EDITOR'S NOTE

# Boldly we go

Ask most Canadians what this country's input to space exploration has been, and the response will probably be: the Canadarm. In fact, Canadians ranked this technological marvel 14th (out of 50) when polled by the CBC for their *The Greatest Canadian Invention* TV show, which aired January 3.

Built in 1975 by then-Spar Aerospace (now MDA) as Canada's contribution to NASA's space shuttle program, the Canadarm, and next-generation Canadarm 2, may also be the most well-known feats of Canadian engineering known outside our borders (the very visible Canada logo probably helped).

These projects certainly cemented the Canadian space industry's close collaboration with NASA, and our country's international reputation for robotics innovation. And, no wonder. There is no doubt that the Canadarm is a spectacular example of Canadian engineering and one that is invaluable to the space shuttle and International Space Station programs. It has performed faultlessly on 72 missions since its space debut on November 13, 1981. According to Astronaut Chris Hadfield, "[The Canadarm] has great strength, but at the same time it's very precise. It can grab onto a pencil and stick it up your nose." Um, well put, Chris.

But Canada's contribution to space has involved much more than the Canadarm, as you'll read in "From niche player to key contributor" (p. 60). Canadian engineers have much to be proud of with space advancements that range from robotics, telecommunications and satellite technology to advanced imaging and sensing systems.

And, although we didn't mention it in our features, Canadian technology may be indirectly responsible for the annus horribilis poor Pluto experienced in 2006. It seems the planetary status debate began for Pluto when the Keck telescope, developed and built in Canada by engineering firm AMEC, discovered Xena, a 10th "planet" last year. The discovery that Xena's orbit, like Pluto's, was misshapen resulted in the latter's demotion to a pluton, a new subcategory of small, outer solar system objects distinct from the eight larger "classical" planets. Sorry about that, Pluto.

Canada has contributed some of the best minds to space exploration, too, and by that I don't mean William Shatner. Some of NASA's top engineer astronauts hail from Canada–Julie Payette, ing., Marc Garneau, P.Eng., and the aforementioned Chris Hadfield (the first Canadian to walk in space), among them. PEO's own Bob Thirsk, P.Eng., who flew on shuttle mission STS-78 in 1996 was presented with the Ontario Professional Engineers Awards Gold Medal in 1997.

However, not everyone who dreams of seeing the curvature of Earth gets to be an astronaut–at least not through the regular channels. That may be changing though, ever since American Dennis Tito happily forked over $20 million in 2001 to visit the International Space Station for seven days. It turns out there is no shortage of private entrepreneurs eager to strap paying customers into tin cans and fire them into orbit. And with the success of SpaceShipOne, the Ansari X Prize winner (p. 59), private entrepreneurs such as Virgin Galactic are gearing up to blast off the first block of space tourists in VSS Enterprise (SpaceShipTwo) starting in 2008.

While definitely an exciting prospect, and one that may be necessary for the survival of humans, "personal space travel" presents some thorny issues for engineering regulators ("Whose rules?," p. 56). When governments build rockets, put people in them, and fire them into space, it's one thing. It's quite another when civilians get into the act. It will require a fine balance to establish a legal, regulatory and safety ethos that doesn't stifle the competition necessary to advance the commercial space frontier.

It remains to be seen how personal space travel unfolds. No doubt, there will be interesting times ahead for all involved, including Canadian engineers.

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