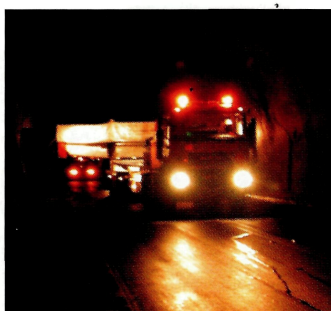


Edited by Emma Sanders

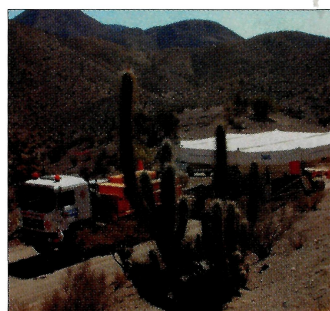
Gemini mirror goes on the road



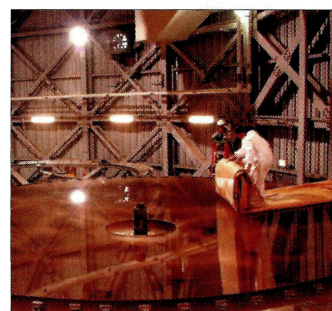
The Gemini mirror crosses Paris en route to Chile... (Gemini.)



...negotiates the Puclaro Dam tunnel in Chile...



...approaches its destination, at Pachón...



...and is finally unveiled on the 3250 m summit of Cerro Pachón.

Particle physicists are familiar with the trials of moving large, unwieldy pieces of equipment on epic voyages around the globe. They are not alone.

The 24 ton, 8.1 m mirror of the Gemini South telescope was fused from ultra-low-expansion glass in the US last year. It travelled by ship to Paris for polishing, then in February

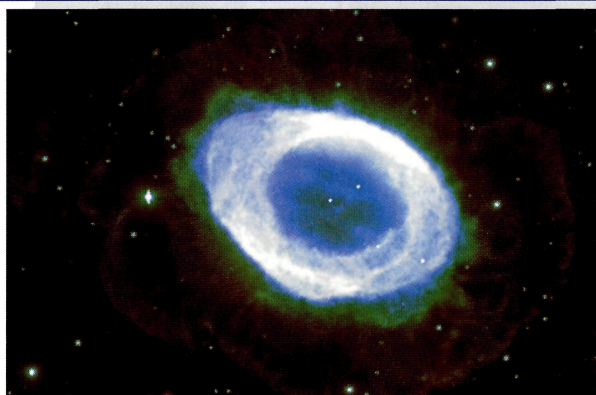
it was transported by barge, then container ship to Chile. On arrival there, the transport difficulties were not over. On a four-day road trip to the 3250 m summit of Cerro Pachón, one of the tunnels had to be widened by 2 m so that the mirror could pass.

As its name suggests, Gemini is a twin. This whole rígarole was also carried out for the

northern hemisphere telescope, Gemini North, in Hawaii.

Partners for the project are the UK, the US, Canada, Chile, Australia, Brazil and Argentina. Gemini South is expected to see first light before the end of the year. Gemini North became operational last year (*CERN Courier* September 1999 p16).

Picture of the month



The Ring Nebula. The hot central white dwarf star emits ultraviolet radiation that illuminates the surrounding shell of gas. These observations, using the Japanese 8.2 m Subaru telescope at the summit of Mauna Kea in Hawaii, show a faint outer halo, observed clearly for the first time. This will improve understanding of the gas flow from the central star during its preceding red giant stage. After all core hydrogen had been burned, the star's surface expanded outwards and the central part of the star contracted to form the white dwarf. The Subaru telescope opens to astronomers later this year. In the future, the telescope will be operated remotely from the Mitaka campus of the National Astronomical Observatory in Japan. (Subaru.)

Free-floating planets prove too light for dark matter

The most sensitive search ever undertaken for small substellar objects has revealed 13 free-floating planets and more than 100 young brown dwarf stars in an active star-forming region of the Orion Nebula. The discovery was made using the new infrared camera at the UK Infrared Telescope (UKIRT) in Hawaii.

Although the appeal of small lumps of gas and rocks may not be immediately obvious, some astronomers hope that such objects might help to solve one of the great mysteries of cosmology. Invisible dark matter makes up 90% of our universe and possible candidates include just such small, faint objects.

Previously, only two free-floating planets had been discovered. The fact that there are 13 in one small region of the sky makes it likely that there be many more in other star-forming areas across the universe. The survey also revealed more than 100 young brown

dwarf stars. These dull mini-stars are too tiny to shine brightly because their cores never heat up enough to trigger the fusion of hydrogen. A small amount of energy is generated by the fusion of deuterium.

Despite the large number of objects discovered in the new survey, their total mass is nevertheless low compared with the total mass of the stars. Indeed, if this is a typical cluster, it is unlikely that planets and brown dwarves contribute significantly to dark matter.

● For more dark matter developments, see p13.

JAS'2000

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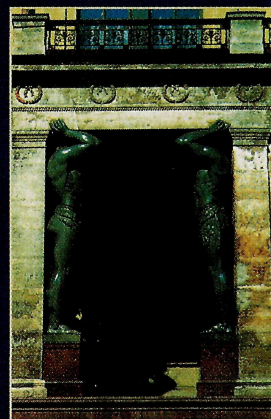


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