

Clem Jones Oral History Project

Job name: cjohMarkRigby

Interviewee: Mark Rigby – to appear as “MR:” in transcript text

Interviewer: Lindsay Marshall – to appear as “LM:” in transcript text

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LM: This is an interview for the Clem Jones Old History Project conducted by myself, Lindsay Marshall, and I’m talking today with the curator of the Sir Thomas Brisbane Planetarium at Mt Coot-tha in Brisbane, Mark Rigby, and the recording’s taking place on Friday the 18th of December 2020. Mark thanks very much for your time and participation.

MR: My pleasure.

LM: Now I noticed on your Twitter account that you have a little profile quote that you use and it says “I find it so satisfying to speak”, “to spark in others”, sorry I’ll start that again, “I find it so satisfying to spark in others that sense of wonder about the universe”. So that sense of wonder about the universe, you’ve been in this game for decades now and I know you’re going to be retiring soon but what, going way back, what actually sparked that sense of wonder in you?

MR: Curiosity. It actually, it probably goes back to about 1962 in primary school. They used to have something, Dux was the brand, Dux exercise books, you know lined books and, and they had different topics on the back of those books and one of them had a solar system diagram and measurements of how far each planet was in miles and I remember okay that’s where the planets are in their order but even at that time I was trying to get my head around the distances, you know those figures, as someone that was in lower primary grade and billions of miles what did that mean?

So that's the first memory of something to do with astronomy that tweaked an interest. My interest ran away with me, you might say fanatical, from about the mid-1960s. Things like the first spacewalk, Alexei Leonov who died not long ago and I did get to meet him finally in more recent years. But that first spacewalk of someone in March of 1965 and then a robotic mission to the planet Mars in July of 1965. It was the first successful flyby of the planet Mars, and sent back 21 and a fraction black-and-white images, really low resolution, but it showed Mars with craters and everything and up until then everyone thought there might be the possibility of life, even advanced life on Mars, there were still people that thought that until that mission, Mariner 4, when craters were visible and they thought it's like another lunar landscape, it's a dead world.

And, but that spacecraft only imaged about 1% of the planet. It missed enormous volcanoes, areas where water had flown, dried-up river beds and things, it missed some really interesting things. So it wasn't until years later that we've found Mars to be much more interesting. Maybe life started or microbial life is still under the ground protected from the sun's ultraviolet.

But that really, those events, probably the first spacewalk in March 1965 and that flyby of Mars which thrilled me. We didn't have internet and that so the information coming through, and even news footage from overseas was flown on I think 16 mm from overseas before you saw it on Channel Nine News with Don Secombe or something like that back in those days.

LM: Yeah many days later usually, yeah, yeah.

MR: Yeah, yeah. So you didn't really have live television events until things like Montreal 1967 Expo things and of course the lunar landing, Apollo 11 in 1969. But I became fanatical from that. I wrote to NASA Centres, I got letters back and at that time, around about 1966, the next year, even my teacher would send me like to the next class or something to give a talk and that's when I first started talking publicly about the space and astronomy.

LM: In primary school?

MR: In primary school.

LM: Right.

MR: I joined the Astronomical Society of Queensland. I started going to meetings at the beginning of 1967 and there was a person, Peter Hall, a watchmaker who lived at Kenmore, and actually worked in at his watchmaking business at McDonnell and East in the city, but Peter used to run me all the way from out past Kenmore, what became known later as Pinjarra Hills, into the meetings in the city on Friday nights. So I owe him a lot. He's passed on now but so I really got involved and in the Astronomical Society of Queensland.

LM: And what school were you at at the time?

MR: Well when I was a little kid we lived at Kedron and I went to Kedron State Primary School until 1962 and then we moved out in 1962 out to past Kenmore, or Moggill area, and I went to Kenmore State Primary but for secondary I went to Brisbane Boys' College.

LM: Right. And your parents, a lot of little kids over the years have had these sort of fascinations with astronomy and space and travel and, you know becoming astronauts and that, did they encourage you in this? Did they actually see it was like a, they didn't think it was a passing fad? Obviously it hasn't been but did they, did they sort of encourage you with it?

MR: No, they encouraged it. Dad actually took me to the first meeting I went to in the beginning of 1967 in the city and that's where I met Peter Hall who from that point on took me monthly to the meetings. But, and they got me my first little telescope for my birthday in August 1965 and books and everything. So yeah they encouraged it.

Dad actually was an artist and my first overseas trip was actually in 1956 for a year and a half. Dad won the Italian Government painting scholarship to do anything related to art that he wanted for a year in Italy. So he took that out in '56 so we sailed from Brisbane in August '56, just got through the Suez Canal before it closed with the Suez crisis. Spent a year in Italy and Rome and several months in Positano over the

winter of '56-57 and Fiesole overlooking Florence and Venice and then he asked them whether he could continue on to spend some time in the UK. So we went by train there and then at the end of that went back to Italy to get the ship back around Christmas of '57 and got back to Australia.

LM: So how old were you then in?

MR: Well we sailed when I was 2 years and 12 days old. We got back when I was 3 and a half and my first memory that I have is absolute fear and it was in mid-January of 1958. And I have a certificate of the King Neptune Ceremony and I just remember people dressed in my mind hideously and throwing people into the ship's pool and me terrified they were going to grab me and throw me.

LM: [laughing].

MR: That's my first memory.

LM: Right.

MR: At 3 and a half.

LM: That's crossing the equator, the ceremony?

MR: Yes, yeah coming back to Australia and I have vague memories of Sydney Harbour and being met by relatives there when we got off the ship. So they're my first memories, not astronomical but fear [laughing].

LM: It sounds quite feasible to be fearful of that.

MR: But my parents were very supportive of my interest in astronomy and space in general.

LM: And so how did you, when you were at school how did you, did you look for other subjects outside, like you were obviously a member of the society, you were educating yourself.

MR: Yeah.

LM: Because I assume there wasn't a lot of education about this within the syllabus.

MR: And I, that's right and I had a science master at Brisbane Boys' College who on one occasion told me to concentrate on what they were teaching and almost sort of keep my head out of the clouds, out of the stars sort of thing, that I was thinking so much of it. Because I have to admit that during Apollo missions I'd sometimes take a, as we call them, a transistor radio with an earpiece and I'd sort of hide it and in class during some of those missions I'd be listening to some coverage with Dr Peter Pockley on ABC and great coverage. Later on I got myself short wave radio and followed things on that in the middle of the night and I'd be tuning into Voice of America or the American Forces Radio and Television Service or the BBC and listening to missions through the night because things didn't always happen at the right time for us.

But so as I said earlier fanatical. And I must admit that some of my grades suffered actually from my fanatical interest in that. I remember being in class sometimes doing calculations on could you use Apollo hardware to do a one-way trip to Mars with a crew and really accelerate out and I'm doing calculations like that.

So I did well at physics and things like that. Started on as physics at University of Queensland but then I met a Canadian journalist who was out here who'd been to one of the Apollo launches and he got me, he got me more interested in communication. He didn't deliberately do that but in our conversations and so I actually ended up getting an arts degree with, I still had mathematics and things and I did geology, chemistry, it was a real mix, but I did journalism as well.

LM: Right.

MR: So I did quite well at the journalism units and then I started science writing and I tried to get the position of curator in the Sir Thomas Brisbane Planetarium. And initially it was to be open in 1977, late in that year, and they advertised the position of curator and the technical officer in about February of '77. I applied. I got a, I got an interview with Fred Sharp who was in charge of the department but a friend of mine got the position. I was only 22.

LM: Right. So ...

MR: So I didn't have a lot of experience but Jeff Ryder got the position. But I eventually came on later.

LM: But you were determined from an early age to find a career somehow in this field?

MR: Something to do with astronomy, space, you know, and a lot of kids have thought about wouldn't it be great to be an astronaut and, you know, to this day somewhere in the 500-600 level of people that, individuals that have flown in space, it's still not a big number. But it's not the days when you looked at the original seven Mercury astronauts and then the next nine, including Neil Armstrong in that group and a small group of cosmonauts, that was a pretty elite field. Purely male.

LM: Yeah.

MR: Except for Valentina Tereshkova in 1963 who's still alive. So it was really male dominated with a few standout females that have been coming to light through some movies and books and things.

LM: That change in the space programs of various countries around the world, you know, obviously more countries now have a space program.

MR: Oh yeah.

LM: There's talk of one being developed in Australia again. But to my mind there tends to be, there has tended to be a shift in the motivation or the drive for it from government to like private sector. We're seeing people like Elon Musk in America, you know taking to the, and Richard Branson, you know their space companies. Do you see that is the future? Sort of private space operations?

MR: Of course commercial has always been involved in a way as contractors, you know, Chrysler for example was building rocket stages and Boeing and all that way, way back, decades back as contractors to US Government or to NASA when it formed in 1958. But now commercial is going at its own pace independently quite often.

Sometimes with some funding. Like Elon Musk you mentioned he was on the verge of losing all of his money when finally he had a successful launch. If that hadn't have worked that would have been the end of his efforts but fortunately that one worked, got funding from NASA, that didn't cover everything but helped. And now you see SpaceX with reusable rockets. Some have flown seven times the same first stage, seven times, that dramatically cuts the cost. Because the biggest obstacle to doing anything in space out there with spacecraft or satellites orbiting Earth is the cost of getting it into orbit initially.

It literally has been like taking a 747, flying it across the Pacific once or a Dreamliner, and you toss it away at the end of that single flight. That's what the space age has been ever since the beginning and it still is in most cases with most launches. But so others are now looking at reusability and the European Space Agency and Aireon Space, and you've got Jeff Bezos on the scene too, currently the world's wealthiest person, who's liquidating every year some of his, a small part of his Amazon stock, and funding Blue Origin, his own space company, building enormous facilities at Cape Canaveral, a space station as it's called now.

And so you've got Elon Musk leasing facilities there at the Kennedy Space Centre in Cape Canaveral and you've got Jeff Bezos there. You've got Richard Branson with his Virgin Galactic and sub-orbit or not reaching orbital speeds but up and down which has been taking a long time but space is not easy.

LM: No, and expensive.

MR: And Australia has never had a space agency but now we do so the idea is not to build huge rockets in Australia, there are some companies, and even local, but the, but to somehow have input there and we've got skills, you know. There's talk of mining ice at the polar regions of the moon. Well Australia has lots of mining expertise and technology and that, you know, there's just one example.

We've got Antarctic research, even one of my nephews has just started working with the Antarctic division on submersible robotic things. So I think there's a lot more chance for Australian young people in the future to be involved. And at the moment we've only had two Australians that

have flown in space, Australian born, but those opportunities will increase.

We actually had someone, Philip Chapman, who was one of the Apollo astronauts, a scientist astronaut, but he never got the opportunity to actually fly. But so we go back to the '60s as having an Australian-born person selected as an astronaut in those early days. But the opportunities will certainly increase and planetariums play a role in inspiring. I mean we can travel anywhere in the observable universe.

In my decades here, I finally came on at the beginning of 1985, February 13, so I'm retiring in 2021 when I turn 67 in August. But I'm taking leave from the beginning of March so I'll just pass my 36th anniversary here and I've been curator since 2002 when the original curator, Jeff Ryder left and we overlapped for 17 and a half years. But the more I've looked out, I started looking out when I came to this planetarium, looking out at the universe. But in recent years I've been looking more and more back at our planet, so much interest in us sustaining this world, and despite the fact that we've discovered to date over 4,000 planets around other stars, exoplanets, we don't know of any Earth-like ones yet. They might be out there but at the moment all we can say is Earth is the only hospitable place in the entire universe to our knowledge.

And even if there are other ones they're going to be so far away, there are none in the solar system, that whether there are many out there or whether this is the only place that's like this, either way it's imperative that we look after this world because it's all we've got and for the foreseeable future.

LM: Is there an imperative too to look for those other worlds or those other planets? Because you mentioned the commercial imperative, or the possible commercial application of close, you know closer space travel and exploitation exploration, but when people talk about other galaxies, you know that are light years away, what's the benefit of looking for those?

MR: Or even the stars, apart from our sun, are light years away.

LM: Yes, yes.

MR: The nearest major galaxy, the Andromeda Galaxy, is two and a half million light years away.

LM: So why, what, what ...

MR: No technology we have except in science fiction can ...

LM: Can get there, that's right.

MR: Reach the nearest star.

LM: So what's, what is the benefit in looking at those? How do you see the benefits?

MR: Well number one it's curiosity. We've always wanted to know what's over the hill or what's there and, you know, at the moment are we unique or, you know, does life only occur in one place in the entire universe. And I mean what will it do to our mindset if we discover that even there's microbial life on Mars. Now it could have got there from Earth, things hitting Earth, because we've found Martian meteorites on, on Earth. It's feasible, not as likely but still feasible, that Earth rocks got to Mars maybe with some life forms within and so life might have been triggered there or vice versa.

One of the moons of Jupiter called Europa is a bit smaller than our moon, a little bit, but it's got a subterranean ocean, are there forms of life beneath that where there are vents with hot water and minerals, life essentially consuming minerals, no light source or anything but chemical energy like we find on the ocean floor on Earth even which don't need sunlight. Is that in the outer solar system that could not have been contaminated from Earth?

You know if there was, that's a difficult mission because you have to drill through a lot of ice to get down to a dark ocean and explore it but that's for many decades ahead.

LM: Yes I was going to say I think we're safe to say it's not in our lifetime.

MR: Yeah. So at the moment as I said we only know of one place in the universe that's got life and a lot of people in the field of astronomy think

that, you know, on the odds it's quite likely, you know what those numbers are, but until a couple, the last couple of decades, we knew of no planets around other stars. Now we currently know of over 4,000 confirmed. There are ones bigger than Jupiter, there are Earth-size planets, there are ones in the Goldilocks zone of stars where liquid water could exist on the surface, so the conditions might be right but did that, did the trigger for life, did it start, you know, is it unique here?

LM: Yeah. So just getting back to you and the planetarium. When you left high school you had this burning desire to be somehow involved in this field of work so what jobs did you look for and take on before you actually got here to the Sir Thomas Brisbane Planetarium?

MR: I was doing science writing, not always getting a lot of money I might say but, and even for *The Courier-Mail*. In fact my first newspaper article was for the *Sunday Sun* and that was an eclipse one in the mid-70s, a full feature, so. And then I started going to things as media. Like I went for the last Apollo launch. It wasn't one of the lunar ones but in 1975 it was the last use of Apollo hardware on a smaller launch vehicle to take an Apollo crew to link up with a Soviet crew in orbit. So Nixon and Kosygin sort of came to an agreement on that and that occurred in 1975.

I saw the first successful launch of a lander to the planet Mars. Went back for the first shuttle launch. So I tried to get media and I started to get a rapport with different media. Even went to an eclipse in New Guinea in the early '80s with Paul Bongiorno when he was up here in Brisbane and we did some coverage of that. So it was lots of things.

Then I started a national science competition getting sponsorship from TAA which became Australian Airlines while that was running and then got people at, Towards, Beyond 2000, it became Towards 2000 or vice versa on ABC and got publicity around the time of the Commonwealth Games in Brisbane in 1982 and it became a national competition with the main sponsor being the Australian Government satellite company AUSAT. So they threw quite a bit of money at that and I was managing that and that was to fly Australian student experiments on a space shuttle in the '80s.

LM: Right.

MR: So we had three winners from Victoria, South Australia, and Perth, got them together, got the involvement of Joe Kerwin who flew on Skylab who at the time, that time in the '80s was NASA's senior scientific representative to Australia in Canberra, so I got Joe involved quite a bit in that and then the Challenger disaster occurred and that knocked it off. But AUSAT still funded a major trip to the US for me to take those students and NASA really put on the works for us at different facilities around the country and contractors, Hughes Aircraft which was building AUSAT satellites for Australia at the time. But some of that overlapped with me coming here so.

So, many things, many, chasing many eclipses over the decades to different parts of the world whether it was Siberia, Libya. I love travel. Easter Island, all sorts of places. And always communicating. Sometimes paid for things, sometimes not, so but it was always in my early days, even as a kid, sort of getting background that was useful to put on something to lead to something else.

LM: And the idea of having a planetarium in Brisbane?

MR: Oh and I might mention that I also got involved with the Cape York Space Agency in the '80s.

LM: Oh okay.

MR: Which was paid and that was when Sir Joh [Bjelke-Petersen] in 1986 was running with the idea of a space port on Cape York to launch because there'd been the Challenger disaster, the US was trying to move all their, all their satellite launchers essentially to the shuttle, reusable. It never worked out that way as a reusable truck. And there'd been other expendable throwaway launch vehicle failures. So the Institution of Engineers Australia, which particularly people at the University of Queensland, got interested in a space port so that ran through for a number of years but it didn't come to fruition.

LM: And that idea keeps sort of, every now and again keeps being resurrected doesn't it?

MR: Yeah, yeah there's still talk possibly of somewhere in Queensland. The closer you get to the equator for certain satellite launches, depending on

the satellite, you, it's more efficient. So Woomera, which I had a great interest in and actually way back developed the first website to do with Woomera, Woomera on the Web which went for many years and many recollections from people around the world that live there, work there, were born there, and eventually it was archived by the National Library for its social history.

Woomera couldn't launch eastward because you'd be launching across South Australia, New South Wales and populated areas, so it used to launch polar, sort of to the north. But it was started in the late '40s after World War II because the British wanted a range to test missiles and Australia provided the ground and later the US was involved with the things, the European Launcher Development Organisation but eventually European launches moved to French Guiana. So the interest in Woomera too which I sustained for quite a few years there. So the planetarium side of things though, ah.

LM: Yes where did the idea come from in, to actually have a planetarium, what was the motivation?

MR: Well I should say that we're coming up to the centennial of projection planetariums. The first one to operate was in 1923 and it was Zeiss in Jena in Germany at the time and so the world's first planetarium show was in Germany in 1923.

The earliest I've found about a planetarium in Brisbane dates back to 1954. We didn't know about it until eventually the National Library started their Trove Online digitising papers and oh probably oh less than a decade ago I noticed the Brisbane *Telegraph*, also a Grafton paper, had a story in December of 1954, the year I was born, about a group of businessmen in Brisbane. They'd been in contact with Zeiss and it wasn't clear whether it was Zeiss Jena in East Germany or Zeiss Oberkochen in West Germany because they split because of the war, but and they'd been in touch about building a planetarium in Brisbane and having a Zeiss projector. The total cost in the '50s was projected to be about 100,000 pounds and about 30,000 pounds of that for the projector, the optical star projector. But I see nothing beyond that December of 1954.

LM: And was that idea, was that for a similar set up to what you've got there, the hemispherical roof being projected, the images being projected on?

MR: Well yeah, a dome on which you projected with a dumbbell type star projector. Dumbbell because one end projects the stars for the northern hemisphere north of what we call the celestial equator, sorry the equator on Earth, and the other half for the southern hemisphere sky and if you tilt the projector you can change what latitude you're showing. So sort of a universal projector. It doesn't matter where you are on Earth you can recreate the night sky. So they had visions of one with hundreds and hundreds of people in it, bigger than we actually are in fact.

But there was someone called Bill Newell in the Queensland Government who is sort of like a state astronomer in a way who I got to know in the '60s. He was the honorary secretary of the Astronomical Society of Queensland. Bill and another fellow I knew who used to work for the PMG, Post Master General, on the telecommunications and later Telecom, Telstra - Bernie Doran. I talked to him some years ago, a few years ago, and he told me about some conversations in the '50s post that article I found where Bill had talked about some businessmen having an idea of a planetarium but nothing came to fruition.

It didn't really start to move until about 1966 when the Astronomical Society of Queensland, of which I became a part and started going to their meetings in '67, they formed a committee to try and look at getting a planetarium for Brisbane and not knowing how it would be funded at that stage. But it was a small committee including Bernie Doran that I mentioned, and also in the latter part of the '60s the Queensland Museum Society with its president, Dr John O'Hagan of the CSIRO, was also having similar thoughts.

And eventually they got together and joined forces and on the concept of a planetarium for Brisbane and they contacted Zeiss and but there were other manufacturers as well by then. They approached I think federal, state, but things started to move with an approach to Clem Jones in the early '70s and John O'Hagan went and saw him and Clem of course was by training a surveyor and had an interest in astronomy through that.

And Clem took an interest in it and I believe his wife Sylvia also thought it was a good idea. One of my staff who's retired now and just coming up

91 in a couple of weeks, she was good friends with Clem. She and her husband, Dixon Falconer who has different roles in the media and *Sunday Mail*, *Courier-Mail* going way back, and they were quite friendly with Clem.

LM: This is Jean Faulkner?

MR: Jean Falconer, yeah, and so she's told me about Sylvia. So I get, I've had... Clem might have told me himself even that Sylvia had an interest in it too. So Clem actually unveiled a foundation stone up on Mt Coot-tha past the kiosk on the next knoll sort of spur out on the left there in December of 1973. A foundation stone was sort of put there, a plaque, and there was media up there and we've got a photo of that, a couple of photos, and on the wall at one of our displays. That's where they thought the planetarium would be located.

But also under Clem, you know, the push was on to establish a botanic gardens out here just before then other than the city gardens and so the ones, botanic gardens at the base of Mt Coot-tha were getting going and established. So it was eventually decided it made more sense to site the planetarium within this establishment, you know.

It was, in hindsight even though we would have been perhaps a little bit further away from the lights because we've got a small demonstration observatory, practically this was probably a much better location down here in the gardens. Transport wise, parking wise and just getting to so, and it's a very lovely location to work in [laughing].

LM: [laughing] And ...

MR: Now currently 56 hectares of gardens since the Legacy Way Project finished and handed over several hectares. So, so Council started to put out details and go to tender and construction started on the site in early 1977 and it was thought that it would open in the latter part of 1977. The positions of curator and technical officer were advertised about February of '77 and I applied, got an interview, but Jeff Ryder who is seven years older than me and we'd known each other since the '60s as well in the Astronomical Society of Queensland, we were both members and then he was in another society that formed after that.

So Jeff got the job and I honestly believe he was the best person in hindsight. I know what difficulties there were and dealing with people coming from East Germany and just the practicalities of it and the Council sent Jeff to East Germany for training in the latter part of 1977 and to the planetarium in Vancouver and Toronto. So in hindsight I think Brisbane got a better planetarium than it would have if I'd been trying to manage the project at 22 years of age [laughing].

So I think my time came later. It did, you know, and actually when I came for the interview with Jeff and Bill Gudman who was acting manager of the department at the time, Jeff said I hope we have you for at least six years here. Well I've put in 36 years now so [laughing].

LM: Yeah [laughing] you've exceeded their expectations.

MR: But so Brisbane got it. It actually opened on the 24th of May was the official opening, 24th of May 1978. It opened to the public two weeks later on the 7th of June even though we did have special shows here and I came to one of them, the Astronomical Society's, and I was involved in the committees by that time before because we were amalgamating two societies and in that same month of the official opening we formed the new Astronomical Association of Queensland out of the one I was in and another one.

So we started meeting across in the auditorium here which that building was also opened by Clem earlier. But Clem had moved on to like the Darwin reconstruction project before we actually opened so Lord Mayor Sleeman opened ...

LM: Yeah I've just got to say, yeah.

MR: Opened the facility.

LM: Frank Sleeman as Lord Mayor opened the planetarium.

MR: Yes.

LM: Clem had retired as Lord Mayor. But as far as you're aware in terms of sort of his interest in the project and perhaps even driving it through the Council.

MR: Driving it is a good, from having talked to Clem [laughing] a number of times in later years there wasn't total agreement in the Council Chamber.

LM: Within the Council.

MR: For having a planetarium. It was a lot of money. The total cost counting the fittings and everything was around about the \$1.7 million back in '77-78 dollars. That's a lot of money if you inflate it to today. Sydney had had a small planetarium at Ultimo and the projector, the old projector had packed up in the '70s, and in the years since this place was being constructed right up until recent times I've lost track over those decades of how many consultants, museum people and others that we've had from Sydney, and other parts of Australia, come here to look at the Brisbane Planetarium and, you know, from country towns, cities, to look at what Brisbane has.

We are the only real standalone planetarium in the country. Others are in science centres or in museums. We are standalone and under the Brisbane City Council and in the end the Brisbane City Council fully funded its construction and has fully funded its running ever since.

LM: So do you think it would have happened without Clem's involvement or Clem's perseverance?

MR: There's a good chance that it wouldn't have because approaches had been made to others and I believe that there might have been the chance of some funding coming from federal with Gough Whitlam's time there as Prime Minister but of course that ended on November 11 of 1975 before this place went ahead.

So although Clem wasn't the, the one that started the idea of the planetarium in Brisbane, I think there is a good chance that we wouldn't have the planetarium. We may have had one but it mightn't have been what we have here. So I give a lot of kudos to Clem Jones for us having this and for the Council having done it.

Without Clem, even if it had been another Lord Mayor, without Clem and his interest in astronomy through his training as a surveyor. You need a number of things to come together. And in later years that happened

when we were, without going into all the details, you know, planetariums, art galleries, museums, always go through cycles of evaluating and reviews. There wouldn't be one on Earth I don't think, under western style anyway, that wouldn't go through those sort of reviews on what it's costing and the value of it.

And we've gone through those and we've always come out pretty strong and, and I've seen a number of those. So I'm pretty happy that we've got such a wonderful facility and it's been upgraded in terms of its equipment and other things a number of times in my time as curator, since coming on as curator from assistant curator was my role from '85 to 2002, assistant to Jeff Ryder as curator. But we've had upgrades in early 2004 and a major one in 2010, another one in 2013 that was sort of finishing off one and our last major one was last year in April/May of 2018.

And in fact we're one of the most modern planetariums in the southern hemisphere. We have near 8K resolution across the dome, in fact it's just under 7,000 pixels across the dome and they call it near 8K.

LM: And this is a 12 point ...

MR: But most planetariums in the world don't ...

LM: 12.5 metre dome?

MR: 12.5 metre dome. In resolution mostly they've gone digital now. We removed the original star projector and for a while we had another smaller one but digital has got so good and what we did last year has really pushed us to state of the art. That's another great thing.

And so when we opened we had 144 seats in here, concentric seating in the round, which is my preferred. A lot of planetariums have gone to the seating facing one way. It's called unidirectional, and it's more convenient in some things in producing something, especially if you've got characters that people are projecting on the dome. But in the round still has that intimacy that you're sort of outside, especially if you're doing the night sky, recreating it. It's like you're out there gathered as a joint experience, a shared experience.

Virtual reality has come in a lot these days where you, you know, you have the headsets and everything but there's still something. We've even had virtual reality people here involved in that and said this is virtual reality that you've got, it's just a different form of it, and that doesn't rule out the other types of using headsets and things for, but this is a very shared experience in here.

LM: So in terms of its development you were, or I guess the city was lucky that at the time there was a Lord Mayor willing to drive it who came from a profession, namely surveying which is inextricably linked with astronomy, but the other person I guess we have to give some share of the credit to was Sir Thomas Brisbane himself who also had a background in astronomy.

MR: Yeah. I mentioned a couple of people. Bernie Doran was one of the committee members on the Astronomical Society of Queensland. John O'Hagan from the Museum Society and a CSIRO person. John was also at the time through the '60s showing quite an interest in Sir Thomas Brisbane and his background and his astronomical background. Sir Thomas had a background in military and everything and came from Largs in Scotland. He built his own observatory there in Largs on his estate in 1808 and he had a military career.

But then the opportunity came up to come to the colony, New South Wales, and he eventually came and arrived in New South Wales – of course Queensland wasn't called Queensland then, it was part of it – but he arrived in Sydney in December of 1821 and at his own expense he built an observatory at Paramatta, out at the Government House there, and he paid for the library and the instruments and he paid for two assistants to come out, one of whom was German, Charles Rumker, who by the way just the other day the Chinese landed on a part of the moon of a young volcanic area, relatively young, named for that assistant, Charles Rumker.

LM: Okay.

MR: Mons Rumker, Mount Rumker, so it landed near there. So there's a little link. But Sir Thomas built that observatory and that started operation in May of 1822 so we're coming up to the bicentennial of that. And very soon within a month the staff there that he had brought out picked up a

comet called Encke and it was a return, a predicted return of this comet. The only comet previously that had been predicted to return and was observed was Comet Halley and so this was a second attempt to predict a different comet. And so it was the only place on Earth, Sir Thomas Brisbane's observatory at Paramatta was the only place on Earth that detected Comet Encke on this return. So that was one of its..... There is also the Brisbane Catalogue of Stars that was produced there during his time. So then he returned to Scotland after several years and so he's got that astronomical one.

Sir Thomas was also very much involved in later years in education, the Largs Academy, he and his wife took a great interest in the education of children. So I think Sir Thomas would love to think that there was a facility in a city of Brisbane dealing with astronomy and also the education of so many children over the years, not just children, children at heart too, people of all ages. It would be lovely to have Sir Thomas walk in somehow and show him what we can do these days.

But John O'Hagan from the Museum Society took that interest and John suggested to Clem that a good name for the planetarium would be one named for Sir Thomas Brisbane so Clem obviously liked that idea too and that's how we became known as the Sir Thomas Brisbane Planetarium and the only city on Earth named for an astronomer.

LM: Yeah.

MR: And I might mention that there is a crater on the moon named for Sir Thomas too over 40 km across and in 2009 we had an asteroid named for Brisbane and it was actually an asteroid discovered by someone, Robert McNaught, who came from, was born just down the road from Largs. Moved to Australia and was looking for potentially hazardous asteroids that might cause trouble for us and I contacted him some years earlier and said 'Rob one of those comets that you've got that hasn't yet been named, nothing's named for the City of Brisbane or for Sir Thomas Brisbane', and he said 'Oh well pick one of the ones that hasn't been named from my list'.

And so in 2009, the International Year of Astronomy and the 150th anniversary of Brisbane becoming a municipality, late that year we did an approach to the International Astronomical Union which is the only body

that really can name astronomical objects and features on them, and in October of 2009 it made the decision to name an asteroid for Sir Thomas and then that was announced in the media in early October.

So we've got a few things named for Brisbane. So the name Brisbane, whether it's the City of Brisbane, or whether it's an asteroid, a crater or whatever, the river and other features, there are a few Brisbanes around.

LM: Yeah.

MR: And Clem took an interest in Brisbane [*emphasis on bane*] which, that's how they pronounce it in, which is on the way from the centre of San Francisco out to the international airport there, and Clem took an interest in that small area and also an interest in Largs and they remember Clem in Largs [laughing].

LM: Yes, yes they do and Brisbane [*emphasis on bane*] too, they, they still remember him.

MR: Yeah, yeah certainly.

LM: The, I'm guessing that just harking back to Sir Thomas Brisbane, you mentioned him walking in and seeing this, I'm guessing that ...

MR: Well I wish he could walk in [laughing].

LM: Well you wish, that's right, yes [laughing].

MR: [laughing].

LM: I guess his standard of equipment, even the grinding or the making of the lenses and that he used in his equipment, that would have been fairly basic?

MR: Well he purchased those and there were some issues with some of those but those instruments are held by the, down in Sydney, and some of them are on display at the Sydney Observatory which was built later. Sir Thomas' observatory wasn't really built to last for a long time and it eventually had white ants and things like that so some decades later it didn't survive. There are a couple of piers at the moment that supported

one of his instruments still there and I'd love to see something significant put there in terms of commemorating that.

We've tried to find ourselves anything we could that would inform us as to what his observatory looked like and in the Catalogue of Stars, and Council has a copy of that large catalogue inscribed by Sir Thomas to one of his daughters, and there's a drawing of what that observatory looked like and there's another painting done which shows in the distance the observatory.

And we've tried to get everything we could and measurements. There was an archaeological survey done of that site some years ago and I've got that as well. So from that we started to get the dimensions worked out and its overall appearance and we started to construct it in 3D software and we've done a little 3D model print of that and one day we'll finish that off and landscape it.

So I have a bit of an attachment to Sir Thomas Brisbane and on my last trip to Largs they asked me if I'd mind being Honorary Vice-President of the Brisbane Observatory Trust there because they're trying to restore that and get it in a good condition. Back some years ago I, on one trip to Largs, they got me to talk in a few schools to kids, both little primary school kids and secondary ones and everything, so I think they're also trying to get the people in Largs, you know, to take more interest in Sir Thomas as well.

LM: Just to sum up and conclude Mark, you mentioned on a couple of occasions during the interview, you know things like virtual reality, you've just mentioned 3D printing, all this sort of, digital projection, all this sort of stuff that wasn't thought of when you started in the job and you'll be retiring in a little while as you say, from your perspective how do you see the future of these sorts of facilities, planetariums?

MR: It's a hard one and [laughing] funny term to use these days, I haven't got 20/20, you know in the future I might look back at our conservation and think oh I wish I'd had 20/20 vision or something, but the, even decades ago with Hollywood making science fiction blockbusters I remember an article in *Sky and Telescope* magazine and I think it even dated back to 1976 which wondered about whether we were at the end of

planetariums with Hollywood able to produce big blockbusters that planetariums couldn't do.

You know we were based on optical mechanical projectors and when this place was built and for many years up until the early 2000s our ancillary projectors that supplemented things on the dome were modified slide projectors. They'd slew or move a spacecraft image across the dome or they'd zoom or things like that. Now with digital you can put something anywhere.

I remember when we used to, we used to close for a number of days to install a new show. We could only run one public show. We could do live in any manner of ways. But a show for the public where we, we actually used to, Jeff and I used to write the scripts, we'd narrate them downstairs in a sound room, we'd mix music with them, it was reel to reel and we'd edit those and we'd end up with our master and do copies of that and run them on a tape deck here in the sky dome.

And then we'd have all these projectors, up to 100, around in what we call the cove, like a corridor just behind the, where people don't see, and projecting out. And we'd close for a number of days to install a new show and we'd do opaquing, like painting slides to paint around an image so that you wouldn't see anything other than that image of a spacecraft on the dome or a planet or something. It was, and my eyesight for close up was a lot better back then though. Very steady hand you needed. We were using a pen with a nib or a little fine paint brush and everything.

And so then we'd do an installation and we'd be patching with patch cords from circuit boards that we'd make in, dimmer boards that were, and we'd use push buttons and it was all manual. There was no automation. When it came from Germany it was an automated punch tape that you could do a show and it would punch holes in the tape and you could run it but it wasn't entirely reliable that thing so we were really a manual thing.

One of the nice memories I have once was of people from Canada from Vancouver Planetarium doing a visit here and I was running a show and they complimented me later on on how great our automation was on getting things right [laughing] and it was all manual. We just memorised

in our minds, we knew what cue from what we'd done in the, where we'd narrated exactly to a fraction of a second when we'd push a button to get effects on and everything and Jeff and I would do that for years.

Now, you know, it's all done through computers. We have a master, a host computer and 12 graphics computers that are linked to that and all manner of things. We can, but we used to have a technical officer and when we'd be installing all these projectors we'd had a call out saying there's no room in this part of the cove for another projector, you can't have that effect in that direction. Now it doesn't matter, you can put anything anywhere on the dome.

Also in those days you were stuck on planet Earth. So new technology, video technology started coming in in the '90s into planetariums but it might just be a video projector projecting some video of something on one part of the dome but now it's full dome immersive. You know we have six projectors. There's blending of the edges. You wouldn't know that there were six different blended things to create a whole full dome like fisheye.

And you can do, there are databases and imagery and we can fly anywhere in the observable universe now. We can go out to those exoplanets that have been discovered. We can go and fly down into the craters and mountains of the moon or on Mars into valleys and to landing sites.

And a new show just starting today as we're recording this is Come Fly With Us which is a new show and as I've indicated, you know, I've started to look back at our planet, we need to look after it, this is our spaceship, we're all passengers and crew members on it, and we can fly down to virtually ground level on Earth and explore Earth, see the changes on Earth, look at the Amazon and how it's been encroached into.

And there are a lot of things we haven't even explored yet that I want, I'd like to get in. Even though I'm retiring I don't want to finish my involvement. It's in the blood so I'm going to maintain my international and local memberships of planetarium societies and things and I hope I'll still be involved in some way with the planetarium here because there's still a lot of different things we can do in here and I think educating

people about what's out there but also that makes you appreciate how special our planet is.

We have a show we call Saturday Night Live which we introduced just over a decade ago and its totally live for about 50 minutes. Starts off on Earth. We fly around, we look down on our planet, we look at issues like space junk and that's a big issue these days of potential collisions of valuable assets that virtually everyone on Earth uses. If you came here using GPS you've been using assets that are under threat of potential collisions of objects. And so money's to be made out of everything so, you know, there could be money made out of cleaning up space junk.

But looking at our planet people talk about moving to Mars but it's a cold dry desert world, you'd have to change it. But this is our world we have to maintain and I think planetariums can have a role in making people appreciate more this world and the need to really look after it, even if we end up with colonies on Mars.

The asteroid belt, we talked about missions and commercial, the asteroid belt has millions of asteroids, nearly a million discovered so far. Huge resources in those of valuable metals and things. It could be that there is mining and that you in the end you don't mine Earth so much for some of those, you can utilise them. Also don't take your resources from Earth, live off the land so to speak, learn how to build your colony using materials that are on Mars or something like that and water is in abundance in frozen form throughout the solar system. So water, you can get oxygen, you can get hydrogen fuel from that and so on.

So the future's bright if we look after this world so, you know, climate change and all of those are one of the threats we have. We're cataloguing potentially hazardous asteroids into the future. So we have potential that we didn't have even a century ago that within the century if we see something that's on a collision course in decades or a century from now we potentially will be able to make it miss our planet. Dinosaurs didn't have that luxury 66 million years ago.

LM: [laughing].

MR: I sometimes say to our audiences there was a wonderful day on Earth 66 million years ago and everything fell to pieces the next day. It was

literally like that. An asteroid hitting the Yucatan Peninsula part of Earth, maybe an object 10 km across, and that changed the history of Earth just in that virtual instant. If that impact, impacts can be good and bad. It was bad for most forms of life on Earth, maybe three quarters of species, but on the other hand if that had not happened you probably wouldn't be interviewing me today.

LM: Yeah.

MR: Almost certainly wouldn't be.

LM: We wouldn't be here.

MR: Yeah.

LM: No.

MR: Mammals were able to arrive more and things like that. So it's just fascinating and knowing that and could that be happening on other worlds in other solar systems and, you know, I talk about over 4,000 confirmed planets. Something I couldn't say 20 years ago was that planets are more numerous now, we firmly believe, than there are stars. There are hundreds of thousands of millions of stars in the Milky Way Galaxy. There are more than that number of planets, even a tiny fraction of that, is still a huge number of Earth like planets, whether life's on it is another matter, but a century ago the Milky Way was considered to be the universe, everything, by astronomers, the Milky Way. Now we know the Milky Way Galaxy is just one of hundreds of thousands of millions of galaxies. Many smaller than ours but nonetheless it's mind boggling.

And when we do something like Saturday Night Live, currently we're doing it in the afternoons, Saturday Afternoon Live, but when we fly out of the solar system we start flying beyond the Milky Way, you know, it's common to get comments from people about we just feel so insignificant. You can feel that way or you can feel significant that people have actually fathomed this out. That we understand it.

But so it's been a fascinating 36 years. I'm glad that I did get chances to chat to Clem about the early days of how this got going and not with total support but he pushed that through and as we've indicated yeah

we mightn't have this wonderful facility if it hadn't of been for that. And we've had support through the decades too because, you know, as I've said there are challenges that come along to, and I've known of colleagues, planetariums have closed through the years, even major ones sometimes, you know, economics and everything.

But you can't put an economic value on everything, especially when it comes to education and just culture and what have you and I hope it's here for many years to come and, and the potential, one of the potentials is to link dome to dome and have guest presenter somewhere on Earth controlling here and it's something we would have tried this year but COVID's interrupted.

And one of the things that distresses me I guess about this year is UNESCO about mid-year predicting that 13% of museum type things would never reopen after the COVID-19 era and someone said they'd seen a report that that number has gone up to maybe a quarter that may not reopen.

LM: That's a huge loss.

MR: And I know of planetariums, museums, art galleries around the world where they've laid off hundreds and hundreds of employees and some have been permanently laid off. We usually rebound from disasters, not without cost, but and as I've said planetariums I think can still play a role in making people appreciate what we have here on Earth and one of the shows is looking at planet Earth and I think this is a great place to come and actually show people what we have as well as exploring other words.

LM: Okay. Look thanks very much for your time today Mark. Thanks for your memories and the, telling us a little bit about Clem's role there and ah.

MR: It's been my pleasure.

LM: We're, I hope you have a prosperous retirement.

MR: And an active one [laughing].

LM: I'm sure it will be [laughing].

MR: Yeah [laughing].

LM: Thanks very much.

[end of recording]