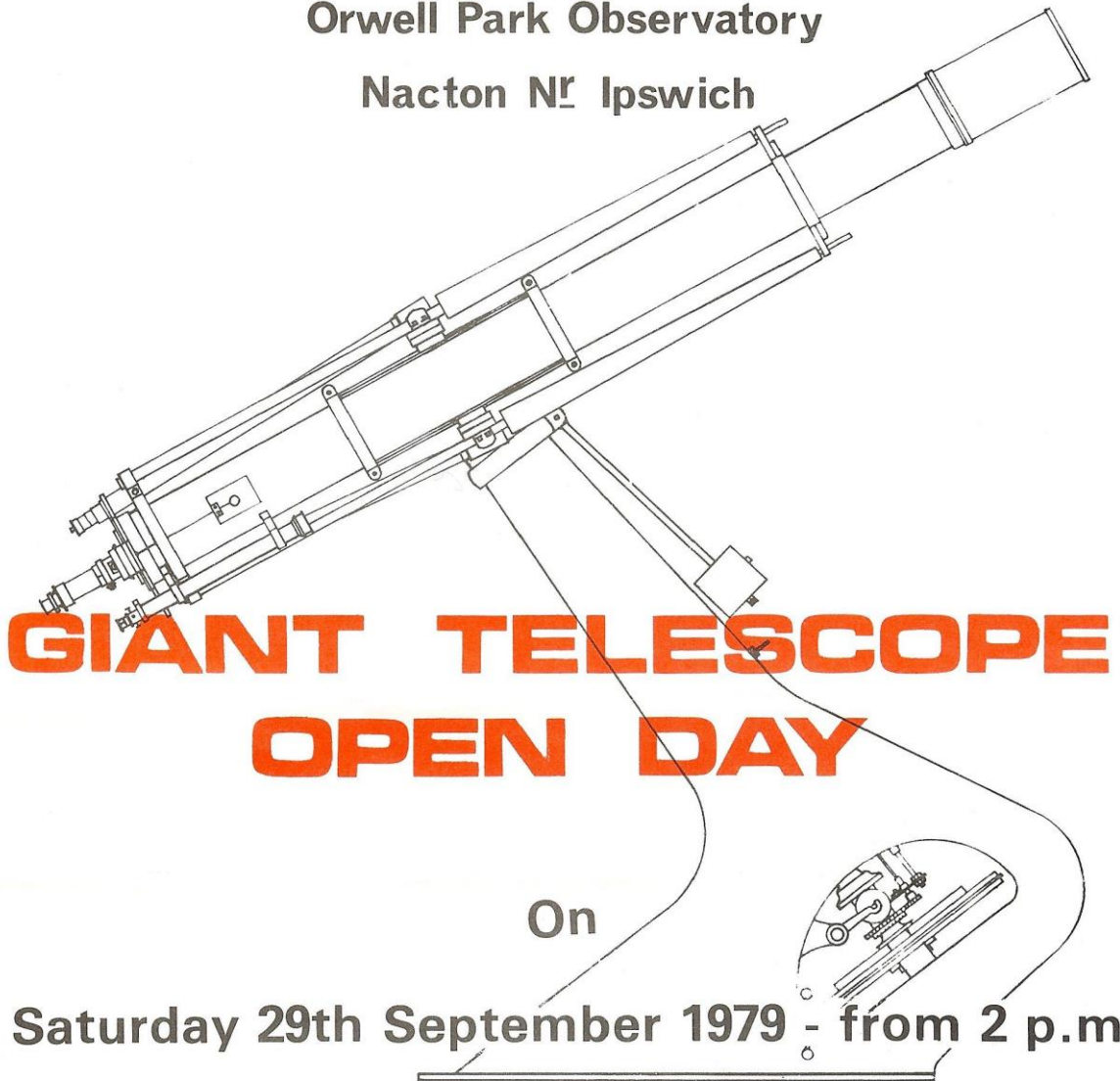
Note from David Barnard: Keep selling the Draw Tickets - he still has plenty more if you should want them.



Orwell Astronomical Society (Ipswich)

Orwell Park Observatory

Nacton Nr Ipswich



Saturday 29th September 1979 - from 2 p.m.

**EXHIBITIONS . DISPLAYS
SLIDE & FILM SHOWS
DURING AFTERNOON & EVENING**

REFRESHMENTS AVAILABLE

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

(Weather Permitting)

**Admission Adults 30p
Children 15p**

Secretary: Mr. M. Barriskill
4 Hadleigh Road
Ipswich