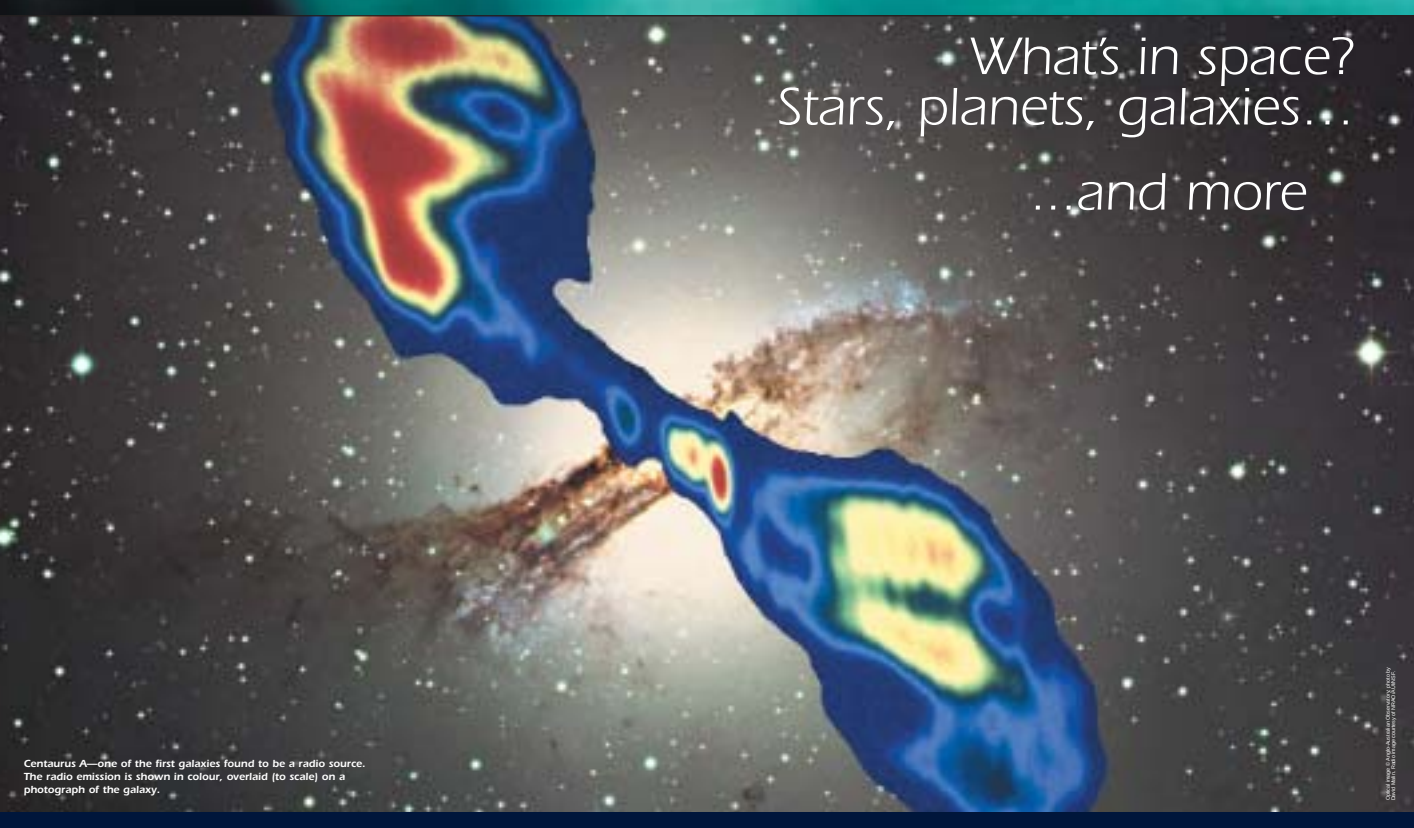
Probing new worlds



What's in space?
Stars, planets, galaxies...
...and more

Centaurus A—one of the first galaxies found to be a radio source. The radio emission is shown in colour, overlaid (to scale) on a photograph of the galaxy.

For millennia we explored the Universe only by what we can see—visible light. In the twentieth century astronomers started using other tools such as UV radiation, X-rays and ***radio waves****. They uncovered an invisible world.*

EUREKA!

Dover Heights field station, Sydney: one of the antennas that was turned to the sky to look for radio waves. A long exposure showing star trails.

Intrigued by stories of radio signals seemingly coming from outer space, a team of Australian engineers turned their radio antennas to the sky.

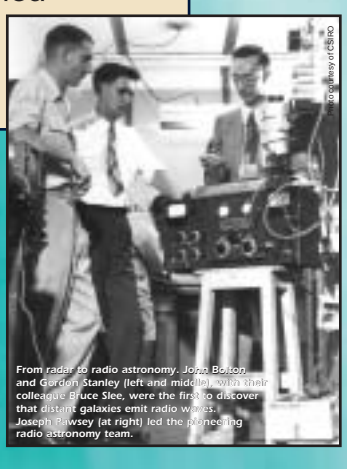
Using converted radar equipment from the Second World War, John Bolton, Gordon Stanley and Bruce Slee discovered the first **extragalactic radio sources**. Three—Virgo A, Centaurus A and Cygnus A—turned out to be galaxies millions of light-years away.

WHAT NEXT?

Australia is a world leader in **radio astronomy**.

We are one of several countries bidding to host the world's 'next generation' radio telescope—the Square Kilometre Array (SKA). It will be 100 times more sensitive than the current best instruments and will consist of a number of telescopes with a combined collecting area of one square kilometre.

An artist's impression of one possible version of the SKA.



From radar to radio astronomy. John Bolton and Gordon Stanley (left and middle), with their colleague Bruce Slee, were the first to discover that distant galaxies emit radio waves. Joseph Pawsey (at right) led the pioneering radio astronomy team.

This revolutionised space exploration. By looking at the radio waves emitted by objects in space, we can probe deeper and reveal the very distant universe.

It is difficult to comprehend the emotional impact of an observation which took us from a partially explicable solar system and galactic radio emission phenomena into the realms of phenomena with inexplicably high energy outputs, no matter where they were located. Neither of us ever approached such an emotional high again in our work.

Gordon Stanley, a member of the team that discovered radio waves from distant galaxies.