

# Canada Weekly

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- Canada's new Hawaiian aerie – Anatomy of a telescope, 1
- Public servants move to Hull, 2
- Post office honours Tom Thomson, 3
- Fewer jobs fewer immigrants, 3
- Canada's ethnic past – a collection of memorabilia, 4
- First woman appointed chairman of ILO Metal Trades Committee, 4
- News of the arts – films, music, 5
- France-Canada mixed commission, 6
- News briefs, 6

## Canada's new Hawaiian aerie – Anatomy of a telescope

The following progress report on the Canada-France-Hawaii telescope appeared in *Science Dimension*, 1977/1, a publication of the National Research Council of Canada. The new world-class instrument is now in the final stages of construction and well on target for completion by 1978.

What started as an astronomer's dream in 1972 is now barely 18 months from becoming reality. Today, the new Canada-France-Hawaii Telescope is quickly taking shape at the 4,250-m (14,000-foot) summit of Mauna Kea, an extinct volcano on the island of Hawaii. For the past several years, design and construction have been guided by a partnership between Canada, France and the State of Hawaii.

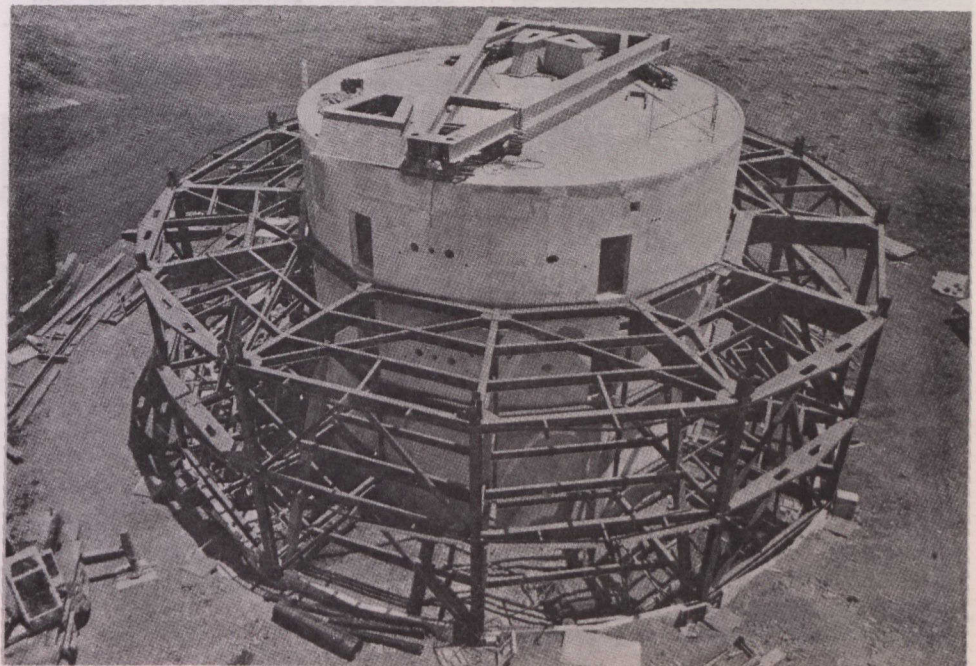
During this time, work has gone ahead in various locations round the world on the telescope's numerous working components. Later this year, the pieces will begin crossing the Pacific Ocean to the observatory site where they will all come together within the dome.

### Heart of the system

The heart of the telescope's optical system is a 144-inch (3.6-m) diameter main mirror made of Cer-Vit, a ceramic which looks rather like glass but does

not expand or contract with heat. It will give the new instrument almost twice the diameter and four times the light-collecting area of any telescope now operated by Canada or France.

As originally cast, the block of Cer-Vit for the mirror was about 60 cm (nearly two feet) thick and weighed about 13 t (14 tons). Since 1973, over a third of a ton of material has been removed during grinding and polishing at NRC's Dominion Astrophysical Observatory in Victoria, British Columbia, one of the few places in the world capable of finishing such large mirrors. Optical technicians are currently in the final "parabolizing" stages of this painstaking three-year process. After working with progressively finer grit and polishing compounds, they will hone the mirror's shiny surface to an accuracy of several millionths of a centimetre (a millionth of an inch). Such high tolerances will enable the telescope to reap maximum advantage from its chosen site in Hawaii.



A metal framework is erected around the pier.

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