

# Down, down, and away High-tech down low

*NRC's Program for Industry-Laboratory Projects, PILP, recently funded, with the Department of Supply and Services, a new cutting head to permit a proven Canadian tunnelling machine to go through not earth, but solid rock.*

*Oh, it's dark as a dungeon,  
And damp as the dew:  
Where dangers are double,  
And pleasures are few . . .*

It's been like that since ancient times. Recent decades have seen some improvement, but mines haven't yet gone the way of factories, with their high bright ceilings and all-weather carpet. Down below, you left daylight and took buckets and trains to the oreface. You drilled a hole, stuffed in explosive, went back a distance, and set off your charge. Then you cleared away the rubble and grouted in the ragged, leaky walls.

In Cape Breton Island, the mineral sought was coal. Nova Scotians have been digging it out for over a hundred years, and the harshness of that life is legend. When oil replaced coal in factories, homes, and powerplants, the

eastern mines began to close; and the Islanders adjusted without too much complaint. They turned to the good life and cheap energy that waited on the surface. But as the price of oil rose, so did the rationale for a coal economy. The oil-fired generators were ruinous to finance, and the Government of Nova Scotia, in a bid for energy self-sufficiency, turned back to anthracite. After all, new technologies had emerged to burn coal more cleanly, more evenly, with fewer pollutants, and greater efficiency.

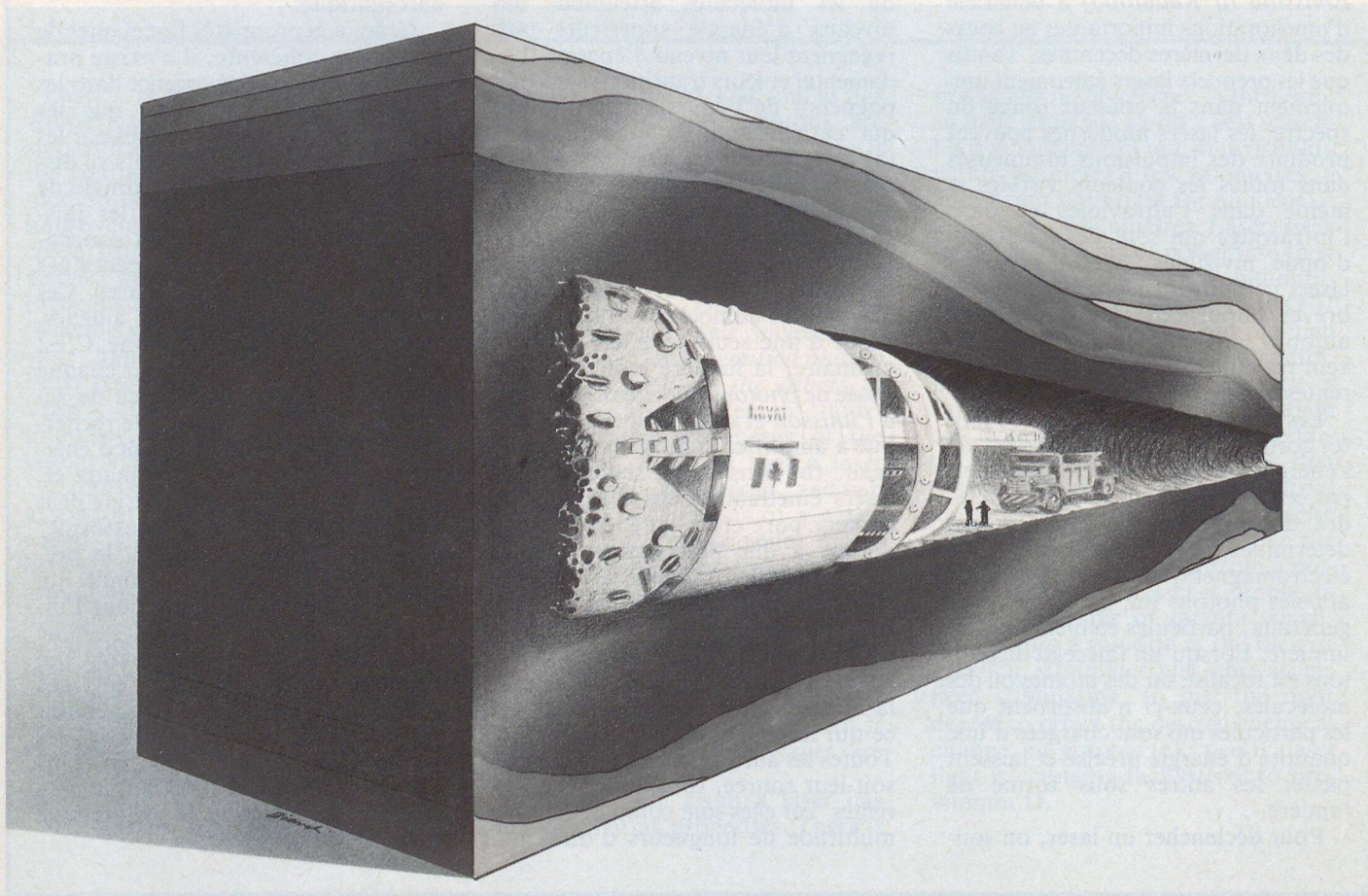
The Cape Breton Development Corporation was the federal agency chosen to develop coal resources on Crown land. Three years ago, it became interested in a new coalseam that appeared to run out under the North Atlantic Ocean from the town of Donkin, N.S., on the Island's east side. CBDC decided to drive tunnels through the Cape Breton sandstone to see if coal was indeed there in quantity, and of quality, fit to mine. They called for tenders to do this work, assuming traditional drill-and-blast techniques.

And yet the hazards seemed high: blasting is hard on more than miners, it

is ungentle to the earth. Strata are weakened, and fissures open to leak gas and water. One does *not* want this with

Artist's impression of the 7.5-m machine now under development in Toronto. Pushing against liner plates with hydraulic rams, this immense tunneller and others like it should be at work soon in the rock of Nova Scotia, extracting coal for power plants. Other applications within Canada and around (and under) the world, include bauxite, potash, and tar sands. New technology was accelerated under a National Research Council PILP (Program for Industry-Laboratory Projects) contract with Lovat Tunnel Equipment.

Représentation artistique de la machine de 7,5 m de diamètre en construction à Toronto. S'appuyant sur les voussoirs de revêtement à l'aide de vérins hydrauliques, cette énorme excavatrice et d'autres qui lui ressemblent devraient être au travail dès l'année prochaine dans la roche de Nouvelle-Écosse, extrayant du charbon destiné aux centrales électriques. Parmi les autres applications envisagées au Canada, autour et de l'autre côté du monde, mentionnons l'exploitation de la bauxite, de la potasse et des sables bitumineux. La mise au point de cette nouvelle technologie a pu être accélérée grâce à un contrat passé avec Lovat Tunnel Equipment Inc. dans le cadre du Programme des projets "Industrie-Laboratoires" (PILP) du Conseil national de recherches.



(John Bianchi)