

THE HISTORY OF ROCKETRY IN INDIA

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In the development of gunpowder is found the germinal seed of modern warfare and rocketry. Common belief is that the invention of gunpowder had its genesis in Asia - probably China or India. Several claims have been put forward for an Indian priority; however, the actual origins of rockets in India are surrounded in obscurity and even in myth.

Of all the great technological marvels of the modern world, rockets are perhaps the most exciting. The rocket made possible the modern moon landings, various space probes and pictures from space; in short, the whole space age, and yet it is mostly an Asian invention.

It is generally agreed that gunpowder and rockets came from the East about 1000 to 1300 years ago. Evidence to this effect has been found in China and India. It is recorded that the earliest known written formulae for gunpowder appeared in China in the year 1044. The most widely accepted instance of the first use of Chinese rockets was the employment of arrows or "Spears of Flying Fire" in the year 1233 against the Manghols. In India also, the problem of interpreting historical sources exists. It is believed that gunpowder had been established on the Indian subcontinent by the year 1400. A Spanish traveler, Benjamin of Tudela, who made a voyage to the subcontinent between 1176-77 and visited Quilon on the southern end of the Malabar Coast (South India) had seen Sun Worshippers, who built, on a very high place, a "Solar Disc", which rotated with a thundering noise throwing out fire sparks. Perhaps, the spurious 12th century Sun Worshippers did indeed master the complex pyrotechnics of the Catherine

Wheel - what Indians of today know as "Chakri" or "Chakkaram" (turn round and round).

The earliest appearance of war rockets upon Indian soil is dated 1399 and in a battle in the Siege of Delhi. The army of Delhi, under Sultan Mohammed V, is said to have launched against the Manghol attacks of Timur firepots or grenades - fireworks of burning pitch, believed to have been war rockets. What is certain is the Chinese, in a sense, lost the ancient rocket arms race to the Indians. For it were the Indians, and not the Chinese, who began to adopt war rockets and regularly fired them in battles in the last century. How the first rockets arrived upon the Indian subcontinent, and whether they originated in China or if the Indians discovered them themselves, must be left to future historians. However, once established, India certainly used war rockets more extensively than any other country. Thousands are recorded in some battles. Rockets are mentioned frequently in Indian military annals of the 16th to 18th century. For example; at the Battle of Panipat in 1761 between the Afghans and the Maharattas - the Maharattas are reported to have possessed a vast quantity of rockets and could fire a volley of 2000 of them at once. They frightened the war elephants. In 1572, during the Emperor Akbar's expedition to Gujarat, one of the rockets fell among thorn bushes and made such a noise that one of the enemy noted how the war elephants flew into panic and caused a wholesale rout.

Amongst some of the innumerable engagements in which rockets appeared were the following:

1. The Battle of Gwalior in 1518 when Sultan Ibrahim Lodi of Delhi fired them against Rajputs.
2. The Battle of Talikota in 1565.
3. In Akbar's expedition to Gujarat in 1572.
4. In Aurangzeb's Siege of Bidar in 1657.
5. At the Battle of Samugarh in 1658.
6. At the Battle of Panipat in 1761 in which the Maharattas fired volleys of 2000 rockets at one time.
7. The Battles of Srirangapatnam in 1772 and 1799.
8. In the various Maharatta Wars against the French and British.
9. The Siege of Jahnsi in 1858.
10. And lastly, during the Indian Mutiny.

The Mysorean armies of Hyder Ali are reported to have had 2000 'rocket men'. His son, Tippu Sultan, raised the number to 6000. Hyder Ali's armies had 5000 'rocket camels' at their disposal.

In Europe, by comparison, crude war rockets were reported by the late 14th century, but they soon disappeared from European battle fields. War rockets vanished from Europe because of the rapid progress made in conventional firearms rifle and cannon.

Rockets, in fact, came to complement the rifle and cannon and evolved as both a useful and necessary arm. Rockets were found to be an inexpensive substitute for light artillery. Though notoriously inaccurate and fired singly, a lucky hit, such as against a war elephant, might turn the tide of battle; but their great advantage was when fired en

masse. Here, their chief purpose was to harass and demoralise blocs of troops or cavalry, and particularly to frighten the latter. In short, the rocket was an ideal weapon for close order warfare up to the late 18th or early 19th centuries. In the end, it was to provide the impetus for future rocket technology.

The rocket was a necessary link in the development of technology that began with fire arrows and led to a walk on the Moon ••