

Chapter 13 Astronomy

The start The 13th June 1994 was a watershed for me. Up until this day I had been a casual observer of the Heavens but this was the pivot for my affair with the OTA – the optical tube assembly – otherwise known as a telescope. This day dawned bright, still and clear; on returning from a barbecue at dusk the crescent moon glowed invitingly, low in the west. I set up my 3” Zeiss refractor and saw a moon with 30 degree terminator (the line between the lit and unlit area). As it became darker three blobs of “condensation” became apparent. I had never had this problem before but, wiping the optics, the “problem” persisted. As the telescope was undriven, the moon glided across the field of view and the “blobs” retained their position relative to the moon. This had to be cloud but there was not a single cloud in the sky. As it became darker I could determine that one whitish cloud had a stem of milk chocolate colour issuing from a small crater near the terminator, perhaps Santbech. The other two clouds had no contact with the moon. Each cloud was about 100 miles wide. I had to get others to look at this: firstly my wife Margaret and then neighbours Richard and Peggy Salmon and their daughter Hayley. We all saw the phenomena and I determined to speak with an astronomer. BT telephone enquiries could not find Patrick Moore’s telephone number but they did give me numbers for Greenwich and Cambridge observatories. Each call got me through to the janitor. I have a friend, Frank Rosa, who was, at that time, running New York TV news broadcasts for the city “you can’t fool me Gordon”. What about an Australian friend, Mike Marriott, currently a news reporter for CBS in Washington – he had been snapped up by CBS when they saw his six weeks of film shot in Vietnam from the trenches of the Viet Cong. “Pull the other one” was all I got. Ringing NASA, I was invited to leave a message on the answer phone. The moon was setting so I tried Hawaii. My

fourth connection to observatories in Hawaii brought success! On my 16th telephone call concerning what we could see I am conversing with a professional astronomer, Kevin Polk, who is prepared to listen to me! No, he has not heard of an event at the moon but he will look that night. Hawaii is clouded out. I never watch morning TV but I did on the 14th: what was that? No mention of the moon on the news.

I phoned Adrian Berry, Science correspondent of the Daily Telegraph and was able to prove my credentials because I had conducted business for his uncle Lord Hartwell, owner of the paper. He had had no reports and put me in touch with local astronomers.

I went down to see Patrick Moore, a wonderful host who gave me a fine lunch and regaled me with stories. I think it is fair to say he humoured me believing not a word of it. Sir Bernard Lovell, amazingly, did say that what I described might not entirely have been in my imagination. Professor Paul Spudis was running the Clementine space mission orbiting the moon at the time. In an e-mail exchange with him he thought I might have seen a spacecraft venting gas. If so, why did the effect lock on to the moon?

It is known that when an asteroid approaches a large body the gravitational forces can cause it to break up, as evidenced by chains of craters on the moon. Perhaps this is what we saw.

Deciding that I needed the ability to take a photograph should such an event recur, this led, in a series of rapid steps, to the construction of a "bees-knees" observatory with a whopping Meade telescope and digital camera. Now I have the means to take photographs of the moon I very seldom point the telescope in that direction; I now see it as the ultimate light pollution.

The Observatory The Hythe is at the edge of the Conservation area and, to be of any use, an observatory had to be, for practical reasons, high up and on the most prominent side of the house adjoining open country. Getting planning consent would not be easy especially as the local Member of Parliament was currently much involved in leading a protest about a radio mast, proposed to be erected not far away. Support of neighbours was vital and support they gave - big time! However two were not so happy and lodged objections. I had to persuade them to withdraw: planting two mature trees on the line of sight did the trick. (With one it was necessary to get stuck into the whiskey before the day was won).

My son Chris did a magnificent job in building the observatory and found himself, almost daily, facing out of the ordinary problems. Just two aspects I will mention. Weighing eight tons, the pier had to be well founded: this entailed thrust boring for soil samples to a depth of eleven metres - this gave the Koi carp in the adjacent indoor pond something of a headache. The pier was eventually built on a foundation supported by three eight metre deep piles. We wanted to cast it in one day but were concerned about eight tons of concrete bursting out in front of the kitchen window; in any event Margaret was not best pleased by the whole endeavour and such a disaster would have entailed an extended haut couture visit to Bond Street.

One of the most daunting moments was opening the container from Chicago containing the Ash Dome. A myriad of parts, sheets, straps, wheels, bolts, unctions, you name it together with a 76 page manual. Assembly of the dome panels looked especially complicated but with the help of washing up liquid proved easy and rewarding as the dome took shape before ones very eyes. One particularly memorable moment was the day for installation of the

shutter. It was a showery day and we had a crane to hoist the piece. At the moment of installation a mini-storm came through and the shutter spun like a top. The crane driver knew his stuff and whisked it away: thank goodness all fingers were still intact.

Our cleaner Ruby was accustomed to shaking the dusters from the kitchen doorway around mid-day: this was the same door by which she entered the house. The lads made sure to be in position to see her reaction when she opened the said door to unexpectedly find it had been bricked up – little things!

Telescopes Over the years I progressed from a 3” Zeiss refractor to an 8” Celestron reflector to a 16” Meade Schmidt cassegrain to a 16” Ritchey Cretien (of the same design as the Hubble space telescope). Then I “piggybacked” a 4” Takahashi FSQ refractor. If a reader wishes to hear of my activities with these telescopes they are set out in my book “My Heavens” published by Springer and available on Amazon.

Walking home one evening from a night out, the sky was so inviting that I had to start imaging, even though I had imbibed somewhat. Having watched the first image download satisfactorily, I fell asleep for a while. I awakened to a lost guide star and what was that noise? Rain drumming against the observatory! Dashing upstairs I found water pouring straight off the shutter into the open ended telescope, which was at an angle of 45 degrees. Quickly I closed the dome and switched off all the electronics! Then I manually lowered the scope and out poured half a gallon of water! The main mirror had been immersed but thank goodness the electronics stayed dry. Amazingly everything was alright the following evening. (A colleague in Arizona

had his \$10,000, water cooled CCD camera drop into the bucket of cooling water with no lasting bad effects!)

The telescope provides one unexpected benefit: ladies seem to have a fixation about seeing it and who am I to deny a lady her pleasure? I have developed a routine for new ladies part of which I will divulge now but the final moves must remain off record. I am careful to ascend the stairs before the lady so that I can welcome her into the chamber. Once on board I lower the observing flap over the stairs to extend the floor area and to ensure there is no possibility of escape. I have the habit of setting down on a display board the first words to fall from a lady's lips when initially seeing the equipment: they include: -

“Oh my God (frequently)

Oh, it's like the dentist

It's sensational

Oh my God it is big and black

Wow – what exactly do you do with it

Where do you look?

This is the exciting bit

It's huge Gordon

Wow – that is quite a bit of equipment

My God, gee wizz

Magnifique (from a Parisienne)

It's bigger than I expected”

International Observatories. In my endeavours to visit observatories worldwide I have had some significant failures. The tour bus for St. Petersburg went past a sign “to the observatory”. I asked Irene, the comely guide, whether we could see it. No problemski! Without a prior appointment we were not allowed in but were permitted to walk the grounds.

The following year I was to be in Sydney and had to endeavour to see the Anglo-Australian telescope at Siding

Spring. David Lee, a senior astronomer at the observatory, responded to my e-mails with complete hospitality and the arrangements were made. Getting the flight to the outback arranged was one of the travel agent's more challenging projects but Lesley came up trumps. On the day in question I was the sole occupier waiting in this shed, at the back of Sydney airport, early in the morning, when a young man with epaulets came up to me "Mr. Rogers?" "Yes" "Coonabarabran?" "Yes please" "We have a problem at the airstrip" "What sort of problem?" "Well, this plane was taking off and it hit a pig. The airstrip is now closed with a plane with no undercarriage sitting on a dead pig". OK, lets ring Siding Spring. "What, not another pig!" We were due at the opera that night and cancelling was not an option: I did not even dare ask. So back to the hotel ten hours before I was expected, to find Margaret having breakfast with George! (The really bad news was that she lumbered me with George for the Grand Harbour Tour whilst she went on an extended and unencumbered shopping trip) It was just three months later that David Lee was at a star party when he noticed a faint glow that he did not recognise. It turned out to be a new comet, forever hence to be known as Comet Lee.

We were going to Chile and I had to try to see the Very Large Telescope array at Paranal, which to me is the premier ground based telescope facility. The very helpful ESO lady in Germany gave me the number to ring. This turned out to be a Chinese takeaway. Referring back to her she gave me a new number and I found the right man. He said that he could arrange for me to go on a Saturday but not any other day. Only the Director could give that permission and he would not respond to my e-mails. We were due to arrive in Santiago at mid-day on Saturday and I could not ask Margaret to wait a week. Another failure. A couple of years ago the Sky at Night team did a programme from the

VLT and invited along a local amateur who took his 5” refractor. The professionals never look through anything and formed a queue to peer through his instrument, whilst off duty from controlling four linked eight metre telescopes!

Talks I give talks to a variety of groups. Astronomical Societies are an obvious target but I give more general talks to anyone who wants one. These include talks for various charities, to Clubs and to the Women’s Institute. I am licensed by the Royal Astronomical Society to speak to schools. This last task can be quite challenging and also very rewarding for there is always a bright spark. Talking about the explosion of a star that was first seen on the 4th July 1054 I asked if any pupil (aged 9) could guess how we might know the precise date. The teacher was clearly worried about Thomas and he preceded his question with “it is cheeky Mr. Rogers”. “Well go one then”. “Were you around at the time?” With one school talk I let it be known that I would be slipping in one or two non-astronomical images and, to be sure they were still awake, they must let me know if they saw a fake one. I put in a few of the wonderful paintings by Patrick Moore’s mother: as each one appeared 280 9-11 years old children identified the falsehood in thunderous style.

Accompanying their letters of thanks I have received some outstanding drawings and I reproduce one sent to me by a nine years old girl. Even astronauts have to be fashion conscious

Some notable observations

Halley’s comet At the time of Halley’s comet I was on a ship cruising the Orinoco river in Venezuela, a good vantage point to be so far South. Let me paint the picture. There is the gentle throb of the engines as the vessel slowly pushes

into the current. Luxuriant vegetation hems in on all sides with mysterious sounds and exotic smells. The moonless sky is inky black studded with endless diamonds and there, this arching comet. On deck, feasting on the moment, were half a dozen souls. The remaining five hundred and twenty passengers were below decks playing Bingo.

Eclipsed star Around 1990 I heard a forecast that one of Saturn's moons would occult a star. Because of the star's proximity to Saturn it was easy to find it and I observed at the given time. To my astonishment at the very second that was predicted the starlight ceased and twenty two seconds later it switched on again just as forecast.

Shoemaker-Levy comet Then there was the amazing Shoemaker-Levy spectacle. The impact on Jupiter was due at dusk around 20-55 on the 9th July 1994. I was watching in the hope of seeing a flash even though the impact would be on the far side. No flash, because it was insufficiently dark, but as I continued to observe there appeared a big black roundel, followed quite quickly by another, each as big as the world. It was as if an old friend had been wounded. I arranged for a number of acquaintances to have a look through the telescope. The response was pretty universal – very nice!

Hale Bopp Of course the comet Hale Bopp was magnificent and I obtained a decent high power image of the nucleus but the wide-field images rank in the failures department

Comet Neat The rapidly moving Comet Neat (C//2001 Q4) was a splendid target at high power, imaged low in the West on the 3rd February 2002, I did obtain a good image but was clouded out seven days later when the comet blew up – that would have been something. The distance to the comet was about 0.1 of an Astronomical unit (a tenth of the distance to

the Sun) and the orbital period around the Sun was calculated to be around 37,000 years.

Black Hole creation Relatively close, at a distance of ten million light years, is a face on spiral galaxy catalogued as NGC 6946 in Cygnus. On the 31st August 2004 I imaged the galaxy on a night of splendid sky. Two weeks after I took this image an Italian amateur found a supernova there (a star blowing up; a massively bright event - so bright that for months that star can shine as brightly as its host galaxy containing around one hundred billion stars). Because of cloudy conditions I could not take a new image until the 18th October. I include both these pictures. The bold light points are foreground stars in our galaxy but the marked light source in the second image is the exploding star. This was researched to be the death of a massive star and, most likely the birth of a black hole. First picture - no black hole: second picture black hole arrives – all delayed 10 million years.

Billion years old light Quasar 957+561 in Ursa Major. This split source of light had been travelling for over nine billion years before striking my mirrors and being captured. At a redshift of 1.41, the light from this quasar has been enhanced by gravitational lensing caused by a massive intervening galactic cluster at a distance of 3.9 billion light years (redshift .36). The cluster divides, magnifies and bends the light in such a way that the light at point A, having travelled the shorter distance, arrives 417 days before light at point B. I include my picture of this object.

User Group I belong to an Internet user group of around 4000 astronomers who use the same equipment as me and find this very beneficial. Enter a problem and in very little time there is an expert telling you how to solve it. With subscribers around the world there is always someone well

placed to view any astronomical event so that an eclipse in Australia it pretty well guaranteed to be on your screen within hours of the event or perhaps a sequence of a comet viewed from Chile. I have never seen an Unidentified Flying Object and I put out a note to the Group asking if any member had seen one. The answer was none.

Of course there are the lighter moments. One subscriber from Kazakhstan came out with a theory about body heat disturbing the airflow around his telescope. With deep snow on the ground, he rigged up a small fan, which he could point at his face to make sure his body heat would not interfere. Dedication indeed!

A German member put up a magnificent image of a Southern Galaxy he had imaged from Namibia There were glowing accolades regarding the picture from all round the world. One top level American imager admired it but voiced the view that perhaps the colours were a fraction strong. Now this member had spent days, maybe weeks, nurturing this image and the comment got to him. Back came a reply refuting the criticism and demonstrating why he would not accept it. There were links to two sites. The first was to a German Christmas tree sparsely decorated with golden balls. The second to an All American Christmas tree decorated in such grand fashion with lights, baubles, chocolates, presents, and all manner of bric a brac to such extent that the tree had all but disappeared.

Sharing One resounding thing about astronomy is that all who participate seem happy to share: to share their images, their knowledge, to show you their equipment and observatory. “The Heavens” is one thing that transcends all the petty jealousies and gripes of man. Many visitors come to my observatory and sharp-eyed children are especially welcome: they see far more on Jupiter than me with my weathered peepers. I had a lesson in the way things have

moved on since my school days. A friend phoned to enquire if his son and schoolmate, each aged ten, could come to the observatory as part of a school project. They arrived with tripod and video camera; set up the studio and with copious notes derived from the Internet gave me a substantial grilling about the solar system. They made it clear that there was no chance of any editing, if you got it wrong – tough.

Sir Patrick Moore I cannot let pass a chapter headed “astronomy” without mention of my good friend Sir Patrick Moore, (who ascended into the Heavens in December 2012). for those readers who did not know about him. He had a razor sharp brain, a rapid wit, (asking him if he had had any “out of this world” experiences he immediately retorted that he had been to Bradford!) and a presence that puts you at ease. He was a compassionate man who never thought of his personal gain but always the welfare of others. His monthly programme for the BBC, “The Sky at Night” was presented by him for 55 years and is the longest running TV programme worldwide by the same Presenter. (Patrick only missed one programme when he was laid low by a rogue duck egg). On the 1st April 2007 Patrick presented the Golden Jubilee Sky at Night programme in, typically for him, a very novel fashion. He played himself now, Jon Culshaw the impersonator played a magnificent Patrick in 1957 and Brian May played Brian May on Mars in 2050 – Hilarious! At the BBC party to celebrate this event I had a half an hour conversation with Gabriella of the Cheeky Girls. One of the things she told me was that she liked older men!

He was the author of over one hundred books in the astronomy and space fields (I think he did stray into the science fiction world but that seemed to remain behind closed doors). Following the Boxing Day tsunami he co-authored, with Sir Arthur C Clarke, the book “Asteroid”; all

proceeds of this were donated to the Sri Lanka tsunami relief fund. He wrote “Bang”, a complete history of the Universe. The co-authors of this book are the astro-physicist and renowned guitarist Brian May, (Brian was the guitarist on the roof of Buckingham Palace at the time of the Queen’s Golden Jubilee celebrations) and Chris Lintot the astro-physicist and co-presenter of The Sky at Night.

He could provide you with a Who’s Who of the space world. He had met Orville Wright: also Neil Armstrong including featuring Armstrong on a Sky at Night programme. Patrick said it is such a shame that these two pioneers never met one another. He knew Wernher Von Braun well. He was particularly close to Buzz Aldrin who came over especially in 2001 to present Patrick with his BAFTA for communicating science and astronomy to the public. He has met Yuri Gagarin and Alex Leonov, the first man to undertake a space walk. He has also met me! In the war Patrick lied about his age to get into the Royal Air Force aged just seventeen and was sent to Canada for a course in navigational training.

Patrick had enormous musical talent and some of you may have seen his xylophone recital at the Royal Variety Performance before the Queen. He could write the most rousing March and a splendid Viennese waltz. One of my favourites is the “Penguins’ Parade”. The Parachute Regiment needed a March and Patrick quickly volunteered to write it. In pantomime he made a wonderful ogre. Patrick has shaken hands with Rachmaninov.

For many years Patrick was a stalwart of Selsey Cricket Club bowling devilish spin with, on Patrick’s admission, an ungainly and cumbersome run-up. Maybe the run-up paid a part in foxing the batsman but he was very effective at taking wickets. For the Lords Taverners he featured in an

unbroken stand of 100 runs. The scoreboard read: Moore P 1: Compton D 100! He did make fifty once. I did not like to tell him but I think the opposing side had decided he would do well on that day. He was dropped six times, no-balled every time he was bowled and had endless overthrows to his name.

The extent of Patrick's fame was brought home to me when he asked if I had an image of a cluster of galaxies. I do have some but I knew an American astronomer, Stan Moore, who had some that were far better than mine. E-mailing for consent to use them in *The Sky at Night*, Stan replied affirmatively saying that, as a boy, the first astronomy book he had read was by Patrick and it would be a privilege to have him air his picture.

Patrick published his *Stars of Destiny*, a scientific and lighthearted look at Astrology. His conclusion was that it was all a bit of fun but of course, with no foundation whatsoever. Yes, you could make out that Sagittarius had the shape of a teapot but, equally, you could also call it a petrol pump.

Patrick did me the honour of agreeing to open the observatory on the 31st March 2001. This gave me the opportunity to give a decent party. Now, builders universally like a drink, and it was a damn close thing but none of them quite fell into the indoor pond. Kim Wilde, the million disc pop star, came along. She is keen on space and has now branched out into gardening. On this subject she regularly appears on television and she won a Gold Medal award for her Chelsea Flower Show garden. She found herself in conversation with Terry, the jack-of-all-trades builder. Making conversation she intimated to him that she was looking for a plant that would hold its colour all

summer – Terry’s response “how about something in plastic”.

Patrick seemed to approve of the observatory and a little later he telephoned to say that he would like to use it as a subject for one of his programmes. During filming we paid a visit to the elevated balcony with its low door and, despite a caution, Patrick cut his head on his return. Margaret was quick to patch him up with a plaster: this was before luncheon. After the meal Laura, the manager, ripped the bandage from his wound for the sake of “continuity”. I was amazed to read in the Radio Times that the billing for the programme said that Patrick Moore would “visit The Crendon Observatory to learn how deep-sky images of distant galaxies and nebulae are produced”! The great man is supposed to be learning from me? Patrick said he was pleased with the programme but I found it disconcerting to hear all the “errs” and “ums” that I introduced.

Patrick said that, on his death, we were to sit round a table with a lighted candle “and I will blow it out if it kills me”. In the event we did exactly this and the candle went out; I am not sure whether or not Patrick participated.

Brigadier Dennis Rendell MC Dennis lived across the road from Patrick and we supped quite a few glasses together at some of the regular parties given by Patrick. Only on Dennis’s death in 2010 did I read about his wartime escapades. He was wounded and captured in Tunisia, made two unsuccessful attempts to escape, was moved to Italy where he twice more failed to escape but, on the third attempt, succeeded. (The extract below is reproduced with kind permission from The Daily Telegraph Obituary column). *One day in November, a travelling fair set up in the main square of the town. Among the sideshows was a short shooting range where customers could try their luck with an air rifle at hitting a plate 20 yards away. If they*

succeeded, the impact of the slug "triggered" an automatic flashlight photograph of the marksman. Rendell and six of his fellow escapees could not resist visiting the fair. Wehrmacht and Luftwaffe servicemen were at the range, but their shooting was poor and the camera seldom flashed. Two Luftwaffe men put up such an abysmal performance that Rendell, exasperated beyond endurance, could stand no more. He grabbed the rifle, rammed a slug up the breach, aimed and fired. A satisfying clang followed by a large flash signalled a bullseye. The fugitives, rather shaken by attracting so much attention, collected the film and slipped away quickly – leaving the Germans to pay. Soon after this adventure the organisation was betrayed, and Rendell decided to move his team to Rome. There they became part of the ring which was being run by Major Sam Derry and O'Flaherty. On one occasion Rendell, whose highly proper manner masked a daredevil streak that erupted from time to time, approached several senior German officers at the opera house. In execrable Italian he asked one of them to sign his programme. When Rendell returned to his comrades they asked him if he had gone off his rocker – the German officer in question was the Military Governor of Rome.

Piers Sellars I was talking to this English astronaut shortly after his return from the International Space Station and was intrigued to know what he could see in deep space. The answer was a very disappointing “not a lot, there is too much light pollution”. How frustrating to have such a wonderful window onto the Cosmos but to find it covered in lights.

My Heavens, the book Patrick promoted a series of Astronomy books and he asked me to write one about my observatory. If Patrick asks, you comply. It took me the

winter of 2006/7 to write it for Springer and I make quite a meal of all the problems that beset me. It was gratifying to receive an e-mail from an Austrian surgeon who bought the book and could not put it down because I was recounting all the problems he had experienced. I sent the draft to a renowned astronomer in case I had made any howlers. He replied saying that the only problem he could see was with the title. I could not think of a shorter way of expressing what the book was about than “Building and operating a first-rate home Observatory”. He thought a more accurate title would be “My Observatory and the Women”. Springer’s English representative said I would never get it past New York but I sent it anyway. Surprisingly my lady editor e-mailed to say she loved it but wanted to change the title. She did cut out a few things and changed the language to American. It is now available on Amazon.

Astronomy people I remember my first national Astronomy Society meeting at the famed Rutherford Appleton campus at Oxford where they do all manner of exciting things and you can actually talk to people who make components for space probes. I arrived in my best bib and tucker and stood out like a sore thumb. Margaret always preaches restraint in dress but these guys were in vivid reds and blues and greens. Hair was worn very long and I wondered who these chaps were. When it came to question time I found out: a bunch of brilliant guys who could hold their own with the professor.

Not long after this there was an open day at Culham, headquarters of UK Atomic Energy Authority where they were researching nuclear fusion. Picking up a bunch of mathematical papers I turned to the fellow sitting next to me and asked if all the jargon made any sense to him. He replied that it did, he had just retired as Director of Electrical Engineering!

Oxford University advertised a one-day astronomy course with some top speakers. I chose to sit next to an interesting looking man of foreign appearance: I later learned his name was Jose Ramon Lopez-Portillo. In Mexico he had precisely the same set up as me with both dome and telescope. Since he was a man of style I judged that he would have an attractive wife and suggested dinner, to which he agreed. Indeed, Mantina turned out to be gorgeous. On enquiring how she met Jose, she said it was at the Palace. Asking what she was doing at the Palace she said “oh, but Jose is the President’s son”. A subsequent dinner at their manor house was memorable. Internally the building had been “Mexicanised” and pre-dinner drinks were, of course, Margaritas. Mantina’s father, Augustin, had been Ambassador to both Germany and America and some interesting political tales unfolded. Henry Kissinger had wanted to take Mantina under his wing when she was a teenager! When visiting us, Augustin wrote in our visitors’ book “I like Mrs. Rogers”.

In London I got to talk to the astronaut Jeff Hoffman who had flown on the December 1993 Hubble Servicing mission. In EVA he had at one stage to remove nuts not designed for astronaut gloves being aware that one tiny lost nut could jam Endeavour’s doors.

We are privileged to have the renowned Astronomical Historian, Dr. Allan Chapman of Wadham College, Oxford, lecture at my local Aylesbury Astronomical Association, on a regular basis. His means of transport is by bicycle or bus and I sometimes give him a lift back to Oxford, which gives me the delight of his unfettered company for half an hour. His mental faculties astound me. Being conveyed to Aylesbury he nonchalantly asked “what is my topic tonight?” Without notes he is able to speak for an hour on virtually any historical astronomical subject, calling up endless dates and names. An interesting aside for me was

that when passing Hartwell House the subject of the regular apparition there arose. This gave me the opportunity to raise the topic of my poltergeist, in which he was most interested.

Bad to good Now please hear me while I tell a story of a disaster leading to stimulation. I had arranged a birthday treat for Margaret at the Plaza Hotel in New York and from here we would board a ship for an East Coast Colonial Tour. There was a storm in London and all flights were cancelled so that we stayed that night at the Heathrow Crown Plaza, which was rather a far cry from the New York version. Queuing for several hours in seeking to re-book, those in our part of the line became well acquainted as Margaret kept us supplied with sandwiches and wine. The guy behind me was going to Saudi Arabia to insure oil wells and the chap behind him was trying to get to Seattle where he was involved with Boeing's AWACS side. The fellow in front worked for British Petroleum and was on his way to Anchorage. He told a dreadful story about a paint spillage costing the company \$30 million dollars.

Eventually we did arrive in New York with very little time before the ship was due to sail and, of course, without any bags. Like a whirlwind Margaret did Saks from top floor to basement in twenty minutes. We rushed to the ship, last passengers to arrive but there was a delay because the new Captain had been held up and, in addition, the ship had spilled oil into the harbour and had to report this. There was a delay of two hours whilst the environmental people argued the cost. Eventually we left New York at night; the spectacle made the delay worthwhile. The weather was bad and the ship bounced about. The ship had a bug and Margaret caught it. The shore visit at Rhode Island was spent in a spree of emergency clothes purchase (together with other shipmates). On day three we got to Philadelphia: it was still pouring, the streets were awash and even the Liberty Bell

was cracked. Still the bags had not arrived and British Airways had no idea where they were. A lady on a ship with no clothes is a disaster and I agreed that if nothing arrived by the fifth day at Baltimore we would go home. For the formal night they rigged me out with a dinner suit in which other passengers mistook me for an undertaker.

By the fifth day our fortune changed dramatically. The sun shone, the bugs went away, the bags arrived and I met a man called Dick Underwood. Dick ran NASA photography through Mercury, Apollo and some of the Shuttle missions. He is one of very few people who have first hand knowledge of all the Apollo astronauts since he instructed them in photography and de-briefed them on their return. He stood over the developing tray and watched as the photograph seen by more human beings than any other came into view: the picture of Earth as an orb. Margaret reckoned that there were now three of us on holiday together because I was intrigued with the inside story from a man who was there and took every opportunity to meet him. We did the tour of Cape Canaveral together from where Dick used to commute with Houston at times of launch.

Dick's family background makes interesting reading. His grandfather was killed when there was an explosion at the torpedo factory at Alexandria (Washington). His father was meteorological officer on the USS Hornet on the Doolittle mission to bomb Tokyo following Pearl Harbour and was responsible for the decision to launch the attack early because of his forecast of deteriorating conditions over the target. At the atomic bomb test at Bikini atoll cameras were banned but Dick made his own camera and used a film sent to him by his mother secreted in a chocolate bar. He married Rosa, daughter of the President of Honduras. He has visited every State and County in the USA and every County in the UK.

Apollo Programme

I recite a few of the events he told me about:-

a) Apollo 8 had just rounded the moon and Bill Anders asked to speak to Dick. “What if we exposed the film as ASA 60” “but you know it is ASA 10,000” “Well, we were tired, we were excited and I gone done it” “Thanks for letting me know” Dick researched the treatment of over-exposed film and found a paper by Dr. C.E.K Mees. Dr. Mees was employed by an English company, Wrattan and Wainright Ltd.: George Eastman of Kodak heard of Dr. Mees’s talents and offered him a job, which he declined. So Eastman bought the company and appointed Mees as Chief of research in Rochester, New York. From the papers written by the long deceased Mees, Dick established how to develop the grossly over exposed film resulting in some decent pictures from man’s first pass behind the moon.

b) Dick was at home in Houston one night when there was a tap on his window from one of the Capcoms who lived next door. “There is trouble at the office and we must go in”. Dick says that in Control there is always an “odds of success” forecast. When John Glen first flew the odds were just 6 to 10 in favour of success. As he entered the room the success rating for the Apollo 13 mission was 1 in 999,999! You will remember there was a carbon monoxide problem and a quandary about how to join a rectangular section with a circular one. It was Dick’s idea to take one of his photographic plates, roll it into a tube, and grey tape each end to the respective orifices.

c) The Controller, Gene Kranz, instructed that all personnel should remove their badges: rank was not going to fetter the rescue of his astronauts. Two young engineers, fresh from

college, took a tea break and pondered how the stricken craft could be returned. On a paper napkin they came up with the idea of a never before tried double burn for the quickest return trajectory. Kranz went for it: there were just 22 minutes to calculate the duration of the burn to within one second.

d) It was important to try to get pictures of the damaged service module but this would be spinning wildly. After twenty-three hours in the mock-up Dick arrived at a way to do this. He asked Jim Lovell to take one of the graduated photographic plates and drill a hole at particular coordinates. Then he asked him to clear the frost from the window with a medical wipe and, holding the plate in a particular alignment, mark the window through the pinhole and allow it to freeze over again. At the appropriate time Lovell was to again clear the window being careful to retain the marked spot and to hold the camera touching the spot and with a corner of the camera on a designated rivet. The camera was a telephoto one with a thirty-six shot reel. Thirty seconds after separation Lovell was to use all thirty-six shots. One of these had the picture which captured what had transpired.

e) On Apollo 14 Al Shepherd was seen to make a motion like a golf swing. Asked what he had done he said he had played the first golf shot on the moon. In answer to the question about how far the ball went he said it went out of sight. Not so: I have a photograph of the club sixty two feet away and the ball is at a slightly lesser distance, an experience which many club golfers will have known.

f) Dick has, in a bank vault, a St. Christopher's medal that has been certified by one of the crew of each moon lander to have accompanied him on the journey. I have been fortunate

to receive from Dick a certificate incorporating a snip of film that went to Tranquility Base.

g) Four watt Trinitron television was a NASA development for the Apollo programme. NASA offered it to American TV companies who all turned it down: not so Sony who developed it to the full.

h) From the vantage point of space Dick watched as his pictures showed change on earth. He saw the Aral Sea in Kazakhstan, fourth largest in the world, shrink to half its size. He saw Lake Chad in Nigeria almost disappear over the years. In Zimbabwe the rain bearing cumulus nimbus gave way to dry cirrus. The North Polar ice cap was suffering a yearly retreat.

A successful failure Following the coverage of the 40th anniversary of the Apollo 13 mission, a local astronomer has just drawn my attention to a little snippet spawned by the huge relief at the successful conclusion of the journey. Grumman Aerospace Corp made the lunar module which kept the astronauts alive following the explosion. After splashdown, it sent the makers of the Command and Service module, North American Rockwell, a rather tongue in cheek invoice. It listed charges for towing the crippled CSM around the moon and back to Earth: \$4 for the first mile and \$1 for each additional mile, as well as oxygen at \$10 per pound, jumper cables at \$4.05 and \$32 for the extra “guest” staying in the LM for four nights. The total came to \$400,540.05. Rockwell declined to pay the bill, stating that they had not been paid for taking the LM to the Moon on previous missions.

Financial Times Just before the financial crash I had a telephone call from Jonathan Margolis who had been commissioned to write an article for the FT magazine under

the title “How to spend it”: he wanted to base the story on an astronomical observatory. Amazingly it was arranged that he would come on a night that was actually clear and I was engaged on the project of trying to find an optical counterpart to a gamma-ray burst that had been detected by a satellite. (I took long exposure images – without success). A few days later the photographer Jonathan Root came down with his lighting man. Margaret provided tea and we had a social hour looking at some of his work such as Lord Bath (without wifelets) posing on the roof of his mansion in some peculiar garb. I was surprised that Jonathan used conventional film and his initial shots were taken with a Polaroid camera. When they had left I did a Yahoo search (they tell me that Google is very intrusive with your computer) and up leapt a string of sites naming him, amongst other things, “Erotic Photographer of 2007” – we had not seen these. His style seemed to be concentrated on taking nude or nudish pictures of models in beaten up leather chairs.

Conclusion Astronomy is utter hassle. I used to think that golf was the ultimate frustration but astro-imaging wins hands down. Nevertheless the rewards are enormous. The ability to dip your toe in the cosmos; on your own account to acquire images of galaxies as they existed way before the dinosaurs and perhaps even in some circumstances the possibility of capturing photons of light that emanated from their source before the earth existed. Then there are the people. What else could unite such a bunch from every walk of life. Rogers’s’ Law says that the odder an astronomer’s garb the brighter his mind. Such as the man wearing one red shoe and one green shoe – with a pair like it at home. Through astronomy I have made diverse friends. The underground train driver, the two Americans who have taken advice from me in building their observatories in similar format to mine (one of whom has considerable pluck

– he shoots with Vice President Cheney), the Polish paint salesman, the Mexican Airship promoter, the property magnate, the Austrian Surgeon, the American Radiographer, the US fighter pilot to name just a few.