

## Charlie Oscar Victor India Delta-19 Special Issue



### *Comet 2020 F3 NEOWISE*

Top 2 By Mark Edwards. Left on 12 July, 10.56pm, dark lane in tail, presumably due to more than one fountain of ice and dust on its surface. Sky still blue. Taken with Canon 200D 500mm f/8 1600 ISO 4 x 2s. Right on 19 July, 10.14pm. Mark wrote, "it was still visible to the naked eye, but I struggled to see it with all the light pollution. The tail is now straight up as you can see from my picture taken with a Canon 200D 500mm f/8 ISO 3200 4 x 3.2s unguided."

Left by 20 July, 10.29pm, by Geoffrey Johnstone, he writes, "I had an incredibly narrow opportunity to get a clear view of the comet. it appeared from one tree to go into another only 15 minutes later. It was lovely in binoculars at 11 ish, with a long tail. The image was taken with my 200mm SCT at f6.3 and was a 60 second exposure at ISO 800 using my DSLR Canon 600D."



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# THE NIGHT THAT THE STARS DIDN'T SHOW

by John Davis

I had intended my article for MIRA to be an account of some terrific stargazing. . . It turned out to be not quite like that. . . if you only like to read about astronomy, then move to the other pages. If you like strange life experiences, please read on...

**My partner Allyson doesn't have the best track record** when buying me Christmas or birthday gifts, its a bit of a family joke really, it's not her fault but I've had 2 stargazing long weekends in Devon clouded out (to be expected in January) and don't even get me started on the 4 vouchers she got me last year which all couldn't be used for various reasons. The best one being a voucher for a cinema chain we don't have in Coventry. However this year, again for no fault of hers, she has surpassed all previous gifts.

We both like holidays, we both like trips to see things wherever we go and we both like to add days on the beach into our itinerary. This year in January it was my 60th birthday and I excitedly opened my gifts.

First up, some toy animals, errrm, OK. A model of "Stingray" the Submarine from Gerry Anderson Puppet Series, a Mutant Ninja Turtle toy, a fluffy Yellow Bird, a make your own Volcano chemistry set and what looked like a lid off the Co-op sweets that she likes, painted white, with another bit pinned to it looking a bit like a Motorbike Helmet, with a hole cut in it. . . Wait a minute, it looks like. . . YES, A dome of an Observatory!

I was asked to guess what all these clues meant but was struggling, but to cut a long story short the animals were for a trip to the zoo. Stingray and Turtle were for a snorkelling trip we were going to take, the Yellow Bird was a canary. The chemistry kit was to represent a volcano and the final one was an observatory.

We were off to Tenerife and she had booked all these trips including a special one up to the observatories on Mt Tiede for an 8 hour sunset and star gazing experience.

We were to fly on Friday 13<sup>th</sup> March. Excellent, what could possibly go wrong? Quite a lot it would seem.

Now, I am a sort of happy fella, not much gets me down, but I do watch a lot of world news, too much Allyson says and often I see things coming along and try to warn Allyson who is not at all concerned with the way the world works. I had mentioned a few times to her that I thought this virus in Asia might get to us, and if it does we might not get the other 2 holidays we planned in June and October, or even a break with the grandkids in England in the school holidays. She just ignored me.

We were now 2 weeks away from our Tenerife trip when we heard of a case of Corona Virus in the very resort we were going to, "Costa Adeje" though not in the same hotel. We watched the news daily and now even Allyson's attention was grabbed, we did all the usual jokes back then, maybe we will get 3 weeks extra holiday and another week in Liverpool on return?

We also wondered if we should go? It was said to

affect people 60 and above, Allyson took great delight in remind me I am now 60 (despite her 60th being this coming August). I must admit I hardly ever go to the doctors but immediately after my birthday I started to get letters from them every other day advising this test and that, "Well Man Clinics" and Bowel Screenings, it seems as though on hitting 60 my body had suddenly become a Health Time Bomb!

We checked the Government websites and there was no advice on not travelling, insurance company would not pay out unless there was and Allyson didn't really want to lose all the money she had spent if we decided not to go. During the 2 weeks prior to departing there was still no advice, folks were released from Tenerife and flown home seemingly healthy and by now there were more cases in England than there were in the Canaries.

Unfortunately I sort of took my eye off the ball and the news of cases in England overshadowed the situation in Spain and you sort of forget that the Canaries are owned by Spain. We decided to go!

We arrived at Birmingham Airport to find the place eerily quiet, only days before Flybe Airline had gone bust and of course we had lost Monarch Airlines and Thomas Cook recently. These made up the majority of flights from Brum, so we thought it was mainly down to that and maybe a few folks who had decided not to fly because of the Virus. We boarded the plane, waited and were delayed by an hour for other passengers but no one came, we departed half full! We found out later that the other people would have been cruise passengers who had their trips cancelled that morning. Rejoicing in the fact that we could sit anywhere without paying £11 extra "to move" we had rows of seats to ourselves. I don't pay extra to sit next to Allyson, after all she can spend hours sat on the next sofa at home and not talk to me, not sure why I would pay extra for the that on a plane LOL.

4 hours later we were in Sunny Tenerife.

As we arrived in the late afternoon, we settled into the hotel "Parque del Sol" which was very nice, and we had a very nice room with a view of the pool from our balcony. We had booked "Half Board and our room included a kitchen, this would prove to be a god send. We unpacked, went for a wander round the hotel and had our early evening meal, so far so good. As we were very near the seafront we decided to go for a wander and a look around. Allyson had been to the same resort on Tenerife before I met her, but this was my first visit to the island.

First impressions were good, but it seemed very quiet, lots of bars and restaurants open but hardly any people and we were not sure if this was to do with



*On Arrival*

people cancelling due to the virus or it being the start of season. Each bar was trying to get you to go in for a drink but as we had just eaten we declined and after an hour returned to the hotel.

We had arrived on a Friday night, and the stargazing trip was booked for Sunday night. Our only concern at this point was that it might be cold at the top of the volcano. Allyson is not really into astronomy but is very patient and doesn't mind doing these trips to please me.

They sell lots of Star Gazing experiences on Tenerife, some guided by astronomers, some have evening meals etc.

The one Allyson had booked was with the Company running Mt. Teide. It was to be 8hrs going up in the afternoon, looking at the observatories, doing some solar observing and after sunset some guided stargazing. It promised to be excellent.

On returning to our hotel on the first night Allyson got an e-mail and a text saying our trip was cancelled.

At first she thought maybe the observatories were closed to protect staff from the virus so we decided to ring the company the next morning and if that was the case maybe we could book one of the general stargazing trips. They had said she would get a re-fund, so although disappointed we thought, "Well at least we have the zoo and snorkelling to look forward to".

The next morning was bright and sunny, Allyson loves to go shopping, I hate it, but as it was the first morning we decided to go back to the sea front and she



*"Covid the Duck"*

said, "There might be some shops where we could get the grandkids some little presents. My heart sank a bit as I knew this would involve a whole day looking through "Tat

Shops", oh well, at least its sunny we can have lunch etc.

There were a few more people around although our own hotel was only half full, lots of British around and as soon as we got to the seafront we started to hear rumours, we heard that Jet2 had turned four aircraft around that morning, one bar owner said, "Come on in and get your last drink on the island" and there were lots of glum British folks saying the bars were going to close that night! Meanwhile others saying we were going into Lock Down and wouldn't get home! Not wanting to panic, we decided to investigate things on the Internet when we got back to the hotel rather than take everything we heard at face value.

We walked further along the seafront, we saw several companies offering various different "Stargazing Packages" and whilst looking we spoke to one of the Essex born sales guys, "Yeah mate, I can get ya up da volcano, no problem!. Naahhh mate nuffings cancelled, I can get ya up there tomorra!!" Imagining that this would be with "Manuel in his Mini-van" we declined and said we needed to check with the company we had booked with before parting with any cash. That afternoon we were to have a "Welcome Meeting" with our TUI Rep, we would see if they were doing trips as at least we would get our money back, unlike with "Del-Boy". We continued shopping without really finding anything decent to take back for the kids, except we saw a cute rubber duck dressed in green scrubs wearing a face mask which we thought would be a good souvenir of our holiday, we immediately named him "Covid the duck". Walking further we called in for a drink at a bar called "The Winchester" which is named after the pub in "Sean of the Dead" I believe, they had the line from the film written on the wall "Go to the Winchester, have a cold pint and wait for this to Blow Over". It seemed appropriate, we ordered a couple of cold pints. The bar staff confirmed that as far as they knew, all bars and restaurants would close at midnight, or so they thought. Well maybe, who knows, it's all rumour at the moment but we think so! We sat there sort of shell shocked had a few pints and decided to head off to our meeting with the TUI rep.

She arrived a few minutes late, rather haggard



*Sign at the Winchester*



*Taped off Beach Closed*

looking, hot and sweaty, not the normal look for their reps. We have used TUI for years, they are normally bright and breezy and ready to fleece you within an inch of your life at these meetings.

There was only me and Allyson, "You're here for an update are you?" she enquired. "No we are here for the meeting". "Oh," she said, "I'm trying to find out where everyone is, in which hotel I mean? And when they are going back? But don't worry we will get you off the island!". Ok, we hadn't worried till she said that! "When are you here until?" "Friday", we replied. "Ok it will be Friday when you go, enjoy your holiday. I'll be here at 11am each day if you need me". And with that she dashed out of the door. Allyson said, "Are you selling any trips? Will anything be running?" "No", she said, "I can't sell you anything" and then she was gone.

Realising that trip to the zoo and snorkelling were now in tatters we decided to go back to the room for a lie down. It was only day one and already this was turning into another "Allyson" birthday present!

Oh well, we can buy pop and crisps for lunch and sit on the beach tomorrow then we thought, its not the kind of holiday we wanted but it will have to do.

Day 2 was bright and sunny, definitely beach weather. We had breakfast, slathered ourselves in sun cream packed our stuff into a bag and headed to the beach.

As we reached the beach I looked left and saw further up the sea front what looked like Police taping off the entrances, but there were a lot of people on the beach, although sun loungers were being piled up and beach bars closing shutters. Allyson didn't believe they were shutting it as their car had orange flashing lights not blue. "It's just maintenance", she said but we decided to have a paddle just in case.

As we walked in the water we were approached by a Life Guard, "Meester it OK now, but tomorrow we fine you". He scurried off, we walked on only to hear whistles and shouts, we then got escorted off the beach by armed police who then taped up all other entrances. "Go to your hotel", they said, "Stay there". Oh well at least we have the hotel pool. "It's not

the kind of holiday we wanted but..."

The rest of day one was quite pleasant, we had a burger at the hotel for lunch and sat by the pool. We went back to the room to try to find out anything more but could only find info about Mainland Spain, videos from Benidorm with Police cars and loudspeakers telling folks to go home and stay in your hotels, at least we didn't have those here, they sounded scary.

No one knew anything, everything was rumour or speculation and questions from other tourists to TUI on twitter brought no more information and very often no reply. It was all starting to get worrying.

At least we had use of the hotel, the food was good. It had a nice pool, we would use that, it had been a bit chilly that afternoon and I had not been for a swim. I have all day tomorrow to do that I thought.

Day 3 was bright and sunny, we would use the pool. We had to wait till 8am to put towels out, but a few people had gone home so beds in the sun were plentiful, we went to breakfast, put towels on beds and went back to the room to put on suntan cream and get our books etc.

Whilst getting ready there was a lot of noise below our balcony, clattering and the like. I went to take a look. They had moved all the towels and were piling up the sun beds. "We put our towels out too early", I said to Allyson, "They threw them all off!" Then I noticed them taping up the pool and putting all the pool bar tables and chairs away. I went down to retrieve our towels and was told, "From now on, Room Only! You can go out to Supermarket and Pharmacy only, one person at a time!" Outside we could hear Police Cars warning people to go home.

Oh well, at least we have our room, it's not the kind of holiday we wanted but. . .

We could get lunch at the hotel as they did takeaway burgers but we decided to venture out to the Supermarket as we had a kitchen and could cook for ourselves. We had already been to get a few biscuits etc. I didn't really want Allyson to go alone so we decided to go together and risk arrest, the supermarket was quite a big one in a little shopping complex very



*Hotel pool bar cling filmed and taped off*

nearby. All other shops were closed except for an off licence, one shop already had a "Closing Down Sale" notice in the window, it's tough when you can't even finish that, I thought. The supermarket was packed with holiday makers, but unlike what was going on in England there was no shortage of anything so we stocked up on stuff for lunches and headed back to the room to settle in.

Luckily we had a kitchen and a kettle, we had books and magazines, wi-fi and our iPads to keep in touch. The only thing I missed was my iPod I normally take it with me on holiday, but don't use it a lot so I had left it at home, so unfortunately I did not have any music.

The TV in our room had BBC World Service and BBC1 so we could keep up to date. The only thing was that our balcony did not get any sun until 2.00pm. At this time we were not sure if we were being confined to rooms because there was a case of Covid in our hotel or as part of the general lock down. Luckily it turned out to be the latter, we think.

We didn't know what was happening about our breakfast or evening meal, would we still have to go to a packed restaurant or would they feed us under the door? We were allowed to go out to shops and very quick walks around hotel so we went to the reception to find out. We were to go for dinner at 7.30 as before.

Evening came and from our balcony we could see about 70 guests all lined up on the stairs for the restaurant, no social distancing, they had decided to restrict it to 20 people in the restaurant and no more than 2 people per table which they spaced out. We saw them split up a couple with a baby, making one parent sit on a separate table despite the fact they had been in a room together all day. We might have well used the pool after all, all the staff were wearing gloves and not changing them so cross contamination of everything was going on if there was any virus in the hotel. I must admit, things got to me at that point, I had had a bad day and I asked Restaurant Manager which Muppet was running the place? Kermit? Which got a cheer from those waiting on the stairs.

The only good thing about this situation was that people started to talk to each other, all pointing out the madness, we would meet couples each day going to and from rooms to eat or shop, fleeting conversations but there was a great feeling of "We are in this together." We met a nice couple from Southam who were leaving on the same day as us and going to Birmingham, they also couldn't get any further info from TUI. Although it was still days away TUI had told us that on departure day the bus would pick us up at 2.00pm and to be there at 1.45pm and don't be late as it departs at 2.00 with or without you. Our new friends Janice and Chris said, "We won't let them leave without you if you do the same for us."

The next day we had breakfast, chatted with fellow inmates, asking things like, "Are you Ok? You don't seem to get out much?" Planning meetings of the escape committee and generally making light of the situation.



*Empty streets*

We did feel sorry for the hotel staff as they had said that the hotel was closing on Friday when the last guests left, and they were all out of work. None of them seemed very confident that the Spanish government would bail them out. It didn't help that the pool attendants T Shirt had SOS written on it.

On going for breakfast we noticed that some of the equipment was switched off and wrapped with Cling Film, i.e. one of the 2 coffee machines, toasters, juice dispensers; this was a trend which would continue until we left, each day food and choices were getting less as about 10 guests left per day.

We settled into a routine, Homes under the Hammer, Ready Steady Cook, bit of reading, catching up on iPad and making video calls home and watching the Government Briefing each day on the BBC which we now called "The Bozza Show." Also each day we would go to the Supermarket, just to get out really. Each day there would be less people and it was very strange seeing no one on the streets. The supermarket now made us wear gloves and disinfected all the trolleys and baskets.

One day I went out on my own and an Army Land Rover with four soldiers pulled up by me, they shouted something in Spanish at me, I said, "Ola" and they drove off. Allyson laughed when I told her, she said they probably said, "What are you doing out, you idiot?", to which you replied, "Hello."

We also had one day in our PJ's which was a first for a holiday!

Every day we got more concerned as to whether we would get home, rumours that the airport was closed or about to close were flying around. I have a Plane Finder app on my phone which showed that not to be true, but every day the rep had no more news other than to say we will get you home.

Each day the hotel got less busy, the whole outdoor pool bar was now wrapped in Cling Film, on the last morning they were even wrapping all the plates and piling them up for storage. As people left the rooms would be cleaned and balcony chairs, tables and umbrellas would be removed and stored.

On Friday, our last day we packed our stuff and decided to go down to meet the coach at 1.30pm. Allyson hates going for these coaches early and kept saying they are not leaving till two, let's go at 1.55pm, they will wait. I wasn't having any of that as we



*Departure madness*

couldn't afford to miss this flight. The hotel was closing that day and could not legally stay open any longer than Tuesday. As we were about to close the door, Allyson got a phone call which we thought was a sales call and she missed, then the room phone rang and it was reception asking where we were as the coach was waiting. When we got down there we found out that the 2.00pm coach was cancelled and they sent an earlier one and our friends Janice and Chris had told them they weren't leaving without us and luckily she had remembered our room number and got them to call us!

They were good to their word.

We drove the short distance to the Airport. Every shop, restaurant, cafe and other business was closed, not a single thing open, we had heard that the Army was in control of the Airport but were not prepared for the chaos that we saw when we arrived. It was like one of those "Escape from" films. All passengers had to wait outside, the Repts got us into groups of passengers going to Birmingham, Manchester etc. and told us that 4 flights had been cancelled. Luckily our flight to Birmingham was still on. I tracked it coming in on the Flight Radar app. Once the plane was there they allowed us into the Airport 20 at a time to check our bags and go through security and straight to the gate. We waited 10 minutes and then boarded and waited on the plane whilst the next 20 did the same. About 1 hour 15 minutes after our scheduled departure time the Captain came on to apologise for the delay, he said as they were expecting our flight home to be half full he was waiting to fill up the plane with folks from the cancelled flights, he said "I'm not leaving this airport whilst passengers are stranded and I have seats on my plane. We can get them back to other parts of the UK from Birmingham when we get back." Eventually we did depart with 4 empty seats because there were still 80 passengers stranded and TUI decided to send another rescue flight.

As we took off we were mightily relieved that our friends hadn't left us as we heard of coaches driving off, taxis charging £40 per person etc. and 2 old ladies being left in our hotel because they couldn't get packed and to the airport in an hour! They were due to leave on Tuesday but were offered an earlier flight, I hope they made it home.

As our plane climbed out, I finally saw the Top of Mt. Teide where we were supposed to have gone Stargazing a few days ago, that seemed like a lifetime now.

The flight home seemed so long, on these planes you don't have any in-flight entertainment

and the man in front of me tried to recline his seat, there was massive bang as the pin sheared off and he landed in my lap! Luckily they were able to prop his seat up and move him to one of the four spare seats.

On landing we had to wait 20 minutes more as they put us on a very remote stand as the aircraft would not be used for some time. After a week of social distancing they put us on a bus and packed us in like sardines and drove us round every bit of the airport until we got to a closed gate. The bus driver said he didn't have security clearance to go through! You couldn't make this up! After 15mins they let us off and escorted us up some stairs and we had to walk about a mile to Immigration and bags and finally a lift from our son-in-law home, arriving just after midnight. Exhausted but at least safe at home.

Just before take off, Allyson had checked her phone and saw the news that the UK was shutting pubs and restaurants, she told me during the flight home, so we knew what we were coming back to, but at least we were prepared, we knew what to expect, we only hoped our family at home did.

Allyson is a Nurse, she was expected back on the Front Line on Monday, once again no guidance on the Government website as to whether we should self isolate? After ringing her boss and waiting a day they made the decision for her, she should stay off for a week, or two weeks if I showed any symptoms. Luckily neither of us did and she returned. She is regularly working over 60hrs a week, is scared and of course is exposed to it day in, day out, and by definition so am I. We don't know when this will end for us and as I write this neither do any of us.

Do we regret going? No, not at all. Life is about experiences. We experienced something exceptional, normally I would say, "Something to tell the grandkids", except they are living through it now too.

Do we want any money back? I suppose it would be nice, however TUI supplied us with flights, and a hotel as promised and also got us home, its not really their fault the Island was put in quarantine.

Would we go back. YES, definitely, we plan to go back to the same hotel if it survives and do the trips to the Zoo, go snorkelling and finally go up the volcano and do that Bloody Stargazing I was promised, but in the meantime I have to use the tickets Allyson bought for Christmas, to see my favourite musician and his Band "Jools Holland" in May. Oh hang on, here we go again!

Think next year I will tell her not to get me anything!



*Last look at Mt Teide*

# *Five Challenges to Colonising Mars*

By Irene Rogers

When I took up Martin Braddock's "challenge" to consider "Five Challenges to Colonising Mars", last year, I stuck to the psycho-social aspects (and stretched the "Five" a bit.). However, I have considered other things such as starting off the colonisation by using robotic "workers" controlled remotely from Earth (or from a nearby space station) in as much the same way as the current batch of landers are, but these would be "avatar-type" robots designed to live, experience and measure the conditions as a human would. Japan, I believe, leads the way the development of "humanoid" robots. Also, as Martin has links with the pharmaceutical company, AstraZeneca, I wonder if research is being done to provide drugs to reinforce the human tolerance to the conditions, even (although I think this is unlikely!) adapt the human to the conditions. These are just a few thoughts.

## **Five Challenges to colonising Mars.**

### **1. Choosing the right leadership system.**

Although any linkage of military with space is a linkage fraught with problems, it is my opinion that any social system would have to, initially, be based on military systems where the leader – the commander-in-chief persona – would have to be selected and have the approval of all participating nations and not be democratically elected by the colonists in situ. This is because no democratically elected leader appears able to please all the people all of the time and some dissatisfied individuals with vested or personal interests in their specialities may push to keep their particular specialities in top position for time, resources etc. and even sabotage others to keep them that way. You only have to see how poisonous political systems become when individuals seek to undermine current leaders in an effort to advance their own interests or secure their positions of power. I am not advocating military-style dictatorship as those tend to keep people in check by force of law or otherwise but a structured, regulations-based system where a chain of command that everyone understands and accepts is in place. It can't be by chance that most science fiction expeditions or adventure stories feature such command chains.

### **2. Choosing the right leader.**

This is where the greatest "ask" occurs. A "unifier" is required. He or she must be accepted as leader by everyone in the colony and if there are groups from many countries, all these countries must accept him or her before sending their nationals to the colony. (I shall now use the masculine pronoun for convenience). He should, ideally, have a wide knowledge of, even expertise in, what is going on in the colony and be prepared to consult when problems arise and make decisions based on the best advice. He would need to have the highest integrity in all aspects of his life, be

impartial when decisions are to be made and, maybe, even have to accept a degree of personal isolation. It will not be easy to find such a person but worth it to ensure smooth functioning of a no doubt, disparate, collection of colonists.

### **3. Predictable problems.**

Preparation is essential, first colonists will, effectively, on their own, in a hostile environment, much further away from any support that other expeditions in hostile environments – such as in the Antarctic or Arctic – have ever been. They obviously need secure food and water supplies, secure communication systems with each other and Earth, accommodation, protection from the environment, facilities and equipment for their work and space and provision for their personal needs. Communications and supply chains have to be secure and independent of political influences on Earth; routines have to be established for maintenance schedules, health care monitoring – including psychological aspects, and any out-of-building activities. All predictable problems have to be predicted and computer-modelling, with human analysis, for best action to solve them done before putting colonists in place.

### **4. Unpredictable problems. (Or, expect the unexpected!)**

Colonists obviously would have to be prepared to deal with problems or situations that may not have been predicted but occur nevertheless. I have categorised these into groups:

#### **A. Cascades of problems.**

There is a belief that when things go wrong, they go wrong in threes. Recent experience of mechanical failures in my house say that in fives would be more appropriate! Martian dust and storms have long been a problem for NASA's rovers cutting off power supplies and even bogging them down. Colonists would have to be prepared to face the stress and possible danger of not just one thing going wrong at any one time but a whole cascade of possibly disconnected things going wrong and maybe all at the same time?

#### **B. Catastrophic failures.**

It is unlikely that the possibility of catastrophic failures would be overlooked but some provision for those would need to be in place.

#### **C. Recurring problems.**

The problem that appears to have been solved but recurs no matter what action is taken and eventually appears insurmountable.

#### **D. The really unexpected.**

The effects of Mars' gravity, atmosphere and irregular magnetic field on the human body have been

extrapolated following studies on the effects of living in space on astronauts however, living on an alien planet's surface may show effects not yet predicted. For example, I believe (I may be wrong) that there are some locations in England where disturbance of the soil is not encouraged for fear of liberating viruses dormant since plague times. I apologise if that is known to be fantasy but if – as some people theorise that Mars probably was Earth-like in its distant history – there are viruses dormant beneath its surface, what effect will these have on the body?

## 5. Psychological issues requiring a supportive working and living environment:

### A. The hostile external environment.

There is no doubt – no matter how much training and preparation has taken place – that finding yourself actually in place will be daunting, especially if you are likely to be there for years. Initially, getting used to routines and all the limitations will occupy your mind and body but being far away from home, support and assistance, and in a hostile environment may turn out to be more stressful than expected. If problems, as outlined above occur, the stress will be increased.

### B. A limited population.

I would expect that people selected to be the first colonists would be prepared to function intensively and long-term within a small population in a small space, however, provision would have to be made for personal space and time.

### C. Mission doubt creep.

It is possible that, over time, individuals may start to question the real purpose of colonising Mars. Such questions, for example, may include: "Who are we benefitting humankind, or ourselves?" "Are we aiming to provide a 'Noah's Ark' for humans after spoiling Earth?" or "Will we be providing a bolt hole for the rich and powerful after they have spoiled Earth?"

Only a clear mission agenda will provide answers to those.

### D. Spiritual Space.

Being the first humans attempting to live on an alien planet may present challenges of a deeply spiritual nature. Provision would need to be made so that an individual's spiritual needs – in whatever form they take – can be catered for without comment. I haven't got the statistics to back up this next statement but I believe that spiritually secure individuals cope with stress of any kind better than those without such security.

### E. The potential of a group psychosis.

I know the colonists would have had to undergo extensive physical and psychological assessment before being accepted for the mission but these are not infallible and what would happen if a "group psychosis" occurred at whatever level in the command chain?

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# The Life of Fred Hoyle Astronomer Extraordinaire

## Part 1

By Geoffrey Johnstone

**Fred Hoyle was one of the foremost theoretical astronomers** of the 20th century. In his lifetime he made many well-known statements. Here is one of his best: *"to achieve anything really worthwhile in research it is necessary to go against the opinions of one's fellows. To do so successfully, not merely becoming a crackpot, requires fine judgement, especially on long-term issues that cannot be settled quickly. . . to hold popular opinion is cheap, costing nothing in reputation, whereas to accept that there is evidence pointing oppositely. . . is to risk scientific tar and feathers. Yet not to take the risk is to make certain that, if something new is really there, you won't be the one to find it."* Fred Hoyle was often called a crackpot – certainly in his later years. Some of his prophecies have come true or are still under discussion by living theoreticians, so watch this space.

Fred Hoyle was born on the 24th June 1915 in

Gilstead, which is one mile from Bingley and not far from Bradford. The River Aire rises near Malham, which is Herriott Country and then passes through Skipton Bingley, Shipley and joins the Humber estuary. In the past, the river provided power for the mills – the main industry in Gilstead. Fred's mother worked in the mill for a time to earn enough money to go to Royal Academy of Music.

Shortly after Fred's birth, his father, who was in his thirties, was conscripted into the army. Fred's father chose the machine gun corps, because he didn't like spit and polish, which wasn't particularly required because the life expectancy of a machine gunner was so low.

Fred's mother received only 5 pence a day from the government, so extra employment was needed. Before her marriage she was a school teacher – a job that she had to give up, as married women were not

employed as teachers. Instead she embarked on a career as a singer, but later transferred to the piano. In 1916 Fred's mother took a job playing music to accompany silent films. As she worked mostly at night she left Fred in bed while she was out. He was only two years old, so used to cry himself to sleep.

After a while, Fred's mother was asked to leave her job because Beethoven sonatas didn't go well with Keystone Cops. One week following her dismissal the manager came round to ask her to return as attendance had fallen. It transpired that the cinema patrons had not gone to see the films, but to listen to Mrs Hoyle play the piano. When Fred was four years old he accompanied her to the cinema and learnt to read from the subtitles, which indicates how clever he was.

With time on her hands, Fred's mother taught him his numbers and he used to lie in bed setting himself little problems such as six and six make twelve. By the age of three, he had constructed the multiplication tables in his head.

Miraculously, Fred's father returned at end of the war and developed a successful cloth business. Machine gunners were supposed to give a burst of fire every few minutes to keep the enemies heads down, but it obviously gave their position away. This was a directive that Mr Hoyle senior failed to follow, which may explain how he had survived the war. The cloth business fell on hard times in 1921 due to the post war recession and his mother became ill in the same year after the birth of his sister. As a result, the family moved to Essex to live with a relative as paying guests. It was there that Fred started school.

Fred found school all too easy. Therefore, he asked a friend to say he was very ill and he just didn't turn up. This was the start of many years of truanting. The family didn't stay very long in Essex and moved back to Bingley after Fred's seventh birthday. In 1923 Fred moved into standard 3 where there was a sadistic teacher whom he didn't like, so he managed to miss most of the year by malingering. However, having run out of excuses, he returned to school where the teacher boxed his ear over a disagreement about the number of leaves on a sprig of clover. As a result, he walked out of school and told his mother that he wasn't going back. Eventually he was brought before the education authority, where Fred got the better of the inquisition. Following this, he left the house every morning and wandered round the local factories and canals; he reckoned that he learned far more from this than if he had stayed at school.

In 1924 Fred started at Eldwick school in the nearby village of Eldwick. Fred made rapid progress in standard 3, and progressed to standard 4 within months. He was also very popular with the girls right up to leaving age as he would do their sums for them if

they slipped him their exercise books. In return they used to dry his clothes: he had no particular wet weather wear so the severe winters in Yorkshire were not much fun. Walking to school down rough country lanes was a problem in winter. Fred's shoes didn't last long so most of the time he sat in wet feet. The older boys were separated from the girls in the playground. The boys used to saturate the playground with water so

that the next day there was a long slide. They used the slide down the slope and crash into the wall at the far end.

While at junior school, Fred started reading books. He read anything he could find in the house and when he was old enough, the library. One of the books in the house had belonged to his father and was on the subject of chemistry. There was quite a lot of chemical apparatus in the house so he started at the beginning of the book and repeated all the experiments it suggested. He proudly showed one experiment to a local girl, but there

was a minor explosion and he ruined her dress. After that he did most of the experiments when his parents were out of the house.

The last experiment in the book was particularly hazardous, with the aim of producing phosphine. Fred saved up his pocket money and went into Bingley to buy some reagents and glassware. He went into the chemist and asked for some concentrated sulphuric acid. The chemist tried to persuade him to use dilute acid, but Fred knew the reaction would be too slow. He managed to come away with a half pint bottle of the concentrated acid!

It was a family desire that Fred should pass the grammar school scholarship exam as his father had. Unfortunately, Fred's father had needed to work to help his family instead of taking his place at grammar school. Therefore, Fred was entered for the scholarship even though he had missed so much school.

The day of the scholarship involved walking to the examination centre. The room was freezing cold as it was a Saturday and Fred felt unwell. The exam didn't go well for him: he only did 5 out of the 8 arithmetic questions, the essay topics were dreadful and there was a grammar test. He could never understand why so much emphasis was placed on grammar. The next morning he woke up with mumps!

When the results came out and he didn't win a scholarship there was a big fuss because no other student from the area had either. Eventually, Fred was called for an interview at the grammar school where he chatted with the headmaster. When he mentioned his interest in chemistry the chemistry master was sent for, whereupon Fred described the experiments he had been doing including the preparation of phosphine. At



this point the chemistry master said, "you won't be making phosphine here". Afterwards, Fred wondered if he had passed and, in fact, he had.

Fred began at Bingley Grammar School in September 1926. He tried persuade himself that his new school would not affect his relationships with the village boys, but it did, not because of a uniform (he didn't wear one), but by what was going on in his head. When he was about nine years old the village boys used to play a game in the dark winter evenings and during that time, he discovered the night sky and wondered what was up there.

At the grammar school his marks were fairly low at first, as he had lost such a lot of schooling. But gradually, his grades improved so that he became one of the top two or three pupils. In 1930 he matriculated, which meant he had passed the school leaving certificate with high enough marks to continue in the sixth form. He was given £15 per year by the education authority to continue at school.

There was little formal teaching in the sixth form as there were insufficient numbers of teachers, but there were small rooms where the students set up their own labs and did their own work. Fred passed the higher school certificate with 76% and was due to take up a place to study chemistry at the University of Leeds. Just at this moment, the education budget was cut and with it, his place at Leeds.

Fred returned to school and told the head that he didn't want to spend a year doing the same work. After a short time, the head produced scholarship papers in maths, chemistry and physics for St. John's College Cambridge. With only September to December before the exams, this gave little time for preparation. The level was far above what he had been doing and maths was the most difficult. Fred was required to take the exam at the university so he stayed at Emmanuel College for the night. It was a long journey to Cambridge: he began at Bingley railway station from where he travelled to Shipley, picked up a connection to Doncaster, changed at Peterborough for March and made yet another change at Ely finally arriving at Cambridge.

Fred was a bit disconcerted to find that he took his evening meal at a long table with benches on each side. When each student finished their meal they got up and walked down the middle of the table! The chemistry papers went well, the physics quite well, but on the maths paper he could only do 2 or 3 questions out of the 10. However, he was called for an oral exam



after the chemistry practical by a man who eventually won a Nobel Prize.

Unfortunately, he failed to obtain a scholarship. Back at school, the head found that Pembroke College held its scholarship exams in March. The examinations at Pembroke went well and he was called for a physics oral exam. As a result, he was awarded an exhibition scholarship, which he didn't take up. At the same time he took the West Riding examinations in the summer. He thought he had passed these exams with a good margin, yet he was down on the

chemistry paper. In the end he had an offer from Emmanuel College, not as a scholar, but as a commoner.

So, in October 1933 – after another tortuous journey – Fred entered Emmanuel College Cambridge. One of the first things he had to do was visit his tutor. After studying Fred's marks, the tutor considered Fred's maths knowledge was not good enough for a real scientist and therefore, Fred decided to study maths, instead of physics and chemistry. This involved joining the slow stream for a year which, if his marks were good enough, would enable him to progress to the fast stream and then end up in the third year with the maths tripos.

At the end of the first year, he had progressed up the slow stream to somewhere in the top third. So in his second year, Fred started at the bottom of the fast stream and, as typical of him, progressed upwards again finishing in the top quarter. Consequently, he started the final year with considerable confidence. During his time at Cambridge, he joined a walking and hiking group and took up canoeing with two friends, becoming the fastest canoe on the river and he was superbly fit by the time the final exams came along. The grant he received was £225 per annum, which he managed in typical Yorkshire thriftiness. Fred was youth hostelling when the exam results were declared and so a friend had to send him a telegram. Fred received what was known as 'honours with distinction' and also the Mayhew Prize for the best performance in applied mathematics. This prize was awarded to two people equally so each received half of the £25.

So Fred's time at Cambridge ended in triumph. But this was in 1938, when dark clouds were forming over the whole of Western Europe.