



Federation of Astronomical Societies

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issue number 6

June 1985

ORWELL PARK OBSERVATORY, NACTON,
IPSWICH, SUFFOLK

QUARTERS OF THE ORWELL ASTRONOMICAL
SOCIETY, IPSWICH

by Roy Adams (OASI)

Orwell Astronomical Society is indeed fortunate in having the use of such a site, expensively built observatory. away, though not too deeply, just off the south-eastern doorstep, about a (or if you prefer, one and a half) miles from the A45, the Observatory is in an almost ideal position.

really appreciate just how close to the site the location is, one should at least visit the Observatory during the day, in good weather. The complex stands on the eastern end and is part of an even more enormous mansion, now Orwell Park Hotel.

can reach the Observatory by travelling miles or so along a scenic country road to the outskirts of Ipswich and the new Orwell By-Pass, or through Nacton. Alternatively, from Levington, allows one to see the grandeur of travelling up the hill to the massive iron gates of the mansion in a horse-drawn coach as in days of

Orwell Park is steeped in Naval and political history. The present mansion is a red-brick rebuilding of the 1840s by one Colonel George Tomline. Astronomy was one of Colonel Tomline's pet subjects, and in 1870, in agricultural slump around 1870, the Colonel gave the alternative employment of building on the Observatory to out-of-work labourers. At about the same time, he had the Ipswich to Felixstowe railway built in his own private railway, and made other concessions to the Mansion. The Colonel built early dock facilities at Felixstowe on reclaimed land.

g an extremely rich man, no expense was spared in the building of the Observatory and its equipment. The then Astronomer, Mr Biddle-Airey, was engaged for the design work, and the world's leading telescope makers, Troughton & Simms of London, given the task of building the main telescope and a transit instrument very large to one at Greenwich which at recent times was still kept on exhibition there.

main telescope's object glass was made by German firm, Merz. It gives a clear aperture of 258 mm (10.16 inches) and has a focal length of 3,894 mm (12 feet 9.3 inches), with resulting F ratio of 15.1. It cost £333.6s.8d, the telescope mounting costing an additional £5.12s.8d. If this seems high, the cost of the buildings that give the telescope access - the Main Dome and Transit Room, on a floor elevation of about 70 feet above surrounding terrain, must have been very astronomical. No less than 111 stairs and stairways lead up to the observing floor.

stairs are not the only way up to the observing floor. Colonel Tomline also included a screw-driven hydraulic lift, working the

own use - not even his personal astronomer was allowed to use it.

The lift was last known to be working in 1936. The Society has recently investigated the possibility of getting it working again, but to do this would mean renewing much cast-iron hydraulic mains piping and expectedly would cost more than installing a new one in the same place at as much as £20,000. Unless someone comes up with something rather special it seems this superb associated piece of industrial archaeology will have to remain dormant, unable to assist less able-bodied folk who all too often find the climb too daunting.

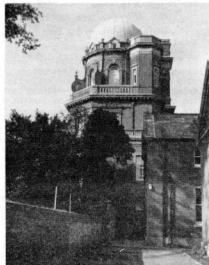
For those able to achieve the ascent, the rewards are great. Beneath the Main Telescope and Transit Rooms the ring-shaped

Clubroom, now called the Cheesman Room after the earlier long-standing Chairman, Mr Royston Cheesman, houses a library well-stocked with past notes and current works and periodicals, charts and other data. Committees also meet at this level, which is a goodly way house if one gets weary easily. Some items of telescope equipment are also kept in the Clubroom, together with a grandfather-type chronometer made by a member, Mr Barrell, who alas is no longer with us in body.

And so, up the remaining steps and into the Dome. The big, grey telescope, counter-balanced almost intricately, with main counterweight over 300 pounds (140 kg) of solid lead immediately dominates our view and invites us to examine its make-up. Firstly, its unique mounting, of massive cast-iron, still the subject of some conjecture as to its exact weight, but likely about two tonnes. The base is something like a sculpture by Henry Moore, a large hole housing the main R & A drive wheel of three feet diameter and 1,440 teeth, which used to be driven via a shaft with a hand-wheel or regulated by a shaft stretching across part of the Dome floor to a centrifugal flyball governor in a glass case at the south wall. The drive power came from weights which could be wound up by a handle in the north side of the pier. These weights could operate in the central, inner brick pillar supporting the telescope running all the way to ground separately inside an outer brick ring pillar which supports the floors of the building at the centre.

The shaft to the governor constituted something of a hazard to the uninited in the dark, but now the Society has installed a stepper motor drive, the shaft has been removed. The interesting governor, however, remains.

Originally the whole telescope was apparently designed to be operable entirely from the eyepiece position. Various ingenious shaft and gear and coupling arrangements lead through to the clamp on the main R & A gear; likewise to the Declination gear, and there are two sighting 'scopes' so that however the main ten-inch is disposed about the pier, the Dec position can be read off a large silver-ringed Declination indicator wheel. The new drive has now been in use for a couple of years, succeeding a temporary squirrel-cage motor drive also installed



Orwell Park Observatory
Photo: Roy Adams, October 1984

also, possibly in conjunction with a photo-electric guidance system. Last April (1984) a four-inch diameter guide 'scope with +/- about 1° of star selection movement, was mounted on the main tube. The aim of this was to improve long-exposure photographic facilities.

The 20-foot diameter dome of tongued-and-grooved mahogany inside and clad in patinated copper outside can be turned by one person using a four-foot diameter handwheel. It is believed that the workforce for this construction came from the local craftsmen boatbuilders. A cast-iron ring beneath the rotating dome rests on wheels set in the top of the brickwork. The shutter is opened and closed by hand, but this really needs two people who are used to the job. One reason, therefore, why there is now a rule stipulating two directors are needed to "open up" and supervise.

Looking out in any direction through the shutter opening or small windows gives wonderful views. Nearby, the rest of the School from which we lease the Observatory, stretches away to the west. To the south-east a clocktower, built in 1859 and equipped with a 16-bell carillon restored recently to full working order, stands just visible amongst trees.

So it was probably to the sound of traditional Scottish tunes on these bells every three hours or so that the Observatory was built and became one of Europe's, if not the world's, leading observatories in the 1870s.

The 6-foot 5-inch Colonel apparently had no difficulty in persuading a professional astronomer from the University of Durham to become full-time Curator of the Observatory, John Isaac Plummer. The Colonel gave Plummer a house in Nacton still called the "Astronomer's House", and with an honorary MA degree on leaving Durham University, the 27-year-old Plummer continued prolific observations for upwards of 16 years, contributing regularly to the Royal Astronomical Society's Monthly Notices, public-

Continued discussions about the future of the Royal Greenwich Observatory may mean that we have to start looking for an alternative venue for an annual convention. Obviously, we hope that the present relationship with the RGO will continue as their hospitality is much valued. Meanwhile, enjoy the Herstmonceux '85 meeting on October 5; but keep an eye open for alternative meeting places, particularly in a central or northern location. Your ideas welcomed, please.

CONTRIBUTIONS for Issue No 7
should be sent to the editor,
Rosemary Naylor, 256 Bacup Rd,
TODMORDEN, Lancs OL14 7HJ
by mid-August, please.

DON'T FORGET

OCT 5

Herstmonceux '85

COMPETITION WINNERS AT COVENTRY;
1985 MAY 11

Photographic section: Steve Hathaway of Croydon AS with a black and white print of the Orion Nebula.

Astro-art section: Jim Swannel of West Yorkshire AS with a painting of the Trifid Nebula.

At May's AGM, the following officers were elected to serve on the FAS Council for the year 1985/86:

President	Tony Balfour
Vice-President	Alan Drummond
Secretary	Dave Powell
Assistant Secretary	Andrew Gatward
Treasurer	Ken Marcus
Editor	Rosemary Naylor
Assistant Editor	George Bolland
Publications Secretary	Brian Jones
Meetings Organiser	Michael Pace
Publicity Officer	Bob Owens
Education Secretary	Pam Chick
Society News Editor	Stuart Lonsdale

SUBSCRIPTIONS 1985/86

It was again decided to peg subscriptions at the level which has been standing for a number of years, ie £7.50 full rate and £4.50 reduced rate for new and small societies. These subscriptions become due for payment on the first day of September.

HERSTMONCEUX '85

This year's Convention takes place with the kind agreement of the RGO authorities, in Herstoncoteux Castle on Saturday October 5. Bookings may be made through the Treasurer, *Ken Marcus, at the usual rate of £2.50 per person (FAS members) and £3.50 for non-members. The evening buffet is extra. Speakers include Eric Zucker, Michael Mauder and David Hardy, with more to be arranged, plus all the usual side shows. Fuller details in the next newsletter.

* Ken Marcus, 5 Cedars Gardens, Brighton, BN1 6YD.

HERSTMONCEUX '85
SATURDAY 5th OCTOBER

COMPETITIONS

The competitions will be open to all members regardless of whether or not they attend, but those not attending should please send the material in to George Bolland, 25 Deneside, East Dean, Eastbourne, BN20 0HY, ensuring that they include sufficient stamps for return postage. Items will be accepted on the day or by prior posting to the above address. All material submitted must be the work of the person or society in whose name it is entered and competitions are only open to members of the FAS so please make sure that your society has paid the appropriate subscription.

Prizes will be awarded at the sole discretion of the FAS Council and judges' decisions will be final.

Could you please ensure that each item entered for any of the competitions is clearly marked with the name, address and the Society of the person entering and also, in the case of photographic and art competitions, a title or description of the item and the photographer's name.

- 1 **MAGAZINES:** Entries must consist of two different issues only, each to have been published in the year ending October 1985. Each copy should be marked with the Society name, Editor's name and date of issue, and it would considerably help if these could be posted to the organisers before the event at the above address.
- 2 **ASTRO ART:** Paintings, sculpture, pottery, pencil or ink drawings, in fact, any art form. Limited to six items per person.
- 3 **TELESCOPES:** All instruments must be amateur constructed (apart from the optics). There is no limit on the number of instruments per person.
- 4 **BLACK AND WHITE PHOTOGRAPHIC PRINTS:** Any size, mounted on card ready for display with title, photographer's address and Society. Maximum six prints per person.
- 5 **COLOUR PHOTOGRAPHIC PRINTS:** Arrangements as for black and white prints.
- 6 **COLOUR TRANSPARENCIES:** Maximum six slides per person. Please mark each slide with name and title and include a list giving details of the objects shown in the slides.

G. Bolland

ARTICLES are still required for the FAS Handbook 198. Please let the Handbook editor know if you are able to contribute: Brian Jones, 47 St Blaise Court, off Manchester Rd, BRADFORD BD5 0QE.

ADDITIONS AND AMENDMENTS TO THE FAS

It is a difficult task keeping the Handbook up to date, so it would be helpful if you could send any additions and amendments for the Handbook to the following addresses:-

PLACES TO VISIT: Dave Powell,
1 Tal-y-Bont Road
Cardiff, South Wa.
CF5 5EU

INFORMATION
SOURCES: Neville Kidger,
60 Denshaw Grove,
Near Leeds, West

All other additions and amendments should be sent to the Publications Secretary:-
Brian Jones, 47 St Blaise Court,
off Manchester Road, Bradford 5.

Small ads.

Any private individual belonging to member society of the FAS can place classified advertisement free of charge. Please keep the wording reasonably short and send the copy to me. I will do my best to include the ads in the next follow-in but I cannot guarantee anything.

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BOSTON ASTRONOMERS ONE-DAY CONVENTION

BOSTON ASTRONOMERS ONE-DAY CONVENTION "EYES ON THE UNIVERSE" will be held Saturday July 27 1995, at Blackfriars Spain Lane, Boston. Please book in paying £2 per ticket made payable to Astronomers" with an SAE for details. Speakers include Heather Couper, Nigel, Peter Drew and Neville Kidger. stands also. Space exploration exhibit supported by NASA, ESA, etc. Write Boston Astronomers, South View, Fen Stickford, Boston, Lincoln.

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FOR SALE: Tasco 2.4 inch refracting scope. Steady tripod and accessories condition. £110. Phone Haywards' He (0444) 450398 - Simon Clifford.

Live your Society magazine up with a
lar crossword puzzle. Astronomical
crossword puzzles supplied. £2 per
12. Send SAE for sample, or SAE with
for £2 for full set. Cheques to be
to: Hinckley & District Astronomica.

SOCIETY NEWS ROUND-UP

STUART LONSDALE

AYLESBURY AS: The date of the AGM was changed from February to April because of poor attendances and bad weather. Guess what? - the weather in April was foul and a power cut meant a candlelit meeting. The supply was restored - at the end of the meeting!

The library has been sorted out, catalogued and Sky Atlas 2000.0 plus some slides are to be added. The grand sum of £50 raised by members will help.

For your diary - the new Chiltern Group Representative is Dave Early, 11 Church Road, Harlington, Beds; tel: 9915 3179.

Shortly after the February meeting, member Bill George collapsed and died. Writes Ted Gates, "Bill helped to make and supervise the putting together of the dome ... he negotiated the purchase of the electricity cable and connection to the supply ... he was always willing to help any of us ... the observatory dome at Winchendon is one, at least, of the memorials to Bill George in this area that will remind us of him."

BOSTON ASTRONOMERS: All eyes will be focussed on Boston on Saturday July 27th because this is the date of their 10th Anniversary celebration "Eyes on the Universe". Speakers include Heather Couper, Nigel Hembest, Peter Drew and Neville Kidger. There will be trade stands and an exhibition plus morning coffee and afternoon tea. The day looks like being well worth a visit and for just £2 - unbeatable value. Drop a line to Bryne Tongue, South View, Fen Road, Stickford, Boston, Lincoln; tel: Stickney 347 - for further details. Hurry though, places are limited to 230 and it's filling up fast!

Other news from Boston - improvements are being made to the instruments including a new pedestal stand for the 4½-inch reflector and a realuminised mirror. Components have been purchased for constructing 4- and 6-inch Dobsonians.

A recent Jumble Sale raised £36 for funds.

In February, four members attended the 2nd East Anglian Astronomical Societies Convention.

A bumper edition of "Nova" is to be produced for the conference on July 27th.

CLEVELAND AS: A welcome return of this society after a break from this column. Their magazine is called "Polaris" and contains articles on testing your space knowledge, photographing Venus, observing group and other bits and pieces.

The prize for the space quiz is a set of BAA Star Charts.

During December last year, a group of thirty astronomers gathered at Stockton Sixth Form College for the 3rd Annual "Thomas Wright Trophy" Quiz. The two teams competing were Cleveland and Darlington AS - Darlington being the eventual victors 134 to 99.

Due to the falling membership it was decided to amalgamate all the observing sections into the new Observing Group.

The recent Perseid shower resulted in a total of 70 meteors observed by 12 members in 355 minutes. If all the results were put through correction equations it seems that the shower produced a ZHR of 104±15 at 12.925, the night of the maximum.

COVENTRY & WARWICKSHIRE AS: Plans are being drawn up for NAW and they include an official re-opening of the College Observatory, public observing nights and a display in the College foyer.

Work is continuing on the observatory, the "horrible" jobs being finished and the finishing touches being applied. A request for prompt payment of subs was for a good reason - they need to spend the money on the observatory.

Thanks to member Paul Porter, they are now subscribing to "Astronomy" magazine and this together with "Sky & Telescope" and "Popular Astronomy" are available for loan to members.

A call for a "flood" of articles for the magazine "Mira" was being sent to members.

It was hoped to have more subjects suitable for beginners.

CRAWLEY AS: A Blockbusters Quiz with Brighton AS resulted in a win for Brighton.

A Jumble Sale was held on April 13th.

The BAA Comet Section met in Crawley on April 27th.

A description and drawing for a sunshine recorder appears in the Newsletter but it is not clear who has written it. The recorder measures sunshine over 10 hours during mid-summer. It relies on the staining action of the Ultra-violet rays in solar radiation on plain paper soaked in lemon juice. Trial periods of fifteen minutes show it works okay. Sunlight shines through a piece of wood with a hole in and on to the paper. It can record several days of sunshine with the changing declination of the sun making each day's line separate.

HAMPSTEAD ASTRONOMICAL GROUP: In the last Round-Up I mentioned a 12½-inch Reflector being replaced by an 8-inch. Well it seems that when the 12-inch was dismantled, the mirror was tested and as suspected was found to have a turned down edge. With some work it will probably be used to make a Richfield Dobsonian.

Plans are in hand to view Comet Halley through the 28-inch at Greenwich during December.

The "Halley Comet Trail" in the Queen Elizabeth Country Park, has been fairly successful. Favourable comments were received about the exhibition and six new members joined as a result. Weather wise the very wet Easter discouraged walkers and visitors.

HEBDEN BRIDGE LITERARY & SCIENTIFIC SOCIETY; ASTRONOMICAL SECTION: A new astronomical group has been assembled in Hebden Bridge and they have promptly joined the Federation. Of course, the fact that Rosemary Naylor is their chairman probably has something to do with this.

The group consists of over 20 paid-up members, but membership is expected to grow to about 30. The plan is to learn some basic astronomy, and to get to know the night sky.

Please add this society to your list in the FAS Handbook. Secretary is Mr F Parker, 48 Caldene Avenue, Mytholmroyd, Hebden Bridge, West Yorkshire, HX7 5AJ.

N E LONDON AS: Society officials are appealing for more members and cannot understand why publicity in local libraries does not produce a better response. Meetings are in Wanstead but a quick calculation shows that the average "membership-distance" is 12.5 miles.

At the April meeting, Don Wallis was guest speaker; his topic being the Solar System. In order to show the scale planets spaced out about the sun, he brought along a number of props. As and a penny, fixed at either end of pole represented the Earth/Moon system.

Of course this scale could not be made to include the other planets, and he reverted to a scale of 10 million miles to the inch. The planets were located on unrolled length of toilet paper which started its journey in the meeting; soon extended some 40 feet, mostly to the first floor of Wanstead House. The editor in the newsletter remarks - 'good job we had the house to ourselves'. I'll say!

NOTTINGHAM AS: Writes Carl Brennan a break of over 4 years we have decided to re-join the Federation. The Mount Observatory now has the dome in place is starting to look like an observatory. Thanks to a generous donation from Engineering Co Ltd, we now have a w generator.

We are looking forward to Comet Halley have plans to open the site for public viewing during the NAW. The society: 8-inch Reflector, a mobile 6-inch B25x100 and 20x50 binoculars.

We hope to make a trip to the Newbury Observatories and Planetarium on June 1st.

In a bid to attract new members it is decided to establish a new Library, membership cards and to re-join the Federation.

Please note the change of Secretary in the FAS Handbook. It is now Carl 40 Swinden Close, The Vale, Giltbrook Nottingham, NG16 2WD; tel: Nottingham 384521.

The Society, by the way, was founded so we look forward to their 40th AGM celebrations next year.

ORWELL AS: On Friday April 12th, met with the Norwich AS.

Saturday June 15th sees a visit to the

There is a trip to Cromer during August to observe a grazing occultation of the star and the Perseids. It is to be a weekend.

Maintenance is to be carried out during summer on the observatory. (See also this issue.)

The society had a display at the 2nd Anglian Astronomical Societies Convention in February.

SAGAS: Brighton AS - a scale review of the Solar System was Brighton's contribution to the Brighton Festival on May 4th. It was hoped to have a public viewing session for the lunar eclipse evening. (I don't know about Brighton in Sheffield it was completely ok South Downs AS - despite the uncertainty regarding the future of the Trundle story, it has been decided to hold during the Chichester 910 festival July. The dates are Saturday July Sunday July 14. Plans are being drawn up the society's 12½-inch mirror telescope. (It would be a good idea Vectis AS - have changed the date of monthly meetings from the first Friday to the fourth Friday. The venue is also changed to the Land Estate Library.

STUART LONSDALE

Items for the next "Round-Up" should be sent to: 16 Joan Lane, Hooton Levitt, Nr Rotherham, South Yorkshire, S66 8PH.

SHEFFIELD AS: A set of "Astro Cards" has been purchased for the observatory. A plastic index box holds all the cards.

A visit will be made to the Newchapel Observatories and to Jodrell Bank on September 28th.

The new posters publicising the society were sent out to some 400 schools in the area! Results look extremely encouraging with many enquiries and we have new members joining at every meeting.

The recent joint meeting with the Sheffield Photographic Society for Mike Maunders's talk resulted in over 80 people turning up.

After a break last year, it was then decided to hold the Sponsored Meteor Watch once more. It will be held in December for the Geminids.

SOUTH WEST HERTS AS: During a lecture on the Messier Catalogue, member Arthur Davies gave each of the audience a chart showing the location of each object and a catalogue giving precise co-ordinates as well as his own ratings of each object's observability. Arthur has observed all 110 objects, either by naked eye or through binoculars or a 4-inch reflector. His ambition now is to photograph them all. We wish him luck.

WEST MIDLAND AA: As is the case of many societies, West Midland are suffering from a lack of support for their magazine "Nova". A shame because it is always well presented.

Alan Wells had problems with his 12-inch reflector in that a piece of metal hit the mirror. The damage caused excess scatter, but he thinks he may be having a new mirror. Members have been using the telescope and Alan has been trying out the Kodak VR1000 film and producing some good prints.

WEST OF LONDON AS: On June 10th, Mike Barlow from University College London gave a talk on telescopes in space and in particular the 2.4 metre (98-inch) Hubble Space Telescope.

A unique movie film of Mars in 3-D was shown by Gregory Smye-Rumsby at a meeting last year and on May 13 this year, he spoke about the Voyager mission to Uranus. Gregory is well qualified to speak on these topics as he is a UK founder member of the Planetary Society, the American organisation devoted to the exploration of the planets. He will be among the favoured few who will be at JPL when the first historic pictures arrive.

WEST YORKSHIRE AS: A party of "Rotarians" from the USA are to visit the Rosse Observatory some time in June.

The telescope has been given a new colour scheme by Brian Joyner. The 18-inch mirror was away being re-aluminised (during April) as the last job was a disaster. I won't mention the company for obvious reasons. Contact Derek Hufton for details! An off-axis guide telescope is being constructed and a variable frequency drive unit.

A Jumble Sale during April raised around £50 for funds.

A visit to Huddersfield AS planned for March had to be cancelled due to part of the Huddersfield dome collapsing!

In conjunction with the York AS, members had a conducted tour of places of astronomical interest in the York area. Nice to see societies coming together like this.

WOLVERHAMPTON AS: For the past ten years, Wolverhampton have organised an Astro-nomical Weekend at Alston Hall near Preston. The 1985 course was held over the weekend of March 15/16/17. Speakers were Terry Platt on Electronics in Amateur Astronomy, Russell Eberst from the ROE, and Dr Cedric Martys on Astrophotography.

The accommodation is apparently very comfortable and relaxing. Those attending brought along telescopes and binoculars and other supporting gadgets.

It is expected that the 1986 meeting will be held in March again and no doubt some Halley slides will be well to the forefront in the Members session.

The normal number that can be accommodated is about 40 and details of the 1986 gathering will be available in November this year. Watch the Newsletter for details. Anyone wanting information now can contact Malcolm Astley who is the Secretary of Wolverhampton. You will find him on 0902 783212.


SOCIETY CONTRIBUTIONS TO FAS "ROUND-UP"

An interesting article appears in the 1984 edition of the Salford AS Journal written by Dick Horrocks. In the article Dick makes a comparison between societies contributing to the "news round-up" feature of the FAS Journal and he has drawn up a "goal average" table to indicate the number of contributions made. I have taken the liberty of using Dick's information and updating it to include the first three issues of the news letter, so the "goal averages" are :-

SOCIETY	NO OF CONTRIBUTIONS
Aylesbury	7
Boston	1
Brighton	1
British Meteor Soc	3
Cleveland	3
Cotswold	1
Coventry & Warks	3
Crawley	4
Crayford Manor House	1
Croydon	1
Eastbourne	6
Fleetwood	1
Huddersfield	7
Lancaster & Morecambe	3
Mid-Kent	1
Mid-Sussex	1
Newchapel Observatories	5
Nasbury	1
North East London	5
Orwell	6
Plymouth	1
Sheffield	5
South Downs	1
South East Essex	1
South West Herts	7
West of London	6
West Midlands	6
West Yorks	1
Scottish Societies	3

If your society has a low score or, worse, no score at all, there is an easy remedy. Pop a letter in the post to Stuart Lonsdale, 16 Joan Lane, Hooton Levitt, Near Rotherham, South Yorks, S66 8PH, and tell him all about your society.

GEORGE BOLLAND



BARON STAR TELESCOPES

Telescopes 4" to 24"

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cameras, keep aky camera mounts, Optics,

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I.R.Poyer (Engineering)

43 Roebuck Road, Rochester, Kent ME1 1UE. Medway 401220

Telescopes

We can offer a range of 3" refractors, some ex. stock. All have English optics of the highest quality. Prices start at 110 pounds for a 19" focal length rich field instrument, finished in deep blue leather textured vinyl and black wrinkle paint. The top of the range is a 42" focal length instrument, at 170 pounds. This is finished in hand engraved polished brass and black leatherette, and is supplied with a 7 X 48 starfinder. Send a s.p.e. for further details.

Terrestrial telescopes can also be supplied, either to your design or to one of our patterns, all of which are finished in polished brass and leatherette. Prices start at 40 pounds for a 20 X 48" scope with a fully achromatic erector and ocular.

Traps

Equatorial, worm drive in R.A., for 3" refractors	70.00
Ex. Govt. aluminium, 3ft legs extend to 5ft. Need pointing	15.00
Altezmuth heads. Aluminium. Massive. Brand new.	15.00

Lenses

We have a large quantity of cemented achromats and singlets suitable for objectives and oculars. Some examples are:

Cat. No.	Dia (mm)	f.l. (in)	Price (pounds)
11	17	0.8	3.00
12	12.5	2	2.00
13	48	7	In 34 tpi cell 4.00
14	50	7	4.00
15	50	7	Less heavy than No. 14 5.00
17	75	20	One only left 30.00

The following are airapach achromats:

48	64	16.5	20.00
49	43	27	15.00
73	25	11	In cork lined brass cell 7.00

Send a s.p.e. for our price list which gives the full range of our new and ex. Govt. lenses.

NOTE: We still have a few ex. Govt. achromatic Barlow lenses in threaded brass cells. These are excellent. 24mm dia. with a f.l. of 3 ins. Price £8.00

WE ALSO STOCK: lots of ex. Govt. oculars (over 100 in stock), helically grooved brass tubes, black anodised draw tubes, starfinders and many other items for the DIY astronomer. We will make adaptors or components to suit your needs.

2.10am on the morning of Monday 17th February there was a grazing lunar occultation of a 4.60 magnitude star. The track for observation of the graze went about 10 miles north of Ipswich and it was therefore a good opportunity for some "field" observations.

For this particular graze we planned to have two groups of observers at two different locations along the centre of the predicted track. Alan Smith had written to Herstmonceux for details of the predictions and had then duly plotted them on a local Ordnance Survey map. These predictions showed the track passing about 2km north of my observatory at Wickham Market. With such a close track I was going to form a third observation point using my 10-inch reflector at home. In this particular occultation the star was passing to the south of the moon and as my observatory was just south of the track I was expecting to observe a "near miss", I will come back to this point later!

On Friday 8th February it began to snow. On Saturday it continued to snow and then froze. Things were beginning to look grim for observations of this graze. However on Saturday night we held a committee meeting at the Orwell Park Observatory, most committee members managed to attend and the roads didn't seem too bad. It looked as if the observations could be on, as long as we got clear skies during the early hours of Monday morning. We parted from the committee meeting planning to go ahead with the observations. Martin Cook and Alan Smith would be one travelling team and Roy Gooding with Eric Sims would be the other.

Unfortunately although no more snow fell during Sunday, the winds increased and all the snow evenly deposited over the fields ended up in heaps on Suffolk's roads with the result that the county ground to a halt. This meant that the "field" observations would have to be abandoned. However as I didn't have to travel I decided to persevere with my own observations if the skies cleared.

Having decided to get some sleep before the event I went to bed having set the alarm for 1.30am. Events then proceeded as follows:

1.30am - The alarm goes off! I switch it off as quickly as possible, not wishing to wake the whole family.

First thoughts are now something like this: "Oh God! I've got to get up. I hope it's cloudy!" After a few moments however enthusiasm begins to return and peering through the window I can see a few stars through gaps in patchy cloud. "Is it clear enough to be worth getting up? Where's the moon?"

I can't see the moon from the window because of its position in the south east, but I can make out a faint glow on the walls of the observatory and I decided to get dressed and go and look.

1.45am - Outside in sub-zero temperatures and not far off a gale blowing. The moon's clear! I collect a couple of eyepieces and open up the observatory.

1.50am - I have found the star shining clearly south west of the terminator. At this point I realise that I have not got any means of timing and recording the observations and beat a hasty retreat back indoors to collect a portable tape recorder. I then dialed the speaking clock, got a recording of it on to the tape which I leave running through the event. This serves as a time reference (02.01.20) for the following observations.

now just about at the terminator. I cannot make out the dark side limb and find it difficult to estimate the distance of the star from the dark limb.

2.09am - At this stage I was convinced that closest approach had occurred a couple of minutes ago and started to use the crater Clavius to estimate the position of the star.

02.09.57 - The star disappeared!

02.10.14 - Recorded my estimate of the time of disappearance, using my watch, as 2.10.00 (the 09.57 estimate is measured off the tape recorder).

I continued to observe the star for several minutes and then decided to close up for the night.

The first important point about this observation is that it shouldn't have occurred if the predicted track was correct. From the position of my observatory relative to the track I should have got a near miss. The first assumption was that Alan must have made a mistake plotting the track (sorry Alan, but Japanese computers and Herstmonceux can't be wrong!! Can they??). On the following Wednesday evening Alan turned up at the Orwell Park Observatory with the predictions. These I took home and independently plotted them on an Ordnance Survey map. The results agreed precisely with Alan's plot. The track predictions were in error after all and by at least three kilometres! The results of these observations will be sent to Herstmonceux for information and, I hope, comment.

The results of the observation are summarised in the diagram below.

Observatory position:

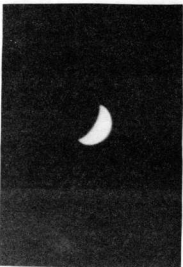
Longitude - 1° 21' 41.5" E
Latitude - 52° 08' 57.7"

Star ZC 2053 Virginis

Time of disappearance (D) 02.09.57 UT

Time of reappearance (R) 02.11.05.

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Practically every astronomy magazine is carrying articles on Halley's comet, and will be for some time to come. Up to a point, at any rate, Halley has been much fainter than predicted. Whereas predictions indicate it should have been mag 16, it was in fact beyond mag 19, that is approximately 15 times as faint as it should be. This not mean that it will be fainter through the entire apparition as it has been suggested that the formulae used to calculate brightness only applies when a significant coma is present. During Astronomy Week, November 9th to 16th, it could just reach naked eye visibility, but should be easier seen in late December and early January. Late February and early March it returns a morning object, and then we have another chance but not without optical aid.

The comet will be particularly well placed in the Autumn and Winter and most amateurs will want to take a photograph of it, purely as a souvenir of a once-in-a-lifetime event. There are various ways of tackling this with increasing levels of sophistication. Firstly just a camera and tripod should capture the event when at its brightest provided that the fastest possible film is used, such as 3M 1000 slide film or Fuji 1600 colour print film. If you do not want the star trails then the exposure should be equal to 600 divided by the focal length of the lens, eg 12 seconds for a 50 mm lens. At the smallest f/ratio it should be possible to reach mag 7.0 in reasonable conditions. Great benefit can be achieved by increasing the exposure time to the square of the f/ratio. Exposures much in excess of this become progressively affected by sky fog preventing fainter objects from being recorded, but this is dependent largely on local conditions. I recently saw a superb slide taken by Tim Goldstone of the Coventry & Warwickshire Astronomical Society which was a 4 minute exposure on Fuji 400 film taken with a Zenit camera at f/2 using the standard 58 mm lens. It dramatically showed the North American Nebula in Cygnus together with the Cygnus Star Clouds. This photograph would probably show stars down to mag 11 or 12. An exposure of this length requires that the camera be driven in some way to counter the diurnal motion of the Earth. If you have a telescope with slow motions I am sure that you are aware that you can attach the camera to the telescope and use the telescope to guide the camera. To keep the guide star in the centre of the eyepiece it is best to defocus the star image so that it nearly fills the field. On the other hand you are fortunate enough to have an electric motor drive, then provided that you are using a short focal length lens, then you can go off and have a cup of tea while the exposure is in progress. For the amateur without a telescope so described some form of driven mount is required. The so-called "Scooth" mount is the easiest to construct and most societies I am sure, will be able to supply details.

In an entirely different vein the recent favourable apparition of Venus was a gift for the astrophotographer as it was so well placed, being well above the horizon at sunset. The photograph with this article, although not perfect, stands up well when compared with other published examples. It was taken by eyepiece projection on Kodak Technical Pan 2415 (ISO 25) using my 254 mm Newtonian. The exposure was about 1 second.

# NOCTILUCENT CLOUDS

by Neil Bone  
(Scottish Astronomers Group)

The period between late May and early August is often regarded by observers at our high temperate latitudes as time for a well-earned rest. The sky never gets properly dark, presenting problems for many types of observational work. There remains, however, one important phenomenon, observations of which can only be carried out during the summer - noctilucent clouds.

Noctilucent clouds form at high latitudes in a thin layer between 80-85 km (about 50 miles) height in the atmosphere, at the boundary between the mesosphere (middle layer) and the thermosphere (the highest part of our atmosphere, including the auroral layer and ionosphere).

There are a couple of reasons for the restricted period of visibility of noctilucent clouds (NLC). Firstly, NLC are very tenuous and can only be seen against a background sky which is relatively dark while they remain sunlit; such demanding illumination conditions are available only when the sun is between 6-12 degrees below the observer's horizon, a situation encountered for most of the brightly-twilight summer nights at UK latitudes. More importantly, NLC can only form when the mesopause (thermosphere/mesosphere boundary) is cooled by upwelling of cold air from the polar regions, a phenomenon encountered only during the summer in each hemisphere.

Studies of the behaviour of NLC yield useful information on high atmospheric winds and provide clues on general conditions at these great heights. NLC often show rapid south-westwards movement, and observations suggest a 3-day high-latitude global atmospheric circulation at the mesopause. Attempts have been made to retrieve noctilucent cloud particles using sounding rockets, but there is little consensus as to the nature of NLC material - suggestions include ice condensed around meteoric dust and/or terrestrial material (such as volcanic dust), or even pure ice.

There are strong suggestions of a negative correlation between NLC and the aurora: NLC seem to be most often seen when auroral/geomagnetic conditions are quiet. Activity in the overlying thermosphere possibly evaporates NLC as the temperature at the mesopause rises. Many more observations are required to examine this possible link, and amateur astronomers can play a valuable role. This work is carried out under the control of the BAA Aurora Section, which collects NLC reports from the UK and Scandinavia.

NLC observations are made during the summer by many amateurs in Scotland and the north of England. It is little-realised, however, that NLC can be seen at least as far south as the Sussex coast and Devon on occasion. Indeed, good NLC displays have been seen from Exeter and Plymouth in the last couple of years on nights when northern observers were under more conventional cloud!

Observations of NLC require no more equipment than the naked eye and a modicum of patience. A clear northern horizon is essential, however, as NLC are usually restricted to this part of the sky. In common with the aurora, NLC exhibit a



Fig 1: Noctilucent Cloud forms. Type A is a featureless background veil. It is not unusual for several - or even all - of these forms to be present together.

limited number of distinct forms (Fig 1). Perhaps the most distinctive is Type C, in which the tightly-interwoven bands produce a "herringbone" structure. NLC are readily identifiable, remaining sunlit when even the highest "weather" clouds are in darkness; low-atmosphere clouds usually appear dark against NLC.

When NLC are present, observers record a number of useful details, including the extent in altitude and azimuth of the cloud-field, the types present, and the brightness (on an ascending scale of 1-3). Changes take place fairly slowly, and it is usually adequate to record the details at 15 minute intervals. Annotated sketches are often best for quick recording, and are usually made in "negative" form as in Fig 1.

Photography, of course, allows accurate and relatively easy recording of NLC. Results on colour films are usually far superior aesthetically to those on black-and-white, and many observers have successfully used slide films such as Ektachrome 400. On this, exposures of between 2 and 4 seconds at f2.8 will catch the details, actual exposure time depending mainly on the brightness of the sky background. Slower films, eg 100 ASA, need exposures around 6-8 seconds.

With diminishing solar activity, it is likely that the next few summers will produce several good NLC displays. It should therefore be worth keeping a lookout for these highest, and arguably most beautiful, of all clouds during the "close season" for other observations in the next couple of years.



Type B



Type C



Type D

## 'HELP'

The new FAS secretary is Dave Powell, 1 Tal-y-Bont Rd, Ely, Camruff, South Wales Tel: 0222 551704

Dave asked, at the AGM, whether or not other people had experienced the problems he had had in 1984 in connection with Mr Keith Hindley's "Astro News". The Cardiff AS took out a subscription with "Astro News" - the scheme to provide local societies with regular news bulletins and information packs. They paid good money and received poor service. Dave was particularly aggrieved that his many letters requesting information including one registered letter were ignored. He never received more than one package against the four which were paid for under Option 1.

Now he wants to know how many other societies have also lost money on this venture which appears to have faded into obscurity. Please get in touch with him with your experiences.

## BOOKSHELF

THE CAMBRIDGE ATLAS OF ASTRONOMY CUP/Neaves 1982 £49.95

The Cambridge Atlas (more an encyclopaedia really) is coffee table size, too heavy to stand upright, too good to leave lying around, and too packed with knowledge to store out of reach. For regular speakers, with £50 to spend on books, it is the best single volume reference work around. One can only hope the price will not escalate too much at the year end. The "Atlas" is an in-depth review of modern astronomy. Although 4% is devoted to the Solar System, stellar astronomy is well covered. I counted 19 H-R diagrams, all colour banded, to explain different aspects of stellar evolution. Illustrations are lavish, there is good use of diagrams and graphs to explain technical concepts. This has got to be an important addition to anyone's library.

R.N

Invite you on behalf of South African Airways and Premier Travel, to join them on a once in a life time trip to view Halley's Comet in April 1986.

We will be leaving Heathrow Airport on April 6th 1986, for a trip that you will never be able to forget. We will be seeing Halley in all its glory, from the best vantage point in the World. Every care is being taken to ensure that the best seeing spots are available, and we will have the added advantage of joining up with a South African Astronomical Society.

During our time there, we will be staying in wonderful Holiday Inn Hotel's, with three ports of call, Cape Town, Durban and Johannesburg. Included in the price is your Air fare, Accommodation, with bed, breakfast, and evening meals. All the excursions that follow: A visit to the Union Observatory, and the Witwatersrand Planetarium. The Deep Space tracking station at Hartbeesthoek. A visit to Table Mountain, and the Royal Cape Town Observatory, with optional tours to the Nagal Dam, the Valley of the Thousand Hills and the Cape Wine Lands. The optional tours were to be included in the price, but due to unforeseen price increases, and the fact that we want to keep our original price, we will now have to leave these as options.

We will be in this wonderful country for 13 days altogether, but there will be an optional extra week, if you would like to take it. Further details will be available very soon.

South African Airways have taken a tremendous amount of time to arrange a trip with an attractive price, and Itinerary. To let this offer pass by would be the worst thing you could possibly do. Halley only comes around once every 76.4 years, and most of you will never get the chance again. Come and join us, and make sure you see this once in a life time event, in all its splendour, from a wonderful country, with three of the most popular astronomers around.

A finalised Itinerary is now available, and for all this our price is only £1,150. This price is quoted on the 28th May 1986, our dead line for deposits was the 29th May. There may be a slight increase for those booking after the 29th May, but I am sure it will be minimal. We will be taking bookings through-out the year, but be sure and secure your place as soon as you can. We wouldn't like you to be disappointed.

The address to write to is Andrew Gatward 19 Belle Vue Terrace, Halstead, Essex CO9 2DD: Tel Halstead 476844. Due to the tremendous interest in the trip, Andrew will promise an Itinerary as soon as possible, but please remember to enclose a SAE for reply. At the end of the itinerary you will find a small form, fill it in and get it back to Andrew as soon as possible, with your 10% deposit, making these payable to Premier Travel.

Don't be fools and miss this trip. You will regret it. Heather, Iain, Nigel and Andrew, look forward to spending 2 wonderful weeks in South Africa with you. You will have the time of your life. Pick up your pen and write now, We would love to hear from you.

HALLEY'S COMET 1986. THE CHANCE OF A LIFE TIME. NOT TO BE MISSED.

## ASTRONOMY CAMP SUMMER 1985

Week's camp for astronomers is to be held from the 9th to 16th August next year at the Aston Montford Field Centre in Shropshire. The highlight of the week will be the Perseid meteor shower, which next summer coincides with the new moon, hence giving ideal viewing conditions. Weather permitting we hope to be able to hold group observation of the Perseids, in a site with good skies, as part of astronomical programme based on working groups with major topics being meteor astronomy and comets, to coincide with the approach of Halley's comet. Other areas of astronomical interest will be covered, dependent on interests of the applicants. We hope to have speakers from both professional and amateur astronomy in addition to working group programme.

Astronomical programme will be combined with a non-astronomical programme designed to give all the camp members a very interesting and worthwhile week.

The price will be approximately £75 for the week, all accommodation and meals included. A deposit of £15 is payable on booking, cheques made payable to Astro-Camp. If you are interested and would like further information and/or wish to book, please contact, enclosing SAE:

Miss A Barrowcliffe,  
11 Millhouses Lane,  
Heffield, S Yorks, S7 2HD.

Rosemary Naylor,



### SHOP \*\*\*\*\* MAIL ORDER

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## National Astronomy Week

1985 NOVEMBER 18 - 24 COMMEMORATING HALLEY'S COMET  
In association with the Daily Telegraph



HALLEY'S COMET

The National Astronomy Week Committee are preparing a set of Halley Comet posters, which will be available, free, to astronomical societies who are planning exhibitions in conjunction with NAW. These will be A3 size and give some details of where and how to observe the comet.

For further information, get in touch with members of the FAS Council who will be kept informed as to when these are