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PRIME MINISTER

CHECK AGAINST DELIVERY

EMBARGOED UNTIL DELIVERY

SPEECH BY THE PRIME MINISTER
OPENING OF THE AUSTRALIA TELESCOPE
CULGOORA - 2 SEPTEMBER 1988

Neville Wran,
Dr Bob Frater,
Barry Jones,
Distinguished international and Australian guests,
Ladies and gentlemen,

Australia has always, from before its inception as a European settlement, been associated with the attempts of mankind to explore and to understand the universe.

Aboriginal lore included many stories about the formation and behaviour of the celestial bodies.

Captain Cook's voyages of exploration which led to the European discovery of the eastern coast of Australia had as one of their aims the attempt to observe in the South Pacific the transit of Venus.

And it is particularly fitting to recall, in our Bicentennial year, that on board the First Fleet was one Lieutenant William Dawes who had, within the first months of the settlement of Port Jackson, commenced construction of an astronomical observatory on the point which today bears his name.

In more recent years, with the birth of radio astronomy as a field of inquiry, Australian scientists have always been at the forefront of this research.

Today we are inaugurating a new era in Australian scientific research - the major Bicentennial science project - which will ensure Australia remains at the forefront of radio astronomy.

The CSIRO's Division of Radiophysics was set up during the Second World War to develop radar equipment for use in the Pacific. Following the war the scientists set out to investigate what were then mysterious radio emissions originating from somewhere "out there" in the universe.

In those post-war years before quasars and pulsars were even thought of, it was not surprisingly believed the Sun was the source of these radio emissions - a conclusion which incidentally allowed researchers to work civilised office hours! It was what you could perhaps call the first sunrise industry.

As scientists gradually learned more about cosmic radio sources, Australians were among the pioneers. This was recognised by the decision to hold the General Assembly of the International Union of Radio Science in Australia in 1952. Australians were also leading the way in the development and application of new equipment to make the increasingly sophisticated astronomical observations that were required.

When the Parkes Telescope was being planned in the 1950s it was intended as, and indeed it became, a world class research tool. It is unfortunate however that during the planning, the decision was taken not to build it in Australia. Instead, the 64 metre antenna and most of the equipment were supplied by West German firms, and most of the mechanical support systems were supplied by British firms.

The Parkes Telescope went on to be involved in major discoveries and is certainly a proud symbol of the high quality of Australian astronomical research.

But my point is that the benefits of Parkes to Australia were largely limited to the research scientists who used it. It was imported technology and imported engineering - and this in a field of research where Australia had established itself as a world leader.

But where Australians had to rely on Europeans to build Parkes, this time, with the Australia Telescope, we've relied on ourselves.

The Australia Telescope is the state of the art in astronomical technology. It is one of the best telescopes in the world. It is one which will keep Australia at the forefront of radio astronomy research. And it is conceived, designed and manufactured in Australia.

Right from the start of the Australia Telescope project, as you have heard from Dr Frater, it was decided that Australian firms should be largely responsible for building the Telescope.

In fact eighty per cent of the content of the Australia Telescope is Australian. This has helped Australian industry develop the design and production skills we will need if we are to be competitive in our own local market, as well as on the world market, in one of the most important and potentially one of the most productive of high technology industries, the space and telecommunications industry.

With this \$50 million Telescope, Australians have proven their skills and their capacities in key areas of space and telecommunications research and development.

I note with considerable pride the fact that since their work on the Telescope many of the Australian companies involved have developed capabilities enabling them to pursue export markets for sophisticated manufactures. The Australia Telescope project has stimulated a substantial increase in collaboration between CSIRO and industry on significant new technological development for export.

We are all the beneficiaries when new manufacturing and export capabilities are developed, because each signals a step towards the diversification of our economy and a step away from our vulnerable reliance on a limited range of primary commodities.

As Prime Minister, I want to express my pride in this Telescope as a world class achievement and my gratitude to all those who have been responsible for building it.

It's hard for a layman to even conceive how such complex instruments can come into being, let alone understand their workings. But let me tell you some of the things that have impressed me.

Each of the six 22 metre diameter antennae which make up this network is relatively small; but thanks to fibre optic connections they together form a Compact Array which will simulate a very much larger telescope 6 kilometres in diameter.

When these antennae at Culgoora are supported by a similar antenna still being built at Siding Spring, and the grand old radio telescope at Parkes, the whole network will have the power of a single telescope 300 kilometres in diameter.

Ultimately it will be able to work in concert with other telescopes in Australia, overseas and - who knows - in orbit around the planet, to form vast sensors capable of receiving radio information from the absolute outer reaches of the universe helping us toward an understanding of our cosmic environment.

I am told that the Compact Array has the capacity to read a telephone directory from a distance of 200 metres - and when the Culgoora antennae are linked in with Siding Spring and Parkes, that telephone book will be legible from 10 kilometres away!

- although using the Telescope for such a purpose would seem to be a rather wasteful modern day equivalent of using a sledge hammer to crack a walnut.

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On the subject of orbiting telescopes, I recall that when I was in Moscow late last year I signed with General Secretary Gorbachev a number of agreements for future cooperation, including one on Scientific collaboration. Within the framework of that agreement, the Soviet Union has agreed to CSIRO providing part of the Soviet RADIOASTRON satellite, an orbiting radioastronomy satellite project with which a number of other Western countries are involved.

These Culgoora antennae had to be mobile, so they have thirty five observation stations along a rail track. And to work properly, they had to be placed precisely - and they are in fact placed on their stations with an accuracy of five millimetres.

The 4,000 correlator micro-chips which combine the signals from the various dishes have to be capable of intensely accurate, speedy and frequent calculations. These chips can in fact perform one thousand million multiplication tasks per second which, as Barry Jones told Parliament this week, is even faster than the Treasurer can compute. And that's fast.

The capability developed here has led on to the development and production of chips with major benefits for Australian companies in medical and defence industries.

Ladies and gentlemen,

For all these reasons the Australia Telescope is a most appropriate achievement with which to celebrate our Bicentenary.

It is a project whose benefits will be felt for many years into Australia's third century.

I pay tribute to those many individuals - those in CSIRO led by Dr Frater, those in academia and those in private industry - whose hard work and vision has created this massive project, on time and within budget. I acknowledge with pride that a project such as this is one that only Governments can initiate and bring to completion, and I pay tribute to the previous Government for its decision in 1982, which we confirmed on coming to office in 1983, to go ahead with the Australia Telescope. In saying that I do not, in any way remove or minimise the burden of responsibility the Australian private sector must bear to engage in R and D work of its own.

The discoveries that will flow from this Telescope are, literally, unimaginable. Researchers from all around the world will be able to probe the centre of the galaxy, the birth of stars in the Milky Way, the nature of supernovae and the Magellanic Clouds - all of which are vital questions in astronomy and all of which can only be studied with precision from the Southern Hemisphere.

It is with the confident expectation that this Telescope will speedily move to, and will long remain at, the forefront of world astronomical research, that I have pleasure in declaring the Australia Telescope open.

{unveil plaque}

{Dr Keith Boardman will invite you to press button to activate antenna}
