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war in ancient india

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The history of ancient India is largely a history of Hindu culture and progress. Hindu culture has a distinct claim to a higher antiquity than Assyrian schools would claim for Sargon I and as much or even higher antiquity than Egyptian scholars would claim for the commencement of the first dynasty of Kings. One aspect of this culture consists in India's political institutions which were almost modern. Modern warfare has developed on mechanical lines, giving less scope for the qualities of courage and individual leadership. The value and importance of the army were realized very early in the history of India, and this led to the maintenance of a permanent militia to put down dissent within and arrest aggression from without. This gave rise to the Ksatriya warrior caste, and the ksatram dharmam came to mean the primary duty of war. To serve the country by participating in war became the svadharma of this warrior community.

Hindu military science recognizes two kinds of warfare - the **dharmayuddha** and the **kutayuddha**. Dharmayuddha is war carried on the principles of dharma, meaning here the Ksattradharmam or the law of Kings and Warriors. In other words, it was a just and righteous war which had the approval of society. On the other hand, kuttayuddha was unrighteous war. It was a crafty fight carried on in secret. The Hindu science of warfare values both niti and saurya i.e. ethical principles and valor. It was therefore realized that the waging of war without regard to moral standards degraded the institution into mere animal ferocity. A monarch desirous of dharma vijaya should conform to the code of ethics enjoined upon warriors. The principles regulating the two kinds of warfare are elaborately described in the Dharmasutras and Dharmasastras, the epics (Ramayana and Mahabharata), the Arthashastra treatises of Kautilya, Kamandaka, and Sukra. Hindu India possessed the classical fourfold force of chariots, elephants, horsemen, and infantry, collectively known as the Caturangabala. Students also know that the old game of chess also goes by the name of Caturanga. From the references to this game in the Rg Veda and the Atharva Veda and in the Buddhists and Jaina books, it must have been very popular in ancient India. The Persian term Chatrang and the Arabic Shatrang are forms of the Sanskrit Caturanga.

According to **Sir A. M. Eliot** and **Heinrich Brunnhofer** (a German Indologist) and **Gustav Oppert**, all of whom have stated that ancient Hindus knew the use of gunpowder. Eliot tells us that the Arabs learnt the manufacture of gunpowder from India, and that before their Indian connection they had used arrows of naphtha. It is also argued that though Persia possessed saltpetre in abundance, the original home of gunpowder was India. In the light of the above remarks we can trace the evolution of fire-arms in the ancient India. (source: **German Indologists: Biographies of Scholars in Indian Studies writing in German - By Valentine Stache-Rosen**. p.92). Terence Duke, author of *The Bodhisattva Warriors: The Origin, Inner Philosophy, History and Symbolism of the Buddhist Martial Art Within India and China*, says that martial arts went from India to China and fighting without weapons was a specialty of the ancient Ksatriya warriors of India.

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Introduction

The value and importance of the army were realized very early in the history of India, and this led in course of time to the maintenance of a permanent militia to put down dissensions. War or no war, the army was to be maintained, to meet any unexpected contingency. **This gave rise to the Ksatriya or warrior caste, and the ksatram dharman came to mean the primary duty of war.** To serve the country by participating in war became the **svadharna** or this warrior community.



The necessary education, drill, and discipline to cultivate militarism were confined to the members of one community, the Ksatriyas. This prevented the militant attitude from spreading to other communities and kept the whole social structure unaffected by actual wars and war institutions. Says the **Arthva Veda**: "May we revel, living a hundred winters, rich in heroes." The whole country looked upon the members of the ksatriya community as defenders of their country and consequently did not grudge the high influence and power wielded by the Ksatriyas, who were assigned a social rank next in importance to the intellectual and spiritual needs of the society. The ancient Hindus were a sensitive people, and their heroes were instructed that they were defending the noble cause of God, Crown and Country. Viewed in this light, war departments were 'defense' departments and military expenditure were included in the cost of defense. In this, as in many cases, ancient India was ahead of modern ideas.

Chivalry, individual heroism, qualities of mercy and nobility of outlook even in the grimmest of struggles were not unknown to the soldiers of ancient India. Thus among the laws of war, we find that (1) a warrior (**Khsatriya**) in armor must not fight with one not so clad (2) one should fight only one enemy and cease fighting if the opponent is disabled, (3) aged men, women and children, the retreating, or one who held a straw in his lips as a sign of unconditional surrender should not be killed. It is of topical interest to note that one of the laws enjoins the army to leave the fruit and flower gardens, temples and other places of public worship unmolested. Terence Duke, author of *The Boddhisattva Warriors: The Origin, Inner Philosophy, History and Symbolism of the Buddhist Martial Art Within India and China*, martial arts went from India to China. Fighting without weapons was a specialty of the ancient Ksatreya warriors of India.

Territorial ideal of a one-State India

Imperial sway in ancient India meant the active rule of an individual monarch who by his ability and prowess brought to subjection the neighboring chieftains and other rulers, and proclaimed himself the sole ruler of the earth. This goes by the name of **digvi-jaya**. It is not necessary that he should conquer all States by the sword. A small state might feel the weight of a conquering king and render obeisance of its own accord.

According to the **Sangam** classics, each of the respective rulers of the chief Tamil kingdoms, the Cera, Cola and Pandya, carried his sword as far north as the Himalayas, and implanted on its lofty heights his respective crest the bow, the tiger and the fish. In these adventures which the Tamil Kings underwent for their glorification, they did not lag behind their northern brethren. The very epithet **Imayavaramban** shows that the limits of the empire under that Emperor extended to the Himalayas in the north. This title was also earned by Cera **Senguttuvan** by his meritorious exploits in the north. Names like the Cola Pass in the Himalayan slopes, which in very early times connected Nepal and Bhutan with ancient Tibet, give a certain clue to the fact that once Tamil kings went so far north as the Himalayas and left their indelible marks in those regions.



Kshatriya Warrior (Now in Indian Museum, Calcutta).

If in the epic age a Rama and an Arjuna could come to the extremity of our peninsula, and in the historical period of a Chandragupta or a Samudragupta could undertake an expedition to this part of our country, nothing could prevent a king of prowess and vast resources like the Cera king Senguttuvan from carrying his armies to the north. The route lay through the Dakhan plateau, the Kalinga, Malva, and the Ganga. Perhaps it was the ancient **Daksinapatha** route known to history from the epoch of the **Rg Veda Samhita**.

The king who became conqueror of all India was entitled to the distinction of being called a Samrat. In the Puranic period the great Kartavirya Arjuna of the Haihaya clan spread his arms throughout the ancient Indian continent and

earned the title of **Samrat**. The same principle of glory and distinction underlay the performance of the sacrifice, Asvamedha and Rajasuya, which were intended only for the members of the Ksatriya community.



This bears testimony to ' the existence of the territorial ideal of a one-State India' (**Cakravartiksetram of Kautalya**). These kings were called **Sarvabhaumas and Ekarats**.

Vedic kings aimed at it, and epic rulers realized it. The idea of ekarat, continued down to Buddhist times and even later. The Jatakas which are said to belong to the fifth and sixth century B.C., make pointed reference to an all-Indian empire. This concept of an all-India empire stretching from Kanyakumari to the Himalayas, according to Kautalya receives further support from another important political term: **ekacchatra**, or one-umbrella sovereignty.

Hindus have given shelter to the persecuted people from many lands and in all ages. **But what is most important, they have always regarded their own homeland as the only playfield for their chakravartins, and never waged wars of conquest beyond the borders of Bharata-varsha.**

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The Laws of War

When society became organized and a warrior caste (Kshatriya) came into being, it was felt that the members of this caste should be governed by certain humane laws, the observance of which, it was believed, would take them to heaven, while their non-observance would lead them into hell. In the post Vedic epoch, and especially before the epics were reduced to writing, lawless war had been supplanted, and a code had begun to govern the waging of wars. The ancient law-givers, the reputed authors of the **Dharmasutras** and the **Dharmasastras**, codified the then existing customs and usages for the betterment of mankind. Thus the law books and the epics contain special sections on royal duties and the duties of common warriors.

It is a general rule that kings were chosen from among the Kshatriya caste. In other words, a non-Ksatriya was not qualified to be a king. And this is probably due to the fact that the kshatriya caste was considered superior to others in virtue of its material prowess. Though the warrior's code enjoins that all the Ksatriyas should die on the field of battle, still in practice many died a peaceful death. There is a definite ordinance of the ancient law books prohibiting the warrior caste from taking to asceticism. Action and renunciation is the watch-word of the Ksatriya. The warrior was not generally allowed to don the robes of an ascetic. **But Mahavira and Gautama protested against these injunctions and inaugurated an order of monks or sannyasins. When these dissenting sects gathered in strength and numbers, the decline of Ksatriya valor set in. Once they were initiated into a life of peace and prayer, they preferred it to the horrors of war. this was a disservice that dissenting sects did to the cause of ancient India.**

When a conqueror felt that he was in a position to invade the foreigner's country, he sent an ambassador with the message: 'Fight or submit.' More than 5000 years ago India recognized that the person of the ambassador was inviolable. **This was a great service that ancient Hinduism rendered to the cause of international law.** It was the religious force that invested the person of the herald or ambassador with an inviolable sanctity in the ancient world. The **Mahabharata** rules that the king who killed an envoy would sink into hell with all his ministers.



The Mahabharata War

Dharmayuddha is war carried on the principles of Dharma, meaning here the Ksatriyadharma or the law of Kings and Warriors.

The Hindu laws of war are very chivalrous and humane, and prohibit the slaying of the unarmed, of women, of the old, and of the conquered.

Megasthenes noticed a peculiar trait of Indian warfare they never ravage an enemy's land with fire, nor cut down its trees.

(Artwork courtesy of The Bhaktivedanta Book Trust International, Inc. www.krishna.com).

As early as as the 4th century B.C. **Megasthenes** noticed a peculiar trait of Indian warfare.

"Whereas among other nations it is usual, in the contests of war, to ravage the soil and thus to reduce it to an uncultivated waste, among the Indians, on the contrary, by whom husbandmen are regarded as a class that is sacred and inviolable, the tillers of the soil, even when battle is raging in their neighborhood, are undisturbed by any sense of danger, for the combatants on either side in waging the conflict make carnage of each other, but allow those engaged in husbandry to remain quite unmolested. Besides, **they never ravage an enemy's land with fire, nor cut down its trees.**"

(source: [A Brief History of India - By Alain Danielou](#) p. 106). The modern "scorched earth" policy was then unknown. "

Professor H. H. Wilson says: "The Hindu laws of war are very chivalrous and humane, and prohibit the slaying of the unarmed, of women, of the old, and of the conquered."

At the very time when a battle was going on, he says, the neighboring cultivators might be seen quietly pursuing their work, - "perhaps ploughing, gathering for crops, pruning the trees, or reaping the harvest." **Chinese pilgrim to Nalanda University, Hiuen Tsiang affirms that although there were enough of rivalries and wars in the 7th century A.D. the country at large was little injured by them.**

Weapons of War as Gathered from Literature

Dhanur Veda classifies the weapons of offence and defense into four - the mukta, the amukta, the mukta-mukta and the yantramukta. The **Nitiprakasika**, on the other hand, divides them into three broad classes, the mukta (thrown), the amukta (not thrown), and the mantramukta (discharged by mantras). The bows and arrows are the chief weapons of the mukta group. The very fact that our military science named Dhanur Veda provides sufficiently clearly that the bow and arrow were the principle weapons of war in those times. It was known by different terms as sarnga, kodanda, and karmuka. Whether these are synonyms of the same thing or were different is difficult to say. The Rg vedaic smith was not only a steel worker but also an arrow maker.



Fire-Arms:

It would be interesting to examine the true nature of the agneya-astras. **Kautalya** describes agni-bana, and mentions three recipes - agni-dharana, ksepvo-agni-yoga, and visvasaghati. **Visvasaghati** was composed of 'the powder of all the metals as red as fire or the mixture of the powder of kumbhi, lead, zinc, mixed with the charcoal and with oil wax and turpentine.' From the nature of the ingredients of the different compositions it would appear that they were highly inflammable and could not be easily extinguished.

A recent writer remarks: '**The Visvasaghati-agni-yoga** was virtually a bomb which burst and the fragments of metals were scattered in all directions. The agni-bana was the fore-runner of a gun-shot.....

Sir A. M. Eliot tells us that the Arabs learnt the manufacture of gunpowder from India, and that before their Indian connection they had used arrows of naphtha. It is also argued that though Persia possessed saltpetre in abundance, the original home of gunpowder was India. It is said that the Turkish word top and the Persian tupang or tufang are derived from the Sanskrit word dhupa. The **dhupa** of the **Agni Purana** means a rocket, perhaps a corruption of the **Kautaliyan term natadipika**.

(source: [Fire-Arms in Ancient India - By Jogesh Chandra Ray](#) I.H.Q. viii. p. 586-88).

Heinrich Brunnhofer (1841-1917), German Indologist, also believed that the ancient Aryans of India knew about gunpowder.

(source: [German Indologists: Biographies of Scholars in Indian Studies writing in German - By Valentine Stache-Rosen](#). p.92).



Gustav Oppert (1836-1908) born in Hamburg, Germany, he taught Sanskrit and comparative linguistics at the Presidency College, Madras for 21 years. He was the Telugu translator to the Government and Curator, Government Oriental Manuscript Library. Translated **Sukraniti, statecraft by an unknown author**.

He attempted to prove that ancient Indians knew firearms.

(source: [German Indologists: Biographies of Scholars in Indian Studies writing in German](#) - By Valentine Stache-Rosen. p.81).

(For more refer to article by G R Josyer - [India: The Home of Gunpowder and Firearms](#)).

In his work, **Political Maxims of the Ancient Hindus**, he says, that ancient India was the original home of gunpowder and fire-arms. It is probable that the word Sataghni referred to in the Sundara Kanda of the Ramayana refers to cannon.

(source: [Hindu Culture and The Modern Age](#) - By Dewan Bahadur K.S. Ramaswami Shastri - Annamalai University 1956 p. 127).

The word astra in the **Sukraniti** is interpreted by Dr. Gustav Oppert as a bow. The term astra means a missile, anything which is discharged. Agneya astra means a fiery arm as distinguished from a firearm.

Dr. Oppert refers to half a dozen temples in South India to prove the use of fire-arms in ancient India. The Palni temple in the Madura District contains on the outer portion in an ancient stone mantapa scenes of carved figures of soldiers carrying in their hands small fire-arms, apparently the small-sized guns mentioned in the Sukranitisara. Again in the Sarnagapani temple at **Kumbakonam** in the front gate of the fifth story from the top is the **figure of a king sitting in a chariot drawn by horses and surrounded by a number of soldiers. Before this chariot march two sepoy with pistols in their hands.** In the **Nurrukkal mantapam** of the **Conjeevaram temple** is a pillar on the north side of the mandapa. Here is a relief vividly representing a flight between two bodies of soldiers. Mounted horsemen are also seen. The foot-soldier is shown aiming his fire-arm against the enemy. Such things are also noted in the Tanjore temple and the temple at Perur, in the Coimbatore District. In the latter there is an actual representation of a soldier loading a musket.

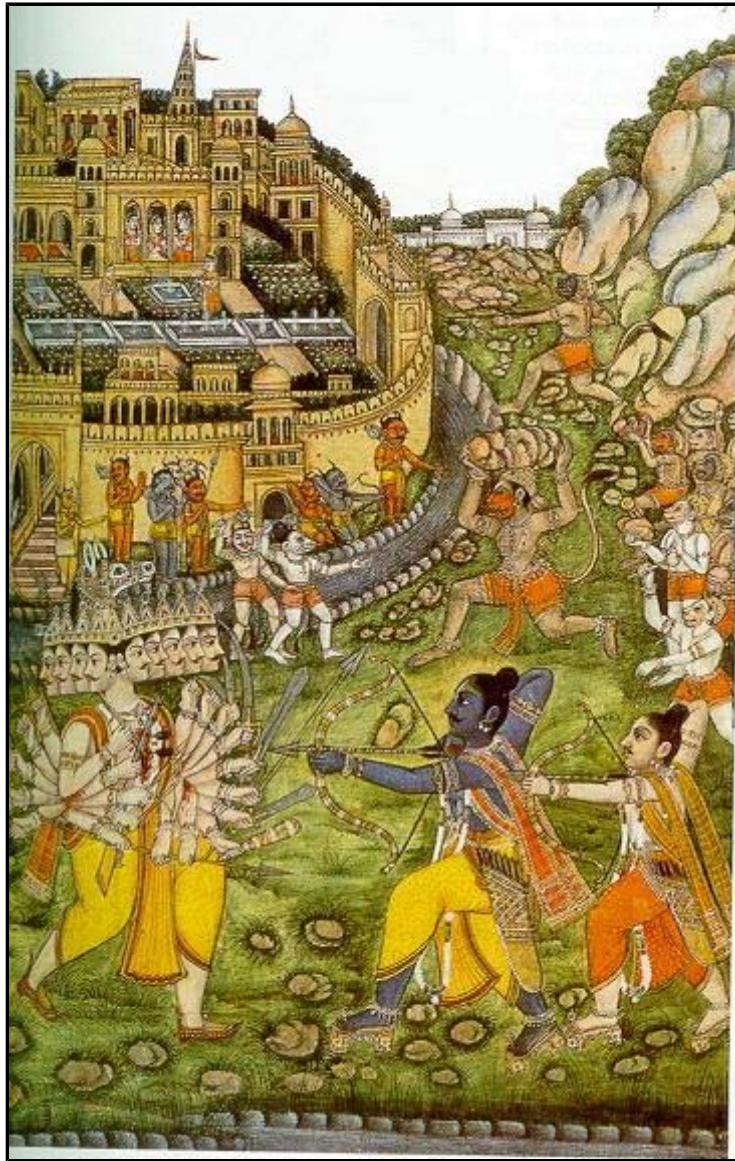
The Borobudar in Java where Indian tradition is copied wholesale. They are ascribed roughly to the period 750-850 A.D. There is a striking relief series PL. I, fig. 5, (1605) representing a battle in which two others are seen on each side, one wearing a curved sword in the right hand and a long shield, and the other a mace and a round shield resembling a wheel, all apparently made of iron. The story of the Ramayana is also given as in the **Tadpatri temple** from Rama's going to the forest down to the killing of Ravana. There is also a wonderful sculpture of an ancient Hindu ship.

(source: [Suvarnavdipa](#) - By R.C. Majumdar. pp 194-5).

Medhatithi remarks thus "while fighting his enemies in battle, he shall not strike with concealed weapons nor with arrows that are poisoned or barbed on with flaming shafts."

Sukraniti while referring to fire-arms, (agneyastras) says that before any war, the duty of the minister of war is to check up the total stock of gunpowder in the arsenal. Small guns is referred as tupak by **Canda Baradayi**. The installation of yantras (engines of war) inside the walls of the forts referred to by Manasollasa and the reference of Sataghni (killer of hundreds of men) pressed into service for the protection of the forts by Samaranganasutradhara clearly reveals the frequent use of fire arms in the battle-field.

(source: [India Through The Ages: History, Art Culture and Religion](#) - By G. Kuppuram p. 512-513).



Lord Rama with his bow defeats Ravana in the gold city of Lanka

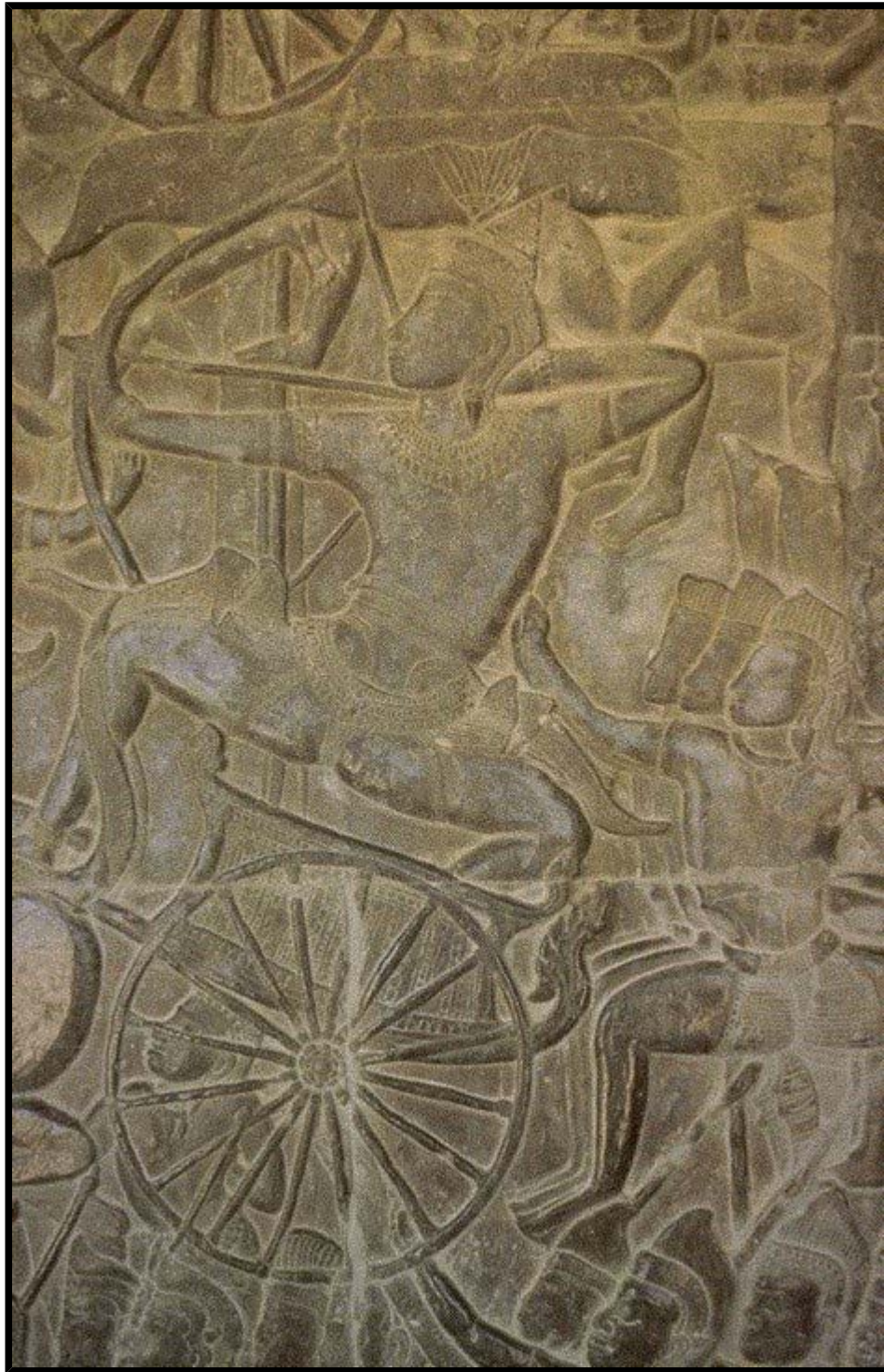
In the light of the above remarks **we can trace the evolution of fire-arms in the ancient India**. There is evidence to show that agni (fire) was praised for vanquishing an enemy. The **Arthava Veda** shows the employment of fire-arms with lead shots. The Aitareya Brahmana describes an arrow with fire at its tip. In the Mahabharata and Ramayana, the employment of agnyastras is frequently mentioned, and this deserves careful examination in the light of other important terms like ayah, kanapa and tula-guda.

The agnicurna or gunpowder was composed of 4 to 6 parts of saltpetre, one part of sulphur, and one part of charcoal of arka, sruhi and other trees burnt in a pit and reduced to powder. Here is certain evidence of the ancient rockets giving place to actual guns in warfare. From the description of the composition of gunpowder, the composition of the Sukraniti can be dated at the pre-Gupta age.

(source: [War in Ancient India - By V. R. Ramachandra Dikshitar](#) 1944. p. 103 -105).

Bow and Arrow:

In the words of **H. H. Wilson**: "the Hindus cultivated archery most assiduously and were very Parthians in the use of the bow on horse-back." One feature of this weapon was that it could be handled by all the four classes of warriors.



Frescos on the Angkor Wat depict scenes from the Hindu epics Mahabharata and Ramayana, showing Kshatriyas engaged in war. For more refer to chapter on [Suvarnabhumi: Greater India](#)

Other Weapons:

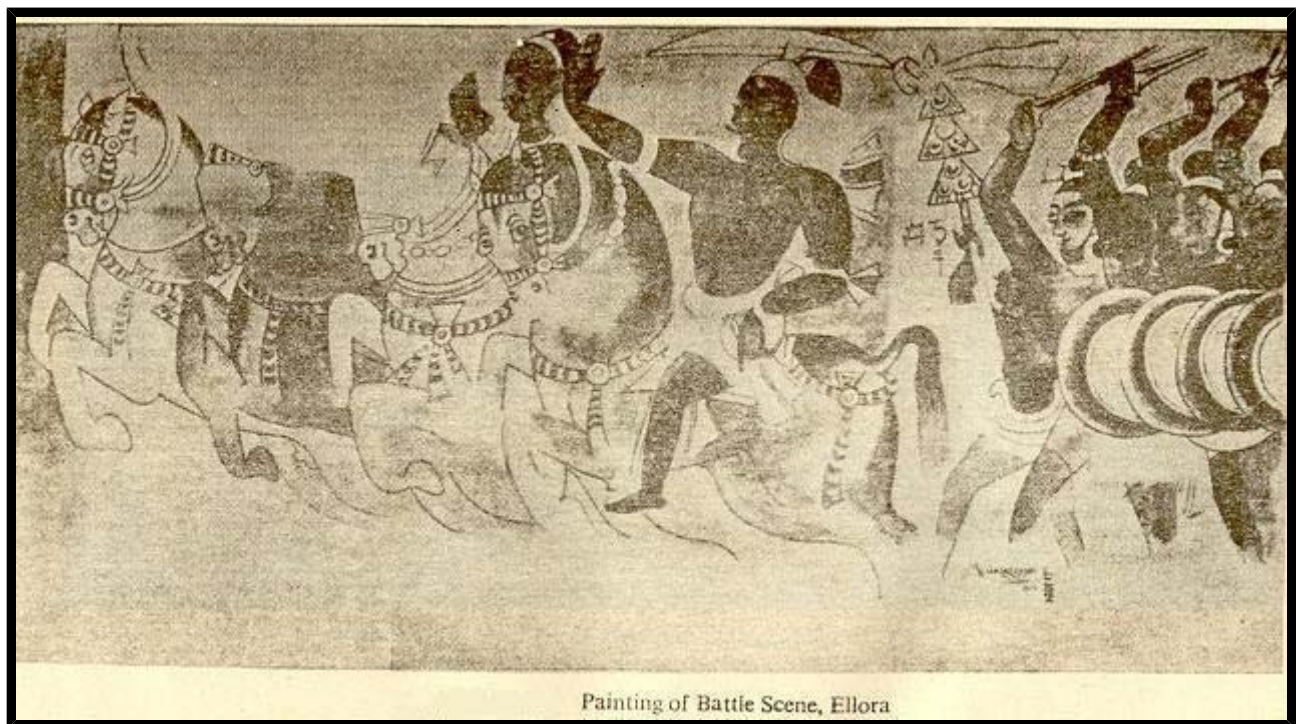
The **Bindipala** and the nine following are minor weapons of this class. Probably this was a heavy club which had a broad and bent tail end, measuring one cubit in length. It was to be used with the left foot of the warrior placed in front. The various uses of this weapon were cutting, hitting, striking and breaking. It was like a kunta but with a big blade. It was used by the Asuras in their fight with Kartavirya Arjuna.

The **Nalika** is a hand gun or musket rightly piercing the mark. It was straight in form and hollow inside. It discharged darts if ignited. As has been already said, **Sukracarya** speaks of two kinds of nalika, one big and the other small. The small one, with a little hole at the end, measured sixty angulas (ie. distance between the thumb and the little finger) dotted with several spots at the muzzle end. Through the touch hole or at its breach which contained wood, fire was conveyed to the charge. It was generally used by foot-soldiers. But the big gun had no wood at the breach and was so heavy that it had to be conveyed in carts. The balls were made of iron, lead or other material. Kamandaka uses the word nalika in the sense of firing gun as a signal for the unwary king. Again in the **Naisadha**, a work of the medieval period, Damayanti is compared to the two bows of the god of love and goddess of love, and her two nostrils to the two guns capable of throwing balls.

Thus there is clear evidence of the existence and use of firing guns in India in very early times.

The **Cakra**, the next weapon in the category, is a circular disc with a small opening in the middle. It was of three kinds of eight, six and four spokes. It was used in five or six ways. It resembled the quoid of the Sikhs today. Lord Vishnu is popularly addressed as Sankha-cakra-gada-pani, that is having Sankha or conch, Cakra or disc, and Gada or mace in three of his four hands. The various uses of a disc were felling, whirling, rending, breaking, severing, and cutting. It is one of the instruments peculiar to Lord Vishnu. Kautalya speaks of it as a movable machine. **The Cakra belongs to the category of a missile. According to the Vamanapurana, the Cakra has lustrous and sharp edges.**

The Tomara is another weapon of war frequently mentioned in all kinds of warfare. It was of two kinds, an iron club (sarvayasam) and a javelin. According to the Agni Purana it was to be with the help of an arrow of straight feathers, and was powerful in dealing blows to the eyes and hands of an enemy.



Painting of Battle Scene, Ellora

The **Dantakanta**, is another weapon of war, perhaps the shape of a tooth, made of metal, of strong handle and a straight blade. It had two movements.

The **Pasa**, which is a noose killing the enemy at one stroke, of two or three ropes used as a weapon attributed to the god Varuna. It was triangular in shape and **embellished with balls of lead**. It was associated with three kinds of movements. In the Agni Purana are described eleven ways of turning it to one's own advantage by dexterity of hand.

The **Masundi**, was probably an eight sided cudgel. It was furnished with a broad and strong handle. It apparently comes from the root-meaning to cleave or break into pieces, and perhaps akin to the Musala.

All these and more found used in one battle or another both in the Mahabharata and the Ramayana.

Amukta Weapons



The first of the Amukta weapons was the **Vajra or the thunderbolt**. The origin of this weapon is given in the Rirhayatra portion of the Mahabharata. It was made out of the backbone of the **Rishi Dadhici** which was freely given by him to Indra. Originally perhaps it had six sides and **made a terrible noise when hurled**.

The **Parasu** is the battle-axe attributed to Parasu-rama, of great fame. Its blade was made of steel and it had a wooden handle. There were six ways of manipulating it to one's own advantage.

The **Gada** is a heavy rod of iron with one hundred spikes on the top. One of the four cubits was able to destroy elephants and rocks. It could be handled in twenty different ways. **By means of gun powder it could be used as a projectile weapon of war**. Its principal use was to strike the enemy either from a raised place or from both sides and strike terror into the enemy especially of the Gomutra array.

The **Mudgara** was a staff in the shape of a hammer. It was used to break heavy stones and rocks. This is again a movable machine according to Kautalya.

The **Sira** was a bucket-like instrument curved on both sides and with a wide opening made of iron. It was as long as a man's height. The **Pattisa** is a razor like weapon.

The **Sataghni**, **literally means that which had the power of killing a hundred at a time**. It looked like a Gada and is said to be four cubits in length. It is generally identified with modern cannon and hence was a projectile weapon of war.

"sataghni tu catustala lohakantaka samcita yastih! iti Kesavah."

It was generally placed on the walls of a fort and is included among the movable machines by Kautalya.



Asi or the Swords - The best sword measured fifty inches.

They were usually made of Pindara iron found in the Jangala country, black iron in the Anupa, white iron in the Sataharana, gold colored in the Kalinga, oily iron in the Kambhoja, blue-colored in Gujarat, grey-colored in the Maharashtra and reddish white in Karnataka. The aSi si also known as Nistrimsa, Visamana, Khadga, Tiksnadhara, Durasada, Srigarbha, Vijaya and Dharmamula, meaning respectively cruel, fearful, powerful, fiery, unassailable, affording wealth, giving victory, and the source of maintaining dharma. And these are generally the characteristics of a sword.

It was commonly worn on the left side and was associated with thirty-two different movements. It measured 50 thumbs in length and four inches in width. In the **Santi-parva** (166,3 ff; 82 ff). **Bhisma being asked as to which weapon in his opinion was the best for all kinds of fighting, replies that the sword is the foremost among arms (agryah praharananam), but the bow is first (adyam)**.

B, K, Sarkar says that the secret of manufacturing the so-called Damascus blade was learnt by the Saracens from the Persians, who, in their turn, had learnt it from the Hindus. Early Arabic literature provides us with a curious illustration of the esteem with which Indian swords were looked upon in Western Asia. An early Arabic poet, Hellal, describing the flight of the Hemyarites, says: "But they fled under its (ie. the clouds) small hail of arrows quickly, whilst hard Indian swords were penetrating them." and again: "He died and we inherited him; one old wide (cuirass) and a bright Indian (sword) with a long shoulder-belt." (Hindu Achievements in Exact Science - By B. K. Sarkar p.

45).



(**Note:** Hindus made the best swords in the ancient world, they discovered the process of making Ukku steel, called Damascus steel by the rest of the world (**Damas meaning water to the Arabs, because of the watery designs on the blade**). These were the best swords in the ancient world, the strongest and the sharpest, sharper even than Japanese katanas. Romans, Greeks, Arabs, Persians, Turks, and Chinese imported it. **The original Damascus steel-the world's first high-carbon steel-was a product of India known as wootz. Wootz is the English for ukku in Kannada and Telugu, meaning steel.** Indian steel was used for making swords and armor in Persia and Arabia in ancient times. Ktesias at the court of Persia (5th c BC) mentions two swords made of Indian steel which the Persian king presented him. **The pre-Islamic Arab word for sword is 'muhannad' meaning from Hind. So famous were they**

that the Arabic word for sword was Hindvi - from Hind.

Wootz was produced by carburising chips of wrought iron in a closed crucible process. "Wrought iron, wood and carbonaceous matter was placed in a crucible and heated in a current of hot air till the iron became red hot and plastic. It was then allowed to cool very slowly (about 24 hours) until it absorbed a fixed amount of carbon, generally 1.2 to 1.8 per cent," said eminent metallurgist Prof. T.R. Anantharaman, who taught at Banares Hindu University, Varanasi. "When forged into a blade, the carbides in the steel formed a visible pattern on the surface." To the sixth century Arab poet Aus b. Hajr the pattern appeared described 'as if it were the trail of small black ants that had trekked over the steel while it was still soft'. In the early 1800s, Europeans tried their hand at reproducing wootz on an industrial scale. Michael Faraday, the great experimenter and son of a blacksmith, tried to duplicate the steel by alloying iron with a variety of metals but failed. Some scientists were successful in forging wootz but they still were not able to reproduce its characteristics, like the watery mark. "Scientists believe that some other micro-addition went into it," said Anantharaman. "That is why the separation of carbide takes place so beautifully and geometrically."

The crucible process could have originated in south India and the finest steel was from the land of Cheras, said K. Rajan, associate professor of archaeology at Tamil University, Thanjavur, who explored a 1st century AD trade centre at Kodumanal near Coimbatore. Rajan's excavations revealed an industrial economy at Kodumanal. **Pillar of strength The rustless wonder called the Iron Pillar near the Qutb Minar at Mehrauli in Delhi did not attract the attention of scientists till the second quarter of the 19th century. The inscription refers to a ruler named Chandra, who had conquered the Vangas and Vahlikas, and the breeze of whose valour still perfumed the southern ocean. "The king who answers the description is none but Samudragupta, the real founder of the Gupta empire," said Prof. T.R. Anantharaman, who has authored [The Rustless Wonder](#). Zinc metallurgy travelled from India to China and from there to Europe.** As late as 1735, professional chemists in Europe believed that zinc could not be reduced to metal except in the presence of copper. The alchemical texts of the mediaeval period show that the tradition was live in India. In 1738, William Champion established the Bristol process to produce metallic zinc in commercial quantities and got a patent for it. Interestingly, the mediaeval alchemical text Rasaratnasamucchaya describes the same process, down to adding 1.5 per cent common salt to the ore.

(source: [Saladin's sword - By The Week](#) - June 24, 2001 - <http://netinfo.hypermart.net/telingsteel.htm>).

Artillery - India Taught Europe



Artillery was introduced into Europe by the Roma (Gypsies), who were none else than the Jats and Rajputs of India.

This has been revealed in a study by a reputed linguist, **Weer Rajendra Rishi**, after an extensive tour of Roma camps in Europe.

He explains that the Romas, who are the Gypsies of Europe, also taught the use of artillery to Europeans. These Roma belonged to the Jat and Rajput clans who left India during the invasions by Mohamud Ghaznavi and Mohammad Ghori between the 10th and 12th centuries of the Christian era.

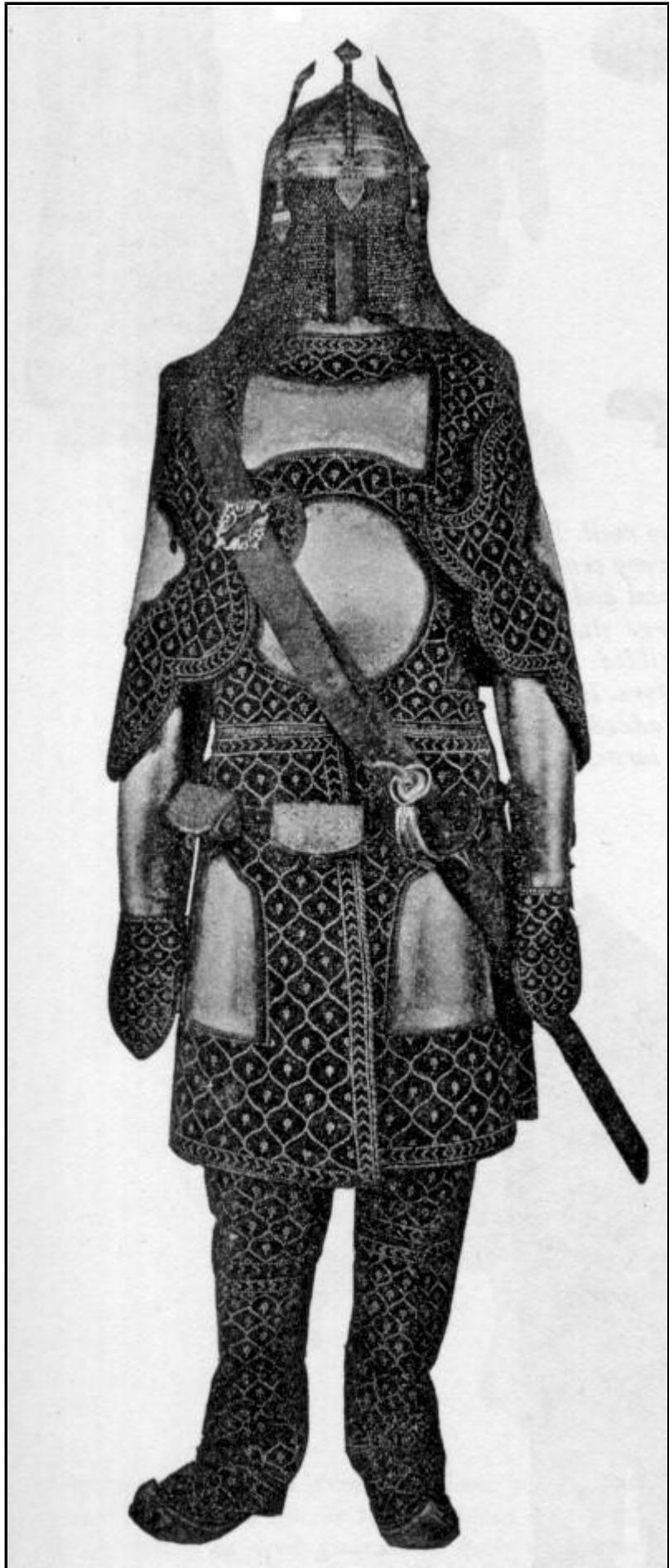


He says the use of artillery was known in Asia, notably in India, from time immemorial, while it was introduced to the Europeans much later.

Mr. Rishi reveals that the Roma had helped different countries of Europe in making artillery. "Evidence of this is given as early as 1496 by a mandate of that date granted by Wadislav, King of Hungary, wherein it is said that Thomas Polgar, chief of 25 tents of wandering Gypsies had, with his people, made at Funfkirchen musket-balls and other ammunition for Bishop Sigismond. "In 1546 when the English were holding Boulogne against the French the latter took the help of two experienced Romas of Hungary to make great number of cannons of greater caliber than earlier guns. The Hungarian Roma of the 16th century possessed fuller knowledge of fabricating artillery than the races of Western Europe.

There were also records that the Roma were employed as soldiers by some countries of Europe. Dr. W. R. Rishi, is the author of the book, Roma - The Panjabi Emigrants in Europe, Central and Middle Asia, the USSR, and the Americas - published 1976. Mr. Rishi is a well-known linguist of India and was awarded the honour of 'Padmashri' by the President of India in 1970 for his contributions in the field of linguistics. He is also the Founder Director of the Indian Institute of Romani Studies.

(source: [Diamonds, Mechanism, Weapons of War, Yoga Sutras - By G. R. Josyer](#). p. 179-182).



Indian Armour

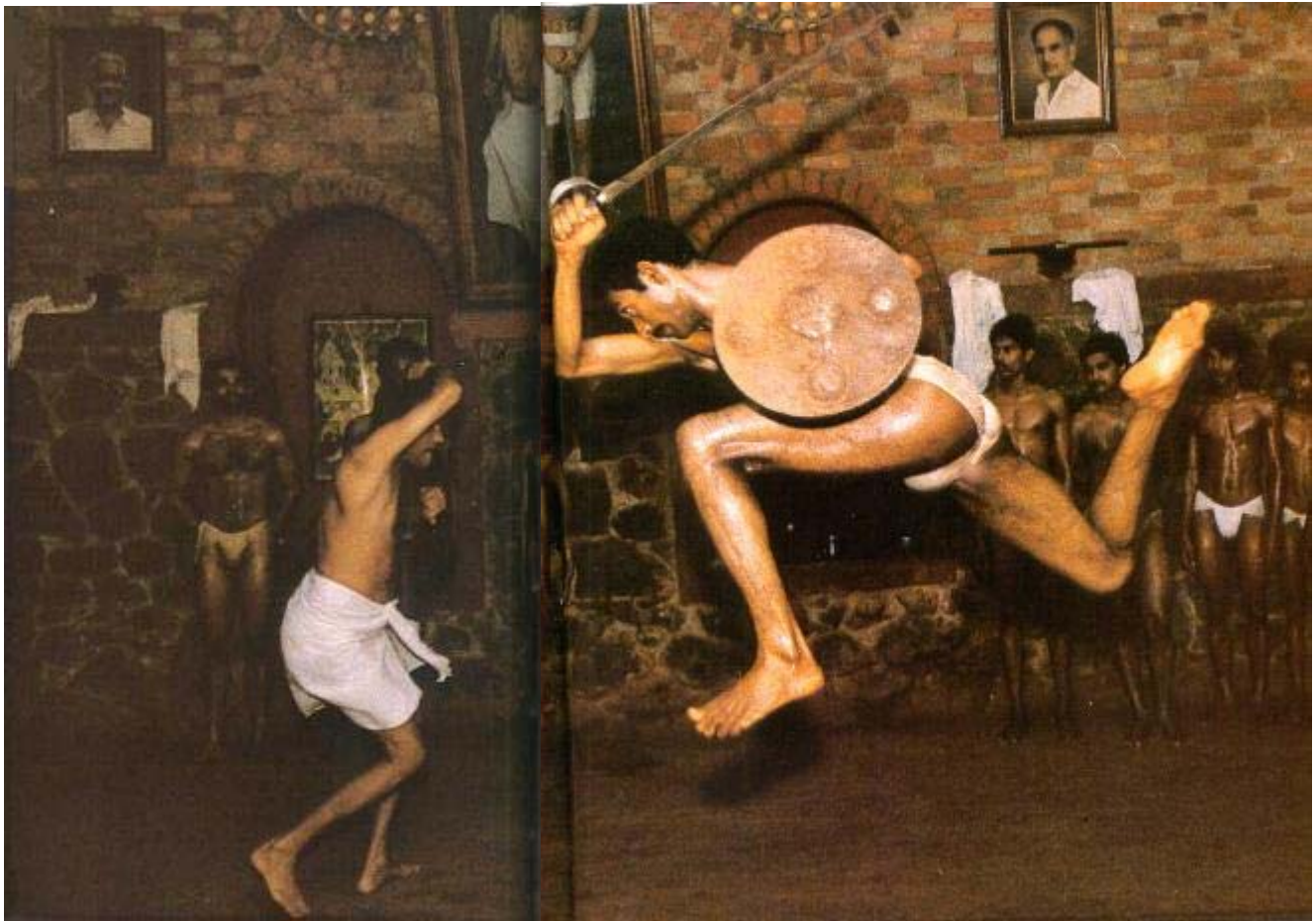
To conclude with the words of [Sir George Birdwood](#):

" For a variety, extent, and gorgeousness, and ethnological and artistic value, no such collection of Indian arms exists in this country (England) as that belonging to the Prince of Wales. It represents the armorer's art in every province of India, from the rude spear of the savage Nicobar islanders to the costly damascened, sculptured, and jewelled swords, and shields, spears, daggers, and match-locks of Kashmir, Kutch and Vizianagaram. The most striking object in the collection is a suit of armor made entirely of the horny scales of the Indian armadillo, or pangolin, encrusted with gold, and turquoise, and garnets."

(source: [The Industrial Arts of India](#) pp. 171-2).

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Martial Arts - Fighting without weapons



"Fighting without weapons was a specialty of the Ksatreyas (caste of Ancient India) and foot soldier alike.

Danger and Divinity: Originating at least 1,300 years ago, India's Kalaripayattu is the oldest martial art taught today. It is also one of the most potentially violent. Weaponless but nimble, a Kalaripayattu master displays for his students how to meet the attack of an armed opponent.

"Fighting without weapons was a specialty of the Ksatreyas (caste of Ancient India) and foot soldier alike. For the Ksatreyas it was simply part and parcel of their all-around training, but for the lowly peasant it was essential. We read in the Vedas of men unable to afford armor who bound their heads with turbans called

Usnisa to protect themselves from sword and axe blows.

"Fighting on foot for a Ksatreya was necessary in case he was unseated from his chariot or horse and found himself without weapons. Although the high ethical code of the Ksatreya forbid anyone but another Ksatreya from attacking him, doubtless such morals were not always observed, and when faced with an unscrupulous opponent, the Ksatreya needed to be able to defend himself, and developed, therefore, a very effective form of hand-to-hand combat that combined techniques of wrestling, throws, and hand strikes. Tactics and evasion were formulated that were later passed on to successive generations. This skill was called **Vajramukhti**, a name meaning "thunderbolt closed - or clasped - hands." The tile Vajramukti referred to the usage of the hands in a manner as powerful as the vajra maces of traditional warfare. Vajramukti was practiced in peacetime by means of regular physical training sessions and these utilized sequences of attack and defense technically termed in Sanskrit nata."



Kalaripayattu, literally "the way of the battlefield," still survives in Kerala, where it is often dedicated to Mahakali. The Kalari grounds are usually situated near a temple, and the pupils, after having touched the feet of the master, salute the ancestors and bow down to the Goddess, begin the lesson. Kalari trainings have been codified for over 3000 years and nothing much has changed.

The warming up is essential and demands great suppleness. Each movement is repeated several times, facing north, east, south and west, till perfect loosening is achieved. The young pupils pass on to the handling of weapons, starting with the "**Silambam**", a short stick made of extremely hard wood, which in the olden times could effectively deal with swords. The blows

are hard and the parade must be fast and precise, to avoid being hit on the fingers! They continue with the swords, heavy, and dangerous, even though they are not sharpened any more, as they are used. Without guard or any kind of body protection; they whirl, jump and parry, in an impressive ballet. Young, fearless girls fight with enormous knives, bigger than their arms and the clash of irons is echoed in the ground. The session ends with the big canes, favorite weapons of the Buddhist traveler monks, which they used during their long journey towards China to scare away attackers.

The "Urimi" is the most extraordinary weapon of Kalari, unique in the world. This double-edged flexible sword which the old-time masters used to wrap around the waist to keep coiled in one hand, to suddenly whip at the opponent and inflict mortal blows, is hardly used today in trainings, for it is much too dangerous.

This indigenous martial arts, under the name of **Kalari or Kalaripayit** exists only in South India today. **Kalarippayat is said to be the world's original martial art.** Originating at least 1,300 years ago, India's Kalaripayit is the oldest martial art taught today. It is also the most potentially violent, because students advance from unarmed combat to the use of swords, sharpened flexible metal lashes, and peculiar three-bladed daggers. More than 2,000 years old, it was developed by warriors of the Cheras kingdom in Kerala. Training followed strict rituals and guidelines. The entrance to the 14 m-by-7 m arena, or kalari, faced east and had a bare earth floor. Fighters took Shiva and Shakti, the god and goddess of power, as their deities. From unarmed kicks and punches, kalarippayat warriors would graduate to sticks, swords, spears and daggers and study the marmas—the 107 vital spots on the human body where a blow can kill. Training was conducted in secret, the lethal warriors unleashed as a surprise weapon against the enemies of Cheras.



Father and founder of Zen Buddhism (called C'han in China), Boddidharma, a Brahmin born in Kacheepuram in Tamil Nadu, in 522 A.D. arrived at the courts of the Chinese Emperor Liang Nuti, of the 6th dynasty. He taught the Chinese monks Kalaripayattu, a very ancient Indian martial art, so that they could defend themselves against the frequent attacks of bandits. In time, the monks became famous all over China as experts in bare-handed fighting, later known as the Shaolin boxing art. The [Shaolin temple](#) which has been handed back a few years ago by the communist Government to the C'han Buddhist monks, inheritors of Boddhidharma's spiritual and martial teachings, by the present Chinese Government, is now open to visitors. On one of the walls, a fresco can be seen,

showing Indian dark-skinned monks, teaching their lighter-skinned Chinese brothers the art of bare-handed fighting. On this painting are inscribed: "Tenjiku Naranokaku" which means: "**the fighting techniques to train the body (which come) from India...**"

Kalari payatt was banned by the British in 1793. (Refer to chapter on [European Imperialism](#)).

(For more information on martial arts refer to chapter [India and China](#) and [Kalarippayattu](#) and [Kalari Payatte - The martial art of Kerala](#)

(source: [The Bodhisattva Warriors: The Origin, Inner Philosophy, History and Symbolism of the Buddhist Martial Art Within India and China - By Terence Dukes/ Shifu Nagaboshi Tomio](#) p. 3 - 158-174 and 242. [A Western Journalist on India: a ferengi's columns - By Francois Gautier](#) Har-Anand Publications January 2001 ISBN 8124107955 p. 155-158).

Silambam – Indian Stick Fighting



The art Nillaikalakki Silambam was brought to the royal court during the reign of the Cheran, Cholan and Pandian emperors, once powerful rulers of India.

The art Nillaikalakki Silambam, which exists for more than five thousand years, is an authentic art which starts with the stick called Silambambo (1.68 meters long). It originates from the Krunji mountains of south India, and is as old as the Indian sub-continent itself.

The natives called Narikuravar were using a staff called Silambambo as a weapon to defend themselves against wild animals, and also to display their skill during their religious festivals. The Hindu scholars and yogis who went to the Krunji mountains to meditate got attracted by the display of this highly skilled spinning Silambambo. The art Nillaikalakki Silambam therefore became a part of the Hindu scholars and yogis training, as they were taught by the Narikuravar.

They brought the art to the royal court during the reign of the Cheran, Cholan and Pandian emperors, once powerful rulers of India.

(source: [Silamban – Indian Stick Fighting](#)).

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Army and Army Divisions

The Game of Chess and the Four-Fold Force



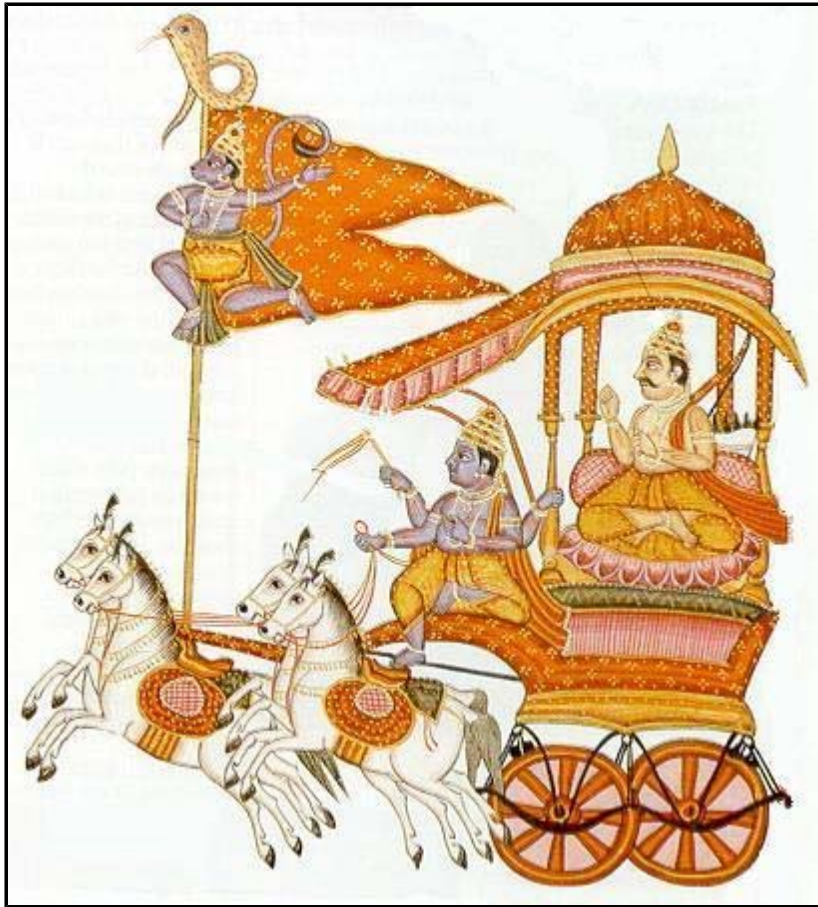
Owing to peculiar geographical features, with her vast plains interspersed with forests, the ancient Indian States had to make extensive use of mounted forces which comprised cavalry, chariots, and elephants. This does not mean that infantry was neglected. **Hindu India possessed the classical fourfold force of chariots, elephants, horsemen, and infantry, collectively known as the Caturangabala.** Students also know that the old game of chess also goes by the name of **Caturanga**. Chess is a game of war, and in each game there are a king, a councilor, two elephants, two horses, two chariots, and eight foot-soldiers. From the references to this game in the Rg Veda and the Atharva Veda and in the Buddhists and Jaina books, it must have been very popular in ancient India. The Persian term **Chatrang** and the Arabic **Shatrang** are forms of the Sanskrit **Chaturanga**.

The famous epic **Mahabharata** narrates an incidence where a game called **Chaturang** was played between two groups of warring cousins. In some form or the other, the game continued till it evolved into chess. **H. J. R. Murray**, in his work titled "**A History of Chess**", has concluded that "chess is a descendant of an Indian game played in the 7th century AD". **The Encyclopedia Britannica** states that "we find the best authorities agreeing that chess existed in India before it is known to have been played anywhere else."

(For more on chess refer to chapter on **Hindu Culture**).

On the whole the board is 8 X 8 squares. According to Taylor, the game of chess was the invention of some Hindu who devised a game of war with the astapada board as his field of battle. From the reference to the game in the Rg Veda and the Arthava Veda and in the Buddhist and Jaina books, it must have been very popular in ancient India. It is to be noted that the relative values of the chess pieces were analogous to or identical with the relative values of different arms as laid down by **Kautalya, Sukra, and Vaisampayana**. The organization of the Indian army which came to be known as **Caturanga**, both in epic Sanskrit and Pali literature, was based on the ancient game.

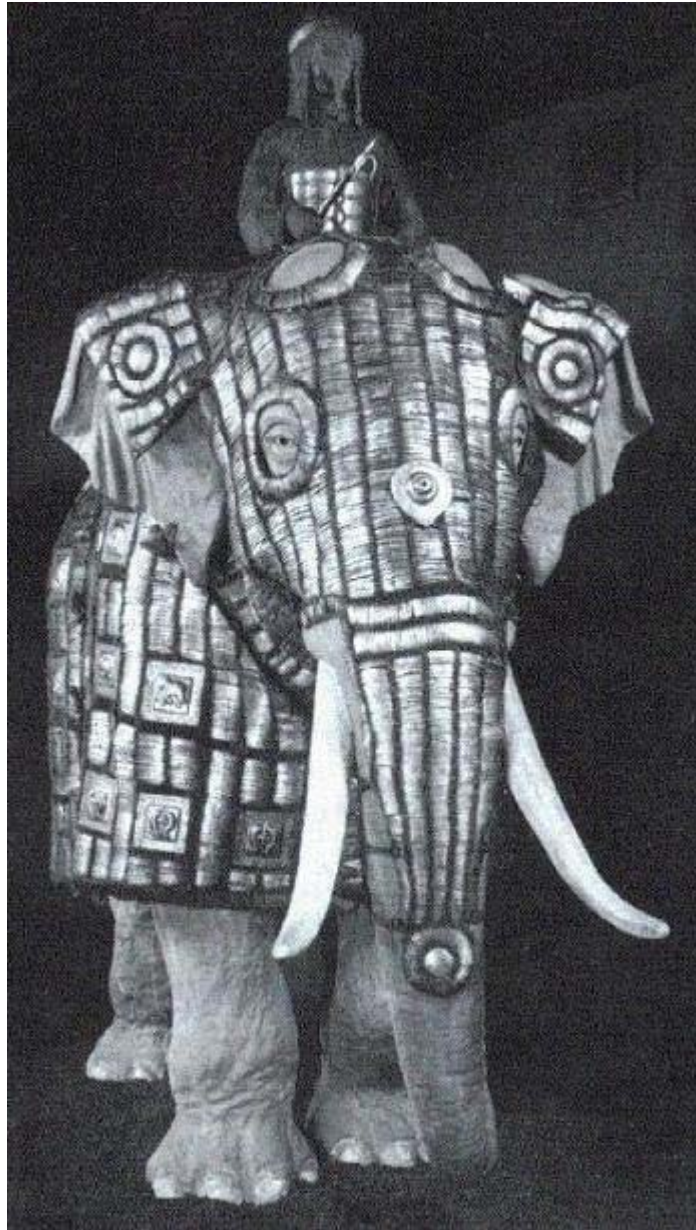
The Chariots: Chariots were used in warfare from very remote times. There are many references to chariots in the Samhitas and in the Brahmanas. The chariot was an indispensable instrument of war in the days of the Vedas, and on its possession depended victory. In the Rg Veda there is a hymn addressed to the war chariot: ' Lord of the wood, be firm and strong in body: be bearing as a brave victorious hero. Show forth thy strength, compact with straps of leather and let thy rider win all spoils of battle.' Chariots were of different types and materials. In the Ramayana and the Mahabharata their use is largely in evidence. Each chariot was marked off by its ensign and banner. Besides flags, umbrellas (chattras, atapatras), and fans were a part of the paraphernalia of the war chariot. **Sukra mentions an awe-inspiring chariot of iron with swift-moving wheels, provided with good seats for the warriors and a seat in the middle for the charioteer; the chariot was also equipped with all kinds of offensive and defensive weapons.**



Warrior Arjuna with Krishna - driving the chariot in the epic The Mahabharata

The conception of the sun-god in Indian tales is of value to the student of ancient Indian military history. The idea is that the sun-god wants to destroy darkness. Therefore he dons a lustrous armor and marching in his swift flying chariot drawn by seven powerful steeds, Aruna (dawn) being his charioteer. The whole image presents a life-like portrait of the military dress as well as the march against an enemy.

Elephants: The next important force of war consisted of elephants. The numerous representations of the animal on coins and in architectural sculptural works from Gandhara to Ramesvaram as well as bronze figures in Indonesia are an indication of the esteem in which it was held by the ancient Indians, clearly on account of its usefulness.



An Elephant Armour: An important force of war consisted of elephants.

There is a reference in the Rg Veda to two elephants bending their heads and rushing together against the enemy, which is a fairly early reference to the animal being used in war. By the time of the Yajur Veda Samhita the art of training elephants had become common. The **Arthashastra** mentions a special officer of the State for the care of elephants and lays down his duties. Megasthenes explains how the elephants were hunted, and how their distempers were cured by simple remedies such as cow's milk for eye-disease and pig's fat for sores. **A Jataka story throws some light on how fire-weapons were used in ancient India.** "Once a king mounted on an elephant and led an attack on the city of Benares. The soldiers who offered defences from within the city gates discharged a shower of missiles against the enemy at which the elephant was frightened a little." The use of burning naphtha balls thrown against on rushing elephants to frighten them and make them turn back on their own side, is mentioned by early Mohammadan historians as a feature of the warfare between the Rajputs and the Turkish invaders from the North-West. (Elliot and Dowson, vol. I).

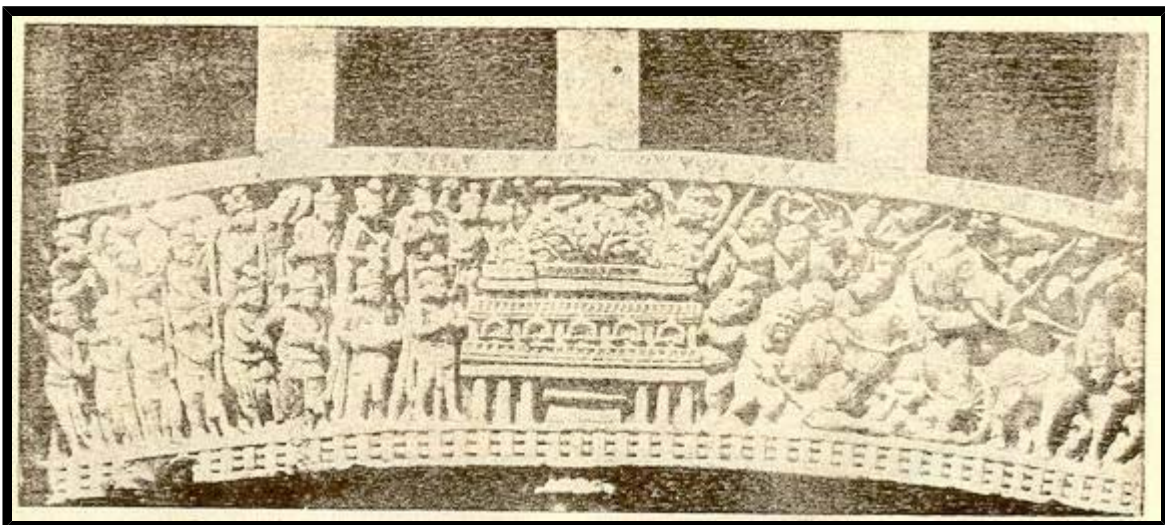
Cavalry:



We hear from the Kautaliya and Megasthenes that there was a well-organized and efficient cavalry force in the army of Chandragupta. In the ArthaVeda we hear of dust-raising horsemen.

We hear from the Kautaliya and Megasthenes that there was a well-organized and efficient cavalry force in the army of Chandragupta. **In the ArthaVeda we hear of dust-raising horsemen. In this connection it is interesting to consider the oft-repeated statement that horses are non-Indian. It is not the whole truth.** They were known to the Asuras of Vedic literature. There is a legend narrated in the third book of the [Hariharacaturanga](#) (though this is work of the late 12th century A.D., the tradition recorded is very ancient). In the epoch of the epics and the Arthasastra, we find that the cavalry occupied as important a place in the army as any other division.

Megasthenes corroborates the evidence of the Arthasastra. There was a special department in the State for the cavalry. The horses of the State were provided with stables and placed under the care of good grooms and syces. There were several trained horsemen who could jump forward and arrest the speed of galloping horses. But the majority of them rode their horses with bit and bridle. When horses became ungovernable they were placed in the hands of professional trainers who made the animals gallop round in small circles. In selecting horses of war, their age, strength, and size were taken into account. We may remark in passing that Abhimanyu's horses were only three years old.



How important the science of horses was to the ancient Indians is best seen from the [Laksanaprakasa](#) which quotes

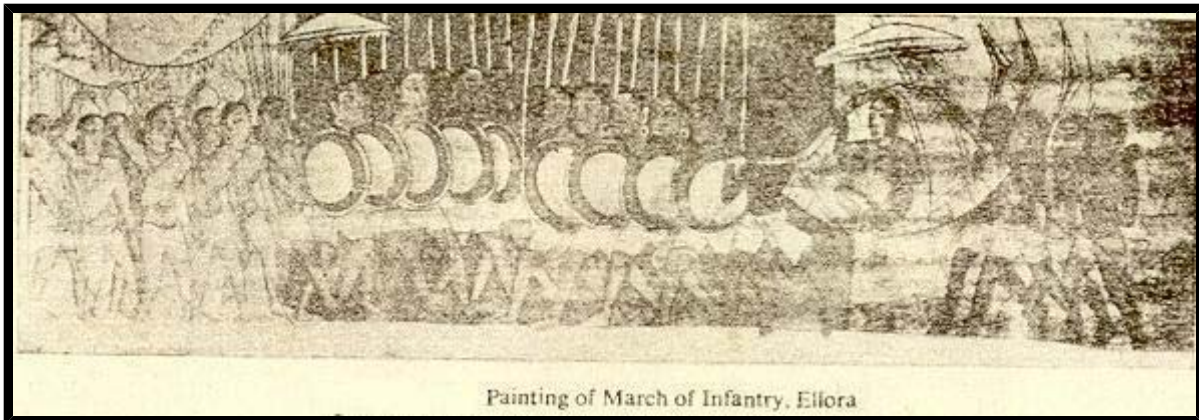
from several important old authorities some of which are probably lost to us. Among them are the Asvayurveda and Asvasastra, the former attributed to Jayadeva and the latter to Nakula. **Both the Puranas and the epics agree that the horses of the Sindhu and Kamboja regions were the finest breed and that the services of the Kambojas as cavalry troopers were requisitioned in ancient wars. In the Mahabharata war the Kambojans (Cambodians) were enlisted.** The steeds of Bahalika were also highly esteemed. Horses had names and so did elephants. Unlike the chariot horse, the cavalryman drove his animal with a whip which was generally fixed to the wrist. This allowed his hand free play. The cavalryman was armed with arrow or spear or sword. He wore breastplate and turban (unsnisa). Worth noting is the fact that horses were made to drink wine before actually marching to battle.

The tactical use of the cavalry was to break through the obstacles on the way, to pursue the retreating enemy, to cover the flanks of the army, to effect speedy communication with the various parts of the army unobserved (bahutsara) and to pierce the enemy ranks from the front to the rear. The cavalry was responsible, in a large measure, for the safety and security of the army in entrenched positions, forests or camps. It obstructed movements of supplies and reinforcements to the enemy. In short, the cavalry was indispensable in situations requiring quickness of movement.

Infantry:

The next important division of the army was the infantry, or foot-soldier. The Arthasastra speaks of the infantry as a separate army department under the charge of a special officer of the State. This receives confirmation from Megasthenes statement. Besides the maula or hereditary troops which formed a considerable portion of the army, there were the bhrta or mercenaries, the sreni or soldiers supplied by the different group and guild organizations, the mitra or soldiers supplied by allies, the amitra or deserters from the enemy ranks, and the atavi recruited from forest tribes. According to the **Sukraniti and the Kamandakanitsara**, the army was to be made as imposing as possible to frighten the enemy by its size. The **Agni-purana** says that victory ever attends the army where foot-soldiers are numerically strong.

The Sukraniti also mentions that foot-soldiers possessed fire-arms when they fought.



When these foot-soldiers equipped themselves for war **Arrian** says that 'they carry a bow made of equal length with the man who bears it. This they rest upon the ground and pressing against it and their left foot, thus discharge the arrow having drawn the string backwards: the shaft they use is little short of being three yards long, and there is nothing which can resist an Indian Archer's shot - neither shield nor breast-plate, nor any stronger defense if such there be.' In their left hand they carry bucklers made of undressed ox-hide which are not so broad as those who carry them but are about as long. If we turn to the ancient nations and especially the ancient Egyptians we meet with almost a similar description.

The Commissariat:

The **Caturanaga** was a classical division of the army accepted by tradition. But in the epoch of the epic we hear of a Sadanga or the six-fold army, including commissariat and admiralty. The use of commissariat can be traced to the epic age. This belonged to the category of administrative division of troops as against the combatant. We are told that this division of the army into two categories was first seen in the battle of Mansikert (1071





A.D.)

But, centuries before, the Indian army leaders had realized the value of such a division. It is said that when the Pandava army marched to Kurukshetra it was followed by 'carts and transport cars, and all

descriptions of vehicles, the treasury, weapons and machines and physicians and surgeons, along with the few invalids that were in the army and all those that were weak and powerless. This was purely a civil department attached to the army. Care was also given to wounded animals.

The numerous references in our authorities to the Commissariat demonstrate beyond doubt that wars were planned methodically and conducted systematically.

The Admiralty:

The Admiralty as a department of the State may have been a creation of Chandragupta **but there is evidence to show that the use of ships and boats was known to the people of the Rig Veda**. In the following passage we have reference to a vessel with a hundred oars. 'this exploit you achieved, Asvins in the ocean, where there is nothing to give support, nothing to rest upon, nothing to cling to, that you brought Bhujya, sailing in a hundred-cared ship, to his father's house.' (refer to Naval warfare section).

Cartography

There is no special word in Sanskrit for a 'a map.' There is, however, reason to believe that in ancient India a map or chart was regarded as a citra or **alekhya**, i.e., 'a painting, a picture, a delineation'. **That maps were made in ancient India seems to be quite clear from the evidence of the New History of the T'ang Dynasty which gives an account of the Chinese general Wang Hiuen-tse's exploits in India in the year 648 A.D.**

With reference to the knowledge of map-making among the people of India, especially the Dravidians of the South:

"The charts in use by the medieval navigators of the Indian Ocean - Dravidas, Arabs, Persians, were equal in value, if not superior, to the charts of the Mediterranean. Marco Polo (1498) found them in the hands of his Indian pilot, and their nature is fully explained in the Mohit or 'the Encyclopaedia of the Sea',

**

Hindu Valor



The Hindus were declared the by the Greeks to be the bravest nation they ever came in contact with. (source: [History of India - by Mountstuart Elphinstone](#) p. 197). **It was the Hindu King of Magadha that struck terror in the ever-victorious armies of Alexander.**

Abul Fazal, the minister of Akbar, after admiring their noble virtues, speaks of the valor of the Hindus in these terms: "Their character shines brightest in adversity. Their soldiers (Rajputs) know to what it is to flee from the fields of battle, but when the success of the combat becomes doubtful, they dismount from their horses and throw away their lives in payment of the debt of valor."

Francois Bernier, A 17th century traveler says that: "The Rajputs embrace each other when on the battlefields as if resolved to die." The Spartans, as is well known, dressed their hair on such occasions. It is well known that when a Rajput becomes desperate, he puts on garments of **saffron color**, which act, in technical language, is called **kesrian kasumal karna (donning saffron robes)**.

(source: [Hindu Superiority - By Har Bilas Sarda](#) p. 79 - 91).

Aerial Warfare



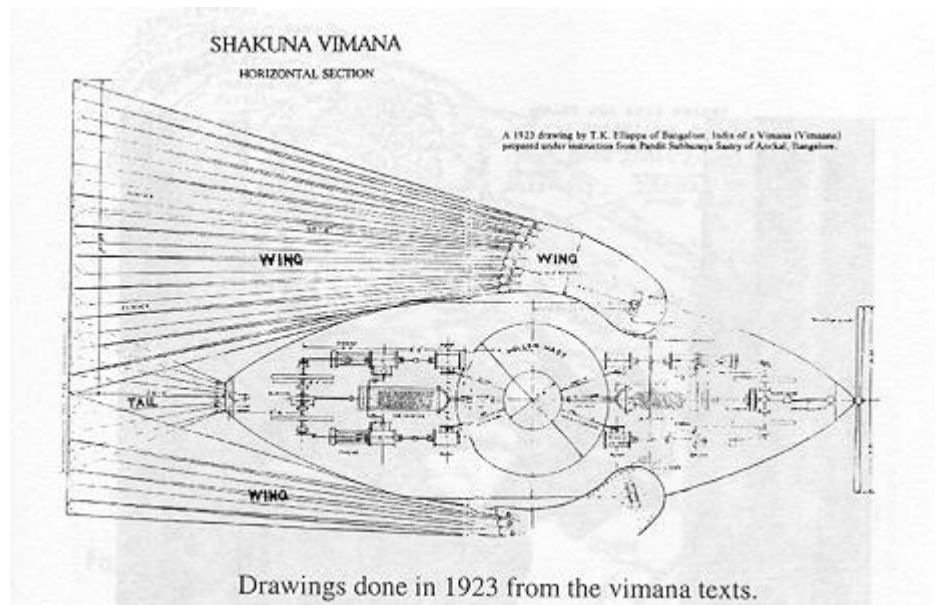
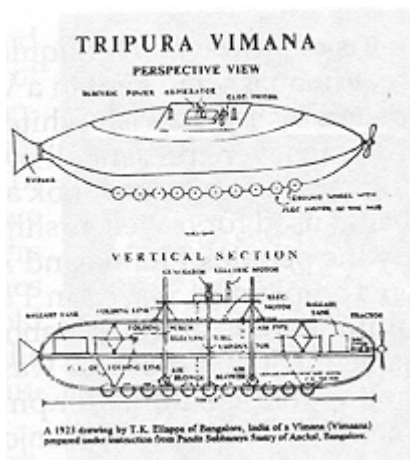
“The ancient Hindus could navigate the air, and not only navigate it, but fight battles in it like so many war-eagles combating for the domination of the clouds. To be so perfect in aeronautics, they must have known all the arts and sciences related to the science, including the strata and currents of the atmosphere, the relative temperature, humidity, density and specific gravity of the various gases...”

~ Col. Henry S Olcott (1832 – 1907) American author, attorney, philosopher, and cofounder of the [Theosophical Society](#) in a lecture in Allahabad, in 1881.

No question can be more interesting in the present circumstances of the world than India's contribution to the science of aeronautics. There are numerous illustration in our vast Puranic and epic literature to show how well and wonderfully the ancient Indians conquered the air. **To glibly characterize everything found in this literature as imaginary and summarily dismiss it as unreal has been the practice of both Western and Eastern scholars until very recently.** The very idea indeed was ridiculed and people went so far to assert that it was physically impossible for man to use flying machines. But today what with balloons, airplanes.....”

Turning to Vedic literature, in one of the Brahmanas occurs the concept of a ship that sails heavenwards. The ship is the Agnihotra of which the Ahavaniya and Garhapatya fires represent the two sides bound heavenward, and the steersman is the Agnihotrin who offers milk to the three Agnis. Again in the still earlier Rg Veda Samhita we read that the Asvins conveyed the rescued Bhujya safely by means of winged ships. The latter may refer to the aerial navigation in the earliest times.

In the recently published [Samarangana Sutradhara of Bhoja](#), a whole chapter of about 230 stanzas is devoted to the principles of construction underlying the various flying machines and other engines used for military and other purposes.



The ancient Hindus could navigate the air, and not only navigate it, but fight battles in it like so many war-eagles combating for the domination of the clouds

The various advantages of using machines, especially flying ones, are given elaborately. Special mention is made of their

use at one's will and pleasure, of their uninterrupted movements, of their strength and durability, in short of their capability to do in the air all that is done on earth. Three movements are usually ascribed to these machines, - ascending, cruising thousands of miles in different directions in the atmosphere and lastly descending. It is said that in an aerial car one can mount up to Suryamandala, 'solar region' and the Naksatra mandala (stellar region) and also travel throughout the regions of air above the sea and the earth. These cars are said to move so fast as to make a noise that could be heard faintly from the ground. The evidence in its favor is overwhelming.

An aerial car is made of light, wood looking like a great bird with a durable and well-formed body having mercury inside and fire at the bottom. It had two resplendent wings, and is propelled by air. It flies in the atmospheric regions for a great distance and carries several persons along with it. The inside construction resembles heaven created by Brahma himself. Iron, copper, lead and other metals are also used for these machines. All these show how far art and science was developed in ancient India in this direction. Such elaborate description ought to meet the criticism that the vimanas and similar aerial vehicles mentioned in ancient Indian literature should be relegated to the region of myth.

The ancient writers could certainly make a distinction between the mythical which they designated as daiva and the actual aerial wars designated as manusa.



After the great victory of Rama over Lanka, Vibhisana presented him with the Puspaka vimana which was furnished with windows, apartments, and excellent seats. It was capable of accommodating all the vanaras besides Rama, Sita and Lakshman. Again in the Vikramaurvaisya, we are told that king Puraravas rode in an aerial car to rescue Urvasi in pursuit of the Danava who was carrying her away. Similarly in the Uttararamacarita in the flight between Lava and Candraketu (Act VI) a number of aerial cars are mentioned as bearing celestial spectators. There is a statement in the Harsacarita of Yavanas being acquainted with aerial machines. The Tamil work Jivakacintamani refers to Jivaka flying through the air.

Kathasaritsagara refers to highly talented woodworkers called Rajyadhara and Pranadhara. The former was so skilled in mechanical contrivances that he could make ocean crossing chariots. And the latter manufactured a flying chariot to carry a thousand passengers in the air. **These chariots were stated to be as fast as thought itself.**

(source: [India Through The Ages: History, Art Culture and Religion - By G. Kuppuram](#) p. 532-533).

(For more information on vimanas please refer to chapter on [Vimanas](#)). Also Refer to [Vymanika Shashtra - Aeronautical Society of India](#).

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Naval Warfare

The old notion that the Hindus were essentially a landlocked people, lacking in a spirit of adventure and the heart to brave the seas, is now dispelled. **The researches of a generation of scholars have proved that from very early times the people of India were distinguished by nautical skill and enterprise, that they went on trading voyages to distant shores across the seas, and even established settlements and colonies in numerous lands and islands.** (please refer to chapter on [Suvarnabhumi](#)).

In ancient India, owing to the geographical influence, nautical skill and enterprise seems to have been best developed in three widely separated region of the country. These were Bengal, the valley and delta of the Indus, and the extreme south of the Deccan peninsula, called **Tamilagam**.

Boat-making and ship-building industries were found in India since ancient times. In the Vedic period, sea was frequently used for trade purposes. The *Rig Veda* mentions "merchants who crowd the great waters with ships". The *Ramayana* speaks of merchants who crossed the sea and bought gifts for the king of Ayodhya. Manu legislates for safe carriage and freights by river and sea. In some of the earliest Buddhist literature we read of voyages 'out of sight' of land, some lasting six months or so.



In **Kautalya Arthasastra** the admiralty figures as a separate department of the War Office; and this is a striking testimony to the importance attached to it from very early times. In the *Rg Veda Samhita* boats and ships are frequently mentioned. The classical example often quoted by every writer on the subject is



the naval expedition of Bhujya who was sent by his father with the ship which had a hundred oars (aritra). Being ship-wrecked he was rescued by the twin Asvins in their boat.

"There was also extensive intercourse of India with foreign countries, including the Mediterranean lands and the African continent, naturally led to piracy on the waters. There then arose the need for the protection of sea-borne trade, and we are told that "at the outset the merchant vessels of India carried a

small body of trained archers armed with bows and arrows to repulse the attacks of the pirates, but later they employed guns, cannon and other more deadly weapons of warfare with a few wonderful and delusive contrivances."

(source: [The Commerce and Navigation of the Ancients In the Indian Ocean](#) - William Vincent pp. 457). These are probably the beginnings of the ancient Indian navy.

In the [Shanti Parvan](#) (59, 41) of the [Mahabharata](#) it is said that the navy is one of the angas (part) of the complete army. Examples of ships being used for military purposes are not lacking. When Vidura scented danger to Kunti's five sons, he made them escape to the forest with their mother, crossing the Ganges in a boat equipped with weapons having the power of withstanding wind and wave. In the Dig Vijaya portion of the Sabha parva, it is said that Sahadeva crossed the sea and brought many islands under his sway after defeating the Mlecchas and other mixed tribes inhabiting them. If this be an historical fact the inference is irresistible that he could not have effected his conquest without the use of boats and vessels. We read in the Ramayana that Durmukha, a Raksasa, who had been fired by the impulse of anger at the deeds of Hanuman, offered his services to Ravana even to fight on the sea. This is testimony enough of the use of a fleet for war purposes. There are other references here and there to ships in the Ramayana. When Hanuman was crossing the ocean to Lanka, he is compared to a ship tossed by winds on the high seas. Sugriva speaks of Sumatra, Java and even the Red Sea, when sending forth his monkey hosts in quest of Sita.



The [Amarakosa](#), mentions a number of nautical terms which stand for ship, anchorage (naubandhana), the helm of the ship (naukarana), the helmsman (naukaranadhara). That there were ships-building yards in different parts could be inferred from a significant term navatakseni occurring in a copper plate grant of Dharmaditya dated 531. A.D.

About 517 B.C. according to Herodotus, Darius launched a maritime expedition under Skylax of Caryanda to the Indus Delta, and during Alexander's time, again, we read of the people of the Punjab fitting out a fleet. We have the testimony of [Arrian to show that the Xathroi \(Kshatri\), one of the Punjab tribes, supplied Alexander during his return voyage with thirty oared galleys and transport vessels which were built by them.](#)

(source: [India and Its Invasion by Alexander](#) p. 156)

In the Manusamhita (VII. 192), it is laid down that boats should be employed for military purposes when the theatre of hostilities abounded in water. [Kamandaka](#) (XVI, 50) alludes to naval warfare when he says: "By regular practice one becomes an adept in fighting from chariot, horses, elephants and boats, and a past-master in archery."

[Manavadharmasastra](#) refers to sea fights and attests to the use of boats for naval warfare. **The sailor is called naukakarmajiva. Thus in Vedic, Epic and the Dharmasastra literature we find that naval warfare is mentioned as a distinct entity, attesting a continuous naval tradition from the earliest times. Yukti-kalpataru** specifies one class of ships called agramandira (because they had their cabins towards the prows), as eminently adapted for naval warfare (rane kale ghanatyaye).

Passing on to other literary evidence, we find in the [Raghuvamsa](#) frequent reference to boats and ships. Raghu in the course of his digvijaya conquered Bengal which was protected by a fleet (nausadhanotyatan). In another place it is mentioned that Raghu marched on Persia through the land route, and not by the sea route, thereby showing that the latter was the more common route.



Historian [Dr. Vincent A. Smith](#) says that 'the creation of the Admiralty department was an innovation due to the genius of Chandragupta.

"The Admiralty as a department of the State may have been a creation of Chandragupta but there is evidence to show that the use of ships and boats was known to the people of the Rg Veda. "

(source: [Early History of India](#) - By Vincent Smith p 133).

In the following passage we have reference to a vessel with a hundred oars. 'This exploit you achieved, Asvins in the ocean, where there is nothing to give support, nothing to rest upon, nothing to cling to, that you brought Bhujya, sailing in a hundred oared ship, to his father's house.'

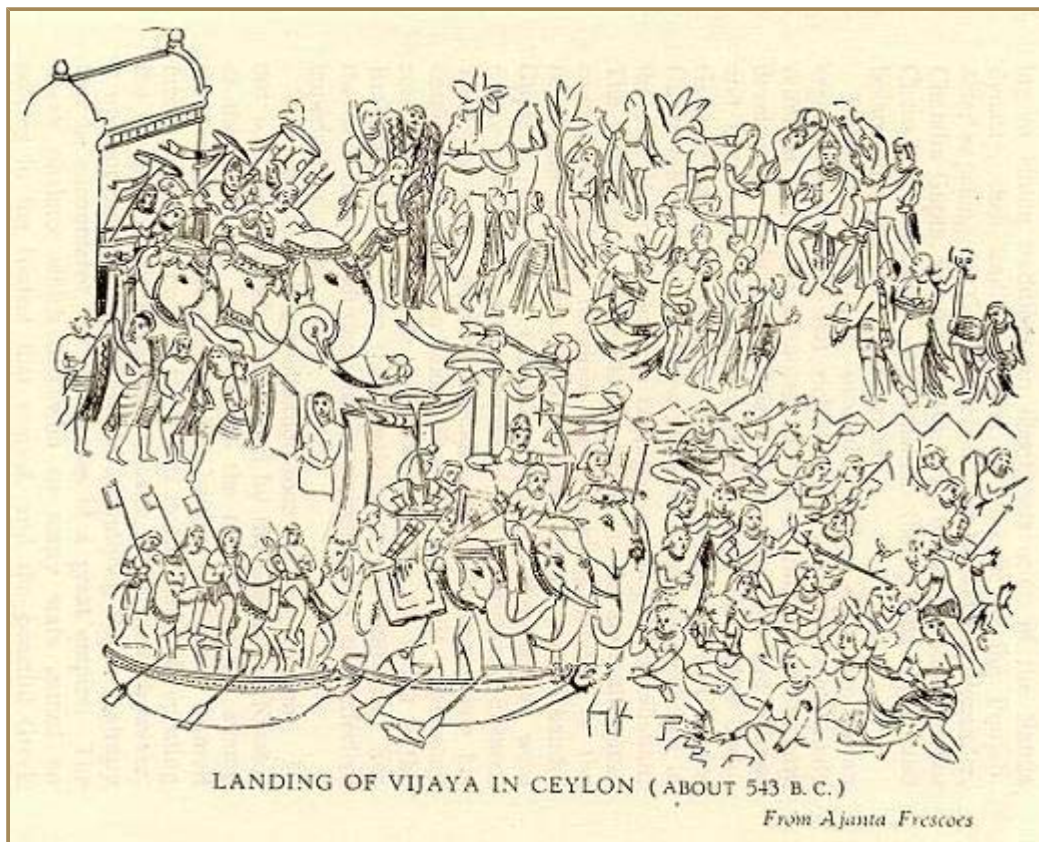
Further on in the Veda, this same vessel is described as a **plava** which was storm-proof and which presented a pleasing appearance and had wings on its sides. Another reference informs us that Tugra dispatched a fleet of four vessels (**Catasro navah**) among which was the one referred to above. We may infer from these passages that the Asvins were a great commercial people having their home in a far-off island, and that their ruler Tugra maintained a fleet in the interests of his State. There are also other references in the Rg Veda to show that the ancient Indians were acquainted with the art of navigation. For instance, Varuna is credited with a knowledge of the ocean routes along which vessels sailed.

The **Baudhayana Dharmasastra** speaks of Samudrasamyamam and interprets it as **nava dvipantaragamanam, i. e. Sailing to other lands by ships. This very term occurs in the navadyaksa section of the Kautaliya Arthasastra.**

The Puranas have several references to the use of ships and boats. The **Markandeya Purana** speaks of vessels tossing about on the sea. The Varahapurana refers to the people who sailed far into the ocean in search of pearls and oysters. The ships floated daily on the shoreless, deep and fearful waters of the ocean. We are on firmer ground when we see in the Andhra period their coins marked with ships. The ship building activities were great on the east coast, and the Coromandel coast in particular. **From this period to about 15th century A.D. there was a regular intercourse with the islands of the Archipelago most of which were colonized and also with ancient America right across the Pacific as testified to us by the archaeological finds and inscriptions in those parts.**

(please refer to chapters on [Pacific](#), [Suvarnabhumi](#) and [Seafaring in Ancient India](#)).

The **Pali books of Sri Lanka** like the **Mahavamsa** refers to ocean going vessels carrying 700 passengers. Such frequent intercourse and colonization through the ages could not have been effected without a powerful fleet.



*Ships Landing of Prince Vijaya in Sri Lanka - 543 BC from Ajanta Frescoes. Ajanta painting of a later date depict horses and elephants aboard the ship which carried Prince Vijaya to Sri Lanka.
(source: India Through the ages - By K. M. Panikkar)*

But it is in a later work, the **Yuktikalpataru of Bhoja**, that we have three classes of ships - the Sarvamandira, the Madhyamandira, and Agramandira. The first was called Sarvamandira because it had apartments all around. In the Sarvamandira were carried treasures, animals, and ladies of the court. This was the vessel ordinarily used by kings in times of peace. The Madhyamandira was so called because the living quarters were situated in the middle. It was a sporting vessel and generally used in the rainy season. The vessel of the third kind, the Agramandira, took its name from the circumstance that the living room was located in front or at the top of the vessel. The Agramandira was used for distant and perilous voyages and also sea-fights.

There are also in the **Yuktikalpataru** other references to vessels. There are 27 types of ships mentioned here, the largest having the measurement 276 ft X 36 ft X 27 ft weighing roughly 2,300 tons. The following passage points to the use of ships in warfare. The line: naukadyam vipadam jneyam makes it clear that naval expeditions were common. Under the heading of yanam or march mention is made of expeditions by land, water and air.

Kautilya remarks: "Pirate ships (himsrika), boats from an enemy's country when they cross its territorial limits, as well as vessels violating the customs and rules enforced in port towns, should be pursued and destroyed." It is obvious that the task set forth above could only be performed by armed vessels belonging to the state.

From this we may conclude that in ancient India ships were employed in warfare at least as early as the Rig Vedic times. It is an incontrovertible fact that there was a naval department in Mauryan times. We have the testimony of Megasthenes that the navy was under a special officer called the Superintendent of Navigation. This official was in turn controlled by the Admiralty department. The officer whom **Megasthenes** refers to as Superintendent of Navigation is called **Navadhyaksa** as already seen, in the **Arthashastra**. The Greek accounts bear testimony to the fact that navigation had attained a very high development at the times of Alexander's invasion, for we are told that the invader was able to secure a fleet from the Punjab at short notice. The **Arthashastra** lays down some healthy regulations relating to navigation. Vessels which gave trouble or were bound for the enemy's country, or transgressed the regulations of port towns were to be destroyed.

A considerable ship building activity is evident on the west coast of India also as noted in the Sangam works of the Tamils. South India carried on political and commercial activities as far as the Mediterranean in the early centuries of the Christian era and before. The great Ceran Senguttavan had a fleet under him.

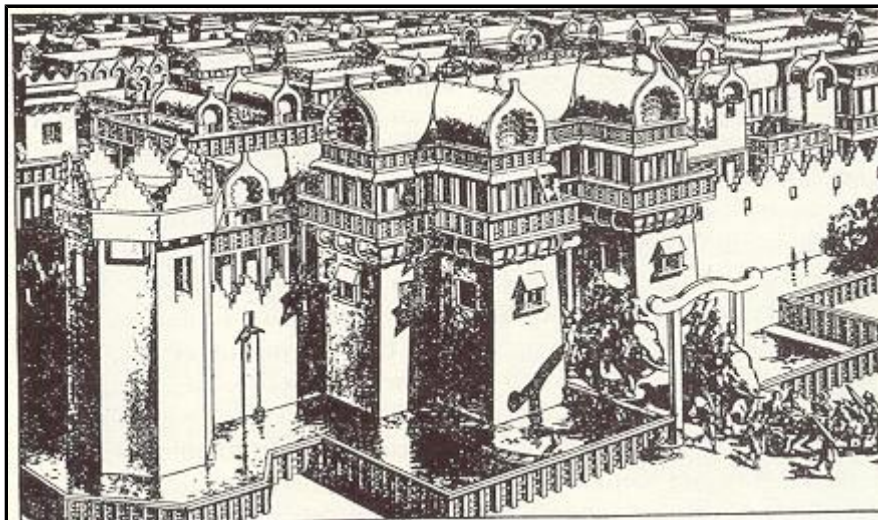


Turning to the history of **South India**, we have evidence to show that the country had trade and culture contacts with foreign countries like Rome in the west and Malay Archipelago and South east Asia in the east. Yavana ships laden with articles of merchandise visited the west coast frequently. There was active foreign trade between Tamil Indian and the outer world **at least** from the time of Solomon, i.e. about 1000 B.C. Roman historians refer to the commercial intercourse that existed between Rome and South India. In the first century before Christ we hear of a **Pandyan embassy to Augustus Caesar**.

(refer to [Periplus translated by Schoff](#) p. 46).

The Sangam classics point to the profession of pearl-diving and sea-fisheries on a large scale. We hear of shipwrecks of the early Tamils saved now and then by Manimekhalai, the goddess of the sea.

(Note: ancient Tamil tradition traces its origins to a submerged island or continent, **Kumari Kandam**, situated to the south of India. The Tamil epics [Shilappadikaram](#) and [Manimekhalai](#) provide glorious descriptions of the legendary city and port of **Puhar**, which the second text says was swallowed by the sea. As in the case of Dwaraka, (please refer to chapter on [Dwaraka](#) and [Aryan Invasion Theory](#)), initial findings at and off **Poompuhar**, at the mouth of the Cauvery, show that there may well be a historical basis to this legend: apart from several structures excavated near the shore, such as brick walls, water reservoirs, even a wharf (all dated 200-300 B.C.), a few years ago a structure tantalizingly described as a "U-shaped stone structure" was found five kilometers offshore, at a depth of twenty-three meters; it is about forty meters long and twenty wide, and fishermen traditionally believed that a submerged temple existed at that exact spot. If the structure is confirmed to be man-made (and not a natural formation), its great depth would certainly push back the antiquity of Puhar. Only more systematic explorations along Tamil Nadu's coast, especially at Poompuhar, Mahabalipuram, and around Kanyakumari (where fishermen have long reported submerged structures too) can throw more light on the lost cities, and on the traditions of **Kumari Kandam**, which some have sought to identify with the mythical Lemuria).



ancient city in India

We have the account of a Cera King conquering the Kadamba in the midst of sea waters. The Cera King **Senguttuvan** had a fleet with which he defeated the Yavanas who were punished with their hands being tied behind their backs and the pouring of oil on their heads. The Cholas also maintained a strong fleet with which they not only invaded and subjugated Lanka but also undertook overseas expeditions. Among the conquests of Rajaraja, Lanka was one, and his invasion of that island finds expression in the [Tiruvallangadu plates](#), where it is described as follows:

"Rama built, with the aid of the monkeys, a causeway over the sea and then slew with great difficulty the king of Lanka by means of sharp-edged arrows. But Rama was excelled by this (king) whose powerful army crossed the ocean in ships and burnt the king of Lanka."

Rajaraja also sent an expedition against the Twelve Thousand Islands, obviously a reference to the Laccadives and Maldives. Friendly embassies were also sent by the Chola king to China.

From the evidence of the Mahavamsa as well as from a few inscriptions we are able to gather some information regarding the diplomatic relations that existed between India and Sri Lanka. We have the story of Vijaya and his followers occupying the island about 543 B.C. Vijaya was a prince of North India who was banished from the kingdom by his father. Passing through the southern Magadha country he sailed to Sri Lanka, according to the [Rajavali](#), in a fleet carrying more than 700 soldiers, defeated the Yaksas inhabiting it, and settled there permanently. This story is illustrated in the Ajanta frescoes.



Numerous ships carried the troops of Rajendra to Sri Vijaya and its dependencies which he conquered. Among the places conquered were Pannai (Pani or Panei on the east coast of Sumatra), Malaiyur (at the southern end of the Malay Peninsula), Mappappalam (a place in the Talaing country of Lower Burma), Mudammalingam (a place facing the gulf of Siam), Nakkavaram (the Nicobar islands. Besides, active trade was carried on between South India and China during this period.

At the end of the 10th century the Chinese emperor sent a mission to the Chola king with credentials under the imperial seal and provisions of gold and piece-goods to induce the foreign traders of the South Sea and those who went to foreign lands beyond the sea for trade to come to China.

The facts clearly show that the Cholas maintained supremacy over the sea and kept a strong and powerful navy which was useful not only for carrying on extensive commerce with foreign countries but also for conducting military expeditions. During the days of the Kakatiyas of Warangal, Motupalle (Guntur District) was the chief port, on the east coast. Ganapatideva, the Kakatiya ruler, **extirpated piracy on the sea and made the sea safe for commerce with foreign countries like China and Zanzibar.** This policy was pursued by Rudramba, his daughter.

Vijayanagar kingdom also claimed supremacy over the sea. Since the days of **Harihara I the rulers of Vijayanagar** took the **title of the Lord of the Eastern, Western and Southern oceans**; and there were 300 ports in the empire. The activities of the Vijayanagar fleet on the west coast are also referred to by the Portuguese in 1506.

The Vijayanagar kings sent friendly embassies to foreign courts. 'Bukka I sent an embassy through his chief explainer to the court of Taitso, the King Emperor of China, with tributes and large presents, among which was a stone which was valuable in neutralizing poison.



Accounts of Foreign Travelers to India

Coming to later times we have the account of **Hiuen Tsang** who notices a fleet of 3,000 sail belonging to the King of Assam. There is inscriptional evidence of the possession of a fleet under the Kakatiyas and the Cholas in South India. **Marco Polo** testifies to the huge size and efficient construction of Indian vessels while **Yule** in his **Cathey** refers to Rajput ships en route to China. Marco Polo, a famous Venetian traveler who visited India in 13th Century also visited Thane Port. The first chapter of his book which deals with India is almost devoted to shipbuilding industry in India. **Friar Odoric** of Pordenone, an Italian Monk who visited India in 14th Century, in his account of his voyage across the Indian Ocean, a mention is made of ships which can carry 700 people.

"Ships of size that carried Fahien from India to China (through stormy China water) were certainly capable of proceeding all the way to Mexico and Peru by crossing the Pacific. One thousand years before the birth of Columbus Indian ships were far superior to any made in Europe upto the 18th century."

(source: **The Civilizations of Ancient America: The Selected Papers of the XXIXth International Congress of Americanists** - edited Sol Tax 1951).

Ludovico di Varthema (1503 A. D) saw vessels of 1,000 tons burden built at **Masulipatnam**. According to Dr. Vincent, India built great sized vessels from the time of Agathareids (171 B.C.) to the 16th century. And no wonder the Portuguese, when they first landed at the west coast, were carried away by the excellent Indian vessels. Later still, the Vijayanagar Empire, which had as many as 300 ports, had a powerful fleet. The naval commander was styled Navyadaprabhu.

India has a coastline of about 6300 kms. Extensive new archaeological,



epigraphical, sculptural and literary material has been added to our knowledge since the early decades of this century. **Dr. Radha Kumud Mookerji's** Book [Indian Shipping - A History of the Sea-Borne Trade and Marine Activity of The Indians From The Earliest Times](#) published in 1912 Orient Longmans ISBN 8121509165) is the most comprehensive study of Indian Navigation up to that period. We now know that many ports on both Eastern and Western Coast had navigational and trade links with almost all Continents of the world. There are many natural and technological reasons for this. Apart from Mathematics and Astronomy, India had excellent manufacturing skills in textile, metal works and paints. India had abundant supply of Timber. Indian - built ships were superior as they were built of Teak which resists the effect of salt water and weather for a very long time.

"The art of Navigation was born in river Sindhu 6000 years ago. The very word navigation is derived from Sanskrit word Nav (or Nav-ship) Gatih."

Lieut. Col. A Walker's paper: "Considerations of the affairs of India" written in 1811 had excellent remarks on Bombay-built ships. He notes, "situated as she is between the forests of Malabar and Gujarat, she receives supplies of timber with every wind that blows." Further he says, "it is calculated that every ship in the Navy of Great Britain is renewed every twelve years. It is well known that teakwood built ships last fifty years and upwards. Many ships Bombay-built after running fourteen or fifteen years have been brought into the Navy and were considered as stronger as ever. The Sir Edward Hughes performed, I believe, eight voyages as an Indiaman before she was purchased for the Navy. No Europe-built Indiaman is capable of going more than six voyages with safety."

He has also further noted that Bombay-built ships are at least one-fourth cheaper than those built in the docks of England. **Francois Balazar Solvyns**, a Belgian/Flemish maritime painter, wrote a book titled **Les Hindous** in 1811.

His remarks are, **"In ancient times, the Indians excelled in the art of constructing vessels, and the present Hindus can in this respect still offer models to Europe-so much so that the English, attentive to everything which relates to naval architecture, have borrowed from the Hindus many improvement which they have adopted with success to their own shipping.... The Indian vessels unite elegance and utility and are models of patience and fine workmanship."**

(source: http://www.orientalthane.com/speeches/speech_2.htm).

Surprisingly, many earlier western traders and travelers have expressed the same views. Madapollum was a flourishing shipping centre. **Thomas Bowrey**, an English traveler who visited India during 1669-79, observes, " many English merchants and others have their ships and vessels yearly built (at Madapollum). Here is the best and well grown timber in sufficient plenty, the best iron upon the coast, any sort of ironwork is ingeniously performed by the natives, as spikes, bolts, anchors, and the like. Very expert master-builders there are several here, they build very well, and launch with as much discretion as I have seen in any part of the world. They have an excellent way of making shrouds, stays, or any other rigging for ships".

A Venetian traveler of 16th Century **Cesare de Fedrici**, while commenting on the East Coast of India has noted that there is an abundance of material for ship building in this area and many Sultans of Constantinople found it cheaper to have their vessels built in India than at Alexandria.

Nicol Conti who visited India in 15th century was impressed by the quality Indians had achieved in ship building. He observes:

"The nations of India build some ships larger than ours, capable of containing 2,000 butts, and with five sails and as many masts. The lower part is constructed with triple planks, in order to withstand the force of the tempests to which they are much exposed. But some ships are so built in compartments that should one part be shattered, the other portion remaining entire may accomplish the voyage."

J. Ovington, Chaplain to the British King, the seventeenth-century English traveler, who visited Surat, wrote a book [A Voyage to Surat in the Year 1689](#). He was impressed by the skill of the Indians in ship-building and found that they even outshone Europeans. **The timber used by the Indians was so strong that it would not 'crack' even by**

the force of a bullet so he urged the English to use that timber 'to help them in war'. Indian Teak stood firmer than the English Oak, remarked Ovington.

Thomas Herbert, a traveler who visited Surat in 1627, has given an interesting account of the arrival, loading and unloading of ships through small boats at Swally marine (Sohaly), a few kilometres away from Surat. He remarked that between September and March every year, the port of Sohaly presented a very busy and noisy scene for there came many ships from foreign lands. The merchants (*baniyas*) erected their straw huts in large numbers all along the sea coast, making the whole place thus look like a country fair. The merchants sold various commodities like calicoes, ivory, agates, etc. Many small boys engaged by the merchants were seen running about doing odd jobs. The English found that the small boats used and constructed by the natives could be of immense use. This was a definite gain for both nations. Boats and rafts were used as a means of conveyance for loading and unloading ships. There were about 4200 big and 4400 small boats. There were large-sized boats that could carry even elephants. The boats used by kings and nobles were designed to look artistic. **Abul Fazl** writes about the "wonderfully fashioned boats with delightful quarters and decks and gardens"



Among the primitive Indian boats, the **cattarmaran** comes first. It consisted of three logs and three spreaders and cross lashings. The centre log was the largest, and pointed towards one end. Mainly fishermen used the cattarmaran for fishing. A little more skillfully made is the **musoola** boat, which has no iron fastening. It was mostly used in the Coromandel coast. Dr John Fryer says, "It is possible that the name musoola may be connected with Masulipatarn where boats seem to have been in use".

Another boat made in an indigenous manner was known as **dingy**. It was hollowed out from a single trunk. Lower down the Ganga, the name was applied to boats half-decked, half wagon-roofed and built of planks.

Purqoo was another type of boat described by **Thomas Bowery**. It plied between the Hooghly and Balasore. These boats were made very strong to carry 'sufficient load'. They were also used for loading ships. they could remain in water for a long time without getting damaged. As compared to the purqoo, boora was a 'lighter boat' which rowed with 29 or 30 oars. These boats were also used for carrying saltpeter and other commodities.

(source: [Coastal trade flourished with Europeans - By Pramod Sangar](#)).

Sir John Malcolm writes"

"Indian vessels are so admirably adapted to the purpose for which they are required that, notwithstanding their superior science, Europeans were unable, during an intercourse with India for two centuries, to suggest or to bring into successful practice one improvement."

(source: [Journal of Royal Asiatic Society, Vol. I](#)).

In the middle of the 18th century, **John Grose** noted that at Surat the Indian ship-building industry was very well established, indeed, "They built incomparably the best ships in the world for duration", and of all sizes with a capacity of over a thousand tons. Their design appeared to him to be a "a bit clumsy" but their durability soundly impressed him. **They lasted "for a century"**.

Lord Grenville mentions, in this connection, a ship built in Surat which continued to navigate up the Red Sea from 1702 when it was first mentioned in Dutch letters as "the old ships" up to the year 1700." Grenville also noted that ships of war and merchandise "not exceeding 500 tons" were being built" with facility, convenience and cheapness" at the ports of Coringa and Narsapore.

Dr. H. Scott sent samples of **dammer** to London, as this vegetable substance was used by the Indians to line the bottom of their ships; he thought it would be a good substitute "in this country for the materials which are brought from the northern nations for our navy...There can be no doubt that you would find dammer in this way an excellent substitute for pitch and tar and for many purposes much superior to them."

source: [Decolonizing History: Technology and Culture in India, China and the West 1492 to the Present Day - By Claude Alvares](#) p. 68-69).

Alain Danielou (1907- 1994) son of French aristocracy, author of numerous books on philosophy, religion, history and arts of India has written:

"**India's naval dockyards, which belonged to the state, were famous throughout history.** The sailors were paid by the state, and the admiral of the fleet hired the ships and crew to tradesmen for transporting goods and passengers. When the British annexed the country much later on, they utilized the Indian dockyards - which were much better organized than those in the West - to build most of the ships for the British navy, for as long as ships were made of wood."

(source: [A Brief History of India - By Alain Danielou](#) p. 106).

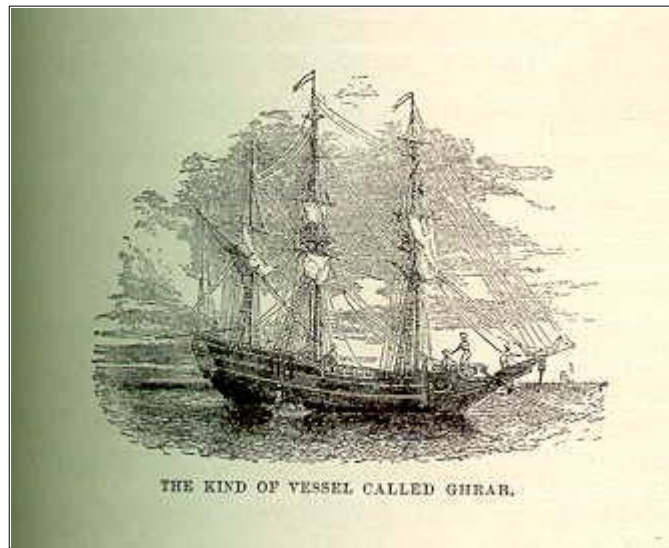
"...an Indian naval pilot, named **Kanha**, was hired by Vasco da Gama to take him to India. Contrary to European portrayals that Indians knew only coastal navigation, deep-sea shipping had existed in India. Indian ships had been sailing to islands such as the Andamans, Lakshdweep and Maldives, around 2,000 years ago. Kautiliya's shastras describe the times that are good and bad for seafaring. In the medieval period, Arab sailors purchased their boats in India. **The Portuguese also continued to get their boats from India, and not from Europe. Shipbuilding and exporting was a major Indian industry, until the British banned it.** There is extensive archival material on the Indian Ocean trade in Greek, Roman, and Southeast Asian sources."

(source: [History of Indian Science & Technology](#)).

For more on Shipbuilding in Ancient India, please refer to chapter [Seafaring In Ancient India](#)).

India became the first power to defeat a European power in a naval battle - The Battle of Colachel in 1742 CE.

A dramatic and virtually unknown past, in an area of bucolic calm surrounded by spectacular hills: that is Colachel, a name that should be better known to us. For this is where, in 1741, an extraordinary event took place -- the Battle of Colachel. For the first, and perhaps the only time in Indian history, an Indian kingdom defeated a European naval force. **The ruler of Travancore, Marthanda Varma, routed an invading Dutch fleet; the Dutch commander, Delannoy, joined the Travancore army and served for decades; the Dutch never recovered from this debacle and were never again a colonial threat to India.**



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The Battle of Colachel in 1742 CE, where Marthanda Varma of Travancore crushed a Dutch expeditionary fleet near Kanyakumari. The defeat was so total that the Dutch captain, Delannoy, joined the Travancore forces and served loyally for 35 years--and his tomb is still in a coastal fort there. So it wasn't the Japanese in the Yellow Sea in 1905 under Admiral Tojo who were the first Asian power to defeat a European power in a naval battle--it was little Travancore. The Portuguese and the Dutch were trying to gain political power in India at that time. Marthanda Varma defeated the Dutch in 1741. He was an able ruler. He established peace in his country - Travancore. It was a remarkable achievement for a small princely state.

(source: [The Battle of Colachel: In remembrance of things past - By Rajeev Srinivasan](#) - rediff.com and <http://www.kerala.com/keraculture1.htm>). For more refer to chapter on [Glimpses IX](#)).

For more information on Navy refer to chapters on [Pacific](#), [Suvarnabhumi](#) and [Seafaring in Ancient India](#)).

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Diplomacy and War

Notwithstanding the elaborate rule of war laid down in the epics and the law-books, insisting in the main that to wage war was the duty and privilege of every true Ksatriya, in several cases the horrors of war made the belligerent think of the consequences and avoid outbreak of hostilities by a well calculated policy which we now term diplomacy.



King seeking counsel

Negotiation, persuasion and conciliation were cardinal points of the ancient Indian diplomatic system, and were effective instruments in averting many a war, which would otherwise have realized in much bloodshed and economic distress.

The political term for diplomacy is **naya**, and the opinion of **Kautalya**, the eminent politician of the 4th century B.C., a king who understands the true implications of diplomacy conquers the whole earth.

The history of diplomacy in ancient India commences with the Rig Veda Samhita, and the date of its composition may be taken as far back as the Chalcolithic period. In the battles the help of Agni is invoked to overcome enemies. He is to be the deceiver of foes. In pursuing his mission to a successful end, the use of spies is mentioned. This bears eloquent testimony to the system of espionage prevalent so early as the time of the Rig Veda Samhita. In the battle of the Ten Kings described in the seventh mandala, we find diplomacy of rulers getting supplemented by its association with priestly diplomacy, which exercised a healthy influence on the constitutional evolution.

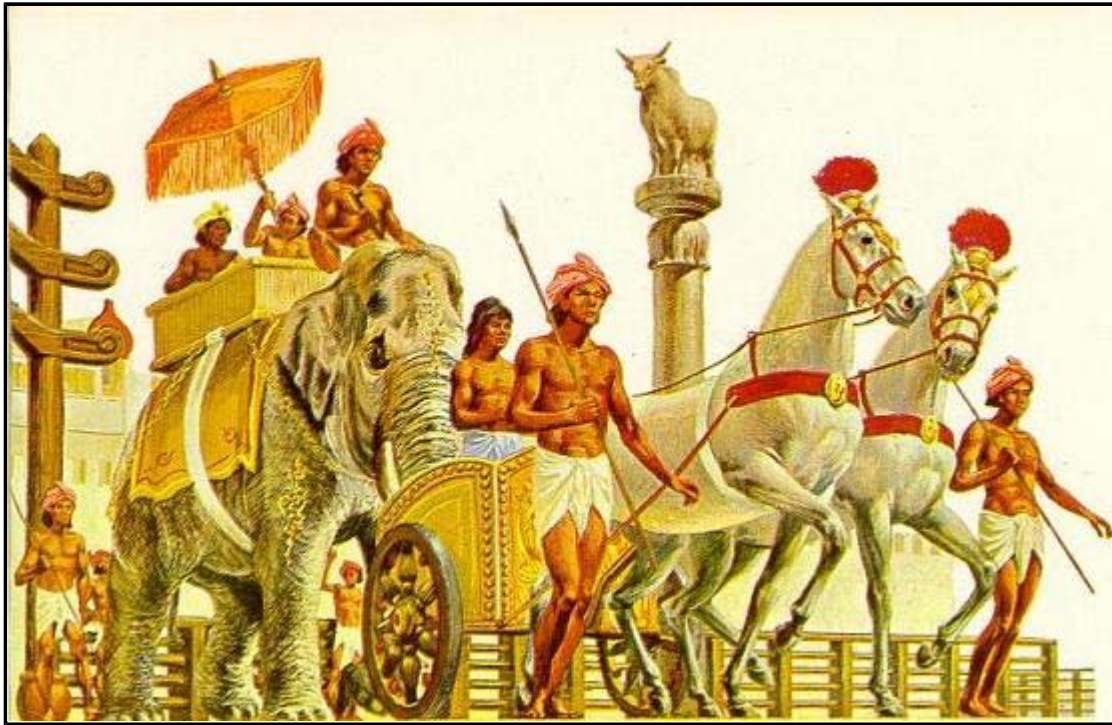
International Relations - The picture presented in the **epics** and the **Arthashastra** literature seems to be confined to the four corners of **Bharatkhanda**. **The intercourse as envisaged in the literature, shows relations to be more commercial than political in character.**

Strabo quotes Megasthenes and says that Indians were not engaged in wars with foreigners outside India nor was their country invaded by foreign power except by Hercules and Dionsysius and lately by the Macedonians. **There were friendly relations of Chandragupta with Seleukos Nikator, of Bindusara with Antiochus, of Asoka and Samadragupta with Lanka, of Pulaskesi with Persians, of Harsha with Nepal and China, of the Cholas with Sri Vijaya.**

"It was always regarded as a legitimate object of the ambition of every king to aim at the position of **Cakravartin or Sarvabhuuma** (paramount sovereign or of supreme monarch)." This ambition was legitimate and had no narrow outlook about it. It was a fruit to be sought after by every one of the monarchs comprising the mandala. If the king is not actuated by this idea, he falls short of an ideal king according to the Hindu Rajadharma.

Diplomatic agents - ambassadors

Bhishma mentions seven qualifications as essential in an ambassador: he should come from a noble line, belong to a high family, be skilful, eloquent of speech, true in delivering the mission, and of excellent memory.



Espionage in War - Spies filled an important role in both the civil and military affairs of ancient India. The institution of spies had a greater utility, as the king could take action on the report of the spies. Spies were engaged to look after the home officials, including those of the royal household as well as to report on the doings in the enemy kingdoms. The Rig Veda Samhita, often speaks of spies (spasah) of Varuna. Only men of wisdom and purity were sent on this errand, thus suggesting that they should be persons above corruption and temptation of any sort. In the epics and post-epic literature in general, spies have been described as the 'eyes of the king'. In the **Udyoga-parva** (33, 34) of **Mahabharata**, it is stated that "cows see by smell, priests by knowledge, kings by spies, and others through eyes." Spies roamed about in foreign states under various disguises to collect reliable information. In the **Ramayana**, a king mentions the wise adage that "the enemy, whose secrets have been known through espionage, can be conquered without much effort." The **Arthashastra**, which predates Christ by centuries, dwells at length on the importance of espionage and the creation of an effective spy network.

Such details may indicate the high development of the science of diplomacy in ancient India. It was the famous Indian strategist of the fourth-century B.C, **Kautilya** in the **Arthashastra**, who gave the world the dictum:

"The enemy of my enemy is my friend."

"The same style of Indian thought" says **Heinrich Zimmer** in his book, **Philosophies of India**, p. 139, admirably of Kautilya, **"that invented the game of chess grasped with profound insight the rules of this larger game of power."**

Attitude to war - **The Sangam age of the Tamils was the heroic age of the Tamil Indians.** If the men of the Tamil land were heroes, then their women were heroines. A certain mother was asked where her son was, and she replied, that she was sure that the tiger that had lain in her womb would be found in the field of battle. War was the pabulum on which our ancient warriors were great in name and fame. A certain lady who gave birth to only one son and who sent him to the field of battle when there was the country's call for it. **Okkurmasattiyar**, a poetess, praises a certain lady dresses the hair of her only son and gives him the armor to get ready for action in the field of battle. This may be contrasted with another where a heroic mother heard the disquieting news that her son lost his courage in action and had fled in fear. If it were true, she expressed that she would cut off her breasts that had fed him with milk. With this determination she entered the battle-field with sword in her hand and went on searching for her fallen son. When she saw her son's body cut in twain, she felt much more happy than when she gave birth to him. (source: **Puram** 277 and 279 - in Tamil).

Flags - The origin and use of flags can be traced to the earliest Indian literature, the Rig Veda Samhita. The term deaja occurs twice in the Veda. Besides, dhvaja, we meet with a good number of expressions for a banner in Vedic literature. These are Akra, Krtadhvaja, Ketu, Brhatketu, Sahasraketu. It appears that the Vedic host aimed their arrows at the banners of the enemy. The idea was that once the banner was captured, or struck, a claim was made

for success in the battle over the enemy. Ketu was a small flag as contrasted with Brhatketu or the big flag. Sahasraketu may be a thousand flag, or as the knight who brought under control a thousand flags of enemies. We are told that banners and drums were counted among the insignia of ancient Vedic kings. In the Mahabharata war, every leader had his own insignia to distinguish one division from the other. **Arjuna** had the **Kapidhvaja** or the flag with the figure of Hanuman, **Bhisma**, Taladhvaja, cognizance of a palmyra tree etc..

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Conclusion

The foregoing survey may convince an impartial student of history that the ancient Hindus had evolved precepts on fair fighting which formed a chivalrous code of military honor.



On the whole, however, it would seem that wars in ancient India were characterized by less violence and savagery than wars elsewhere. There is no recorded instance of such wanton and cold-blooded atrocity as Athens perpetrated against Melos, Corcyra and Mytilene, or the wearers of the Cross against the defenders of the Crescent in 1099 A.D. Such incidents of war as the indiscriminate slaughter of all men of military age or the enslavement of women and children of the conquered state were hardly known. On the whole, the chiefs were considerate of each other's rights.

This was also the **Kautilyan ideal of dharmavijayan**, and the typical Hindu method of creating unity out of diversity in the political sphere. It was a well-established maxim of statecraft that a victor should acquiesce in the continuance of the laws, beliefs and customs of the vanquished peoples, and that instead of seeking to extermination of the defeated dynasties, he should be content with submission and tribute. It is also the reason why some of the princely families in India can boast of an ancestry unequalled by any royal house in Europe.

It is of paramount importance to remember that in India the social, economic and religious life of the people pursued their course irrespective of the activities of the state. As early as as the 4th century B.C. **Megasthenes** noticed a peculiar trait of Indian warfare.

"Whereas among other nations it is usual in the contests of war to ravage the soil, and thus to reduce it to an uncultivated waste, among the Indians, on the contrary, by whom husbandmen, the tillers of the soil, even if battle is raging in the neighborhood, are undisturbed by any sense of danger, for the combatants on either side, in waging the conflict, make carnage of each other but allow those engaged in husbandry to remain quite unmolested. Besides they never ravage an enemy's land with fire nor cut down its trees." The modern "scorched earth" policy was then unknown.

Professor **H. H. Wilson** says: "**The Hindu laws of war are very chivalrous and humane, and prohibit the slaying of the unarmed, of women, of the old, and of the conquered.**"

At the very time when a battle was going on, he says, the neighboring cultivators might be seen quietly pursuing their work, - "perhaps ploughing, gathering for crops, pruning the trees, or reaping the harvest." **Chinese pilgrim to Nalanda University, Hiuen Tsiang** affirms that although there were enough of rivalries and wars in the 7th century A.D. the country at large was little injured by them.

Colonel James Tod, author of [Annals and Antiquities of Rajasthan: or the Central and Western Rajput States of India](#) South Asia Books; ; 2 edition (April 1998) ISBN 8120803809 wrote: "To spare a prostrate foe is the creed of the Hindu cavalier, and he carried all such maxims to excess."

What were the causes which led to the downfall of the Hindus? Why did the Indian states fall prey to the Muhammadan Turks in the 11th and 12th century?

King Asoka wanted to convert his empire into an open-air Buddhist monastery, at the



expense of Hindu taxpayers whose interests in turn were marginalized. Buddhist principles derided martial prowess and criminally neglected the intrepidity and valor which fought for national independence. The excessive propaganda for unrestricted ahimsa which King Asoka carried on by his use of political authority throughout his empire, cut at the very root of the Indian empire.

For a few generations following Ashoka's demise, 'non-violent' Buddhists ate into the vitals of India's external defence, leaving the country vulnerable to a second wave of Greek attacks.

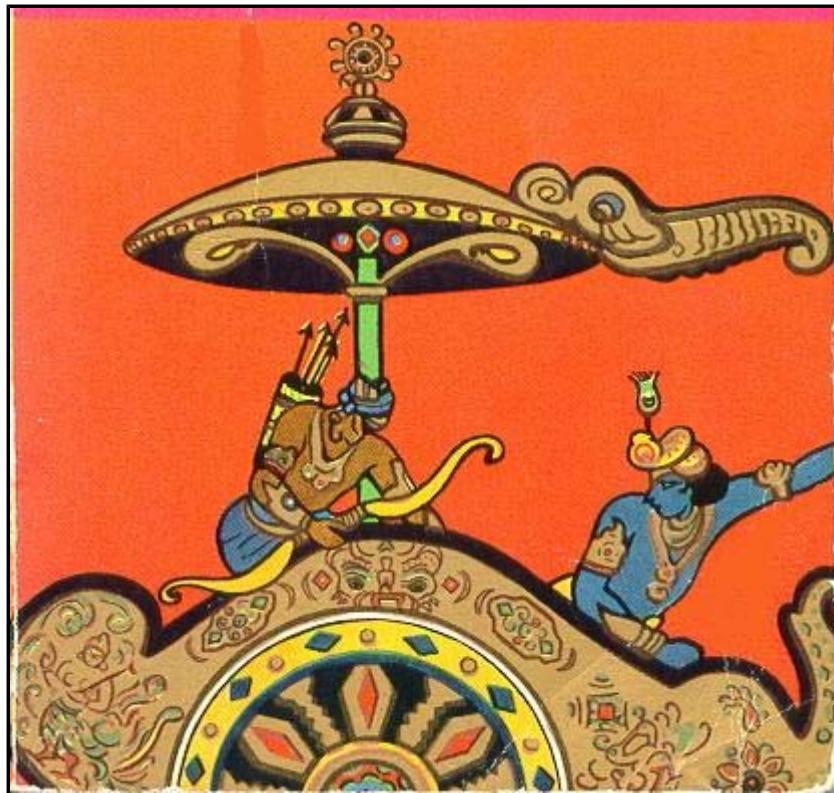
According to **Priyadarshi Dutta**:

"The Greeks, who had concluded a treaty with Chandra-gupta Maurya, moved in to Ayodha before the Kalinga King **Kharvela** repulsed them. Later Pushyamita Sunga assassinated the last Maurya King and salvaged India. Buddhism vanished from India as a result of Muslim onslaught because none of them had the liver of the likes of say, Guru Govind Singh. **While Hindus and Sikhs resisted Muslim onslaught, Buddhist submitted en mass to Islam.**"

The Hindu defenders of the country although fully equal to their assailants in courage and contempt of death were nevertheless, divided among themselves. This division and disunion also enabled the crafty Turk invaders from the north to exploit the differences within the country. Hindus were more civilized and prosperous than the Turks. Moreover, the Turks had rude rigor of a semi-civilized barbarians who combined the fierce religious zeal of neo-converts. To spread their faith by conquest doubled their natural zest for battle and endowed them with the devoted valor of martyrs. In addition, the concept of ahimsa tended to create in certain sections of Hindus a deep abhorrence to all forms of violence.

The **Bhagavad Gita's** great message: **that violence is sometimes necessary, if it flows from Dharma.**

Non-violence in thought, word and deed is the ideal of the yogi, as the Gita points out. Violence is never an ideal in a civilized society, but it cannot be avoided. Rulers of society have to employ it for their preservation. Even this terrible action can be performed as selfless service when lawless societies (eg. Muhammadan Turks or Europeans who came to India as invaders) prey upon others out of greed.



The Bhagavad Gita's great message: that violence is sometimes necessary, if it flows from Dharma



*For a warrior, nothing is higher than a war
against evil.*

*The warrior confronted with such a war should be pleased, Arjuna, for it comes as an open gate to heaven.
But if you do not participate in this battle against evil, you will incur sin, violating your dharma and your honor...*

- Bhagavad Gita 2.31-33



Books used for this chapter

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['Six Glorious Epochs of Indian History' - By Veer Vinayak Damador Savarkar](#)

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Articles

Sailors of Sixty Centuries

[Yukikalpataru](#), a Sanskrit manuscript compilation by [Bhoja Narapati](#), which manuscript is now in the Calcutta Sanskrit College Library, is something like a treatise, on the art of shipbuilding in Ancient India.

It gives, according to Vriksha-Ayurveda ("Botany"), an account of four different kinds of wood. The first class comprises wood, that is light and soft, and can be joined to any other wood. The second class is light and hard, but cannot be joined to any other class of wood. The third class of wood is soft and heavy. Lastly the fourth kind is hard and heavy. According to Bhoja, a ship made out of the second class of wood, brings wealth and happiness. Ships of this type can be safely used for crossing the oceans. Ships made out of timbers containing different properties are not good, as they rot in water, and split and sink at the slightest shock.

Bhoja says that care should be taken that no iron be used, in joining planks, but they be subjected to the influence of magnetism, but they are to be fitted together with substances other than iron. Bhoja also gives names of the different classes of ships:

1. River-going ships –Samanya;
2. Ocean-going ships – Visesa.

The measurements in cubits of the "Ordinary class" of ships are the following:

		Length	Breadth	Height
1.	Kshudra	16	4	4
2	Madhyama	24	12	8
3	Bhima	40	20	20
4	Chapala	48	24	24
5	Patala	64	32	32
6	Bhaya	72	36	36
7	Dirgha	88	44	44

8	Patraputa	96	48	48
9	Garbhara	112	56	56
10	Manthra	120	60	60

Bhima, Bhaya, Garbhara are liable to bring ill-luck because their dimensions are such as not to balance themselves in water.

Among the "Special" are two classes.

1. Dirgha

		Length	Breadth	Height
1.	Dirghika	32	4	31/5
2	Tarani	48	6	44/5
3	Lota	64	8	62/5
4	Gatvara	80	10	8
5	Gamini	96	12	92/5
6	Tari	112	14	111/5
7	Jangala	128	16	124/5
8	Plavini	144	18	142/5
9	Dharnini	160	20	16
10	Begini	176	22	173/5

2. Unnanta

a	Urddhva	22	16	16
b	Anurddva	48	24	24
c	Svanamukhi	64	32	32
d	Gharbhini	80	40	40
e	Manthara	96	48	48

Lota, Gamini, Plavini, Anurddhava, Gharbhini, Manthara bring misfortune, because of their dimensions, and Urddhva much gain.

The "Yaktikalpataru" also suggests the metals to be used in decorations, eg. Gold, silver, copper, and compounds of all three as well as the colors. A vessel with four masts is to be painted white, the one with three masts is to be given a red paint, a two masted vessel is to be colored yellow, and a one masted vessel is to have a blue color. The prows are to be shaped into the form of heads of lions, buffalos, serpents, elephants, tigers, ducks, pea-hens, parrots and human beings, thus arguing an advanced progress in carpentry. Pearl and gold garlands are to decorate the prows.

Three classes of Ships:

According to cabins, ships are to be grouped into three classes:

Sarvamandira ships, having the largest cabin, from one end of the ship to the other. These are to be used for the transportation of the royal treasury, of women and horses. Madhyamandira ships, with cabins in the rainy season. Ships with cabins near the prows, are called Agramandira, and are for sailings in the dry seasons as well as for long voyages, and naval warfare. It was in these ships, that the first naval battle recorded in Indian literature, was fought, when Tugra, the Rishi King, sent his son Bhujyu against his enemies inhabiting some Island, and Bhujya on being wrecked, was rescued by two Asvins, in their hundred oared gallery. Of the same description are the five hundred vessels, mentioned in the Ramayana.

Carried 1000 Passengers: In Rajavalliya, the ship in which Prince Vijaya and his followers were sent away by King Sinhala of Bengal, was large enough to accommodate seven hundred passengers. The ship in which Prince Vijaya's bride was conveyed to Sri Lanka, was big enough to accommodate eight hundred people of the bride's party. The ship which took Prince Sinhala to Sri Lanka contained five hundred merchants besides the Prince himself. The Janaka Jataka mentions a ship-wreck of seven hundred passengers. The ship by which was effected the rescue of the Brahmin mentioned in Sankha Jataka was 800 cubits in length, 600 cubits in width, 20 fathoms deep, and had three masts. The ship mentioned in the Samuddha Vanija Jataka was big enough to transport a village full of absconding carpenters, numbering a thousand, who

had failed to deliver goods paid for in advance.

Early History: An ancient couplet betrays the spirit with which the Indians were imbued and which accounts for their wonderful achievements on land, beyond seas and across mountain barriers. There is indeed evidence to show that the sons of the soil were adept at navigation both riverine and oceanic. Right from the dawn of history, therefore, Indians have been engaged in plying boats and ships, carrying cargoes and passengers, manufacturing vessels of all types and dimensions, studying the stars and winds, erecting light-houses and building ports, wharfs, dockyards and warehouses. From rustic beginnings they developed a precise science of navigation and composed regular manuals as well as elaborate treatises on the subject, some of which survive to this day. It is noteworthy that the very term navigation is derived from nau, which in Sanskrit word for 'ship' or 'boat'. Thus navi gatih 'going in a boat' amounts to 'navigation'.

Literary Evidence: Sanskrit literature is full of references to river transport and sea voyages. Sometimes we have graphic descriptions of fleets, even of ship-wrecks. The Rig-Veda is taken as the earliest extant work of the Aryans, though there is no general agreement as to its exact age. At one place, Rishi Kutsa Angirasa prays to Agni: "Remove our foes as if by ship to the yonder shore. Carry us as if in a ship across the sea for our welfare."

In Ramayana: In Valmiki's Ramayana, we come across beautiful descriptions of large boats plying on the Ganga near Sringeriberapura. King Guha of that place arranges a magnificent boat for Rama accompanied by Lakshman and Sita, in exile, to enable the party to cross the river. When Bharata comes later to the same place, with the whole royal household, citizens of Ayodhya and a large army, with the intention of bringing Rama back to Ayodhya from exile, the same King Guha, suspecting Bharata's intentions, take precautionary measures by ordering five hundred ships, each manned by one hundred youthful mariners to keep in readiness, should resistance be necessary.

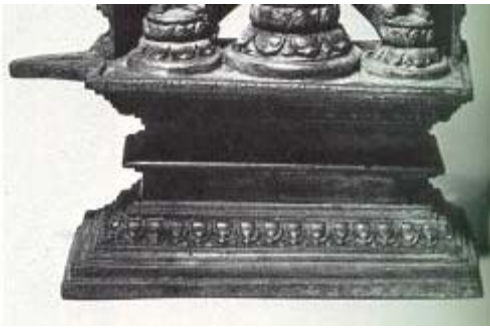
The descriptions of the ships is noteworthy: "Some (of the ships) reared aloft the swastika sign, had tremendous gongs hung, flew gay flags, displayed full sails and were exceedingly well built" The ships chosen for Bharata and the royal ladies of the royal household had special fittings and furniture as well as yellow rugs.

In Mahabharata: In the Mahabharata too there are many references. The ship contrived by Vidura for the escape of Pandavas had some kind of mechanism fitted in it: "the ship strong enough to withstand hurricanes, fitted with machinery and displaying flags." Panini, who lived about the 7th century B.C. in his Ashtadhyayi, the most commented upon work on Sanskrit grammar, has incidentally recorded certain usages which reflect in a way the maritime activity before and during his days in India. According to one sutra various types of small river craft were in use, and their names were utsagna, udupa, udyata, utputa, pitaka etc. A large boat was called Udavahana or udakavahana. Of special interest is the distinction made between the cargoes coming from an island near the coast and those coming from mid-ocean islands: the former were called dvaipya, and the latter dvaipa or dvaipaka. Certain other sutras speak of ferry chages, cargoes, marine trade and the like of those days.



Chandragupta Maurya's minister, Vishnugupta Chanakya alias Kautilya, the celebrated author of the treatise on statecraft, Kautilya Arthashastra, of about 320 B.C. devotes a full chapter to waterways under a Navadhyaksha 'Superintendent of ships'. His duties included the examination of accounts relating to navigation, not only on oceans and mouths of rivers, but also on lakes, natural or artificial, and rivers. Fisheries, pearl fisheries, customs on ports, passengers and mercantile shipping, control and safety of ships and similar other affairs all came under his charge. Jaina scriptures, Buddhist Jatakas and Avadanas, as well as classical Sanskrit literature, abound in references to sea-voyages. They acquaint us with many interesting details as to the sizes and shapes of ships, their furniture, and decorations, articles of import and export, names of seaports and islands, in short, everything connected with navigation.

Temples Give Proof: In the temple of Jagannath at Puri, a stately barge is sculptured in relief. The oarsmen paddle with all their strength, the water is thrown into waves, and the whole scene is one of desperate hurry. The boat is of the Madhyamandira type, as defined by Bhoja in the "Yuktikalpataru". The Ajanta paintings are rightly interpreted by Griffiths as a "vivid testimony to the ancient foreign trade of India." Of the many paintings one is of "a sea-going vessel with high stem and stern with three oblong sails attached to as many upright masts. Each masts is surrounded by a truck and there is carried a big sail. The jib is well filled with wind. A sort of bowspirit, projecting from a kind of gallows on deck is indicated with the outflying jib, square in form," like that of Columbus ships. The ship is of the Agramandira type, as described in the "Yuktikalpataru". Another painting is of a royal pleasure boat which is "like the heraldic lymphad,



with painted eyes at stem and stern, a pillard canopy amid ships, and an umbrella forward the steersman being accommodated on a sort of ladder, which remotely suggest the steersman's chair, in the modern Burmese row boats, while a rower is in the bows." The barge is of the Madhyamandira type.

Sculpture at Borobudur: The temple of Borobudur in Java contains sculptures recalling the colonization of Java by Indians. One of the ships "tells more plainly than words, the perils, which the Prince of Gujarat and his companions encountered on the long and difficult voyages from the west coast of India."

There are other ships tempest-tossed on the Ocean, fully trying to pluck and

dexterity of the oarsmen, sailors, and pilots, who, however, in their movements and looks impress one with the idea, that they were quite equal to the occasion.

What Historian say: **Nicolo Conti** says:

"The natives of India build some ships larger than ours, capable of containing 2,000 butts, and with five sails and as many masts. The lower part is constructed with triple planks, in order to withstand the force of the tempests, to which they are much exposed. But some ships are so built in compartments, that should one part be shattered, the other portion remaining whole may accomplish the journey."

Mr. J. L. Reid, member of the Institute of Naval Architects and Shipbuilders, England and the Superintendent of the Hongli Docks, has stated:

"The early Hindu astrologers are said to have used the magnet as they still use the modern compass, in fixing the north and east, in laying foundations, and other religious ceremonies. The Hindu compass was an iron fish, that floated in a vessel of oil, and pointed, to the north. Fact of this older Hindu compass seems placed beyond doubt by the Sanskrit word "maccha-yantra."

India's extensive Sea-borne Trade: The historian **Strabo** says that in the time of Alexander, the River Oxus was so easily navigable that Indian wares were conducted down it, to the Caspian and the Euxine sea, hence to the Mediterranean Sea, and finally to Rome. Greeks and Indians began to meet at the newly established sea ports, and finally all these activities culminated in Indian embassies, being sent to Rome, from several Indian States, for Augustus himself says that Indian embassies came "frequently." Abundant Roman coins from Augustus right down to Nero, have been found in India.

Archaeologist's Testimony: Archaeology amply supports literary record. Excavations at Mohenjodaro on the Indus have yielded, among other things, a potsherd and couple of steatite, seals each bearing a representation of a boat or a ship incised on it. By far the most substantial proof is afforded by the discovery of a dockyard at Lothal in Gujarat.

The eminent Indian archaeologist **Dr. Bahadur Chand Chhabra** concludes:

"It may be a surprise even to an Indian today to be told that in the ancient world India was in the forefront in the field of shipping and ship-building. Her ships, flying Indian flags, sailed up and down the Arabian Sea, the Indian Ocean and far beyond to Southeast Asia. Her master-mariners led the way in navigation. Riverine traffic within the country, shipping along the entire length of India's coastline, and on high seas were brisk until as recently as the days of the East India Company. Owing however, to historical competition by the British, ancient Indian shipping was wiped out without a trace. No wonder then the common man in India today readily believes that Indians are not only now learning the ABC of navigation. It would have been odd indeed if, bounded on three sides by great oceans, and gifted with a remarkable spirit of enterprise and invention, India had registered no advancement in the sphere of navigation while she had gone far in other arts and sciences.

(source: [Hindu America: revealing the story of the romance of the Surya Vanshi Hindus and depicting the imprints of Hindu culture on the two Americas - By Chaman Lal](#) with foreword by **Dr. S. Radhakrishnan**. 3d ed. (LC History-America-E) 1966).

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U.S. adopts catamaran technology

Washington May 28. The United States adopted **ancient Indian catamaran-making technology to construct fast ships** which were used with dramatic effect in the Iraq war, says a media report.

Among the equipment the Americans used to win the Iraq war were 100-foot catamaran ships to ferry tanks and ammunition from Qatar to Kuwait.

The ships, built with technology adapted from ancient Tamil methods to make catamarans, can travel over 2,500 kms in less than 48 hours, twice the speed of the regular cargo ships, and carry enough equipment to support about 5,000 soldiers, the Wall Street Journal reported yesterday.

Having a shallow draft, the boats can unload in rudimentary ports, allowing troops to land closer to the fight. — PTI

(source: [U.S. adopts Indian Catamaran technology](#) - hindu.com and [tribune.com](#)).

Sailing down the seas of history

Charting the coastline from Mumbai to the very end of Gujarat, where India ends and Pakistan begins, the 1,000 nautical mile voyage that will end on February 11 is in preparation for another, more ambitious voyage. The sailors, calling themselves the Maritime Exploration and Research Group, is getting ready to follow the path of ancient Indian mariners from south India all the way to Indonesia.

Inspired by the Chola kings of the 11th century, who discovered the present-day Indonesian islands of Sumatra and Bali, the group is preparing to replicate the feat using traditional instruments and a boat resembling the vessels of yore.

Called the Simulation of Chola Navigation Techniques, the forthcoming expedition will attempt to cover the distance between Nagapatnam in southern India and the Indonesian islands. "The expedition will aim to show that our ancient seafarers were in no way inferior to their Western counterparts," said B. Arunachalam, a researcher who is the moving spirit behind the expedition. The expedition has cost the team members nearly Rs.100,000 but they have received substantial assistance from the Indian Navy.

(source: [Sailing down the seas of history](#) - newindpress.com).

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India defence looks to ancient text

Indian scientists are turning to an ancient Hindu text in their search for the secrets of effective stealth warfare.

They believe the book, the **Arthashastra**, written more than 2,300 years ago, will give Indian troops the edge on their enemies.

India's Defence Minister George Fernandes has approved funding for the project, and told parliament recently that experiments had begun. The research is being carried out by experts from the Defence Research and Development Organisation and scientists from the University of Pune and National Institute of Virology in western India. The book includes the recipe for a single meal that will keep a soldier fighting for a month, methods of inducing madness in the enemy as well as advice on chemical and biological warfare.

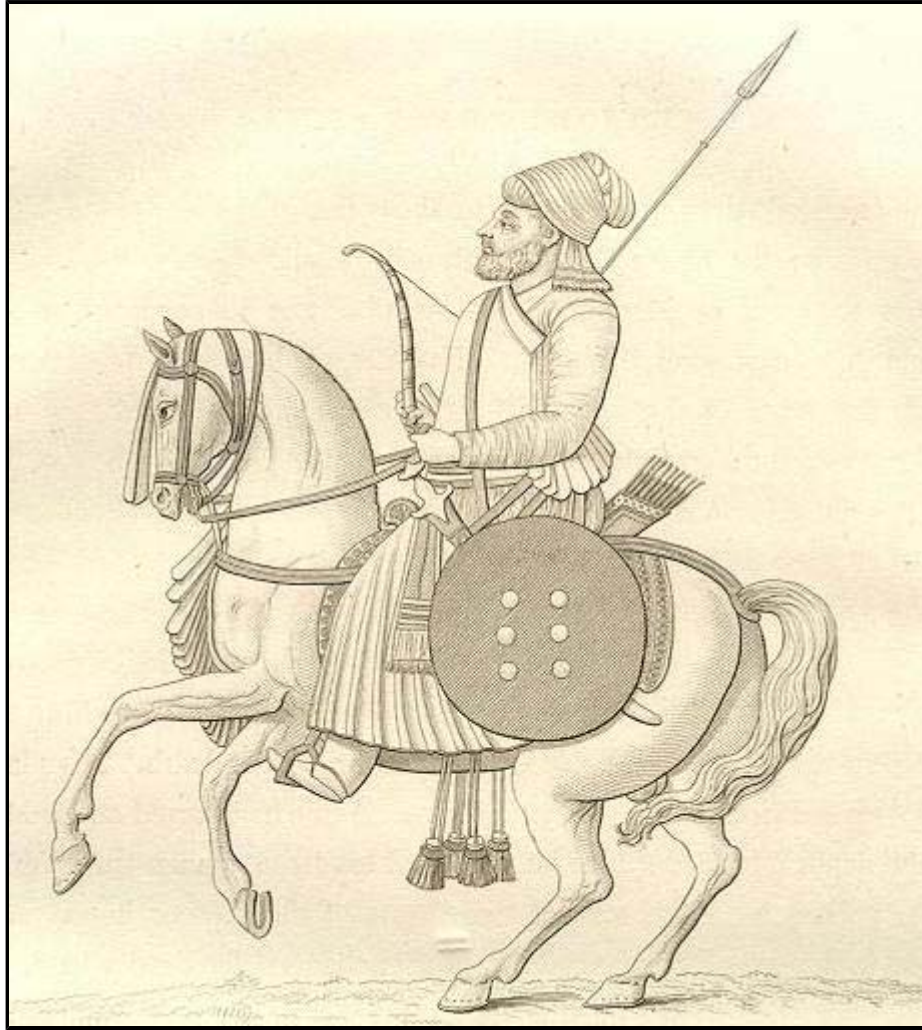
Powders and remedies

The book was written by military strategist Kautilya, also known as Chanakya and Vishnugupta, a prime minister in the court of India's first emperor Chandragupta Maurya, in the fourth century BC.

"All of us are excited about the possibilities and do not for a moment think that the idea is crazy," said Professor SV Bhavasar, a space scientist who has spent many years researching the Arthashastra.

"Decoding ancient texts is not an easy task but we are very hopeful of success," he added. According to a Pune University report, the book says that soldiers fed with a single meal of special herbs, milk and clarified butter can stay without food for an entire month.

Shoes made of camel skin smeared with a serum made from the flesh of owls and vultures can help soldiers walk hundreds of miles during a war without feeling tired. A powder made from fireflies and the eyes of wild boar can endow soldiers with night vision.



(source: [*Annals and Antiquities of Rajasthan: or the Central and Western Rajput States of India - By Colonel James Tod*](#)).

Chemical warfare

Kautilya wrote in the Arthashastra that a ruler could use any means to attain his goal, and Book XIV touches on aspects of chemical and biological warfare.

The book says that smoke from burning a powder made from the skin and excreta of certain reptiles, animals and birds can cause madness and blindness in the enemy. The book also provides the formula to create a lethal smoke by burning certain species of snakes, insects and plant seeds in makeshift laboratories.

"Our focus at present is on how humans can control hunger for longer durations and walk for longer period without experiencing fatigue, Project leader Dr V S Ghole, head of the environmental engineering department of Pune university, said the team was now focusing on the methods of controlling hunger and increasing stamina.

"Once we have made some headway we will go into researching Kautilya's notes on night vision and other fields," he said. Professor S V Bhavasar said the team also had plans to research other ancient Hindu texts. These include manuscripts which "claim to provide secrets of manufacturing planes which can not be destroyed by any external force, could be motionless in the sky and even invisible to enemy planes."

(source: http://news.bbc.co.uk/hi/english/world/south_asia/newsid_1986000/1986595.stm).

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Did You Know?

Gun powder (Agnicurna) and Ancient Hindus

Sir A. M. Eliot tells us that the Arabs learnt the manufacture of gunpowder from India, and that before their Indian connection they had used arrows of naphtha. It is also argued that though Persia possessed saltpetre in abundance, the original home of gunpowder was India. It is said that the Turkish word top and the Persian tupang or tufang are derived from the Sanskrit word dhupa. The dhupa of the **Agni Purana** means a rocket, perhaps a corruption of the Kautaliyan term natadipika.

(source: **Fire-Arms in Ancient India - By Jogesh Chandra Ray** I.H.Q. viii. p. 586-88).

(For more refer to article by G R Josyer - [India: The Home of Gunpowder and Firearms](#)).

Heinrich Brunnhofer (1841-1917) German Indologist, also believed that the ancient Aryans of India knew about gunpowder.

(source: [German Indologists: Biographies of Scholars in Indian Studies writing in German - By Valentine Stache-Rosen](#). p.92).

Gustav Oppert (1836-1908) in his work, **Political Maxims of the Ancient Hindus**, says, that ancient India was the original home of gunpowder and fire-arms.

It is probable that the word Sataghni referred to in the Sundara Kanda of the Ramayana refers to cannon.

(source: **Hindu Culture and The Modern Age - By Dewan Bahadur K.S. Ramaswami Shastri** - Annamalai University 1956 p. 127).

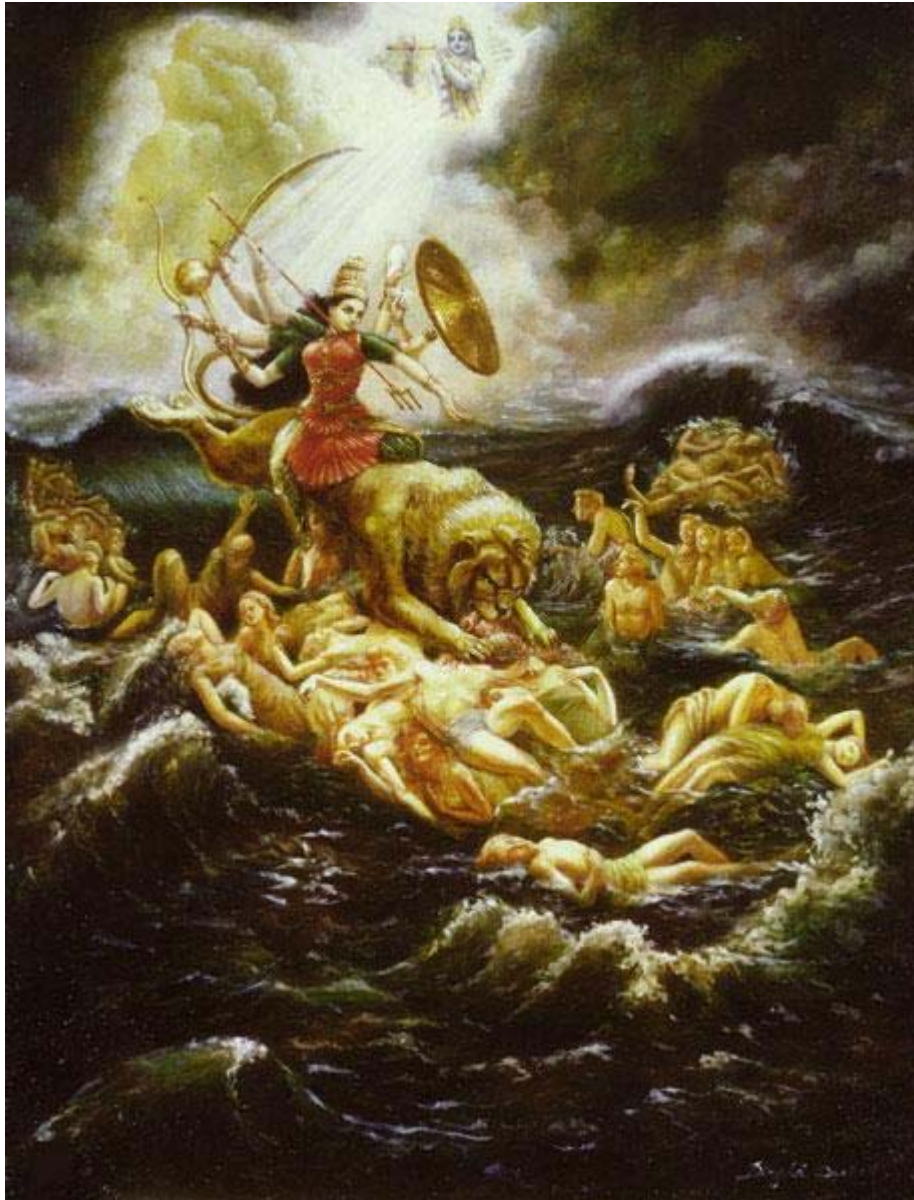
Professor Horace Hayman Wilson says: "Amongst ordinary weapons one is named vajra, the thunderbolt, and the specification seems to denote the employment of some explosive projectile, which could not have been in use except by the agency of something like gunpowder in its properties."

"**The Hindus, as we find from their medical writings, were perfectly well acquainted with the constituents of gun-powder - sulphur, charcoal, saltpetre - had them all at hand in great abundance.** It is very unlikely that they should not have discovered their inflammability, either singly or in combination. To this inference a priori may be added that draws from positive proofs, that the use of fire as weapon of combat was a familiar idea, as it is constantly described in the heroic poems."

(source: **Essays and lectures on the religions of the Hindus - H H Wilson** vol. II p. 302)

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The testimony of ancient Greek writers, who, being themselves ignorant of fire-arms used by Indians, give peculiar descriptions of the mode of Hindu warfare is significant. "Themistius mentions the Brahmin fighting at a distance with lightning and thunder."



Goddess Kali at war

Alexander, in a letter to Aristotle, mentions, “the terrific flashes of flame which he beheld showered on his army in India.” (See Dante’s *Inferno*, XIV, 31-7).

Speaking of the Hindus who opposed Alexander, [Lord Elphinstone](#) says: “Their arms, with the exception of fire-arms, were the same as at present.”

(source: [History of India - by Mountstuart Elphinstone](#) p. 241).

Philostratus thus speaks of Alexander’s invasion of the Punjab: “Had Alexander passed the Hyphasis he never could have made himself the master of the fortified habitations of these sages. Should an enemy make war upon the, they drive him off by means of tempests and thunders as if sent down from Heaven. The Egyptian Hercules and Bacchus made a joint attack on them, and by means of various military engines attempted to take the place. The sages remained unconcerned spectators until the assault was made, when it was repulsed by fiery whirlwinds and thunders which, being hurled from above, dealt destruction on the invaders.”

(source: *Philostrati Vit: Apollo*, Lib II. C. 35).

Commenting on the stratagem adopted by King Hal in the battle against the king of Kashmir, in making a clay elephant which exploded, **H M. Elliot** says: “Here we have not only the simple act of explosion but something very much like a fuse

to enable the explosion to occur at a particular period.”

(source: [The History of India, as told by its own Historians - By H. M Elliot](#) volume I. p. 365).

Though the Hindu masterpieces on the science of war are all but lost, yet there is sufficient material available in the great epics and the Puranas to prove that fire-arms were not only known and used on all occasions by the Hindus, but that this branch of their armory had received extraordinary development. In medieval India, of course, guns and cannons were commonly used. In the 12th century we find pieces of ordnance being taken to battle fields in the armies of Prithviraj. In the 25th stanza of Pritviraja Rasa it is said that “The calivers and cannons made a loud report when they were fired off, and the noise which issued from the ball was heard at a distance of ten cos. An Indian historian, Raj Kundan Lall, who lived in the court of the King of Oudh, says that there was a big gun named lichhma in the possession of His Majesty the King (of Oudh) which had been originally in the artillery of Maharaja of Ajmer. The author speaks of a regular science of war, of the postal department, and of public roads. “Maffei says that the Indians far excelled the Portuguese in their skill in the use of fire-arms.”

Another author quoted by **Peter Von Bohlen** (1796-1840) German Indologist, speaks of a certain Indian king being in the habit of placing several pieces of brass ordnance in front of his army. “Faria-e-Souza speaks of a Guzerat vessel in A.D. 1500 firing several guns at the Portuguese, and of the Indians at Calicut using fire vessels in 1502, and of the Zamorin’s fleet carrying in the next year 380 guns.”

(source: [Hindu Superiority - By Har Bilas Sarda](#) p. 355-360).

In the light of the above remarks **we can trace the evolution of fire-arms in the ancient India**. There is evidence to show that agni (fire) was praised for vanquishing an enemy. The Arthava Veda shows the employment of fire-arms with lead shots. The Aitareya Brahmana describes an arrow with fire at its tip. In the [Mahabharata and Ramayana](#), the employment of agnyastras is frequently mentioned, and this deserves careful examination in the light of other important terms like ayah, kanapa and tula-guda.

The **agnicurna or gunpowder** was composed of 4 to 6 parts of saltpetre, one part of sulphur, and one part of charcoal of arka, sruhi and other trees burnt in a pit and reduced to powder. Here is certain evidence of the ancient rockets giving place to actual guns in warfare. From the description of the composition of gunpowder, the composition of the **Sukraniti** can be dated at the pre-Gupta age.

(source: [War in Ancient India - By V. R. Ramachandra Dikshitar](#) 1944. p. 103 -105).

Medhatithi remarks thus "while fighting his enemies in battle, he shall not strike with concealed weapons nor with arrows that are poisoned or barbed on with flaming shafts."

Sukraniti while referring to fire-arms, (agneyastras) says that before any war, the duty of the minister of war is to check up the total stock of gunpowder in the arsenal. Small guns is referred as **tupak by Canda Baradayi**. The installation of yantras (engines of war) inside the walls of the forts referred to by Manasollasa and the reference of Sataghni (killer of hundreds of men) pressed into service for the protection of the forts by Samaranganasutradhara clearly reveals the frequent use of fire arms in the battle-field.

(source: [India Through The Ages: History, Art Culture and Religion - By G. Kuppuram](#) p. 512-513).

The use of gunpowder, first invented and used in India as an explosive mixture of saltpetre, sulfur and charcoal to power guns, cannons and artillery.

(source: [How to Read the Timeline Hinduism Today](#)).

H. H. Eliot, Foreign Secretary to the Government of India (1845), after discussing the question of the use of fire-arms in ancient India, says: "On the whole, then, we may conclude that fire-arms of some kind was used in early stages of Indian history, that the missiles were explosives....that projectiles were used which were made to adhere to gates and buildings, and machines setting fire to them from a considerable distance; that it is probable that saltpetre, the principal ingredient of gunpowder, and the cause of its detonation, entered into the composition, because the earth of Gangetic India is richly impregnated with it in a natural state of preparation, and it may be extracted from it by lixiviation and crystallization without the aid of fire; and that sulphur may have been mixed with it, as it is abundant in the north-west of India."

(source: [Historians of M India](#) - Bibliographical Index. Vol. I p. 373).

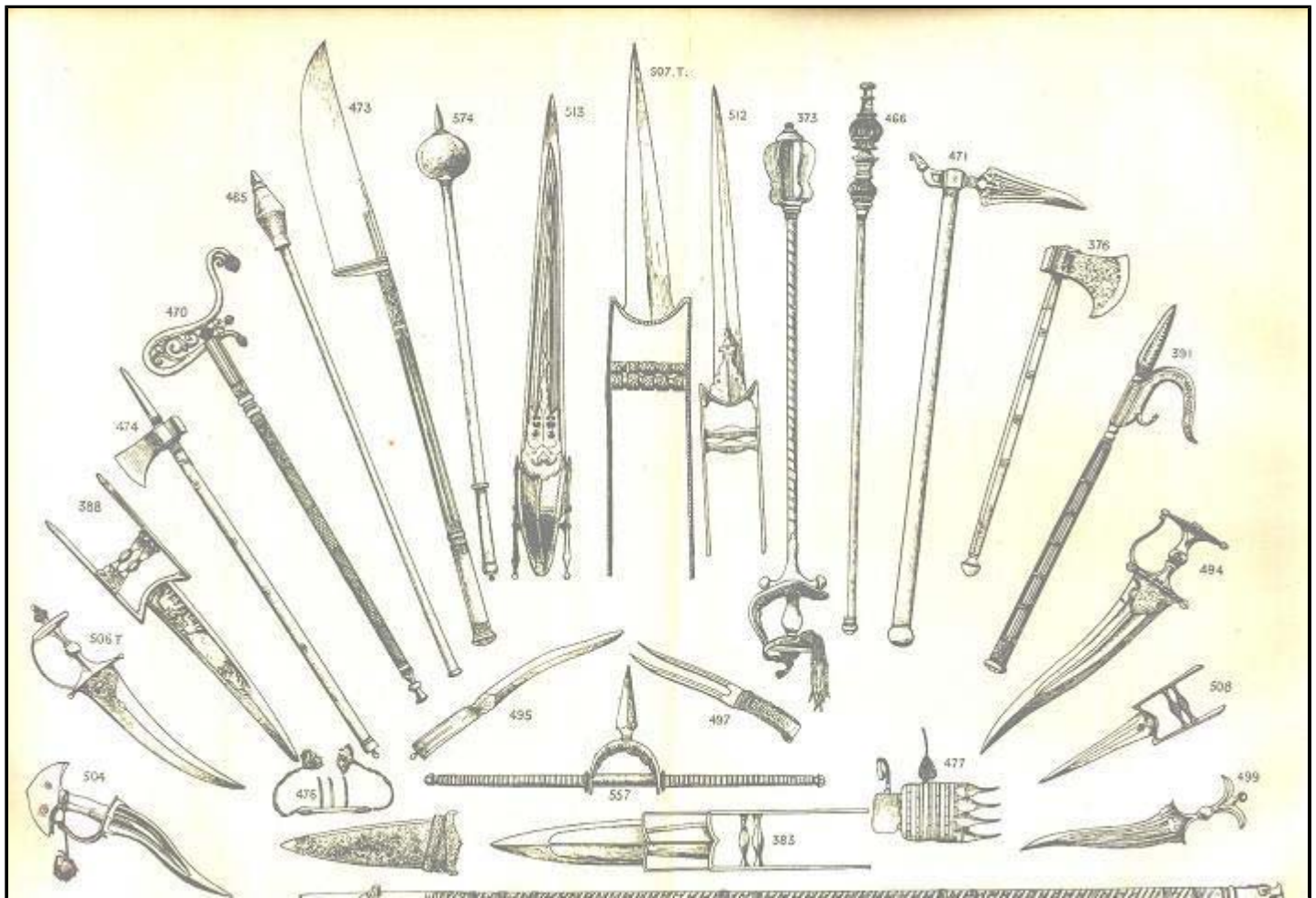
Horace Hayman Wilson wrote: "Rockets appear to be of Indian invention, and had long been used in native armies when Europeans came first in contact with them." "It is strange that they (rockets) should now be regarded in Europe as the most recent invention of artillery."

(source: [Annals and Antiquities of Rajasthan: or the Central and Western Rajput States of India](#) - By James Tod South Asia Books; ; 2 edition (April 1998) ISBN 8120803809 Vol. II p. 220 and (source: [Historians of M India](#) - Bibliographical Index. Vol. I p. 373 and 357).

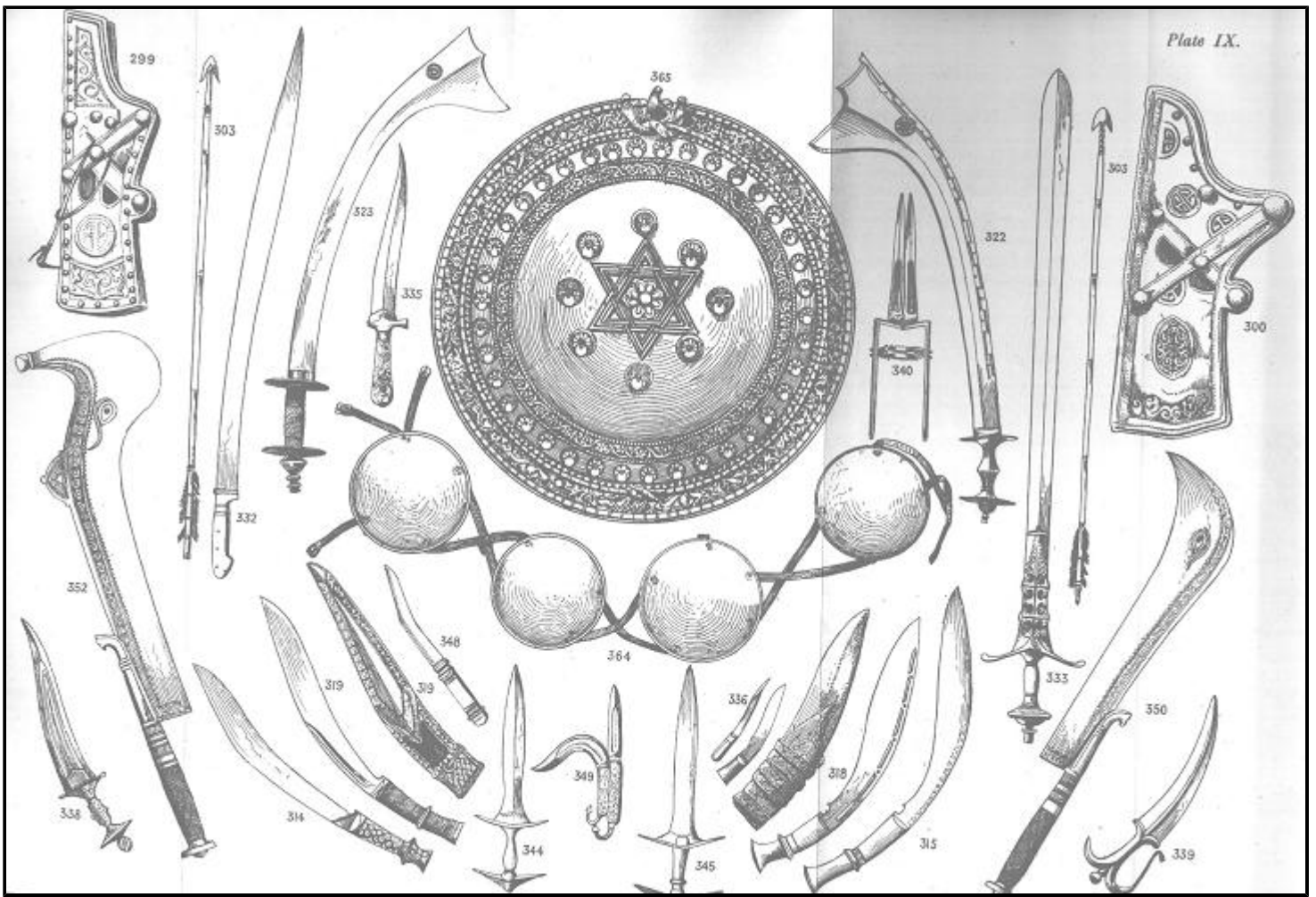
(For more refer to article by G R Josyer - [India: The Home of Gunpowder and Firearms](#)).



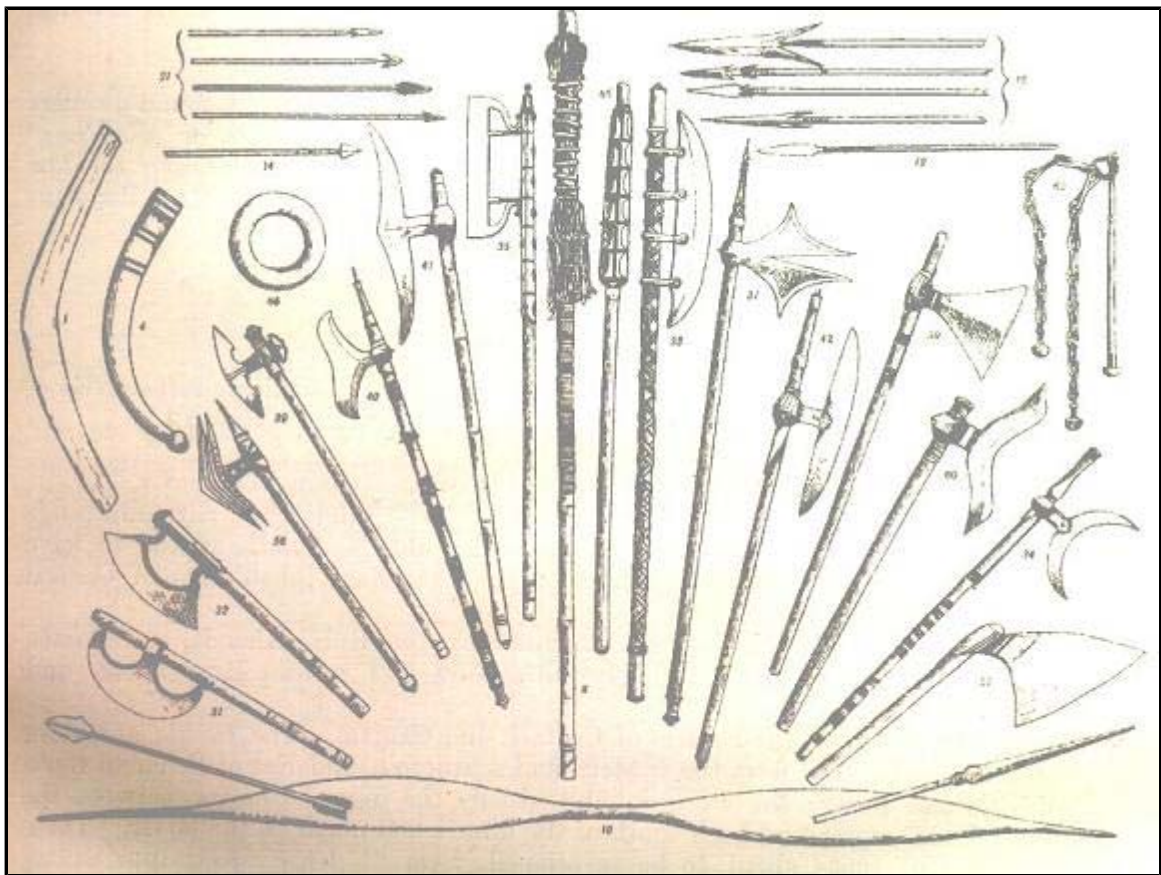
Images of Some Weapons



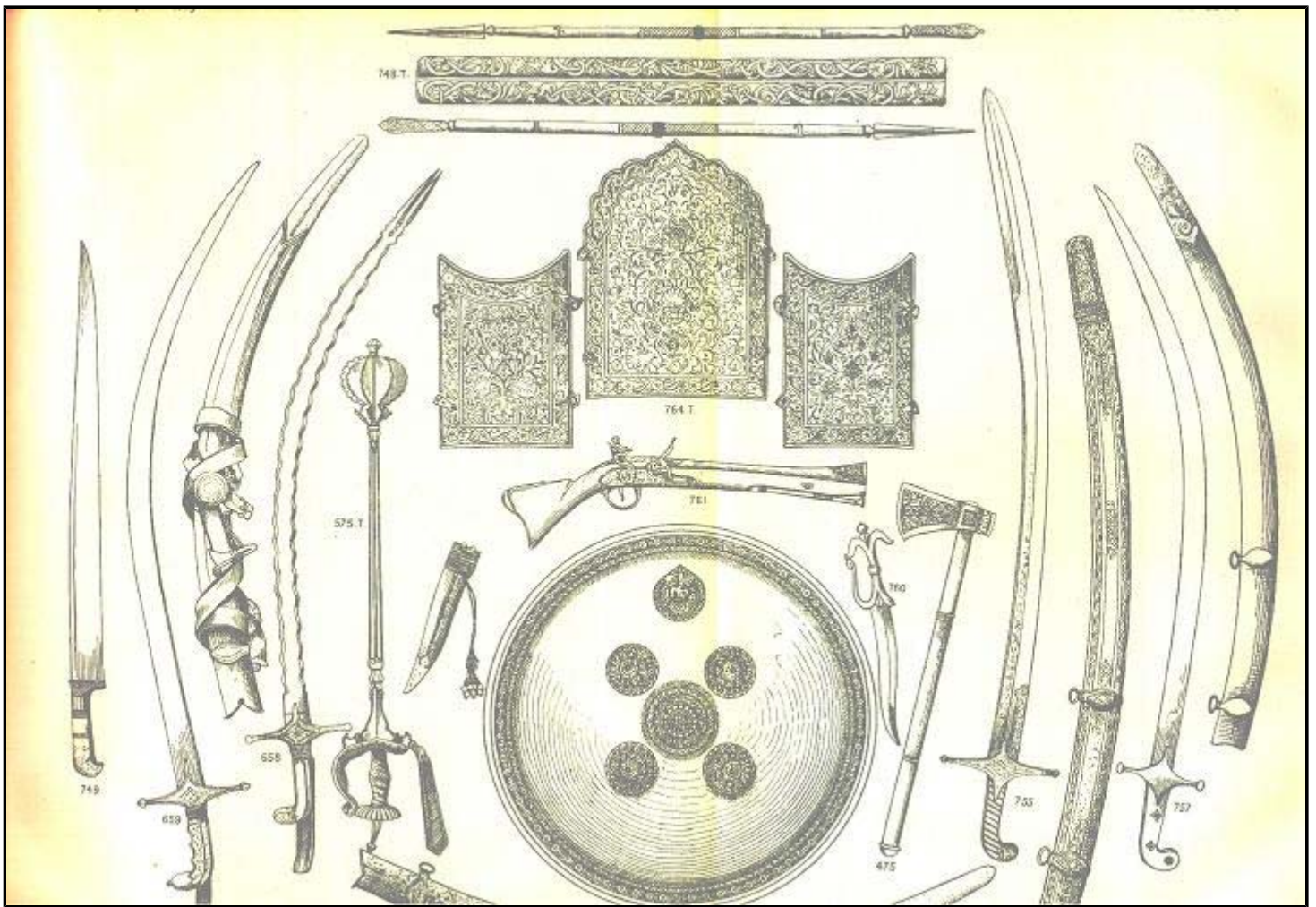
Maharatha weapons



Nepal weapons



Central India weapons



India - Persia weapons

(source: [Arms, armour: weapons and accoutrements of warriors in Bharat through the ages - hindunet.org](http://hindunet.org)).

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