

### Arctic mushrooms as navigation aids

Strange structures that bear the appearance of mushrooms will soon be dotted all over Canada's North to guide pilots over the Arctic hinterland, reports the September/October issue of *Transport Canada*.

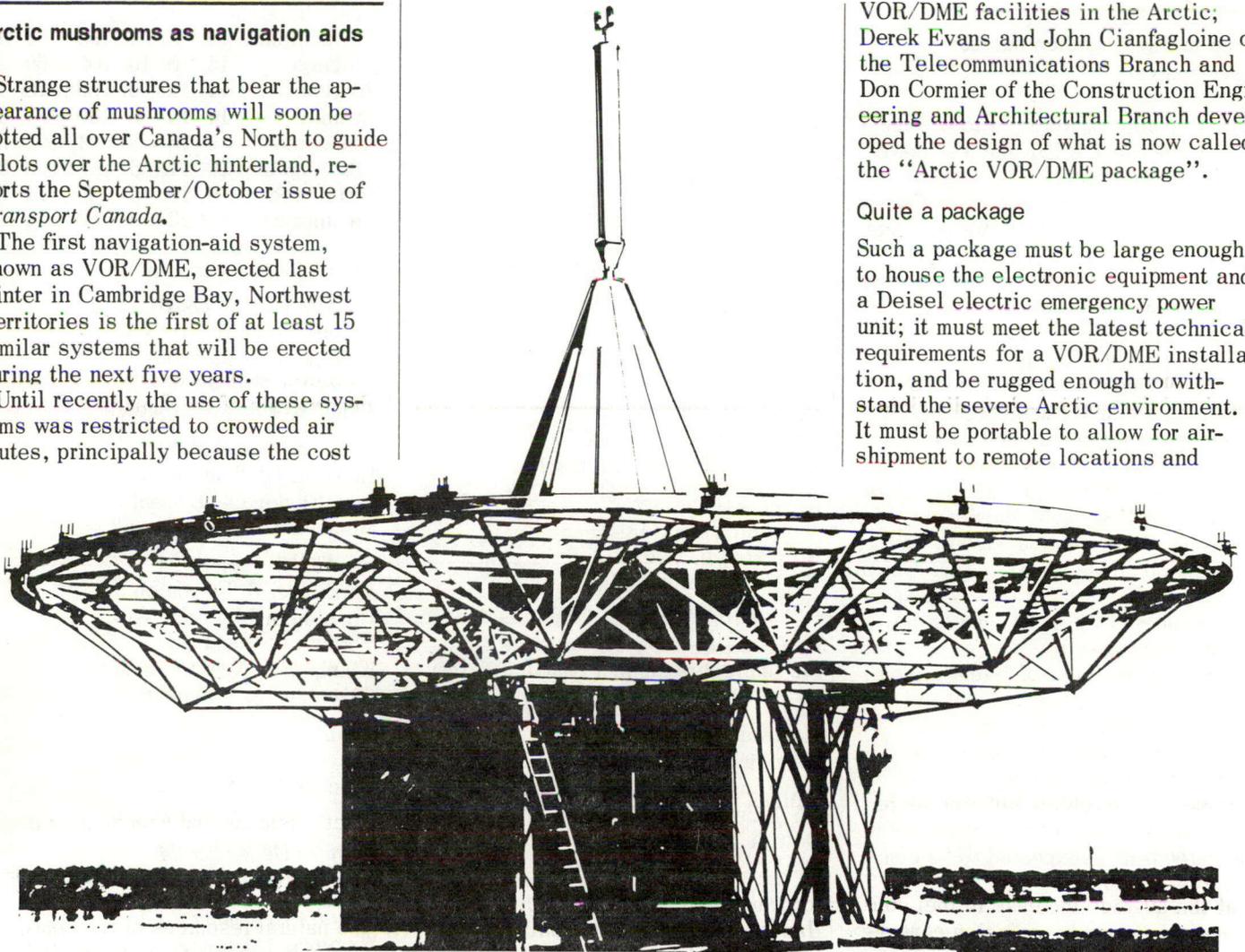
The first navigation-aid system, known as VOR/DME, erected last winter in Cambridge Bay, Northwest Territories is the first of at least 15 similar systems that will be erected during the next five years.

Until recently the use of these systems was restricted to crowded air routes, principally because the cost

VOR/DME facilities in the Arctic; Derek Evans and John Cianfagloine of the Telecommunications Branch and Don Cormier of the Construction Engineering and Architectural Branch developed the design of what is now called the "Arctic VOR/DME package".

#### Quite a package

Such a package must be large enough to house the electronic equipment and a Deisel electric emergency power unit; it must meet the latest technical requirements for a VOR/DME installation, and be rugged enough to withstand the severe Arctic environment. It must be portable to allow for air-shipment to remote locations and

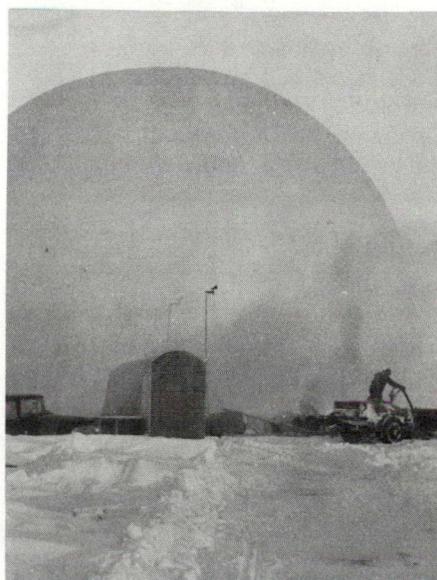


and bulk of the equipment limited their use to commercial airliners. Also, the complex ground equipment required frequent maintenance by highly-skilled personnel and a large amount of power to operate. As a result, sites had to be situated reasonably close to populated communities.

Conventional construction techniques used to build VOR/DME facilities in the southern areas, using brick, concrete, and steel, are not compatible with construction in remote Arctic areas owing to high costs of transportation, a lack of materials locally, and heavy construction equipment. The building must be more than just a shelter for equipment. The 40-foot diameter circular roof (counterpoise) forms an important part of the antenna system. So something more than a prefabricated "house-trailer" is required for Arctic installations.

In 1971, the Ministry of Transport began studying the best way to install

*A giant air dome protects equipment and men during the construction phase of the new VOR/DME navigation aid system for the Arctic.*



simple enough to construct on permafrost soils with a minimum of skilled labour and equipment.

The package contains the components to make a 16-foot square prefabricated building composed of plywood insulated panels, supported by four steel columns. The 40-foot diameter counterpoise consists of expanded mesh panels mounted on top of a triodetec space frame that is supported by the steel columns. The only tools required for construction are wrenches and hide-faced hammers. It can be erected by a crew of seven men in 12 days, compared to the usual months of construction time taken by a contractor to build a VOR/DME by conventional methods in the south.

With the advantages of portability, lower costs owing to bulk purchase, shorter erection time, and standard installation, there is a distinct possibility that this system will some day be the standard VOR/DME installation in other parts of the country.