Explorer Dome

The presenters of Explorer Dome put on a special show at La Hougette School for some of the members of the Astronomy Section and their children. The Explorer Dome is an inflatable mini-planetarium just big enough to fit about 25 people inside. Two lively young presenters gave us a tour of the night sky. They showed us how the sky appears from different latitudes and, very popular with the children, how it would look if the Earth's rotation was speeded up. Well done to Jessica Harris for organising the evening.

Help Needed

Its time to give the Observatory its annual clean up. If you can come along to give a hand on Saturday 21st July, for all or just part of the day, your help will be much appreciated.

Barbecue

Everyone is welcome to come to the barbecue on the evening of Friday, 10th August. Bring along some food and drink, we will supply the barbecue for cooking. Family and friends are all welcome. For those who want to stay on until it gets dark we will be watching out for meteors from the Perseid meteor shower. A deck chair and warm clothes will make for more comfortable viewing.

Telescope clinic

If you or someone you know is having a problem with their telescope, or you need some advice on how to get the best out of it, come along to the telescope clinic on Tuesday, 18th September, when experienced telescope users will be on hand.

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Sagittarius

The Newsletter of the Astronomy Section of La Société Guernesiaise

July - September 2001

Forthcoming events

Observatory Clean-up Day
Saturday, 21st July
All day at the Observatory

BBQ and Perseids Meteor Count
Friday, 10th August
7.30 pm at the Observatory

Telescope Clinic
Tuesday, 18th September
8.00 pm at the Observatory

Public Open Evening
Tuesday, 16th October
8.00 pm at the Observatory

In addition, the Section meets at the Observatory every Tuesday evening, and Friday if clear for observing.

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Orbit Speeds

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Centre inserts

Star chart
Moon phases
Sunset and sunrise times

Alien City

During this summer the Section is attempting more fund-raising. As most of you will know from the Business Meeting at the beginning of the year many things need doing at the Observatory and most will cost money.

Unfortunately, as money doesn't grown on trees (what a shame), there is only one way to get our hands on it and that is to do some fund-raising. That's where Alien City comes in.

Alien City is a stall that we will be having at various events during the summer, the North Regatta, Harbour Carnival, Rocquaine Regatta and Showtime on August 27th. We will be selling inexpensive fun items with an astronomy and space connection. We will also have a little more serious aspect in the form of a display with information and facts. The stall will be mostly very light-hearted but we hope as well to trigger people's interest in wanting to know more about the night skies.

As the name Alien City indicates, there will be a lot of alien-associated goods, like Mars Mud, Alien Sticky Balls, and glow-in-the-dark Moon Balls, which we hope will attract the children.

You will find two advertising posters in the middle of this quarter's Newsletter, and we ask that you display them for the Section. They could be put on the notice boards at work, pinned to a gate post, displayed in a window (house or car), anywhere that they will attract attention.

Please help make this a success, tell everybody you know about Alien City and, if you can, come along and support us at one of the events with family and friends. If you would like to help out on the stall please contact Jessica on tel 247193.

Jessica Harris

PLEASE HELP MAKE THIS A BIG SUCCESS

'ALIEN CITY'

coming soon at a place near you

Total Solar Eclipse

***David Le Conte** recounts the memorable experiences of his visit to southern Africa to see the total solar eclipse on 21st June*

My wife, Dorothy, Maureen Pitman and I flew into Cape Town on the 14th June on the first leg of our journey to Zambia to view the total eclipse of the Sun on Thursday, 21st June. There we were joined by the other hundred members of our group, organised by Hole in the Sky Tours of California. In all we were nine nationalities, mostly Americans, with the rest from various European countries. For at least half of them this was to be their first total solar eclipse. Others had seen many eclipses, the record being sixteen. So, although there was no official "astronomer" there was plenty of expertise amongst the group. We all looked forward to enjoying Southern Africa, with the eclipse as a bonus to an otherwise exciting venture. We knew that tens of thousands of others were making their way to the narrow path of the Moon's shadow, just 105 miles wide, which would cross Africa at a speed of over 2000 miles per hour.

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We had three days sightseeing in Cape Town (including wine tasting and the chance to stroke a cheetah), and a further two days safari in Kruger National Park (during which we saw a wealth of big game). The night sky from our base at Melalane, near Kruger, was superb, with virtually no light pollution, and we enjoyed observing the beautiful constellations of the southern hemisphere.

On Wednesday, the day before the eclipse, we flew in three chartered aircraft to the town of Livingston, Zambia, at the Victoria Falls. At an intermediate stop in Pietersburg, South Africa, a television crew was on hand to interview participants and find out what brought us all the way to Africa to see this extraordinary natural phenomenon. In Livingston we stayed at the superb new Royal Livingston Hotel, on the banks of the Zambezi River adjacent to the Falls - surely one of the most spectacular settings for a hotel anywhere in the world.

This was to be the longest total solar eclipse until the year 2009, and many people were therefore attracted to it, as well as by the stimulus created by the European eclipse of 1999 and the probability of far better weather. The winter months in Southern Africa bring almost no rain and an excellent chance of clear skies.

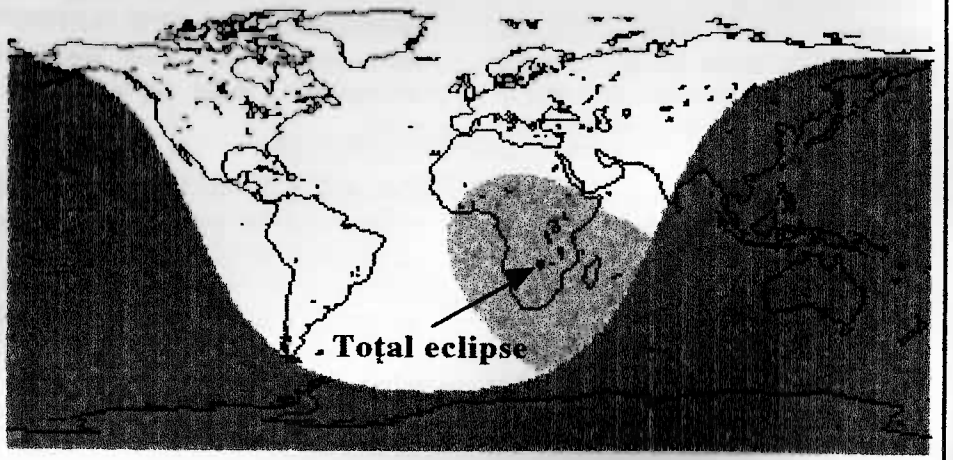
Sure enough, Thursday, eclipse day, dawned clear and bright. After a 5:00 am call, we flew in the same three Hawker Siddely aircraft to Lusaka airport, which had never seen such a busy day, with as many flights as it normally gets in a week. At the airport a huge camp had been set up and hundreds of people were already gathered with telescopes and cameras. Special day-trip flights had come in from Austria and Switzerland and there were many smaller planes parked at odd angles to fit them all into a tight space.

But we were headed for our observing site on the Agriflora vegetable and rose farm outside Lusaka. On arrival there we were greeted by the tiny children of the farm company creche who sang the Zambian national anthem and danced for us. We were given a tour of the farm, a huge operation employing thousands of people. It exports to the European market, especially to UK supermarkets, and is therefore run in accordance with European standards. The facilities laid on for us were excellent, with a marquee and toilets constructed especially for the occasion, albeit that the gents was made of hay bales!

We found the Zambian people beautiful, warm and friendly, and eager to experience with us the magic of a total eclipse of the Sun. We distributed protective eclipse viewers which we had brought for the farm workers, the

Solar Eclipse 21st June 2001

The chart shows the shadow of the Moon at the time of the total eclipse over David's location near Lusaka in Zambia. The other dark area shows the nighttime region.



children and the catering staff. I was invited to speak about the danger of looking directly at the Sun, and to give advice about how to observe it safely, based on my experiences while employed at Kitt Peak National Observatory and my involvement with the 1999 eclipse. This identified me in the eyes of some of the participants as an "expert" and for the next couple of hours I was inundated with technical questions about eclipse observing and photography.

After a barbecue lunch it was time to pick our spot and settle down to view the eclipse. We had perfect conditions. As usual, "first contact", when the limb of the Moon first touches that of the Sun, brought much interest. We watched the progress of the eclipse over the next hour and a half as it led towards the climax of totality, passing the time by looking for eclipse images caused by "pinhole projection" under trees and people's loosely-woven hats. Although I had brought a film camera and a digital camera I concentrated on enjoying the event, with photography taking second place. Most people had cameras and a few had modest-sized telescopes, one being of a special reflective design.

Then the beautiful corona, the atmosphere of the Sun only visible during a total eclipse, blossomed forth, pearly white, large and uniform, as expected for a Sun near the peak of its activity cycle

Within three quarters of an hour after first contact the quality of sky-light noticeably changed and it became colder. By 15 minutes before totality excitement had grown as the solar crescent became ever thinner. Shadows became sharper, the sky grew darker and people starting putting on extra layers of clothing. Still, surprisingly, no planets or stars could be seen. We had borrowed a tablecloth and spread it on the ground and, sure enough, two minutes before totality we clearly saw shadow bands. These elusive bands of light and dark are occasionally but rarely seen during eclipses and brought much excitement. Crickets started up in the nearby field and confused birds were seen flying overhead.

Then, suddenly, as the crescent Sun shrank to nothing, we saw the gigantic shadow of the Moon rushing towards us through the sky from the west. Then all eyes were on the Sun as the bright string of "Baily's Beads" rapidly contracted to a splendidly brilliant "Diamond Ring", the glowing pink solar chromosphere clearly visible around the Moon. This lasted for several seconds and was a magnificent sight. Then the beautiful corona, the atmosphere of the Sun only visible during a total eclipse, blossomed forth, pearly white, large and uniform, as expected for a Sun near the peak of its activity cycle.

By now Jupiter, just five degrees from the Sun, shone brightly at magnitude -2. The stars Sirius (magnitude -1.5) and Canopus (-0.6) could be seen. These were the only ones we observed although

we had a good look for Saturn (magnitude 0) and the bright stars of Orion and Taurus.

We all admired with astonishment the beauty of the scene. No matter how many times one sees it (and this was my third) one cannot but be overwhelmed by the spectacle of a total solar eclipse. But the three and a half minutes of totality passed all too quickly. A brief Diamond Ring appeared again and the bright light of the solar photosphere returned, necessitating the replacement of filters over eyes and photographic equipment.

We all admired with astonishment the beauty of the scene. No matter how many times one sees it (and this was my third) one cannot but be overwhelmed by the spectacle of a total solar eclipse

There followed much exchange of notes about what had been seen, the effects on people and how successful photography had been. The Zambians were eager to talk about this new experience and were pleased to hear that there will be another total eclipse crossing the African continent in December 2002, although it will be much shorter and will occur during the rainy season.

The atmosphere of the crowd was at the same time animated and relaxed, all being delighted with the perfect conditions, the excellent facilities and the spectacle which we had all shared, which was even now being experienced by others in Zimbabwe, Mozambique and Madagascar.

So it was time to pack up and return to the airport - a slow process because of the masses of cars with families who had taken advantage of the Zambian Government's declaration of a special holiday to view the eclipse from vantage points near the airport. The airport itself was in chaos, with hundreds of people trying to get their flights. However, we fought our way through to the departure area, zoomed through security and boarded our planes. Such was the pandemonium that there was no question of boarding cards or allocated seats, or even allocated planes. We were simply told to get on the nearest plane and go.

We flew back to Livingston in the sunset, the clear western sky showing beautiful colours of deep crimson, diffusing into pink, apricot and saffron. We were content and elated and undoubtedly there were many already looking forward to the next total eclipse of the Sun.

Back at the Royal Livingston Hotel we relaxed in a state of elated exhaustion. The following day we were joined by other groups which had also been to Lusaka to view the eclipse, as this was a prime observing area. Two of the groups had come by train from South Africa and I was pleased to meet up with Dr Robin Catchpole of the Royal

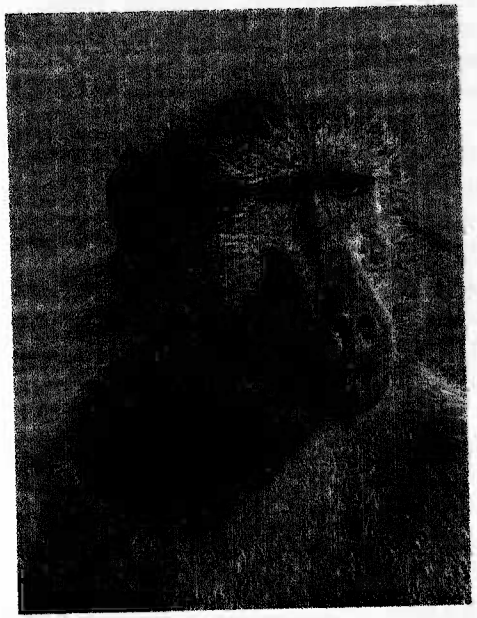
Observatory, Greenwich, who was leading one of the groups and who had been with us in Guernsey and Alderney for the 1999 eclipse. This is one of the joys of eclipse chasing - meeting up unexpectedly with old acqaintances in out of the way places.

I had further unexpected evidence of the closeness of the astronomical fraternity while having breakfast on our last day in Livingston. An Englishman at the next table, who had been on one of the groups travelling by train, informed me that five years ago, during a holiday in Guernsey, he had taken the opportunity of visiting the Astronomy Section's Observatory. Because of this experience he had become interested in astronomy and that was the reason he was now in Africa for the 2001 eclipse. What a small world it is, indeed! It was most gratifying to learn that our efforts at public information and astronomical education sometimes bear fruit.

Our last night in Zambia was marked by an evening of African singing and dancing in a Boma, a traditional outdoor gathering. We were entertained by members of the Ngoni tribe, for whom solar eclipses have particular significance as their mass migration in the 1830s was marked by an eclipse.

We were sorry to leave Zambia, a desperately poor country, but rich in scenery and friendliness of its people. As we awaited transport to our next stop in Botswana we were thrilled to see an elephant walking across the Zambezi River towards a small island in the middle, right by the Victoria Falls. Arched over this beautiful scene was a perfect rainbow, created by the spray from the Falls themselves - a natural spectacle quite different from the eclipse, but equally never to be forgotten.

David Le Conte



As well as seeing the eclipse David saw lots of African wildlife, like this baboon. You can see David's pictures from his trip, including a sequence of eclipse shots, on his website: www.vs76.dial.pipex.com/africa2001/index.htm

Astronomy and Space

References for further reading

compiled by Geoff Falla

Spaceflight - 40 Years. A tribute to 40 years of spaceflight, with Russian astronaut Yuri Gagarin making the first orbital flight in April 1961. *Astronomy, April 2001*

Jupiter - Cassini Flyby. The space probe Cassini passed close to Jupiter in December 2000, half way on its journey to reach Saturn in 2004. The spacecraft's camera was activated, obtaining some spectacular images as it was boosted on towards its final destination. *Astronomy, April 2001*

Eros Touchdown. The NEAR Shoemaker spacecraft made a historic landing on the asteroid Eros on February 12th. Photographs were taken as it approached the landing site, and the spacecraft continued to communicate after touchdown. *Astronomy Now, April 2001*

Mars - The Search for Life. New evidence suggests that microbial life could survive travel between the planets, and that life on Earth might have originated on Mars. *Astronomy Now, April 2001*

Light and Radio Wave Pollution. The British Astronomical Association's Campaign for Dark Skies. The folly of over-bright lighting and its effect on the environment. Pollution also affects radio astronomy where problems come from the increasingly active telecommunications industry. *Astronomy Now, April 2001*

The Future of SETI. The Search for Extraterrestrial Intelligence has been expanded since it was started some 40 years ago. New experiments have been planned using both radio and optical wavelengths, and with more advanced equipment to improve the search. *Sky and Telescope, April 2001*

Solar Sails. Russian sub-orbital and orbital flights are planned this year to test the technology of solar sails, using lasers as an alternative means of propulsion for travel to the planets and beyond. Cosmos 1 is the first craft in this Planetary Society sponsored project. *The Planetary Report, March/April 2001*

Astronomy Glossary. The meaning of astronomical terms. The start of a series, this first one from Aberration to Azimuth. *Astronomy and Space, May 2001*

Astronomy and Science Fiction. A set of articles about how early ideas relating to the Moon and Mars in particular and classic works by authors such as H.G.Wells compare with modern scientific knowledge. *Astronomy Now, May 2001*

Longitude - The Moon versus the Clock. The 18th century race between lunar astronomers and clockmakers to measure longitude accurately, leading to the invention of the marine chronometer by John Harrison. *Astronomy Now, May 2001*

Mars returns. This year Mars is at its closest to Earth since 1988. What may be seen, and where to find the planet low in the southern sky. *Sky and Telescope, May 2001*

Io in Close-up. The Galileo spacecraft's best images of Io and its active volcanoes, obtained during the past 4 years. *Sky and Telescope, May 2001*

X Ray Observations. The Chandra X Ray orbiting observatory has improved the resolution of emissions from galaxies, and supernova remnants. Details of the early results, which have already raised some questions relating to black holes. *Astronomy, May 2001*

Ireland's Historic Astronomical Sites. A celebration was recently held to mark the restoration of the Birr Castle telescope, established by the Earl of Rosse in 1841, and for many years the world's largest telescope. Ireland also has one of the oldest archeoastronomy sites, at Newgrange near Dublin. *Astronomy, May 2001*

Astronomer Ernest E. Barnard. The life of an astronomer who discovered over 300 nebulae, including a landmark discovery in 1884 of what became known as Barnard's Galaxy, in the constellation Sagittarius. *Astronomy, May 2001*

Ringed Planets. The mysteries of the outer planets' ring systems, and how they seem to have been formed. *Astronomy Now, June 2001*

The First Space Tourist. American businessman Dennis Tito recently fulfilled a dream by visiting the International Space Station. The visit was only made possible by the Russian Space Agency. *Astronomy Now, June 2001*

Robot Space Explorers. The advantages of robot explorers in space as opposed to manned missions with some of the achievements to date and a look at the future. *Astronomy Now, June 2001*

Epsilon Eridani - Evidence for a Planet. Evidence has been found that a large planet may be orbiting one of the closest stars - Epsilon Eridani. The challenge for astronomers to observe the planet directly. *Sky and Telescope, June 2001*

Geoff Falla

Astronomers and UFOs

***Geoff Falla** argues that, when it comes to UFOs, scientists are not always as objective as you might think*

There are times when any of us may happen to see something unusual in the sky. It may be an exceptionally bright meteor, perhaps leaving a trail hanging in the sky before it gradually fades and disappears. If we are even more lucky we may see a fireball type object trailing sparks as satellite debris re-enters the atmosphere. Sometimes a bright star will seem to appear where no star should be, only for us to realise that it is a satellite briefly reflecting the rays of the setting Sun before disappearing again after just a few seconds. There is usually an explanation for everything we may see, but could there be other much more mysterious objects up there as sometimes reported, and far more difficult to explain?

Astronomers do however sometimes see UFOs, although what may be reported or discussed in public is not the same as what may be admitted in more guarded statements

It is sometimes claimed that astronomers never see UFOs, and that for this reason such objects cannot possibly exist as truly unexplained events. After all, astronomers must spend more time looking at the sky than anyone else, so if there is anything in the sky which should not be there they would surely be aware of it. But astronomers of course do not always have a wide view of the sky. A telescope eyepiece only provides a narrow angle view and a very small fraction of the sky. Astronomers do however sometimes see UFOs, although what may be reported or discussed in public is not the same as what may be admitted in more guarded statements. In 1976, over a thousand members of the American Astronomical Society were asked in a survey if they had experienced any UFO type observations. A small but significant number, about 5 per cent of the members, responded that they had in fact seen an object which they were unable to explain and which they would class as a UFO.

There have been several noted reports from astronomers and from observatories. As far back as 1949, Dr Clyde Tombaugh, famous for his discovery of Pluto in 1930, was at his home in New Mexico with other members of his family when they saw a very strange object in the sky. He was so astonished and concerned that he reported the matter to the FBI, on the understanding that details would not be revealed to the public. Other sightings of unknown objects were later not revealed by the astronomer when he found that details of the earlier incident had been released. Another astronomer who experienced an unexplained sighting was Dr H.P.Wilkins, a highly respected observer and an authority on the lunar surface. It was in 1954 during a lecture tour of the United States when he saw three unknown objects while travelling by air over West Virginia The objects were oval, well defined and moved against the wind direction. Two of the objects moved slowly, while the third one dived quickly behind the clouds.

In 1976 an incident was reported from Galdar in the Canary Islands, also involving astronomers at the Monte Izane Astrophysical Observatory. The driver and passenger in a car saw an object a few feet above the ground as they rounded a curve in the road. The object was spherical and seemed transparent,with what looked like tall figures inside it. The car radio suddenly failed. Three astronomers at the observatory described the object as a brilliant sphere with a swirling centre. It approached the observatory before making a ninety degree turn, moving away at speed. The astronomers could not explain the object, seen from the observatory for several minutes, and by other eyewitnesses near Galdar for up to half an hour.

The science team led by Professor Sturrock examined a sample of significant UFO cases and concluded that the subject deserved more serious scientific study

During a scientific conference at the Shemakha Observatory at Baku, on the Caspian Sea coast in October 1999, scientists including astrophysicists observed a large disc-shaped object overhead for several minutes. The object was recorded on video tape. Following study of the results the scientists were reported to be unanimous in concluding that the object was not of terrestrial origin and could not have been caused by any known atmospheric phenomenon.

Reports of UFOs are on a worldwide basis, with many reliable accounts from the pilots of aircraft, from police officers and military personnel. The reports are building up a pattern with a degree of consistency. Many of the best cases do not depend just on visual sightings, but where objects are reported to interact with the environment, producing apparent effects on vehicle and aircraft systems, radar tracking and physical traces. In 1997 a scientific review of UFO evidence was set up by Professor Peter Sturrock of Stanford University, a leading research centre in the United States. The science team led by Professor Sturrock examined a sample of significant UFO cases and concluded that the subject deserved more serious scientific study.

When it comes to media reporting the subject is usually ignored except when it comes to a more sensational report, which may not always be dealt with in a serious manner. Then of course there are the 'debunkers'. These are people who do not study the evidence carefully to arrive at a reasonable explanation but prefer any

seemingly easy answer regardless of the evidence. In this way you can have a daylight sighting in one example, explained as a magnified image of the planet Jupiter, or Venus being put forward to explain almost anything. It is well known that many scientists do not have an open-minded approach to subjects which do not conform with present thinking or with currently accepted scientific theory. Adrian Berry, science correspondent of the Daily Telegraph for many years, has admitted that scientists in general are infuriated by paranormal events, including UFOs. In an article in the newspaper in November 1990, he stated that these subjects are "resented because, if confirmed, the whole fabric of science would be threatened".

So now we know why most scientists do not wish to look honestly at reported events which do not fit the accepted pattern, preferring to guard presently known theory for as long as possible. This seems a pity as it does not help to advance knowledge into new areas which must surely exist. Scientists must, of course, exercise caution where reputations are at stake, but they would be unwise to feel satisfied that there are no major discoveries yet to be made in the natural world or in the Universe around us.

Given that UFOs may well exist as a truly unexplained phenomenon, as evidence seems to confirm, what could they be and where do they come from? Not long ago it was thought that our own solar system was probably unique. But since about 1995 evidence has been found that there are many stars which seem to have planetary companions. The existence of these other solar systems is indicated mainly by the observed gravitational effects on the parent star. It would take a very powerful telescope indeed to see any of these planets directly. It is quite possible, even assuming the most pessimistic chances, that intelligent life does exist elsewhere in the Universe, but we are told that faster than light travel is impossible. Knowing how much has been discovered and achieved in science, with manned flight and space research in just the past century, how much more may be considered possible and achieved in the more distant future, or may already be available to any civilisations more advanced than ourselves?

It is well known that many scientists do not have an open-minded approach to subjects which do not conform with present thinking or with currently accepted scientific theory

It should not be assumed that the origin of any UFOs must necessarily be from some extraterrestrial source. Although it is of course a possibility to be considered, there is intriguing evidence in many of the reports of links with other reported paranormal events. For those who are prepared to study the evidence, it is apparent that genuine unexplained events exist, and the scientific panel in 1997 was, for example, impressed in particular with UFO cases involving effects on electrical systems. Reported vehicle interference effects are a major part of the many 'high strangeness' cases, and it is in these that the most significant clues will be found. Although many case files remain unobtainable, in spite of Freedom of Information legislation, there are however enough reports available to assist investigation of the subject

The search for evidence and for more definitive answers will continue. Where exactly UFOs come from may be neither here nor there, but in between - and perhaps in a somewhat different direction, but if people say astronomers never see UFOs don't believe them.

Geoff Falla

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(Professor Peter Sturrock retired in 1998 as Director of the Center for Space Science and Astrophysics at Stanford University, California)

The UFO Encyclopedia - Margaret Sachs *Corgi Books edition, London, 1981*

Mysteries of Space and Time - H.P.Wilkins *Frederick Muller Ltd, London, 1955*

Vehicle Interference Report. Interference effect cases - G. Falla *British UFO Research Association*

UFO Magazine - November/ December 1996, January/ February 2001 *Quest Publications International*

Possible Plans for the Meade/Takahashi

by Debby Quertier

I watched a recent Sky at Night programme with interest as the subject was an amateur astronomer who was doing great work with his two telescopes, two computers and CCD camera. The programme showed some of the wonderful images he had taken. In particular I liked the image he took of the Horsehead Nebula (probably one of the most photographed objects) and of the Moon. The most interesting part was concerning the two telescopes that this man was using, a 16" Meade with a 5" Takahashi piggybacked on top. He operated the telescopes with one computer, I'm not sure what program he used but it was something similar to what we have in the Meade building, and the second computer was used for the CCD camera with the superb resulting images shown on the Sky at Night.

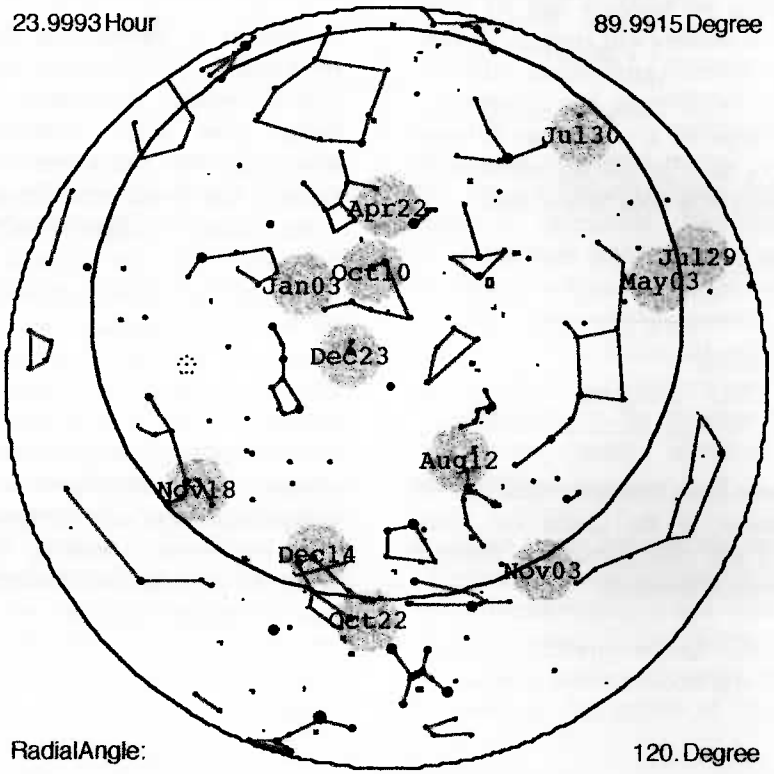
Possible Plans for the Meade/Takahashi *continued*

We have the same telescope set up, the necessary computers and a CCD camera, albeit not the latest model. We have the advantage of being a few degrees further south than the UK and, generally speaking, we do not suffer as much from light pollution. I was really interested to see what could be done and hope that we can get our CCD camera operational and see what we can do. I expect Tuesdays are going to be quite busy during the summer, as we have started to get visitors most weeks, but it is certainly something we should think about. Maybe we could use some Fridays for imaging and later on we will have the winter nights when we can start viewing much earlier. Anyone who is interested in using the CCD camera please let us know.

Debby Quertier

Meteor Showers

On 10th August we have our annual barbecue followed by a count of Perseid meteors. This chart shows the dates and radiants of the main meteor showers during the year



Orbit Speeds

by Peter Langford

It is well-known that the closer a planet is to the Sun the shorter the time it takes to complete its orbit. For example Venus, the next planet closer to the Sun than Earth, takes roughly 0.6 years to complete an orbit, whereas Mars, the next planet out, takes about 1.9 years. What about their speeds though? It's obvious that if you have an inside track like Venus you can easily beat the Earth round the circuit unless you are a real slowcoach.

Let's ask another question. Say you are in orbit in your spacecraft around the Earth. Mission control asks you to go into a higher orbit so you apply your thrusters to take your spacecraft vertically away from the Earth. However, your horizontal speed is still the same as it was when you were in the lower orbit. Should you speed up a bit or slow down to keep yourself in a circular orbit?

The chart below shows the relationship between orbit radius and and planet speed. Everything is measured relative to the Earth. The horizontal axis shows distance from the Sun while the vertical axis shows speed relative to the Earth. The chart clearly shows that, as well as having the advantage of the inside track, the inner planets also go faster than the outer ones. Venus for instance goes at roughly 1.2 times the speed of the Earth whereas Mars goes at about 0.8 of the Earth's speed. (In drawing the points on the chart we are approximating. Since the orbits are elliptical there is no single radius and the speed along the orbit changes too).

Using either Kepler's laws or Newton's laws of motion one can work out that for a circular orbit the speed varies as the inverse of the square root of the radius. This theoretical curve is drawn on the chart and it can be seen that the planet points do indeed fall on the curve.

So what about your spacecraft? It follows the same laws of motion relative to the Earth as the planets do relative to the Sun. Consequently if you move to a higher orbit you need to put the brakes on to slow yourself down a bit.