

Dover Heights Radio Astronomy Field Station



Radar equipment used during World War II - 1952

Dover Heights was the site of early Australian experiments in radioastronomy. On the cliffs of what is now Rodney Reserve, the C.S.I.R.O. operated the Dover Heights Radio Astronomy Field Station from the end of World War II until 1954. The five hectares had been a military coastal defence radar post.

A radio telescope, called a "Sea Interferometer", was formed by combining Yagi arrays with the surface of the sea. Using this Interferometer, scientists J.G. Bolton and G.J. Stanley began investigations which led to our current ideas about how the sun works and how it affects the earth's atmosphere. Disturbances from the sunspots are the source of particle streams ejected by the sun which reach the earth's atmosphere some 26 hours later and are responsible for magnetic storms and major disturbances in the ionosphere.

The Sea Interferometer was also used by Bolton and Stanley to study radio sources (emissions of radiowaves which are invisible in optical telescopes). The first radio source they identified with something that could be seen was in the constellation Taurus, and named Taurus A, which is in fact the Crab Nebula, a supernova remnant (the remains of an exploding star) first reported by Chinese astronomers in the year 1054.

Also identified were two radio sources, Centaurus A and Virgo A, which eventually proved to be extra galactic (galaxies well beyond our own Milky Way Galaxy). Centaurus A is surrounded by a strange dark band of dust, gas and stars, estimated to be from 7 to 16 million light-years away, and is the third strongest radio source in the sky. Virgo A is a giant elliptical galaxy, the most massive galaxy known (with a mass of about 300 billion times that of the Sun) and lies about 50 million light-years away, with a peculiar and now famous jet shooting from it. The true significance of the discovery of these radio sources was that they were the first examples of a new kind of astronomical object, the radio galaxy, which had quite unexpected characteristics.

As a lunch hour hobby, Bolton and his colleagues hollowed a hole out of the Dover Heights sandy soil, to a depth of 9 feet. It was surfaced with concrete, and chicken wire made a reflecting "mirror", creating an 80 foot diameter paraboloidal radio telescope, with a 40 foot focal length. With this device Bolton and R.X. McGee discovered in 1953, a strong radio source, Sagittarius A, believed to be the galactic nucleus (the centre of our Milky Way Galaxy). Tracking down the "true" galactic centre continues and the current thinking is that it is at a position called Sgr A*, which lies within the larger area of Sagittarius A.

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