



# CAPELLA

CAMBRIDGE ASTRONOMICAL ASSOCIATION

Newsletter 142. January/February 2010.

[www.caa-cya.org](http://www.caa-cya.org)

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## Contents

Chairman's comment .....	2
Neil Bone Project .....	3
Speaker meeting .....	3
Friday 20th February 2010 Anna Quider .....	3
Members' Contributions .....	4
A Memory Refreshed .....	4
Following in Stanley's footsteps .....	5
Virtual Moon Atlas .....	6
Reminiscences of my first 20 years in the CAA. ....	6
A few photos from the recent CAA trip to Surrey	
Satellite Technology. ....	8
CAA/CYA News .....	9
CAA Secretary required. ....	9
Loan Telescopes .....	9
Observing Sessions .....	9
CYA meetings .....	9
7 -11 year olds .....	9
Saturday 30th January 2010 .....	9
Saturday 27th February 2010 .....	9
CYA 11+ group .....	9
Monday 1st February 2010 .....	9
Monday 1st March 2010 .....	9



*Is this the bravest CAA member? Tony (who appeared on the front cover of the last issue of Capella) appears as Miss Toni Starlett, a suspect in our CYA panto "Murder at the Observatory". Tony agreed to play the part several months before the December meeting, but as the day of the panto approached Tony realized that he simply didn't have a thing to wear. A quick trip into town to visit sixteen shops and try on thirty seven outfits, meant he'd soon be the talk of the Association!*

*Photo by Dave Allen*

## Cambridge Astronomical Association and Cambridge Young Astronomers

President: Dr. David Dewhirst

Chairman: Brian Lister

Treasurer & Membership Secretary: Mickey Pallett

Committee: Dave Allen, Kevin Black, Paul Drake, Clive Gilchrist, Clive Holt, Barry Warman

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Loan Telescope maintenance: Dave Allen, e-mail day.vid@hotmail.co.uk

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Webmaster: Paul Fellows

Website: www.caa-cya.org

### **Chairman's comment**

#### A couple of "Farewells"

At the end of 2009 Nigel Brown, the CAA's longest serving member, died after a short illness. Earlier in the year I'd asked him to do an article for *Capella* and as usual Nigel came up with the goods - his article appears on page 6. While his article tells of how he joined the CAA and who was running it, it doesn't say much about his role in saving the CAA from going under. During the late 70s and early 80s the Association was in imminent danger of folding with less than a couple of dozen members, and Nigel - who was very much a behind-the-scenes-person - did a lot of the day to day running of CAA. Then in 1986 a committee was formed to stop the rot and of course Nigel was elected onto to the committee along with the other seven members who attended that AGM (there hadn't been a committee meeting for several years!). In a comparatively short space of time the Association's fortunes had been turned around, and numbers started to revive. Nigel, of course, got stuck in and produced the first few newsletters, was a regular volunteer helper with the early CYA meetings and helped out at all the CAA meetings and events. In recent years Nigel took a well deserved back seat, but it is safe to say that without Nigel the CAA would not be here.

The second "farewell" is to Stanley who is also a long serving Committee member, who having recently retired is moving to Northumberland (everybody keeps asking "why?"). Stanley has been a regular helper with the CYA and has appeared in many pantomimes as the infamous Dr Speck complete with pointy ears and being absolutely correct to seven decimal places. So, many thanks to Stanley for all his efforts and we've started to divide up his jobs. Mickey has been looking after admin of the loan telescopes, Dave has agreed to look after the maintenance of the loan telescopes (see page 5) and Brenda has kindly offered to make the Christmas cakes. Stanley's other jobs that still need volunteers to help iare:- someone to be CAA secretary (taking minutes etc - only six times a year), and a volunteer to help with the older CYA group - usually held on the first Monday of the month. Please contact me if you have some spare time and don't mind helping out.

Brian



*Stan getting ready to go North looking for comets. Good hunting Stanley. We look forward to seeing Comet Trafford.*

## ***Speaker meeting***

Friday 20th February 2010 Anna Quider

**"The Dusty Universe."**

Anna hails from Grand Island, NY, and she holds an Honors BS in Physics and Astronomy and a BA in the History and Philosophy of Science and Religious Studies from the University of Pittsburgh, USA. Her research encompasses the chemical composition, kinematics, and stellar populations of galaxies from the early universe and extragalactic gas clouds. She is in her third year of a PhD in Astronomy at the Cambridge Institute of Astronomy through the generous support of a Marshall Scholarship from the UK government and a National Science Foundation Graduate Research Fellowship from the US government.

The Dusty Universe is an introduction to the different types of dust found throughout the universe and what we can learn from this dust. The presentation discusses the dust samples that have been collected from numerous sources within our solar system, including recent results from the Moon, Mars, and comets, as well as how we can use this information to understand our Solar System. We then turn our sights to more distant objects, including exoplanets and galaxies, to explore how we can use glowing dust to find exoplanets and study the formation of stars in galaxies throughout the history of the universe.

This meeting will be in the Hoyle Building at the Institute of Astronomy, Madingley Road, Cambridge. The doors will open at 7.30 p.m. with the talk beginning at 8 p.m. The library will be open before and after the talk. Tea, coffee and biscuits will also be available after the talk.

### Neil Bone Project

Richard Miles, Director, Asteroids and Remote Planets Section, BAA

Last October, I set up a special BAA project in honour of our late Meteor Section director, Neil Bone, who sadly died last April at the age of 49. Some weeks before he died, Neil learned that an asteroid had been named after him as an acknowledgement of all that he had done in furthering amateur astronomy and popularising the subject amongst the public. It turned out (and I was able to explain this to Neil in person) that 'his' object has an unusual orbit which might be indicative of it once having been a comet. I also pointed out to Neil that 'his' asteroid happens to pass through an extremely low phase angle (i.e. Sun-Asteroid-Earth angle) of 0.03 degrees when at opposition this month. Such events are very rare, and enable one to measure the light-scattering properties of the surface regolith (soil) by measuring the extent to which asteroids brighten or fade as they pass through opposition.

I told Neil that we would be starting this project to observe not only 'his' asteroid but also any other bright asteroid that attained a very low phase angle at opposi-

tion. Project NeilBone has been up and running for 3 months now and we have 14 members participating in the observing programme following 12 asteroids of which (7102) Neilbone is the latest of 9 objects to reach opposition. This special event occurred on Monday, January 18 at 09h UT and I can report that Neil's asteroid was successfully observed at opposition under very good skies using the 2.0-metre robotic Faulkes Telescope North in Hawaii controlled over the internet. So far, Darryl Sergison and I have used Faulkes telescopes to observe (7102) on 18 nights. We shall now follow it from time to time over the next couple of months to watch how it fades.

Please share with me in the satisfaction that we have achieved what we set out to do all those months ago, honouring Neil in the bargain. For once, the weather gods have looked kindly on us!

If you wish to join this project, please contact Richard Miles at

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## Members' Contributions

### A Memory Refreshed

by Ken Day

Memory is a funny thing. How is it that one can remember events years ago and yet not remember why one has gone from one room into another. I can remember things going back years, things that happened whilst I was at school, and at infants' school at that! My earliest memory is being held in my father's arms and seeing these green lights in the sky, the aurora borealis. Listening to an edition of Blue Peter, it was mentioned that in 1938 there were sightings of the northern lights in Britain and Mallard broke the world speed record for a steam train (a record which, incidentally, still holds). The aurora were seen in February of that year, and I was 14 months old! Many people don't believe me, and who could blame them, but I have held this sighting to be true. But I did want to see them again.

Let's move on a few years, nearly 72 in fact. August 2009 saw our Golden Wedding anniversary and my wife and I wanted to celebrate it with something different. Miriam had always wanted to go on a cruise, something which didn't appeal to me, but on seeing the TV programme with Joanna Lumley as she went to see the lights, we agreed that we could combine a cruise with a trip to refresh my memory of the aurora.

We went into Premier Travel in Cambridge (other travel agents are available!) and there spoke to Leisa Olley. She had been on one of the cruises run by the Norwegian company Hurtigruten and assured us that if we went with them, we would be more than satisfied. So, there and then, she rang Hurtigruten, booked a 12-day cruise in a cabin of our choice on the ship of our choice which started on 5th. November sailing from Bergen.

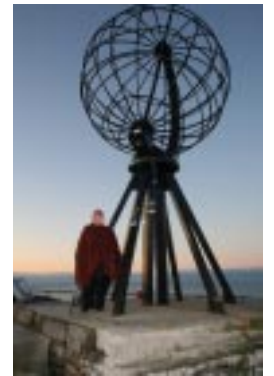
So, in the early hours of November 5th. we went by coach from Cambridge to Heathrow and flew to Oslo. When we got there, it was snowing hard and the runways were being kept clear by a train of snowploughs and our connecting flight to Bergen had to be de-iced before we could take off. How glad we were that we had taken warm clothing and sturdy footwear for dealing with snowy conditions. And what a waste of luggage space they were! We never saw another snowflake fall. Not one. Bergen was sunny, dry and warm (10°C) and so it continued for most of the cruise.

We boarded the ship, *MS Midnatsol*, and were greeted by the crew and the cruise began at 22.30. A word about Hurtigruten. Their cruises are not the usual style where the ship sails overnight, docks for the day then sails on the next night. Their ships are working vessels calling at stops all along the Norwegian coast, sometimes for several hours, sometimes for 30 minutes. They are, in fact, ferries carrying goods and 'locals' along the coast: they have this added extra of taking holidaymakers in superb conditions with wonderful food and courteous staff.

As we sailed north, we stopped of at several places long enough for a walk round some places such as Ålesund, a town where many of the buildings are decorated in an art deco style. In Trondheim, we had a coach tour of the city with several stops to take in the sights.

In Tromsø we were supposed to go on a dog sled ride but with no snow this was not possible. In any case, it would have been a bit difficult if there had been any snow because it was pitch dark soon after we reached Tromsø at 14.30.

Incidentally, by the time we reached Tromsø, we had crossed the Arctic Circle. This was at about 07.20 and a competition had been arranged to forecast the time to the second. Using a very complex algorithm called 'sheer guesswork', I was about 7 minutes out. At a ceremony the next day the winner, who got it right to the second, was presented with the company flag, signed by the crew with the date and time. She was also baptised by King Neptune - with ice-cold water, including 5 cm. ice cubes, down the neck! Those of us who had not crossed the Circle before were invited to be similarly baptised, and I can assure you that a ladle full of iced water, complete with large ice cubes, down one's neck is quite a shock to the system. Those of us who submitted to the treatment walked around the deck

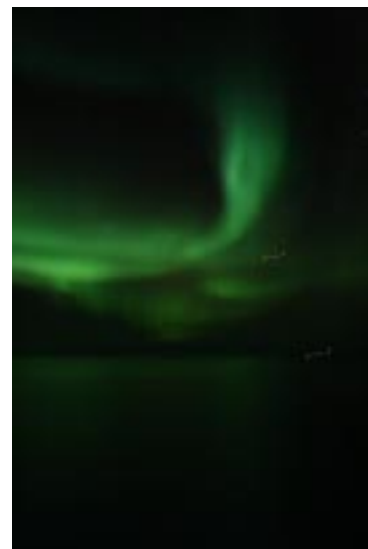


*Miriam at North Cape*

looking as if we had 'disgraced' ourselves!

The boat sailed ever northwards and we stopped at Honningsvåg and from there we went by bus to North Cape, the most northerly point on the European mainland. Actually this is not quite true as the actual point is about 200 metres away, but who is arguing? It was sobering to think that standing there, travelling due North, apart from grazing a part of Spitzbergen, the next land you touch is Alaska. We were just about in time to see North Cape in daylight because 8 days after we were there the Sun would sink below the horizon and not be seen again for a couple of months. From here the boat sailed eastwards then south towards the town of Kirkenes.

Here comes the, albeit tenuous, astronomy bit. That evening as we were supping



our coffee in the lounge bar, an announcement came over the PA to say that the aurora was visible. The bar would not have cleared any quicker if the general alarm had been sounded. It was back to the cabin, on with the coats and out onto the after deck, And there it was. All green and wandering across the sky. It was jolly cold out there, standing on an open deck in the Arctic with the boat batting

along at 15.5 knots (~27 kph). I tried to get some video of it but was not very successful as my camera was not sufficiently sensitive. I was able, however, to get some stills. This was quite a job. As I just said, the boat was travelling at 15.5 knots, the deck was swaying and the exposures were about 10 seconds, hand held.

We had the lights for four successive nights and the third night was the best. The predominant colour is green, but it was possible just to discern red in with the green. The red does show up in the photos I took. It looks a bit like light pollution, but there were no lights to pollute the night sky! I cannot abide the modern cameras that do not have viewfinders. The thought of trying to hold such cameras steady is, to me, something to be avoided. I used a Canon 400D digital SLR with a standard 18-55 mm zoom lens and uses a proper viewfinder. At first I was getting no pictures, the problem being that modern digital cameras tend to decide what they will and will not do. So I set it to manual exposure, manual focusing, pointed it at the aurora, braced myself, tucking my arms in, and pressed the button. And ten seconds after each press, I had a picture. It is surprising how steady one can hold a camera in such conditions. On one of my pictures, it is possible to see the Plough quite clearly and I'm quite proud of that one. The colour of the lights was predominately green, but it was possible to discern some red in the display and this colouration did show up in some of my photos.

I mentioned the absence of light pollution. There were the ship's lights, but these were not too intrusive so the night skies were absolutely marvellous. I saw some stars that are impossible to see here in Britain. Orion and the Pleiades in particular were pin sharp.

And so, having achieved my ambition, and Miriam doing likewise, we sat back and enjoyed the journey back to Bergen and then home via Oslo.

I can thoroughly recommend Hurtigruten as a carrier. OK, the stops are not very long so detailed exploration is not possible, but for comfort, good food and a relaxing time, they would be hard to beat.

### Following in Stanley's footsteps by Dave Allen

After hearing from our chairman Brian that our existing telescope maintenance man (Stanley), was moving away I begged him to give me the chance of continuing this responsibility of keeping all our hire telescopes clean and in good working order for people to get the most out of them. When Brian finally gave in and said yes I thought it might be a good idea to tell Stanley. I was there at our last speaker meeting and so was Stan so just after his farewell announcement and cake I asked him about the possibility of him showing me what was involved in maintaining the scopes. He agreed too. I've known Stan for a little while and so he knew I would be enthusiastic about the job and said we should meet soon before he moves away.

I met him just last Sunday and which proved to be invaluable!. We spent the afternoon going through the methods and techniques used in cleaning the mirrors, lenses and collimating the scopes and actually went through the motions on Stanley's own 8" Newtonian tel-



*Some of my photos of the aurora*



scope. There were also a few tricks I learned too. Finally, after all was done, we of course had to make sure the everything was all aligned up and collimated so what better way than to take it out for just a quick test and very fortunately the sky was clear and the stars were out!! The scope worked beautifully.

We started on NGC 891 edge on galaxy which we found and could see which was very pleasing indeed!! Next up Stan showed me NGC404 a nice ellipti-

cal galaxy which I had never seen before. Then on to M52 an open cluster in Cassiopea which had real defined edges to it. A double star test was next and we chose Almaak (Gamma Andromedae) which showed a real clear separation and great colours! We got the double cluster in Perseus which was really amazing at low power and then finally M38 open cluster with it's little companion NGC 1907. Wow what a lovely view this was with both within the eyepiece.

All in all the afternoon was a very nice way too hand over the duties from one person to the next so I thank you Stan for that. And now it's down to me to periodically give the scopes an MOT. This will usually involve me either doing it on site or taking it away in between hirers causing as little disruption as possible. They should be in good condition but if you feel that the hire scope you currently has a problem or needs fixing before it's service then do get in contact with the Association.

### Virtual Moon Atlas by Mick Jenkins

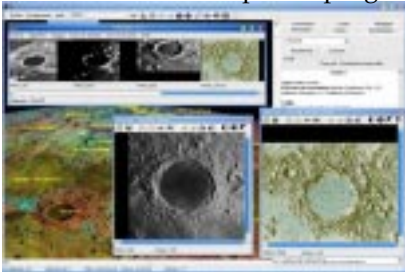
I have always found the Moon a fascinating place and when I retired and was able to spend more time following my interest in astronomy, I brought a new telescope, a Meade LX200 8 inch. The software that came with the telescope included Virtual Moon Atlas which is the best Moon map that I have come across, so with Moon watch a feature of this Astronomy year I thought you might like to know about this free software.

Virtual Moon Atlas displays a detailed map of the moon with a data panel on the right hand side of the screen. Click on a crater and full details appear on the information tap this includes, Geological period, size, description, observational interest, recommend telescope aperture and lots more information.

The program requires you to enter in the configuration menu, your observatory latitude and longitude and time zone; this allows the software to show moon phases for your location. There are a number of menu tabs to enable the user to adapt the program, an example is a

terminator tab that lists all craters on the terminator in real time, you set your telescope aperture size to filter the result, set an interest box to pretty interesting, very interesting or exceptional and a list is displayed of all the feature on the terminator for your telescope, click on the crater of interest the its indicated on the map with its name. There is a search feature of the 8000 entries, enter the craters name in the box and its high lighted on the map with full description on the information panel.

One nice feature of the software is the ability to access over 6000 photos by clicking on the camera icon; also Included on the information panel is a list of photos available on the internet taken by the Lunar Orbiter. This is a brief description of the software I use all the time, down load and enjoy exploring the Moon. Virtual Moon Atlas is available as freeware on the internet at [www.astrosurf.com/avl](http://www.astrosurf.com/avl) the latest version is Pro 4; the site gives details of the software and links to manuals and other information.



*Two screen shots from Virtual Moon atlas*



### Reminiscences of my first 20 years in the CAA. by Nigel Brown

One evening in 1969 I was asked to give a lift home to a teacher from Soham Village College. On the way conversation turned briefly to the subject of astronomy, which I casually mention having been interested in as a child: she told me that her husband, John Everitt, belonged to a local astronomy group and offered to introduce me to him on arrival at her home. John in turn took me to meet Tom Smartt FRAS, at that time Chairman of the CAA. So started a long and happy friendship with Tom until his untimely death in 1988.

The CAA had recently stopped having their meetings in premises in Brooklands Avenue after a number of moves, and were now meeting informally in Tom's house. Among those I met at those meetings were: Dr W. H. Steavenson, then our Honorary Vice President; the late Dr Slater, who donated his 6" refractor which for some years after was the Association's main instrument; R. W.

Potts; Malcolm Farrant; Mike Sharpe, who I remember demonstrating a diffraction grating; Roy Clark and Stan Whistler. The observatory had been built some time previously by the members in the woods in Wandlebury Park.

These meetings continued on an *ad hoc* basis, alternating between Gough Way and Wandlebury, until a more permanent venue could be found. In 1973, under the leadership of Mike Sharpe (then Chairman) and Doug Allanson (then Secretary) our meetings moved for a short time to Bottisham Village College, taking advantage of Doug's connections with the College. Our stay in Bottisham was, however, short lived: our scheme to install our observatory in the College grounds failed for lack of Council financing. This unsatisfactory situation caused a sharp drop in membership, which was already at a low ebb. It was shortly after our move to Bottisham that I succeeded Mike as Chairman; Stan Whistler took over as

Secretary from Doug, but after a short time had to give up, and Colin Cornwell stepped in to the breach at short notice, his wife kindly helping with producing notice cards. Roy dark had been Treasurer during all this time.

During 1976 Brian Lister and Hubert Potratz (who was our instrument curator and had his own fully equipped observatory) spent most of a weekend refurbishing the hut; later a working party of members strengthened the hut props, thus giving it a new lease of life. However, its position on the edge of the Wandlebury wood made it difficult to supervise, and the hut was severely vandalised. Added to this, the growth of vegetation encroached, to the point where viewing became restricted to an angle of about 45° to the southwest. Thus we were forced to find another home for the observatory. In 1977, prompted by contacts I had at that time with Comberton Village College, the Committee negotiated a place for the hut on its playing fields, and it was eventually transported there on a low loader, and installed with kind help from Ely A. S. and pupils from the Perse School's science group. We were given a room for our meetings. Tom took over the Chairmanship.

Tom was asked by the Cambridge Evening News to contribute a short piece on astronomy each month along the lines of the Night Sky features in the national press. The article brought several enquiries about membership and one or two new members. He also finished work on a 10" reflector which became available for members to borrow. The Association joined the newly formed Federation of Astronomical Societies in London; Brian represented us at the inaugural meeting. The Association had the first of many visits we were to make to the Institute of Astronomy at the invitation of our Honorary President Dr. Dewhirst, and to the Mullard Radio Astronomy Observatory.

At the AGM in 1979 Eleanor Fear succeeded Tom as Chair. During her tenure of office she organized trips to R. G. O. at Herstmonceux in 1978, Jodrell Bank in 1981, and the Rutherford Appleton Laboratory near Oxford and the Ionospheric Research Station in Slough in 1983. Eleanor eventually moved to Boston where she helped form a local astronomy group. In 1982 I took over as Treasurer and Carol Madden as acting Secretary. Michael Cardwell, a science teacher at Longsands School in St Neot's, succeeded Eleanor as Chair in 1984 and held the post until he left to take up a short service commission in the RAF. Tom took over from him as Acting Chairman.

Our association with Ely Astronomical Society began at this time; their Chairman Peter Ingram joined us and later became a member of the Committee and Vice Chairman. Links with Cambridge University Astronomical Society (C. U. A. S.) also began; this allowed our members a standing invitation to their speaker meetings. Negotiations started with Newnham College for permission to use their observatory were finalised and we were given regular access, thanks to kind permission of a Fellow of the College Dr Margaret Stanier, who gave us a great deal of support. Brian organised regular observing sessions, and occasional open viewing sessions for the public, among them during Halley week in 1986.

But back to Comberton. Alas! Problems again. The only space the College could give us for the hut was in a

far comer of the playing fields, where again it was difficult to watch over, so it fell victim to vandals again. Its poor accessibility and there being no power meant that it was very underused. Then, the final straw, the County land agency put a swingeing increase on the ground rent that our finances at that time could not afford. So in 1985 we were forced to abandon the site and look elsewhere. A sad tale, another "good" idea gone by the board!

The 6" refractor was set up temporarily in my back garden in Long Road where it was used occasionally for viewing during a few meetings held there, and some minor maintenance was done on it; after a couple of years it was moved to Frank Murphy's garden in Harlton. Frank at about that time was organising talks to pupils in various schools in the Cambridge area. For our meetings we shuffled between Long Road, Gough Way, the Portland Arms and St. Mark's Church; this last venue proved completely unreliable. Finally, thanks to an initiative of Roy Barret's we were able to secure a stable venue in the Friends Meeting House. Some informal meetings continued to be held in the Portland Arms right up until 1989. About this time our young astronomers offshoot (C. Y. A.) was started up by Brian, David Herbert and Peter Ingram: regular Saturday morning children's activity sessions were set up in the Meeting House, which were greatly enjoyed by the kids. And very much welcomed by the parents!

1986 was an eventful year. In addition to regular meeting and observing sessions (held in various locations) there were visits to the Rutherford Appleton Laboratory near Oxford; talks by visiting speakers Colin Ronan and Storm Dunlop, and Dr Dewhirst. Two of our members attended a symposium organised by Boston Astronomer in Lincolnshire and led by Paul Money; as a consequence of meeting Paul he came to give us a talk on several occasions in the following years. The first edition of the Association's Newsletter appeared; it was given a name Capella on its Number 26 in 1990.

Jim took over as Chairman in 1987, and John London became Secretary. Two of our members attended a symposium organised by the Oxford University Astronomical Society. We mounted a display in the public library for National Astronomy Week, consisting of posters, instruments and showing a computer programme on video. At the AGM in 1988 we staged the first of the 3-sided quiz contests against Ely A. S. and C. U. A. S. with David Early kindly taking on the job of question master and setting the questions. This was to become a regular annual feature.

I have to introduce a sombre note at this point. In March 1988 Tom Smartt died suddenly of a heart attack at his home in Gough Way. Tom was a founder member of the Association and one of its mainstays throughout. Chairman many times, often stepping into the breach in times of crisis, as always there to help when help was needed. Tom was accomplished in all aspects of astronomy, and a Fellow of the Royal Astronomical Society. A skilled mirror maker, I remember him demonstrating to me how the grinding was done. I shall always remember him as a great friend.

1989 saw increased and varied activity in the CAA. During the year we were given talks by a number of high

profile speakers, including Professor Anthony Hewish, Dr John Baldwin, Dr Dewhirst and Michael Maunder. Peter King contributed the first of a series of articles to the Newsletter, describing his work on radio astronomy, including monitoring of solar flares.

Looking ahead... another turning point in the Association's fortunes came later in 1991 when we secured the use of the workshop facilities of the University's School of Veterinary Medicine. Brian set about putting the Association's practical work on a sound footing with the help of Kris Arber and several members. The 6" was brought in from Frank's garden and thoroughly refurbished; work started on the planning and construction of telescopes for loan and for members' orders. Jim Hysom

provided mirrors, figuring and polishing, sometimes from blanks from his own mirror works. After months of debate about a new instrument for the CAA, positive steps were taken which culminated in the Hysom Half Metre.

At the AGM we celebrated our 30th anniversary with a party in the Friends' Meeting House led by Dr Dewhirst and including another 3-sided quiz. The Mayor of Cambridge Councillor Lavena Hawes accepted our invitation to take part in commemoration, and gave the prize for the quiz. As I draw this period to a close, reflecting on the Association's ups and downs I had seen, I was happy to see a stable and vibrant society, growing in strength and scope, with steadily increasing membership, to which I was privileged to belong.



*A few photos from the recent CAA trip to Surrey Satellite Technology.  
Pictures by Daniel Coe*

## CAA/CYA News

### CAA Secretary required.

With Stanley heading to Northumberland we're in need of a new secretary. The job doesn't involve a great deal of work, the main job is taking the minutes at Committee meetings. You would join the Committee and help make decisions about the running of the Association. Please contact Brian for further details or if you can offer to help.

### Loan Telescopes

There are usually no long waiting periods for the loan telescopes. Visit our web site ([www.caa-cya.org](http://www.caa-cya.org)) and click on to book an instrument, or ring Mickey Pallett on 01480-493045.

### Observing Sessions

These continue on clear Wednesday evenings. Doors open at 7.00 p.m. with a short talk at 7.15 p.m. and, if the skies are clear, observing starting at 8.00 p.m. Please ring the Institute on 01223-337548 after 5.00 p.m. to see if observing is on. There will still be a lecture even if the sky is cloudy.

## CYA meetings

### 7 -11 year olds

Saturday 30th January 2010

#### **"The Refracting Telescope."**

From Galileo's first telescopes to the modern amateur refractors of today, we'll be showing how the refracting telescope has improved over 800 years. Some of these telescopes were very successful, others were not - like the biggest refractor ever built. It was finished in time for the Great Paris Exhibition of 1900, but the images it gave were generally rubbishy! Some time after the exhibition the telescope was offered for sale, but nobody wanted to buy it, so it was dismantled.

Saturday 27th February 2010

#### **"Dust and Gas in the Milky Way."**

While there are many stars that can be seen in the night sky - a great many more if you use a pair of binoculars, but there are comparatively few bits of gas and dust visible even with binoculars, the Orion nebula being the most prominent example. With telescopes and sensitive cameras more gas and dust can be seen and many make beautiful photos (you can see many examples pinned up at the Institute). However some molecular clouds can't be seen in visible light and often obscure our view of what's behind them, new stars can eventually form from these clouds.

These meetings will be held in the Hoyle Building at the Institute of Astronomy, Madingley Road from 10 a.m. till noon. Free to CYA members; for non-members there is a £1.00 fee.

### CYA 11+ group

Monday 1st February 2010

#### **"Discovering the Outer Solar System."**

This month it is the turn of the outer Solar System. The exploits of the voyager spacecraft are well known, but there are not so many probes frisking about in the region beyond the orbit of Jupiter compared to the inner part. So information has to be gleaned from other sources, like the Hubble space telescope and other orbiting observatories as well as ground based observatories.

Monday 1st March 2010

#### **"The Interstellar Medium."**

We'll be examining what lies between the stars from the bright nebulae we can see, to the dark stuff that can only be seen at other wavelengths. The matter consists of 99% gas and 1% dust and can range in density from few thousand to a few hundred million particles per cubic metre, The average density of our galaxy is 1 atom per cubic centimetre - but you knew that already!

These meetings will be held in the Hoyle Building at the Institute of Astronomy, Madingley Road from 7.15 p.m. till 8.45 p.m.. Free to CYA members; for non-members there is a £1.00 fee.