Introduction: The following audio has been created by OUTSIDE Arts with the support of Cheadle Discovery Group to celebrate the work of Mary Blagg 80 years on from her death. In life she was committed to both her family and her home town of Cheadle - and she was also among the first group of women to be admitted as a Fellow into the Royal Astronomical Society in the year 1916.

Mike Plant: My name is Mike Plant, I'm chairman of the Cheadle Historical Society and a trustee of the Cheadle Discovery Group. Mary Blagg was the daughter of a solicitor in the town and her family, they were involved with all the groups and societies and the churches and such like. If there was a committee, a Blagg was probably the chairman of it. So Mary was the eldest surviving daughter of Charles Blagg. She was educated at home originally then went to school in London and in middle age, which I find quite amazing, she decided she'd take up astronomy after attending some university extension courses at Cheadle's Town Hall and after that time it was suggested she look into the field of selenography and she was very lucky enough to meet some very supportive scientists who gave her quite a momentus project in bringing some order to the names of the features on the moon which was eventually why she was admitted as a fellow of the Royal Astronomical Society.

Hannah Niblett: So my name's Hannah Niblett, I am the heritage officer at Jodrell Bank. Prior to her work in the 18th and 19th centuries everybody came up with their own system for naming all of these craters and mountains and these different features. So what Mary Adela Blagg did was to look at all these different moon maps and look at all this data and tabulate it all and come up with a standard naming system so that all the scientists, all the astronomers, are speaking the same language. I think particularly when scientists, including those at Jodrell Bank, started using radar to study the surface of the moon and then ultimately in the 1960s men visited the moon, none of this would have been possible without a standard naming system. There's just no way any of that could have happened without the work that Mary Adela Blagg did.

Mike Plant: She was given three existing lunar maps with all the lunar features named by three different scientists. So all these maps featured a lot in the thousands of lunar features where over the years basically scientists had made their own observations and named something and there was no clear ordered way in which all the features were named. So in 1905 this mess was presented to the Royal Astronomical Society who said yes actually, something does need to be done and they formed a special group tasked with that and Mary was given the main lead on this and over several years she took these three different sets of information. So she compared each map and then she renumbered everything. This isn't like someone who grew up with the hobby and developed it, she was a middle aged lady who had different other things to be doing and such like. She was running a busy household for her father, she was helping out with the church and the Sunday school and things and this was almost like a sideline yet she's become immortal really with the work she's done.

Sally Roberts: One other interesting thing I always think well Mary Blagg astronomer, you expect her to almost grow up with a telescope in her hand but from what I can gather she didn't actually have her own telescope until she was in her 50s and she was given one as a present - which she was delighted with apparently but that always struck me as strange. I'm Sally Roberts, I'm a member of the Cheadle Discovery Group, very interested in Mary Blagg because I live in a house on the site of Greenhill House where Mary lived. There's still a wall there where she would have walked and where she lived. Mary was a very unassuming lady, she did not seek fame and fortune, she took it reluctantly, being one of the first women admitted to the Royal Astronomical Society. But she must have been well

respected in her own family, I think it's interesting having seen the will of her father, she was made the executor to her father's will and given they were a legal firm and there was plenty of sons and other people who could have been executor, I thought that in itself was interesting. She must have been well thought of to be given that role when her father died.

Hannah Niblett: Something that's really important I think to celebrate about the life of Mary Adela Blagg is not only her achievements and her quiet determination but the fact that she was elected as a fellow to the Royal Astronomical Society in 1916. This was the first year that women were actually able to be elected as fellows and she was one of the first four which is quite an incredible achievement and it really shows the growing recognition of women in astronomy and in science that has grown during the 20th century. And it really started with pioneers like her. Today there is still a gender gap - women represent less than a third of the world's science research community but this is improving and it started with pioneers like Mary Adela Blagg being recognised officially back in 1916 for her work.

Mike Plant: She had several scientists backing her and making sure she did take credit for the work she did. In fact one of the papers she submitted, the scientist who actually submitted the paper for her opened the paper with saying Miss Blagg has asked me to submit this paper but I must make it very clear that it is all her work, whereas quite often in the astronomy circles women did a lot of the work but men took a lot of the credit for it.

Hannah Niblett: So something we see with Mary Adela Blagg which is a common story where women have contributed to astronomy and throughout history is to do with her high level of mathematical skill so today astronomers can just put data into a computer and it does a calculation instantaneously. However prior to modern computing humans had to do these really long, tedious calculations to calculate things like distances and brightness and speeds. In the early days of the space race NASA had a whole team of human computers who were female. A lot of them were African American and they were doing the tedious, long, really complex calculations that required a really high level of accuracy that essentially allowed NASA to put men on the moon in the 1960s. So this is a very common story with women in astronomy and we certainly see that with Mary Adela Blagg, particularly in her work looking at variable stars. So variable stars are stars that from the earth their brightness changes so they brighten and they dim, they brighten and they dim. Many astronomers had observed this in the past and created these data sets. It was Mary Adela Blagg who brought all these together and crunched the numbers and really analysed what it meant and started to make observations about specific stars and the period of their brightening and dimming. It's work that has been really important in our understanding these variable stars and all the other sorts of stars that are out there.

Mike Plant: One of the other bits of work she did was actually an alternative to Bode's Law which was named Blagg's Law which was to do with calculating distances between the planets and the stars. This law was written up and put in a paper but from what I understand largely forgotten until the 1950s when someone rediscovered the work that she'd done and actually in the meantime other planets and astronomical bodies had been discovered and proved that her calculations had been right 10, 15 years before hand. In the 1920s it was suggested that her original piece of work was going to be revised so she attended a lecture in the Netherlands in fact which was quite rare for Mary at that time to leave Cheadle, but her and her sister went to the Netherlands to attend the conference where it was suggested that her work be updated and I'm assuming they didn't want to do the work without her being involved so she was working then with a Czech scientist called Mula and between them they revised all her work taking into account new discoveries that

had happened in the 10, 15, 20 years that had passed since the original. Now what was quite the achievement for Mary really probably personally was the fact that originally there was going to be maps included in her first set of work but the original artist actually died before the work could be started properly and then there was no money by the time it came around to be published. In the new revised version in the 1930s she was able to actually get maps produced. She actually took on the drawing of the maps herself so there is actually a full set of the nearside of the moon which Mary drew the second set herself based on the original artwork. These were published separately from the set of works and it's because of that that Blagg and Mula were both offered craters on the moon to be named after them and they both refused the honour in fact and in fact the astronomer royal Sir Frank Dyson that came to Cheadle personally to speak to Miss Blagg to convince her that she should take the offer of having the crater named after her.

Sally Roberts: Yeah the crater named after Mary on the moon is in the Sinus Medii just named Blagg but it's there quite central on the moon. If you know what to look for you can see it.

Jim Plant: I'm Jim Plant, local blacksmith and I was born on the same year as Mary died in 1944. My interest in astronomy started many years ago. Mary would have had very good skies, I would have thought then because even in my young days, even in the high street, you could look up and see the stars. Very often when I am out with the telescope and very often these days I only use it when I've got a visitor, and of course if the terminator's in the right position that's where the division between the light side and the dark where you've got the shadows which bring out the detail on the moon, I normally do try and point out which is that little crater called Blagg.

Sally Roberts: In those days communication would be entirely by postal services and the thought of sending precious work, there was no photocopiers, so everything was an original copy or had to be copied by hand and to be sending things like that through the post strikes us in this day and age as incredibly risky.

Mike Plant: She was quite worried about the maps that had been posted to her. She was quite insistent that they let her know that they got back to her safely and in one of the letters she says 'They're all fine, I have made a few slight repairs here and there and I've replaced a bit of tissue paper, I hope that's all okay.' Incredibly sweet letter that she wrote back to them just to make sure everything was back with them safely.

Sally Roberts: Mary herself of course never married, she - from a family point of view - devoted herself to looking after her father, her many brothers and sisters, particularly looking after the little ones and helping with their education but her sisters were married and were really big occasions in the town. I think she was probably known better for her local charity work rather than her astronomy work. She lived in a large house and was able to set up a work room for the Red Cross during the First World War, prepare supplies there and things. So she'd be probably known locally for that sort of thing. We're pleased to be able to highlight her life and her work and bring her to people's attention and I think growing up I didn't know about Mary Blagg even though I lived on the site of her house! I think it's important to bring her to the attention of Cheadle and the people who live around here and we're pleased to be able to highlight her life and her work and bring her to people's attention that otherwise just wouldn't know. So I think it's important that we fly the flag for her.

Acknowledgements: Using money raised by National Lottery players, The National Lottery Heritage Fund supports projects that connect people and communities with the UK’s heritage. Cheadle Moon is made possible with The National Lottery Heritage Fund. Thanks to National Lottery players, OUTSIDE have been able to produce this audio story for the Cheadle Moon project. Thanks also go to Cheadle Discovery Group, Jodrell Bank and the Royal Astronomical Society.