

Gearmaster to the fleet and industry!

Most of the Laboratories of the National Research Council of Canada are in Ottawa some 1,000 miles inland, and would seem, at first glance, to be a most unlikely site for a naval repair station.

Yet, when HMCS Kootenay was crippled by an engine room explosion off the south coast of England 14 months ago, the Department of National Defence ordered the damaged gearing shipped directly to NRC's Manufacturing Technology Centre for regrounding. Similarly, when the Kootenay's sister ship HMCS Fraser needed emergency repairs to her gearing system while undergoing sea trials off the coast of England in November, the vital part was flown to the MTC. The damaged gear was reground and back aboard the Fraser within a week.

MTC, which forms a part of the NRC's Division of Mechanical Engineering, has the only plant in Canada with the specialized equipment for precision gear work on destroyers such as the Kootenay and Fraser.

In 1967, the plant that had manufactured and serviced the gearing for all of Canada's post-war destroyers closed its doors. Its specialty machinery was offered for sale by auction, but critical parts of the plant were transferred to the National Research

Council for research on gearing and to ensure that the Navy would not be without repair facilities. On re-installation, the equipment was made available to the Department of National Defence for the above reasons, and also, as a unique resource, to private industry until such time as business would justify a commercial installation.

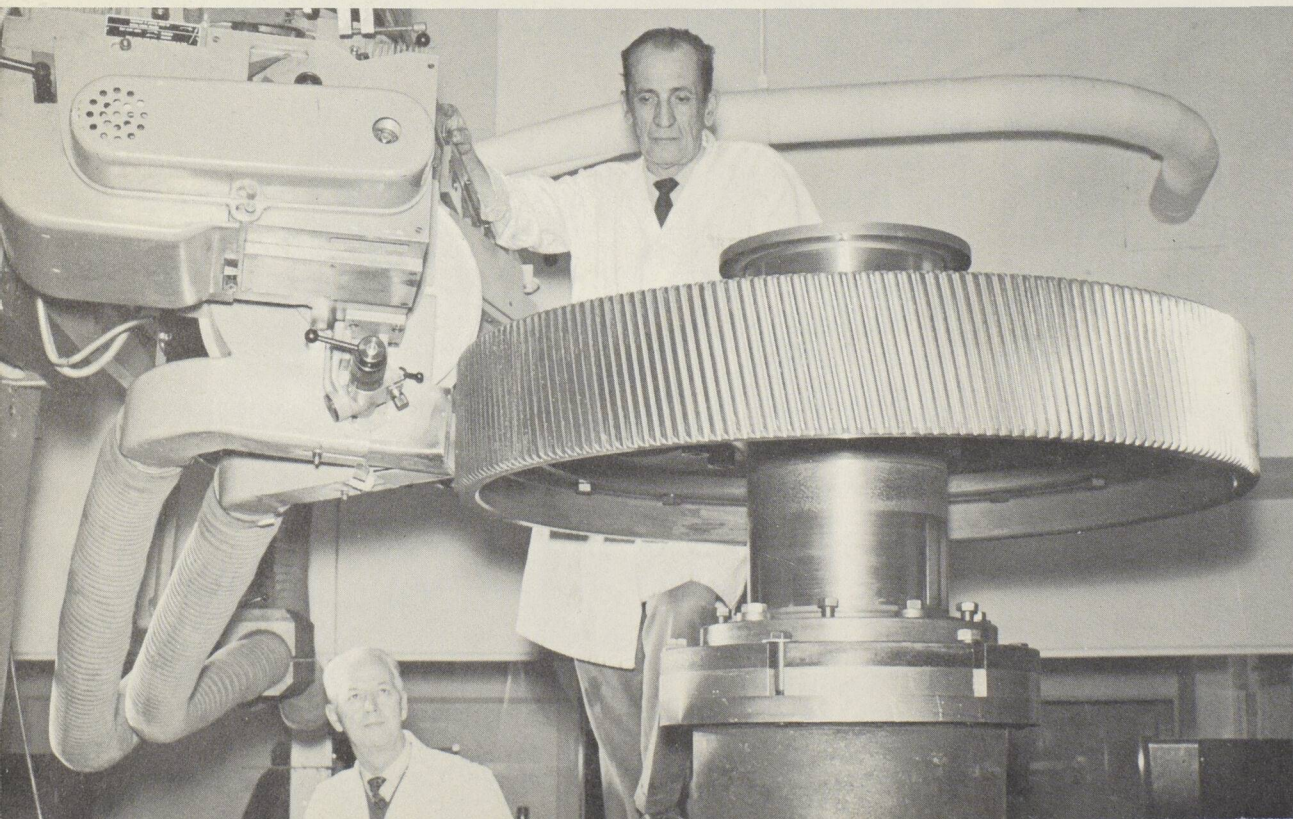
Part of the original equipment, a MAAG HSS 360 gear tooth grinder, was modified by MTC to the point that it now outperforms its original specifications and in a more convenient and economical way. Hardened gear teeth on gears to a diameter of 11 feet six inches can be ground to a very high degree of accuracy. Other changes in the grinder made it possible to deal with gears down to 35.75 inches in diameter, much smaller than originally possible. The versatility of the grinder enables it to be used in other fields such as aircraft gearing and for development of compressors and turbines.

It needs to be emphasized that, far from being in any sense a form of competition with the industrial plants of the country, these machine tools represent a precision finishing technique for special gearing manufactured in commercial shops but requiring preci-

sion not commonly commercially justifiable. Collaboration with commercial manufacturers has already proved extremely useful in the discharge of contracts running otherwise into difficulty.

Installation of the gear grinding facility also marked the start of a major expansion and updating of the Manufacturing Technology Centre that is continuing to assist the Division of Mechanical Engineering. Its 100 staff members, one-third of the personnel of the Division itself, are housed in two buildings on NRC's Montreal Road Laboratories in Ottawa. They are employed in a MTC design office, a wood-working shop, sheet metal shop, heavy machinery shop and an instrument shop. Skills range from toolmakers and pattern makers to electronic engineers, draughtsmen and designers.

Over the years these shops have produced a unique range of apparatus, such as wooden and plastic ship research models up to 26 feet in length. In metal they have come up with items as widely varied as five foot six inch diameter gears for HMCS Kootenay and a vascular suturing instrument with staples made of wire measuring a mere 0.003 inches across.



The primary gear wheel of HMCS Kootenay undergoes precision grinding of gear teeth profiles under supervision of MTC's Norman Crete.

Norman Crete surveille le meulage de précision des dents d'un engrenage essentiel du "Kootenay".