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Documentation of Cannons of Eastern India*

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The aim of project was to document the cannons of Eastern India with reference to history, design, construction methodology and other aspects.The area covered in this project included West Bengal, Bihar, Assam, Orissa, Meghalaya and Tripura. As a neighbouring country, Bangladesh has also been included in this documentation, whose history is the same of Eastern India. Moreover, a number of cannons of Bangladesh, West Bengal and Assam have changed their places of origin.

The project was carried out under the following chapters:

I. Documentation of cannons of Orissa

II. Cannons of Kolkata, and other parts of West Bengal

III. Cannons of Bihar and Jharkhand

IV. Cannons of Assam and Tripura.

Introduction

Before studying the cannons of this region one should be introduced with the various parts of cannon. Indepth study of cannons had been made by Professor R. Balasubramaniam (2008 pp. 47-48). The front portion of the cannon is known as the *muzzle* and the rear end is called the *breech*. Figs. 1 and 2 interprets the various components of cannon (Courtesy: R. Balasubramaniam).The barrel is the characteristic shape, tapered from base to mouth. The bore is the hole in cannon where cannon balls are placed. The rings outside the barrel from base of the cannon are called the base ring, reinforce ring, trunnion ring and mouth rings. Trunnions provide maneuverability to the cannon, as a cylindrical extension on the side of the cannon, usually located at the just forward of centre of gravity. The main

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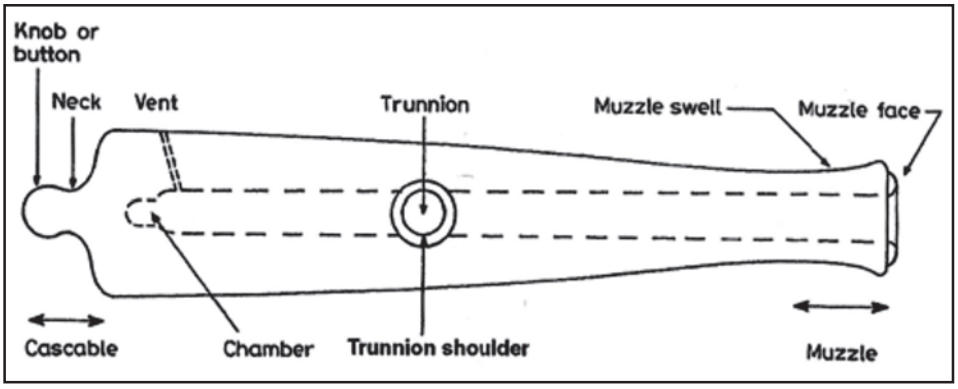

Fig.1. Schematic diagram showing the various parts of typical cannon

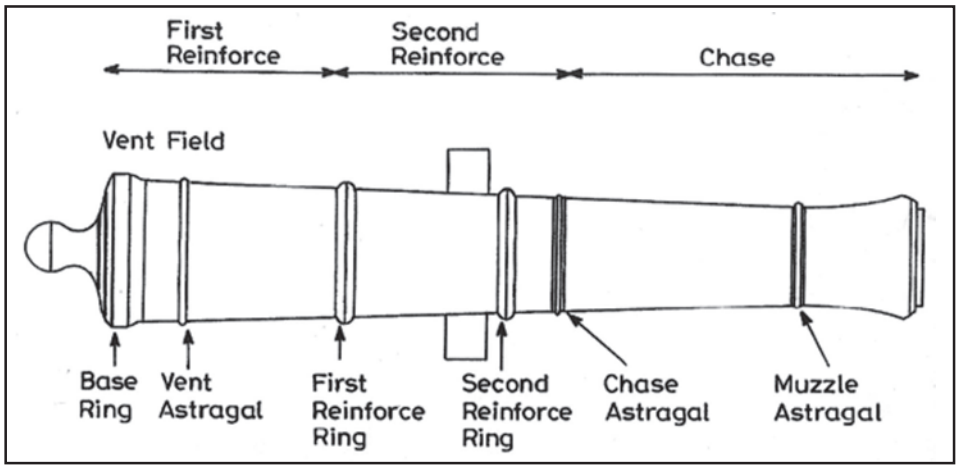

Fig. 2. Schematic diagram showing the various parts of typical cannon

function of the trunnions is to elevate and depress the body of the cannon on the carriage. Chamber is the location of gunpowder and vent or touch hole is the path of fire, which came from a red hot rod or a slow match. That ignites the charge. In some of the cannons reads the weight of the gunpowder that is to be provided.

Handling rings were provided to cannons for shifting, the clamps were intricatelyconstructed with the body of the cannon. Swivel is attached to the trunnion, which is forfixing with the ground or to the body of the boat on naval cannons. At the back of some of the cannons, there are provisions of sighting arrangements; gunner uses that for shooting the target.

Gunpowder is the principal raw material for guns and cannons – fire arms. We are not sure whether gunpowder was invented by the Ahoms. Travernier, (1678, p 187) assumed that gunpowder was formerly invented by Ahoms which spread itself from Assam to Pegu and then China (Gait 1997: 89). That was in connection with Mir Jumlah's expedition in 1667. The discovery of cannon is very much related to the discovery of gunpowder. The credit goes to Chinese, who discovered that combination of salt peter (potassium nitrate or other nitrate salts), sulfur and charcoal when burnt gives an excellent propellant property. The mixture turns into an explosive if firing is made in a container. The container explodes with a heavy sound – this was the basic principle of a detonator. If the former combination was made into an optimal proportion of saltpeter, sulfur and charcoal as 75:13:12 in a metal barrel of cannon, made of adequate strength then on firing the mixture produces suddenly 3000 times of bulk of gas – nitrogen, oxides of carbon and sulfur. The temperature suddenly reached around 3880°C (Biswas 2005). That explosion is conducted in a place known as chamber. Basically we find two types of cannons of Assam where gunpowder was used. These are cast brass or bronze and forged welded iron cannons. We have also found composite cannons where both those alloys and iron were used.

Iron ores are widely available in Assam. Clay-iron stones are reported from Lakhimpur and Sibsagar districts. Ferruginous iron sands of this area was washed and concentrated for iron-making. Medieval iron industry developed at Tirupathar near Dibrugarh. From thepresence of iron smelting slag and other materials, Dutta has informed that cannons were also manufactured at Kacharihat, Dhekial and Bossapathar at Doyang Dhanseri Valley of Assam (Dutta 1998). Some of the important sites of Northeast related to cannons and mineral resources are shown in Fig.3.

As to construction of cannons first we shall discuss cast bronze or brass cannons. Small cannons are made in single caste, whereas large cannons were manufactured by two pieces – barrel and gunpowder chamber which made separate, and then joined together. The main part of the cannon mould was made hollow to fit over the core. The cannon was cast around a core that was lowered in to 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 castingprocess (Balasubramaniam 2008:93).The skills of manufacturing the forge welded cannons are unique.

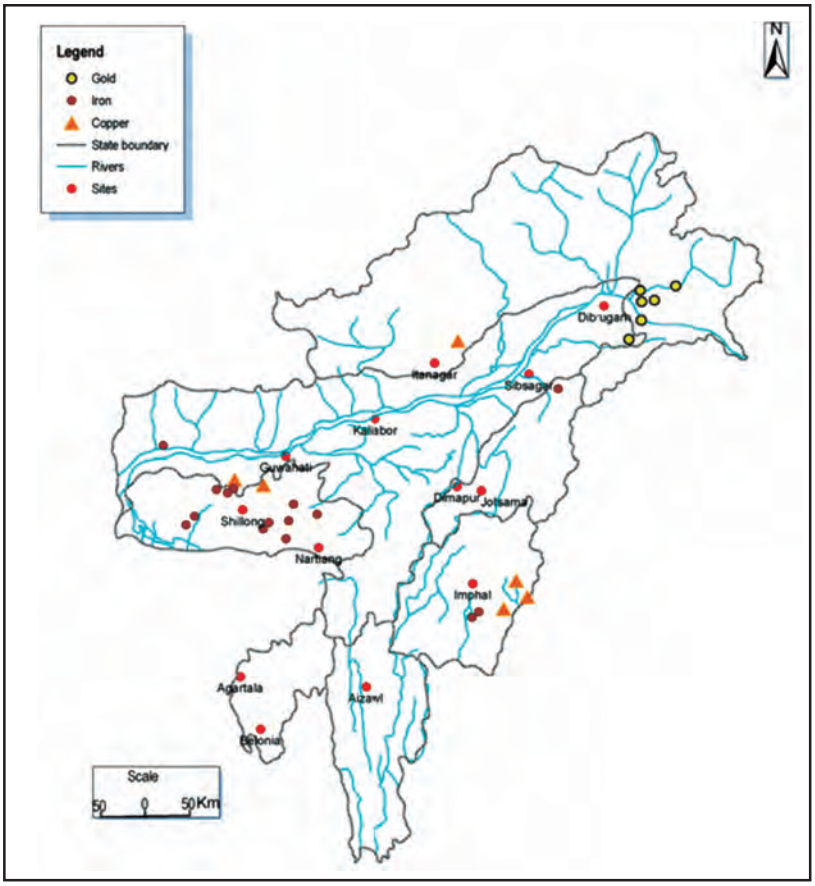

Fig. 3. Map of North-east showing location of ore-minerals and some of the important sites

The solid pieces of iron were joined by hammering the pieces together at white heat- above 1200˚C. In some of the cannons indicate hooping of iron rings over central staves are seen in the barrels. The main barrel of the cannon is the prime one, which sometimes made with combination of rings. We have noticed the superb skills in black smithy for the Assamese cannons. However, a documentation of cannons will be of interest (Table 1).

Cannons in and around Kolkata:

The documentation work started from the city of Kolkata, the first being Raj Bhavan. Lord Ellen Borugh (1842-1844) set up on a plinth in front of the Grand Staircase the huge iron gun mounted on a winged dragon

Table 1: State-wise documentation of cannons

State	Location	Specific	Forge welded	Cast Iron	Brass	Compo	Total
WB	Kolkata	Fort William	3	58	11	1	73
	Kolkata	Asiatic Society	1				1
	Kolkata	Indian Museum	1	7	1		9
	Kolkata	Metro Rail		2			2
	Kolkata	Tipu Sultan Mosque	1	14			15
	Kolkata	Tipu Sultan Dharmatala		11			11
	Kolkata	State Arch Museum	5		2		7
	Kolkata	Victoria Memorial		7	1		8
	Kolkata	Kolkata Town Hall		2			2
	Kolkata	Calcutta Art College		2			2
	Kolkata	Kumar Singh Hall		1			1
	Kolkata	Sahitya Parishad		1			1
	Andul	Rajbari		1			1
	Krishnanagar	Rajbari		7			7
	Krishnanagar	DM Bunglow		2			2
	Chandannagr	French Institute		3			3
	Diamondharb	City, bank		3			3
	Bishnupur	City	2				2
	Bardhaman	Rajbari		3			3
	E Medinipur	Garkella Harsankar	1				1
	E Medinipur	Purushottampur	1				1
	Murshidabad	City	2	6			8
	Maldah	City	1	1			2
	Kochbihar	Palace	2				2
	Purulia	Sainik School		4			4
	Barrackpur			3			3
	Chinsura	City		3			3
	Mahisadal	Rajbari		1			1
	W Mednipur	Narajol		3			3
Tripura	Agartala	City	5	2			7
Assam	Guwahati	City	7	1			8
	Guwahati	Assam State Museum	15		6		21
	Jorhat	District Museum	3				3
	Sibsagar	Sibsagar College	15				15
	Sibsagar	Tai Museum	13		1		14
	Sibsagar	ASI	2				2
	Sibsagar	Talatalghar	5				5
	Dhubri	Matiabag			1		1
	Dhubri	Hawa Mahal			1		1
	Dhubri	District Museum	2		1		3
	Tejpur	Dist Museum	7				7
	Silighat	Koliabor Tea Est	5				5
	Majuli	Garmur Shatra	1				1
	Mangaldai	Darrang Dist Muse	2				2
Odissa	Bhubaneswar	Orissa State Museum	23	15	3		41
	Cuttack	Cuttack Club		1			1
	Cuttack	Ravenshah College		3			3
Bihar	Patna	Patna Museum	2	2			4
Jharkhand				1			1
Total			**127**	**170**	**28**	**1**	**326**

with red glass eyes and tremendous scaled convolutions of the tail ending in a forked point. Around the plinth are ten iron guns with embossed Chinese inscription planted upright in the ground (Fig. 4). The inscription on the plinth reads "Edward Lord Ellen borough, Governor General of India in Council, erected this trophy of guns taken from the Chinese, in commemoration of the peace dictated under the walls of Nan kin by the Naval and Military forces of England and India under the command of Vice-Admiral Sir William Parker and of Lieutenant-General Sir Hugh Gough (1842)." This cannon was originally made of brass now preserved with black paints (Fig. 5).

The next task was documentation of cannons in possession of the Fort William, the head quarter of Eastern Command. This place is highly

Fig. 4. Raj Bhawan with cannons

Fig. 5. The Chinese cannon

restricted and one is hardly allowed to visit it. The original fort was built by the British East India. This is one of the finest example of European Fortification. The initiation of this fort began around 1701 and old fort was completed in 1706. In 1756 Nawab of Bengal, Shiraj-Ud-Daulah attacked the fort and conquered the city and renamed it as Alinagar. After the battle of Plassey in 1757, Robert Clive built the new fort in 1857. With our tireless effort, we were succeeded to document the 73 cannons of their possession (Fig. 6).

Fig. 6. Earliest cannon of Fort William

The most important cannon is the Tope-Zafarbaksh, manufactured by Mihra Das, son of Ranjit for the Aurangzeb, in 1674 AD. A detail report on that cannon was published by the present author and Prof. Balasubramaniamin *IJHS* 2007, 42(2): 205-221. Other important cannons belonged to Alamas Khan Bahadur Ghazi, Dutch gun captured by Clive from Chinsura 1754, Nawab Shujauddoalah Bahadur 1756.

At the campus of Indian Museum nine cannons were documented. Some other important cannons are from Kolkata at the gate of Kolkata Art College. The cannons belong to English of 1801 AD. These are made of cast iron. The cannons are fixed at the ground. The two cannons are of same dimension, with muzzle face diameter of 262 mm, the length above the ground is 1335 mm.

At Asiatic Society, the Assam rulers had used their own types of cannons. One such cannon is preserved badly in this museum (Fig. 7). It was

originally used by Svargadeva Jayadvaja Simha, who captured this cannon from Mughals. Later it was captured by the English and was used by them in the first Burmese war. In Tipu Sultan Mosque eighteen numbers of cannons is lying in the Mosque complex. Except one forged welded cannon all others are cast iron cannons - converted into light post. The cannons were used by Tipu Sultan. We could not measure the actual length because the back plate of the cannon has been mounted on the ground.

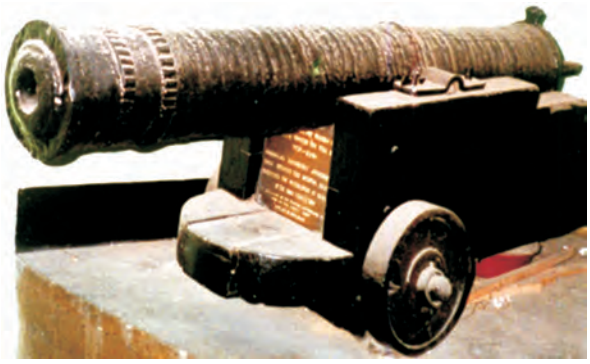

Fig. 7. Assamese cannon at Asiatic Society

Tipu Sultan Mosque at the Prince Anwar Shah Road and also at Dharmatala areas, State Archaeological Museum, Victoria Memorial hall, Metro Railway Bhawan, Ordnance Factory and Gun shell factory premises, Bangiya Sahitya Parishad, AndulRajbari, etc. From Chandanagar, we have documented three cannons. Those are used by French soldiers.

Cannons in Bihar:

One of the cannons confiscated by the Ahom rulers from the Mughals is at present in the Patna Museum. There is an inscription on the top of the cannon written with brazed brass letters in the Assamese script. That inscription, dated in the *Śaka* era 1570, indicates the name of its owner as Jayadhvaja Simha (AD 1648-63). The complete legend has been inscribed in a rectangle of 500 x 110 mm in two-line, with a margin of 5.0 mm thickness. That reads, "*Sri Sri Svarg(ga)dev Jayadhvaj Simha Maharajena Yavanam Jitva Gubakahattvam i[da*]m yantram praptam(m) Śaka 1570"* (Figs. 8 & 8a). Perhaps, the Mughal army recaptured that cannon. The Museum obtained that subsequently from an unknown source (as informed

Fig. 8. Cannon of *Jayadhvaj Simha* at Patna Museum

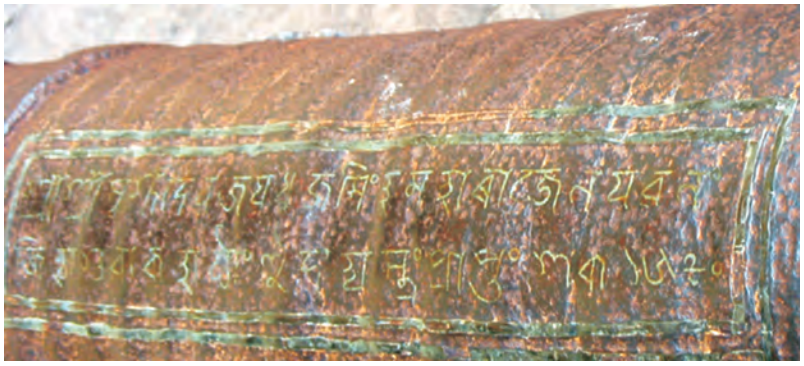

Fig. 8a. Inscription on the cannon of *Jayadhvaj Simha at* Patna Museum

by the present in-charge of the Patna Museum). We guess that it was the same cannon brought from Bhagalpur.

Cannons at Orissa:

In this state we have located the presence of cannons at Pallur, at the palace of Ganapati Maharaj, Bhanja family – now at Mayurbhanj College, Singh Deo Family – the great K P Singh Deo, etc. and the Baripada Museum. We have located a cannon at Cuttack Club beside Barabati Fort. To begin with, we have surveyed at the Orissa State Museum, Bhubaneswar (Figs. 9&10). The cannons of Ravenshaw college has also been documented by us. The main resources of cannons of the Orissa State Museums collection collected from Barabati Fort. This museum possesses 41 cannons of English, Mughals and Marathas. Out of this 4 pcs are found to be broken, which


Fig. 9 and 10. Forge welded cannon at Orissa State Museum

actully parts of two cannons. Most of the cannons were collected from Lalbagh and Barabati Fort, Cuttack.

Cannons of Tripura:

The earliest use of the cannon in Bengal is recorded in the *Rajamala* of Tripura. It has been mentioned that the Bengal Sultan Hussein Shah used cannons while fighting against Dhanyamanikya in the early part of the 16th century AD (perhaps in 1513-14 AD). The troupes of the Sultan were defeated and a cannon made of brass was captured. We do not know where this cannon is located at present. Four cannons are preserved in Agartala State Museum. One cannon is preserved at Kaman Chowmohani of Agartala, which Dhanyamanikya had captured from Hussain Shah. We have documented cannons of Agartala city. The cannons in the city of Agartala are preserved at Tripura State Museum, in city and at Baijayanta Palace. Total no of cannons documented are 7 in nos. Out of that 4 cannons are preserved at State Museum (Fig. 11), one of those we understood that it was in store- we could not locate it.

Fig. 11. Forge welded cannon at Tripura State Museum

Cannons of Assam:

The state of Assam is famous for preservation of medieval cannons made of forge-welded iron and also of brass and bronze. The Ahom rulers ruled the area between Guwahati and the Naga Hills for six centuries. Assam had links with China and Southeast Asia and it is quite possible that diffusion of cannon and gunpowder technology might have occurred through Bhamo routes.

Fig. 12. Forge welded cannon of Assam State Museum

Fig. 13. Cannon at Koliabor

We have documented the cannons located at Assam State Museum (Fig. 12), Nabin Baradoloi Library, Raj Bhawan and in a residence in Guahati; Tai Ahom Museum, Sibsagar College Museum, Talatalghar and the possessions of Archaeological Survey of India at Sibsagar, Jorhat District Museum, Dhubri District Museum and Tejpur District Museum. The most important studies were conducted at Koliabor where great- war was conducted with Assemese and Mughal army. However, photograph of one cannon (Fig. 13) is given here.

The documentation sheets are prepared and submitted to the Academy in the form of a report.

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