

winter road suitable for "cat-trains" in 1938, but by 1940 it had been sufficiently improved to permit some use by highway vehicles. It was completed as a year-round road to Hay River shortly after the war, and was extended to Yellowknife in 1961. However, only quite recently has it become a good-quality gravel highway, with the rebuilding of the Alberta section under the Roads-to-Resources Programme.

#### CONSTRUCTION IN PAST DECADE

The internal road systems of the territories are mainly of more recent development. Much of their mileage has been built only during the past decade. Greater progress has been made in the Yukon than in the N.W.T. with regard to internal road development. The backbone of the Yukon's internal road system was completed during the 1950s....

In the N.W.T., the development of permanent internal roads has not progressed very far. The earliest internal roads were portage roads built in connection with water transport on the Slave and Bear Rivers. Other permanent roads have been developed in connection with specific mines, for example Rayrock and Pine Point, and to give access to Wood Buffalo Park. Currently, a road is being built from the Pine Point road to Fort Smith.

A few comments might be pertinent here on why it is that the Yukon has about 2,000 miles of permanent internal roads and the N.W.T. only about 500 miles despite the fact that the latter is about six times as big. One factor accounting for this is the relatively early existence of the Alaska Highway as a fully-developed road. The fact that access out of the Yukon existed even during the war sparked demands for an extension of this access to off-highway points. Another factor is the prominence of Whitehorse in the Yukon - there is no place in the N.W.T. which has equivalent status. There is a substantial community of interest between Whitehorse and other Yukon centres. That inter-community connection by road should exist is only logical in view of this. The Yukon is also more advantageously structured politically than is the N.W.T. It is a relatively cohesive body, whereas the N.W.T. is unwieldy, and it has a resident commissioner. There is a more evident spirit of common purpose.

#### IMPORTANCE OF MINERAL DEPOSITS

An explanation of the relative degree of road development might also be sought in the nature and magnitude of mineral exploitation. For many years now a principal mineral product of the Yukon has been lead-zinc concentrate from Mayo, a commodity with a high weight-to-value ratio. Volumes have not been large enough to warrant extending the railroad north from Whitehorse, and water transport, owing to seasonality and the difficulties of navigating the Yukon River, has never really been suitable for the movement of bulky mine products. Under these circumstances, road transport of the kind that has developed provided a compromise solution. With the construction of the Whitehorse-Mayo road in 1951, a backbone for a territorial road system was provided.

In the N.W.T., on the other hand, the principal hard-rock minerals exploited in the past have tended

to have very low weight-to-value ratios. One thinks of gold and fissionable materials from Great Slave and Great Bear Lakes. Such products lend themselves to air transport, which has, indeed, been the means used to bring them to market. Petroleum from Norman Wells is also a traditional mineral product of the N.W.T., but the Mackenzie River has provided an adequate means of transporting it.

The cost of building the internal roads of the territories has varied considerably with standard of construction, but cost levels per mile have not differed much between the territories for similar kinds of roads. However, there will likely be significant differences in cost levels when roads are built over the tundra of the N.W.T. and over areas of substantial permafrost. So far, very little permanent road mileage has been built over such terrain.

The N.W.T. has vast numbers of lakes, a feature relatively absent in the Yukon. This is probably a reason why winter roads, which are most easily built over lake or river ice, have been used much more extensively in the N.W.T. The total mileage of such roads varies considerably from year to year, owing to shifts in activity on the frontier. Some have become almost permanent in the sense that they are rebuilt winter after winter - for example, the road from Yellowknife to Tundra Mines. One of the most impressive winter-road projects of recent years is the construction of a road to parallel the full length of the Mackenzie River, all the way to Inuvik.

#### VARIETY OF WINTER ROADS

Winter roads vary in quality from those which can accommodate only a single "cat-train" creeping along at three or four miles an hour to those permitting the use of highway tractor-trailers travelling at nearly highway speeds. The methods of building such roads depend on their intended use. Some of the better winter roads of the Great Slave Lake region are built by pulling an ordinary farm harrow and some heavy packing equipment back and forth along the right of way with a half track "bombardier" vehicle. Maintenance is usually conducted by using wing plows. If a road of this type has been properly located in the first place, so that most of it lies over the ice of frozen lakes, real difficulty in maintenance might be encountered only because of drifting at portages.

Currently there are no roads which link the Yukon with the N.W.T., nor indeed, in view of traditional communities of interest and established transport lines, can there be much justification for the development of such roads. Except for its southernmost section, the old Canol Road, built between Norman Wells and the Alaska Highway during the war in connection with the refinery-pipeline project, has long been abandoned. Because of the low quality of its construction and very steep gradients its usefulness as a civil road would have been limited in any event.

#### LAG IN TERRITORIAL ROAD BUILDING

Even though road construction has proceeded quite rapidly during the past decade or so, the territories are far behind the rest of Canada in the degree to