

## Slap-shot strategy — new look at Canadian hockey sticks

What has happened to the Canadian hockey stick industry in recent years and why are so many hockey sticks now made of imported woods?

The problem appears to lie with the priorities of Canada's wood manufacturers, which concentrate their research and marketing on materials needed by the construction and furniture industries, at the expense of the specialty woods required by hockey stick manufacturers. The woods are imported mainly from Finland, which has become the chief source of high quality plywood in Canada.

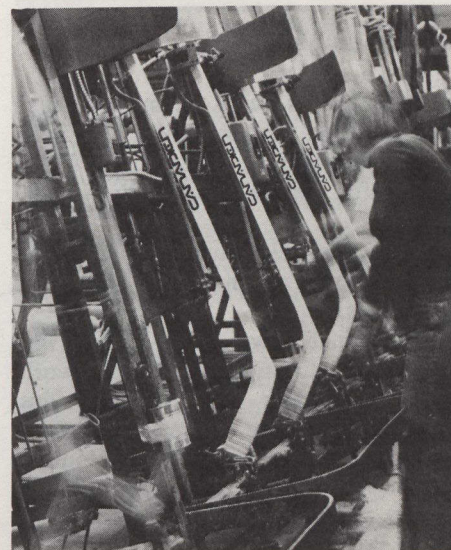
cluded plastics researcher Léo Tessier, who had the glimmer of an idea about wood and plastic, and Marcel Goupil, who was working on the reinforcement of materials with fibreglass and resin.

Their first task was to strengthen the "heel" of the stick, an area often under strain, by adding a plastic part. Problems resulting from the addition of this new piece taught Tessier much about combining wood and glass. "Domestic quarrels" between wood, plastic, glue and epoxy had to be resolved. A three-month effort brought the experiments to a successful conclusion.

From this first step the research team turned to the problem of the stick handle and it is here that the issue of foreign plywood is of major concern. Those 41-ply Finnish handles combine strength with flexibility — characteristics demanded by professionals and amateurs alike. "Our aim was to combine fibreglass, plastic and epoxy to duplicate the character of wood," Tessier says. "And we have actually surpassed it by adding strength while keeping flexibility and weight."

### Glass/plastic blade

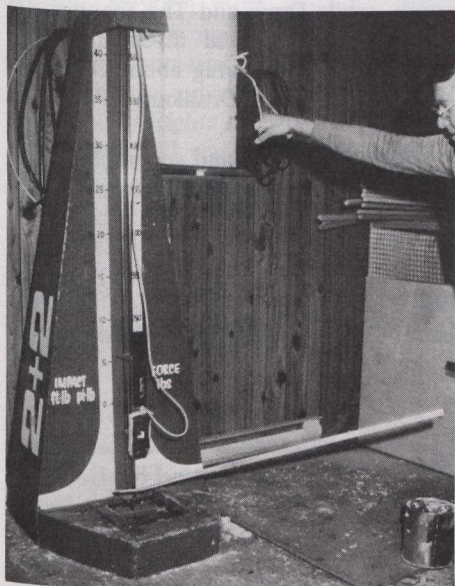
How well they succeeded is, literally, in the hands of hockey players. The crowning achievement of this effort is the company's new stick with an all glass and plastic blade. When Canadian Hockey Industries Inc. first approached the IRAP office with a research proposal, an all syn-



*An automated fibreglass tape-winder, designed by Canadian Hockey Industries Inc., is used in the manufacture of new sticks.*

thetic stick idea was simply an idea. No prototype existed, and the manufacturing methods were bridges to be crossed in the future. Léo Tessier's design team spent more than a year on blade design and manufacture. The result: a plastic core sandwiched between fibreglass layers. The blade is strong, lightweight and more elastic than wooden ones. Even more important is the blade's thin cross-section. An airborne puck is a goalie's nightmare and the synthetic blade allows the shooter to loft the puck higher when making a slap shot.

*(From an article by Stephen A. Haines in Science Dimension, 1978/5.)*



Stephen Haines, NRC

*A weight is dropped on the blade of one of the all-plastic sticks to determine its impact strength. Flexibility is a major feature of the new sticks, which were developed with the help of NRC.*

Canadian Hockey Industries Inc., of Drummondville, Quebec, has responded with innovative technology in stick fabrication. The firm, founded in 1969, began the manufacture of traditional wood sticks, trying to compete with less than prime quality wood for the junior models. While the basic new construction design was sound, breakage and glue failure caused a high sales figure to be matched by a high complaint rate.

### NRC consulted

Knowing his new company would not survive under such conditions, Marc Ruel sought the assistance of the National Research Council's Industrial Research Assistance Program: a small team that in-

## Social security agreement signed with Italy

Health and Welfare Minister Monique Bégin and Italian Deputy Minister of Foreign Affairs (Emigration) Franco Foschi signed an administrative arrangement on January 19 related to the Canada/Italy Social Security Agreement, the provisions of which were effective January 1.

The accord, the first international social security instrument of its type to be signed by Canada, enables persons who are, or have been, residents of Canada or Italy to combine social security credits earned in each country in order to satisfy the minimum eligibility conditions for benefits from one or both countries.

It also ensures that a person who is

transferred from Canada to Italy or from Italy to Canada or who is working in one country for an employer of the other will have social security coverage and will contribute to the social security insurance scheme of only one country.

A subsidiary arrangement will be signed shortly between Italy and the province of Quebec to ensure that contributors to the Quebec Pension Plan will benefit under the agreement in the same way as contributors to the Canada Pension Plan.

During his stay in Canada, Deputy Minister Foschi visited Ottawa, Montreal, Quebec, Regina, Winnipeg, Toronto and St. Catharines, Ontario.