WARFARE AND POLITICS IN SOUTH ASIA FROM ANCIENT TO MODERN TIMES

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KAUSHIK ROY

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In honour of
Prof. Subhas Ranjan Chakraborty
who taught me in Presidency College, Kolkata.

Contents

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CHAPTER 5

Cannons of Chittagong University Museum: New Studies on the Artillery of Shah Jahan

ZIAUDDIN CHOWDHURY
PRANAB K. CHATTOPADHYAY

INTRODUCTION

Cannons played an important role in medieval warfare. Sometimes in the tenth century CE, the Chinese discovered gunpowder and invented 'primitive' cannons. From China, the cannon technology spread through different routes to South-East Asia and South Asia. The dominant view is that Zahir-ud-din Muhammad Babur introduced cannons in north India. And in India, cannons were first used during the First Battle of Panipat by Babur in 1526. The theory of the introduction of cannons in India by Babur cannot be accepted fully and the statement has to be reassessed thoroughly.

GUNS AND GUNPOWDER IN BENGAL

In Bengal, the earliest reference to the cannon is found in the *Rajamala*, which states that the Bengal Sultan Hussein Shah used cannons while fighting against Dhanyamanikya in the early part of the sixteenth century CE (perhaps in 1513-14). Bhattasali has referred to the autobiography of Babur (*The Baburnama*) translated by A.S. Beveridge, where it has been mentioned that on 4-5 May 1529, Babur had an encounter at Kharid with Nusrat Shah, the Sultan of Bengal. Babur commented on the use of cannons by the Bengalis noting that their aiming was not proper and they had resorted to random shots. Some scholars argue that

the Afghans of Bengal used *bans* (rockets, which were pyrotechnic device) against Babur at the battle of Ghagra. Babur noted that a person came from usta (east) saying the stone is ready (perhaps cannon balls), and fired the stone. Babur had written that he saw one large stone was fired along with several *firingi* (probably cannons copied from the Western models. The word *firingi* was derived from Franks, meaning French, but it was applied for all the West Europeans including the Portuguese) ones and the Bengalis had a reputation for making *bans* (probably rockets). Both the facts related to Hussein Shah and Nusrat Shah clearly indicate that cannons were used by the Bengal sultans during the invasion of the Mughals.[1]

The discovery of cannon was related with the discovery of gunpowder. The credit goes to the Chinese, who discovered that combination of saltpetre (potassium nitrate or other nitrate salts), sulphur and charcoal when burnt gives an excellent propellant property. The mixture turns into an explosive if it was fired within a container. The container explodes with a heavy sound—this was the basic principle of a detonator. If the former is made into an optimal proportion of saltpetre, sulphur and charcoal as 75:13:12 in a metal barrel of cannon made of adequate strength, then on firing the mixture produces suddenly 3,000 times of bulk gas—nitrogen, oxides of carbon and sulphur. The temperature suddenly reaches around 3880 °C.[2] This explosion is conducted in a place known as chamber of the cannon.

It is surprising that Mahau, a Chinese traveller, had referred to the presence of 'guns' in Bengal around CE 1406, but he does not describe whether they were made of metal or they were bamboos filled with explosives, which were known as *bans*. Probably, the transfer of gunpowder technology from China to Bengal had occurred prior to the arrival of Babur in eastern India. The diffusion of knowledge on saltpetre in Bengal occurred directly from the Chinese.[3] The *Rumis* (Ottoman Turks) are believed to initiate bronze casting in manufacturing cannons in the subcontinent. The Turks were employed in the service of Indian monarchs for manufacturing cannons. Cannon technology though initially originated outside South Asia, further development took place in late-medieval India based on local/regional needs.

Three types of cannon were referred by Babur. These were *kazan, zarb zan* and *firingi. Kazan* was a type of large cannon.

The *Ain-i-Akbari* refers to the invention of different cannons by Akbar. The names of cannons appearing in the text indicate *gajnals*, which could be easily carried by a single elephant; *narnals* was a device, which could be carried by a single man; *shatrunal* was a type of small cannon which was mounted on camels. We are aware that in late medieval Bengal the small cannons were also mounted on boats. In a temple plaque in Hooghly district country boats were seen with mounted cannons. Several naval cannons are preserved at the Tai Museum in Sibsagar, Assam.

In India and Bangladesh a number of scholars have made intensive studies on the cannons of the subcontinent. Mohammad Abul Hashem Miah (1991) studied the cannons of this part of the subcontinent on the whole. The cannons of Dhaka have been studied by Stapleton[4] and in a Bengali book titled *Dhakar Itihas* by J.M. Roy (1913). These works analyse the cannons which are at present located at the National Museum of Bangladesh. For specific studies on the cannons of Bengal we may mention the works of P. Neogi (1914). Originally this book was published from Rajshahi.[5] In Varendra Research Museum's *Annual Report*, N.B. Sanyal has thrown considerable information on Sher Shah's cannons,[6] while S. Sharf-ud-din has studied the Persian inscriptions on them.[7] This collection includes two cannons of Sher Shah. From the analysis of Sher Shah's cannon of Varendra Research Museum, we know that they were made of bronze, though the tin content very low, and we may call it gunmetal. Shamsul Hussain (1985, 1988) first threw light on the cannons of the Chittagong University Museum.[8] Our objective in this paper is to further elaborate the studies he initiated.

ANALYSIS OF THE GUNS OF BENGAL

Basically we find two types of cannons in Bengal. These are cast brass or bronze and forged welded iron cannons. We have also found composite cannons where both the alloys and iron were used. First we shall discuss cast bronze cannons. Babur described the casting of brass or bronze cannons. His chief gun-founder, a Rumi, was Ustad Ali Quli Khan. Mustafa Rumi was another gun-founder of Babur.[9] The description of casting techniques in *Baburnama*, however, lacks technical details. By the time of

Akbar, the process of casting of fully complete bronze cannons was well established in India.

We have three brass/bronze cannons of Sher Shah in the National Museum of Bangladesh and two cannons in the Varendra Research Museum. The cannons of Shah Jahan, now located in the Chittagong University Museum, were manufactured by Saiyad Ahmad Rumi. The brass cannons of Sher Shah, presently located in Varendra Research Museum, were made by another Rumi namely Saiyad Ahmad. These two cannons are known as the *Sherdahan* type.

The casting methods of the cannons are basically of two types. Small cannons like those in the museum which we are studying were made in single cast, whereas large cannons were manufactured as two pieces—the barrel and the gunpowder chamber were manufactured separately and then joined together. The mould and casting technique of the cannons located in the Chittagong University Museum is explained in Figure 5.1. The main part of the cannon mould was made hollow to fit over the

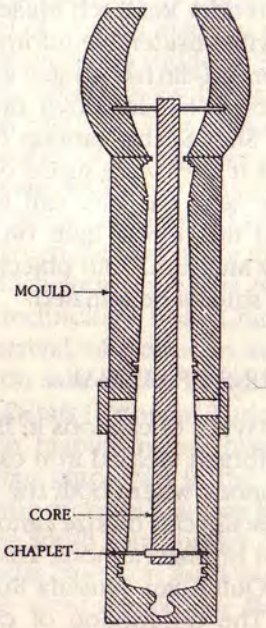

FIGURE 5.1: CANNON MOULD.

core. The cannon was cast around the core that was lowered into the main sleeve of the mould. The core was maintained in position and centred by means of a iron cross or web known as chaplets and they held the core in place during the casting process.[10]

The chemical and metallographic studies on the bronze-brass cannons of Bengal are too meagre. The two cannons of the Chittagong University Museum have been identified as bronze, though chemical analysis has not been obtained. The brass or bronze cannons in this subcontinent have been hardly analysed. However, we are aware with the chemical analysis of the bronze cannons of Sher Shah of the Varendra Research Museum. The composition indicates 84.72 per cent of copper, 13.32 per cent of zinc and iron and 1.83 per cent tin. The analysis of a Mughal cannon indicated a composition of 87.72 per cent of copper, 10.32 per cent of zinc, 1.83 per cent of tin and 0.13 per cent of iron.[11] The cannons of Sher Shah and Isa Khan of National Museum of Bangladesh are of brass. It may be mentioned that XRD (X-ray diffraction, a technique used to identify the several elements and their phases in an object) of the two cannons of the State Archaeological Museum, West Bengal, indicated mostly zinc alloying, that is brass. Unless the tin content of the Chittagong University cannons are identified, we cannot accept them as bronze cannon.

We have massive forged welded iron cannons in Dhaka, Murshidabad and Bishnupur. The manufacturing technique of forged welded iron cannons of Bengal was as follows. Iron rings were joined together by forging at red hot temperature. The blacksmiths were well conversant with the physical properties of iron and steel. They knew the critical assessment of thermal expansion and contraction of iron rings. The rings were placed over the iron staves and over each other by shrink fitting. In forging barrels often two or three layers of ring forged together.

THE CANNONS OF CHITTAGONG UNIVERSITY MUSEUM

The Chittagong University Museum was established on 14 June 1973. In brief, the following are the descriptions of four cannons of the Chittagong University Museum. In 1966, the then National Bank of Pakistan had purchased the four cannons from Karim-

unnesa Begum of Chittagong who donated them to the Museum. It is important to note that Karimunnesa Begum was a lineal descendant of Adhu Khan Hazari, a Mughal officer posted at Chittagong. It was the reason for the possession of those cannons by Karimunnesa Begum.

The most important brass/bronze cannon of Bangladesh are the *Sar Jang* (head of the war) preserved at the Chittagong University Museum. This cannon's muzzle face bears an excellent engraved design with befitting ornamentation. In Table 5.1 gives the measurements of various components. From the three inscriptions on the first noted cannon, one may conclude that it belonged to Shah Jahan and was built by Muhammad Hussain Izzat in AH 1066, under the supervision of Barqandaz Khan.

Description of Cannon no. 1 (Accession no. 124), The cannon of Shah Jahan (Figure 5.2): This cannon contains three embossed *Nastaliq* inscriptions. There are two hand-written inscriptions also which we could not decipher correctly. The measurements of the cannons are shown in Figure 5.3. The first inscription tells to whom that cannon belonged to. Shamsul Hossain had correctly identified the title *Shah Buland Iqbal*—it was the most favourite title of Emperor Shah Jahan. The transliterated first inscription is: *Tope Shah Buland Iqbal Ast* (This is the cannon of Shah Buland Iqbal). The second inscription indicates that it was built under the supervision of a particular person. The transliterated second

TABLE 5.1: DIMENSIONS OF THE FOUR CANNONS

	Cannon no. 1 Accession 124	Cannon no. 2 Accession 125	Cannon no. 3 Accession 126	Cannon no. 4 Accession 127
Length				
Total length	197 cm	197 cm	216 cm	171 cm
Barrel	165 cm	171 cm	175 cm	110 cm
Backplate to trunnion	78 cm	71 cm	82 cm	48 cm
Trunnion	11 cm	5.5 cm	7 cm	5 cm
Trunnion to muzzle	106 cm	108 cm	112 cm	79 cm
Diameters				
Muzzle face	22 cm	18 cm	22 cm	14 cm
Bore	10 cm	7.5 cm	10 cm	6.5 cm
Backplate	28 cm	18 cm	30 cm	14 cm
Trunnion	10 cm	6 cm	8 cm	3 cm
Vent	4 cm	1 cm	2 cm	2 cm

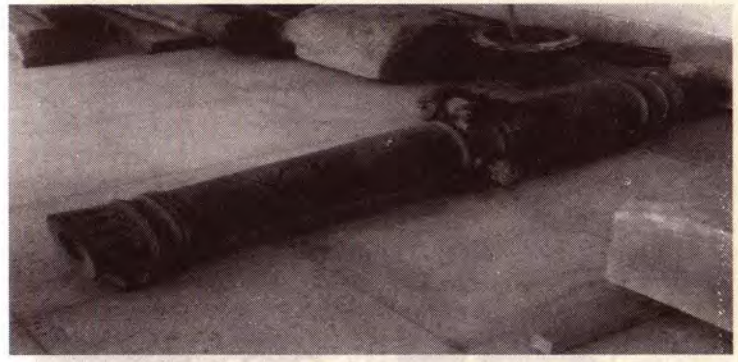

FIGURE 5.2: THE CANNON *SAR JANG* OF SHAH JAHAN.

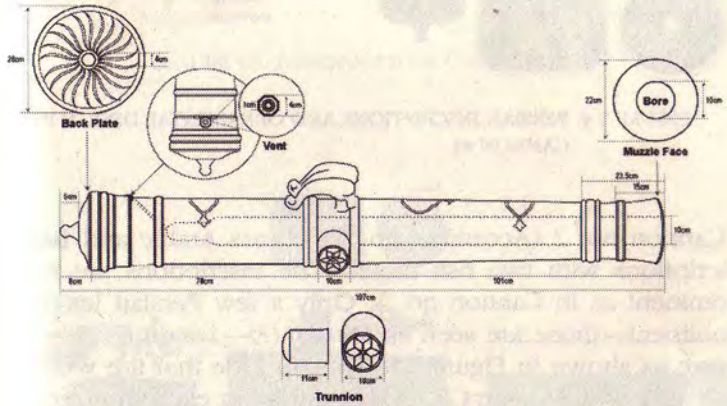

FIGURE 5.3: DIMENSIONS OF THE CANNON *SAR JANG*, #1.

inscription is: *Tope bad darogha Barqandaz Khan tyar shud* (This cannon was built under the supervision [Daroghaship] of Baraqandaz Khan). Hussain commented further that this title of Baraqandaz Khan was awarded to one Baha-ud-din *Topchi*—an officer in the Mughal artillery. The third inscription indicates the name of the cannon, the name of the builder and the year of manufacture. The transliterated third inscription is *Tope 1066 Sar Jang Amal Muhammad Hussain Izzat* (This cannon, *Sar Jang*, is the work of Muhammad Hussain Izzat, dated (AH 1066). Figure 5.4 indicates the details of the inscriptions on this cannon and the ornamental designs engraved on it.

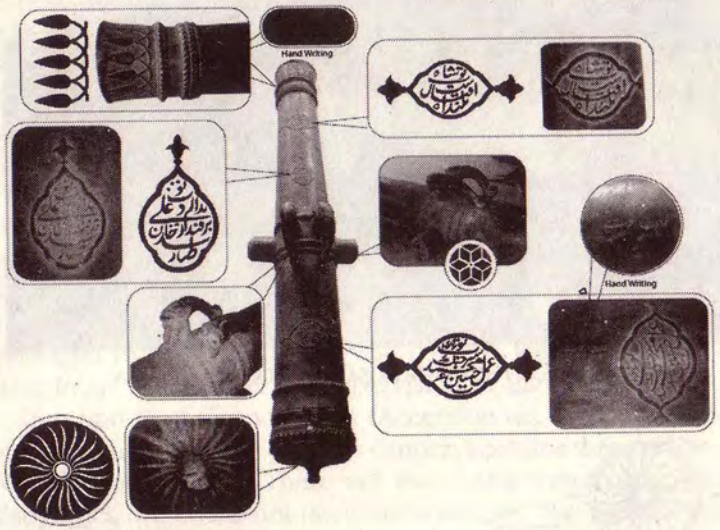

FIGURE 5.4: PERSIAN INSCRIPTIONS AND ORNAMENTAL DESIGN IN CANNON #1.

Cannon no. 2 (Accession no 125) bears Arabic and Bengali inscriptions with two fish motifs. The inscriptions are not so prominent as in Cannon no. 1. Only a few Persian letters are prominent—those are seen as *Mauzij (?)—zurrat (?) 33 seer—4 seer*, as shown in Figure 5.6. We conclude that the weight of each shot was 33 *seers* (27.63 kg) and firing each shot required 4 *seer*s (3.35 kg) of gunpowder. Figures 5.5 and 5.5A indicate the details of this cannon.

Cannon no. 3 (Accession no. 126) is a forge welded iron cannon. This does not bear any inscription. Figure 5.7 indicates the details of this cannon. It bears no inscription.

Cannon no. 4 (Accession no. 127) was originally mounted on a naval ship, probably used in the battle with the Magh troops in CE 1666. This cannon was possibly the *firingi* one as described in the *Baburnama*. This cannon is attached with a swivel connecting the trunnions. Figure 5.8 indicates the details of it. The tail portion with a long handle helped the gunners to aim the target easily.

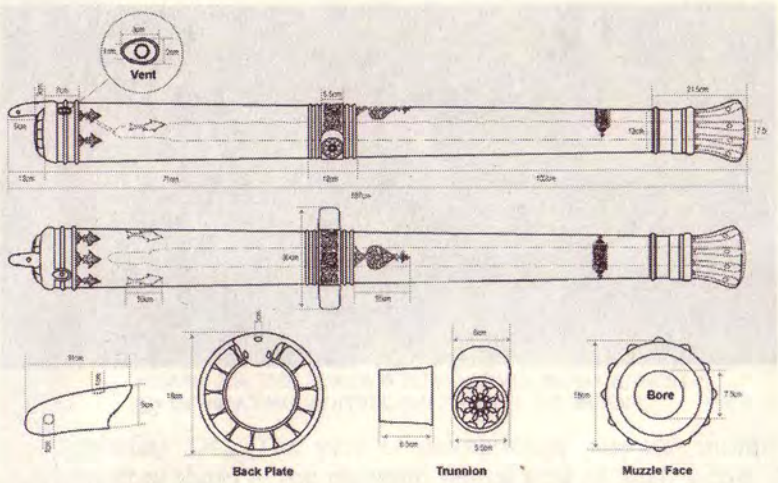

FIGURE 5.5: DIMENSIONS OF CANNON #2.

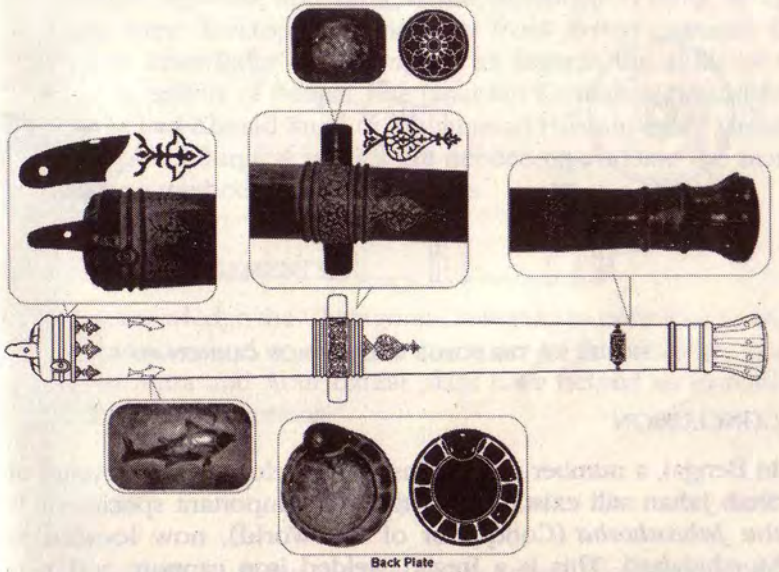

FIGURE 5.5A: ORNAMENTAL DESIGNS OF CANNON #2.

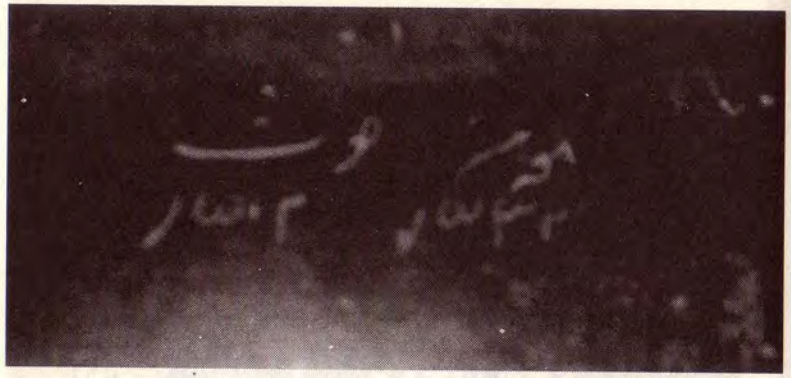

FIGURE 5.6: PERSIAN INSCRIPTION ON CANNON #2.

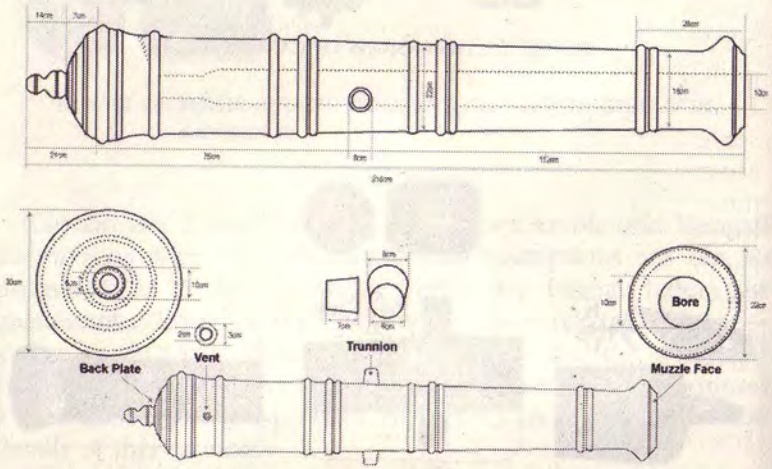

FIGURE 5.7: THE FORGE WELDED IRON CANNON #3.

CONCLUSION

In Bengal, a number of cannons which belonged to the reign of Shah Jahan still exist. One of the most important specimens is the *Jahankosha* (Conqueror of the World), now located at Murshidabad. This is a forged welded iron cannon, and was manufactured by a Bengali blacksmith, Janardan Karmakar, under the supervision of Daroga Sher Muhammad and Inspector

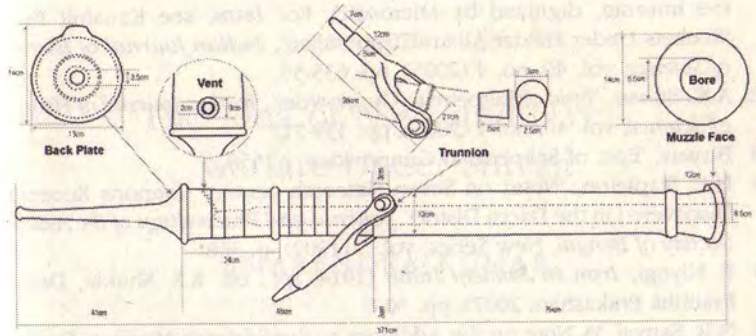

FIGURE 5.8: THE FORGE WELDED NAVAL IRON CANNON #4.

Haraballav Das. The year of manufacture was the month of *Jumadi al shani* in the eleventh regnal year of Shah Jahan. The weight of the cannon was 212 maunds. Another cannon was perhaps manufactured in Bengal as it included fish symbols and Bengali inscriptions. A number of small naval cannons are preserved now at the Bangladesh National Museum, Tripura State Museum, Agartala; and Tai Museum, Shibsagar in India. Most of those were developed or modified from *firingi* cannons. Our present knowledge is incomplete as regards the skills of the cannon makers of Bengal, like Janardan Karmakar, Brajakishore Das, Saiyad Ahmad Rumi or Muhammad Hussain Izzat. Detailed archaeometallurgical studies are needed to evaluate the manufacturing methods of those cannons.

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We acknowledge the Chittagong University to permit us to study the cannons and to publish the same in this volume. Pratip Kumar Mitra and Abul Barkat Jilani have helped us in reading the Persian inscriptions.

NOTES

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CHAPTER 6

The Idea of Navy and Naval Warfare Under Shivaji

AMARENDRA KUMAR

The sea and rivers have helped in fostering the development of the human civilization in many ways. They have been significant in facilitating the human requisites of transportation-communication since time immemorial. Depending on the natural conditions—viz., access to the sea, geographical position of a nation, and, more recently, the geo-political compulsions—the human interest in the sea, and his desire to use and possess it for his own benefit have been found to have gradually increased in the historical context. As a result, the concept of 'sea power' has evolved and gradually assumed larger significance, especially in the pre-modern (pre-industrial) era. The main aim of this paper is to examine the response of the Maratha Navy under Shivaji—the founder of the Maratha *Swarajya*—towards the superior challenges coming from the organized fleets of European nations (having rich maritime traditions and expertise) in the Arabian Sea. This paper will take into account geo-political surroundings of the Maratha *Swarajya* under Shivaji, the Konkan Coast and the Arabian Sea; beginning of the Maratha Navy; structure of the naval establishment under Shivaji; declared objectives of the Maratha Navy; threat perceptions and the naval wars of Shivaji—nature and intensity; and finally naval strategy and tactical appreciations.

I

The nineteenth-century military theorist A.T. Mahan identifies six fundamental factors which affect the development of a nation as a sea power. These are: geographical position, physical con-

This volume presents fifteen original essays on warfare based on primary sources by scholars from different parts of the world. Spatially, the pieces cover the period from the Vedic to the Nuclear Age. And temporally, they not only cover the whole of the subcontinent but also link the historical trajectory of South-East Asia with that of South Asia.

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Moreover, all the contributors agree that warfare cannot be separated from the political matrix which surrounds organized violence like the double helix of a DNA molecule.

This volume will be of enduring value to scholars of Military History in general and South Asian Warfare in particular.

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