

ORWELL ASTRONOMICAL SOCIETY IPSWICH

Charity No 271313

JULY 1998



"AND FOR ONLY £200 EXTRA
THEY THREW IN THE WHEEL BARRON"
(TED STAMPSON (MEMBER) AFTER WAITING OVER 5 MONTHS FOR
DELIVERY PURCHASED A FAR MORE EXPENSIVE & HEAVIER MODEL)

Society News

1 Next Committee Meeting

The next committee meeting will be held on Saturday 4th July from 19:30 in the club room. As usual this is an open meeting and any one who is interested is invited to attend.

2 Events for 1998

Summer Excursion Newton's House	18 th July. Places are still available. Contact Pete Richards
BAA Exhibition Meeting	27 th June
Astro Camp	From 16 th August
Summer Barbecue	Provisionally 5 th September
Horncastle Weekend	From 11 th September
Lecture meeting: Nial Tanvir Intergalactic Stars	2 nd October Friends Meeting House 20:00 start
FAS Cambridge Convention	3 rd October
Thetford Astro Camp :- Ashdown AS	From 3 rd October
Open Weekend	16 th , 17 th 18 th October
Lecture Meeting: Martin Mobberley	3 rd December (Thursday) Friends Meeting House 20:00 start
Christmas Meal	9 th December

Night Sky

All times GMT

Sun

The sun will be rising approximately between 03:40 to 04:20
The sun will be setting approximately between 20:20 to 20:00

Moon

1 st Quarter	Full Moon	3 rd Quarter	New Moon	1 st Quarter
1 st	9 th	16 th	23 rd	31 st

Mercury

Mercury will be setting about 1½ hours after the sun at the beginning of the month. It is very low down in the twilight sky and will be very difficult to observe. Mercury is at greatest eastern elongation of 27°, on the 17th.

Venus

Venus remains in the morning sky, rising about 1½ hours before the sun in mid month. Magnitude will be at -3.8.

Mars	Mars will be rising about 2 hours before the sun at the end of the month. Magnitude 1.5
Jupiter	Jupiter will be rising at about 21:00 at the end of the month. Magnitude -2.5
Saturn	Saturn will be rising at about 23:00 by the end of the month. Magnitude 0.5
Uranus	Uranus will be rising at about sunset in mid month. Magnitude 5.7
Neptune	Neptune will be rising about half an hour before Uranus. Magnitude 7.8

Meteor Showers

Name	Limits	Max	ZHR
α Cygnids	July to August	July 21 st & August 21 st	5
Capricornids	July to August	July 8 th July 5 th July 26 th	5
δ Aquarids	July 15 th to August 20 th	July 29 th	10 / 20

Meteor source is the BAA Handbook

OCCULTATIONS DURING JULY 1998

Only one stellar occultation disappearance event occurs during the month under favourable circumstances. The table below contains the details; the data relates to Orwell Park Observatory, but will be similar at nearby locations.

D or R	Date & Time (UT)	Lunar Phase	Sun Alt (d)	Star Alt (d)	Min Dist (r)	Star	Mag
D	02 Jul 22:35	.61+	-13	14	.03N	74 Vir	4.8

James Appleton

Meteor Diary - July

Two minor showers for July: the Capricornids and the Alpha Cygnids.

Peak day	Shower name	Peak rate (ZHR)	Effect of Moon
8 th , 15 th & 26 th July 1998	Capricornids	6	
21 st July 1998	Alpha Cygnids	6	

THE RANSOMES CONNECTION

Part 2 of Ken Goward's historical exploration and analysis

Thus far we have explored the backgrounds to three components in the connection, namely; Ransomes of Ipswich, The Royal Greenwich Observatory and George Biddall Airy (7th Astronomer Royal). In this instalment I propose to discuss the Ransomes Instruments designed and installed by Airy at the RGO which will, one hopes, enlighten the reader and prepare one for conclusions that might be drawn, based on certain similarities and ideas, regarding our own instrument at Orwell Park and its 'creators' in the final part of this story.

A 'new broom' arrives at Greenwich

Upon his appointment to Astronomer Royal in 1835, Airy set about alterations to both the accommodation and instrumentation of the establishment. New living rooms were added to Flamsteed's original quarters, along with changes to the Octagon, Computing* and Quadrant rooms. From 1836 he embarked upon a complete re-equipping of the Observatory, starting with a new magnetic observatory to the South of the main buildings and aligned to the magnetic meridian. During 1844 at the South-western corner, work commenced on a three-storey Altazimuth Dome which was sited upon the original walls from Flamsteed's time. To be placed inside the dome was the first of the 'Ransomes' products;

The Airy Altazimuth Instrument (1847)

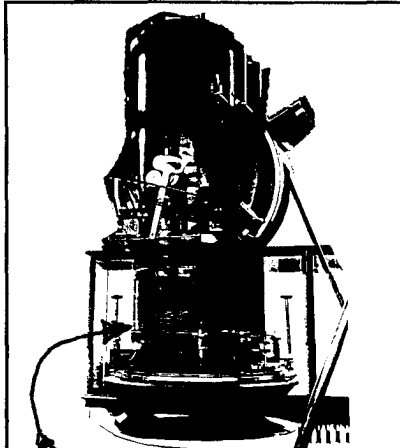
Having convinced the Board of Visitors to the RGO of the need of an instrument 'constructed on principles of extraordinary firmness' for more accurate measurement of the Moon's motion** and that certain parts of the moon's passage (at that time) were never measured (not least four days either side of a new moon due to Solar glare), in 1843 Airy placed an order with Ransomes & May of Ipswich for castings - along with an order for a 360 degree Azimuth circle & optics from Troughton & Simms, London. The instrument did not achieve 'first light' until 1847 May 16 due to an unexplained accident during manufacture at Ransomes*** and other minor delays in setting up. It was essentially a transit circle, capable of being turned to any azimuth and altitude, and was used to obtain accurate lunar positions which were compared daily with the published lunar tables of the time and remained in use until 1899 when a new Altazimuth was brought into use. That was not the end for the Airy instrument and between 1900 -1910 some work was done on lunar occultations. However, the dome was required by 1910 to house a new Photoheliograph and the instrument was "That is say Computing in the old sense of 'clerk & quill' pouring over countless figures (observational measurements). One might appreciate that even the omnipresent Bill Gates had yet to be borne...!

**Using the compelling argument that the Observatory had been founded expressly to study lunar motion for the aid of mariners.

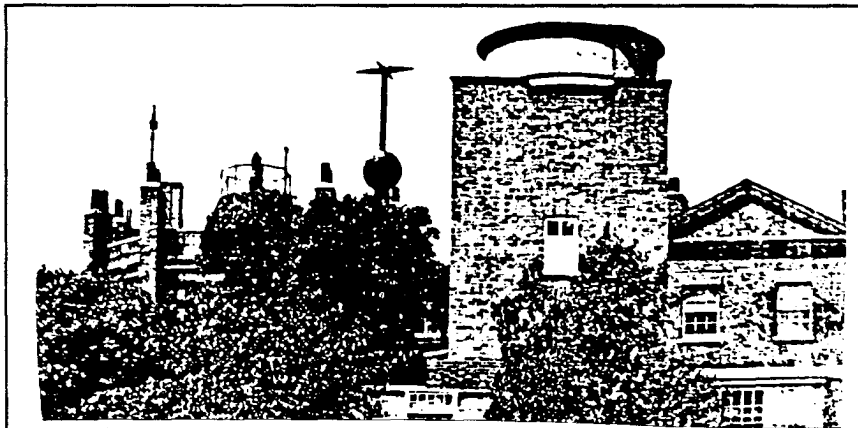
***One might assume the company encountered difficulties in casting what was certainly a new breed of scientific product and similarities are frequently seen in this day an age with any groundbreaking new devices.

dismounted, eventually being placed on exhibition in the Science Museum. The dome was demolished in 1947.

Paramount in Airy's design was the need for firmness of construction by using as few principle parts as possible. It was mounted upon a 26 feet high brick pier with a 3 foot diameter cylindrical brick pier to mount the horizontal graduated circle and the bottom pivot of the vertical axis, upon which it rotated. The movable part of the instrument, weighing just under one ton, consisted of four iron castings which carried the micrometers, levels, lamp, reflectors and other paraphernalia for illumination of the telescope and graduations. On one of the side plates Ransomes mounted a large name plate.



The Airy Altazimuth Instrument with the Ransomes plate clearly on view
Courtesy of the National Maritime Museum.



A view of the Altazimuth dome from the South in 1857.
Courtesy of the National Maritime Museum.

Airy's Transit Instrument (1850)

In 1848 Airy arranged for the Admiralty to purchase an 8 inch object glass with an 11 foot six inch focal length from Simms. Around this parameter he designed his Transit Circle to be the 'state of the art', superseding the existing transit circle of James Bradley (3rd Astronomer Royal) at Greenwich and the instrument of Sir James South at nearby Blackheath which, from 1806, was considered the most successful of its type in the world. Airy's new instrument was mounted nineteen feet to the east of Bradley's (which had defined the prime meridian of Britain via the first ever Ordnance Survey Map since 1801) and effectively shifted

the prime meridian several feet further eastwards from two other meridian lines defined by Flamsteed and Edmond Halley (2nd Astronomer Royal). Ransomes and May of Ipswich built all the 'engineering' components and, once again, Troughton & Simms were engaged to produce the optical and instrumental side of things. The instrument was in regular use until 1954, some 103 years and 600,000 observations later. By 1967 the instrument had been maintained back to working order and is now a principal periodically working exhibit at the Observatory. If one cares to visit the observatory, have a look at the telescope tube of the instrument. One will see two plates there, proudly saying 'RANSOMES & MAY ENGINEERS IPSWICH 1850'.

At an International Meridian Conference held at Washington DC. in 1884, twenty two nations voted that the cross hairs of the Airy Transit Instrument would be the Initial (Zero) Meridian of the world*. That became a Treaty which holds to this day and one might, therefore, reasonably conclude that as the instrument defines the initial meridian it also marks the starting point for the worlds time zones. I would now like to offer you this sobering extrapolation; **With the forthcoming Millennium in mind, we can say that an instrument largely made in Ipswich 148 years ago is the means by which the year 2000 will be 'defined'..** Not bad eh?

**San Domingo voted against and France & Brazil abstained. France, with classic gallic indifference, defined Paris as the initial meridian for another thirty odd years until they finally realised that if you can't beat them.....*

I have already mentioned the telescope tube size parameters. It was mounted on two piers - one of granite and the other of Portland stone via two 6 inch diameter pivots made with Ransomes famed 'chilled cast iron'. The whole assembly ran on an axis of 6 feet overall and weighed in at 1,890lbs. The roof shutter mechanisms are a classic example of the Airy eye for minute detail - just before the shutters reach the fully open or closed positions a hammer strikes against a bell 'as a warning to the person who turns the winch that he must move it gently'. **

***Perhaps our own ever attentive Maintenance co-ordinator, Martin Cook, would approve of this as it would prevent premature greying of his hair whenever the Orwell shutter is operated..?*



Observers using the Airy Transit Instrument, from the Illustrated London News, 1923 April 21.
Courtesy of the National Maritime Museum.

"It's in the A's"

except "OASI" -See if you can find it

best regards from Roy Lobbett

E D N I A B S O R P T I O N A
 T C Q R E D U T I T L A W S X
 U A N U E A R O R U A C Q L I
 A S R A S T R O P H Y S I C S
 N T U T T P A S A L X S Z E A
 O R E N N S E D A U E E R U I
 R O T E A I I M E R T E P A N
 T L A C R L O D A M H U L A O
 S A M A R N O T R P O T M I M
 A B A H A M N G S A A R O N M
 L I L P K A H O L I L M D O A
 E S Z L I X M C R A E U O N O
 I A C A S T A L B E D O G T A
 R O C L A Z I M U T H Y Q N A
 A P O L L O A S P E C T T J A

Airy's Great Equatorial Refractor (1859)

This is, perhaps, the most celebrated of the Ransomes instruments - certainly the only one that the company itself ever seemed to acknowledge.

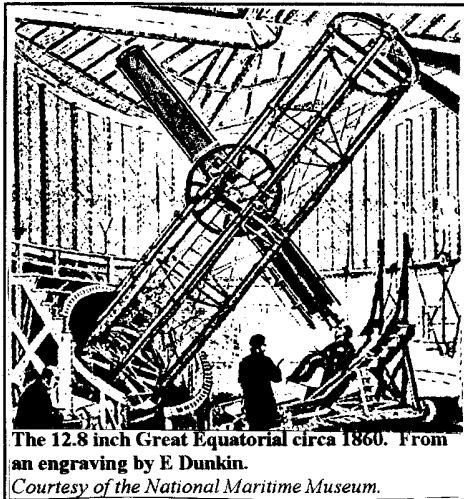
Readers will be aware that the existence of the Planet Neptune had been mathematically predicted coincidentally by Adams of Cambridge and Le Verrier of Paris in 1845. The first optical detection was made the following year by Galle in Berlin, although Challis at Cambridge had unsuccessfully searched for it for some months*. Victorian English public opinion was outraged by this 'damned foreigner' discovery - considering that it 'ought' to have been made in England - and, in 1855, Airy took full advantage of this in an address to the board of visitors to the RGO to point out deficiencies in contemporary Equatorial Telescopes. He pressed successfully for a new instrument to his own design with a 12.8 inch Object Glass from Merz of Munich, a field leader of its day. Troughton & Simms were, again, contracted to produce the optical system and Ransomes & Sims the mounting. The telescope clock drive was water driven by turbines (controlled by a mercurial pendulum and governor) via the Kent Water Company. The instrument was housed in a new dome on the south-east corner of the Observatory. The first recorded observation by this 'wonder of the age' instrument was of an occultation of Jupiter 1860 24 May. Thereafter it was used for planetary visual/drawing, spectral and early pioneering photographic work. By 1891, lens making had advanced to the point where much larger Object Glasses were possible and the 12.8 OG and tube were replaced on the Ransomes mount by a new 28 inch Refractor**, for which a new dome was built around the mount. That telescope survives to this day at the Old RGO. The 12.8 OG is now mounted in a contemporary tube on the Thompson 26 inch Refractor at Herstmonceux as a guide scope. Proof, if ever needed, of its optical qualities.

The Ransomes mounting is of the English style with the Declination axis eccentric to the Polar axis, permitting observation of the celestial pole. The wrought iron framework rests on a 24 foot cast iron pier (to the north) which weighs in at 5.5 tons. Setting circles were provided at 5 foot (Dec) & 6 foot (hours) respectively.

*There is reasonable anecdotal evidence that Herschel himself had observed Neptune many years previously but had not recognised it for what it was.

**To this day, the largest Refractor in the UK and the eighth largest in the world.

In the final part of this saga I propose to discuss our own Orwell Instrument with its Greenwich/Airy links & similarities. Along with conclusions regarding our mounting...



The 12.8 inch Great Equatorial circa 1860. From an engraving by E Dunkin. Courtesy of the National Maritime Museum.

Absorption	Ariel
Albedo	Aries
Alcor	Arrakis
Algol	Aspect
Alphacentauri	Astrolab
Altair	Astronaut
Altitude	Astrophysics
Amateur	Atmosphere
Ammonia	Atom
Andromeda	Aurorae
Angular distance	Autumn
Anomaly	Axis
Antares	Azimuth
Apex	Oasi
Apollo	

Summer Excursion to Woolsthorpe Manor

There are now only 5 or 6 places (at the time of writing) left on the trip to Woolsthorpe Manor (Newton's birthplace) on July 18th. Contact Roy Gooding or Pete Richards as soon as possible if you want to go and haven't booked already.

MONDAY NIGHT HELP

TRAVEL TO THE 1999 UK SOLAR ECLIPSE

Observers contemplating arrangements for travelling to Cornwall to observe the UK total solar eclipse on 11th August 1999 may be interested to note that Explorers Tours are now taking bookings for their chartered train to Penzance.

Penzance lies on the central line of the eclipse, so offers the longest period of totality visible from the UK, amounting to some 2 minutes and 6 seconds. The Explorers' train starts its journey at London Paddington, and is scheduled to arrive at Penzance at 08:00 am on 11th August, in good time for the start of totality at 11:11am. The train departs Penzance for the return journey to London at 1:00pm. The cost is £65 for standard class and £99 for first class.

Explorers Tours are now taking telephone bookings, on 01753 681999.

The BAA are understood also to be organising travel to Cornwall for the eclipse, but details are not yet available. Other travel companies may also offer packages.

James Appleton

NEW LIBRARY BOOK

The OASI library has acquired *The RGO Guide to the 1999 Total Eclipse of the Sun* (by Steve Bell, HM Nautical Almanac Office, Royal Greenwich Observatory, 1997, ISBN 0 905 087 03 8).

The *RGO Guide* opens with a general introduction to and explanation of eclipses, then provides many pages of detailed information concerning the UK eclipse of 11th August 1999. The detailed information includes large scale and small scale maps of the graze track, tables of eclipse circumstances for various locations in the UK and Europe, and advice on observing the eclipse.

The library is housed in the Orwell Park Observatory. It holds a selection of astronomy books, videos and magazines. All members of OASI are welcome to use the library. Please contact me with suggestions for purchases of books, videos and software.

James Appleton

Get Ready for 1999! - Eclipse glasses

In preparation for the 1999 total solar eclipse the society will be placing an order for mylar eclipse glasses. The regular price is around £2, but we will be getting discount (the expected price is around £1). There is also a Royal Astronomical Society eclipse guide for 50p (again we expect to get a discount). If you're interested in either of these items, please place an order by either by adding your name to the list at the observatory, sending an email to the society enquiry address or writing to Peter Richards (addresses are on the back page).

Mr Nigel Gage is looking for somebody to help run his evenings at the observatory. All he needs is somebody to assist with the opening up of the dome about three evenings a month. Any training needed will be given but there is very little to it.

Nigel would like to start a general observation section to add more interest to our observation programme.

If you are interested in helping Nigel his phone number is on the back of this journal, or contact any member of the committee. All the phone numbers are on the back page.

I would also like to bring it to the attention of all members that other nights are available for any members to run a night on any observation aspect that interests them.

If you are interested in running your own night then please contact any member of the committee

E. Sims

Informal Interactive Workshops for Orwell Astronomical Society members.

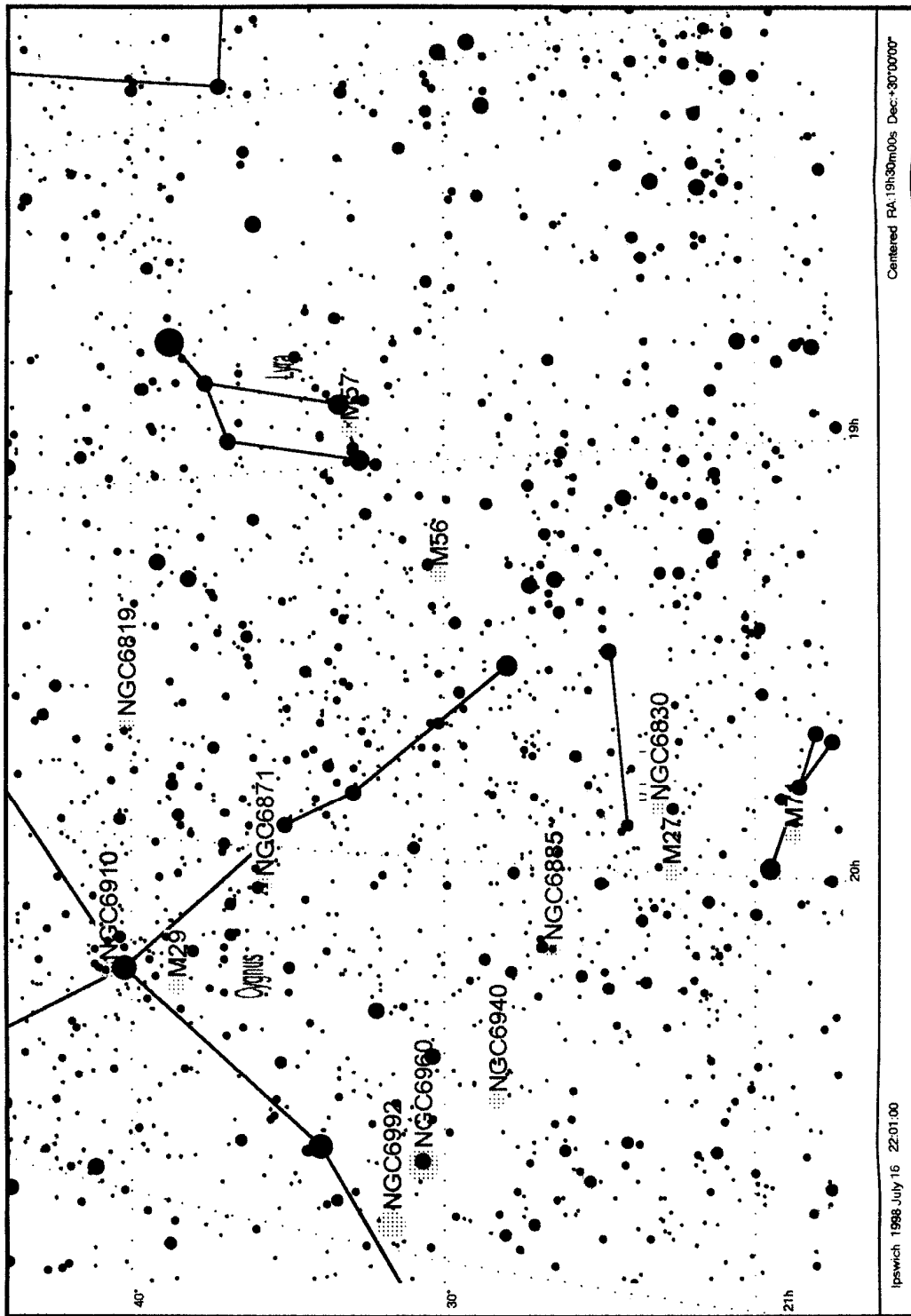
The response to the circulated letter containing the above idea has been most encouraging, with more than twenty five percent of the membership expressing an interest. Replies have come from beginners, improvers, and from those with more experience, together with offers of help in presenting the sessions. There have been responses from younger members, and an offer of help with catering - which was something we hadn't thought of.

The majority of subjects suggested were related to the problems in locating sky objects, and practical use of telescopes. Astro photography, CCD imaging, and solar observing were also suggested among other topics.

There is still a big step to take to put the idea into practice, but we are working on it **AND THE COMMITTEE WILL BE DISCUSSING IT AT THE JULY MEETING**

The hope is that the sessions will give the opportunity for members to ask questions and to give their own experiences, be they of success, difficulty, or even failure. In fact it will be an opportunity for people to talk and practice astronomy, with we hope, a mixture of members at all levels of experience. We would still be pleased to hear from experienced members who could give a guiding hand, and also to lead on the basics of the more specialist subjects such as CCD and astro photography. Keep watching this space for further details and plans, and keep the responses coming.

PROGRAMME FOR JULY



Centered PA:19h30m00s Dec:+30°00'00"

Ipswich 1998 July 16 22:01:00

Mondays from 7.30pm Mr N Gage	GENERAL OBSERVATION SECTION
Tuesdays from 7.30pm Mr P Richards	OBSERVATORY VISITS FROM OUTSIDE GROUPS
Wednesdays from 8.00pm Mr M Cook	NEBULA & FAINT OBJECTS SECTION Mr D Payne
Thursdays from 7.30pm Mr P Richards	OBSERVATORY VISITS FROM OUTSIDE GROUPS
Fridays from 7.30pm 3rd - 17th - 31st Mr J Hood	DOUBLE STARS

All members are welcome on any night, but on nights other than Wednesday please check with the director of the night that the observatory will be open.

Lectures and other events:

Committee Meeting

The next committee meeting is to be held on Saturday July 4th in the club room at the observatory at 7.30pm. All members are welcome to attend.

e-mail enquires to oasienq@btbcs.bt.co.uk
 WWW url <http://www.ast.cam.ac.uk:80/~ipswich/>

1998 COMMITTEE		Home Phone	Work Phone
CHAIRMAN	D Payne		
SECRETARY	R Gooding		
TREASURER	M Harlow		
MAINTENANCE CO-ORD	M Cook		
JOURNAL CO-ORDINATOR	E Sims		
SOCIETY ACTIVITIES	P Richards		
& DARK SKIES	J Walsh		
EQUIPMENT CURATOR	J Appleton		
LIBRARIAN & COMP SOFTWARE	J Appleton		
JOURNAL ARTICLES TO	E Sims		
CORRESPONDENCE ADDRESS	R Gooding		
MEMBERSHIP	M. Cook		

Ipswich Suffolk IP1 4HA
 Ipswich Suffolk IP1 6AE
 Ipswich IP4 5PZ