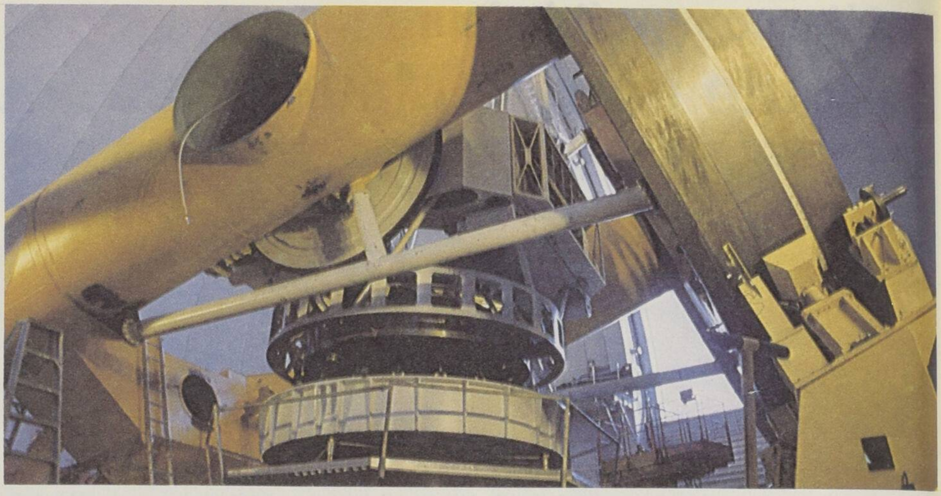
pedestal for the telescope, soon rose into the clear Hawaiian sky. Around it grew a criss-cross framework of metal beams, the rib cage for the building's white-colored steel skin which followed.

Next came the bulbous dome. The structure was designed in Vancouver and pre-fabricated in smaller sections at the workers' base camp part-way up the mountain. Then, one by one, like giant slices of orange peel, the 40 segments of the dome were sealed smoothly together over arching girders on the building. By 1976, the building and dome were complete. The working parts of the telescope would soon cross the oceans from Canada and France.

The heavy, moving parts of the telescope were being made in France. The teeth of the telescope's main driving gear were cut along the outer rim of a 77 t "horseshoe". This massive structure and all the other supporting components were carefully aligned and bolted together for testing at La Rochelle on the west coast of France. A mammoth plastic bubble was then inflated over the structure to serve as a makeshift dome. Inside, the whole assembly was connected to the Canadian-designed computer control system built to move and point the telescope. Then, tests were done on the movement of the telescope and the accuracy of the computer drive. For this dry run, a steel-and-concrete replica was used in place of the main mirror. Over several days of experiments and adjustments, the telescope performed just as engineers hoped it would. Finally, the assembly was taken apart, and the pieces put to sea for Hawaii, where they were re-assembled at the observatory.

In Victoria, B.C., optical technicians were finishing the telescope's main mirror. The grinding process had lasted one whole year. All that time, the mirror rotated slowly, like a record on a giant turntable, under a huge, moving pyrex-covered tool. Separated only by a thin layer of abrasive liquid, the two components were rubbed together until the mirror's surface gradually assumed its correct shape. Two years of polishing followed. The mirror surface was caressed with fine cosmetic materials to a glassy-smooth sheen. In the end, after exacting tests on the mirror quality, master opticians pronounced it one of the finest ever made.

Early last year, it set sail for the Hawaiian port of Kawaihae, four hours by truck from the summit of Mauna Kea. Like each part before it, the mirror made the winding, bug-like crawl up the mountain slope. Inside the dome it was coated with a bright film

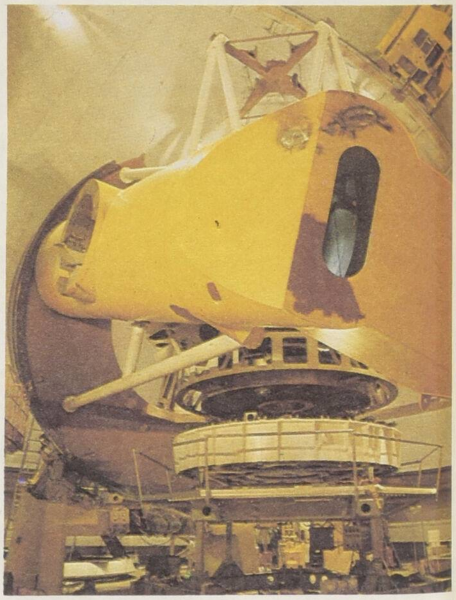


**The horseshoe and the three enormous yellow beams are bolted together to form a square. The vertical seeing part of the telescope or "tube" is cradled inside. A Canadian-made computer drive system is used to point the assembly at different parts of the sky. The "tube" is tilted forward and back by engaging a circular gear located near the round opening on the side beam. Another gear, cut along the outer rim of the horseshoe, rolls the telescope to one side or another. The entire structure, weighing some 250 t moves with the accuracy of a fine clock.** *(Photo: W.J. Cherwinski)*

**Le fer à cheval et trois énormes poutres jaunes en acier sont assemblés à angle droit et fixés à l'aide de boulons. La partie verticale du télescope, appelée "tube", est logée à l'intérieur de sa structure. Le système de commande informatisé, conçu au Canada, permet d'orienter et de pointer le télescope dans différentes directions. Le "tube" peut être incliné vers l'avant ou vers l'arrière à l'aide d'un rouage d'entraînement circulaire situé près de l'ouverture circulaire dans la poutre latérale. Un autre rouage d'entraînement, solidaire du pourtour du fer à cheval, permet au télescope de pivoter d'un côté ou d'un autre. L'ensemble, pesant environ 250 t, se déplace avec la précision d'un chronomètre.** *(Photo: W.J. Cherwinski)*

**The 77 t horseshoe, at the so-called "north end" of the telescope, is supported by several brass-covered hydrostatic pads. When it rotates, the horseshoe rides smoothly on a thin film of oil, transmitting little vibration to the mirror. On most other telescopes, the gear drive for this kind of motion is located at the opposite end. The more elaborate CFHT system allows more accurate movement.** *(Photo: W.J. Cherwinski)*

**Le fer à cheval de 77 t, situé à l' "extrémité nord" du télescope, est supporté par plusieurs patins recouverts de bronze et flottant sur une mince couche d'huile qui atténue les vibrations lors de sa rotation. Dans la plupart des autres télescopes le rouage produisant ce type de mouvement est situé dans la partie opposée. Le système perfectionné utilisé dans ce télescope confère une précision supérieure aux mouvements.** *(Photo: W.J. Cherwinski)*



**The eye of the telescope, its 3.66 m primary mirror, looks up from the circular support "cell" below the yellow beams. Whether used horizontally or at different angles, the mirror lies on a bed of pressurized air pads which keeps it from distorting under its own weight. The same Canadian-designed system was used in Victoria to cushion the mirror during the grinding and polishing operations.** *(Photo: W.J. Cherwinski)*

**L'oeil du télescope, c'est-à-dire son miroir primaire de 3,66 m installé dans un barillet et situé sous les poutres jaunes, est dirigé vers le ciel. Quelle que soit sa position, le miroir repose sur des coussinets pneumatiques qui l'empêchent de se déformer sous son propre poids. Ce même système, conçu au Canada, a été utilisé à Victoria pour supporter le miroir lors des travaux de polissage et de meulage.** *(Photo: W.J. Cherwinski)*