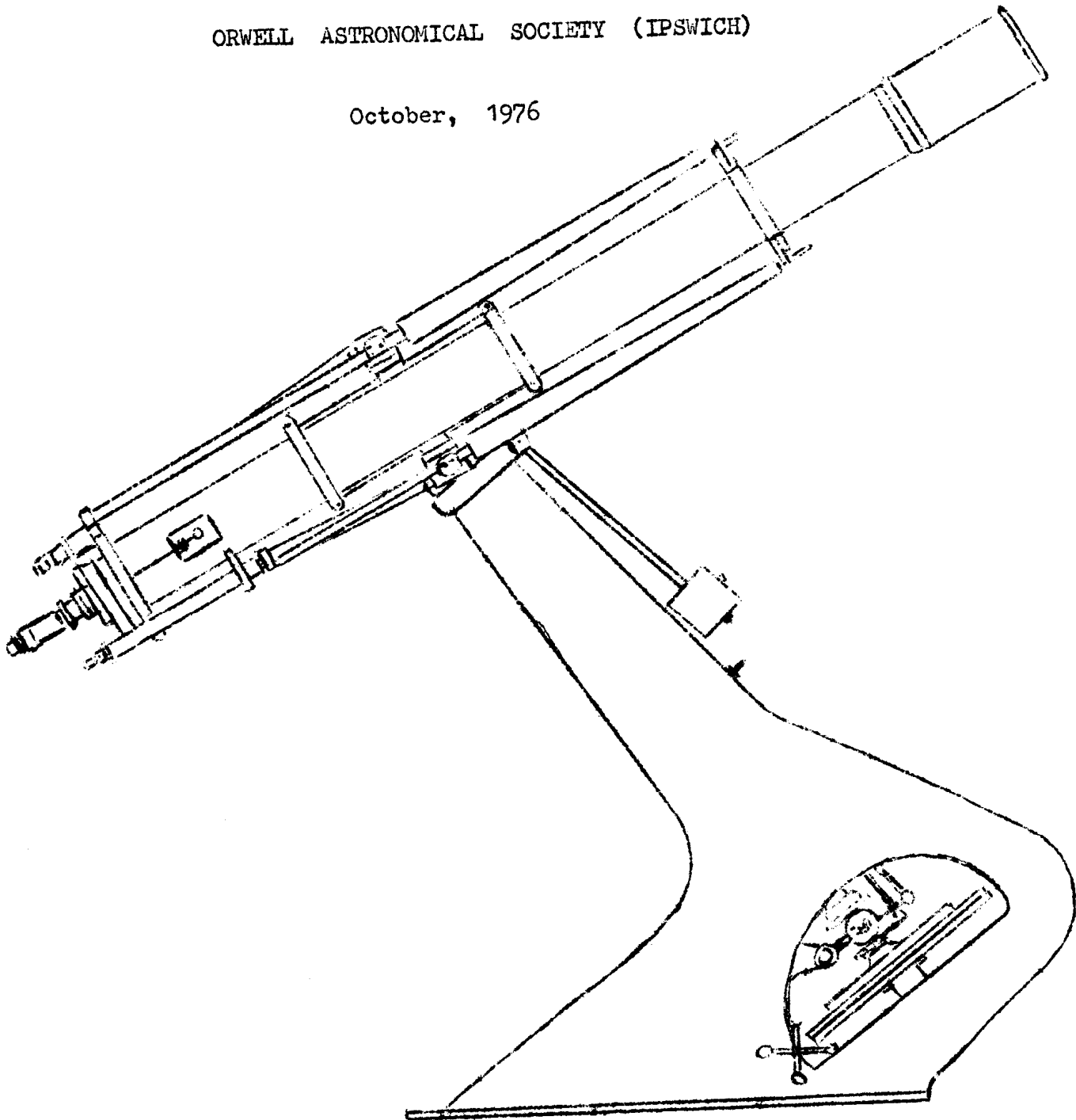


Journal of the

ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

October, 1976



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SOLAR SECTION.

Heliographic Co-ordinates as at 12.00 U.T.

	<u>P.</u>	<u>Bo</u>	<u>Lo</u>
October 4th	+26.2°	+6.5°	91.1°
" 9th	+26.3°	+6.3°	25.1°
" 14th	+26.3°	+5.9°	319.2°
" 19th	+26.0°	+5.5°	253.2°
" 24th	+25.6°	+5.1°	187.3°
" 29th	+25.0°	+4.6°	121.3°

Synodic Rotation no. 1646 commenced September 13.63d
" " no. 1647 commences October 10.90d

(for key to symbols P, Bo, and Lo see O.A.S.I. Journal June 1975, 'Observation of the Sun')

MERCURY is a morning star in Virgo reaching greatest Western elongation on October 7th (elongation 18°) when it will be zero magnitude.

VENUS is still an evening star and getting brighter mag 3.4 - 3.5

JUPITER now rises about an hour **after** sunset. It is still retrograding in Taurus and it's magnitude rises to -2.4 this month.

SATURN is a morning star in Cancer, magnitude +0.6 rising at 00hrs U.T. by the middle of the month.

THE MOON.

Lunar Phases for Lunation 665/666

Full Moon	October 8th	04hrs 55m U.T.
Last Quarter	" 16th	08hrs 59m U.T.
New Moon	" 23rd	05hrs 10m U.T.
First Quarter	" 29th	22hrs 05m U.T.

OCCULTATIONS

	<u>Star*</u>	<u>Mag.</u>	<u>Phase*</u>	<u>Time</u>
October 11th	577	6.0	R	22hrs 06.2m U.T.
" 13th	832	4.7	R	22hrs 07.3m U.T.
" 13th	836	5.5	R	22hrs 44.3m U.T.
" 18th	1359	5.1	R	01hrs 36.8m U.T.
" 27th	2687	6.5 - 7.3	D	18hrs 35.1m U.T.
" 29th	2969	3.2	R	17hrs 29.6m U.T.
" 31st	3259	7.4	D	23hrs 45.0m U.T.

*R = reappearance, D= disappearance

* Given is the star's number in the 'Zodiacal catalogue'

ECLIPSE There is a total eclipse of the Sun on the 23rd which is not visible from this country.

Another "Moon Illusion?" by Mark Howe.

(original article dated 14th August but was too late to insert in September's Journal)

A few days ago Ken Blowers of the 'East Anglian Daily Times' rang me up to ask if I had seen anything unusual in the Moon's appearance on Saturday August 7th. Apparently about ten or so people had seen the Moon 'tear-drop shaped' with the large end towards the horizon. Mr. Blowers asked if I could offer an explanation for the anomaly; apart from mumbling something about T.L.Ps (hardly a Likely explanation) I suggested it could be due to the refraction effect which makes the the Sun appear oval when close to the horizon, combined with the Moon's gibbous phase (not particularly convincing!) He also asked me to find out if any of the Society's members had seen it.

continued.....

So that night I rang a few people up and asked Charles Radley. He had not seen it but thought up the same explanation that I had. David Barnard, who was doing a Meteor Count at the time did not notice anything unusual in the Moon's appearance. Did any other member of the Society notice anything strange about the Moon on Saturday 7th August?

Mr. Blowers rang me up again and I told him what I had found out. He had checked with the London Weather Centre who offered the explanation of Cirrus clouds in the atmosphere causing a kind of 'mock moon'. They wondered if the Moon is bright enough to cause such an effect; I said I should think it is, but, I was not sure (can anybody help there?) Mr. Blowers said that they were going to run a centre page spread about it in the 'Evening Star' if anybody wants anymore information about it.

G.C.E. ASTRONOMY.

Postscript to my article on 'G.C.E. Astronomy'. A little while ago I got my 'O' level results; I passed with grade B, which just goes to show how easy it must be! I am sure there are many members who could pass the examination. However, I have decided that the best course is to enquire to the Cambridge Examination Syndicate, Syndicate Buildings, 17 Harvey Road, Cambridge, CB1 2EU, rather than the nearest college

PHENOMENA OF JUPITER'S SATELLITES by J. Deans

As Jupiter rises around 19hrs U.T. at the beginning of the month and is well placed for observation, I thought some members might like to have some predictions of the phenomena involving the Jovian satellites.

The four principle satellites of Jupiter are I, Io, II Europa, III Ganymede, IV Callisto.

An eclipse disappearance (EcD) occurs when one of the satellites moves into the shadow or umbra of Jupiter, EcR is an eclipse reappearance.

Oct.	1st	satellite	II	EcD	00h 15m U.T.
"	4th	"	III	EcD	20h 25m "
"	4th	"	III	EcR	22h 35m "
"	12th	"	III	EcD	00h 26m "
"	15th	"	I	EcD	22h 42m "
"	25th	"	II	EcD	21h 16m "
"	31st	"	I	EcD	21h 00m "

Occultation disappearance (OcD) is when a satellite passes behind Jupiter without actually being eclipsed, OcR is an occultation reappearance or the reappearance of the satellite from behind Jupiter.

Oct.	1st	satellite	I	OcR	22h 08m U.T.
"	5th	"	III	OcD	00h 46m "
"	8th	"	I	OcR	23h 56m "
"	11th	"	II	OcR	20h 22m "
"	17th	"	I	OcR	20h 08m "
"	18th	"	II	OcR	22h 39m "
"	24th	"	I	OcR	21h 53m "
"	26th	"	II	OcR	00h 55m "
"	31st	"	I	OcR	23h 37m "

Transit Ingress (TrI) is when a satellite starts to cross the face of Jupiter and Transit egress is when the satellite has completed it's transit and starts leaving the face of Jupiter.

Oct.	2nd	satellite	II	TrI	21h 16m U.T.
"	2nd	"	II	TrE	23h 45m "
"	7th	"	I	TrI	00h 29m "
"	8th	"	I	TrE	02h 36m "
"	9th	"	I	TrE	21h 03m "
"	9th	"	II	TrI	23h 38m "

continued.....

Oct.	10th	satellite	II	TrE	02h 07m	U.T.
"	16th	"	I	TrI	20h 42m	"
"	16th	"	I	TrE	22h 49m	"
"	22nd	"	III	TrI	21h 15m	"
"	22nd	"	III	TrE	23h 01m	"
"	23rd	"	I	TrI	22h 26m	"
"	24th	"	I	TrE	00h 34m	"

All these phenomenon should be visible through a small telescope of say 60mm aperture (weather permitting). It is worth starting your observation 5 - 10 minutes before the predicted times and remember to adjust for B.S.T. time.

This month we revert to G.M.T. or Universal time at 2a.m. Sunday 24th October which should simplify matters.

REPORT on the Caravan Club Rally at Orwell Park, 3, 4th and 5th September.

This event took place about two weeks before the Open Day so it was a dead line to meet for getting the Observatory ready for the Open Day. Because of the lack of helpers we only managed to get one coat of paint on the walls and sand the Observatory floor the rally. On the Friday night, after an excellent jug of ale in the Rally's bar, a small band of members opened the Observatory at 8p.m. There were seven of us to show visitors the telescope on an excellent night with clear skies. The total number of caravans attending the Rally was 111 and on the Friday evening over one-hundred and forty people signed the visitors book! We finally realized what time it was at 11.30p.m. and the observatory was still full of people. At about 11.45p.m. we closed up to return again on Saturday at 7p.m. Again on the Saturday we sampled the ale before opening the Observatory up again with five members to help. The sky again was clear and the mass arrived. At one time we had so many people in the Observatory that we had to close the door and tell the visitors to come back later!

The Saturday night a great number of members of the Rally who had visited us on the Friday again came to look at the skies together with Caravan Club Members who had arrived late on Friday and could not get into the Observatory. Again the visitors book was signed by over one-hundred and fifty visitors and our five Society members had a hectic time before closing the observatory at 11.55p.m.

On the Sunday morning we again returned to clear up and to finish getting the Observatory ready for the Open Day. We were, however, invited back to the Chairman's caravan for a quick 'tot' after I had to give a little talk to Caravan Club Members.

Apart from the lack of members to assist the Caravan Club's visit to the Observatory was a great success.

OPEN DAY 18th September, 1976 Report. R.M. Cheesman.

Even on the Open Day the Observatory was not really as ready as we had originally planned for. The walls still had to have their second coat of paint and a lot of little jobs still had to be done. We had, however, erected the N.C.C. Barrell reflector in its observatory in the school grounds. This is still only a temporary site. When we have a permanent site the observatory, which is very heavy and takes about six people to move it at the moment, will be fitted with wheels and runners so that it will be easy to manage.

A quick estimate of the number of visitors was in excess of one-hundred and fifty. Again we were very short of members helping but the day went quite well apart from a little delay in the first lecture programme. Some visitors got a bit upset that we had sold all the Draw Tickets (£115) but this was due to so many members selling tickets which I had passed out, to which I extend my thanks.

The Open Day, together with a single £18 donation rose our funds by just under £120. My thanks go to all members who did so much before and on the Day, and although there are too many to mention by name I think I should mention Mr. David Barnard and Mr. Martin Cook who spent most of their holiday from the Civic College, repairing and repainting the observatory.

Although the skies were clear on the Open Day and we managed to view the sky both with the telescope and with our 'Open Night Sky' on the school grounds, we were unable to open up the N.C.C. Barrell telescope because it, and it alone, was covered by a pocket of mist.

Another band of people who I would like to thank is the wives, girlfriends and the other people who cooked us some cakes to sell on our Refreshment Stall. The tables were full again and by the time I had finished my talks at 5p.m. they were all sold!, the profit from the sale of refreshments was just over £10.

THE MYSTERY IS SOLVED! by Charles Radley.

Remember that article I put in the O.A.S.I. Journal in September? I did not tell you what it was all about did I? Ah - hah!..... Well obviously it was entitled: 'THE SKY'

Surprising the number of people who I met did not guess it for themselves, although most people did.

WANTED: Have you any photographs? by Charles Radley.

The magazine of the Junior Astronomical Society "Hermes" is being published in large format (Sky and Telescope size) from now on.

They wish to feature O.A.S.I. and I require as many black and white prints (the bigger the better) as possible.

YOU CAN HELP in the following way:

1. GIVE OR SELL me all the black and white prints of O.A.S.I. meetings, expeditions, meteor watches, open days, etc. that you can spare;
2. LEND or HIRE out to me; all the slides and negatives you can spare (colour or black and white) so that I can have my own prints made up at my expense. I will return everything in mint condition, I can give you a deposit if you want.

If you can help me please contact me, a. by telephoning Ipswich [redacted], or if I am not in leave a message AND (since messages often go astray).... b. write me a letter at. [redacted], WHERSTAD, Ipswich, saying how I can contact you, collect them etc.

Or better still, post me or drop them in at my home the above items 1 and 2 saying where I must return them to, if you trust me. Your name will appear in print too! Thanks.

AT LAST THER'RE HERE! by Charles Radley.

A thousand thanks to Alan Smith for putting up notice boards in the club room. They are for everybody to pin suitable notices on, but be reasonable as space is limited. There is a lot of good stuff on the notice boards now, so read them thoroughly when you are up there.

Grazing occultation information is on the display boards for example, please read it if you intend coming on the expedition on Saturday, November 21st. Full details for observing grazes were in the May 1976 O.A.S.I. Journal. This series of articles will be continued. They were:-

- February 1976 - introduction and quote from a Pan Book.
- March 1976 - the Sun and the amateur
- May 1976 - Solar and Lunar Occultations.

COMING SOON:

- Lunar Astronomy: T.L.P.s and Allied Checks.
- Variable Stars
- Fireballs.

Keep your eyes upwards,

Cheers, Charlie Radley.

METEOR NOTES: by David Barnard.

The Spradic Meteor Count held on Saturday 25th September saw the end of seven clear meteor watches in succession. This night was very cloudy and mistly and the two members who did turn up were unable to see anything and the count was cancelled after one hour.

There are three Meteor Showers this month, two minor and one major.

1. ORIONIDS Multiple radiant, max of 30 an hour, on 21st October is the maximum. Normal limits October 16th to the 26th. The Radiant rises about midnight,.

THERE WILL BE a METEOR COUNT to observe this shower on FRIDAY 22nd October starting at 9.30p.m. There will be no Moonlight on this count.

2. TWO MINOR SHOWERS:

Xi Arieds, Max October 11th normal limits October 2nd to 16th

Epsilon Geminids, Max on 21st October, normal limits October 14th to 26th.

These two showers are very weak with a ZHR rating of only one meteor every one or two hours.

This month's Journal includes the last part of the papers on the Development of Astronomy by Roy Gooding.

This article has been serialized in our Journal over many months and has proved to be of great interest. Our thanks go to Roy Gooding for spending so much of his time in preparing this article and we hope that many of our members have benefitted from it.

If you would like any copies of the article which has been in earlier Journals please contact Mr. R.M. Cheesman, [redacted], Ipswich who has spare copies. Also Mr. Cheesman has the complete work bound up if you would like one.

The next article in our Journal will be 'The Geology of the Solar System' by Mr. R. Markham and covers four sides of paper. This will be published in two parts, the first part we hope to include in next month's Journal.

IF YOU have any articles which you would like us to put in our Journal please send them to our Editor, Mr. J. Deans, [redacted], Capel St. Mary, Ipswich.

WINTER LECTURES at the Friends Meeting House, Fonnereau Road, Ipswich.

This month on Friday 15th October we start our winter lecture programme, the first is by Dr. D.W. Dewhirst of the Institute of Astronomy, Cambridge. The subject of the talk should be of great interest to our members as the subject is 'The Century of the Great Refractors'. Please come along and support our lectures and please put the poster which is at the back of this month's Journal in a prominent position to advertise the lecture. Further copies of the poster can be obtained from Mr. R.M. Cheesman.

ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

Programme for
OCTOBER, 1976.

At the Observatory, Orwell Park, Nacton, Ipswich.

MONDAYS: from 7.30p.m. General Observations Section.

Directors: Mr. N. Gage, [redacted], Felixstowe,
Phone Felixstowe [redacted]
and Mr. S. Flory, [redacted], Ipswich,
Phone Ipswich [redacted].

October 4th
" 11th
" 18th
" 25th
November 1st.

WEDNESDAYS from 7p.m. Solar, Lunar & Planetary Section.

Director. Mr. R.M. Cheesman, [redacted], Ipswich.

October 6th
" 20th
" 27th

THURSDAYS: from 8p.m. Double Stars Section.

Director Mr. D. Bearcroft, [redacted], Ipswich, Phone [redacted]

October 7th
" 21st.

FRIDAYS: from 7.30p.m. Nebula and Faint Objects Section

Director Mr. M. Stow, [redacted], Ipswich
and Mr. R. Hazelwood, [redacted], Ipswich, Phone [redacted]

October 8th
" 22nd

VISITS TO OBSERVATORY arranged by Mr. R.M. Cheesman.
October 5th (Tuesday) from 7p.m. 9th Ipswich Cub Pack.

October 6th, Wednesday from 7p.m. 14th Ipswich Cub Pack

" 16th, Saturday from 7.30p.m. All Saints Church Youth Club, Kosgrave

FRIDAY 15th October at the Friends Meeting House, Dr. D. Dewhirst lecture on the Century of the Great Refractors.

Chronological list of important Astronomical Discoveries & Events

- 1942 Walter Baade arrived at a more accurate distance for the Andromeda galaxy. He discovered over three hundred Cepheid variables in the galaxy.
- 1947-60 Instruments are shot above the atmosphere in the U.S. for astronomical observations.
- 1952 Walter Baade worked out a new period luminosity Law for Cepheid variable stars. This had the effect of doubling the size of the known Universe. Baade proved that our own Galaxy was of only average size when compared to others thus dethroning the idea that it held a prominent place due to its size.
- 1957 First artificial satellite in orbit round the earth.
- 1959 First space probe to hit the moon is launched by Soviet scientists.
- 1961 First manned space flight around the earth by Soviet astronaut Yuri Gagarin.
- 1961-66 Radiotelescopes locate quasi-stellar sources ("quasars"), found to have large optical red shifts like the most distant galaxies.
- 1962-67 X-ray sources detected by rocket-borne equipment above the earth's atmosphere.
- 1964-65 First close-up photographs of the lunar surface obtained by U.S. space probes Ranger 7 and Ranger 8.
- 1965 Photographs of Mars, taken at about 11,000 miles distance by Mariner 4, show a cratered surface.
- 1966 First soft landing on the moon (by the Russian Luna 9)
- 1967 Physical analysis of moon's surface carried out by Surveyor 3.
- 1969 First optical discovery of a pulsating star (in the Crab Nebula)
Man lands on the Moon.
- 1971 Mariner 9 in Martian orbit.
- 1973 Pioneer 10's fly by of Jupiter
- 1974 Pioneer 11's fly by of Jupiter.
Mariner 10's fly by of Venus and Mercury.

CONCLUSION

Astronomy originated in the need to compile an accurate calendar, and time measurement. For many centuries it was not a pure science in as much as astrology was intertwined with it. Copernicus was one of the first to adopt a purely scientific approach to the subject. This was greatly enhanced by the works of Kepler and Newton. Astronomy and Astrology were separated once and for all.

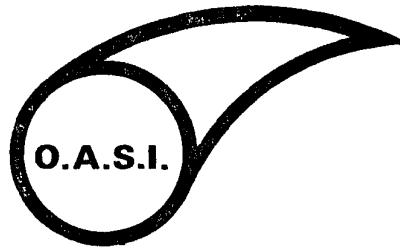
The development of the telescope opened up a vast potential for new discoveries. Subsequent inventions extended this enormously. The distances of stars were determined, as well as their chemical and physical properties. The distribution of stars was analysed giving us the shape of our Galaxy and our position within it. Radio Astronomy has provided us with conclusive evidence of its shape. After the work of Hubble and Baade, the existence of many millions of external galaxies of all shapes and sizes has become common knowledge.

Since the end of the second World War many new branches of Astronomy have come into existence. Radio Astronomy has provided a completely new outlook on conditions prevailing in space. Many new regions of electromagnetic radiation can now be detected, e.g. X-ray, Infra-red, Ultra-violet. These are providing vast quantities of additional information on objects.

In the last twelve years several new and as yet unexplained objects have been discovered. Namely quasars, pulsars and galaxies with extremely hot centres. These objects are radiating vast amounts of energy. The mechanism by which they do this is not known.

During the coming years the present ideas in astronomy could be radically changed when the true nature of quasars and pulsars are understood. The consequences could be as great as those of Copernicus' when he proposed his heliocentric model of the solar system.

Roy Gooding.



Orwell Astronomical Society (Ipswich)

presents
a lecture entitled

**THE CENTURY OF
THE GREAT
REFRACTORS**

by

Dr. D.W. DEWHIRST

of the Institute of Astronomy, Cambridge

at

The Friends Meeting House

Fonnereau Road, Ipswich

on

FRIDAY 15th. OCTOBER 1976 at 8p.m.

REFRESHMENTS

ADMISSION FREE

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