

# Unmanned Satellites on Postage Stamps

## 42. Aryabhata, Bhaskara, Rohini, and Badr Series Satellites

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This is the forty-second in a series of articles about unmanned satellites on postage stamps. In this article we cover scientific satellites from Southern Asia: the **Aryabhata**, **Bhaskara**, and **Rohini** satellites from India, and the **Badr** satellite from Pakistan.

The **Aryabhata** satellite was India's first satellite, launched 19 April 1975. It was completely designed and manufactured in India but launched by Russia. The spacecraft, named after the famous Indian astronomer Aryabhata (476-550), was a scientific satellite used to measure cosmic X-rays, solar neutrons, gamma rays, ionospheric electrons, and UV rays. With 26 sides, the spacecraft was quasi-spherical. It appears on several stamps or other postal items from India and Russia. Dominica is the only other country that has issued a stamp depicting Aryabhata.

The first **Bhaskara** (also known as the **Satellite for Earth Observation - SEO**) was India's second satellite. Two Bhaskaras were launched by Russia in 1979 and 1981. Bhaskara was named after two Indian astronomer-mathematicians. The spacecraft were intended for Earth observations related to hydrology, forestry, and geology, as well as for microwave studies of the ocean surface. Another objective was to collect meteorological data from remote platforms. Like Aryabhata, Bhaskara was a 26-sided

quasi-spherical polyhedron, about 1.6 m in diameter.

Since the body of the spacecraft is similar for both Aryabhata and Bhaskara, it is assumed that the antennas can be used to distinguish between the two. For Aryabhata, the antennas appear to be attached to the widest part of the spacecraft body. For Bhaskara, the antennas appear to be attached to the angled part of the body.

The first **Rohini** was the first Indian-built satellite that was also launched by them, on 18 July 1980. Three Rohinis were launched through 1983. Although some sources identify it as a spherical satellite, 0.6 m in diameter, the lone postal item from India featuring Rohini shows it as a polyhedron, similar to Aryabhata and Bhaskara, but with one flattened end.

Pakistan's first satellite, **Badr**, was launched by the People's Republic of China on 16 July 1990. Badr-1 was an experimental communications satellite. Also a 26-sided polyhedron, about 0.5 m in diameter, it looked similar to the Indian satellites mentioned above. Only two postal items from Pakistan feature Badr-1. Badr-2, an experimental microsatellite with communications and remote sensing capabilities, was launched in 2001, this time by Russia. No postal items are known to depict the Badr-2 satellite.

A checklist of postal items showing these Indian and Pakistani satellites (<http://rammb.cira.colostate.edu/dev/hillger/Aryabhata.htm>) is available on the Website developed by the authors for the un-manned satellites featured in this series of articles (<http://rammb.cira.colostate.edu/dev/hillger/satellites.htm>). E-mail correspondence is welcome. Don Hillger can be reached at [don.hillger@colostate.edu](mailto:don.hillger@colostate.edu) and Garry Toth at [garry\\_toth@hotmail.com](mailto:garry_toth@hotmail.com).



*Dominica 2237f (Mi2907) 2000*



*Russia (USSR) 4490 (Mi4531) 1975*



*India 655 (Mi624) 1975*



*Russia (USSR) 5242 (Mi5372) 1984*



*India P79 2 rupee (banknote) 1983*



Russia (USSR) 5243 (Mi5373) 1984



St. Thomas and Prince Island 1963b  
(Mi3909) 2008



Pakistan 734 (Mi778) 1990



India 927 (Mi874) 1981



Pakistan 772 (Mi848) 1992



Russia (USSR) 1975-04-19 Kapustin Yar (Two-color printed) cachet on cover  
Aryabhata launch



INDIA 1976-04-20 SRI HARI KOTA LAUNCH RANGE (SINGLE-COLOR PRINTED) CACHET ON COVER (1ST ANNIV.) ARYABHATA LAUNCH

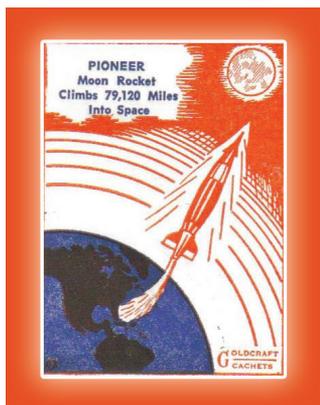


RUSSIA (USSR) 1979-06-07 MOSCOW CANCEL AND (PRINTED) CACHET ON STAMPED ENVELOPE BHASKARA-1 LAUNCH

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