Figure 1. A new pane of eight round self-adhesive stamps honoring Canadian astronauts, scheduled for release Oct. 1 by Canada Post.

New issue celebrates Canadian space achievements

CHARLES J.G. VERGE

n Oct. 1, Canada Post will issue a pane of eight round self-adhesive stamps honoring the eight Canadian astronauts who have traveled in space. The selvage or margin paper of the pane shows Canada's most important contribution to space research development: the "Canadarm" Shuttle Remote Manipulator System (Figure 1).

This issue is not only Canada's offering for Stamp Collecting Month, but it also celebrates the Canadian Space Agency and more than 45 years of Canadian participation in space exploration.

Canada's first satellite was called *Alouette*, the French name for the bird known in English as the lark. When the satellite was launched on Sept. 29, 1962, Canada became the third country in the world to have a satellite in orbit, following the Soviet Union and the United States.

Alouette was an atmospheric studies satellite. Originally, it was going to be an instrument package that would ride on an American satellite, but at the suggestion of John Chapman from the Defence Research Telecommunications Establishment, Alouette became a full-blown Canadian satellite.

Alouette performed much better than everyone expected. Its intended lifespan was one year, but it continued to send down information about the ionosphere for 10 years. Alouette produced over one million images of the topside of the ionosphere.

The satellite was so successful that it even won an award. On Jan. 22, 1987, the Engineering Centennial Board recognized Alouette as one of the 10 most outstanding



Figure 2. Canada Scott 445 from 1966 shows the Canadian satellite Alouette II as it orbits Earth.

achievements of Canadian engineering over the last 100 years.

It was so successful, in fact, that Canada launched *Alouette II* from California on Nov. 28, 1965. To commemorate this event, Canada's first space stamp was issued Jan. 5, 1966, showing *Alouette II* in orbit over a map of Canada (Scott 445, shown in Figure 2).

On Nov. 9, 1972, Anik A1, Canada's first communications satellite and the world's first domestic communications satellite in geosyn-

chronous orbit, was launched from Cape Canaveral. It was followed on April 20, 1973, by *Anik A2*, and on May 7, 1975, by *Anik A3*. Many other satellites bearing the name *Anik* (with letter and number suffixes) were launched during the next 25 years, the last (so far) being *Anik F1*, launched from Korou, French Guiana, on Nov. 21, 2000.

On Jan. 17, 1976, the *Hermes* was launched atop a Delta rocket from Cape Canaveral. Hermes was one of the first satellites to test direct-to-home broadcasting, and was a cooperative venture between the Canadian Department of Communications, NASA and the European Space Agency.

Satellites played an important role in the 1976 Olympic Summer Games held in Montreal. The Olympic flame was carried by runners from Olympia to Athens, and then brought to an "ion receiver," where the flame was converted into electronic energy. A sound generator then used the electricity created and

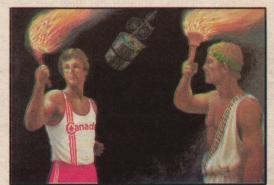




Figure 3. Original artwork (left) by Peter Swan for the 1976 Olympic Games commemorative (courtesy of the Canadian Postal Archives). The issued stamp, Scott 681, is shown at right.

produced a coded signal. The signal was transmitted to the *Intelsat* satellite, and from there all the way down to a station on the ground in Canada, which retransmitted the signal to Ottawa. In Ottawa, the signal was changed into an optic signal thanks to a laser beam and fiber optics, and was finally used to light the torch.

Then the flame was run from Ottawa to Montreal and from there to Kingston by car, runners, canoes, bikes, rowing boats and horses. This unique and original flame lighting method was illustrated on an 8¢ Canadian stamp (Scott 681, shown in Figure 3).

The space shuttle Columbia began its second shuttle flight Nov. 12, 1981; it was the first flight with the Canadarm robot arm, or Shuttle Remote Manipulator System, on board. The next day, astronauts Joe Engle and Richard Truly ran successful tests on the Canadarm, which has become standard equipment on space shuttle flights.

The Canadarm is used to move, deploy and recover satellites and experiment packages; inspect the shuttle; move astronauts; and help assemble the International Space Station. The shuttle and Canadarm 1 are illustrated on a 34¢ stamp issued June 27, 1986, from a block of four stamps celebrat-



Figure 4. From a set of four stamps depicting invention blueprints. issued in 1986 to commemorate Canada Day, Scott 1100 details the "Canadarm" robotic arm and illustrates its use on the space shuttle.

ing Canadian science and technology (Scott 1100, shown in Figure 4).

Earlier, on June 8, 1983, NASA and the National Research Council of Canada announced the Canadian Astronaut Program in Ottawa. On Oct. 5, 1984, Marc Garneau became the first Canadian to fly in space when *Challenger* lifted off for the eight-day flight of mission STS-41G. Garneau has been in space three times, the last time on Nov. 30, 2000, and is now the president of the Canadian Space Agency (CSA).

Garneau is one of the eight Canadian astronauts shown on the new issue. Figure 5 shows Garneau's stamp at upper left, along with the

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stamps honoring the other seven astronauts. Information about each of the eight astronauts is provided in a separate nearby table.

Garneau's first flight received postal commemoration on March 15, 1985 (Scott 1046, shown in Figure 6). Canada's space exploration and scientific activities became so important that on March 1, 1989, the CSA was formed, taking over from the National Research Council as Canada's primary space agency.

In 1993, the CSA established its headquarters in St. Hubert, Quebec, near Montreal, where the new Astronauts stamps are being issued.

For Stamp Collecting Month in 1992, Canada issued two additional space stamps to commemorate the 30th anniversary of the launch of *Anik 1*. One of the stamps shows *Anik E2* (Scott 1441) while the other shows the space shuttle over a map of Canada (Scott 1442). The two stamps are pictured in Figure 7.

The latter stamp was Canada's first hologram stamp and exists with a number of varieties, of which the most unusual is the missing hologram. The stamps were issued in panes of 20. Some panes have one or two missing holograms; others have 10. Other varieties have been nicknamed according to their character-



Figure 5. The eight Canadian astronauts who traveled in space, as pictured on the new round stamps: (top row, from left) Marc Garneau, Roberta Bondar, Steve MacLean and Chris Hadfield; (bottom row, from left) Robert Thirsk, Bjarni Tryggvason, Dave Williams and Julie Payette.

	Year	Mint	Tab	Used	FDC	Year	Mint	Tab	Used	FDC
-	1948	405.00	_	149.95	-	1977	5.95	6.95	5.25	15.50
1000	1949	69.50		8.95	-	1978	5.95	6.95	4.95	13.75
	1950	18.95	_	15.95	-	1979	4.50	4.95	4.25	9.95
1	1951	2.75	156.00	.80	-	1980	7.95	9.95	11.50	16.95
100	1952	17.50	295.00	7.10	16.95	1981	10.95	12.95	8.95	19.95
	1953	4.95	94.50	.80	2.75	1982	15.80	21.50	11.50	San Street
	1954	1.95	13.95	.85	2.95	438 385		19.95	11.50	100000000000000000000000000000000000000
	1955	1.50	4.95	.80	4.85	1983	16.95		N. T. Contract	
20	1956	1.10	2.50	.75	1.80	F1000000000000000000000000000000000000	.12.50*		8.55	STATE NAME OF
100	1957	1.95	29.95	1.30	=		.21.50*	100 100 miles	15.75*	
	1958	1.10	1.95	.60	1.95	1986	.20.95*	28.95*	17.95*	24.85
	1959	1.25	3.95	.75	2.90	1987	.33.95*	40.75*	18.65*	33.25
	1960	10.50	22.75	6.75	3.95	1988	.17.75*	20.50*	14.95*	24.95
	1961	3.95	10.95	1.50	5.90	1989	.39.50*	45.50*	22.50*	53.50
	1962	5.95	16.95	1.75	6.95	1990	.26.95*	31.95*	19.95*	7000
	1963	3.75	18.85	1.95	8.95	1991	.29.95*	39.95*	19.95*	THE RESERVE
	1964	3.50	13.95	2.95	8.95	To the same	36.75*	52.95*	29.95*	ALC: COLUMN
	1965	3.50	11.50	2.75	9.75	1992		02.90	- TOR 15791	900 P. 300 C.

UNITED

Year	New	York	Geneva	Vienna
1986	.468-93	.\$23.00	140-50\$16.95	57-66\$17.10
1987	.494-518	.\$16.50	151-61\$11.00	67-77\$9.95
1988	.519-45	.\$23.30	162-72\$16.60	78-87\$15.75
1989	.546-51	.\$22.15	173-81\$12.10	88-96\$14.25
1990	.552-83	.\$18.75	182-94\$25.75	97-109\$21.50
1991	.584-600	.\$18.85	195-210\$23.95	110-24\$22.95
1992	.601-17	.\$15.50	211-25\$23.95	125-40\$24.50
1993	.618-36	\$16.25	226-43\$23.10	141-59\$22.20
1994	.637-54	\$24.50	244-61\$26.95	160-77\$27.50
+ 995	.655-70	\$42.50	262-76\$57.50	178-92\$62.50
1996	.671-689	\$11.80	277-94\$19.75	193-210\$19.95
1997	.690-718	\$21.40	295-316\$20.25	211-232\$20.95
ALL	.1-718	\$495.00	1-316\$350.00	1-232\$325.00

Prices include regular souvenir sheets. Orders under \$50 add \$3.25 for P&H. Insurance or registration extra.

Canada's astronauts who traveled in space					
<u>Name</u>	<u>Year</u>	Comments			
Marc Garneau	1984, 1996, 2000	Doctorate in electrical engineering. First Canadian in space and currently president of the Canadian Space Agency.			
Roberta Bondar	1992	Medical doctor and Ph.D. in neurobiology. First Canadian woman in space. A member of Canada's Medical Hall of Fame.			
Steve McLean	1992	Ph.D. in physics.			

Scott

1046).



istics, and include "a high-orbit shuttle" and "a low-orbit shuttle," a "black hole," and a "meteor shower," all found on the hologram stamp. The silver color has been discovered missing on the Anik A2 stamp.

On April 19, 2001, Chris Hadfield (at far right in the top row in Figure 5) flew to the International Space Station (ISS) aboard the shuttle Endeavour on mission STS-100. Three days later, Hadfield became the first Canadian to walk in space when he and U.S. astronaut

Scott Parazynski installed Canadarm 2, the first part of the Mobile Servicing System (MSS), on the ISS. The MSS is Canada's contribution to the ISS and will help astronauts service the exterior of the space station.

Canadarm 1 was shown on one of the 68 Millennium stamps issued by Canada in 1999-2000 (Scott 1831c, shown at left in Figure 8) while Canadarm 2 is shown with Canadarm 1 near the bottom of this year's souvenir sheet (pictured in Figure 1). Another stamp in the Millennium series honors Bell Canada Enterprises, owners of Telesat Canada. The stamp shows a satellite thought to be Anik E2-C (Scott 1834b, shown at right in Figure 8).

Pierre-Yves Pelletier (Figure 9) is a designer of more than 100 Canadian stamps, as listed in the nearby accompanying table. Pelletier is responsible for the eight new stamp designs showing Canadian astronauts and the overall design of the souvenir sheet. Using photos from the Canadian Space Agency and NASA he has helped create Canada's first round stamps.

Centered in the design of each 40mm circular stamp is a twinkling star with four points that extend to the stamp's outer edge. In addition, each stamp features the image of a dif-



Figure 7. The 30th anniversary of the launch of Canada's first satellite was commemorated in 1992 with the release of two 42¢ stamps. Scott 1441 shows the Anik E2 satellite. Scott 1442 has a holographic image and pictures Earth and the space shuttle above it.





Figure 8. Two space-themed stamps from Canada's 2000 Millennium Collection: Scott 1831c (left) shows the Canadarm 1 with depictions of Canadian satellites; Scott 1834b (right) features a representation of a Bell Canada Enterprises satellite.

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Figure 9. Canadian stamp designer Pierre-Yves Pelletier with his dog. Haddock. Pelletier designed the Astronaut stamps shown in Figure 1.



ferent astronaut, with a highlight of his or her mission shown in the background.

The twinkling star, the shape of which is depicted in Figure 10, is found in the CSA logo and also appears on several commemorative badges issued for the missions undertaken by Canadian astronauts.

A look at Mr. Pelletier's previous designs shows how creative he is and how he uses the cutting edge of printing technology to make Canada's stamps recognized worldwide for their artistic merit.

The star he uses to enhance this design is composed of holographic stamping and microembossing that gives the star a twinkling effect. It is the first time that both techniques have been successfully combined on stamps.

The lower part of the souvenir sheet illustrates the Canadian "space handshake" of April 28, 2001. Astronaut Chris Hadfield was at the controls of the robotic arm at the back of the shuttle flight deck when Canadarm 2 transferred its launching cradle to Canadarm 1 of the shuttle Endeavour.

Each of the astronaut stamps are denominated at the 48¢ domestic-letter rate, and Lowe Martin printed six million stamps (750,000 sheets), with the stamping done by Gravure Choquet.

The stamps are die-cut and self-adhesive

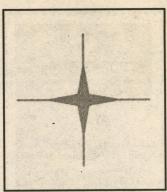


Figure 10. The shape of the twinkling star that is the main structural feature of the Canadian **Astronaut** stamps.

with tagging on the white margin surrounding each stamp. Six colors were used for the lithography and two colors for the foil stamping. The sheets are printed on coated Tullis Russell SSM paper.

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Canadian stamps designed by Pierre-Yves Pelletier

Year	Scott	Subject	Year	Scott	Subject
1984	1044	100th anniversary of La Presse	1995	1545	Masterpiece of Canadian Art - 8
1986	1077	1988 Calgary Winter Olympic Games	1996	1602	Masterpiece of Canadian Art - 9
1986	1111-12	1988 Calgary Winter Olympic Games	1996	1615-16	100 years of Cinema in Canada
1987	1130-31	1988 Calgary Winter Olympic Games	1997	1635	Masterpiece of Canadian Art - 10
1987	1152-53	1988 Calgary Winter Olympic Games	1998	1735	Health Professionals
1988	1195-98	1988 Calgary Winter Olympic Games	1998	1754	Masterpiece of Canadian Art - 11
1988	1203	Masterpiece of Canadian Art - 1	1999	1791-98	Canadian Horses
1989	1241	Masterpiece of Canadian Art - 2	1999	1800	Masterpiece of Canadian Art - 13
1989	1250-53	Second World War - 1939	1999	1806	125th anniversary of the Universal
1990	1271	Masterpiece of Canadian Art - 3			Postal Union
1990	1298-1301	Second World War - 1940	1999	1812	Millennium issue
1991	1310	Masterpiece of Canadian Art - 4	2000	1824b	Dr. Lucille Teasdale -
1991	1345-48	Second World War - 1941			Millennium series
1992	1404-07	CANADA 92	2000	1863	Masterpiece of Canadian Art - 13
1992	1419	Masterpiece of Canadian Art - 5	2000	1876-77	Canadian regiments
1992	1420-31	Canada Day	2000	1878-81	Maple Leaf and Animal definitives
1992	1448-51	Second World War - 1942	2001	1916	Masterpiece of Canadian Art - 14
1993	1466	Masterpiece of Canadian Art - 6	2002	1927	Maple Leaf definitive
1993	1503-06	Second World War - 1943	2002	1945	Masterpiece of Canadian Art - 15
1994	1516	Masterpiece of Canadian Art - 7	2003	??	Canadian Astronauts (8 stamps)
1994	1537-40	Second World War - 1944	2004	??	150th anniversary Victoria Cross
1995	1541-44	Second World War - 1945			(2 stamps)