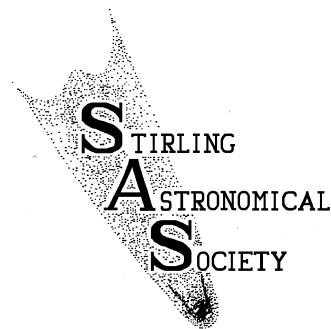


Newsletter of the



Vol. 16 No. 4 October 2001

REFLECTIONS ON THE LOSS OF A LOVELY LADY

By the time you read this, the sad news will most probably have reached everyone in the Society that on the 2nd of September, suddenly and tragically, Vina Robertson died.

I heard the sad news from Chris and could hardly believe it. She was such a kind, gentle and thoughtful person, doing whatever she could to make life easier for the people around her. What a bombshell! I went through to tell my wife and as we talked I found myself reminiscing about some of the good times that we'd shared over the years, at various and sundry astronomical events.

If I may, I would like to share some of those memories with you, gentle reader. I remember the first time I ever met Vina. It was way back in 1984 when Ken MacKay was organising a short course of astronomical lectures. I had arrived a bit early at the Old High School and the caretaker, Dougie, let me in and pointed me in the direction of the Seminar Room. At half past seven, more or less on the dot, Ken turned up smiling and greeting people as he usually does, and following in his wake was this silver haired, slim, wee woman dressed in slacks and a jersey. It was of course Vina. Come to think of it, I don't think I ever saw Vina when she wasn't wearing slacks and a shirt, or slacks and a blouse, or such like. Ken performed the introduction for himself and Vina. I remember him telling us that she was an audio-visual technician at the High School.

Those lectures were fun, but when they had run their course Ken proposed forming a steering committee to draw up a constitution and create an Astronomical Society in Stirling. Well, I got involved with that along with half a dozen others, one of whom was Vina. The first meeting was at Ken's house, but after that Vina often played host as well. The rest, as they say, is history.

I remember at the last committee meeting before the inaugural A.G.M. we'd been discussing what roles we might have within the Society and Vina piped up in her distinctive husky contralto. "Oh well, if we're going to have teas and coffee after the meetings I'll do that, because I can't give talks or stand up and talk to people, but that's something I can do." And, God bless her, that's exactly what she did. From February 1986 right up to the present day she kept the hospitality flowing, and by that simple act created a warm and friendly atmosphere where people could come and simply inter-react one to another, sharing information, sharing ideas, and sharing small confidences as they shared the coffee.

Though she would probably be embarrassed to hear it said, Vina did in no small way contribute to the very real feeling of warmth and camaraderie that exists inside the SAS. In fact she may have started something of a trend, because not long after we had formed the Society we began to make contact with other Astronomical Societies around Scotland, one of which was the Dundee lot. We'd

the Dundee chairman, where the tea was. He seemed slightly taken aback by the question and said, "Oh, we never have tea at our meetings!" "Ed, we never have our meetings without our tea!. You'll see that when you come to Stirling." Well, they duly came, saw, munched, and they went home, and suffice it is to say that the next time we visited Dundee tea and biscuits were laid on.

I remember another time when we had gone to North Third to count meteors on August 10/11th. There must have been eight or nine of us, and I had just finished setting up a camera and was turning round to set up the deck chair and sleeping bag when I saw three other observers, nestled close together, passing round a flask of coffee and a packet of biscuits. "Did we come to count meteors or are we having a picnic?", I asked no one in particular. This husky contralto voice replied out of the darkness, "Oh well, I just think it makes it more friendly to have something while we're waiting, and any way it'll help keep the cold out!" Dead right!!

There were a few other times as well: sitting in a car at Dalbrack with the rain coming down "hale watter" bouncing off the roof, and us inside eating tea biscuits, with Vina fair disgusted with herself because she'd forgotten the flask of coffee. I think that shows her essential character: modest of her own abilities while doing the utterly vital but unglamorous behind-the-scenes work that helped to make the Stirling Astronomical Society such a nice friendly place to visit.

I remember the one time she was persuaded to give a short talk to the rest of us at an AGM. She was going to tell us about her visit to Callanish to see the standing stones. I went into the hall and greeted her with the usual hello and how's it going sort of thing. Poor soul, she was fair nervous at the very thought of standing up in front of a whole load of folk. I remember telling her, "Everyone here knows you and you know everyone here. All you're doing is talking to your friends. What's there to be nervous about? You're just going to be talking to your friends." There was a short pause while she mulled it over, and then she came out with a sort of reluctant "Yes, I suppose that's true, but I'm still not looking forward to it!" admission. It ought to be noted that when the time came she rose to the occasion and carried it off with aplomb!

My most abiding memory and one thing I'll always associate with her is an observation session after an open meeting. Little by little, in ones and twos, the group had dwindled away until only Jed, Ken, Vina and I were left. It was quite late and Ken was for calling it a night, but Vina wanted him to find M54, the Ring Nebula in Lyra. "Oh just one more thing, Ken", she said. "See if you can find the Ring Nebula in Lyra. I've never been able to find it with the little telescope and I've always wanted to see it. Och go on, Ken. You can find it, you know how to work the telescope." Well, Ken did as he was bidden and Vina duly saw the Ring Nebula. So did all the rest of us and, boy, is it forever worth the seeing! I can close my eyes even yet, years later, and still see it hanging there in the field of the telescope; small and faint, ethereal and beautiful: a ring of smoke against the stars.

Yes, oh yes, it's going to be really strange not to see her bustling about at open meetings and members' evenings, taking a cuppa to Mr Blackadder or asking if so-and-so got his juice, or did John get his tea. It is also going to feel very odd at the annual Christmas Astro Party, not to have her there with the tinsel in her hair and the raffle ticket book clutched in her hand.

I could go on all night at this rate, and without a doubt so could many others who came into contact with her. We are all going to miss her terribly, but I'll say this to you truly my friends, we all ought to be grateful for having had the chance to know her.

A very special lady. God bless her. From all of us, a fond "Good Bye Vina".

We also have the sad task of recording the death earlier this year of another stalwart and long standing member, **Margaret Hargreave**. Margaret was a backbone member of the S.A.S. in all its activities. She was very involved with the welfare of her fellow members and always willing to lend a hand. She and Vina were a grand team together which will be difficult to replace.

SUN POWER

Admittedly not often, but even in a British Summer paving stones can get too hot to touch. The Sun, ninety three million miles away still delivers nearly a kilowatt per square metre of patio. This is a large amount of energy if you imagine ten 100 watt bulbs whizzing the meter wheel and cranking up the electricity bill.

But the Sun does not just heat up your patio. On a good day it can heat up the whole of Scotland, hundreds of square miles. And of course above the atmosphere the Sun is shining on the whole planet, at least the hemisphere facing the Sun - millions of square miles and a prodigious energy output by anyone's reckoning. It dwarfs our entire global power generation.

Even this does not give the full measure of the Sun's power, since the Earth is a relatively insignificant speck in the solar system intercepting only a tiny fraction of the Sun's radiance. The rest beams out into black space making the other planets shine as bright specks in the night sky as it goes.

Imagine giant mosaic tiles each with the same area as the cross section of the Earth. How many would be needed to completely line the inside of a huge one hundred and eighty million mile diameter sphere round the Sun. The answer is a staggering two billion plus. This means the Sun is radiating enough heat and light for the planet Earth and for another two billion similar planets all at the same time.

Chris Davis

DISCOVERING CHINESE ASTRONOMY

Some years ago Mary and I were stuck in Beijing for a few days, waiting for visas to go overland across the Gobi Desert and through Mongolia to Irkutsk and Lake Baikal in Eastern Siberia (that's another story!). The Ulaan Baatar authorities only issued visas to Westerners once a week, on Wednesday afternoons by personal attendance at their Beijing embassy. Having already visited the usual tourist places in and around Beijing, we spent some time wandering around on foot, seeing the real city and people. More or less by chance we came upon the old Beijing Observatory, in the middle of much redevelopment, and spent a long time looking at it and finding out about it. Since then, I have had a special interest in ancient Chinese astronomy.

The Observatory was built in 1442 for the sixth Ming dynasty Emperor Zhengtong. It is located on the main east-west axis of the city, which was itself originally laid out according to celestial coordinates. The Observatory, on the roof of what was once a tall building, contains a sextant, a theodolite, a quadrant, an altazimuth, several armilla and a celestial globe, all in bronze. The sextant, theodolite, quadrant and altazimuth are all instruments for measuring the position of celestial objects, and an armilla is a skeletal celestial globe of metal rings representing the equator, the tropics, etc. These various instruments enabled Chinese astronomers, amongst other things, to track the motions of the planets, to record eclipses and comets, and to mark the location of the Milky Way and constellations. These instruments were surprisingly accurate and, for instance, enabled the length of the solar year to be measured as accurately as 365.2425 days, which only differs from the modern measurement by 26 seconds.



Two armillas at the Beijing Observatory

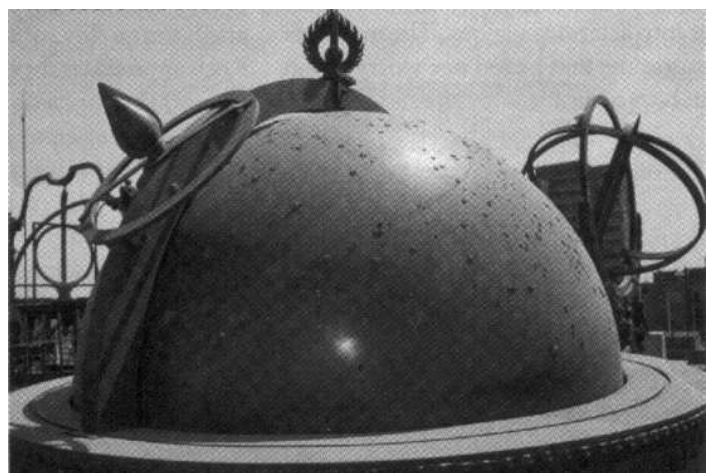


In a traditional Chinese instrument the rings of an armillary sphere are divided into 365.25 daily segments, but the one at this Observatory is divided into 360 degrees, showing a European or Mesopotamian influence in the fifteenth century. The celestial globe was built in 1673 during the Qing dynasty by a Belgian Jesuit, Ferdinand Verbiest. It represents the Milky Way in dimpled metal, and metallic stars show the Orion constellation, Sirius, Betelgeuse and Rigel. Even the Orion nebula is shown. However, to us it was all back to front, as it continued the Chinese tradition of constructing a celestial globe from the “transcendental eye’s view”, of an outsider looking in, instead of us on Earth looking out.

The great Chinese interest in accurate astronomy did not have a scientific basis. It was closely linked to politics and government, as a tool in the social and political power of the state. Astronomical accuracy was considered to be a celestial certification of imperial power. The emperor was supposed to be the son of the celestial god Shang Di. State-sponsored astronomy validated the emperor’s link to the highest order, and solidified the connection he represented between Heaven and Earth, the sacred and the profane, macrocosm and microcosm. China was the “middle land” and Beijing was the centre of the world, with the Tiananmen Gate of Heavenly Peace leading into the Forbidden City, itself astronomically aligned, followed by the Hall of Supreme Harmony, due north on the cosmic axis, where the emperor held audiences to announce the calendar, New Year and winter solstice.



Another armilla and an altazimuth



The Celestial Globe

Derek Allen

COMMEMORATIVE PLAQUES

In the Millennium Year 2000 the Institute of Physics unveiled four Blue Plaques commemorating the contribution of certain individuals to Physics. Two of these plaques were for astronomers, namely Sir William and Caroline Herschel, and Sir James Jeans FRS. Caroline Herschel was William's sister and principal assistant, and the duo featured in an earlier issue of Mercury (Vol.2 No.3 1987). However, they had a number of "firsts" which may not be widely known.

Their major contribution to astronomy was their discovery of the planet Uranus in 1771, when making a systematic sweep of the heavens with a seven inch reflector telescope. At first it was thought to be a comet, but Laplace confirmed it to be a planet at a greater distance than Saturn. As Saturn and the nearer planets were all known to the ancients, Uranus was the first planet to be discovered in "modern" times. For this achievement King George III knighted William and gave him a pension and sufficient funds to construct a four foot reflector. With this new telescope the Herschels found Titania and Oberon, the brightest of the four satellites of Uranus, and also Mimas and Enceladus, two of the nine satellites of Saturn.

Sir William coined the word "Asteroids" to describe the large group of minor planets orbiting between Mars and Jupiter. He discovered that the ice caps on Mars vary in size with a period equal to the sidereal period of the planet. He also gave his name to a set of coloured interference fringes and wrote an article about these in the Philosophical Transactions for 1809. The Herschel Plaque is located in the William Herschel Museum, Bath.

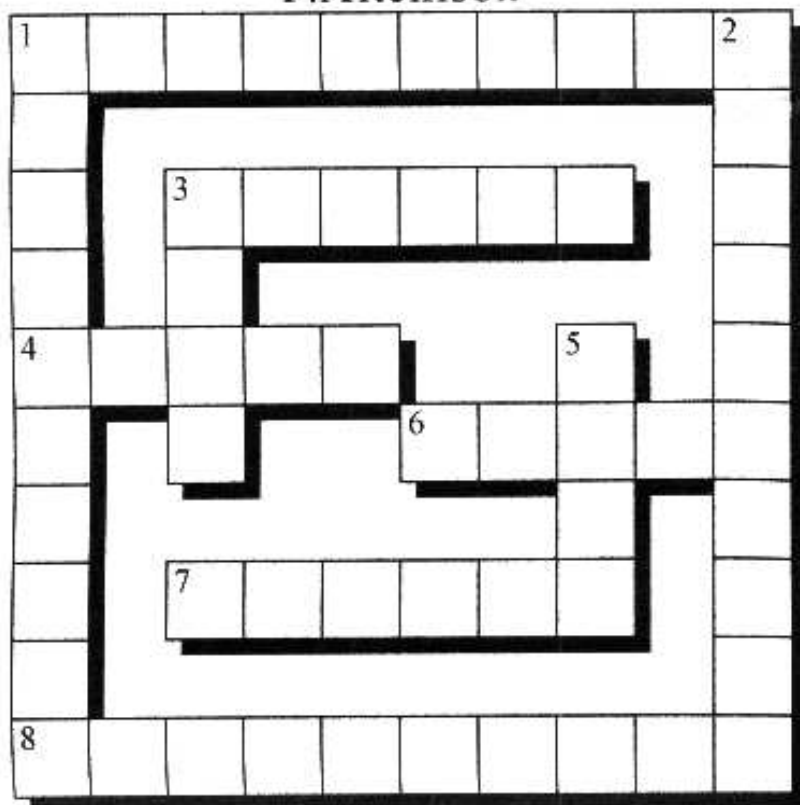
Sir James Jeans FRS (1877-1946) has his commemorative Plaque in the Royal School of Church Music, Dorking. He had a Cambridge First, was a Second Wrangler and a mathematician of considerable ability. He published two major books on physics, *The Dynamical Theory of Gases* and *The Mathematical Theory of Electricity and Magnetism*. In the main, his contributions to astronomy were concerned with the dynamics of star and galaxy formation, and especially with the origin of the Solar System. His researches resulted in two books, *Problems of Cosmology and Stellar Dynamics*.

In 1928 Jeans started a new career as a writer of popular science books. *The Mysterious Universe* (1930) was one of the best known, and earned him one of E. C. Bentley's Clerihews: "Sir James Jeans always says what he means. He is really perfectly serious about the Universe being mysterious". Jeans and his first wife, a lady from Connecticut, settled in Dorking to be near the School of Church Music, as he was a keen organ player. Whether the Music of the Spheres qualifies as Church Music is not recorded! After the death of his first wife, Jeans later married a concert organist from Vienna, and in the same year published *Music and Science*. Like J. J. Thomson, Jeans accepted many honorary degrees and other academic awards, and he also held a number of Royal Society and British Association appointments, as well as some musical ones. His last book, published in 1942 was *Physics and Philosophy*.

LARGEST CONSTELLATION The largest of the 88 constellations is Hydra, the Water Snake. The area of sky designated as Hydra is 1302.84 square degrees, which is 3.16% of the whole sky. The next largest constellation is Virgo, at 1294.43 square degrees. Given its name, it is not surprising that the Water Snake is a long thin constellation, winding a quarter of the way around the sky, with most of it is just south of the celestial equator. One legend associated with Hydra says it is the many-headed monster killed by Hercules. Despite its size, Hydra is not a distinct pattern. It is largely made up of rather faint stars and is not easy to find. Its brightest star is Alphard, a second magnitude orange giant, 130 light years away.

astropuzzle No.1

T.Aitchison



SOLUTION ON NEXT PAGE

Across

1. Constellation: The little horse
3. He performed the first accurate measurement of the distance to a star
6. The first American to orbit the Earth - John
7. Luminous atmospheric phenomenon
8. Constellation: The scorpion

Down

1. Ability of a material to resume its original shape after being deformed
2. Polish astronomer - Nicholaus . . .
3. These radiation particles are electrons
5. Russian space probe which visited Haley's comet

A ROOFTOP OBSERVATORY that offered to show "heavenly bodies" to visitors has been closed down by police in Vienna after they discovered that it was a brothel. Officers raided the building, the Office for Heavenly Services, and arrested four women. A queue of men that had formed outside was allowed to leave without charge. *Sunday Times 16 Sept. 2001*

ADAPTIVE OPTICS

The lecture in February 2001 [1] was an eye-opener for many of us. The computer assisted system installed in Hawaii's Keck Telescope appeared to be the latest idea in improving the optical images from ground-based telescopes. Many of the graphics used by the lecturer were baffling and while most of us understood the end result, the method of getting there was obviously at the forefront of science!

I was therefore a little surprised to find a feature on telescopes in a National Geographic magazine as far back as January 1994, which featured the 10 metre wide mirror on the Keck comprising 36 hexagonal sections, each controlled and aimed by computer. At 14,000 feet, the telescope has major advantages of thin atmosphere and minimal meteorological interference. It is the largest mirror on Earth, twice the diameter of the Hale 200 inch Telescope at Palomar, California.

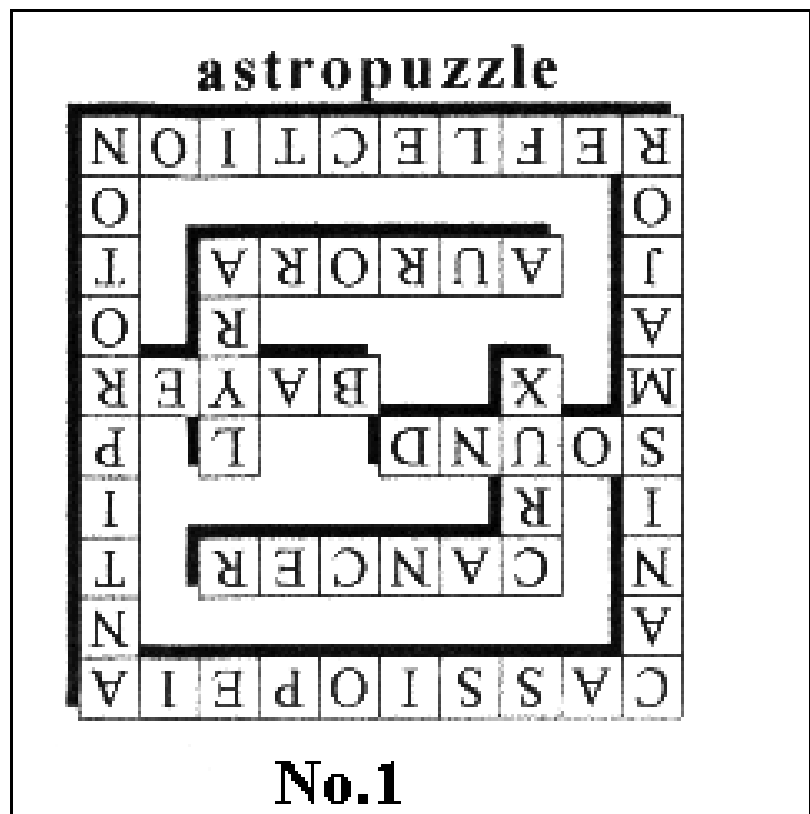
The development of the telescope began in 1978 and received a boost when the Challenger disaster grounded the Shuttle missions. The distorted mirror on the Hubble Space Telescope, which was only corrected in December 1993, also helped to promote the technology used in ground-based telescopes. The Keck instrument is made up with 36 hexagonal mirrors, each about 6 feet across, linked by a computer system that aligns the image to within a millionth of an inch twice a second.

The same article also mentioned the operation of adaptive optics at the European Southern Observatory, which on a night of poor seeing, when two arc seconds was the norm, the adaptive optics could improve the photos to six tenths of an arc second. The technique of bouncing narrow laser beams from different layers in the atmosphere, creating artificial stars, which can be used by the computers as references, was illustrated in the magazine. The sodium-wavelength (orange) beam described by our lecturer and also a copper vapour (green) were typical examples being used in the early nineties. The distortion caused by the atmosphere is calculated and the same correction can be applied instantly to the telescope mirror, producing sharp images even with long exposures.

So adaptive optics are not so new as I thought, but the article did say that technological advances were continuing at great speed, with thirteen ground-based telescopes planned before 2000, including the Very Large Telescope, a real giant of four independent 8.2 metre mirrors built in the Atacama Desert, Chile. Perhaps this winter, we will be updated on the VLT's performance!

Bert Mackenzie

[1] *Astronomical Adaptive Optics: Space Telescope Image Quality from Ground-based Telescopes* by Dr Andy Longmore.



APOLLO MOON LANDINGS - FACT OR FICTION?

Ever since I used to stay up all night many years ago, spellbound, watching the Moon landings and walks, it never occurred to me that it wasn't actually happening for real in the transmissions and photographs relayed through mission control. Until recently, that is. I was astounded to see that in a recent survey, 25% of Americans said that they believed NASA had faked it all and that no-one had yet landed on the Moon. It would be interesting to know whether this 25% are people born since it happened, who did not have the unique experience of sharing in what has been described as the most momentous event so far in human history.

Why do so many doubt that it took place? A lot of evidence has been put forward in support of this view. First of all there is the peculiarity of the shadows in several pictures taken on the Moon. They are cast not in parallel lines as might be expected if the light source is the distant Sun, but diverging as if from a much nearer light source, such as a photoflood on a film set. The official interpretation is that this is caused by the effect of perspective on the uneven surface of the Moon. Then there is the question of the small cross etched onto the lenses of the Apollo cameras to indicate which is the top of every picture taken. In some pictures, however, there is no cross and it is alleged that this was an oversight in faking the pictures. Another explanation is that it is merely the effect of over-exposure of bright Moon objects when a picture was taken. It has also been pointed out that some hills and landscape in pictures taken in different places on the Moon appear to be remarkably similar, even identical, and that they all must have been taken on the same film set or location used to fake the pictures. The other view is that the Moon landscape does not vary very much anyway, and one bit of it can look very similar to another. There are other alleged inconsistencies as well, which can also be open to different interpretations.

So none of this appears to be hard incontrovertible evidence. Is there anything which is? Hard physical evidence is of course the 382 kg of Moon rock brought back by the Apollo missions. Analysis of these rocks shows that, wherever they came from, they could not have originated on Earth. The oldest of the Moon rocks, for example, are 4.44 billion years old and were formed 640 million years before the oldest rocks still found on Earth. The reason is that the Moon, unlike the Earth, has been geologically dead for a very long time, with no volcanic or other activity of any sort to obliterate older rock as on Earth. Thus fake Moon rocks could not have originated naturally on Earth. Could fake Moon rocks have been synthesised artificially to appear to be the real thing? Again the definitive answer is No because of the state of radioactive decay and composition of the isotopes of some elements in them. To reach their present state the rocks containing these elements cannot have been disturbed for billions of years.

If not from the Moon or the Earth, could the rocks have come from the lucky find of a rare meteorite which landed on Earth after being in space for billions of years? The composition of isotopes of oxygen in the Moon samples is very different from that in known meteorites, and is in fact similar to their composition on Earth. This particular composition depends on the distance from the Sun at which the objects which gave birth to them were originally formed. Meteorites originate much further away from the Sun, so the only candidates are the Earth and the Moon, and the Earth has already been eliminated.

All this therefore appears to indicate conclusively that the Moon rocks are genuine. Besides the Moon rocks brought back by the Apollo mission astronauts, there is also about 100 gm brought back by the Russian unmanned Luna missions. These Luna samples match up completely with the Apollo samples, so were the Russians in on any deception as well? Hardly likely at the height of the Cold War. This also raises the possibility that the NASA rocks were not brought back by Apollo

astronauts but by unmanned missions like those of the Russians. But the Russians only managed to bring back 100 gm, compared with 382 kg NASA would have had to bring back by this means!

The events of history can never be conclusively proved one way or the other. Remembering the excitement as it happened, I prefer to believe that it did happen in the way we saw, and that we were not taken in at the time by the greatest con trick of the century.

Derek Allen

OPEN DOORS DAYS AT THE TELESCOPE, 1 & 2 September, 2001

The weather was favourable for our Open Doors Days in co-operation with Stirling Highland Hotel and the Former Pupils Association of the High School of Stirling. Ten of our members took turns to receive visitors, conduct them to the Observatory, and 'show them the works'. A total of 156 visitors were given the opportunity to view through the telescope, the subject being the newly regilded weather-vane on top of the Tolbooth in Broad Street. Since the effect was to transport the viewer to a mere 6 feet from the 'golden chicken' (as several of our young visitors referred to it), the detail visible was extremely impressive.

Most of our visitors were from Scotland, but not so many were from Stirling itself. Quite a few were from England. USA was represented by folk from Texas, North Carolina, and San Francisco. Two were Canadians, from Ontario and Toronto. A New Zealander was from Hamilton. Mr and Mrs Webb, from Texas, asked how they could manage to visit a fellow-meteorite collector in Glenrothes, and two of us took them through to Fife on the following Wednesday, enjoying the experience ourselves.

Here are some of the comments in our Visitors' Book:

Something different for a Saturday morning ...

Been in Stirling for 17 years - never seen this before!

The best wooden telescope I have seen for a while ...

Could I borrow it and put it in my garden?

Very interesting - would love to come at night.

Amazing hidden treasure, here in Stirling!

We saw an upside-down cockerel.

Spectacular! Like stepping back in time. Beautifully maintained.

I see it every day; great to see the inside. The telescope is fantastic!

A very worthwhile visit. Hope more schemes are as successful in stimulating interest.

Open Doors Evening on 23 September saw a further 30 visitors to the Observatory. Unfortunately, there were only occasional glimpses of the Moon, but the telescope was put through its paces on Church of the Holy Rude.

Our thanks are due to the Manager and Staff of the Stirling Highland Hotel, to Catherine Malley of Stirling Council, and to our own volunteers.

Ken Mackay

THE NIGHT SKY for October, November and December 2001

SUN	<i>October</i>		/	<i>November</i>		/	<i>December</i>		
	7	21		4	18		2	16	30
(approx) Rises	06.15	06.44		07.13	07.43		08.08	08.26	08.32
(approx) Sets	17.20	16.45		16.13	15.47		15.30	15.25	15.34

MOON	<i>October</i>				/	<i>November</i>				/	<i>December</i>			
Phase	FM	LQ	NM	FQ	FM	LQ	NM	FQ	FM	LQ	NM	FQ	FM	
Date	2	10	16	24	1	8	15	22	30	7	14	22	30	
Rises	18.04	22.06	05.33	14.52	16.51	22.37	07.30	13.42	15.34	23.19	7.52	12.29	15.29	
Sets	05.27	15.02	17.21	22.23	06.57	14.17	16.16	22.29	07.17	13.06	15.11	23.48	08.44	

PLANETS

Magnitude

MERCURY *October* Visible morning object ENE horizon for last 10 days of month +0.9 to -0.7
November Morning low ESE for first 12 days
 -0.8

Then unsuitable for observation
December Unsuitable for observation.

VENUS *October* Early morning object eastern sky -3.9
November Morning object south-eastern sky -
 3.9
December Morning object low south-eastern horizon, for first 2 weeks -3.9

MARS *October* Evening SW horizon, moves from Sagittarius into Capricorn -0.2
 21.00 +0.2
November Low SW sky in evening, by end of month not visible after
December Low SW sky in evening +0.6

JUPITER *October* Moving from SE sky in morning through month to low ENE sky by 21.00
 2.5
November Visible from late evening onwards ENE sky -
December Visible for most of night ENE sky
 -2.7

SATURN *October* Technically a morning object, but by end of month ENE

CONJUNCTIONS (with the moon unless stated otherwise)

October

Date	Time	
1	19.00	Mercury at stationary point
7	19.00	Saturn 0.5°S
10	01.00	Jupiter 1°S
14	02.00	Mercury in inferior conjunction
15	05.00	Venus 4°S
16	11.00	Mercury 6°S
18	02.00	Neptune at stationary point
23	00.00	Mercury at stationary point
23	20.00	Mars 0.1°N
30	19.00	Venus 0.6°S with Mercury
30	21.00	Uranus at stationary point

November

Date	Time	
2	16.00	Jupiter at stationary point
3	07.00	Venus 0.7°S with Mercury
3	22.00	Saturn 0.6°S
6	08.00	Jupiter 2°S
14	03.00	Venus 3°S
14	09.00	Mercury 2°S
22	21.00	Mars 2°N

December

Date	Time	
1	02.00	Saturn 0.5°S
3	11.00	Jupiter 2°S
3	14.00	Saturn at opposition
4	22.00	Mercury in superior conjunction
14	06.00	Venus 0.8°S
15	08.00	Mercury 2°S
21	00.00	Mars 4°N
28	08.00	Saturn 0.2°S
30	14.00	Jupiter 1°S

METEORS

November Leonids, possible show after approx. 22.30 on 17th and 18th.

December Geminids on 13th and 14th.

Hamish MacPhee

WINDY PLANET

The fastest wind speeds recorded in the solar system were measured on Neptune, around the planet's equatorial region. Large-scale features move from east to west at over a thousand km per hour relative to the core of the planet, but smaller features move faster, at speeds that are up to nearly twice as great. This means that the jet stream around Neptune's equator approaches supersonic speeds. The velocity of sound in Neptune's atmosphere is around 2100 km/hr. All the giant planets have strong winds, but it is not clear why Neptune's are the fastest. They may be influenced by Neptune's internal source of heat. The second windiest planet is Saturn, with maximum wind speeds around half the greatest speeds recorded for Neptune.

LARGEST LUNAR CRATERS

The largest crater on the Moon is Hertzprung, a multi-impact feature, diameter 591 km, on the far side and so not visible from Earth. Similar impact structures on the near side of the Moon became flooded with lava which solidified into dark rock. These features are known as maria rather than craters. For some reason, this volcanic flooding with lava did not occur to nearly the same extent on the far side and so there are more very large craters there. Besides Hertzprung, they include Apollo (537 km), Birkhoff (345 km), Korolev (437 km), Mendeleev (313 km), Planck (3124 km) and Schroedinger (312 km). The largest crater on the near side of the Moon is Bailly (287 km) - not to be confused with Baily, a different crater. The largest impact basin of any kind on the Moon is the South Pole-Aitken Basin, which is 2,500 km in diameter and stretches almost a quarter of the way around the Moon.

EDITORIAL

We would like to thank members for the good response to our appeal for contributions last time. Please keep it up! Send your contributions to (or first discuss them with) :

either:-

Dr Derek Allen,

1 Ogilvie Road, Stirling FK8 2HJ

Tel: 01786 472771

E-mail:derek.allen@btinternet.com

or:-

Dr Harry Stout,

17 Anderson Street, Dunblane FK15 9AJ

Tel: 01786 824034

Copy can be in clear handwriting, typescript, e-mail, or on floppy disk (preferably in *.rtf* format), in that ascending order of preference for the work involved in editing. Please have material ready by the end of November for the next issue of *Mercury* due out the beginning of January 2002.

Index of previous issues

In the past, several members have expressed frustration at not being able to track down contributions in previous issues of *Mercury*, going right back to its beginning in 1986. In fact, establishing *Mercury* was given a high priority when the Stirling Astronomical Society was first formed. Be frustrated no longer! Attached to this issue is an *Index of Back Issues*, as comprehensive as we can make it. However, there are a few gaps in it where we have not had access to particular copies of *Mercury*. If anyone is able to fill these gaps, please let us know with the details.

Stirling Astronomical Society

OFFICERS AND COMMITTEE FOR 2001

President	Dr Harry Stout
Chairman	Douglas Cooper
Secretary	Hamish MacPhee
Treasurer	Dr Iain Smith
Director of Observations	Dr Ken Mackay
Membership Secretary	Albert MacKenzie
Librarian	Maurice Dixon
Committee Members	Terry Aitchison Dr Alan Cayless

REGULAR ACTIVITIES OF THE SOCIETY

Lectures by visiting speakers take place in the Smith Museum Lecture Room, Dumbarton Road, usually on the second Friday each month. Members' Evenings are held at the Mayfield Centre, St Ninians, usually on the fourth Friday each month. All meetings start at 7.30 pm and are held from September through to May. Further details are provided in the Stirling Observer. Other activities, including of course observation sessions, are also arranged.
