

= Ben Gascoigne =

Sidney Charles Bartholemew " Ben " Gascoigne AO (11 November 1915 ? 25 March 2010) was a New Zealand @-@ born Australian optical astronomer and expert in photometry who played a leading role in the design and commissioning of Australia 's largest optical telescope , the Anglo @-@ Australian Telescope , one of the world 's most important astronomical facilities . Born in Napier , New Zealand , Gascoigne trained in Auckland and at the University of Bristol , before moving to Australia during World War II to work at the Commonwealth Solar Observatory at Mount Stromlo in Canberra . He became skillful in the design and manufacture of optical devices such as telescope elements .

Following the war , Gascoigne and astronomer Gerald Kron used newly modernised telescopes at Mount Stromlo to determine that the distance between our galaxy and the Magellanic Cloud dwarf galaxies had been underestimated by a factor of two . Because this measurement was used to calibrate other distances in astronomy , the result effectively doubled the estimated size of the universe . They also found that star formation in the Magellanic Clouds had occurred more recently than in the Milky Way ; this overturned the prevailing view that both had evolved in parallel . A major figure at Mount Stromlo Observatory , Gascoigne helped it develop from a solar observatory to a centre of stellar and galactic research , and was instrumental in the creation of its field observatory in northern New South Wales , Siding Spring Observatory . When the British and Australian governments agreed to jointly build the Anglo @-@ Australian Telescope at Siding Spring , Gascoigne was involved from its initial conception and throughout its lengthy commissioning , taking its first photograph . Gascoigne was made an Officer of the Order of Australia for his contributions to astronomy and to the Anglo @-@ Australian Telescope .

Gascoigne and his wife , artist Rosalie Gascoigne , had three children . After he retired , Gascoigne wrote several works on Australian astronomical history . He acted as Rosalie 's photographer and assistant , using his technical skills to make her artworks resilient for public display .

= = Early life = =

Ben Gascoigne 's parents met and married in Levin , New Zealand , just before the First World War . They soon moved to Napier , where Gascoigne was born in 1915 . He attended Auckland Grammar School , and won a scholarship to Auckland University College (now the University of Auckland) a year before he was due to finish high school . Faced with a choice between studying history or the sciences , he chose the latter because he had a severe stammer and thought that it would be less of an impediment . He completed both a Bachelor 's degree and a Master 's qualification in science , securing Honours in both mathematics and physics , finishing his studies in 1937 . Despite these achievements , he did not consider himself to be practically trained , saying : " I was still very much a theorist , with no practical physics at all . The professor in Auckland used to wince when I walked past the cupboard in which the good instruments were kept ! "

In 1933 , while studying at the University , he met his future wife Rosalie Norah King Walker , although they did not marry for another decade . Rosalie completed a Bachelor of Arts while Gascoigne was studying in Auckland ; she also studied at Auckland 's teacher training college while he was in Bristol .

Although Gascoigne had always intended to study mathematics at Cambridge , an event occurred that significantly shaped his career . In 1931 , an earthquake in New Zealand killed Michael Hiatt Baker , a young traveller from Bristol , and his parents established a postgraduate scholarship in his memory , for study at the University of Bristol , which Gascoigne won and took up in 1938 . During his thesis studies at Bristol , Gascoigne developed a diffraction theory of the Foucault test that is used for evaluating the shape of large telescope mirrors . He completed his doctorate in physics in 1941 , but by then war had broken out in Europe , and he had already returned to New Zealand on the last available ship .

= = War service 1940 ? 1945 = =

Returning to a job in the physics department at Auckland , Gascoigne worked on military optics , developing gun sights and rangefinders , although he did not remain there for long . Richard van der Riet Woolley , director of the Commonwealth Solar Observatory in Canberra (now Mount Stromlo Observatory) , sought out Gascoigne because his " experience in optical work [was] unique " and Gascoigne was " trained in a way that no one else in Australia has been qualified " . When in 1941 Gascoigne was offered a research fellowship by Woolley , he moved to Canberra . The Solar Observatory staff had similar responsibilities to those Gascoigne had held in New Zealand . His first task was to design an anti @-@ aircraft gun sight , and he was also involved in a range of other military optical projects . In 1944 , the Melbourne Observatory , home to the Commonwealth Time Service , was closed . Gascoigne reestablished the Time Service at Mount Stromlo , using two Shortt @-@ Synchronome clocks and astronomical observing equipment that he and his colleagues adapted ; the Time Service remained at Mount Stromlo until 1968 . The knowledge and experience Gascoigne gained during the war proved valuable . He was at the only facility in Australia where optical work could be done , from design and manufacture to assembly and testing . Gascoigne developed a wide range of skills and " finished up quite practical , especially with a screwdriver . "

A decade after Gascoigne first met Rosalie in New Zealand , she travelled to Canberra , and on 9 January 1943 they were married . Their first son , Martin , was born in November , and their second , Thomas , was born in 1945 .

= = Mount Stromlo = =

Following the end of the war Woolley redirected the Commonwealth Observatory from solar research towards the study of stars and galaxies . It took time to get the old and unused telescopes back up to working condition : they had to be overhauled and refurbished , and in one case rebuilt from scrap . Woolley got funding approval from the Prime Minister for construction of a 74 @-@ inch telescope , but it would not be finished for years . Gascoigne began to work in the nascent field of photoelectric photometry , using electrical devices to measure the brightness of stars more accurately than had been possible using photographic techniques . In 1951 , with equipment brought by visiting astronomer Gerald Kron from California 's Lick Observatory , he observed Cepheid variable stars , which are used to measure astronomical distances . Granted nine months of observing time on the Observatory 's Reynolds 30 @-@ inch reflector telescope ? an extraordinary opportunity ? Gascoigne , Kron and others surveyed Cepheid stars in both the Small Magellanic Cloud and , later , the Large Magellanic Cloud . They also examined the colours of star clusters in the Small Cloud . The research produced remarkable results : " it meant that the Magellanic Clouds were twice as far away as was previously thought , and if then the baseline is twice as long , the size of the universe is doubled . " It also showed that star formation in the Magellanic Clouds had occurred more recently than in the Milky Way . The results overturned the prevailing view that our galaxy and the Magellanic Clouds had evolved in parallel . Gascoigne said of his work :

When suddenly all this dropped into place , after I had been working away at it for quite a while , measuring more Cepheids in our own Galaxy and some in the Large Cloud , the feeling of triumph , the great feeling that I had really done something , was wonderful . I had joined the professional astronomers . Not only that , but I truly understood a problem , a proper problem ...

Subsequent research confirmed what were described as pioneering results , arrived at through very innovative techniques .

In 1949 , the Gascoignes ' third child , daughter Hester , was born . Like many Observatory personnel , the Gascoignes lived in a staff residence on Mount Stromlo , which was a long difficult trip away from Canberra . It was cold and lonely , particularly for Rosalie , but they enjoyed the outdoors , and the landscape inspired Rosalie 's creativity and later her artistic career . In 1960 they relocated to Deakin in suburban Canberra , and in the late 1960s they moved to another suburb , Pearce .

In 1957 , administrative responsibility for the Commonwealth Observatory was transferred from the

Australian Government 's Department of the Interior to the Australian National University (ANU) , a move supported by both its director , Richard Woolley , and Gascoigne . This was an era of significant change at Mount Stromlo : in January 1956 Woolley had resigned as director of Mount Stromlo to take up a position as Astronomer Royal and director of the Royal Observatory Greenwich . He was replaced by Bart Bok , whom Gascoigne liked and under whose directorship he played a significant role . Also in 1957 , the Mount Stromlo team began searching for a new field observatory site , due to the increased light pollution from Canberra 's growth . The search was vigorously promoted by Bok , and after an examination of 20 possible locations , two were shortlisted : Mount Bingar , near Griffith , New South Wales , and Siding Spring , near Coonabarabran , New South Wales . Gascoigne was one of a group of scientists who visited Siding Spring Mountain as part of the search , and he was one of those who advocated this choice :

We had to climb the last bit on foot ... [I was] the first astronomer to set foot on Siding Spring . I liked the look of the place right away , partly because it had such good features for astronomy ? for example , the north and west faces had sheer cliffs that were very good for draining away the cold air ? and because of its beautiful outlook , on the edge of the national park . It really is a wonderful place to be .

In 1962 , Siding Spring was selected , and by 1967 Siding Spring Observatory was fully operational

At the end of Woolley 's directorship , the 74 @-@ inch telescope he had initiated finally came online . Gascoigne , looking for a new research project and keen to use the new telescope , took up the study of globular clusters , compact groups of tens of thousands of ancient stars of similar age . With a new design of photometer , he was able to measure the exceptionally faint stars in these clusters . Gascoigne determined that the clusters in the Magellanic Clouds were both young and old , and had quite different characteristics to those in the Milky Way : this information was important for modelling the evolution of galaxies .

In 1963 , Gascoigne developed a device , known as an optical corrector plate , which allowed wide field photography on the new 40 @-@ inch telescope at Siding Spring . Such corrector plates were subsequently used on many telescopes and became known as Gascoigne correctors . During this period he was also active in supporting the establishment of a national research organisation for astronomers , the Astronomical Society of Australia . It held its first meeting in 1966 , and Gascoigne was made its first vice @-@ president .

When Bok retired as Stromlo 's director in early 1966 , Gascoigne became acting director for three months until the arrival of Bok 's replacement , American astronomer Olin J. Eggen . Eggen was an enormously productive scientist , but was " enigmatic " , " somewhat gruff " and selective in the friendships he formed . Although Eggen and Gascoigne had previously collaborated on research projects , when Eggen arrived to take up the post , he and Gascoigne did not get on well , in contrast to Gascoigne 's relationships with other astronomers . Gascoigne said of Eggen : " he made it clear I had no further part in running the Observatory . I was given no information , saw no documents , attended no meetings , and was asked for no advice , not even in optical matters . "

= = Anglo @-@ Australian Telescope = =

In 1963 Gascoigne published an article in the journal Nature titled " Towards a Southern Commonwealth Observatory " . Gascoigne was then given a significant opportunity that became the focus of the remainder of his paid academic career : to help establish one of the world 's largest optical telescopes , at Siding Spring . In the early 1960s , the Australian and British governments proposed a partnership to build a joint optical telescope facility , and Gascoigne was among the experts involved . Former Mount Stromlo director and now head of the Greenwich observatory , Richard Woolley , was prominent in supporting the project from the British end . In 1967 , the two governments formally agreed to collaborate on the construction of a large telescope , to be known as the Anglo @-@ Australian Telescope (AAT) . Given the existing infrastructure of the ANU 's Siding Spring Observatory , the site was readily agreed as the location for the AAT . Gascoigne was one of the four members of the Technical Committee established to guide the telescope 's

development . He provided leadership on the design and optics of the new telescope , and was made the chief commissioning astronomer in 1974 .

A bitter struggle over the management and operation of the new facility went on for some years . The Australian National University and the director at Stromlo , Olin Eggen , wanted the telescope to be under the control of the University while other Australian astronomers , including some at Stromlo , and the British wanted it established independently . Gascoigne 's co -@-@ authored history of the telescope states that " None of the eight fellow of the Australian Academy of Science [Gascoigne was one of them] supported the ANU " and in 1973 the debate was resolved in favour of an independent structure , the Anglo @-@ Australian Observatory . Gascoigne was one of only a few Stromlo employees who ended up working on the AAT for an extended period during its establishment phase : the Anglo @-@ Australian Observatory chose to offer short @-@ term positions rather than academic tenure like that at the ANU .

The work at Siding Spring was rewarding , but it could also be dangerous . During construction , Gascoigne constantly warned colleagues to take care on the elevated catwalks around the telescope . However , Gascoigne himself was almost killed when , while working one night around the telescope structure , he fell seven metres to the floor of the observatory , narrowly missing " a massive steel structure with long protruding bolts " . He survived , and was the first to take a photograph using the telescope , on 26 or 27 April 1974 . Gascoigne was so pleased with the quality of the optics that he said he wanted a number describing the hyperboloid shape of the mirror (1 @.@ 1717) engraved on his headstone . The site quickly became one of the world 's most important astronomical observatories and was for many years home to world @-@ leading astrophotographer David Malin . The successes of the AAT have been documented in annual reports by its Board , while a 2008 analysis of the relative impacts of astronomical observing facilities placed the AAT in the top three , coming after only the Sloan Digital Sky Survey and the W. M. Keck Observatory (both telescopes built more than two decades later) . For Gascoigne , it was " a wonderful thing to be associated with ? the high point in my life . "

It was during the period of Gascoigne 's association with the Anglo @-@ Australian telescope that he and his wife commissioned architect Theo Bischoff to design a house for them , which was planned and constructed between 1967 and 1969 . Bischoff , who was responsible for numerous Canberra residences , designed a modernist home to the detailed , if contrasting , instructions from his client couple , who in turn were heavily influenced by their negative experiences with Canberra housing , particularly their home on Mount Stromlo . Based on Gascoigne 's interest in optics , and Rosalie 's strong visual sense as an artist , the resulting design " was based on maximising the potential for observation " , creating " a form of habitable optical instrument " .

= = Artist 's assistant and historian = =

By the middle of 1975 , the Anglo @-@ Australian Telescope was fully operational , and Gascoigne was offered a job with the new telescope , based in Sydney . By this time his wife was emerging as a significant artist who relied on the landscapes and materials around their home for her inspiration . Gascoigne decided to return to the Australian National University in Canberra ; he retired a few years later in 1980 , and supported Rosalie in her work .

Gascoigne completed a course in welding and became his wife 's assistant , making " her assemblies of ' found objects ' safer and more durable " . He also catalogued and photographed her work , describing himself as " artist 's handyman , cook , and archivist . " Rosalie Gascoigne 's artistic career came late ? she was almost 60 when she held her first solo shows ? and her rise was " meteoric " ; five public galleries purchased works from her early exhibitions . She died in 1999 . In 2008 , Gascoigne donated Rosalie 's final major work , a ten @-@ panel installation titled Earth (1999) , to the National Gallery of Australia .

As well as being an astronomer , Gascoigne was a scholar of the history of Australian astronomy . He wrote histories of major telescopes , such as the Melbourne Telescope and the AAT . He wrote biographies for the Australian Dictionary of Biography , including those of the first trained astronomer at Canberra 's Mount Stromlo Observatory , William Bolton Rimmer , and pioneering

Australian astronomer Robert Ellery .

Gascoigne died on 25 March 2010 . A memorial service was held at St John 's Church in Reid , Canberra , on 12 April .

= = Recognition and legacy = =

Gascoigne was widely respected for his astronomical skills and his generous nature . English astronomer and writer Sir Fred Hoyle , at one time the Chairman of the AAT , gave Gascoigne considerable credit for the telescope 's success , and astronomer Harry Minnett likewise credited him , together with Roderick Oliver Redman , for the telescope 's extremely good optics . Former AAT director Russell Cannon regarded Gascoigne as a world leader in his field , as well as being " a delightful man " . Historian of astronomy Ragbir Bhathal considered Gascoigne to have been an important figure in Australian astronomy , responsible for substantial advances in the field .

In 1966 , Gascoigne was elected a fellow of the Australian Academy of Science . He was made an Honorary Fellow of the Astronomical Society of Australia ; became the first person to be elected as an Honorary Member of the Optical Society of Australia ; and was the first Australian to be elected as an Associate of the Royal Astronomical Society . On 11 June 1996 , Gascoigne was made an Officer of the Order of Australia for his contributions to astronomy and to the AAT . On 1 January 2001 , he was awarded the Centenary Medal , for his service to society and to astronomy .

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