

ORWELL ASTRONOMICAL

SOCIETY IPSWICH

Charity No 271313

FEBRUARY 2001

We hope you had a good trip, Ted!



*The Doc' said to keep my
legs moving ~ but for
22 HOURS ???*

*LGilamb
2/2000*

Society News

1 Next Committee Meeting

The next committee meeting will be held on Saturday 17th Febuary 19:30 in the clubroom. This is an open meeting and any one who is interested is invited to attend.

2 Membership Subscription for 2001

Subscriptions for 2001 are due from 1st of January. If you have already paid please ignore this request.

The rates for 2001 are:

Junior & Concessionary	£10.00
Adult	£14.00
Family	£16.00

A renewal form was included with the January newsletter.

Please return this form with your 2001 subscription, so that the society membership records can kept up to date.

Please make cheques & P.O.'s payable to the: -

ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

Please return all subscriptions **with the renewal form** to

Martin Cook

Ipswich
IP4 5PZ

Group Visits to the Observatory 2001

Date	Group	Society Hosts
01 Feb 01	Kit Bird(member) + friends	G. Coleman/P. Whiting/ M. Whybray
15 Feb 01	15th Ipswich Guides	J. Appleton/ K. Goward/M. Lustig
01 Mar 01	W/bridge Round Table	D. Payne/ M. Cook/ P. Whiting
20 Mar 01	Orwell Park Radio Club	P. Whiting/G. Coleman/ M. Whybray
29 Mar 01	Rotary Club Ipswich East	R. Gooding/ K. Goward/ P. Whiting
17 Apr 01	Brownies(not confirmed)	P.Whiting/ M. Whybray

Any member who would like to come along and help out at a group visit will be most welcome.

Please contact Garry Coleman [redacted] for further information.

On Friday 18th May, 2001, Dr Allan Chapman will visit Nacton as a guest of the Society and the Orwell Park School to deliver a lecture on Sir G.B.Airy, The 7th Astronomer Royal.

In discussion with him I have undertaken to escort him to Playford and visit Airy's former homes, his last resting place etc. Allan is also very keen - as he says - "To visit the observatory Wilfred created".

I have also discussed at length with Allan the background history of our observatory. We came to the conclusion that his visit could also be marked by naming and dedicating the 10" Refractor after Colonel Tomline, much in the manner of nearly all telescopes of great age or historical interest. We suggested calling it the **Tomline Refractor**.

(This idea was agreed to at the AGM, and the Headmaster of Orwell Park School, Andrew Auster concurs).

By a great co-incidence, G.B.Airy's 200th birthday is in July of this year. As you know, his son Wilfred built our observatory.

I further propose that we invite along a few of Airy's direct descendants to the lecture, the mini history tour and the dedication. One of them could unveil the picture of Wilfred Airy that I have been able to obtain and which will be hung in the spiral staircase.

Night Sky

All times GMT

Sun

The sun will be rising approximately between 07:50 to 06:50
 The sun will be setting approximately between 16:40 to 17:30

Moon

1 st Quarter	Full Moon	3 rd Quarter	New Moon
1 st	8 th	15 th	23 rd

Mercury Mercury will at inferior conjunction on the 13th. When it moves back into the morning sky it will be too close to the sun to see

Venus Venus remains very prominent in the evening sky this month. It will be setting by about 21:00 in mid Magnitude -4.6

Mars Mars will be rising at about 02:00 this month. Magnitude 0.2

Jupiter Jupiter will be observable most of the night. It sets about 02:00 in mid month. Magnitude -2.4

Saturn Saturn will be observable to past midnight. Setting at about 1:30 Magnitude -0.2

Uranus Uranus will be in conjunction with the sun on the 9th

Neptune Neptune will be rising about an hour before sun rise this month.

Event	Details	Date
AstroFest	Kensington Town Hall Hornton Street London	2 nd & 3 rd February
Lecture Meeting	Dr Chris Welch 20:00 Friends Meeting House	Friday 9 th February
Astronomy Workshop	The eye and observing techniques School science room 19:45 to 21:00	Wednesday 14 th February
Astronomy Workshop	Constellation close up: Leo School science room 19:45 to 21:00	Wednesday 14 th March
North Essex Astronomical Society	They have recently opened a new observatory. A visit will be arranged	No date for this yet
BAA Winchester Weekend		6 th to 8 th April
Astronomy Workshop	PC packages for PC's School science room 19:45 to 21:00	Wednesday 11 th April
Visit the Norwich AS Observatory	Visit to be arranged	April
Visit to Cambridge AS and Braintree AS	These were proposed at the AGM	Nothing arranged yet
Astronomy Workshop	The Sun, our star School science room 19:45 to 21:00	Wednesday 9 th May
Lecture meeting	Dr Allan Chapman Lecture on Sir G.B.Airy, 7th Astronomer Royal at Orwell Park School, followed by the official re-naming ceremony of the Orwell Park telescope	Friday 18th May
BAA Exhibition Meeting	London Guildhall University	July Date not yet fixed
Summer Barbecue		Date to be fixed.
Summer Excursion	Space Centre Leicester	Date to be fixed.
Open Weekend		Date to be fixed.
Equinox Star Party	Thetford Organiser; Loughton A.S	14 th to 23 rd September
Christmas Meal		Provisional dates 12 th or 19 th December

Additional events will be added through out the year

4 Re-Naming Ceremony of the Orwell Park Telescope.

This has been taken from an email recently sent out by Ken Goward. (If you would like to be included on the society email distribution list, please send you email details to Pete Richards: [redacted])

Astronomy Workshop Wed Feb 14th 2001.

The subject for the above workshop will be 'The eye and observing techniques'. Pete Richards will be the main presenter. Anyone with ideas and information on the subject who would also like to contribute, please speak to Pete. Ted Sampson.

Astrophotography Workshop and Practical Session

The above two sessions were held on the 10th and 15th January respectively, and attracted a turnout of about 10 people each night.

I guess this number might have been higher if it had been advertised in the preceding newsletter but unfortunately this slipped through the net!

The Wednesday workshop was put together by Neil Morley with extra images and slides from other members. The talk was presented mainly using a high brightness computer projector borrowed with thanks to BT, which proved very good for showing a mix of text, graphics and high quality images (and raised interest at the AGM on the 13th in the society obtaining one for future talks and public visits!) After a quick review of the three main methods available for capturing images using a telescope (prime focus, eyepiece projection and afocal), a significant portion of the talk was given over to presenting slides and scanned-in images from the previous year's astrophotography night (yes - some members including myself had finally got round to finishing their films and getting them developed!) and other individual photography and digital imaging efforts. Thanks to Neil for an excellent presentation.

The following Monday was the practical follow-up to what had been learnt, when various SLRs, digital cameras and even video recorders were in evidence. First off was an attempt to photograph the crescent of Venus as it sank in the Western haze twinkling lovely rainbow colours, but largely useless for photography. However, Jupiter and then Saturn were nicely positioned and a succession of SLRs were attached for prime focus and eyepiece projection. One the Jupiter's moons emerged from behind Jupiter just before photography began, and a moon shadow was also visible just above the South equatorial belt. It will be interesting to see if these were captured well by anyone's photography!

Everyone experienced the usual problems of focusing an SLR with a focus screen designed for much higher light levels. Maybe the society needs a camera specially adapted to the purpose with a magnifying eyepiece. Finally, the last remaining members tried photography of the Orion nebula. The exposure time suggested in a reference book was 4 hours, but this had to be drastically shortened to 5 minutes however, so only the stars may be visible on this one!

At the same time as the above was going on, another team was busy attaching the society's low light video camera (actually designed for low light surveillance use) to the larger finder telescope, and displaying the images on a monitor. Images of Jupiter and Saturn around 20mm across were obtained on the TV screen, and Jupiter's satellites were quite visible. However, there was a problem with the detail being washed out of the planets themselves, probably due to the camera AGC applying too much gain and saturating the output signal. This was later compensated for by the observation that when rotating the dome, as the shutter moved across the line of sight of the telescope it acted as an iris reducing the light input to the camera progressively such that a much better exposure was obtained and Jupiter's belts became visible. This camera looks very promising for use when guiding to take long photographic exposures, or on the main telescope for allowing groups of people to see images at the same time, for visits, occultation events etc.

Several people finished off a film during the Monday session, so hopefully it won't be as long as last time before we can see some results. I've already posted my slide film off, which also has (I hope) some pictures of the lunar eclipse taken with a telephoto lens.

Finally, a reminder of the remaining workshop sessions (gleaned from the September 2000 newsletter) , in case they do not appear elsewhere in this newsletter. All begin at 7:45 p.m. in the classroom in the far right hand corner of the tarmac area you enter when passing from the grassed entrance area of Orwell Park School through the opening in the hedge on the left. There will be a practical session of some sort on the following Monday nights in the observatory, also giving an opportunity to use the small telescopes in particular.

14th February - The eye and observing techniques

14th March - Constellation close-up : Leo

11th April - PC packages for astronomy

9th May - The Sun

Mike Whybray

OCCULTATIONS DURING FEBRUARY

The table lists stellar occultations which occur during the month under favourable circumstances. The data relates to Orwell Park Observatory, but will be similar at nearby locations.

D or R	Date & Time (UT)	Lunar Phase	Sun Alt (°)	Star Alt (°)	Min Dist (rad)	Star	Mag
D	03 Feb 17:58	0.73+	-11	51	0.69S	ZC 718	6.0
D	03 Feb 22:43	0.74+	-50	44	0.27N	ZC 736	6.4
D	05 Feb 00:16	0.84+	-54	41	0.41N	ZC 905	6.9
D	05 Feb 18:32	0.91+	-16	43	0.97S	36 Gem	5.3
D	28 Feb 18:28	0.26+	-9	39	0.76N	ZC 401	6.3

James Appleton

VISIT BY CLACTON & DISTRICT ASTRONOMICAL ASSOCIATION

On **Wednesday 31st January** or – if overcast - on the first clear Weds evening thereafter, members of the Clacton AA will be coming along to visit us at the observatory and share some eyepiece time on our instruments. Our Clacton friends were very supportive of last year's Open Weekend (OA2K) and it would be nice to see a good turnout from OASI members for what promises to be an interesting evening of observation and yarn swapping. *Ken Goward*

THE FOUNDING OF THE ORWELL PARK OBSERVATORY

Part 2

In the first of these articles we discussed Colonel Tomline's background, wealth and political career away from Orwell Park. This article will deal with his occupancy of the Orwell Estate, his land holdings, the establishment of our observatory and his attitude towards astronomy.

Tomline purchased the Orwell Park House and estate around 1848 or 1850¹ from Sir Robert Harland. Within a short time he had the original mansion partly demolished and replaced with the beautiful red brick building we see today. The architect was a Mr Burn and Tomline chose an Italianate design, the grandest of three plans submitted by him.² The old mansion's façade was reversed with the new entrance facing north. Tomline had one of the finest art collections in England, including works by Holbein and Murillo. He also built up one of the finest libraries of the day, with many first and rare editions. Orwell Park mansion became something of a treasure store. Over the years much other work was carried out around the building, including the observatory tower and eastern extension, which was not started upon until the turn of the 1860/70s. However, with the reader's indulgence, I propose to discuss the building and design of the observatory in greater detail in the next article. Nacton village was extensively remodelled – houses close to the mansion were knocked down and local stories have it that the front doors of those along the main village road were altered to make side entrances so that he wouldn't be stared at when passing by.³

Colonel Tomline purchased huge tracts of local land and his acquisitions are explained in detail in the following extract from the Ipswich Journal; *'The Orwell Park estate comprises 18,479 acres, not one single part of which was inherited by the late owner. It was all accumulated by purchase, and the result of his continuous acquisition was that he became the owner, with the exception of a few small holdings, of nearly all the Colneis Hundred⁴, having a frontage to the sea of about six miles, and*

¹ 1848 according to the Ipswich Journal, 1889 August 30th. 1850 according to Gillian Bence-Jones in her book 'Orwell Park'.

² 'Orwell Park' by Gillian Bence-Jones.

³ Victorian class values prevailed here, it would seem the Colonel did not wish to be overlooked by his tenants, reputedly saying *'No gentleman's house should overlook another's dwelling'*.

⁴ The Felixstowe/Nacton Peninsular, bounded (approximately) between Ipswich and Woodbridge by the Woodbridge Road, to the north - the Orwell to the Deben.

there are few properties in England which combine so many attractions and advantages. The Colonel's Suffolk possessions also include a pretty little estate at Bacton and Old Newton, the home of his ancestors. Col. Tomline obtained his extensive proprietary interest in the soil of Felixstowe and the neighbourhood by purchasing in 1867 three thousand acres of copyhold land, one thousand acres of shore and saltings, quit rents, rights of common, and 2,400 acres of unenclosed lands, &c., with six farms, cottages, Walton Ferry Inn, and woods, known as the Trimley estate, the property of his Grace the Duke of Hamilton. This was bought privately from Messrs. Fairbrother, Clark and Co., who had successfully offered the estate to public competition at Tokenhouse Yard on July 23rd 1887. Before this (in 1862) he had purchased the Old Hall Farm, at Felixstowe, now in the occupation of Messrs. Hyem, then the property of the representatives of Capt. Montague R.N., deceased, and about 210 acres in extent. Earlier still (in 1856) he had bought the Peewit Farm of Mr. Abraham Abbott, of Walton (father of Mrs. Shuckforth Downing, whose husband was himself Colonel Tomline's confidential agent from 1872 to 1876) for £6,500. This was 152 acres in extent. Another purchase, even earlier, was the Wadgate Farm, at Felixstowe, 434 acres, bought from Mr. John Jakes Steele; and further acquisitions were the East End Farm (now, as regards the farmhouse, the head-quarters of the Felixstowe Golf Club), almost 500 acres; and Mr. William Fulcher's estate, the Grange Farm, of 365 acres. Indeed, every farm in the Colneis Hundred which came into the market, and was added to the already large land possession of Colonel Tomline. He did not stand for price when he had made up his mind to have an estate, as proved by his purchase at public auction (through Mr. Shuckforth Downing, then his agent) on the 14th July, 1874, of the Cottage Farm at Walton – commonage – for £8,350. Whilst Mr. Downing was his agent Col. Tomline bought through him no less than £156,000 worth of property in Walton, Felixstowe and Harwich, besides constructing the railway to Felixstowe at a cost of over £140,000. The Riby Grove estate in Lincolnshire, comprising, 8,439 acres, with a rental of £11,534.2s., were entailed upon the Colonel and his brother William. He acquired his brother's interest in the property by purchase about the year 1875. In addition to the Riby estate, Colonel Tomline owned, amongst other property at Grimsby, a large piece of valuable land extending from Riby Square to Humber Street'.⁵

The following extract gives one an insight into the level of Tomline's personal wealth; 'Colonel Tomline was at one time said to have been the largest fundholder in England, and it was understood, by those who transacted business for him, that a certain portion of his income was always set apart for the addition of field to field and house to house, and that from this source he had ample means to meet all expenses. One story is told, upon pretty good authority, which affords some idea of his vast pecuniary resources, as well as a glimpse of family history. The Riby Grove estates in Lincolnshire, comprising 8,439 acres, with a rental of £11,534. 2s., were entailed upon the Colonel and his brother William. At the dinner table one night, about the year 1875, when William Tomline was staying at Orwell Park, there was something of a quarrel between the two, the upshot of which was that the Colonel purchased his brother's interest in the property there and then. "I want so much money," he said directly afterwards to his business agent, "go and mortgage the whole of my estates." When the Colonel said "go," those who knew him went. The estates were mortgaged accordingly, and the money raised. When the amount for the first six months' interest was presented, however, the Colonel was so enraged at the amount that he communicated instantly with his brokers, obtained the ready cash, and paid off the mortgage at once'.⁶ Undoubtedly, a number of OASI members reside on land formerly in Tomline's ownership and I am most grateful to Dr Roy Tremlett for supplying me with an extract from the title deeds of his home in Bell Lane, Kesgrave. The extract shows that the freehold of Roy's land passed upon the Colonel's death to Ernest George Pretymann and to his eldest sons successively.⁷

An enduring monument to Tomline is the Port of Felixstowe, the town and rail connection. Built and worked by his own Felixstowe Railway and Pier company of 1875, the branch line from the Eastern Union Railway at Westerfield was opened in May 1877, with stations at Derby Road, Orwell, Trimley, Beach and Pier. By 1879 the Gt Eastern railway assumed the running of the line and by 1887, confident in the growth of the port and town, had purchased the whole undertaking from Tomline's company.⁸ (The old Orwell Station still stands and is privately owned, however, one can't help feeling its occupants must enjoy getting shaken senseless every

⁶ Personal Reminiscences, Lincolnshire Chronicle 1889 August 30th

⁷ The extract also finally clarifies to whom Tomline willed his extensive properties.

⁸ A Regional History of the Railways of Gt Britain, Vol 5, The Eastern Counties. Author D.I. Gordon, 1968.

⁵ Ipswich Journal 1889 August 30th

time a modern freight train rattles through!!) Eventually renamed the Felixstowe Dock & Railway Company, in 1884 Tomline's firm was authorised by parliament to construct a dock basin. The rest, as they say, is history..

Anecdotal stories and facets of Tomline's character contained within our archives are legion and members may be interested to know that this material is gradually being copied onto disk for posterity. In the fullness of time copies will be available for loan to members. **However, I am conscious that this newsletter is broadly supposed to be about astronomy – so let us turn our attention to the Colonel's attitude to our science..**

A fundamental belief of Tomline's was that it was his duty as a gentleman *'to employ his money in every direction in which human activity demanded recognition and the co-operation of men of wealth'*.⁹ A life long fascination with the stars naturally led to the building of one of the country's finest private observatories at Orwell Park. (As previously stated, the thoughts behind the design and the design of our observatory and its building process will be discussed in the final of this trilogy of articles). A clue to the depth of his scientific and engineering knowledge comes in this next extract; *'With astronomers I have heard him apparently holding his own, and the same with chemists. Once with a well known ironworker, who was a foreman at a large Government establishment, so much learned talk about hardening and tempering, and case-hardening and annealing took place that I asked the man afterwards whether our acquaintance's knowledge of steel and metals in general was as profound as it seemed to an outsider to be. The answer was, "If the Colonel had worked iron and steel all his life he could not know more about those metals than he does."*¹⁰ Most likely because of his many commitments and not least because of a lack of confidence in his own observational abilities, Tomline employed a professional astronomer to operate the observatory. The astronomer was to run the observatory as a research establishment and also to be on hand for lighter occasions, such as showing favoured guests the rings of Saturn and so forth. A home was also provided close to the

⁹ Personal reminiscences by one who knew him well. EADT 1889.

¹⁰ Ditto. Although I have not – yet – come across documentary proof of this, it is my strong suspicion that this was from a conversation between one of the Ransome's of Ipswich family or Charles May and Sir G.B.Airy (7th Astronomer Royal). Around the period in question, Ransomes built a number of instruments on Admiralty contracts for the re equipping of the Royal Greenwich Observatory to designs by Airy.

mansion for him and his family.¹¹ It is not to say that Tomline did not make his own observations but – thus far – I am unaware of any records of observations made by him. The astronomer he employed was one:

John Isaac Plummer MA, FRAS. (1845 –1925)

Plummer was a protégé of that colourful Victorian Astronomer, Revd Dr Temple Chevallier, and was one of a small band of assistants at the Durham University Observatory picked out by Chevallier in a ground breaking move to be trained for the professional running and management of astronomical observatories.¹² Plummer's observational work and his many contributions to the monthly notices of the RAS is very well covered in our green coloured booklet 'A brief history of the Orwell Park Observatory 1684-1991' and I shan't take up further newsletter space by repeating it. However, one cannot resist quoting the lecture at Harwich, chaired by Tomline, at which Plummer was invited to speak upon the recent transit of Venus. The 'chemistry' and friendship between patron and employee and Tomline's singular wit is self evident; *'Some years ago, the Colonel was announced to take the chair at a lecture in Harwich, on "The Transit of Venus." As I happened to be staying with my family in Dovercourt, I thought I would attend. I met Colonel Tomline at the station in a great fume because in changing carriages at Manningtree, he had lost his friend who was to deliver the address. "Oh yes," he said, "astronomer-like, you know, I expect he was watching the stars instead of looking at the train when it started. It's devilish awkward, isn't it?" I suggested that the lecturer would probably charter a special train by wiring to Ipswich. "If he don't," I said "what will you do?" "Oh, I shall have to get some Harwich Venus to give us an address on the transit of an astronomer," was the ready reply. Somehow or other, I remember the missing gentlemen ultimately did put in an appearance, and a very excellent lecture he gave us, but, in discussing it over a glass of wine afterwards, the Chairman thought the language had been a little high-flown for an audience of boatmen. "Did you notice what he was saying when I gave you a look?" he asked. "No," said I. "Why, 'any of those among my audience who happen to be skilled in the art of natation.'*

¹¹ The house, formerly known as the Astronomer's House but latterly named Orwell Dene, stands today at the top of the drive at the junction with the Levington Road.

¹² Six individuals were eventually trained thus. Source - Dr Allan Chapman 'The Victorian Amateur Astronomer, Independent Astronomical Research in Britain 1820-1920' Wiley Praxis 1998.

*There's a sentence for you, instead of saying, 'any d-d fellow here who can swim!'"*¹³

Colonel Tomline's death

With the exception of his last eight months, all the evidence points towards Tomline having enjoyed an almost rude state of health throughout his 77 year life span. The beginning of the end came just before Christmas 1888 at Orwell Park when, on 21st December he suffered what I think may have been a stroke.¹⁴ Obituaries describe the nature of his illness as *'having been struck down by a paralysis – having changed features and never quite the same man again'*. After weeks of care under a local doctor he was able to take carriage exercise and enjoyed trips to Rushmere Heath to watch the Suffolk Hussars on training exercises. Despite a number of minor relapses, by May he was able to travel to his London home where his health seemed to rally for a short while. On Sunday August 18th he took a turn for the worse and gradually faded away in the week following, suffering a *'paralysis of speech'*. He died in his sleep on Sunday afternoon 25th August 1889. Considered eccentric in life, the method of his funeral was considered - for his time - somewhat oddball, he was cremated at Woking. There was a certain level of consternation within the Pretymans family regarding Tomline's will and they even speculated that he'd left his estate to the Astronomer Royal!¹⁵ However, as mentioned earlier in this article, the estate remained within the family. Regrettably, his heir had no interest in astronomy and within a year of Tomline's death Plummer had left the observatory and that part of the Orwell Park mansion fell into disuse.

To close, I make no apologies for using yet another extract to illustrate Tomline's love of the stars and, perhaps, his thoughts on man's place in the grand scheme of things; *'I particularly remember one glorious summer evening as we stood together on the terrace at Orwell Park just before retiring for the night, my companion (Col Tomline) suddenly changing the subject of conversation, and most impressively pointing up at the stars, saying, "How can a man, looking at that sight, be such a fool as to doubt the existence of an all wise and superinding being?"'*¹⁶ K.J.G.

¹³ Personal reminiscences.

¹⁴ I hasten to add that the whole extent of my profoundly limited medical knowledge comes from regular St John's First Aid training during my years in the Police Service and watching ER on the telly!

¹⁵ Orwell Park by Gillian Bence-Jones.

¹⁶ Personal reminiscences. (One wonders what the good Colonel would make of that same view in 2001 with the added nuisance of light pollution, much of which - by a supreme irony - comes from his own creation at Felixstowe!!)

After a succession of cloudy wet nights (and days) suddenly there is a break in the weather and the clouds drift away to reveal a perfect star spangled night. You drag the telescope out of the cupboard blowing off the dust and wiping away the cobwebs. Then you step outside into that perfect night, only to be hit by wall of ice cold air. It's cool enough to freeze your finder off its mounting and you realise you only have five minutes to observe before your enthusiasm expires from hypothermia. What do you do? Do you - stick to solar observing; wait for balmy summer evenings; or get a CCD camera and rig it up so you can work it from the comfort of a fireside chair? Well, whereas solar, CCD and summer observing are enjoyable there is no reason why you should miss out on observing the best of the Winter sky. By selecting the right clothing you can observe for as long as you like in comfort, even on when the temperature dips below freezing point.

When the Herschels (William¹ and Caroline²) were observing in the late 18th century they would rub raw onion on their skin to try to reduce the biting cold on the skin in conditions which froze the ink in Caroline's inkwell as she wrote the observing log. Even if you can tolerate the cold like the heroic observers of the past you will be more productive for longer and less prone to error if you are doing serious work and get more enjoyment from your observations if you observe for fun.

For astronomy the requirements for cold weather clothing are usually different and are generally technically easier than for many other outdoor pursuits. If you are observing from your back garden or after driving to an observing site you don't need to consider the need to wick perspiration or vary the amount of insulation as you would when hiking, for example. However, some of the clothing used for rambling, sailing, skiing, and other outdoor sports can also be used as observing gear. Clothing you have already for everyday use plus one or two other items may be all you need.

What you need to wear will depend on what conditions you want to observe in and where you observe from. An observatory, for example, will provide protection from wind chill, though it should be close in temperature to the outside air in order to avoid rising currents of hot air which will adversely effect the seeing conditions. It will also depend on your sensitivity to the cold.

Almost half the body heat lost in cold conditions is lost from the head. Perhaps, for people engaged in astronomical observing the proportion lost from the head may be even greater than for walkers since the observer will not be exerting much energy except in thinking about what they are observing, increasing the blood flow in the brain! Having good insulation for the head and upper body will be all you need to keep comfortably warm in most conditions. If you keep your head and torso warm your body will not be trying to conserve heat by constricting the blood flow to your extremities giving you cold hands and feet.

In keeping your upper body warm lots of layers help trap air and are generally more effective than a smaller number of thicker items. Synthetic materials (eg. polyester) are generally warmer than cotton. Wool also provides good insulation properties. They should be a reasonably snug but not such an excessively tight fit that they restrict circulation or reduce the amount of trapped air (which is the key insulating material). A good insulating coat, preferably with a hood, finishes off the basic equipment for the upper body. If you are in an unsheltered position, the top layer should be windproof or at the very least wind resistant.

¹ William Herschel is famous of course for the discovery, from his back garden in Bath in 1781, of Uranus, the first planet to be discovered beyond those known since ancient times. He also mapped out the distribution of the stars in three dimensions producing the first model of what we now know as the galaxy and discovered infra-red light.

² Caroline Herschel holds, to this day, the record for the largest number of comet discoveries by direct observation by any UK observer.

Since the observing is generally not continuously walking during an observing session the next most important thing is to reduce heat loss from your feet. Standing on a heat conducting surface will accelerate heat loss from the feet and a wooden floor will go a long way to maintaining warm feet. Footwear should have soles which do not conduct heat too readily and ideally it should provide some insulation in the uppers as well. Of course, thick socks help as well.

Although, as I mentioned above, under all but the coldest conditions most people will find they can keep their hands uncovered for handling telescopes and cameras etc. if their head and body are very well insulated. When the air is biting cold, however, gloves will also improve your comfort.

People who go observing in extreme conditions, in the UK or abroad, you might want to consider a face mask as well. Even in slightly higher temperatures a scarf to wrap round your neck or face may be useful.

HEAD: A fleece, 'Thinsulate' or wool hat will significantly reduce heat loss and is arguably the most important single item even inside an unheated observatory. A balaclava or a hat with side flaps protect against chilly ears. An inherently windproof hat or the addition of a windproof layer is important if you aren't sheltered from the wind. I usually pull the hood of my coat over the top of a fleece hat for maximum insulation.

BODY: For cold conditions start with some thermal long johns and a long sleeved thermal top. I prefer not to have wool in the base layer as I find even soft wool slightly irritating; polyester is more comfortable. The middle layers could include one or two items such as thick shirts or sweatshirts. Sweatshirts and thick button shirts are often 100% cotton but it is possible to find examples which are 100% synthetic or have a high proportion of material other than cotton. A fairly chunky wool jumper is a good next layer though you may have to look around in outdoor and camping shops or yacht chandlers to find a good one. The next layer should be a warm well insulated coat which is wind resistant (unless you're well sheltered though heat loss can be reduced by a wind resistant layer in calm conditions as well). In moderately cold conditions I find the fleece jacket and waterproof shell I use for hill walking provide is sufficient, but in colder conditions the addition of a quilted body warmer or a switch to a more insulating coat is necessary. (A fleece could even be next to last layer with a coat on top). A lined parka or quilted walking coat or a ski jacket are all possibilities for the outer layer. I have seen a range of coats used by observers which work well ranging - at the two ends of the price spectrum - from an army surplus thermal lined parka costing fifteen pounds to a down filled mountaineer's jacket costing around two hundred and fifty pounds³.

LEGS: Although not previously mentioned a pair of long trousers is generally a good idea in cold weather ☺. A pair of full-length thermals, just like the thermal top, under ordinary trousers are often all you need. Jeans are not efficient at retaining heat and they're not windproof so go for ordinary trousers or specially design thermal trousers instead. In outdoor pursuits shops you can find trousers designed for hiking which are made from a thick insulating material and others which have a thermal lining. Optionally, a pair of long-john style saloppettes (padded trousers) on top of the other two layers provide serious protection against very cold conditions. One OASI member finds that a pair of saloppettes worn over jeans and ordinary cloths and everyday coat and a wool hat is all he needs. I acquired a pair of hardly used saloppettes from a friend when I went skiing several years ago. They've had far more use for observing than they ever did skiing, either for me or the previous owner. The end of season sales are a good time to buy skiwear for observing since you won't need to worry

³ A duvet jacket is generally unnecessary for observing since you can use bulkier coats and more layers which are heavier but less expensive. As well as those who's other interests warrant buying a duvet jacket, amateur astronomers who go on observing expeditions abroad in very cold conditions (eg. observing aurora in Alaska) may find it a justifiable purchase. Having bought such a jacket one OASI member finds the jacket is all that's needed on top of jeans and T-shirt to go out observing in the back garden on quite cold evenings!

about whether it's last years colours! If you don't want them for skiing as well, a pair with design deficiencies for skiing, and hence reduced in price, may still work well for observing.

HANDS: You could use woolen or padded (eg. 'Thinsulate') gloves which you take off when adjusting the focus of your telescope. Thin liner gloves (design to be worn under more padded gloves) will provide some protection whilst allow you to operate fiddly equipment. Fingerless gloves are an alternative. For very cold conditions you could try liner gloves with fingerless gloves on top or have something like 'thinsulate' padded gloves which you put on top when not making those fine adjustments to observing equipment. Gloves help of course, but when using cameras, binoculars or telescopes I prefer to use a pair of thin liner gloves. These are designed to be worn under thicker gloves for conditions of extreme cold for mountaineering but for cold weather observing in Southern England they are usually sufficient on their own. I also have a pair of 'Thinsulate' padded gloves just in case. Fingerless gloves may be better if your optical equipment is particularly fiddly. Often I find that even in quite cold conditions the gloves are not so critical if the rest of clothing is effected at retaining heat, only putting my hands in my pockets if the air is freezing.

FEET: Ordinary shoes often conduct too much heat away from the feet when standing on cold ground. Trainers usually have insufficient insulation in their uppers and are not generally recommended, but I should mention that one OASI member finds his trainers the ideal footwear for observing because the insulating properties of the soles keep his feet warm even when standing on a cold surface (with standard department store thermal socks). Ordinary shoes, particularly those with leather soles, are not very effective at keeping your feet warm. Walking boots, apre-ski boots or a pair of insulated 'moon boots' will certainly help⁴. Sometimes standard ankle length thermal socks are all you need but in colder conditions, or if you are prone to cold feet, then long warm socks – woollen walking socks or skiing socks - on top of either ordinary socks or thin thermal liner socks are needed. My preference for very cold conditions is a pair of thin thermal liner socks with knee-length mountaineering socks (designed to prevent frostbite when trekking across the poles and on mountain tops) worn with a pair of walking boots.

SUMMARY

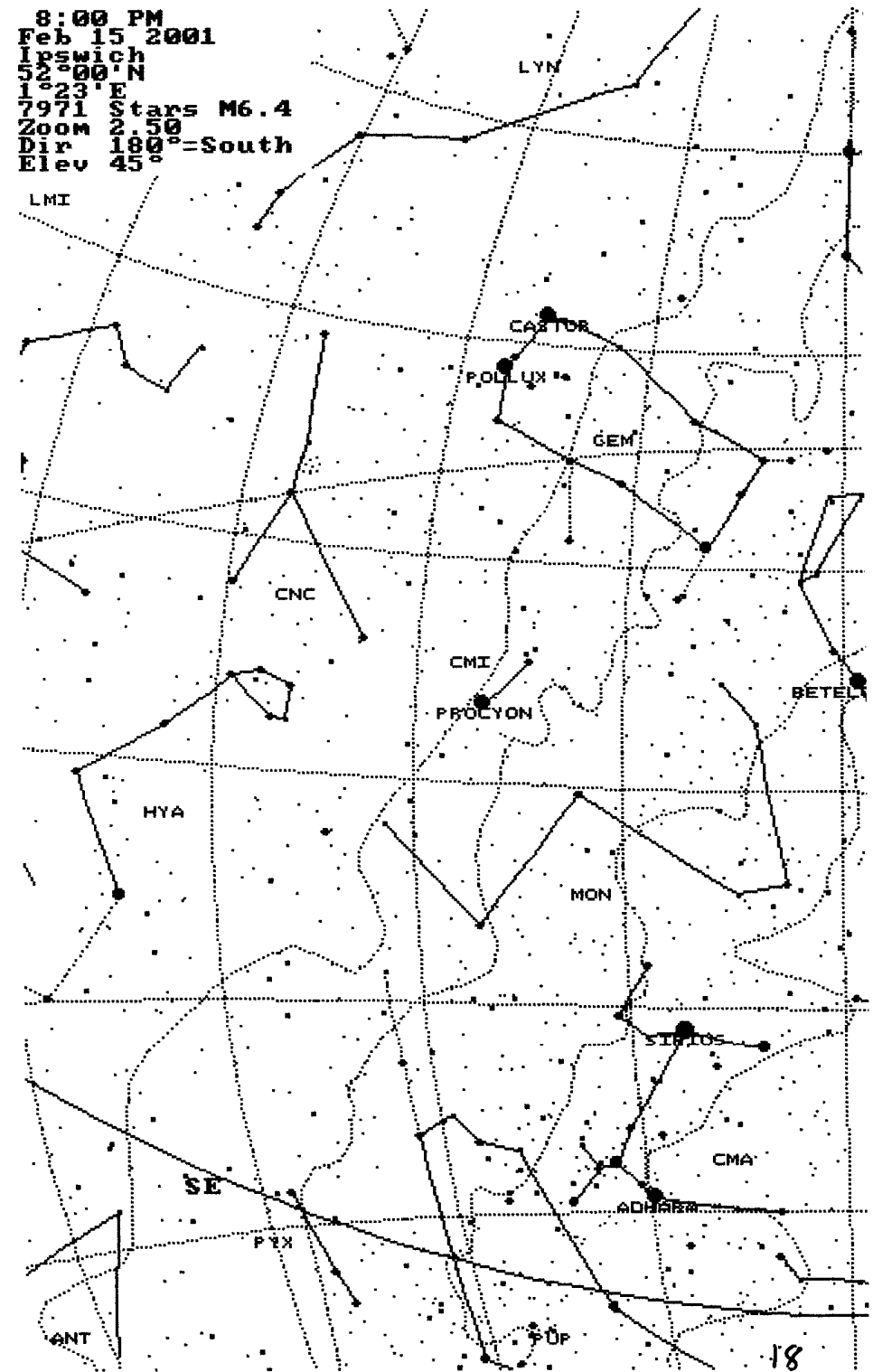
Keep your head and torso warm in particular. Keeping your feet warm – particularly avoiding loss of heat by conduction into cold ground - being the next important area to consider. Use lots of layers with synthetic materials and wool. Cotton is cool and not good for insulation. Cloths should be snug but not too tight in order to trap lots of air which is the key to keeping warm. Avoid jeans and use standard trousers made from synthetic or wool material. A pair of thermals – tops and bottoms - underneath or saloppettes on top are good ways to improve your insulation. Perhaps use both if you want to observe in sub-zero conditions. Gloves can add to your comfort.

⁴ I tried Wellington boots (with walking socks underneath) one evening but I found my feet got very cold. I have seen insulated wellies which might be better.

2001 COMMITTEE

	Home Phone	Work Phone
CHAIRMAN	D Payne	
SECRETARY & WORK PARTY ORGANISER	R Gooding	
TREASURER & PUBLICITY	M Cook	
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		Ipswich Suffolk IP1 6AE
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8:00 PM
Feb 15 2001
Ipswich
52°00'N
1°23'E
7971 Stars M6.4
Zoom
Dir 180°=South
Elev 45°



FOR SALE

Vixen 60mm OG X 700mm Focal Length Refractor.

Offers around £75.00

Vixen SP Equatorial Mount.

Offers around £100.00

Graticule Eyepiece Adaptor

Offers around £75.00

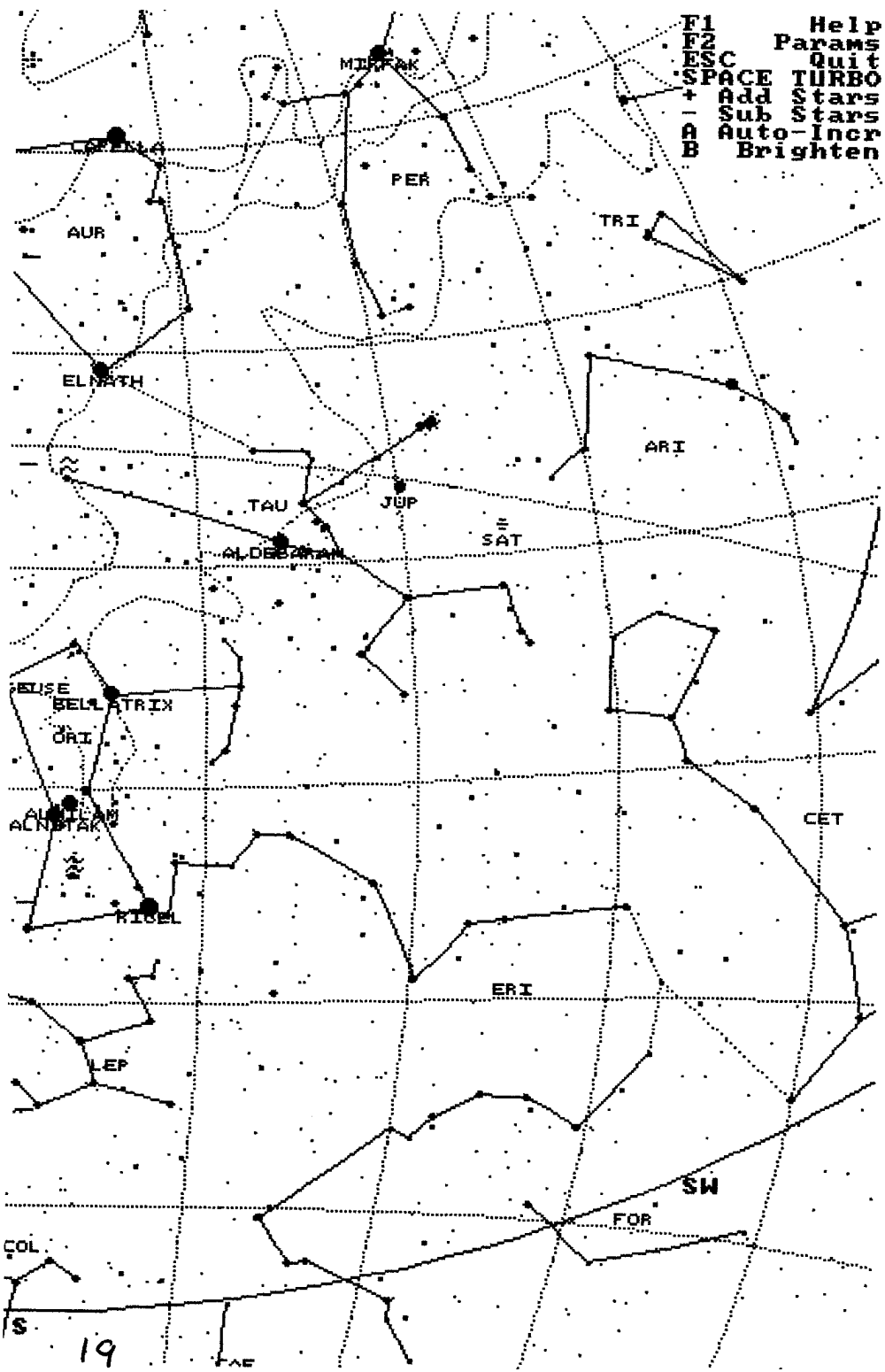
Collection of Astronomy and related Slides (Approx 1,000)

Offers around £100.00

Please contact Bill Barton on
[redacted] (Office hours)

Or [redacted] (Evenings)

F1 Help
 F2 Params
 ESC Quit
 SPACE TURBO
 + Add Stars
 - Sub Stars
 A Auto-Incr
 B Brighten



Observing Programme For February

Dates	Observing Director	Activities
Mondays <i>19th</i> from 7.30pm	T Sampson	General Observation
Tuesdays from 7.30pm	G Coleman	Group Visits
Wednesdays from 8.00pm	M Cook D Payne	Nebular & Faint Objects
Thursdays <i>1st 15th</i> from 7.30pm	G Coleman	Group Visits
Fridays from 7.30pm		Miscellaneous

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

Special Events

- 1. COMMITTEE MEETING**
The next committee meeting is to be held on Saturday 17th of February at 7.30pm in the club room at the observatory. All members are welcome to attend.
- 2. LECTURE MEETING**
A lecture is to be given by Dr Chris Welch of Kingston University on 21st Century Space Propulsion Systems. The venue is The Friends Meeting House In Fonnereau Road Ipswich on Friday 9th February at 8pm.
- 3. ASTRONOMY WORKSHOP**
The next astronomy workshop is to be held on Wednesday 14th february at 7.30pm. The subject is "The eye and observing techniques" Pete Richards is the main presenter.

Society Contact Details

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