

DHANURVEDA- WORKS ON ANCIENT INDIAN ARTILLERIES

The term *Dhanurveda* is generally used by Sanskrit writers to denote the artillery science. Many Sanskrit texts on epics, *Purāṇas* and *kāvya*s have references in detail about artilleries. Further there are texts on this specific subject, by the name '*Dhanurveda*'. A number of weapons like bow and arrow, sword, spear and mace are discussed in full detail in such texts.

The value and importance of the army were realized by ancient scholars very early in the history of India, and this led in course of time to the maintenance of a permanent armed force to put down dissensions. War or no war, the army was to be maintained, to meet any unexpected emergency. This gave rise to the *Kṣatriya* or warrior caste, and the *kṣātram dharma* came to mean the primary duty of war¹. To serve the country by participating in war became the *svadharma* of the warrior

¹ <http://War In Ancient India.mht>

community. The necessary education, drill, and discipline to cultivate militarism were restricted to the members of *Kṣatriya* community. This prevented the militant attitude from spreading to other communities and kept the whole social structure unaffected by actual wars and war institutions. At that time the whole country looked upon the members of the *Kṣatriya* community as defenders of their country and thus did not complain the high influence and power wield by the *Kṣatriya*, who were assigned a social rank next in importance to the intellectual and spiritual class of the society, i.e., the Brahmin hood.

Ancestors are very 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 many cases, ancient India was ahead of modern ideas. Ancestors knew the methods of making swords and new metal combinations. In ancient texts, *Dhanurveda* is the scientific word for the treatises on weapons. It narrates different

kinds of weapon. The main division of this book deals with archery. So it is called *Dhanurveda*.

A variety of weapons are mentioned *Dhanurveda* texts. From ancient India, a number of texts were available on *Dhanurveda* which deal with ancient artillery. But most of these writings are now not available in full. Some texts on *Dhanurveda* have referred to the advantages of artillery as follows.

दुष्टदस्युचौरादिभ्यः साधुसंरक्षणं तथा ।
 धर्मतः प्रजापालनं धनुर्वेदस्य प्रयोजनम् ॥
 एकोऽपि यत्र नगरे प्रसिद्धः स्याद् धनुर्धरः ।
 ततो यान्तरयो दूरान्मृगाः सिंहगृहादिव ॥ ¹

In *Dhanurveda*, the importance of warriors in a society is highlighted in this verse. The above verse narrates that a good soldier can ensure the security of a society. So the soldiers have an important role for the social security. Hence practicing and training of weapons are of much important and it is the actual advantage of *Dhanurveda*. Ancestors were aware about the importance of weapon and its training. So they were trying to develop new weapons as and when it is needed in each part of

¹ *Vasiṣṭha's Dhanurveda samhita* p-3, see also *Dhanurveda* p 24- 25

ancient India. Almost all of our ancient books, *Vasiṣṭha's Dhanurveda samhita*, *Śukranīti*, *Agnipurāṇa* and the like contain narration about weapon manufacturing and its training. Hence ancient writers in Sanskrit wrote not on spirituality alone but on warfare and the like also.

Many of the scholars are equally known in both the fields of spirituality and warfare. Mention may be made of Vasiṣṭha, Viśvāmitra, Paraśurāma, Kaśyapa, Parāśara, Śārngadhara, Bharata and Garga. All these writers are well known in both fields of spirituality and material world alike. The ancient Sanskrit books to a great extent refer to a variety of new weapons. These weapons are generally used in wars. Sanskrit texts mention different types of weapons and the methods of manufacture and usage of weapons.

Most of the scholars of ancient India considered *Dhanurveda* as the branch of *Yajurveda*. *Prasthānabheda* of Madhusudana swami considered *Dhanurveda* as a branch of *Yajurveda*.¹ *Śukranīti*,² *Nītiprakāśika*³,

¹ *Prasthānabheda* p 7, see also *Dhanurveda* p26

² *Śukranīti* chapter 4 śloka 278

³ *Nītiprakāśika* p 5

*Kodaṇḍamandana*¹ and the like consider *Dhanurveda* as the *upaveda* of *Yajurveda*. According to Vasiṣṭha, on the other hand, *Dhanurveda* is considered as the branch of both *Yajurveda* and *Aṭharvaveda*.² Because the *Pracaraṇa* of *Dhanurveda* is from *Yajurveda* and that of the knowledge about the divine weapons is adopted from *Aṭharvaveda*. So it can be concluded that *Dhanurveda* is also connected with *Aṭharvaveda* also.

There are a number of commentaries available on *Dhanurveda*. *Mahābhārata*, *Agnipurāṇa*, *Prasthānabheda* of Madhusūdana sarasvati and the like refer vivid pictures of *Dhanurveda*. These books divide *Dhanurveda* into different divisions. The scholars of ancient India divided *Dhanurveda* into four *pādas*. According to the *Dhanurveda samhita*, *dīkṣa*, *saṃgraha*, *śiḍḍha* and *prayoga* are the four *pādas* of *Dhanurveda*. The *dīkṣāpāda* gives instructions on the principles. The *saṃgrahapāda* contains the rules for collection and *śiḍḍhipāda* describes the ways of casting bows. The *prayogapāda* tells about the application of the

¹ *Kodaṇḍamandana* 1-3

² *Vasiṣṭha's Dhanurveda samhita* p 3

weapons.¹ According to *Nīlakanṭhīya*, the commentary of *Mahābhārata* by Nīlakanṭha, *mantramukta*, *pāṇimukta*, *muktāmukta* and *amukta* are the divisions of *Dhanurveda*.² According to *Agnipurāṇa*, chariot, elephant, horse and cavalry are the divisions of *Dhanurveda*.³ *Nītiprakāśika* divided *Dhanurveda* as *mukta*, *amukta*, *muktamukta* and *mantramukta*.⁴ All these divisions are based on some particular areas of the science of artillery.

Angas of Dhanurveda

According to the *Ādiparva* of *Mahābhārata*, saint Śaradva was an exponent of *Dhanurveda*. He taught *Dhanurveda* to Kṛpa and Kṛpa taught *Dhanurveda* to his students. *Mahābhārata* also narrates that Paraśurāma taught *Dhanurveda* to Droṇa and Droṇa taught it to his students, *Kauravas* and *Pāṇdavās*. Sage Agastya was also an expert in *Dhanurveda* and he taught it to Agniveśa.⁵

¹ *Vasiṣṭha's Dhanurveda samhita* p 3

² *Mahābhārata Ādiparva adyāya 72, śloka 220*

³ *Agnipurāṇa 249/1-3*

⁴ *Nītiprakāśika 2/11/24-25*

⁵ *Purāṇic encyclopedia* p 617-619

Mahābhārata, *Agnipurāṇa* and the like texts narrate the *angas* of *Dhanurveda*. According to *Mahābhārata*, *Dhanurveda* have ten *angas* and four *caranas*¹.

आदानमथ सन्धानं मोक्षणं विनिवर्तनम्
स्थानं मुष्टिः प्रयोगश्च प्रायश्चित्तानि मण्डलम्
रहस्यश्चेति दशधा धनुर्वेदाङ्गमिष्यते ॥ 2

The above verse of *Mahābhārata* narrates the ten *angas* of *Dhanurveda*. They are, *ādāna*, *sanḍhāna*, *mokṣaṇa*, *vinivarttana*, *sṭhāna*, *muṣṭi*, *prayoga*, *prāyaścitta*, *mandala* and *rahasya*.

Agnipurāṇa narrates, *Dhanurveda* as having five *angas*, *yantramukta*, *pāṇimukta*, *Muktasandhārita*, *amukta* and *bāhuyuddha*.³

Yantramukta means using weapons by the help of machines. It involves *kṣepiṇi*, bow machines etc.⁴ *Pāṇimukta* means using the weapons by the hand, stone, mace etc. *Muktasandhārita* means which can be used by either throwing or holding it. *Kunta* is an example for the *Muktasandhārita* type of weapons. Which is *used* by not renouncing from the hand, is

¹ *Mahābhārata*, *śalyaparvam* 6, *śloka*-41

² *Mahābhārata* *Ādiṣarva* *adyāya* 72, *śloka* 220

³ *Agnipurāṇa* 249/3-6

⁴ *Purāṇic encyclopedia* p 617

known *Amukta*. Sword is an example for it. *Bāhuyudḍha* means fighting by hand without using any weapons.¹

Some other scholars classified *Dhanurveda* into two, depending upon the classification of *astra* and *śastra*² and which is again classified into *ṛju* and *māyā*. From these classifications and narrations of *Dhanurveda*, one can assume that *Dhanurveda* and weaponry was one of the most relevant subjects in ancient time.

Classification of weapons

According to *Dhanurveda* weapons are divided into four kinds as per the use of such weapons.

चतुर्विधमायुधं मुक्तममुक्तं मुक्तामुक्तं यन्त्रमुक्तश्चेति ॥ ³

Mukta, *Amukta*, *Muktāmukta* and *Yantramukta* are the main types of weapons. *Mukta* means which is released completely from the user. The *Mukta* type of weapons can be thrown by hand. Discus is an example.

¹ *Dhanurveda* p18-19

² *Purāṇic encyclopedia* p 617

³ *Vasiṣṭha's Dhanurveda samhita*, p 4

Amukta type of weapons cannot be released from the hand. The weapons like *gadā*, *śūla* are best examples. Weapons which are sometimes released are called *Muktamukta*. *Spear* is an example of this variety. Weapons hurled with the help of machines are called *Yantramukta* and catapult ball is an example for this. *Karamukta* is again classified into *Yantramukta* and *Mantramukta*. For example archery is *Yantramukta* and *Brahmāstra* is *Mantramukta*.

In *Yuktikalpataru*, weapons are classified into two types. They are *nirmāya* and *māyika*. The sword, bow, arrow, *ardhacandra*, *nārāca*, *paraśu*, *cakra*, spear, *parikha* etc are included in *nirmāya* group of weapons. *Dahanāgni* [fire], water and *taptataila* (boiled oil) were included in *māyika* group of weapons.

In *Śukranīti* weapons are classified into two main groups. They are *astra* and *śastra*.

अस्यते क्षेप्यते यत्तु मन्त्रयन्त्राग्निभिश्च यत् ।
 अस्त्रं तदन्यतः शस्त्रं असिकुन्तादिकं तथा ॥
 यदा तु मान्त्रिकं नास्ति नालिकं मान्त्रिकं तथा ।
 यदा तु मान्त्रिकं नास्ति नालीकं तत्र धारयेत् ॥¹

¹ *Kalāvidya vivaraṇam* p 216

Weapons which are used by the help of mantra, *yantra* or fire are called *śastra* and other types of weapons are generally called *astra*. *Astra* type of weapons is again classified into two, ie. *nālikam* and *māntrikam*.

Types of Battle

According to the usage of weapons ancient scholars classified battle into different type. *Śukranīti* classified battle into *daivikam*, *āsuram*, *mānavam* and *bāhuyuddha*.

मन्त्रास्त्रैर्दैविकं युद्धं नालाद्यस्त्रैस्तथासुरम् ।
 शत्रुबाहूसमुत्थं तु मानवं युद्धमीरितम् ॥
 एकस्य बहुभिः सार्धं बहूनां बहुभिश्च वा ।
 एकस्यैकेन वा द्वाभ्यां द्वयोर्वा तद् भवेद् खलु ॥¹

The above verses of *Śukranīti* narrate four type of battle. They are *daivikam*, *āsuram*, *mānavam* and *bāhuyuddha*. The divine weapons are used in *daivika* type of battle. *Nālika* type of weapons are used in *āsuram* and that of *śastra* and *astra* type of weapons are used is *mānavam*. *Bāhuyuddha* is the fourth type of battle in *Śukranīti*.

¹ *Śukranīti* 4/ 53-54, see also *Dhanurveda* p 23

According to *Agnipurāṇa* battle is classified into five. They are *yantramukta*, *pāṇimukta*, *muktasandhārita*, *amukta* and *bāhuyudḍha*.

धनुश्चेष्टानि युद्धानि प्रासमध्यानि तानि च ।

तानि खड्ग जघन्यानि बाहुप्रत्यवराणि च ॥¹

In this verse of Agni purana describes four types of battle. The battle which is fought by using *dhanus* is considered *uttama* and that of using *prāsa* is considered as *madhyama* type battle. Using *khadga* to fight in a battle is *adhama* and *bāhuyudḍha* is considered as *adhamādhama*.

According to Vasiṣṭha, battle can be classified into seven as per the types of weapons used in it.

धनुश्चक्रं च कुन्तं च खड्गं च क्षुरिका गदा

सप्तमं बाहुयुद्धं स्यादेवं युद्धानि सप्तथा ॥²

The above verse of Vasiṣṭha narrates the seven ways of fighting. They are by using bow and arrow (archery), discus, spear, *gada*, dagger, mace and *dvandvayudḍha* (wrestling). In *Śukranīti*, battle is classified into four, i.e. *uttama*, *madhyama*, *adhama*, *adhamādhama*. Astra group of

¹ Ibid p 24, see also *Agni purāṇa* chapter 7 p 249

² Vasiṣṭha's *Dhanurveda samhita* p5

weapons are used in battle with the support of mantras. This is the best class of war – *uttama* and the gun used in that war can be called *madhyama*. *Śastra* group of weapons (spear) are considered as *adhama* and that of *Bāhuyuddha* (wrestling) is *adhamādhama*. Besides these varieties of battle another two types of battle are mentioned. They are *Māyayuddham* and *Rājayuddham*. Weapons which are released by the help of a string are called *Yantramukta*. *Tomāram* is released by hand, such is known as *pāṇimukta*. From these narrations, one can safely conclude that ancestors who have gone through with minute details of warfare and artilleries have provided a clear picture about ancient Indian warfare. War and weapon manufacturing is very closely related with their day to day life.

Teachers

In *Dhanurveda*, the quality of *Ācārya* is explained in a verse. He should be efficient in the seven types of battles.

आचार्यः सप्तयुद्धः स्याच्चतुर्भिर्भारगवः स्मृतः
द्वाभ्यां चैव भवेद्योधा एकेन गणको भवेत् ॥¹

¹ *Vasiṣṭha's Dhanurveda samhita p4*

Those who knew seven ways of fighting are entitled as *Ācārya* and he who teaches the art of warfare is called as *Ācārya*. He who is accustomed with four ways of fighting is known as *Bhārgava*. Who knows only two type of fighting is *Yodḍhā* (warrior) and the person who knows only one type of fighting is termed as *gaṇaka*. *Bhārgava* is a brahmanical family name commonly found in Punjab and Utharpradesh. So it is difficult to say whether the name is derived from the sage Bhṛgu or the teacher expert in four types of warfare.

Divisions of weapons by casts

Besides this classification of weapons on the usage of weapons, each weapon is again classified into a variety of classes. This mentioned in the following verse-

ब्राह्मणाय धनुर्देयं खड्गं वै क्षत्रियाय च ।
वैश्याय दापयेत् कुन्तं गदां शूद्राय दापयेत् ॥¹

¹ *Vasiṣṭha's Dhanurveda samhita* p 5

The Brahmins use archery; *Kṣatriyas* use *khadga* (sword), *Vaiśya* use *kunta* (spear) and *śūdra* use *gadā* (mace) respectively. From the above verse one can understand the priority given to weapons by ancestors. The lower communities were engaged in making of weapons while the upper classes and saints were the theoretical authors of artillery science. Almost all scholars accept the classification of weapons by cast. There was no different opinion about the classification. From this Information, it is also revealed that the cast system has domination in ancient Indian society.

Methods of teaching archery

Dhanurveda also narrates training of weapon in detail. It deals with the training of student and also describes the ideal time and place for starting training.

आचार्येण धनुर्देयं ब्राह्मणे सुपरीक्षिते

लुब्धे धूर्ते कृतघ्ने च मन्दबुद्धौ न दापयेत् ॥ 1

The *Ācārya* will teach the science of archery only to the Brāhmins who have successfully come through the tests and they should not be greedy,

¹ *Vasiṣṭha's Dhanurveda samhita* p5

ungrateful and foolish people. From the above verse, it is clear that ancient scholars tried their best to avoid some communities from weapon trainings.

Auspicious time for training

हस्तः पुनर्वसुः पुष्यो रोहिणी चोत्तरात्रयम् ।

अनुराधाश्विनी चैव रेवती दशमी तथा ॥¹

The above verse of *Vasiṣṭha's Dhanurveda samhita* narrates the ideal time for starting weapon training. The weapon training may be started after the keen observation of *nakṣatra*, *tithi*, *day* etc. The ideal time for initial teaching and learning of archery is found with some auspicious tithi and stars-*hasta*, *punarvasu*, *puṣya*, *rohiṇi*, *uttaraphālguni*, *uttarabhādrapāda*, *uttarāṣāda*, *anurāda*, *aśvini*, *revati*. Learning archery will be fruitful when the moon is present in one's zodiacal sign of *lagna* or occupies its third, sixth, seventh, tenth or eleventh position. Also the book tells that learning archery on the third, fifth, seventh, tenth twelfth and thirteenth lunar day *tithi* is very auspicious. They believed that Sunday, Thursday and Friday are

¹ Ibid p6

good for starting the learning. To start with the teaching the *Ācārya* should submit offerings to deities and also should arrange for putting up an oblation of fire, where an offering of clarified butter is made along with chanting hymns. The disciples should offer feast for the Brahmins and virgins and should also worship the hermits or yogins who are the ardent devotees of lord Śiva. Thereafter the disciple should salute his teacher by offering food, garlands, clothes and ornaments. The student who is on fast should wear the deer skin and with folded hands begs the teacher to teach him archery. The teacher then in order to destroy the evils and sins and also to bring success to his disciple, should touch different parts of the body along with recitation of different Vedic hymns or mantras as mentioned by lord Śiva. Then the teacher prays to lord Mahādeva to dwell at the crown of his head or palate, lord Kṛṣṇa at his arms, Lord Brahma on the navel and lord Gaṇeśa on the thighs. The teacher then offers the bow to his disciple after purifying it with the hymns mentioned in *Dhanurveda*.

As referred to in the texts on war science, Brahmins are authorized to deal with bow and arrow. It indicates the fact that even Brahmin was engaged in battles. At least a section of Brahmins must have engaged in wars. In Kerala there are some Brahmins who are not entitled to study Vedas. They are known as *śāstradvija*- Brahmin with weapon. In Malayalam, they are known as *cāttiras*. *Sanghakali* or *cāttirāṅga* was an interesting art form performed by such Brahmins.

BOW AND ARROW

In our ancient texts *Dhanurveda* is used as the scientific term for the treatises on weapon in general. The main division of *Dhanurveda* deals archery. So it is called *Dhanurveda*. Archery is the main part of *Dhanurveda*. Different types of bow and arrows are dealt with in it.

Materials for bow

Metal, wood and horn of some wild animals are used for good bow. Gold, copper, silver etc. are the metals commonly used for the manufacturing of bow. Sandal and bamboo are the commonly used.

Bamboo is the most commonly used wood. *Śarabha's* (a kind of animal) horn is also said to be used for making bow



Bow and Arrow

त्रिपर्वं पञ्चपर्वं वा सप्तपर्वं तथा पुनः ।
नव पर्वञ्च कोदण्डं सर्वदा शुभकारकम् ॥¹

The bow made of bamboo having odd joints like three, five, seven and nine are always considered auspicious. And the bow having four, six and eight joints should be discarded.

¹Vasiṣṭha's *Dhanurveda samhita* p11

Measurement of Bow

Bow is the most important weapon of the ancestors in everywhere in the world. A variety of bows and arrows are referred to in *Dhanurveda*. The bow is classified into two major divisions.

प्रथमं यौगिकं चापं युद्धचापं द्वितीयकम् ।

निजबाहुबलोन्मानात् किञ्चिद्दूनं शुभं धनुः ॥¹

The two types of bow are *yaugika* and *yuddhacāpa*. *Yaugika* or composite bow is made up of horn, wood and sinew and is mainly used for practice. *Yuddhacāpa* is for fighting. *Dhanurveda* also gives importance to the archer [bow man]. If the archer is troubled by the bow, he can't see and shoot the aim easily. Hence the size of the bow should be proportional to the size and health of the archer. The length of the common man's bow should always be shorter than the divine bows.

The bow measuring five and a half *hasta* is recognized as the best. This type of glorious and best bow was in possession of Lord Mahādeva. The measure of most auspicious and suitable bow for common man's use

¹ *Vasiṣṭha's Dhanurveda samhita* p10

is four *hastas*. Twenty four *angulas* make one *hasta* and four *hastas* make one bow.

केषाञ्चिच्च भवेच्चापं वितस्तिनवसम्मितम् ॥¹

According to some authorities the bow should measure nine *vitasti* (ie.4^{1/2} Cubits). *Vitasti* is the distance between the wrist and the tip of the fingers and is said to be equal to 12 *angulas* or about 9 inches.²

Bows which are not useful

The text also discusses about the bows which are not suitable for use. One should not use very old fragile bows and also the bows made up of unseasoned and unripe bamboo or cane and also the bow, which had earlier been used in the family by the ancestors. The bow without string and the bow encorporated with string should be avoided.

Vasiṣṭha says:

¹ Vasiṣṭha's *Dhanurveda samhita* p 11

² Ibid p 12

अतिजीर्णमपक्वञ्च ज्ञातिधृष्टन्तथैव च ।

दग्धं छिद्रं न कर्तव्यं बाह्याभ्यन्तरहस्तकम् ॥ ¹

One should not use very old fragile bows and also the bows made up of unseasoned and unripe bamboo or cane and also the bow which had earlier been used in the family by the ancestors. The burnt or perforated bow should also be avoided.

गुणहीनं गुणाक्रान्तं काण्डदोषसमन्वितम् ।

गलग्रन्थि न कर्तव्यं तलमध्ये तथैव च ॥ ²

The bow without string and the bow encompassed with string should be avoided. Due to the defect in the stem, joints may appear at the neck and also at the bottom of the bow. Such bows should not be used.

अपक्वं भङ्गमायाति ह्यतिजीर्णन्तु कर्कशम् ।

ज्ञातिधृष्टं तु सोद्वेगं कलहो बान्धवैः सह ॥ ³

The bows made up of unripe bamboo break up easily. Bows made up of very fragile bamboo do not possess the elasticity. Hence these are considered to be of inferior quality. Again bows used by the family

¹ *Vasiṣṭha's Dhanurveda samhita* p12

² *ibid* p12

³ *ibid* p 12

ancestors should never be used, since these may bring dispute among friends.

String

String is one of the important parts of a bow. Bow is tied up at both ends with a strong cord. It is named as string or *guṇa* or *gyā* in Sanskrit.

गुणानां लक्षणं वक्ष्ये यादृशं कारयेद्गुणम् ।
 पट्टसूत्रो गुणः काय्यैः कनिष्ठामानसम्मितः ॥
 धनुः प्रमाणो निःसन्धिः शुद्धैस्त्रिगुणतन्तुभिः ।
 वर्तितः स्याद्गुणः क्षणः सर्वकर्मसहो युधि ॥ ¹

The above verses of *Vasiṣṭha's Dhanurveda samhita* explain the qualities of string. The good string is made up of silken thread, which is twisted to the thickness of the little finger and its length is equal to that of bow. The string should be pure, polished and without joint. Three strings are taken and twisted in such a way that it becomes neither too thick nor too smooth and has a thickness equal to that of little finger. This string can sustain strain during battles. If silk is not available, the sinew of deer, buffalo or bull can also be used for making bow strings. The freshly killed

¹ *ibid* p15

hide of cow or goat devoid of hairs is made into threads. The bowstring made out of this thread is considered as best.

प्राप्ते भाद्रपदे मासि त्वर्कस्य प्रशस्यते ।

तस्यास्तत्र गुणः कार्यो न वित्तः स्थावरो दृढः ॥¹

The above verse narrates the ideal time for choosing bow string. In the month of *bhādra pada*, when bark of sun plant matures the fine threads of its skin can be taken out to make a fine bowstring. It will be lasting too.

Arrows

One of the most important and powerful part of archery is the arrow. An arrow usually consists of a shaft with an arrowhead attached to the front end, with fletching and nocks at the other. The size of arrow varies greatly across cultures, ranging from eighteen inches to five feet. The shaft is the primary structural element of the arrow, to which the other components are attached. Traditional arrow shafts are made from lightweight wood, bamboo or reeds, while modern shafts may be made from aluminum, carbon fibre reinforced plastic or composite materials.

¹ Vasiṣṭha's Dhanurveda samhita p 16

Composite shafts are typically made of from an aluminum core wrapped with a carbon fibre outer¹.



Different types of Arrows

The arrowhead or projectile point is the primary functional part of the arrow, and plays the largest role in determining its purpose. Fletching are found at the back of the arrow and provide a small amount of drag used to stabilize the flight of the arrow. They are designed to keep the arrow pointed in the direction of travel by strongly damping down any tendency to pitch or yaw. Ancestors had done a great research in this field, so that

¹ <http://en.wikipedia.org/wiki/Arrow>

there are sufficient descriptions of different type of arrows. A variety of arrows are used to achieve different target.

The arrows are mainly classified into three. They are male, female and neuter. The classifications are under the range of defeating the aims. The male type is able to pierce an object placed at a long distance. The female type is a fast runner and the neuter type is helpful in practicing archery. Again the arrows are classified by the purpose. These classifications vary in each part of ancient India.

Nature of Arrows

Dhanurvēda of Vasiṣṭha refers to arrows as follows-

अतः परं प्रवक्ष्यामि शराणां लक्षणं शुभम् ।

स्थूलं च नातिसूक्ष्मञ्च नोपक्तं न कुभूमिजम् ॥¹

Arrow should not be too thick or too thin. It should also not to be the product of vile land.

हीनग्रन्थिविदीर्णं च वर्जयेदीदृशं शरम् ।

पूर्णग्रन्थि सुपक्वं च पाण्डुरं समयाहतम् ॥¹

¹ Vasiṣṭha's *Dhanurveda samhita* p16

The arrow should be made out of matured pale yellowish reed plants. Odd number of joints like few trim is preferred. Also it should not be weak or split. The reed which is round but hard and which has been grown in a favorable place may be accepted. The arrow should measure a length of two cubits or five *angulas*. In thickness it should be equal to that of the smallest finger. A curved arrow should be made straight. The feathers of cow, swam, brown hawk, peacock, vulture, osprey are excellent for fetching the arrow. Length of these feathers should be six *angulas*, but for arrows of *śarnga* (lurn) bow, feathers of ten *angula* have been recommended. These should be tied strongly with sinew and thread at the rate of four feathers per reed arrow.

Division of Arrows

Arrow heads are known as *phāla* in Sanskrit. The shape of *phāla* is of many kinds. They are -

आरमुखं क्षुरप्रञ्च गोपुच्छं चार्द्धचन्द्रकम् ।

सूचीमुखञ्च भल्लञ्च वत्सदन्तं द्विभल्लकम् ॥

¹ ibid p16

कर्णिकं काकतुण्डं च तथान्यान्यप्यनेकशः ।
फलानि देशभेदेन भवन्ति बहुरूपतः ॥¹

The above verses narrate different type of arrows. The shapes of arrow heads vary according to different regions. As per *Dhanurvēda* they are, *Ārāmukha*, *Kṣurapra*, *Gopuccha*, *Ardhacandra*, *Sūcīmukha*, *Bhalla*, *Vatsadanta*, *Dvibhalla*, and *Kākatunda*. *Ārāmukha* or serrated arrow head is similar to an owl and *Kṣurapra*, razorblade, *gopuccha*, cow's tail, *Ardhacandra*, crescent shaped, *Bhalla*, a spear headed, *Vatsadanta*, teeth of a calf, *Dvibhalla*, two pronged, *Karṇika*, petal of a flower, *Kākatunda*, beak of a crow respectively.

The *Ārāmukha* can cut through the skin, while *Kṣurapra* used for cutting up arrows of the enemy or aiming at his hand. *Gopuccha* is good for general aim *ardhacandra* can cut through enemy's head, neck and bow. The *Sūcīmukha* can pierce the armor of the enemy and *Bhalla* pierces enemy's heart. *Vatsadanta* is used for cutting up the bowstring. *Dvibhalla* is used for entangling enemy's arrow, *karṇika* is used for cutting

¹ *Vasiṣṭha's Dhanurveda samhita* p18

up the arrow made up of *nārāca* (iron) and *Kākatunda* can pierce any unpiercable object. *Gopuccha* is a different type of arrow of which the head is made up of sapless wood and has got a thorn of three *angulas* length fixed at its tip.

Applying poison over arrow head

Ancestors made poisoned arrows to defeat their enemies. They were well aware about making of poisoned arrow heads.

फलस्य पावनं वक्ष्ये दिव्यौषधिविलेपनैः ।
येन दुर्भेद्यवर्माणि भेदयेत्तरुपर्णवत् ॥ ¹

The above verse narrates the method of *Phālāpāyana*. The technique of applying poison on arrowheads is called the *Phālāpāyana*. *Phālāpāyana* is done to harden the edges of the metals fitted with the arrow heads. It is done by the applications of pastes of certain plants on the arrowheads or shafts. These poisonous arrows are able to pierce even unpiercable iron armor of the enemy.

¹ *Vasiṣṭha's Dhanurveda samhita*, p 20. See also *R̥gveda* 4, 75,15,87.6, *Atharva Veda* 4 .6, 5.18.8-15, 5.31.4

The application of juices of poisonous plants was used for making poisonous arrow heads. When the colour of the white red plant turns yellow after receiving rain water on the day of *svāti nakṣatra*, its root becomes poisonous. This root, if applied on the arrow heads acts as fatal for enemies. The best way to recognize the plant is that it trembles always, even when the wind is not blowing¹.

पिप्पली सैन्धवं कुष्ठं गोमूत्रे तु सुपेषयेत् ।

अनेन लेपयेच्छस्त्रं लिप्तं चाग्नौ प्रतापयेत् ॥

शिखग्रीवानुवर्णाभं तप्तपीतं तथौषधम्

ततस्तु विमलं तोयं पाययेच्छस्त्रमुत्तमम् ॥²

The above verses of *Dhanurveda* provide some techniques of *phālāpāyana* (making poisons arrow). The Peepul tree's bark along with *saindhava* (rock salt) and *kuṣṭa* (costus, a medicinal plant) should be mixed with cow's urine. The paste should be smeared over the arrow heads and then it should be heated in fire till it becomes blue in colour like the peacock's neck, then it has the poisonous effect. It should be washed

¹ *Vasiṣṭha's Dhanurveda samhita*, p19

² *ibid* p 20

in water then, and such arrows can pierce the strongest enemy. From this it can be safely concluded that ancestors had tried even to make poisoned weapons to defeat their enemies.

Nārāca* and *Nālika

सर्वं लोहस्तु ये बाणा नाराचास्ते प्रकीर्तिताः ।
पञ्चभिः पृथुलैः पक्षैर्युक्ताः सिद्धयन्ति कस्यचित् ॥ ¹

Nārāca and *Nālika* are the other two important types of arrows.

Nārāca is the name of those arrows which are entirely made up of iron.

Five big feathers remain attached to *nārāca*. It is a very strong type of shaft, only a strong and skilled archer can use it.

नालीका लघवो बाणा नलयन्त्रेण नोदिताः ।
अत्युच्चदूरपातेषु दुर्गयुद्धेषु ते मताः ॥ ²

Nālika are shot through tubular instruments. These arrows can be shot at a great distance from high places and especially useful in the siege craft.

¹ *Vasiṣṭha's Dhanurveda samhita* p 21

² *ibid* p 21

Lakṣya (Aim)

In the texts of *Dhanurveda*, there is an apt reference about the aim also.

Aims are four in number.

लक्ष्यं चतुर्विधं ज्ञेयं स्थिरं चैव चलन्तथा ।

चलाचलं द्वायाचलं वेधनीयं क्रमेण तु ॥¹

The above verse narrates about the aim. The aim is classified into four –*sthira*, *sacala*, *calācala* and *dvayācala*. Firstly the archer should stand still in front of a still object and then practice. If he becomes able to pierce the object in three different ways, then only he will be *sthirabhēdi* (archer- expert in piercing still object).

When the archer stands still and able to pierce an unsteady object under instruction of the teacher, he will be considered as *calabhēdi* (able to pierce



Target

¹ Vasiṣṭha's *Dhanurveda samhita*, p26

unsteady object). When the archer is himself in a moving or walking condition and tries to pierce a steady object, then it *calācala* but this is a very difficult position. When the shooter and his aim both are in moving state and the archer shoots his aim, then he is *dvayacala*. This can be learnt only through a hard labour and practice. Through labour and practice one learns to shoot perfectly and quickly.

One becomes a successful *citrayodhi* and can win battles only through industry. To become a perfect archer one should practice archery only under the guidance of a teacher. Sanskrit texts mention a variety of weapons, the production, teaching methods and the place and time of learning arms in detail. From this we can safely conclude that our ancestors were well aware of not only spiritual but also physical world and the problems of the society life.

SWORD- The royal weapon

Sword is a long, edged piece of forged metal, used in many civilizations throughout the world, primarily as a cutting or thrusting weapon. Sword fundamentally consists of a blade, a hilt, and a cross

guard, typically with one or two edges for cutting, and a point for thrusting¹. In ancient times, sword was considered as the Royal weapon. In *Dhanurveda* sword is attributed to *Kṣatriyas*. खड्गं वै क्षत्रियाय च ।² According to the *Agnipurāṇa*, sword is born from the *yāgāgni* (sacred fire) of Lord Brahma.³



Sword

¹ <http://en.wikipedia.org/wiki/Sword>

² *Vasiṣṭha's Dhanurveda samhita* p5

³ *Dhanurveda* p116

Divisions of swords

Ancient scholars divided sword by its shape, length, weight, colour, smell and the like. Gargācārya, Parāśara, and Kaśyapa had classified sword by its length¹. *Auśanasa Dhanurveda* classified sword into four by its shape. He says:

अग्रपृथुर्मूलपृथुः संक्षिप्तमध्यः समकायश्चेति खड्गाश्चतुर्विधाः वेदितव्याः ।

पिण्डितः पत्र इति तेषां द्विविधः कायो भवति एकधारो द्विधारश्च ॥²

From the above statement of *Auśanasa Dhanurveda* one can understand that sword is classified into four by its shape. i.e. *Agrapr̥thu*, *Mūlapr̥thu*, *Samkṣiptamadhya*, *Samakāya*. The *Agrapr̥thu* type is big shaped sword, *mūlapr̥thu*'s width is less than that of its edge. In other words its sharpened edge is very thin and narrow. *Samkṣiptamadhya* has a narrow middle portion than its edge. *Samakāya* has same width in its all parts.

¹ *Kalāvidyāvivarāṇam* p 231

² *Dhanurveda* p 117

Besides this classification, there are many other types of swords, they are *śūlāgra*, *samāgra*, *mandalāgra*, *gojihvāgra*, *paraśvāgra*, *kutilāgra* and the like. The edge of some sword is in round or *śūla* shape, which is considered as the best type. The shape of the sword blade must be the shape of cow's tongue or the bamboo leaf.

Auśanasa Dhanurveda also classified sword into three by its length. They are *laghu khadga*, *madhyama khadga* and *uttama khadga*. Again these three types are divided into five varieties. The classification is based on the size of the sword. *Kriya*, *maraka*, *māra*, *mārgaṣṭha* and *citratālita* are the divisions of *laghu* type swords. *Sukhasancāra*, *sukhasannāhya*, *madhyama*, *atimadhyama* and *uttama* are the divisions of the *madhyama* type swords. *Durdharṣa*, *vijaya*, *sunanda*, *nandana* and *sreṣṭha* are the divisions of the *uttama* type of swords.¹

शतार्धमंगुलानां तु श्रेष्ठः खड्गः प्रकीर्तितः ।

तदधो मध्य संज्ञाकं ततो हीनं न धारयेत् ॥ ²

¹ *Dhanurveda* p117

² *Kalāvidyāvivaraṇam* p 231

This verse narrates the acceptance of good sword. According to the length, sword is also classified into three. If the sword has a length of 50 *angulas*; it is very precious and famous. This sword is considered as *uttama* (best). If the length of the sword is about 25 *angulas*, it is not good and it must be avoided. The length in between 25 to 50 *angulas* is considered as the *madhyama* or second category.¹ According to Gargācārya, the sword which has a length of 50 *angulas* is the best one and that of the length in between 25 to 50 *angulas* is the *madhyama* or secondary type. The sword which has a length below 25 *angulas* is *adhama* or the bad one.²

According to Parāśara *muni*, if the length is 40 *angulas*, that type is the best sword and if length is 30 *angula*, it is *madhyama* (secondary) type. If the length is 25 *angulas*, it is *adhama* type of sword.³ From the above references it can be concluded that the sword must have at least a length of above 25 *angula*.

¹ *Kalāvidyāvivaraṇam* p 231

² *Ibid* p231

³ *Ibid* p231

तस्मान्न छेदयेत् खड्गं आत्मने शुभदं यतः।

निखर्षणैः प्रमाणस्थः कार्यो येन शुभो भवेत् ॥¹

In the above verse, Kaśyapa says that for adjusting the length, the sword should not be cut. It is not proper. If it is needed to adjust the length, use the whetstone of the Blacksmith. In *Bṛhatsamhita* there is a discussion about the sword's length. If the owner of the sword cut the sharpened end of the sword, it may cause the death of his mother. And if he cut the back end of the sword, it causes his own death. The *Agnipurāṇa*, *Bṛhatsamhita*. *Parāśara samhita* also warn that never use sword for a mirror and never took the sword from the cover without any purpose².

According to the smell, the swords are again classified. If the sword has the smell of ghee, jasmine flower, or rutting juice, it is considered as the *Uttama* (best) type of sword. The sword with the smell of the fat in flesh muscle or cow's urine is the *adhama* (worst) type. Such type of sword must be avoided. The sword having the smell of blood, salt etc. is also not good.

For empowering the performance of the weapon some special

¹ *Kalāvidyāvivaraṇam* p 231

² *Ibid* p 231

methods are used while manufacturing time. This is called *pāyana kriya*.

Some methods are mentioned here

क्षारे कदल्या मथितेन युक्ते दिनोषिते पायितमायसं यत् ।

सम्यक् छितं चाश्मनि नेति भङ्गं न चान्यलोहेष्वपि तस्य कौण्ठ्यम् ॥¹

The above verse of *Bṛhatsamhita* narrates the *pāyana* of sword.

The ashes of plantain are mixed with butter milk and preserve it for one day and night. Then the ignited sword from the furnace should dip into the butter milk and plantain ashes mixed liquid. Such sword is highly hard and is considered as good.²

Considering the mark on them, swords are again classified as best and bad. The sword having the length of *viṣamangala* and the mark of flower of *kūvalam* in Malayalam, *saravam*, *ātapatram*, *kundalam*, lotus flower is very auspicious. According to *Varāhamihira* the marking in the sword like the eagle, kite etc. is not good.

अंगं रूपं तथा जातिर्नेत्रारिष्टेति भुमिका ।

ध्वनिर्मानमिति प्रोक्तं खड्गज्ञानाष्टकं शुभम् ॥³

¹ *Dhanurveda* p 125

² *Kalāvidyāvivarāṇam* p 232

³ *Dhanurveda* p 127

The above verse of *Yuktikalpataru* deals with the eight *guṇas* of sword. They are *anga*; *rūpa jāti*, *netra*, *ariṣṭa*, *bhūmi*, *dhvani* and *māna*.

Anga

अभिन्ने दृश्यते यादृक् विभिन्न घटिते तथा ।

यदेव दृश्यते चिह्नं तदङ्गं संप्रचक्षते ॥¹

The above verse of *Yuktikalpataru* narrates the *anga* quality of sword.

The *anga* is the marking or symbol which spread all parts of the sword.

Lohārṇava mentions that about hundred types of *angas*.² *Çāndī*, *savarṇa*, *hāthi*, *eraṇṭa*, *damana*, *sthūla* , *anga*, *kṛṣṇa*, *aruṇa*, *śveta*, *kamala*, *gadā*, *tila*, *agni*, *pippalī*, *granṭhi*, *sṭhira*, *titara*, *māla*, *jīraka*, *bhramara*, *ūrdhva*, *mirca*, *sarpa*, *khota*, *mora*, *kajjala*, *madhu*, *kṣudraka*, *makhī*, *tuṣa*, *jau*, *cāvla*, *alāsī*, *saraso*, *simha*, *tanṭula*, *gau*, *śīrā*, *śvalinga*, *nakha*, *magaramaccha*, *akṣi*, *keśa*, *upala*, *dronī*, *kāka*, *kapāla*, *pankha*, *tuvarī*, *bimbī*, *phala*, *puṣpa*, *nīla*, *rakta*, *baça*, *lahasuna*, *sumāna*, *jimgī*, *śamī*, *rohita*, *proṣṭhī*, *māriṣa*, *markava*, *khura*, *bijalī*, *meṣa*, *adri*, *gujjā*, *marjārika*, *ketakī*, *mūrva*, *vajra*, *kalāya*, *campaka*, *bālā*, *vaṭa*, *bāmsa*, *śālavr̥kṣa*, *jyeṣṭī*,

¹ *Dhanurveda* p 128

² *ibid* p129

jālā, pipīlikā, bala, raja, kuṣmāṇṭa, roma, spr̥hi, karkandhu, bakula, rasāla, mahiṣa, svacchāṃga, ṛtu and *cakra* are the *angas*¹.

Rūpa (colour)

नीलः कृष्णः पिशङ्गश्च धूम्रश्चेति चतुर्विधः ।
वर्णप्रकर्षः खड्गानां कथितो मुनिपुङ्गवैः ॥²

Rūpa is the colour of the sword. It is divided into four, i.e. *nīlam* , *kṛṣṇa*, *piśangam*, and *dhūmram*. Mixing of two colours is known as *sankaram*. The mix of three colours is known as *triparam* and that of four colours is known as *caturam*.

Jāti (class)

ब्राह्मणः क्षत्रियो वैश्यः शूद्रश्चेति चतुर्विधः ।
जातिभेदो विनिर्दिष्टः खड्गानां मुनिपुङ्गवैः ॥³

The above verse of *Dhanurveda* narrates the different *jāti* of sword.

The sword is divided into four *jāti* (cast) - *Brāhmaṇa jāti*. The Brahmins used the sword which have the good voice, colour, *jāti*, *rūpam* etc. this type of sword is called *Brāhmaṇa khadga* (sword). *Brāhmaṇa khadga*

¹ *Dhanurveda* p 129

² *Ibid* p 128

³ *Ibid* p 129

reflects sun light and which may cause the fire in grass. But the user will have no effect on the heat. This type of sword is the best. The sword which has more strength and is in smoke colour and hard voice is known as *Kṣatriya jāti*. *Vaiśya jāti* is the sword with blue or black colour and this is very common in earth. Actually this type of sword is used in day to day purposes. The colour of *Śūdra jāti* sword is like the black cloud. The wound by this sword causes not much pain. Actually this sword is not in used in war. From the above gradation of the sword it can be assumed that weapons for the lower communities were not much useful. Actually the first two types of swords, Brāhmaṇa and Kṣatriya jāti were useful for fight. The other two types are for daily purpose. Ancestor's attitude towards cast is revealed here. Ancestors have a tendency to achieve good weapons and equipments for their own purpose and that of with less quality were given to the lower communities.

Netra

चक्रं पद्मं तथा खड्गो डमरुर्धनुरङ्कुशः ।

छत्रं पताका वीणा च मत्स्यलिङ्गध्वजेन्दवः ॥

कुम्भः शूलश्च शार्दूलः सिंहः सिंहासनं गजः ।
 हंसो मयूरजिह्वा च दशनः खड्ग एव च ॥
 पुत्रिकाः चामरः शैलः पुष्पमाला भुजङ्गमम् ।
 त्रिंशदेतानि नेत्राणि खड्गानां कथितानि वै ॥¹

The above verses of *Dhanurveda* narrate netra quality of sword. *Netra* is another important marking in the sword. The *netra* type is not spread all part of the sword, which is seen only in one place on the sword. According to *Dhanurveda* there are thirty types of *netra* in the sword they are *cakra*, *padma*, *gada*, *śankha*, *damaru*, *dhanus*, *aṃkuśa*, *çatra*, *patāka*, *vīṇa* and the like.²

Ariṣṭa (marking)

Ariṣṭa is a type of marking in the sword. *Ariṣṭa* also have thirty classifications. They are *chidram*, *kākapadam*, *rekhā*, *bhinna*, *bhekam*, *mūṣika*, *viṭāla*, *śrkara*, *nīli*, *maśaka*, *bhṛnga*, *sūcaka*, *trivindava*, *kālika*, *dārī*, *kapota*, *kāka*, *kharpara*, *śakalī*, *krotī*, *kuśa*, *putraka*, *jālika*, *karāla*, *kanka*,

¹ *Dhanurveda* p 129

² *ibid* p129

khajura, sṛṅga, puccha, khanitraka, hala, śūrpa, batarī and the like¹. The presence of *Ariṣṭa* in a sword is good. But two types of *ariṣṭa* in a sword is better. According to the scholars seven types of *ariṣṭas* are possible in a sword.²

Bhūmi

Bhūmi is another important quality of the sword. There are two major divisions in *bhūmi*. i.e. *divya* and *bhauma*. The *divya* types have *prasastāṅga* and good *netra* and also have good voice. The *bhauma* type is very thick. *Bhauma* again classified into two *vridhaharita kalam* and *sudham*. This is mentioned in *Vṛdhahārīta samhita*.³

पूर्व महेशेन विषाणि यानि भुक्तानि तेषां पतितास्तु बिन्दवः ।
यस्मिन् प्रदेशे स एव देशः कालायसामाकरतां जगाम ॥
पुरामृतं क्षीरसमुद्रमध्याद् उत्पाद्य संगृह्य ययुः सुरेन्द्रः।
तद्विन्दवो यत्र निपेतुरेष शुद्धायसामाकरतां जगाम ॥⁴

¹ *Dhanurveda* p 129-130

² *Kalāvidyāvivaraṇam* p 234

³ *Ibid* p 235

⁴ *Ibid* p235, see also *Dhanurveda* p 154.

The above verses deal with the origin of sword in a mythical way. There is a belief that, while lord Śiva drunk the *kālakūdam* poison, some drops of the poison fell on some places in the earth and they in turn became hard iron ore. At the time of churning the milky ocean some drops of *amṛta* fell on some places and that is the best type of iron, which has the colour of camphor.

वाराणसीमगधसिंहलभूमिभागे नेपालभूमिषु तथाङ्गमहीप्रदेशे ।

सौराष्ट्रिकेन्यतरधन्यमहीविभागे शुद्धायसां कृतिवराः प्रवदन्ति जन्म ॥¹

From the above verse one can understand that the ancient people had a clear and sufficient geological availability of core of iron. They know very well about the mining and ore of metal. The above referred verse mentions the places where iron ore are available in India, Srilanka and Nepal. From it, it can be known that Vārāṇasi, Magadha, Simhala (Srilanka), Nepal, Angadēśa, Saurāṣṭra are the places of good iron ore. By using the iron ore from Vārāṇasi for making sword, it should be more hard and easy to use. Iron from Magadha is also very hard and using iron from

¹Dhanurveda p 154

Nepal for making the sword helps to maintain good shape. Swords from Kalinga are of much weight and size. There are four type swords made in Srilanka. First type is very nice shape, other one is heavy. Third type sword is very hard and the last one is easy to handle. ¹

***Dhvani* (echo)**

The *dhvani* (echo) is one of the classification criteria (*guṇa*) of the sword. Here echo means the voice of the sword. Nāgārjuna muni mentions eight types of *dhvani*. They are-

हंसकांस्ये तथा मेघः ढक्का काकश्च तन्त्रिका ।
गर्दभः प्रस्तरैश्चैव ध्वनिरष्टविधःस्मृतः ॥ ²

Hasta, kākāsya, megha, dakka, kāka tāntric (string of veena), *garddabha* (donkey), *aśman* (stone) are the main divisions of *dhvani*. The voice of the sword is similar to above noted voices. If the sword has the voice of the first four, i.e. *hamsa, kāmsya, megha, and dakka* type of sword is good.

¹ ibid p 155

² *Dhanurveda* p 156

The sword which has the voice of *kaka*, *tāntric*, *garddabha* and *aśman* (stone) are not good.¹

Māna

The next classification criteria of *khadga* are *māna*. The word *māna* mentions weight of the sword. By the weight, the sword has two major divisions-*uttama* and *adhama*². A large sword having less weight is considered as good and a small sword having much weight is considered bad. The quality of a sword is measured in *Kalpataru*, less weight, length, width and strength and the like are the qualities of a good sword. Shortness and high weight and so on are the bad qualities.

Usage of sword

Some of the ancient *Dhanurveda* texts narrate the sword demonstrations. *Nītiprakāśikā*, *Mahābhārata*, *Mānasollāsa*, *Bharatabhāvadīpatīkā* and the like have given instructions about the usage

¹ *Dhanurveda* p156

² *ibid* p157

of sword. *Bharatabhāvadīpatīkā* gives instructions about the usage of swords as follows.-

मण्डलाकारतः खड्गभ्रमणं भ्रान्तमुच्यते
 तदेव बाहुमुद्यम्य कृतमुद्धान्तमीरितम् ।
 भ्रामणं स्वस्य परितः खड्गस्याविद्धमुच्यते
 परप्रयुक्तशास्त्रस्य वारणार्थमिदं त्रयम् ॥ ¹

The above quoted verses provide a clear picture about the usage of the sword. Using the sword in an orbital shape is known as *bhrānta*. Using the sword in *bhrānta* type in the upward direction is known as *udbhrānta*. Using the sword in *bhrānta* type in all direction is known as *āviddham*. The above mentioned types of usage are for blocking enemies sword beat.

According to *Nītiprakāśikā*, there are thirty two types of usage of sword. They are *bhrāntam*, *udbhrāntam*, *āviddham*, *āplutam*, *viplutam*, *sritam*, *samyātam*, *samudīrṇam*, *nigraham*, *pragraham*, *pādāvakarṣam*, *sandhānam*, *śirobhramaṇam*, *bhujabhramaṇam*, *pāśam*, *pādam*, *vibandham*, *bhūmi*, *udbhramaṇam*, *gatam*, *pratyāgatam*, *ākṣēpam*, *utdhānakam*, *plutam*, *lākhavam*, *sauṣtam*, *śobha*, *sthiratvam*,

¹ *Dhanurveda* p164

*driṭamuṣṭitvam, tiryak pracaraṇam, and urdhvapracaraṇam.*¹ Attacking techniques are generally known as *aplutam*. Touching the body of the enemy by using the edge of the sword is known as *prasrta*. *Gaḍitam* is that of beating the enemy by using deceitful method. Using the both sides of two enemies is known as *parivartam* and that of the usage of the enemies back part is known as *nirvāṇa*. *Sampātam* is the another type of usage of sword. Here the soldiers beat towards by using sword in equal speed and strength. In *sampāta* one person may get more strength or victory which is known as *samuderṇṇa*. *Bhrānta* is the usage of sword in to the enemy's body part. *Kauśika* is the usage of irregular paths.

CHURIKA (LONG SWORD)

The *Churika* is the Sanskrit name of *urumi (Malayalam)* and it is a long sword made of flexible steel; sharp enough to cut into flesh, but flexible enough to be rolled into a tight coil. Originated in Kerala, it was popular in the North Malabar coast of Kerala state, India, and is often mentioned in the ballads of

¹ *Dhanurveda* p159-160

the region. It was later spread to Rajasthan and Punjab.¹ The *Churika* is still used in Indian martial arts, particularly in *Kalaripayat*. It was practised as a final device in the training because of the dangerous nature. The weapon is called *urumi* in northern *Kalaripayat* and *cuttu vāl* in the southern style². The word *cuttu vāl* is derived from the Malayalam words *cuttu* (coil/spin) and *vāl* (sword) and thus means coiled sword. The sword is a flexible band of steel three-quarters to one inch in width, and long enough to reach from the fingertip of one hand to the finger tip of the other hand when the hands are held outstretched (usually about four to five and a half feet). It has a small handle with a cover. Often there are multiple belts on a single handle, which makes it more dangerous to the opponents and wielders alike. In modern times it is often made from used band-saw blades. Ability and skill are much needed to master this weapon rather than strength or aggressive power. Twirling and controlling the *Churika* is a difficult and dangerous task, and is therefore taught only to the best pupils of the *kaḷari*. Incorrect use of this flexible sword can result in the wounding of its wielder, and great concentration is required during use, even by experts.

¹ <http://en.wikipedia.org/wiki/Urumi>

²ibid



***Churika* battle**

The *Churika* is most useful against multiple opponents. When not in use, the *Churika* is worn around the waist like a belt. Since women often wore it in belts. It is a convenient weapon for them to carry. Uṅṅiārca, one of the heroines of the ballads of the Northern Malabar coast was said to have been an expert at wielding the *Churika*. It was also a good weapon for duels since thrusting with the point of the sword was not permitted in duels in South India. In ancient India

Churika was not used in battle. The books *Nītiprakāśika*, *Mānasollāsa*, *Aparājitapricha*, and the like have narrated the weapon *Churika*¹.

छुरिकालक्षणं वक्ष्ये यदुक्तं परमेश्वरैः ।

कौमारी चैव लक्ष्मीश्च शंखिनी तुन्दका तथा ॥

पापिनी शुभगा लक्षा षडङ्गुलादिकोद्भवा ।

द्वादशान्तिमाङ्गुलान्यङ्गुलमानं प्रशस्यते ॥²

The above verse of *Aparājitapriccha* narrates quality of *Churika* into seven. They are *kumāri*, *Lakṣmi*, *śanghinī*, *tundakā*, *pāpinī*, *śubhagā*, and *lakṣa*. The sword has a length of six *angula* which is considered as *kumāri* and that of seven *angulā* *Lakṣmi*. The sword having a length of eight *angula* is *śanghinī* and that of nine *angulā*, *tundaka*. Swords, a length of ten *angulā*, *pāpinī*, eleven *angula*, *śubhaga*, twelve *angulā*, *lakṣa*.³

According to *Mānasollāsa*, *māntrika* is the best type of *Churikā*.⁴ The total length or measurement of the *Churikā* is calculated and it is named as

¹ *Dhanurveda* p166

² *ibid* 166-167

³ *ibid* p 167

⁴ *Ibid* p 167

āyu, *Lakṣmi* and *mṛtyu*. *Āyu* and *Lakṣmi* type *Churikā* are considered as useable and the third one *mṛtyu* should be avoided.¹

From the above information it may be safely concluded that ancestors were well aware about *Churikā* battle and its manufacturing. The classification of *Churika* is different from each region of India. But there is no clear evidence of the usage of *Churika* in battle. *Churika* was used as a personal weapon against a group of enemies.

KUNTA* – The weapon of *Vaiśya

The *kunta* (spear) is attributed to *Vaiśya* in Sanskrit archery texts.² From the already quoted verse in *Dhanurvēda*, it can be realized that *kunta* was particularly for the *Vaiśya* community. The weapon includes a long stick and sharpened blade. The blade fixed on the one end of a long stick is called *Kunta*. Ancient archery texts also narrate *kunta* and its divisions. *Auśanasa Dhanurveda*, *Nītiprakāśika*, *Śukranīti*, *Arthaśāstra of Kautilya*, *Rājaviṅaya* and *Mānasollāsa* have discussion about *Kunta*.

¹Ibid p 167

² *Vasiṣṭha's Dhanurveda samhita* p 5

According to *Auśanasa Dhanurveda*, bamboo and sandal are good for making kunta's staff. If the length of the staff is seven *hasta*, it is considered as the best one and if the length is 6 *hasta* it is the *madhyama* type and if it is 5 *hasta*, the *adhama*



Kunta

category. Two types of metals are used to make the blade of Kunta. Metal from *Puṣkalāvarta* and *Vinoṭhi* are used for making the blade. Metal from *Vinoṭhi* is very hard and that of *Puṣkalāvarta* is soft.¹ Soft metal is used to make the knife and hard metal is used for making the edge. Ancestors identified soft and hard metals from the sound. Soft metal produces high frequency of sound.²

According to *Śukranīti*, *Kunta* should have a length of ten *hasta* and the blade should be made of iron.³ According to *Śukrācārya* the length of the long

¹ *Dhanurveda* p 94

² *Ibid* p 96

³ *Ibid* p 99

staff must be seven *hasta*. Sandal, bamboo etc. are good for making the stick. If the length of the stick of *Kunta* is seven *hasta*, it is good and if six, it is called *madhyama* type. If the length is about 5 *hasta*, it is called *adhama* type. The blade which is fixed at the end of the stick is made up of iron. And iron from China is considered good for making the blade. The iron from China is said to be very hard.

The shape of the blade should be like the leaves of bamboo and such other leaves. The knife is classified under its measurement of 16 *angula* length, 2 *angula* width and thickness must be of two *yava*. This type of blade is the *Uttama*. The *madhyama* (second) type is that of 14 *angula* of length 1.5 *angula* of width and one *yava* of thickness. The *adhama* (third) type is that of 12 *angula* of length one *angula* of width and 0.5 *yava* of thickness. Good voice, softness, pleasant smell, good colour and the like are the qualities of the blade or tip of a good *Kunta*.¹ There is a belief that if the voice of the *Kunta* is similar to the voice of a golden vessel, that weapon is good.² The colour of this weapon should be similar to the colour of the moon, which is considered beneficial in war.

¹ *Dhanurveda* p 96

² *Kalāvidyāvivaraṇam* p238

According to the variation of measurement, *Kunta* is classified to three, *Uttama*, *Madhyama* and *Adhama*. The weight of a *Kunta* is about 60 *pala*, which is considered as the *Uttama* (best) type and if the weight is about 50 *pala*, it is considered as *madhyama* (second) type. If the weight is about 40 *pala*, it is considered as *adhama* (bad) type.

According to *Nītiprakāśika*, *kunta* is made up completely of metal. *Kunta* of a length of five hasta is considered as good.¹ According to *Rājaviṅaya*, *Kunta* should be 11 *hasta* of length, 9 *hasta* long *śārbala*, 7 *hasta* long *bhala* and 5 *hasta* long *Kṣēpiṇi*.² According to Kautilya's *Arthaśāstra*, the face of *Kunta*, *śakti*, *prāsa*, *hataka*, *bhintipāla*, *śūla*, *tomāra*, *varāhakarnaknaya*, and *karpana* must be very sharp. *Kunta* should be made up by hard metal. The tip of *kunta* must be like the leaves of bamboo or similar trees. It must be a length of 4 *hasta* and *praśa* must be a length of 19 *angula*.³

According to Kautilya, *Kunta* having a length of 7 *hasta* is good and that of 6 *hasta* is *madhyama*. The *Kunta* having a length of 5 *hasta* is considered as *adhama* type. According to *Mānasollāsa*, *Kunta* is of three different types. The cavalry used *Kunta* having a length of 7 *hasta*. *Kunta*

¹ *Dhanurveda* p93

² *ibid* p 99

³ *ibid* p 99

having a length of 6 *hasta* is used by soldiers on horse. *Kunta*, with a length of nine *hasta* was used the soldiers on elephant.¹

PRĀSA

Prāsa is a weapon similar to *kunta*. This weapon is shorter than *kunta* in size. Generally a *Prāsa* is of a length of seven *hastas*.² The staff is covered with metal. One end of the staff is sharpened. So both ends of *Prāsa* can be used to attack or to throw.

ŚŪLA

Śūla is a weapon similar to *kunta*. The word *śūla* denotes *Trisula*.³ *Rāmāyaṇa*⁴ and *Mahābhārata*⁵ have narrations about *Triśūla*. The *śūla* of Kumbhakarna is said to be made-up of iron and has a weight of more than thousand *palas*. In *Nītiprakāśika*, *Triśūla* is named as *Pināka*. Its sharpened edge is made-up of metal.⁶

¹ *Dhanurveda* p100

² *ibid* P108

³ *ibid* p 109

⁴ *Rāmāyaṇa Yuddhakāṇḍa* 101/30

⁵ *Mahābhārata khatolkhaca vaḍha* 179/57

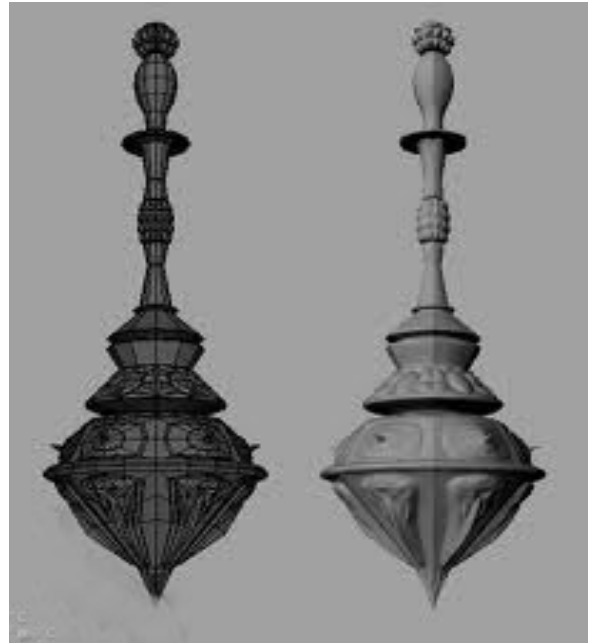
⁶ *ibid* p 109

ŚAKTI

Śakti is a weapon similar to spear used in ancient times. According to the *Auśanasa Dhanurveda*, bamboo, *devataru*, metal or ivory are used to make the long stick of śakti. By the length of the stick, śakti is classified into three- *uttama*, *madhyama* and *adhama*. If the length of the stick is five *hasta*, it is good and that of four *hasta*, it is considered as *madhyama* type. If the length of the stick is about 3.5 *hasta* it is considered as *adhama* type.¹

GADĀ - The weapon of Śūdra

In ancient India *Gadā* type of weapon is attributed to the Śūdra community. The *Gadā* is seen used from a very ancient time. Ancient epics narrate *gadāyuddha*. *Rāmāyaṇa* and *Mahābhārata* provide a clear picture



Gadā

¹*Dhanurveda* p 104

about *gadāyuddha*. In *Rāmāyaṇa*, Hanuman is said to have used *gadā* in battle. *Mahābhārata* also narrates *Gadāyuddha* between Bhīma and Duryodhana. Almost all of our ancient books have narrations about *gadā*. *Agnipurāṇa*, *Śukranīti*, *Nītiprakāśika*, *Auśanasa Dhanurveda* and the like deal *gadā*. In *Agnipurāṇa* 20th *mandala* deals with *gadāyuddha*.¹ *Mānasollāsa* also narrates *gadāyuddha*.²

According to *Auśanasa Dhanurvēda* *gadā* classified in to three- *uttama*, *madhyama* and *adhama*. The weapon having a length of 50 *angulas* is *uttama* and that of 40 is *madhyama* type. The *gadā* having a length of 30 or less is *adhama*.³ *Auśanasa Dhanurveda* has again classified *gadā* by its weight. The *gadā* having a weight of 1000 *pala* is *uttama* and that of 800 *pala* is *madhyama*. The *gadā* having a weight of 600 *pala* is considered as *adhama* type⁴.

राजविजये-

पञ्चाशदङ्गुलो दण्डो दलेष्वकाङ्गुला गदा ।
दलानि षोडशैव स्युः कलशोङ्गुलिमात्रकः ॥⁵

In *Rājaviṅjaya*, *gadā* having a length of 50 *angula* is considered good.

¹ Ibid p 173

² Ibid p 177

³ *ibid* p 173

⁴ *ibid* p 174

⁵ *Lakṣaṇa prakāśa, nāna yudha lakṣaṇam* by Vīra mitra p325, see also *Dhanurveda* p174

According to Śukrācārya this weapon had eight angles. The *gadā* is the weapon of lord Viṣṇu. The *gadā* made up of both wood and iron. Soldiers used *gada* made up of iron and wood as per their health to bear the weapon. *Mandalāghātam*, *Pratyāghātam* is some methods of *gadāyuddha*. In *gadāyuddha* the soldier who revolving to his opponent or enemy is called *Mandala*. The soldier fought his enemies in a way of face to face is called *gatam*. The soldier changing his position from face to face in attack is called *Pratyāghātam*. Besides these three, there are a number of tricks in *gadāyudha*. They are *astra yantra*; *paridhāvana*, *abhdrava*, *ākṣēpa*, *avasthāna*, *savigraha*, *parivartana*, *samvartana*, *avapḷuta*, *upapḷuta*, *upanyasta*, *apnyastha*, *samthyāga*, *avadamśa*, *varāhodhutha*, *urolalātāghāta* etc.

शुक्रनीतौ –

अष्टास्त्रा पृथुबुध्ना तु गदा हृदयसम्मिता ॥¹

According to Śukranīti *gadā* had eight faces.

मानसोल्लासे-

गदां लोहमयीं कुर्याद् दारुसारमयीं तथा ।

घनेन निर्मितां वापि रत्नकाञ्चनभूषिताम् ॥

स्थूलोदरीं च स्थुलाग्रां समदन्तां परां शुभम् ।

¹ Dhanurveda p174

प्रगृह्य मूलदेशे तु खड्गवद् दृढमुष्टिना ॥
 भ्रामयेत् करयुग्मेन करेणैकेन वा पुनः।
 विचरेन्मण्डलैश्चित्रैः सव्यैश्चापसव्यकैः॥
 गतागतैश्च गोमूत्रैरुपप्लवन्नत्प्लुतैरपि ।
 पातयन् परघातांश्च प्रहाराशाश्च दर्शयेत् ॥
 उपन्यस्तैरपन्यस्तैरावर्तपरिवर्तनैः ।
 दर्शयेत् तु गदाविद्यां विनोदाय महीपतिः ॥¹

The above verses of *Mānasollāsa* narrate *gadā* and a variety of its application and manufacturing. According to *Mānasollāsa* *gadā* is made by wood or metal. Some times *gadā* is ornamented by diamond or such other precious stones. One side of it is big and the other side is sharp ended like a sword. Middle portion of the *gadā* is used to handle it. One can hold *gadā* either by one or both hands. A high physical power is needed to use the *gadā*.\

महाभारते-

मण्डलानि विचित्राणि गतप्रत्यागतानि च ।
 अस्त्रयन्त्राणि चित्राणि स्थानानि विविधानि च ॥
 परिमोक्षं प्रहाराणां वर्जनं परिधावनम् ।
 अभिद्रवणमाक्षेपमवस्थानं सवीग्रहम् ॥
 परिवर्तनं संवर्तमवप्लुतमुप प्लुतम् ।

¹ *Dhanurveda* p177, see also *Mānasollāsa bhāga 2, anga1 vimśati 4*

उपन्यस्तमपन्यस्तं गदायुद्धविशारदौ ॥¹

The above verse of *Mahābhārata* narrate the different types of *gadāyudha*. *Mandala*, *Gātha*, *pretyāgātha*, *astra yantra*, *paridhāvana*, *abhidravana*, *ākṣēpa*, *avasthāna*, *avigreha*, *parivarthana*, *samvartana*, *avapṛuta*, *upapṛuta*, *upanyasta*, and *kauśikan* are the main types of *gadāyudha*.

DAṆḌA (stick)

The *Daṇḍa* (stick) is a weapon, which is very similar to *gadā*. Soldiers of a low rank in the army used *Daṇḍa* (stick).



Daṇḍa

Daṇḍa, *parikha* or *mudār*

etc. are used by soldiers in battle. *Gadā* and *daṇḍa* are similar in shape. The only difference is that *gada*'s one end is in sphere shape. *Atharva Veda*, *Rāmāyaṇa* and *Mahābhārata* have references about the usage of *Daṇḍa* in battle. In *Rāmāyaṇa*, soldiers of Sugrīva used *Daṇḍa* against demons. *Śāntiparava* of

¹ *Mahābhārata śalyaparvam adyāya 47*, see also *Dhanurveda* p 178

Mahābhārata narrates *Daṇḍa*. According to Mahabharata lord Śiva gave *Daṇḍa* to lord Viṣṇu. Then Viṣṇu gave *Daṇḍa* to Angiras and Angiras gave it lord Indra. Marīca got this weapon from Indra and he gave it to Bhṛgu. Bhṛgu gave *Daṇḍa* to Ṛṣi and Ṛṣi gave it to Lokapāla. He gave it to Kṣupa and finally it reached Manu.¹ *Ākāśabhairava*, *Aparājitapṛcchā* and *Nītiprakāśikā* narrate *Daṇḍa* with equal importance of other weapons². *Nītiprakāśika* deals with *Daṇḍa*'s shape. According to this book, one end of *Daṇḍa* is a little bigger than the other end. And one end is covered with a metal ring. *Nītiprakāśikā* further narrates four type of usage of *daṇḍa* in battle³. According to mythology *Daṇḍa* is considered as the weapon of lord Yama⁴.

War strategy

In all our ancient Sanskrit texts there are descriptions of various kinds of military formations known as *vyūha*. From *Aṭharvavēda* we got first the technique of *vyūha racana*. *Aṭharvavēda* discussed about *sarpa vyūha racana*.⁵ Kautilya's *Arthaśāstra*, *Agnipurāṇa*, *Viṣṇudarmottarapurāṇa*, *Vīramitrodaya*, *Śukranīti*, *Dhanurvēda of Vasiṣṭha* had detailed discussions

¹ ibid p 180

² ibid p 180

³ *Dhanurveda* p181

⁴ ibid p 181

⁵ *Dhanurveda* p243

about *Vyūha racana*.¹ The major *vyūhas* are in the shape of *padma*, *cakra*, *ratha*, *sarpa*, *garuda*, *simha* and so on. This was the duty of the captain of the army to arrange the soldiers in various troupes for the victory. *Mahābhārata* has discussed such *vyūhas* in full detail.² *Garudavyūha*, *Sarpavyūha*, *Śakatavyūha*, *Padmavyūha*, *Cakrayūha*, *Simhavyūha* and *Agnivyūha* are some important military formation in the war field. In *Rāmāyaṇa* Rāma arranged his armies in the form of *Garudavyūha* to defeat Rāvaṇa.

Different Army Formations

The greatest virtue of the *Kṣatriyas* is to fight in the battle and die. The most disgraceful for him is the death through disease and physical ailment. Various kinds of army formations are discussed in the texts of *Dhanurveda*. Some of them may be discussed in the next sections.

¹ *Dhanurveda* p243

² *Ibid* p243

Military Array

Each soldier, placed in the middle and having names which starts with *yuvasvara* would come forward and fight. The king should keep two groups of armies on each side of him and one group at his back. One group of army should remain far and move here and there (mainly of vigilance).¹ According to *svarodaya śāstras*, certain alphabets in association with vowels turn into *yuvāsvara*. Person whose name begins with *yuvasvara* plays a significant role in winning the battle.²

Staff Array

In *daṇḍa* array, or staff like array, the commander-in chief remains in front, army –chief stays at the back. The king stands in the middle and has elephants on his both sides. Horses stand on each side of the elephants and lastly the infantry onside of the horse. If the enemy is all around then *daṇḍavyūha* should be created.³

¹ *Vasiṣṭha's Dhanurveda samhita* p66

² *Vasiṣṭha's Dhanurveda samhita* p 66

³ *Ibid* p 67

Śakata (Car) array

In *śakata* or carriage array, a small part of the army stay at the front and large part at back. So as the car array give in a shape of vehicle. If there is apprehension of danger at the back then *śakata* or car shaped army formation can be arranged.¹

Varāha array

In *Varāha* or boar shaped array, a small group of army stays at the front and at the back, but remains a bigger number in the middle. If the danger is on the side ways, then *Varāha* or garuda shaped array is prescribed².

Garuda array

Garuda array or bird array has almost similar arrangements as Varaha. The only difference is that it has greater number of armies in the

¹ *Vasiṣṭha's Dhanurveda samhita* p 67

² *ibid* p 68

middle. If the danger is both from right and left sides, then Varaha or garuda array should be arranged.¹

Ant array

A few armies should be take part in the battle and the major part should move everywhere for vigilance. The cavalry should fight on the plain. For fighting in the water one may ride the elephant, boat or *tumbi*. The infantry can fight with the help of gun or bow and arrow after hiding himself behind the tree or climbing on the tree. On the land, the army can also fight with the help of shields, swords and spear. The warriors who are skilled in war strategy should be kept at the forefront and the rest should be kept behind. *Pipīlikā Vyūha* or ant array should be arranged if the attack is on the front side.²

Padmavyūha

The *padma vyūha* or *cakra Vyūha* refers to a military formation narrated in Hindu epic *Mahābhārata*. The *Cakravyūha* or *Padmavyūha* is a multi-tier defensive lotus-like formation, used by Droṇā, commander-in-

¹ *Vasiṣṭha's Dhanurveda samhita* p 68

² *Ibid* p 68

chief of the *Kaurava* army after the injury of Bhīṣma. The formation is similar to a blooming lotus, since when viewed from the top the warriors at each interleaving position would be in an increasingly tough position to fight.¹ The *Cakravyūha* or *Padmavyūha* was a special formation and only a few exclusive *Pandava* warriors, namely, Abhimanyu, Arjuna, Kṛṣṇa, Aniruddha and Pradyumna, knew how to lead an offensive attack against it. However to the *Pāṇdavas* disappointment, Aniruddha and Pradyumna did not participate in the *Mahābhārata* war. Additionally, Arjuna's son Abhimanyu knew how to penetrate the *Padmavyūha* but was not aware how to exit the formation. Abhimanyu was unaware how to escape from the *Padmavyūha*. He was thus killed in *Kurukṣetra* war trying to break free from the *Padmavyūha*. *Mahābhārata* also has references wherein the rules of war were broken by *Kauravas* to kill Abhimanyu. After Abhimanyu penetrated the sixth tier of spiral formation, all the *Kaurava* warriors attacked him in unison, though the main killer was Jayadratha. It was against the rules of *Dharmayuddha* that multiple warriors should not attack a single warrior

¹ www.wikipedia,the free encyclopedia/padmavyūha

According to Droṇā, if this array of army formation constructed during the absence of Arjuna and Kṛṣṇa, then the war would come to an end as Droṇācārya could easily defeat the *Pandavas*. Further, Droṇā was aware that only Kṛṣṇa and Arjuna could break a *Padmavyūha* formation and he was not aware of Abhimanyu's ability to break this formation. Arjuna was called away by the *Samśaptakas*, a group of warriors under the King Suśarma of Trigarta, who had sworn to kill Arjuna or lose their lives to the last man. Hence, Droṇācārya was astonished to see Abhimanyu advancing in *Padmavyūha* successfully.

Animals in War

In ancient warfare, animals had a great role to achieve the victory. Basically man used the animals and birds, for passing messages and transporting weapon from one place to another. Horses and elephants are used generally in the warfare.

The birds have an exclusive role in battle. They are passing the secret message in the warfare. To all battle groups, there is a collection of

birds for sending the message. The birds are doing the spy works in ancient warfare. They got special training for this. The high speed of horse and strength and big figure of elephant are the causes for using them in war. They got better training to face the war situation.

Training of the horses

In many texts on artillery, the training of horses is presented.

मण्डलं चतुरस्रञ्च गोमूत्रञ्चार्द्धं चन्द्रकम् ।
नागपाशक्रेमेणैव भ्रामयेत् कटपञ्चकम् ॥¹

Arthaśāstra of Kautilya provides with a detailed account of the various movements employed for the various training of horses.²The above verse describes the training of horses. They are movements circular, square crescent shaped, cow's urine shaped and snakes or sizing shaped, and then it will not be difficult to tackle it in battle field. The horse should also be trained to pull the chariots on the plane.³

¹ Vasiṣṭha's *Dhanurveda samhita* p 73

² Kautilya's *Arthaśāstra* book 2 chapter 30

³ Vasiṣṭha's *Dhanurveda samhita* p 73

Training of elephant

The large size and strength are the main reasons that man used elephants in war. The utilities of elephants are narrated as follows.

गजानां पर्वतारोहणं , जलगमनं, धावनं, उत्थानम् ।

उपवेशनं , अलातचक्रादिभिर्भीतिनिवारणं कार्यम् ॥ ¹

Arthaśāstra of Kautilya deals with the training of elephants in detail.² The military training of the elephants consists of mountaineering, moving through water, running, jumping rising sitting etc. The elephants should be made fearless by putting up fire circles.

From the information provided in this chapter, it can be safely conclude that ancestors gave very keen attention in weapon manufacturing, its training and practice. From the very beginning man used weapons for self protection. Stone, long stick, horn and the like were his weapons. Later on, however, man used weapon for his domination among

¹ ibid p 72

² *Kautilya's Arthaśāstra* book 2 chapter31

the various groups of the society. For that he developed new weapons of mass destructive power. Bow and arrow, sword, *kunta*, *gadā* and the like are his major weapons. Invention of fire and archery were the milestones of his development. Dual fighting was changed into group fighting. Here the concept of army arises. Gradually fighting techniques and rules were also formed. Then they began to use mass destructive weapons. For the sake of victory, they began to apply certain tricks in making of weapons. Poisoned arrows and such other tricks were applied by the warriors. The greediness of the power hungry men led them to engage in frequent battles. They popularized the message of patriotism through their sermons, in order to achieve the full fledged participation of the warriors in battle. The concept of *vīramṛtyu* and mythological beliefs haunt the warriors to engage in battle. The weapon manufacturing is a continuing process. Always they tried to develop more and more powerful weapons. There is a gradual change in the weapons from the beginning to the modern age. Some of the ancient weapons are mythical weapons like *sudarśana cakra*,

pāśupatāstra and the like. They called these as divine weapons. Actually these weapons are the product of ancestor's imagination.