

Preface

In the mid-twentieth century, radio astronomers revolutionised our view of the universe by observing new objects, ones that had not been previously known by optical astronomers. Even the sun is vastly different when studied by the radio astronomer, yielding clues about the outer regions of the sun that are difficult for the optical astronomer to observe. Ruby Payne-Scott was one of the first radio astronomers in Australia and the first female radio astronomer in the world. Due to her brief period of, only 6 years, employment as an astronomer, her contributions largely had been forgotten by the end of the twentieth century. In addition, she was an independent-minded, sometimes, confrontational woman, even suspected of being a communist in an era when communism was a precarious ideology for an Australian to embrace. Even so, the reader may wonder why the life of Ruby Payne-Scott is of significance to us almost 60 years after her retirement in 1951.

By studying the life and career of Ruby Payne-Scott, we gain a rare insight into the intersection between a woman, who was extremely passionate about research in the new field of radio astronomy, and societal pressures that caused her to leave the field and not realise her full potential as a research scientist. What great talent did this one Australian woman have and why was she only able to devote herself to it for about 10 years of her life? And why, for decades afterward, were her discoveries and work within radio astronomy partially erased from public knowledge?

I first heard about Ruby Payne-Scott when I was a young staff member at the Radiophysics Laboratory (RPL) in Sydney, in the decade starting in 1967. I had arrived with my wife from Berkeley, California, where I had completed a Ph.D. in radio astronomy. While using the Parkes radio telescope, John Bolton, the director, told me that I should have been there at RPL 20 years earlier, when the brightest staff scientist was a woman, Ruby Payne-Scott. He claimed she was the first person in Australia to recognise the importance of radio “confusion”. I had never before heard of this great female scientist, and I admit I was not suddenly struck by the need to find out everything I could about Ruby Payne-Scott. Bolton’s comment, however, adhered to my memory and resurfaced years later as I began hearing stories from the aging founders of the field about the early days of radio astronomy. Truly, the irony of his admiration in light of the tales of antipathy and confrontation

between Payne-Scott and Bolton, which I heard many years later, was the catalyst for piecing together her story.

Even as a child, I always enjoyed reading biographies. It is a format for understanding the history of the world that I find accessible and meaningful. There are numerous histories of optical astronomy, yet understandably few about its younger cousin, radio astronomy. Radio astronomy is a relatively young branch of science after all, as will be explained in this book; it was born from radar research performed during the Second World War. My colleague, Woody Sullivan, has in fact published a few histories of early radio astronomy, and many conversations with him over the years piqued my curiosity about the instruments and the people who engineered them in the creation of the innovative new field. I also began to feel the pull of the historian and I felt that only someone who was a radio astronomer could effectively portray the unacknowledged achievements of someone about whom I had heard so much. The more I spoke with the contemporaries of Ruby Payne-Scott, such as Harry Minnett, Don Yablsley, Chris Christiansen, Bernie Mills, John Murray and Dick McGee, the more I felt that hers was a great story and an important one that needed to be told.

Starting in 1997, while visiting my daughter who was spending a half year at the University of Sydney, I started to collect information about her life, from both senior colleagues who had known her as well as the vast archival materials from the 1940s and 1950s in the National Archives of Australia. Of course many of these conversations occurred 45 plus years after the relevant events; frequent contradictions in recollections of the same events were often observed. The collections from the archives can be used in many cases to resolve these contradictions. In many cases these contemporary records from 1945–1955 can even be utilised to correct vague or even flawed memories.

A crucial element in efforts to recreate her life was meeting three key individuals: her children, Peter and Fiona Hall and her close friend Elizabeth Hall. I could never have predicted that, thanks to these friends, my quest for the past would become a bit of an obsession that constantly brought surprising discoveries. The more I learned, the more intriguing the mystery of her life became. In the end, this has been a joyful journey as I have unravelled the life of this remarkable scientist, woman and mother.

Ruby Payne-Scott's story is an inspiring saga of achievement and adversity. Fortunately, her successful career and life have now been recognised. A main motivation for this book was to make even more people aware of her important contributions to the field of radio astronomy and to further the quest for equality in the workplace.

This book is based on the 2009 Springer (Astronomy and Space Science Libraries series) *Under the Radar, The First Woman in Radio Astronomy: Ruby Payne-Scott* by W. M. Goss and Richard X. McGee. This volume is intended for a non-specialist reader. I do, however, hope that the astronomer reader will also enjoy this book. I have simplified the scientific text considerably; the detailed, technical appendices are not included. An additional chapter has been added at the beginning of the book to provide the reader with a basic background of both solar physics and radio telescopes.

Making Waves

The Story of Ruby Payne-Scott: Australian Pioneer Radio
Astronomer

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