



The GEM report did more than outline the problem; it also drew up specifications for a new NRC division to tackle it. That division now exists, in embryonic form. It is called the Industrial Materials Research Institute (IMRI), it is located in Montreal, its staff, which includes Dr. Utracki, now numbers about 40 and its director, George Bata (who helped write the GEM report), was appointed in 1978.

"We're struggling under a number of handicaps," Bata says from his office in an old postal terminal. "We don't have our permanent premises yet; they are being built at Boucherville, east of Montreal, and won't be ready before 1983. Before we managed to get these temporary quarters it was standing room only. Most of our people are dispersed; they're working at universities, at provincial research institutes, at Hydro-Québec and so on.

"We are here to help make materials better and cheaper. Our services will be available coast to coast, but we have a specific regional mission: to help Quebec industry. For that reason French is our working language. We will be working primarily with larger companies and with small- and medium-sized high technology enterprises, for they speak

**Car corrosion and rust is a serious problem in Canada because of the widespread use of road salt in the winter and extreme climatic variations. The Institute will study better materials and methods for corrosion protection.**

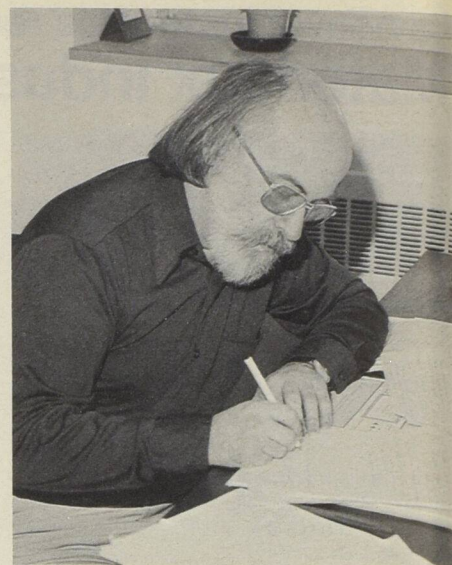
**La corrosion et la rouille des voitures sont des problèmes importants au Canada en raison de l'abondance du sel que l'on doit déverser sur les routes et des variations extrêmes de la température. C'est ce qui amènera l'IGM à étudier la mise au point de meilleurs matériaux et de meilleures méthodes de protection contre la corrosion.**

our scientific language. Eventually we'll have 210 people, not a very large operation, and that means we'll have to concentrate. About half of our resources should be devoted to metals, a quarter to ceramics, and a quarter to polymer materials — plastics, rubber and the like. So far we have received 151 proposals from government, university and industry people, and 31 projects are under way."

Some idea of the concerns and character which NRC's new division is developing can be formed by taking a look at a few of its current projects.

#### **Robot Welding**

Welders are usually in short supply, for the skill needed to fuse metal parts edge to edge is not easily acquired, and the fumes, noise and other conditions



**IMRI's Dr. Ghislain Bégin is a metallurgical engineer with interests in powder metallurgy and ceramics.**

**Le Dr Ghislain Bégin, de l'IGM, est un ingénieur métallurgiste qui s'intéresse aux céramiques et à la métallurgie des poudres.**

of the work are not healthful. Because of this, the Welding Institute of Canada, whose member companies build aircraft, bridges, locomotives, ships and the like, is collaborating with IMRI in an exploration of welding robots.

Although people in a number of countries are working towards machines which can sense irregularities in metal pieces and intelligently adjust a welding torch, no one has yet achieved this ambitious goal. In Montreal, the researchers are looking at how a video camera might serve as a welding robot's eye.

#### **Corroding Steel**

Natural gas occurs at Saint-Flavien near the city of Quebec, one of the few deposits of fossil fuel in the province. There is not enough gas in this small field to justify building a pipeline and so it is compressed in steel cylinders and carried by truck to the brick factory where it is burned. The moist and sulfurous gas is corrosive. What is the optimal design for the cylinders so that they are light enough to move economically, yet thick enough to withstand corrosion? This and related questions are being examined by IMRI in partnership with SOQUIP (Société québécoise d'initiative pétrolière) and Laval University.

#### **Poisonous Glazes**

Lead oxide, potters know, gives the outer seal or "glaze" on pottery both