The Australian experimental data is still being analysed. When the tapes were played back initially there was indication that the sources had all been resolved and it may be possible that the quasars being examined are too large to be measured over such a long baseline.

Dr. J. L. Locke, who with N. W. Broten, Dr. T. H. Legg, Dr. R. W. Clarke and J. R. Fletcher, form the NRC portion of the team, said emphasis is now shifting in part to other areas of research.

The theory of continental drift holds that the floors of the oceans behave like giant conveyor belts, transporting the continents on their backs slowly but inexorably from place to place. Thus the distance between two geographic points on diverging continents is constantly changing, even if the rate is as little as five centimeters or less per year.

Dr. Locke says the recent installation of hydrogen maser oscillators at ARO and Penticton will increase the accuracy of their atomic clocks.

"We plan a long-term program around the fact that you can turn our quasar experiment around so that the observations will be used to determine information about length of the baseline. This approach has got the geodicists excited because it promises a means of determining a long distance to high accuracy and this is a very difficult job for any surveyor to do."

Initial plans call for determining the relative position of telescopes at ARO and Penticton.

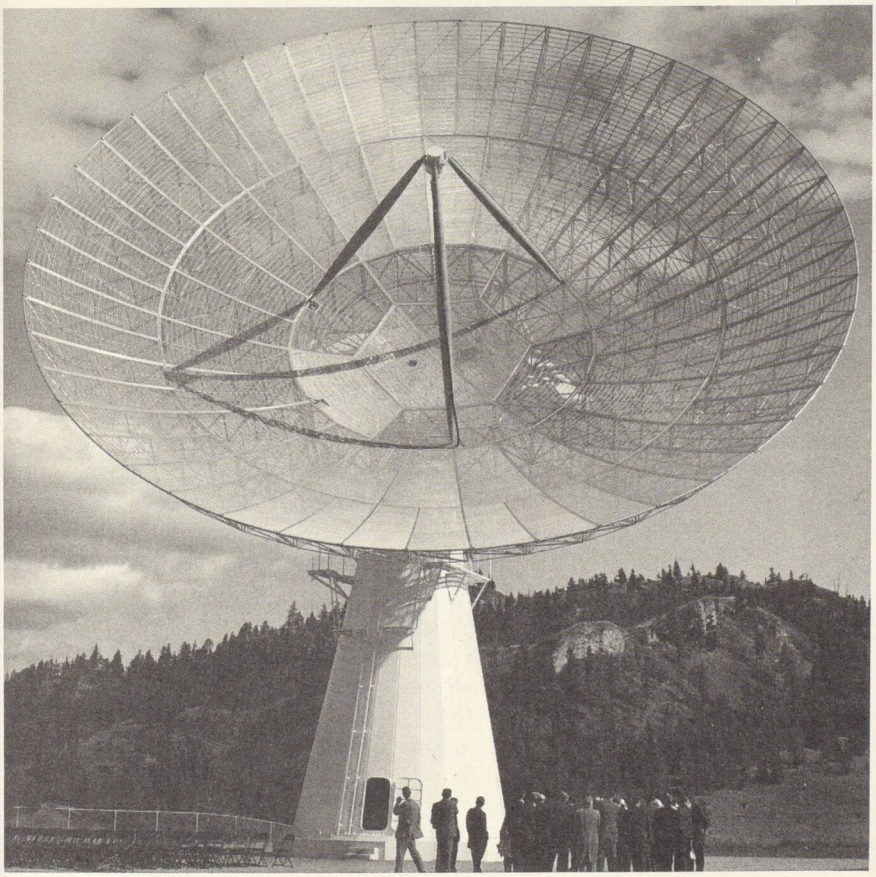
"Later, should we be able to determine the distance with high accuracy between, say the Jodrell Bank telescope and ARO, this might be the means over a period of years of determining the rate of continental drift," Dr. Locke says.

The future plans of the Canadian group also point towards the use of the telescopes to perform a classic experiment in physics. Einstein's Theory of Relativity predicts that when the radiation from a source, either light or radio, passes close to a massive object, such as the sun, it will be bent.

Until now the only way to prove or disprove this prediction was to observe the stars optically during a solar eclipse when the stars can be seen during the daytime. The position of a star seen close to the sun is measured in relation to stars that are further away. Six months later when the sun has moved out of that field of stars, observations are again taken in hopes of detecting a small difference in the apparent position of the star.

This has been very difficult to do since the sky is not usually sufficiently dark and there are not normally enough stars.

"Using radio techniques we should be able to do measurements whenever a quasar approaches the sun and with about 100 times greater accuracy. It should be relatively simple to take a source which moves relative to the sun, e.g. day by day closer to the sun, measure its position and see if, when it is closest to the sun, its position is slightly different than when it is farther away. At least we think it should be simple, but we won't know for sure until we try it," Dr. Locke says. □



The Dominion Radio Astrophysical Observatory's 84-foot telescope at Penticton, B.C.

Le télescope de 84 pieds, de l'Observatoire du Dominion en radio et en astrophysique, à Penticton, en Colombie Britannique.