

## Un-manned Satellites on Postage Stamps : 20

By Guest Contributors Don Hillger and Garry Toth

### The OGO Series

This is the twentieth in a series of articles about un-manned satellites on postage stamps. This article features the **Orbiting Geophysical Observatory (OGO)**-series satellites. Six OGO satellites were launched, starting with OGO-1 on 5 September 1964, and ending with OGO-6 on 5 June 1969. There were no OGO launch failures.

The OGO satellites were all parallelepiped (box-shaped) in form, with two solar panels and several instrument packages. Three-axis stabilization was intended to keep one side of the spacecraft body pointing towards the earth at all times. However this did not prove possible for all the satellites in the series, and a low-rate spin had to be applied to some of the spacecraft.

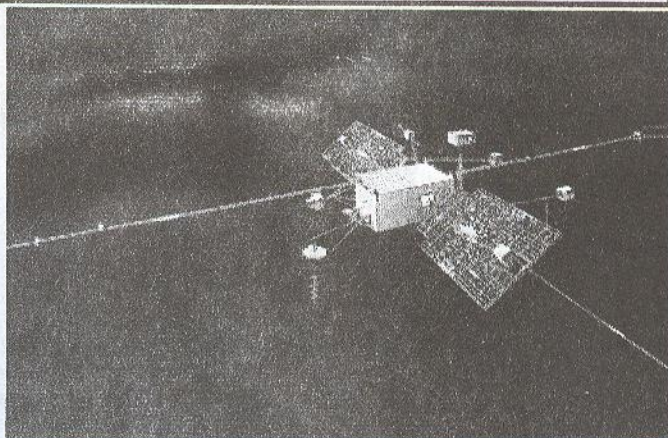
Orbital elements such as perigee, apogee, and inclination (to the equator) varied widely among the six satellites. Perigees ranged from about 230 km to 14,000 km, apogees from 900 km to 114,000 km, and inclinations from 31° to 87°, depending on the types of experiments flown and the data that were to be collected.

Some of the instruments were oriented towards the sun, others in the orbital plane, and yet others were attached to booms extending from the spacecraft body. Experiments were for many diversified geophysical studies: energetic particles, geomagnetic and electric fields, plasma waves, interplanetary dust, electromagnetic radiation ranging from very low frequencies to UV and X-rays, atmospheric composition and heating, radio astronomy, aurora and airglow emissions, and ionospheric properties.

Because the six OGO spacecraft were so similar, all but one of the postal items showing OGO do not specifically note a satellite number. Only the stamp from Sierra Leone issued in 1989 (Scott 1069a) specifically identifies the satellite (as OGO-4).

A checklist of postal items showing OGO series satellites (<http://www.cira.colostate.edu/ramm/hillger/OGO.htm>) is available on the Website developed by the authors for the un-manned satellites featured in this series of articles (<http://www.cira.colostate.edu/ramm/hillger/satellites.htm>).

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Picture taken from Mark Wade's online *Encyclopaedia Astronautica*



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## Orbiting Geophysical Observatory (OGO) series satellites

Below is a checklist of Orbiting Geophysical Observatory (OGO) series satellite postal items (stamps, souvenir sheets, aerogrammes, postal cards, etc.). Catalog numbers, years of issue, and notes on the satellites featured are given when available. For a complete list of satellites see the OGO-series table on the scientific/research satellites page. If readers know of additional information or images, please contact the authors using the e-mail addresses at the bottom of this page.

Country	Catalog Number*	Type of Item**	Year of Issue	Notes on Content
Burundi	129		1965	OGO-1/6 <sup>1</sup>
Czechoslovakia	1454		1967	OGO-1/6 <sup>1</sup>
Ghana	164		1964	OGO-1/6 <sup>1</sup>
Ghana	165		1964	OGO-1/6 <sup>1</sup>
Ghana	166		1964	OGO-1/6 <sup>1</sup>
Ghana	166a	On stamp and in margin of imperforate SS4 (4x (166))	1964	OGO-1/6 <sup>1</sup>
Ghana	186		1964	OGO-1/6 <sup>1</sup>
Ghana	186a	MS12 (12x (186))	1964	OGO-1/6 <sup>1</sup>
Ghana	187		1964	OGO-1/6 <sup>1</sup>
Ghana	187a	MS12 (12x (187))	1964	OGO-1/6 <sup>1</sup>
Ghana	188		1964	OGO-1/6 <sup>1</sup>
Ghana	188a	MS12 (12x (188))	1964	OGO-1/6 <sup>1</sup>
Kathiri State of Seyyun (South Arabia)	M186A M186B	Changed colors on imperforate	1966	OGO-1/6 <sup>1</sup>
Kathiri State of Seyyun (South Arabia)	M189A M189B	Changed colors on imperforate	1966	OGO-1/6 <sup>1</sup>
Kathiri State of Seyyun (South Arabia)	M1A90 M1B90	Changed colors on imperforate	1967	OGO-1/6 <sup>1</sup>
Kathiri State of Seyyun (South Arabia)	BLA1A BLB1A	SS1 (changed colors on imperforate)	1967	OGO-1/6 <sup>1</sup>
Nigeria	143a	In margin of MS12 (12x (143))	1963	OGO-1/6 <sup>1</sup>
Nigeria	144a	In margin of MS12 (12x (144))	1963	OGO-1/6 <sup>1</sup>
Panama	C334a (BL 36) C334a (BL 37)	In margin of SS2 (C333-C334) (changed colors on imperforate)	1965	OGO-1/6 <sup>1</sup>
Satellite Beach FL (U.S.)	Local	set-D-5 (green)	1964	OGO-1/6 <sup>1</sup>
Satellite Beach FL (U.S.)	Local	set-D-5 (green) overprinted in gold	1964	OGO-1/6 <sup>1</sup>
Sierra Leone	1069i	One of MS9 (1069a-i)	1989	OGO-4
Togo	500		1964	OGO-1/6 <sup>1</sup>
Togo	504		1964	OGO-1/6 <sup>1</sup>
Togo	505a	Imperforate SS4 (502-505)	1965	OGO-1/6 <sup>1</sup>

\*Scott catalog number, unless prefixed with Mi or BL for Michel; "i" prefix denotes imperforate version.

\*\*SS# = souvenir sheet, MS# = miniature sheet, where # = number of stamps in sheet, and the numbers in parentheses are the catalog numbers of the stamps in the sheet.

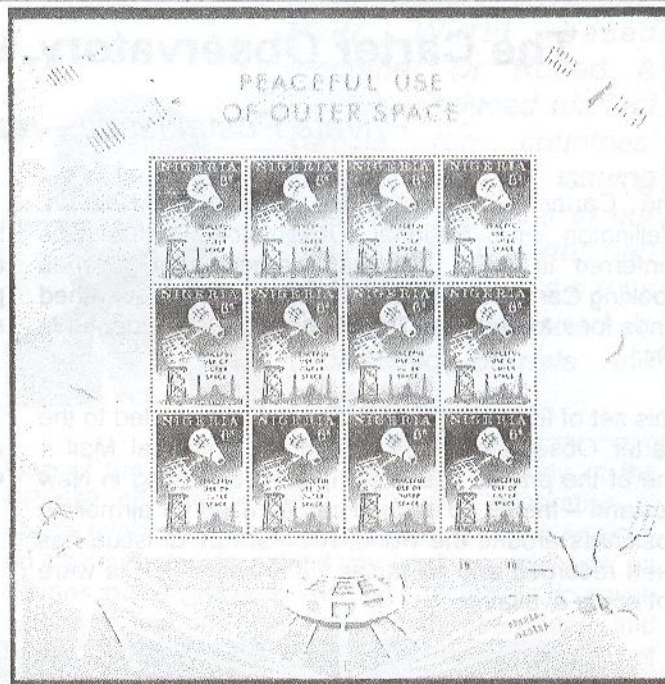
<sup>1</sup>OGO-1 thru OGO-6 are all basically identical.

### "You Say Potato"

Writing in the November 2006 edition of leading British philatelic glossy *STAMP*, regular contributor Bill Goldsmith who is not known as a specialist space stamp collector reveals some intriguing facts about Edmond Halley in a lavishly illustrated four page article marking 2006 issues for the great man's 350th birth anniversary.

Amongst these he asserts is the correct pronunciation of "Halley". Apparently Americans who with singer Bill Hailey (and The Comets) in mind rhyme it with "Bailey" and most others who rhyme it with "Sally" are both wrong as the Edmond Halley Society advises that the word be pronounced like "holly" ! Any thoughts ?

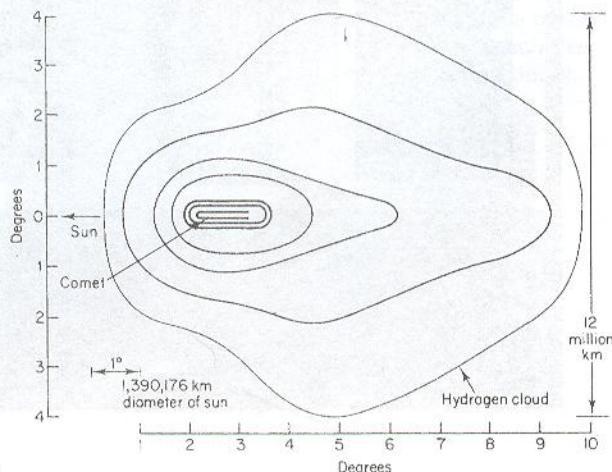
Goldsmith also comments on Halley's eccentric idea that the Earth had a hollow centre which supported life and on the clear evidence, despite a 1985 Christmas issue from Aitutaki, that the Star of Bethlehem could not have been Halley's Comet or indeed any comet.



Below : Text and illustration relating to OGO from Reg Turnill's *The Observer's Spaceflight Directory* (Warne 1978)

### OGO Geophysical Observatory

Details of vast hydrogen clouds, the most abundant element in the universe, were provided by the 6-satellite Orbiting Geophysical Observatory series. OGO 1 was launched Sep 5 1964 by Atlas-Agena from C Kennedy. Wt 487 kg; orbit 35,743 x 114,040 km; incl 57°. OGOs 2-6 were launched between 1965-69. Each was launched into a different sector of the cislunar space quadrant and into a different sector of the cislunar space quadrant. The last (L Jun 5 1969; wt 620 kg) transmitted until Jun 23 1969. The 130 experiments they carried sent back 1.5M hr of data and added a number of notable 'firsts' to space history. They included: first observation of protons responsible for a ring of current surrounding the Earth during magnetic storms, at a distance of several Earth radii; first satellite global survey of Earth's magnetic field; first observation of daylight aurora; first world-wide map of airglow distribution; and new knowledge about Earth's 'bow shock' as it sweeps around the Sun. In Apr 1970 OGO-5 measured a huge hydrogen gas envelope, 12M km across and 10 times larger than the Sun, surrounding Comet Bennett. Not visible from Earth, the hydrogen cloud was measured by a French measuring device while the comet was 104M km from Earth, and OGO-5 was operating in a special spin-scan mode, 22,500 x 107,800 km above the Earth. The existence of large amounts of hydrogen around comets was first discovered in Jan 1970 by OAO-2. Satellites' orbital life 10-16 yr.



Comet Bennett's hydrogen cloud as measured by OGO-5