# Telstar – A Philatelic History

## The Communication Revolution Began with this Satellite Series

Don Hillger SU5200, Garry Toth, and Sig Bette SU-1063

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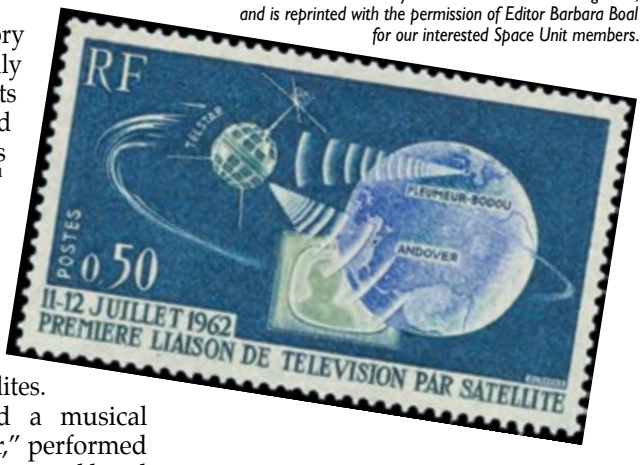



Telstar-1 made history over fifty years ago on July 11, 1962, one day after its launch, when it transmitted the first television signals across the Atlantic Ocean,[1] between the United States of America and France. Although not the first active communications satellite,[2] it became a popular and recognizable name in the new world of artificial satellites.

Telstar even spawned a musical composition titled "Telstar," performed by The Tornados, an instrumental band of the early 1960s. Their recording was the first single by a British band to reach number one in the United States, later becaming a number one hit in the United Kingdom as well. Written and produced by Joel Meek, the spacey sounds of the recording were produced by a clavioline, a keyboard instrument with distinctive electronic sounds. The song was also recorded by other bands, including The Ventures.

Telstar's first television relay by satellite was commemorated not only by France (s. 1048, shown above), but also by two other countries, with common-design stamps. Mali issued two stamps (s. 40, at 45 francs and s. 41, shown below) and Reunion used an overprint of the French stamp (s. 344, also shown below).

A second set of common design stamps was issued to commemorate the same event, but the event is noted as the "first television transmission between Europe and America," versus "first television transmission by satellite" on the previous issue. On all of these stamps the cities of Andover (Maine) and Pleumeur-Bodou (France) are identified, with Telstar shown in orbit, relaying signals between the two locations. This series includes single stamps from eight French-speaking countries: French Andorra (s. 154), Comoro Islands (s. C7), French Polynesia (s. C29), French Southern and Antarctic Territories (s. C29), New Caledonia (s. C33), St. Pierre and Miquelon (s. C26), Somali Coast (s. C31), and Wallis and Futuna (s. C17). All were issued in 1962, except the Somali Coast stamp, which was issued in 1963.





Above: Telstar common-design items: French Southern and Antarctic (Scott C29); St. Pierre (Scott C26); and French Polynesia (Scott C29), all were issued in 1962. APS Reference Collection.

Below: Clyde Sarzin Telstar-1 launch cover with labels of the first Telstar telecast. The cachet accurately depicts the single helical antenna. The label "stamps" of the live TV transmissions are a nice addition to the cover.

Telstar, a name created by joining 'Telecommunications' and 'Star,' was a privately-sponsored satellite built by Bell Telephone Laboratories, which was part of American Telephone and Telegraph (AT&T) at the time. Telstar was designed to relay not only telephone but also television and telegraph messages. Bell arranged for NASA to launch the satellites, paying the $3 million cost of launching each of the first two Telstar satellites. Other communications satellites, such as Relay (built by RCA) and Syncom (built by Hughes) soon followed. However, the international competition ended shortly thereafter with the passage of the Satellite Communications Act, an agreement to give control of international satellite communications exclusively to a newly formed Communications Satellite Corporation (COMSAT), which later became better known as the International Telecommunications Satellite Consortium (INTELSAT).

Telstar-1 and Telstar-2 were spherical satellites spin stabilized in orbit. The 0.85 meter diameter of Telstar was limited only by the dimensions of NASA's Delta rocket. The spacecraft surface was covered with solar cells, with a microwave receive-and-transmit antenna ring around the circumference, operating on different frequencies. A single helical antenna, located on top, was used to communicate with ground stations, as shown on a Sarzin Telstar-1 launch cover, shown below.

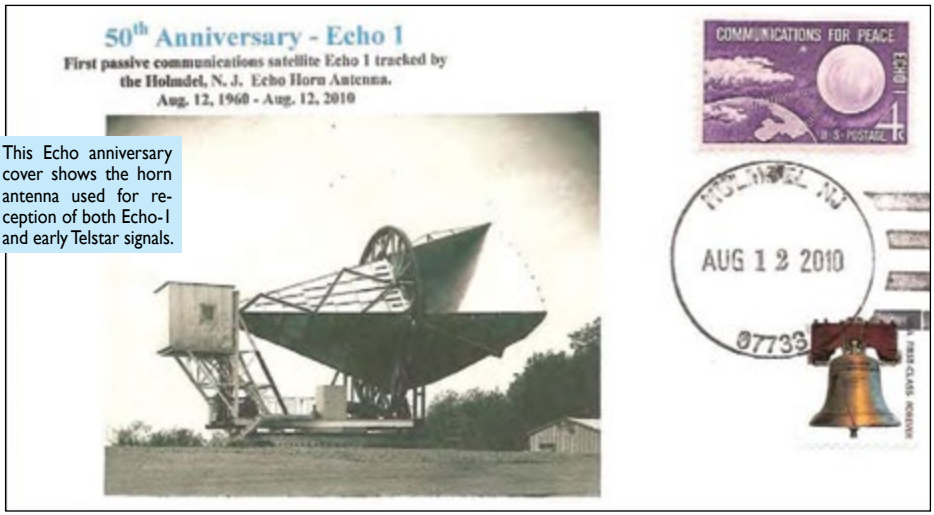
However, different antenna configurations can be seen on numerous postal items depicting Telstar, as displayed by the selection of stamps to the right.

Telstar relayed signals by amplifying the small signals received from ground transmissions, but this amplification was limited because only fifteen watts of power were available from the solar cells. This very weak Telstar signal was then received by huge steerable horn antennas designed to receive those weak signals, picking out the barely audible message above the background noise. Similar antennas were first used to receive signals from the Echo passive communications satellites, with signals merely bouncing off the large silver balloons without any amplification.

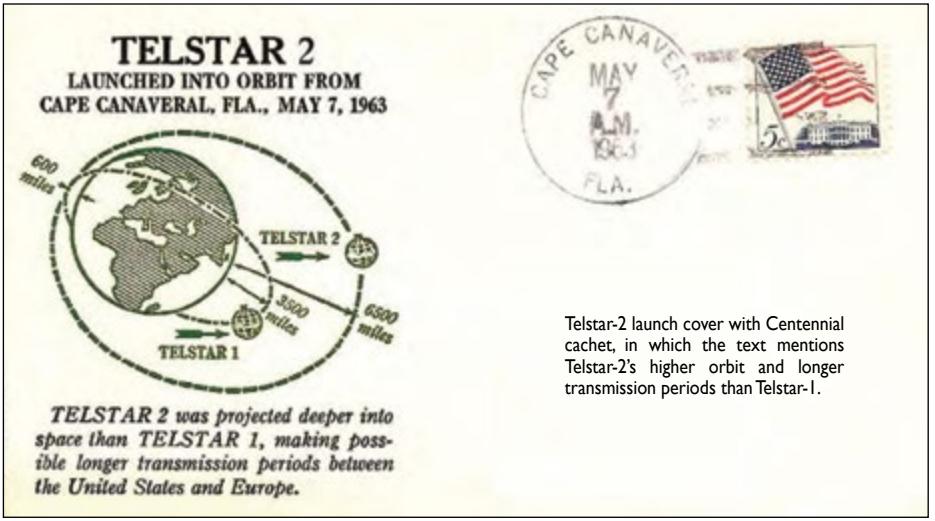
The elliptical (5500 km apogee) and inclined (45° to the equator) orbit of the Telstar-1 caused it to be useful for relaying communications from any given location for only a short portion of each orbit, which took about two and a half hours. The original Telstar concept was to launch up to fifty satellites so that one or two would be available at any time from any location for worldwide communications.

The proposed system also included about twenty-five ground stations in order to provide global coverage. However, only two of the original six Telstars were


The Turks and Caicos Islands stamp (s. 330) depicts Bell Labs technicians assembling and testing the Telstar satellite.




This Echo anniversary cover shows the horn antenna used for reception of both Echo-1 and early Telstar signals.




Telstar-2 launch cover with Centennial cachet, in which the text mentions Telstar-2's higher orbit and longer transmission periods than Telstar-1.

launched. Because of their high altitude, both of those defunct Telstars will remain in orbit for at least another hundred years.

Shortly after the launch of Telstar, the first broadcasts through the satellite were pictures transmitted from Andover to Bell Labs in Holmdel, New Jersey, confirming the viability of the system. The very next day, on the sixth orbit of Telstar, pictures and sound were sent to American television networks. Transmissions from later orbits were received in France and England, but with varying success. The French then were the first to return signals from Pleumeur-Bodou to America.

Telstar-1 lasted only seven months due to unexpected radiation damage from the inner Van Allen belt. Consequently, Telstar-2 was launched on May 7, 1963, into a much higher orbit to avoid radiation damage. It lasted two years and was turned off after all useful information had been obtained. Telstar-1 and 2 were research experiments. All the following Telstar satellites were intended strictly for commercial use.


This "Space Velvet" cachet by Robert Rank depicts the correct antenna configuration of Telstar-1. The Port Canaveral hand cancel applied by Clyde Sarzin over the space-themed stamp (s. 1193) makes this a nice launch cover. The text "Bell" refers to the prime contractor, Bell Laboratories.


A very odd "Space Velvet" cover was created for the Telstar 2 launch on May 7, 1963. Not only did Rank somehow use an inaccurate illustration of the antenna configuration, but the dual cancels don't match: the top one is correct while the bottom one has 1962 in the date.



The international cooperation made possible by Telstar was an example of the 'Peaceful Uses of Outer Space' (PUOS), a theme still promoted to this day by the United Nations. A large number of postal items were issued with the PUOS theme, starting in 1962, the same year the first Telstar was launched.

'Peaceful Uses of Outer Space' items featuring Telstar include a stamp and a souvenir sheet from Liberia (s. C151, C152, above). Other PUOS items include a set of local post stamps from Satellite Beach, issued in 1964, and a second set of the same stamps overprinted and issued in 1965 (below). Qatar also used the PUOS theme in 1966 on two stamps featuring Telstar (s. 101D with a color variation (shown on page 147).

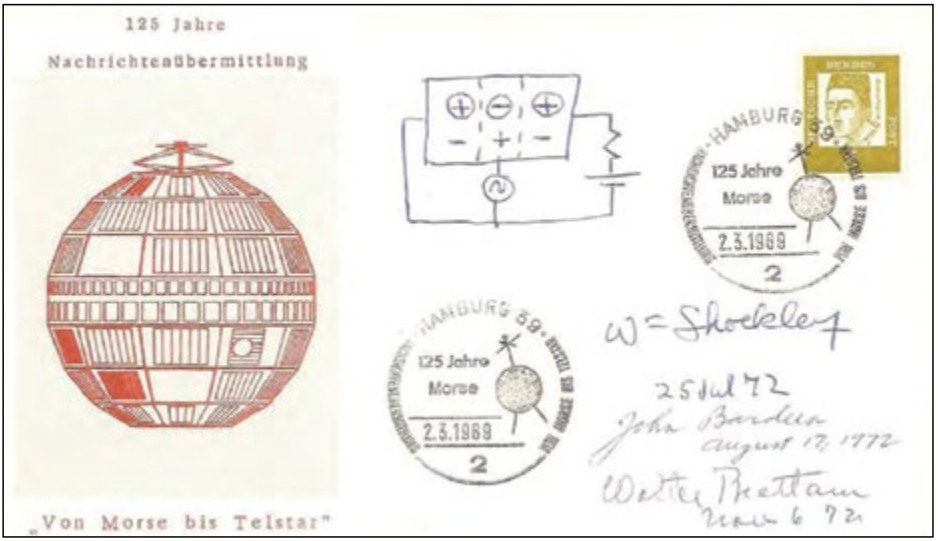


Above: This Satellite Beach stamp is a revised issue with a new denomination and an Eternal Flame in gold overprint.
Left: While this 'Space for Humanity" set from 2007 doesn't have a Telstar image, the United Nation continues to issue stamps for peaceful space exploration


Covers postmarked July 23, 1962: the top one for President Kennedy's live press conference broadcast to Europe, and the second, a postcard, for the live response broadcast from Vatican City.

Among the first public trans-Atlantic TV broadcasts transmitted by Telstar was a live press conference with President John F. Kennedy held on July 23, 1962. That historic event has been featured on Telstar postal covers. Recordings of Kennedy's voice during the broadcast can be found online. The press conference was followed by a complementary broadcast from the Vatican.

The development and implementation of Telstar required, or relied upon, the invention of many other devices, such as the transistor, the laser, the traveling-wave tube amplifier, and solar cells. Working with weak signals from space also allowed the discovery of Cosmic Background Radiation, one of the major scientific discoveries of the century. The names of those inventors and Nobel Prize

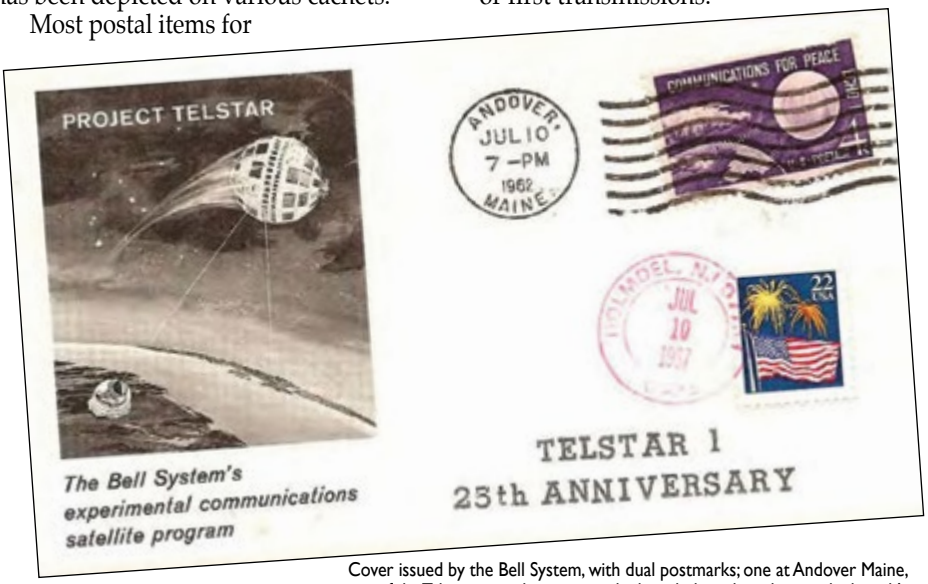



This card with a Telstar label cachet was postmarked at Hamburg, Germany, commemorating 125 years of news transmissions — Morse to Telstar. It is autographed by the three inventors of the transistor: W. Shockley, J. Bardeen, and W. Brattain,.


Another German card, similar to the one on the previous page, is autographed by seven Nobel Prize recipients: Laser inventors C. Townes and A. Shawlow; Discoverers of Cosmic Background Radiation R. Wilson and A. Penzias (their find supports the Big Bang origin of the Universe), and Transistor inventors J. Bardeen, W. Brattain, and W. Shockley. All were employees of Bell Laboratories.

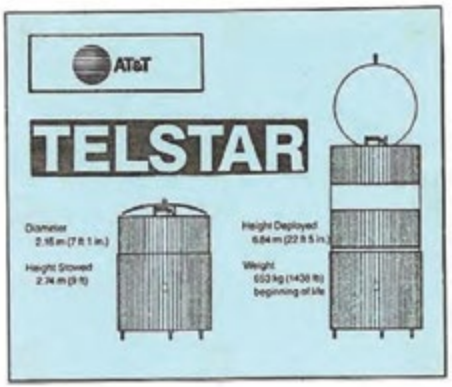
recipients can readily be found on postal covers related to Telstar. This advance of science to enable the use of satellites for trans-Atlantic communications is in striking contrast to Marconi's first wireless transmission across the Atlantic in 1902, sixty years earlier, a theme that has been depicted on various cachets.

Most postal items for Telstar were issued in the 1960s, following the early success of Telstar-1 and 2. But even after fifty years, Telstar continues to appear on new postal items, mostly on stamps commemorating early satellites, as well as postal covers, particularly on anniversary dates of the first two launches or first transmissions.




Cover issued by the Bell System, with dual postmarks; one at Andover Maine, site of the Telstar ground station, on the launch date, the other on the launch's 25th anniversary at Holmdel, New Jersey, the location of the receiving station.

More sophisticated Telstar satellites, similar in name only, then began commercial duty in geostationary orbits. And the Telstar series continues, with the most recent Telstar launched in 2009, with more to come.





Telstar-3D launch cover dated June 19, 1985, placed in orbit by the Space Shuttle Discovery. Notice the description of the satellite's size in the cachet. Telstar-1 had a diameter of about 85 cm and a mass of about 75 kg, while Telstar-3 had a deployed height of 6.84 m and mass of 653 kg.

A checklist of Telstar-series satellites postal items is online at: **http://rammb.cira.colostate.edu/dev/hillger/Telstar.htm**

**Don Hillger, PhD**, (don.hillger@colostate.edu) is a research meteorologist with the National Oceanic and Atmospheric Administration and holds a cooperative position at Colorado State University.
**Garry Toth, MSc,** (gmt.varia@gmail.com) is a retired Canadian meteorologist.
**Siegfried Bette** (sig- bette@optonline.net) is a retired Mechanical Prototype Labs Supervisor who worked at the AT&T Bell Labs in Holmdel, New Jersey.


The Bell System's experimental communications satellite program


Bell System Laboratories was the provider of the technology used on the two experimental satellites, so they advertised their participation in the "Project" Telstar, and you can be sure they provided the correct artwork of the antenna configuration for the cachet.



Clyde Sarzin created this single-color printed cachet and identifies the satellite as belonging to the American Telephone & Telegraph corporation, which owned the Bell System. Clyde has serviced this item at Port Canaveral, his post office of choice, as that is where the launch took place.



Carl Swanson, on the other hand, preferred to send his cover to Patrick Air Force Base, center of the Eastern Test Range. His beautiful three-color cachet points out that this satellite, unlike Echo, was an 'Active" communication relay satellite. The TV set shows the American Flag, the first image relayed by the Bell System technicians., "on the sixth orbit" as noted by Swanson.