

Planning and Construction of the Parkes Dish

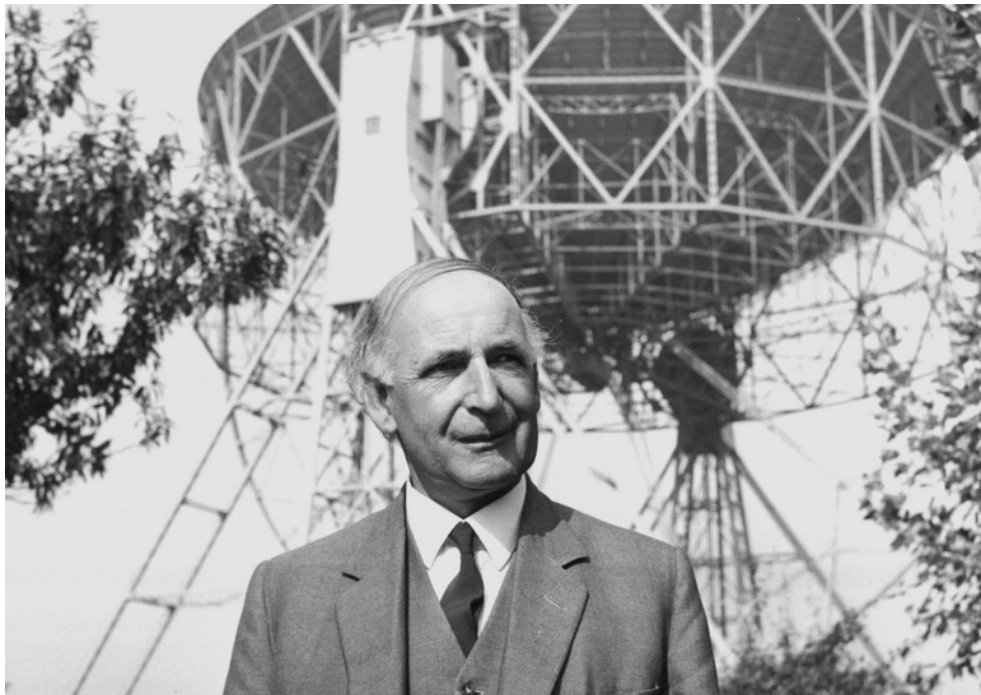
A Brief Snapshot

Peter Robertson

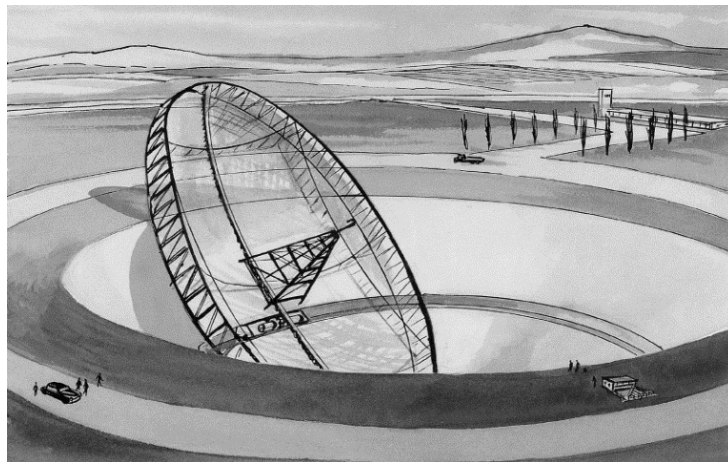
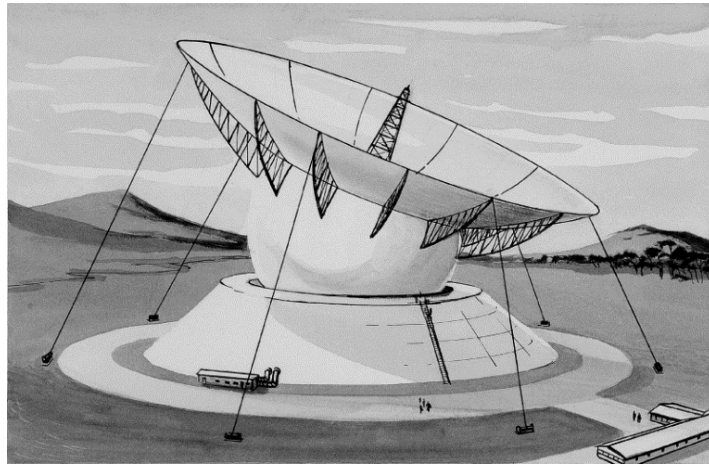
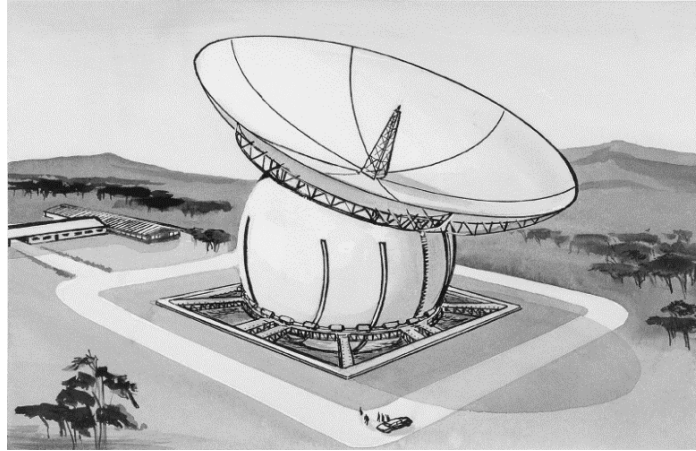
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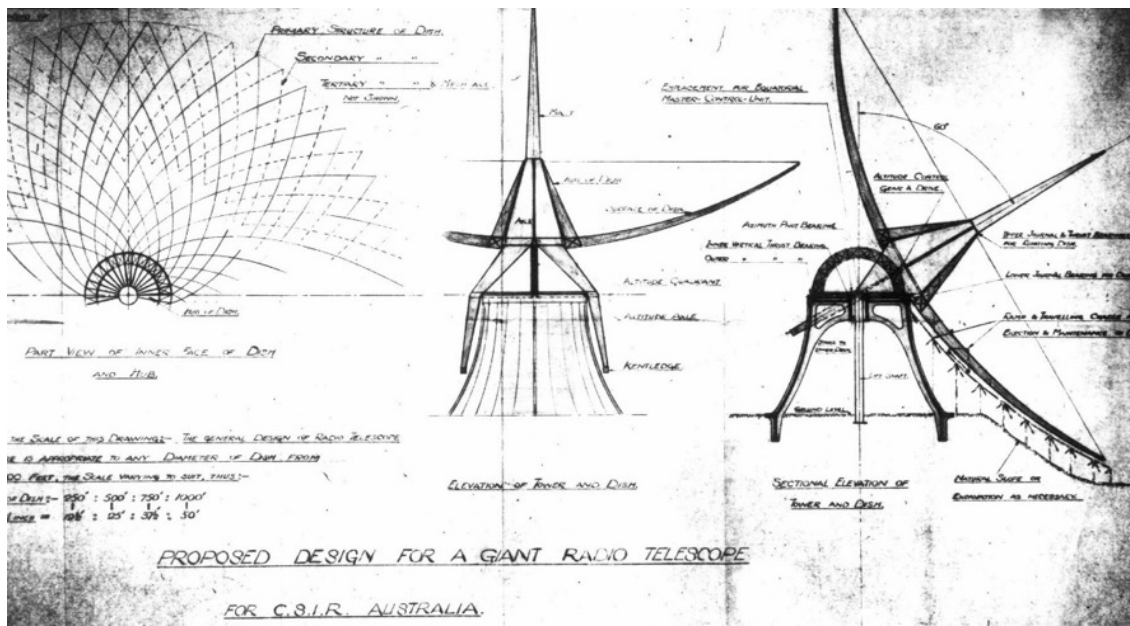
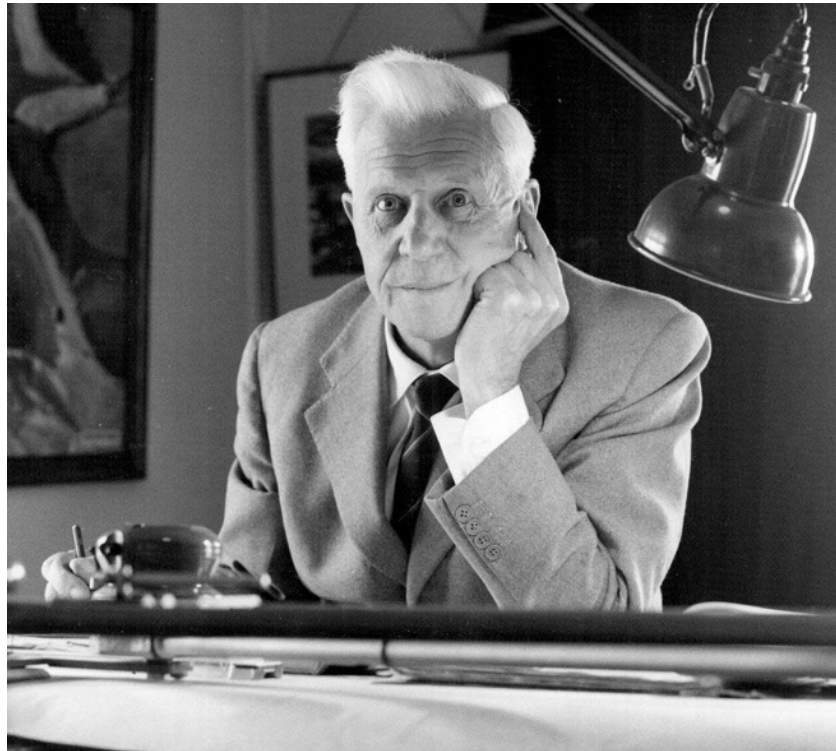
The driving force behind the creation of the Parkes dish was Edward ('Taffy') Bowen. He was born in Wales and educated at King's College London. Taffy then joined a group secretly working on the development of radar and is credited with building the first airborne radar system. In 1946 Taffy was appointed Chief of CSIRO's Radiophysics Lab in Sydney, a position he held until his retirement in 1971



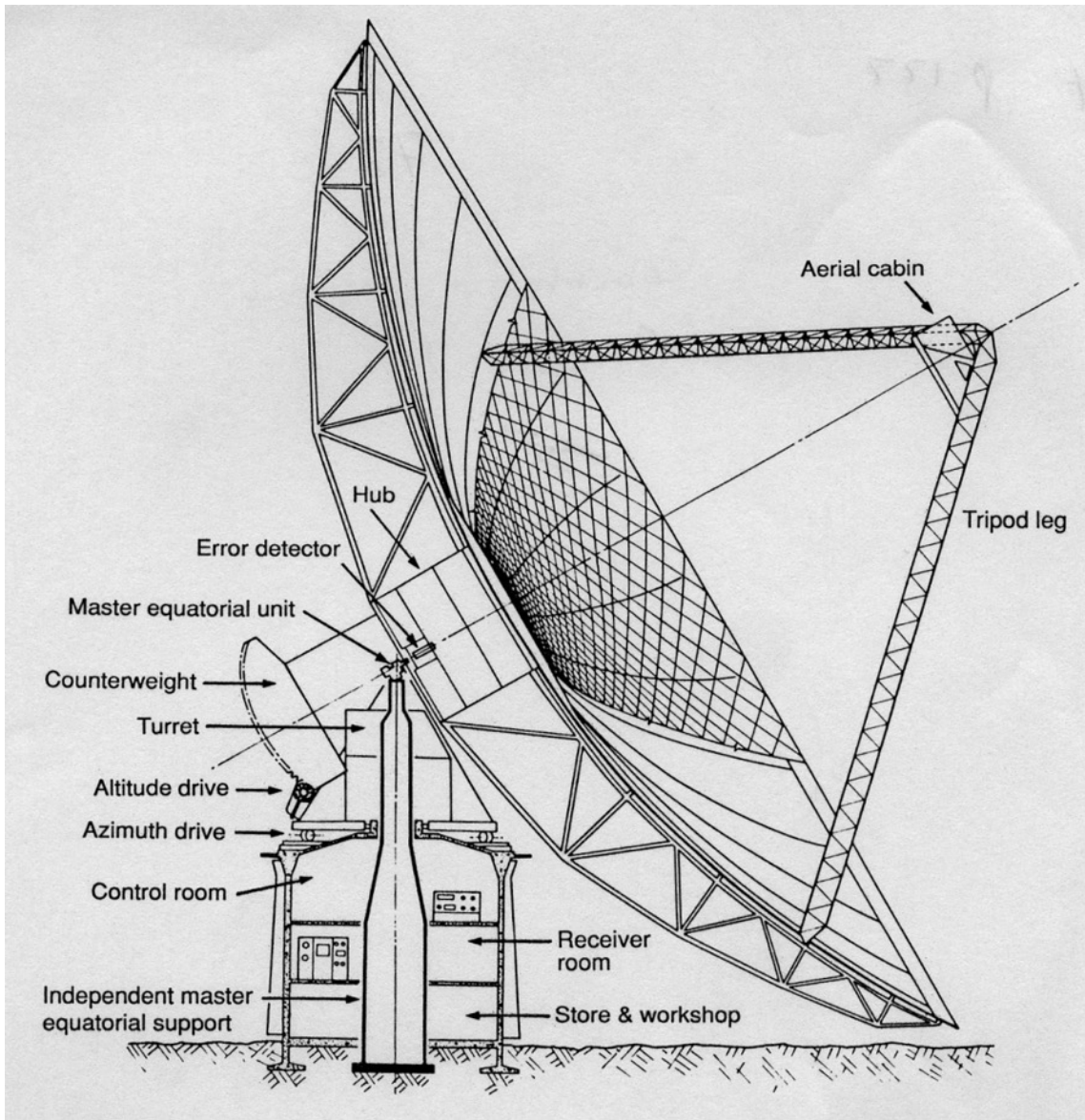
In the late 1940s and early 1950s the Radiophysics Lab led the world in the new field of radio astronomy. In 1952 the Jodrell Bank group in England led by Bernard Lovell announced plans to build a giant radio telescope. Bowen believed that to maintain its leadership Australia would need to build a dish that was at least the equal of the Jodrell instrument [JODRELL BANK OBSERVATORY]



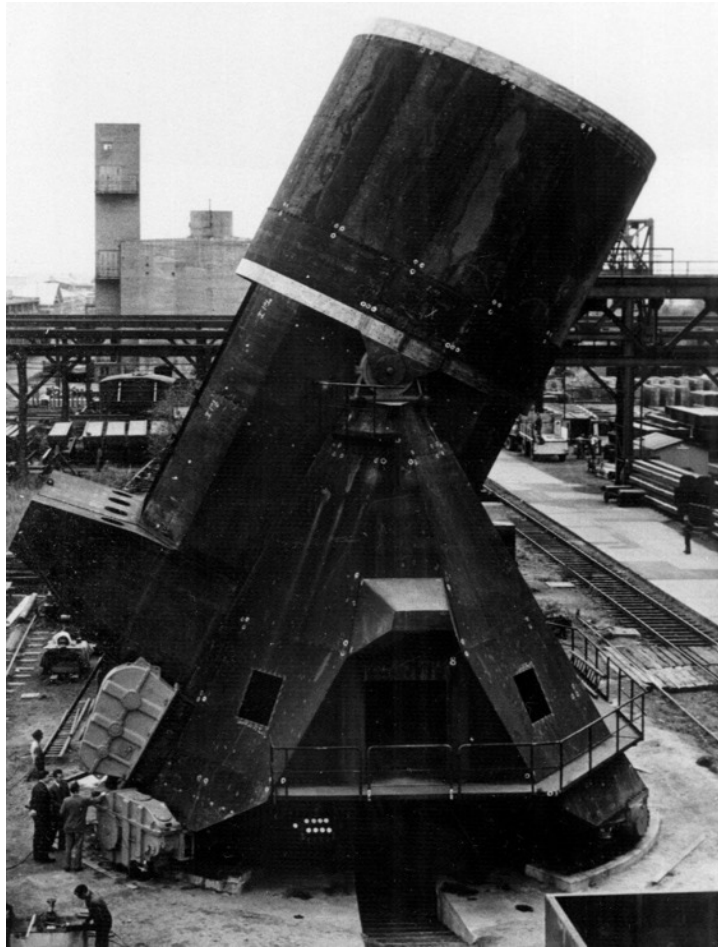
Through his wartime contacts, Taffy Bowen was able to arrange substantial grants to fund the telescope project from the American Carnegie and Rockefeller Foundations. During 1954, engineering firms in Australia and overseas were invited to submit design concepts for a giant dish



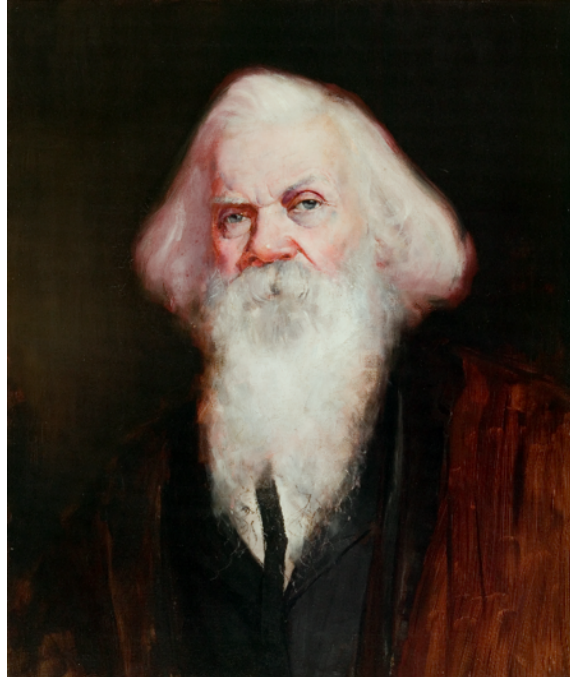
The breakthrough came when the British engineer Barnes Wallis agreed to carry out an initial design study. Wallis was famous for inventing the bouncing bomb that destroyed a number of German dams during the war. He introduced several ideas such as how the dish could maintain a rigid parabolic shape and how it could be pointed with great accuracy



The detailed design of the Parkes Telescope was carried out by the London engineering firm of Freeman Fox. The firm's co-founder Sir Ralph Freeman had designed the Sydney Harbour Bridge. Based on the funds available, Freeman Fox decided on a dish diameter of 210 ft (64 m). Although this was less than the 250 ft Jodrell Bank giant, the greater surface and pointing accuracies made Parkes the superior telescope



After an international tender, the German firm of Maschinenfabrik Augsburg Nurnburg (MAN) was appointed prime contractor for the construction. Most of the telescope's components – such as the hub and turret (above) and the azimuth roller track (below) – were cast at MAN's plant near Frankfurt and then shipped to Sydney



A portrait of Sir Henry Parkes painted in 1892 by the celebrated artist Tom Roberts. Parkes is recognised as the father of Australian federation. In 1873 he had a gold mining town named after him, and in 1961 a radio telescope [ART GALLERY OF SOUTH AUSTRALIA]



Taffy Bowen drives in a stake to mark the site of the telescope, while Lindsay McCready looks on. Well, not quite, it was a staged photo shoot. The real site was some distance away where earthworks had begun several weeks earlier. CSIRO bought the 170 hectare site – located about 20 km north of the Parkes township – from the sheep farmer Austie Helm



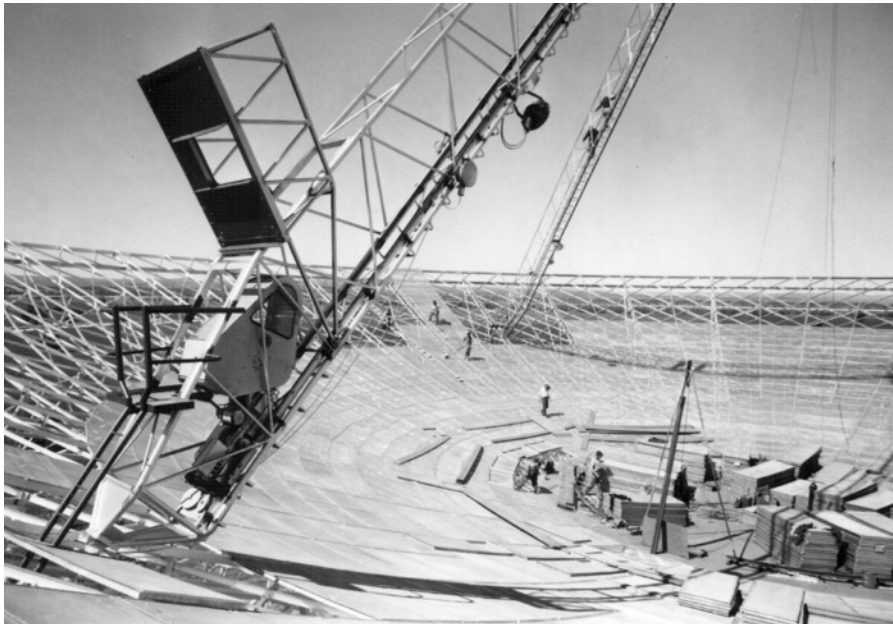
Laying the foundations for the three-storey tower. The road leads north to the site of the village area



At times up to fifty construction workers were on site. MAN imported a specialist group from Germany, while most of the tradesmen were recruited from the Parkes area or brought from Sydney



(left) The hub and pre-assembled rib sections. A thick layer of sand litters the site, used to sandblast the ribs prior to painting. (right) Lifting the first rib section into place. Each section was bolted to the hub and then to its neighbouring sections with a series of girders



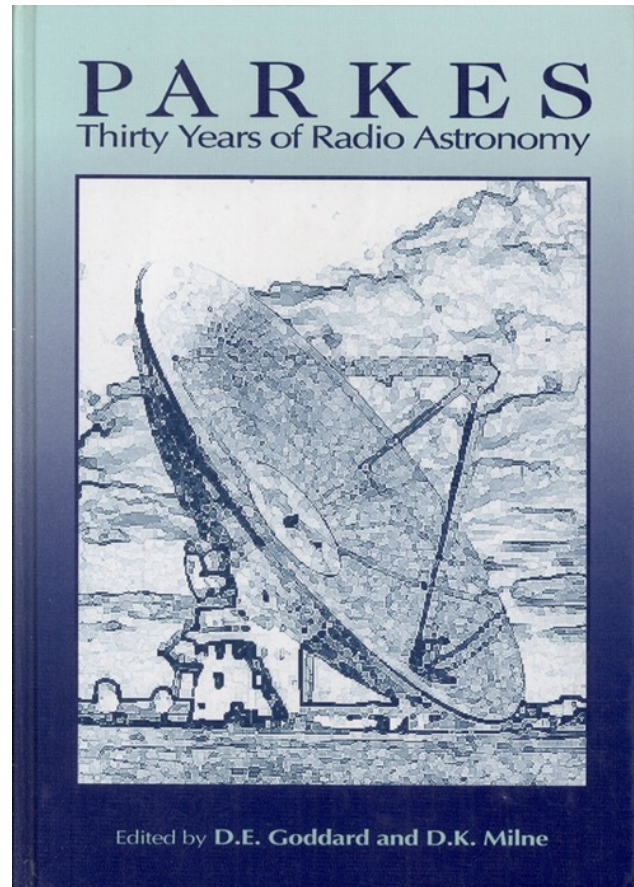
Over one thousand mesh panels were fitted to form the reflecting surface of the dish. A specialised group recruited for the task included most of the Parkes rugby team



Four key players: (above) Harry Minnett was seconded to Freeman Fox in London to work on the design of the Parkes dish. Later, Harry served as Chief of the Radiophysics Lab (1978–81). (below, from left) The inaugural director of the Parkes dish, John Bolton; the Freeman Fox project manager, Mike Jeffery; and Taffy Bowen



The Parkes Observatory was inaugurated on 31 October 1961. CSIRO Chairman Fred White greeted the Governor-General Lord De L'Isle. The Duke of Edinburgh, Prince Philip, declined an invitation to open the Observatory in person, and so De L'Isle read a congratulatory note on Philip's behalf. A very strong and gusty wind drowned out most of the speeches



A conference celebrating the 30th birthday of the Parkes Observatory was held in November 1991 and the conference papers were published in a CSIRO book in 1994. The paper by John Bolton describing the role played by Parkes in the Apollo 11 moonwalk provided the inspiration for the highly successful film *The Dish*, first screened in 2000. [CSIRO PUBLISHING]

TO THE PARKES DISH

HAPPY SIXTIETH BIRTHDAY!

1961 – 2021



My thanks to the CSIRO Radio Astronomy Image Archive for all images, except where indicated [PR]