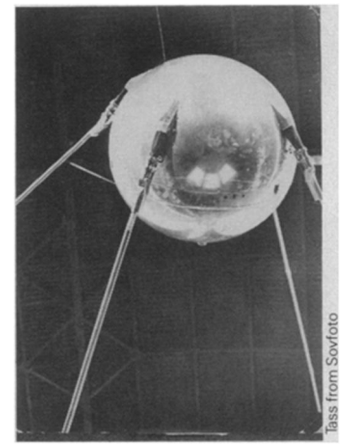
Tass from Sovfoto

The Day the Sky was Opened


Embassy of the USSR

My first reaction was to go running out into the night and look up at the sky. Not because I thought I'd see anything different — a science-oriented 10th-grader who'd discovered Robert Heinlein in kindergarten knew better than that — but because the sky suddenly *felt* different.

It had certainly changed, and it would never be the same again. Yet the difference was only a little metal ball, less than two feet across, tossed into the firmament a few hours before. Sent aloft in the early morning hours of Oct. 4, 1957, its name was Sputnik 1 — the first manmade object ever to be put into an orbit around the earth. The first artificial moon.

Its presence, signaled by its two beeping radio transmitters and then by urgent news flashes, took the planet by storm. Anyone who might have been quoted on the subject in the press, was. Comments ranged from pure praise (a Japanese rocket authority called it the most significant scientific success since Newton discovered the law of gravity) to pure politics (Cairo radio suggested that the feat would "make countries think twice before tying themselves to the imperialist policy led by the U.S."). Schoolchildren and scientists alike listened to the satellite's signals on radio gear and attempted to track it optically (though far easier to see was the top stage, also in orbit, of the rocket that had carried it). In the two weeks following the launch, it was reported, more scientists met with President Dwight Eisenhower than had done so in the previous 10 months.

Yet it had been no secret that satellites were on the way. Both the United States and the Soviet Union were known to be working on them, and they had been an announced part of plans for the International Geophysical Year, which had officially begun three months before. Some of the first coordinated observations of Sputnik 1, in fact, were provided within days of the launch by the Moonwatch project, a network of teams of amateur observers established by the Smithsonian Astrophysical Observatory expressly for the optical tracking of U.S. satellites during the IGY. The National Academy of Sciences and National Science Foundation had asked the SAO two years before to take on the optical tracking responsibility, and both the Army and the Navy had already been developing satellite programs by that time.

Above left: Researchers at Russia's Pulkov Observatory near Leningrad track Sputnik 1 shortly after its launching in 1957. Below: Amateur observers in Philadelphia tracked Sputnik 1 as part of Moonwatch program.


J.J. Barton/courtesy Sky and Telescope

As for the Russian side, even given the minimal advance publicity accorded Soviet scientific and technological activities, it does not take much indulgence in the perfection of hindsight to find it surprising that Sputnik 1 so startled the West. A 1951 issue of a Russian children's newspaper reported that the Soviet Union would be conducting manned rocket flights in the next 10 to 15 years (Yuri Gagarin's pioneering ride aboard Vostok 1 took place in 1961). In 1953, the then-president of the USSR Academy of Sciences, A.N. Nesmeianov, told an international meeting in Vienna that "science has reached a state when it is feasible to send a stratoplane to the moon, to create an artificial satellite of the earth ... " In 1955, the Academy announced the formation of a permanent Interdepartmental Commission for Interplanetary Communications, citing scientific investigations by satellite as one of its "immediate tasks." According to William H. Schauer in *The Politics of Space* (Holmes & Meier Publishers, Inc., N.Y. 1976), commission chairman Leonid Sedov announced later that same year that "it will be possible" to launch an artificial earth satellite "within the next two years" (Sputnik 1 appeared in the sky just two years and two months later). In 1956, the head of the Soviet IGY committee told the IGY's international governing committee that a satellite launch was actually in preparation, and in May, June, July and August of 1957, Soviet amateur radio operators were even advised of the correct frequencies on which to listen for it.

Thus, when the IGY planners convened a meeting on rockets and satellites in Washington, scheduled to run from Sept. 30 to Oct. 5 of that year, there was at least a general awareness that Soviet satellite preparations had been underway for some time, notes Homer Newell, later associate administrator of the National

Smithsonian Astrophysical Observatory

Streak across the sky is the third stage of the rocket that launched Sputnik 1.

Left: Sputnik 1 model, at a Soviet exhibition.

Aeronautics and Space Administration. (NASA was formed the following year.) "But," writes Newell (*Beyond the Atmosphere*, NASA, Washington, 1980), "those expectations did not diminish the surprise and dismay felt by U.S. scientists when the launching of Sputnik 1 was announced on the evening of 4 October 1957. At the time many of the conference attendees were guests at the Soviet Embassy. The news, which had been broadcast by Moscow Radio, was brought to [Lloyd Berkner, later to chair the National Academy of Sciences' Space Science Board], who shared it at once with those present. His announcement practically wiped out the party as the U.S. scientists, in particular, scattered to their home bases to take stock of what had happened."

What had happened was far more than the rattling of some scientists' cages. There were recriminations about the U.S. failure to have beaten Russia to the punch (Sen. Henry Jackson called it "a devastating blow to U.S. scientific, industrial and technological prestige"), and fears about the launching's indication of Soviet intercontinental ballistic missile capabilities (Sen. Mike Mansfield called for "a new Manhattan Project" to achieve U.S. ICBM superiority). Eisenhower appointed the first presidential science adviser (James R. Killian, president of MIT), and moved the President's Science Advisory Committee into the White House. Educational priorities were reevaluated, budgets redrawn, and the conflict between civilian and military space developments (which still rages today) became a major factor for U.S. policymakers.

But in a sense, the political, economic and technological furor can be viewed from the perspective of a quarter-century's distance as mere detail. Many of the same issues still exist, but the most meaningful message of Sputnik 1's beeping was independent of who had sent it. The sky that felt so different to me had abruptly become less of a psychologically separate and unassailable part of man's domain than a new and vast addition to it. The Space Age had begun.

—*Jonathan Eberhart*

Some Space Age Milestones

Launch Date	Spacecraft	Origin	Event
Oct. 4, 1957	Sputnik 1	USSR	1st artificial satellite
Nov. 3, 1957	Sputnik 2	USSR	1st animal in orbit — dog Laika
Dec. 6, 1957	Vanguard TV 3	U.S.	1st attempted U.S. satellite launch — unsuccessful
Jan. 31, 1958	Explorer 1	U.S.	1st successful U.S. satellite; discovered earth's trapped-radiation belts
Dec. 18, 1958	Score	U.S.	1st communications satellite — transmitted taped messages
Jan. 2, 1959	Luna 1	USSR	1st manmade object to leave earth's gravity — lunar flyby (1/4/58), at about 6,000 km
Feb. 28, 1959	Discoverer 1	U.S.	1st polar-orbiting satellite
Mar. 3, 1959	Pioneer 4	U.S.	1st U.S. lunar flyby (3/4/59), at 59,680 km
Aug. 7, 1959	Explorer 6	U.S.	1st satellite photo of earth
Sep. 12, 1959	Luna 2	USSR	1st probe to hit moon (9/14/59)
Oct. 4, 1959	Luna 3	USSR	1st photos of moon's far side (10/7/59)
Apr. 1, 1960	TIROS 1	U.S.	1st weather satellite
May 15, 1960	Sputnik 4	USSR	Unmanned Vostok prototype
Aug. 10, 1960	Discoverer 13	U.S.	1st recovery of payload — ejected film capsule recovered from ocean
Aug. 12, 1960	Echo 1	U.S.	First passive comsat
Aug. 19, 1960	Sputnik 5	USSR	1st animals recovered from orbit — dogs Belka and Strelka
Oct. 4, 1960	Courier 1B	U.S.	1st active repeater comsat
Apr. 12, 1961	Vostok 1	USSR	1st manned space flight — Yuri Gagarin
May 5, 1961	Mercury 3	U.S.	1st U.S. manned space flight — Alan Shepard
Feb. 20, 1962	Mercury 6	U.S.	1st U.S. manned orbital flight — John Glenn
Aug. 26, 1962	Mariner 2	U.S.	1st Venus flyby (12/14/62), at 33,628 km
June 16, 1963	Vostok 6	USSR	1st woman in space — Valentina Tereshkova
July 26, 1963	Syncom 2	U.S.	1st successful geosynchronous satellite
Jan. 24, 1964	Echo 2	U.S.	1st joint program with USSR — passive comsat
July 28, 1964	Ranger 7	U.S.	1st U.S. lunar close-ups, impact 7/31/64
Oct. 12, 1964	Voskhod 1	USSR	1st 3-man crew in space
Nov. 28, 1964	Mariner 4	U.S.	1st successful Mars flyby (7/14/65), at 9,800 km
Mar. 18, 1965	Voskhod 2	USSR	1st spacewalk — Alexei Leonov
Mar. 23, 1965	Gemini 3	U.S.	1st U.S. 2-man crew
Apr. 6, 1965	Early Bird	U.S.	1st commercial comsat
Apr. 23, 1965	Molniya 1A	USSR	1st Soviet comsat
Nov. 16, 1965	Venera 3	USSR	1st Venus impact (3/1/66)
Jan. 31, 1966	Luna 9	USSR	1st successful lunar soft-landing (2/3/66)
Mar. 31, 1966	Luna 10	USSR	1st successful lunar orbiter (4/3/66)
May 30, 1966	Surveyor 1	U.S.	1st U.S. lunar soft-landing (6/2/66)
Aug. 10, 1966	Lunar Orbiter 1	U.S.	1st U.S. lunar orbiter (8/14/66)
Aug. 23, 1967	Soyuz 1	USSR	1st death during space flight — Vladimir Komarov killed when spacecraft parachute tangled
Oct. 27, 1967	Kosmos 186	USSR	1st automatic docking in space, with Kosmos 188
Nov. 5, 1967	ATS-3	U.S.	1st photo of full earth disk
Sep. 15, 1968	Zond 5	USSR	1st life-forms to the moon (turtles, bacteria, plant seeds); first lunar round-trip (returned to earth 9/21/68)
Oct. 11, 1968	Apollo 7	U.S.	1st U.S. 3-man space crew
Dec. 21, 1968	Apollo 8	U.S.	1st manned lunar round-trip — Frank Borman, James Lovell, Edwin Anders (returned 12/27/68)
Jan. 14, 1969	Soyuz 4	USSR	1st docking of two manned spacecraft
Jan. 15, 1969	Soyuz 5	USSR	
July 16, 1969	Apollo 11	U.S.	1st manned lunar landing — Neil Armstrong, Edwin Aldrin (7/20/69)
Aug. 17, 1970	Venera 7	USSR	1st successful automated Venus landing (12/15/70)
Sep. 12, 1970	Luna 16	USSR	1st automated lunar sample-return (returned 9/24/70)
Nov. 10, 1970	Luna 17	USSR	1st automated lunar rover (11/15/70)
Apr. 19, 1971	Salyut 1	USSR	Space-station prototype (unmanned)
Apr. 23, 1971	Soyuz 10	USSR	1st manned docking with a space station
May 19, 1971	Mars 2	USSR	1st successful Mars orbiter (11/27/71)
May 28, 1971	Mars 3	USSR	1st successful automated Mars landing (12/2/71)
May 30, 1971	Mariner 9	U.S.	1st U.S. Mars orbiter (11/13/71)
June 6, 1971	Soyuz 11	USSR	1st humans to occupy a space station
Aug. 4, 1971	Apollo 15 subsatellite	U.S.	1st satellite launched from a manned spacecraft — placed into lunar orbit
Mar. 2, 1972	Pioneer 10	U.S.	1st Jupiter flyby, 82,000 km (12/3/73); first manmade object to be sent out of solar system
Apr. 5, 1973	Pioneer 11	U.S.	1st Saturn flyby, 21,400 km (9/1/79)
May 14, 1973	Skylab 1	U.S.	1st U.S. space station
May 25, 1973	Skylab 2	U.S.	1st U.S. crew to occupy a space station
Nov. 3, 1973	Mariner 10	U.S.	1st Mercury flyby, 438 km (3/29/74)
June 8, 1975	Venera 9	USSR	1st photo of Venus surface (10/22/75)
July 15, 1975	Soyuz 19	USSR	1st U.S./Soviet cooperative manned spaceflight
July 15, 1975	Apollo ASTP	U.S.	
Aug. 20, 1975	Viking 1	U.S.	1st successfully operating Mars lander (7/20/76)
May 20, 1978	Pioneer Venus orbiter	U.S.	1st global map (radar) of Venus
Aug. 8, 1978	Pioneer Venus multiprobe	U.S.	1st U.S. probes to Venus surface (12/9/78)
Apr. 12, 1981	Columbia	U.S.	1st flight of a reusable manned spacecraft