Launceston

Tasmanian radio telescopes are exploring space

By ALAN MERRIDEW

CURRENT research in Tasmania is part of a scientific "attack" on the structure of our galaxy.

Universi y of Tasmania physicists and a world famous American radio astronomer are using two huge and several smaller radio telescopes in Southern Tasmania.

The work is un que.

By the end of next year the scientists will have three maps of the heavens — "bright" maps, unlike the night sky we see as pin-points of light against dark.

Each map will be based on a different radio wavelength.

How does one get a map of the heavens using radio waves?

The scientists explain it this way. Celestial bodies radiate radio waves. So do the masses of 'space" between the s'ars.

People see light waves, and hence the stars, but they don't see the radio waves.

Graphs

The radio telescopes in Tasmania concentrate on the low frequency waves from inter-stellar space.

If the resultant map shows a "dark" spot it usually means that there is a big mass of gas.

The American, Dr. G. Reber, said: "You can be assured that these waves are not propagated by intelligent beings."

The radio telescopes detect the radio waves and record them on moving graphs. The graphs are analysed, and scaled for facts the scientists are looking for to make their maps.

The University of Tasmania operates one of the big telescopes — 4000ft by 1000ft.—and Dr. Reber the other — a circular telescope with an area of about half a square mile.

They are networks of poles and wires and are not movable. Dr. Reber's telescope, at Bothwell, contains about 50 miles of wire.

A private research foundation, the Research Corporation of New York, is sponsoring him. Dr. Reber has been in Tasmania periodically for the past nine years.

The university's monster telescope is at Penna, near Sorell and its others are at Llanherne Airport and Richmond

Medal

The Professor of Physics (Prof. G. R. A. Ellis) said the programme was based on low-frequency radio waves.

"This is essentially the last frontier in radio astronomy," he said.

"It is being tackled from Tasmania because this is a favourable location for receiving these waves.

"In fact, we have a monopoly in low-frequency work. The only other work using low-frequency waves is done with satellites and rockets and that is now at the stage we reached in 1956.

"Think how long it will be before an antenna nearly a mile long can be orbited!"

Professor Ellis has been awarded the Thomas Ranken Lyle medal of the Australian Academy of Science, Canberra, for his work in the field.

The Penna telescope is now being returned to receive 9.6 megacycle waves. For the past two years it has sorted out 4.7 m.c. waves.

Since 1948 Australians have pioneered some of the leading types of radio telescopes now in use internationally.

Their most recent achievement is the 210ft. diameter steerable parabolic metal "dish" at Parkes (N.S.W.).

The Llanherne installation has six different types of receivers for low and very low frequency waves.

They are being used to investigate, among other things, radio waves generated about 20,000-30,000 miles out in the earth's magnetic field.

Another aspect is radio waves from the planet Jupiter.

"We claim to be able to determine the density of Jupiter's atmosphere up to 150,000 miles from the planet," Prof. Ellis said.

What is the purpose of this research?

"Primarily it is a study of the galaxy as pure astronomy," Prof. Ellis said.

Intellect

"However the fundamental processes involved in the generation of these waves have a wide application in what we call plasma physics.

"Included in plasma physics are therino - nuclear reactions, but it would be wrong to say that these are our main interest."

Dr. Reber said: "Like astronomy, this work doesn't have any 'use'.

"It is more an appeal to the intellect than anything else.

"Radio telescopes enable us to find out more than we could with optical telescopes. In this way we're learning more about the building blocks of nature."