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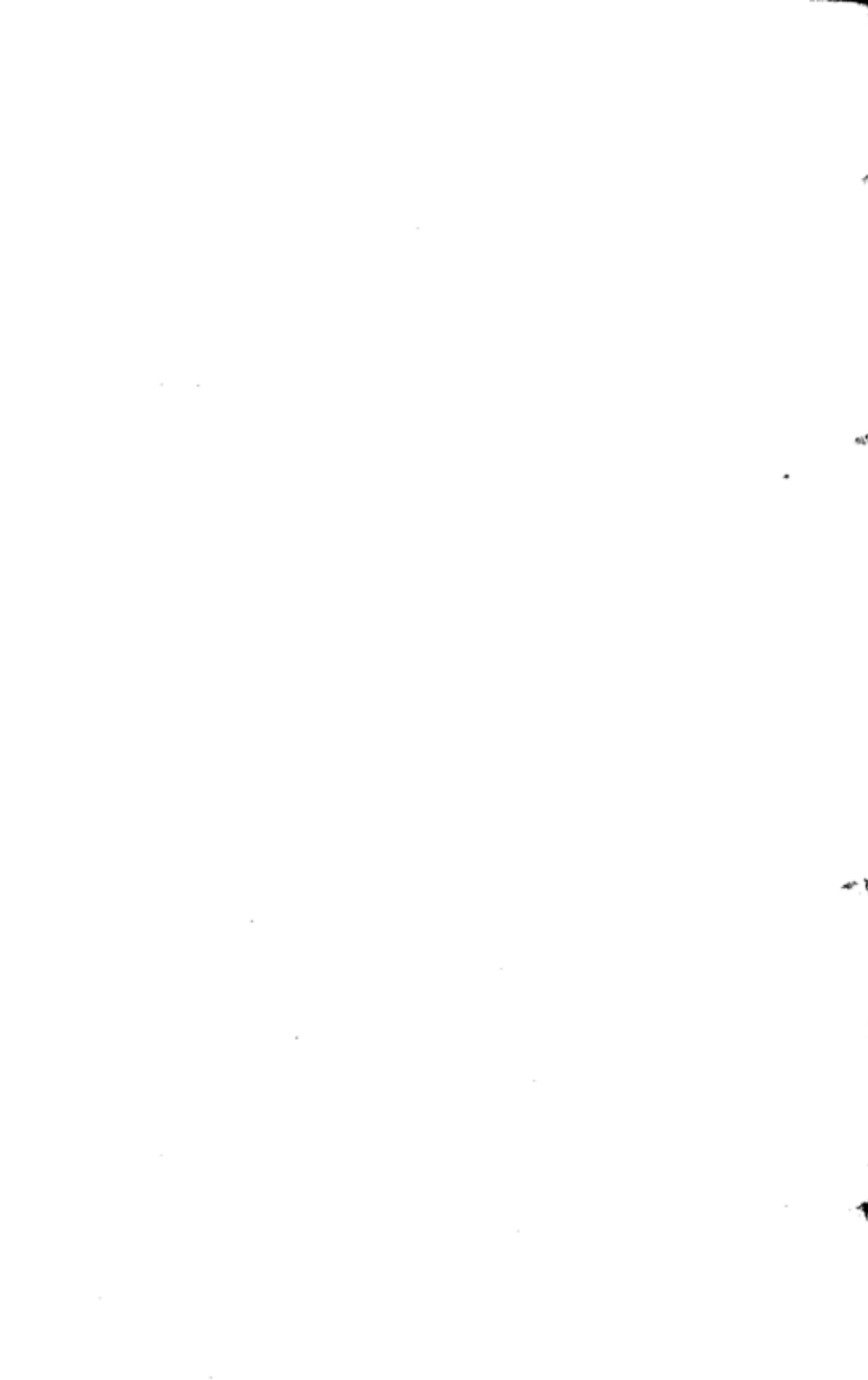
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## THE LATER VEDIC ECONOMY



# The Later Vedic Economy

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BRAJDEO PRASAD ROY

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JANAKI PRAKASHAN  
PATNA — DELHI

To my grand parents

Late Śrī Ruchamanī Roy & Late (Smt) Jaganā Devī

First Published, 1984

71236 23-4-84  
330.9340121  
Roy

"Thesis approved for the D.Litt degree of the  
Patna University, 1981"

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Price : Rs. 200/-

*Published by :*

Nand Kishore Singh

JANAKI PRAKASHAN

Ashok Rajpath, Chauhatta,

Patna-800004.

*Branch Office :*

A1/139-B, Keshav Puram,

Delhi-110035

*Printed at :*

S. K. PRINTING WORKS

IV/401, Bhola Nath Nagar,

Shahdara, Delhi- 110032

## Preface

Since long the Vedic texts have been studied by scholars from the religious and philosophical points of view. Only a few of them have given their attention towards their material aspects but their approach is not comprehensive, rather it is sketchy. Concerning this aspect of the later Vedic period, two important books have come to light, namely, "*India of the Age of the Brāhmaṇas*" by Jogiraj Basu and "*Staat Und Gesellschaft in Alten Indien*" by Wilhelm Rau. Both of them have based their works on information gathered from the Vedic texts and they have not studied the subject critically.

Till now, no independent work dealing exclusively with the later Vedic economy has been published. I have, however, made my humble attempt to study the subject in its proper perspective by utilising the original texts and corroborating the information gathered from them with archaeological finds unearthed from the sites ascribed to the later Vedic period. I have studied the subject under study in its complete structural framework which may indicate the origin and development of different aspects of the later Vedic economy. I have also taken note of the changes which took place during the post-Vedic times. I have refuted some well known conventional views about some points concerning the material life of the later Vedic people. An attempt has been made to highlight parallel developments in some of the contemporary societies.

I express my deepest sense of gratitude to Dr. B. P. Sinha, Prof. G. R. Sharma, Dr. R. S. Sharma and Dr. Upendra Thakur for their valuable suggestions and information which have made this work well documented. I express my thanks to Prof. A. L. Basham for his critical comments and forwarding suggestions for improving the standard of this work. On this advice the present volume has been increased in order to incorporate more

information. I thank Mr. M. Y. Gunye, the Librarian, Max Muller Bhavan, Delhi, for providing me a copy of *Staat Und Gesellschaft im Alten Indien* by W. Rau, which was not available at Patna. I acknowledge my gratefulness to Prof. Gustow Roth and (Mrs.) Shila Sharaan for translating W. Rau's work into English for me. I am greatly indebted to Prof. Ram Chandra Prasad and Prof. A. Das Gupta who took trouble for going through the manuscript and correcting the language of this work.

I thank my wife Dr. (Mrs.) Shanti Roy, M. B., B. S. Hons. (Gold Medalist), D.G.O., M.S., M.A.N.M.S., F.I.C.S., Associate Professor in the Department of Obstetrics and Gynaecology, Patna Medical College, whose sincere co-operation enabled me to complete this work. Lastly thanks are also due to Shri N.K. Singh, Proprietor Janaki Prakashan, Patna who kindly accepted this work to publish.

26 Jan., 1984.

—BRAJDEO PRASAD ROY

Reader, Deptt. of Ancient Indian  
History & Archaeology,  
Patna University,  
Patna-800005

## Abbreviations

<i>AĀ</i>	<i>Aitareya Āraṇyaka</i>
<i>AB</i>	<i>Aitareya Brāhmaṇa</i>
<i>ABORI</i>	<i>Annals of the Bhandarkar Oriental Research Institute.</i>
<i>AHNE</i>	<i>The Ancient History of the Near-East</i>
<i>AI</i>	<i>Ancient India</i>
<i>AIW</i>	<i>Ancient Indian Warfare</i>
<i>AJP</i>	<i>American Journal of Psychology</i>
<i>AJSL</i>	<i>American Journal of Semitic Languages</i>
<i>AMNH</i>	<i>American Museum of Natural History</i>
<i>AN</i>	<i>Aṅguttara Nikāya</i>
<i>AOC</i>	<i>American Oriental Conference</i>
<i>AO</i>	<i>Archiv Orientalni</i>
<i>AP</i>	<i>Ancient Pakistan</i>
<i>Āp. DS</i>	<i>Āpastamba Dharma Sūtra</i>
<i>Āp. GS</i>	<i>Āpastamba Gṛhya Sūtra</i>
<i>Āp. ŚS</i>	<i>Āpastamba Śrauta Sūtra</i>
<i>Aṣṭa</i>	<i>Aṣṭādhyāyī</i>
<i>ASI</i>	<i>Archaeological Survey of India</i>
<i>Ās. ŚS</i>	<i>Āśvalāyana Śrauta Sūtra</i>
<i>AV</i>	<i>Atharva Veda</i>
 <i>BAIIAA</i>	 <i>Bulletin of the American Institute for Iranian Art and Archaeology</i>
<i>BCA</i>	<i>Bronze and Copper Age</i>
<i>BCV</i>	<i>Bhandarkar Commemoration Volume</i>
<i>BDCRI</i>	<i>Bulletin of the Deccan College Research Institute</i>
<i>BDS</i>	<i>Baudhāyana Dharma-Sūtra</i>
<i>BŚS</i>	<i>Bhāradvāja Śrauta Sūtra</i>
<i>BIC</i>	<i>Birth of Indian Civilisation</i>



<i>BPWM</i>	<i>Bulletin of the Prince of Wales's Museum</i>
<i>BPS</i>	<i>Bhāradvāja Pīṭamedha Sūtra</i>
<i>Br.</i>	<i>Brāhmaṇa</i>
<i>BSOS</i>	<i>Bulletin of the School of Oriental Studies</i>
<i>BSOAS</i>	<i>Bulletin of the School of Oriental and African Studies</i>
<i>Baudh. ŚS</i>	<i>Baudhāyana Śrauta Sūtra</i>
<i>Baudh. ŚS</i>	<i>Baudhāyana Śulva Sūtra</i>
<i>BU</i>	<i>Bṛhadāraṇyaka Upaniṣad</i>
<i>BV</i>	<i>Bhāratiya Vidyā</i>
<i>CAI</i>	<i>The Classical Accounts of India</i>
<i>CBAI</i>	<i>The Copper Bronze Age in India</i>
<i>CDHM</i>	<i>A Classical Dictionary of Hindu Mythology</i>
<i>Cf.</i>	<i>Compare from</i>
<i>Ch.</i>	<i>Chapter</i>
<i>CHI</i>	<i>Cambridge History of India</i>
<i>CLAI</i>	<i>Corporate Life in Ancient India</i>
<i>CHI</i>	<i>Cultural History of India</i>
<i>CMN</i>	<i>Culture of Maheswara and Navadatoli</i>
<i>CPC</i>	<i>Chronology of the Punchmarked Coins</i>
<i>CU</i>	<i>Chāndogya Upaniṣad</i>
<i>DN</i>	<i>Dīgha Nikāya</i>
<i>DVR</i>	<i>Dictionary of Vedic Rituals</i>
<i>Ed.</i>	<i>Editor</i>
<i>EH</i>	<i>Excavation at Harappa</i>
<i>EHAI</i>	<i>Economic History of Ancient India</i>
<i>EHR</i>	<i>Economic History Review</i>
<i>EIC</i>	<i>The Early Indus Civilisation</i>
	<i>Excavation at Kaushāmbī</i>
<i>EŚ</i>	<i>Excavation at Śrāvastī</i>
<i>Eng. tr.</i>	<i>English translation</i>
<i>EW</i>	<i>East and West</i>
<i>FTCAI</i>	<i>Foreign Trade and Commerce in Ancient India</i>
<i>GB</i>	<i>Gopatha Brāhmaṇa</i>
<i>GDS</i>	<i>Gautama Dharma Sūtra</i>

GGS	<i>Govila Gṛhya Sūtra</i>
Govt.	<i>Government</i>
GRI	<i>The Geography of the Rgvedic India</i>
Hindi tr.	<i>Hindi translation</i>
HGS	<i>Hiranyakeśi Gṛhya Sūtra</i>
HISMA	<i>History of Indian Shipping and Maritime Activity</i>
HP	<i>Hindu Polity</i>
HPL	<i>Hindu Political Life</i>
HSL	<i>History of Sanskrit Literature</i>
HŚS	<i>Hiranyakeśi Śrauta Sūtra</i>
HOS	<i>Haward Oriental Series</i>
IA	<i>Indian Archaeology (A review)</i>
I. Ant.	<i>Indian Antiquary</i>
ICAR	<i>Indian Council of Agricultural Research</i>
IHQ	<i>Indian Historical Quarterly</i>
IKP	<i>India as Known to Pāṇini</i>
JAHRS	<i>Journal of the Āndhra Historical Research Society</i>
JAOS	<i>Journal of the American Oriental Society</i>
J. Anth. S.	<i>Journal of the Anthropological Society</i>
AS	<i>Journal of the Asiatic Society</i>
	<i>Jaiminiya Brāhmaṇa</i>
JBORS	<i>Journal of the Bihar and Orissa Research Society</i>
JBRS	<i>Journal of the Bihar Research Society</i>
JDL	<i>Journal of the Department of Letters</i>
JESHO	<i>Journal of the Economic and Social History of the Orient</i>
J GRI	<i>Journal of the Ganganatha Jha Research Institute</i>
	<i>Journal of the Gujarat Research Society</i>
JIH	<i>Journal of Indian History</i>
JISOA	<i>Journal of the Indian Society of Oriental Arts</i>
JIBS	<i>Journal of Indian And Buddhist Studies</i>
JNSI	<i>Journal of the Numismatic Society of India</i>
JMSU	<i>Journal of Maharaja Sayaji Rao University</i>
JBAI	<i>Journal of the Royal Anthropological Institute</i>
JRAS	<i>Journal of the Royal Asiatic Society</i>
JUB	<i>Jaiminiya Upaniṣad Brāhmaṇa</i>

JVS	<i>Journal of the Vedic Studies</i>
JWH	<i>Journal of World History</i>
KA	<i>Kauṭilya Arthaśāstra</i>
KANSFV	<i>K.A.N. Shastri Felicitation Volume</i>
KS	<i>Kāthaka Saṃhitā</i>
KU	<i>Kauṣītaki Upaniṣad</i>
KŚS	<i>Kātyāyana Śrauta Śutra</i>
KSCV	<i>Kuppuswamy Shastri Commemoration Volume</i>
KU	<i>Kaṭha Upaniṣad</i>
LEISE	<i>Light on Early Indian Society and Economy</i>
LIC	<i>Lothal and Indus Culture</i>
LGAI	<i>Local Government in Ancient India</i>
• MASI	<i>Memoirs of the Archaeological Survey of India</i>
MGS	<i>Maudgalyāyana Gṛhya Śūtra</i>
MIFV	<i>Munshi Indological Felicitation Volume</i>
MS	<i>Maitrāyaṇī Saṃhitā</i>
Muṇḍaka Up	<i>Muṇḍaka Upaniṣad</i>
MU	<i>Māṇḍūkya Upaniṣad</i>
OCP	<i>Ochre Coloured Pottery</i>
OJVI	<i>Ornaments and Jewellery of the Vedic Indians</i>
OT	<i>Old Testament</i>
P	<i>Page</i>
PAAI	<i>Pre-historic Antiquities of the Āryan People</i>
PAI	<i>Potteries in Ancient India</i>
PAIOC	<i>Proceedings of All India Oriental Conference</i>
PB	<i>Pañcaviṃśa Brāhmaṇa</i>
Pd.	<i>Period</i>
PGW	<i>Painted Grey Ware</i>
PGS	<i>Pāraskara Gṛhya Śūtra</i>
PIAI	<i>Political Ideas and Institutions in Ancient India</i>
PIHC	<i>Proceedings of Indian History Congress</i>
PKGfV	<i>P. K. Gode Felicitation Volume</i>
PPIP	<i>Prehistory and Proto-history in India and Pakistan</i>
Proc.	<i>Proceedings.</i>
PU	<i>Praśna Upaniṣad</i>

<i>PUJ</i>	<i>Patna University Journal</i>
<i>PWHC</i>	<i>Position of Women in Hindu Civilisation</i>
<i>ŚĀ</i>	<i>Śāṅkhāyana Āraṇyaka</i>
<i>ŚB</i>	<i>Śatapatha Brāhmaṇa</i>
<i>SBE</i>	<i>Sacred Books of the East</i>
<i>ŚAI</i>	<i>Śūdras in Ancient India</i>
<i>Śad. Br.</i>	<i>Śaḍviṃśa Brāhmaṇa</i>
<i>ŚGS</i>	<i>Śāṅkhāyana Gṛhya Sūtra</i>
<i>SI</i>	<i>Select Inscriptions</i>
<i>SICH</i>	<i>Studies in Indian History and Culture</i>
<i>SMFV</i>	<i>Satakari Mukherjee Felicitation Volume</i>
<i>SP</i>	<i>Summary of Papers</i>
<i>SRGS</i>	<i>Social and Religious Life in the Gṛhya Sūtras</i>
<i>ŚŚS</i>	<i>Śāṅkhāyana Śrauta Sūtra</i>
<i>SVCV</i>	<i>Shiddheshwar Verma Commemoration Volume</i>
<i>ŚU</i>	<i>Śvetāśvatara Upaniṣad</i>
<i>TĀ</i>	<i>Taittirīya Āraṇyaka</i>
<i>TB</i>	<i>Taittirīya Brāhmaṇa</i>
<i>TMB</i>	<i>Tāṇḍya-Mahā Brāhmaṇa</i>
<i>Tr.</i>	<i>Translation</i>
<i>TS</i>	<i>Taittirīya Saṃhitā</i>
<i>TU</i>	<i>Taittirīya Upaniṣad</i>
<i>UCR</i>	<i>University of Ceylon Review</i>
<i>UMCV</i>	<i>Umeshwara Mishra Commemoration Volume</i>
<i>VDS</i>	<i>Vaśiṣṭha Dharma Sūtra</i>
<i>VEWS</i>	<i>A Volume of Eastern and Western Studies</i>
<i>VŚS</i>	<i>Vaikhānasa Śrauta Sūtra</i>
<i>VI</i>	<i>Vedic Index</i>
<i>VIJ</i>	<i>Vishweshwarananda Indological Journal</i>
<i>Vinaya</i>	<i>Vinaya Piṭaka</i>
<i>Vol.</i>	<i>Volume</i>
<i>VM</i>	<i>Vedic Mythology</i>
<i>VM</i>	<i>Vedischa Mythologie</i>
<i>VS</i>	<i>Vājasaneyī Saṃhitā</i>
<i>WI</i>	<i>Wonder That was India</i>

## TRANSLITERATION AND ORDER OF THE NĀGARI LETTERS

Vowels : अ आ इ ई उ ऊ ए ऐ ओ औ  
a ā i í u ú e ai o au

Anuswar : ँ  
ṁ

Visarga : ः  
ḥ  
ऋ  
ॠ

Consonants :

k	kh	g	gh	ṅ
क	ख	ग	घ	ङ
c	ch	j	jh	ñ
च्	छ	ज्	झ	ञ
t	th	d	dh	n
ट्	ठ्	ड्	ढ्	ण्
t	th	d	dh	n
त्	थ्	द्	ध्	न्
p	ph	b	bh	m
प्	फ्	ब्	भ्	म्
y	r	l	w or v	
य	र	ल्	व	
ś	ṣ	s	h	
श्	ष्	स्	ह्	
kṣ	tr	jñ		
क्ष्	त्र्	ज्ञ्		

Common words and modern names of persons and places have been written without diacritical marks.

## TABLE OF CHRONOLOGY

Harappan Culture	—C. 2500-1500 B.C.
Early Vedic Age	—C. 1500-1000 B.C.
Later Vedic Age	—C. 1000-600 B.C.
Painted Grey Ware	—C. 1100-800 B.C.
	C. 700-400 B.C.
Mahābhārata War	—C. 1000 B.C.
The Period of the Early <i>Brāhmaṇas</i> the <i>Upaniṣads</i> and the <i>Āraṇyakas</i>	—C. 1000-800 B.C.
Gautam Buddha	—C. 563-483 B.C.
NBP ware	—C. 600-200 B.C.
Early Buddhist period	—C. 600-300 B.C.
Lothal Period II	—C. 1500-100 B.C.
<i>Kauśāmbī</i>	
Sub-period 1,3,	—C. 1025-955 B.C.
Sub-period 1,4	—C. 955-885 B.C.
Sub-period II,5	—C. 885-815 B.C.
Sub-period II,6	—C. 815-745 B.C.
Sub-period II,7	—C. 745-675 B.C.
Sub-period II,8	—C. 675-605 B.C.
Sub-period II,9	—C. 605-535 B.C.
Sub-period II,10	—C. 535-465 B.C.
<i>Hastināpura</i>	
Period II	—C. 1100-800 B.C.
Period III	—C. 600-300 B.C.
<i>Rangapur</i>	
Period IIA	— 2000-1500 B.C.
Period IIC	— 1000 B.C.
Period III	—C. 1000-800 B.C.

*Ujjain*

Period I —C. 750-500 B.C.

Period II —C. 500-200 B.C.

*Ahar*

Period I A —C. 2000 B.C.

*Necropoles*

Period B —C. 1000 B.C.

*Atranjikhhera*

Period III —C. 1200-600 B.C.

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## Methods and Materials

Out of the interpretations of various source materials, more than one image of the Vedic India have emerged. These images do not contradict one another but are rather complementary in a very vague and general manner. The most romantic and attractive image to the Indians themselves and also the most persistent was the image of a mystical and metaphysical India dedicated to the quest of the nature of the soul and the Ultimate Reality, even disregarding or remaining unconcerned with the irresistible demands of material life. The other image was of the Vedic people living away from crowded centres of life and their countless active manifestations, in distant sylvan solitudes or in quiet villages. Essentially religious in temper and outlook, these people lived their life in a spirit of relative detachment. But in absence of historical accuracy and correct perspective, a part or segment of such images, we think, was mistaken for the whole in respect of both time and space or, there might have been a complete failure in the correlation of the parts, aspects and segments of the total life and the way of living of the Vedic people.

Besides, one of the basic flaws in earlier historical theories was the fact that history was not regarded as the history of the people but was more concerned with the activities of outstanding personalities. Most of the idealist scholars insist that ideas play the chief role in history. They are of the opinion that history is made by those who give the ideas. But this view betrays a lack of confidence in the creative forces of the common people.

According to them, history is a jumble of chance events due to tricks of fortune or some particular incidents in the life of a great man. But it is to be noted that the common people produce wealth in society and play important role in historical development of a nation. The role of the individual in history should not be overlooked at all. It may be correctly understood only on the basis of an understanding of the factors governing social and economic development and a study of the living condition of the people which account for the appearance of outstanding men.

The culture of a country shapes the destiny of its people and economic factors contribute much towards the development of culture. The Vedic culture also is not a negation of this general rule. It is necessary to investigate into the matter why, for instance, the dominant note of the *Samhitās* and *Brāhmaṇa* texts is one of joy and affirmation of life in this world of mortals. How it was that a people and society supposedly given to ideas and practices leading to liberation of personality from all secular and worldly bondage, could emerge itself to scientifically pursue the means of using and enjoying material life, building up kingdoms, organising and running administration and regulating domestic policies. In order to throw light on these points as also the economic life of the later Vedic people, it is essential to study the prevailing historical and geographical situations because as these are related to time and place factors, they play an important role in the economic life of a people.

### **Historical Situation**

The period under study is very significant and perhaps the most memorable as it is full of contrasts and suspense. It is characterised by the upheaval in all phases of life. Those who want to be familiar with the causes of changes should consider the spread of the Āryans from the Punjab to the Yamunā-Gangetic valley, and particularly, in the whole of the north Indian plains. In the later Vedic texts we see a transformation of religious conceptions. But not less important were the relations of the Āryans with the native population, the elimination of old and the formation of new tribes, the gradual

transition from nomadic and cattle breeding life to settled life employed in agriculture, and the coming up of a new class order which replaced the old aristocratic social structure.<sup>1</sup>

The *Kāthaka Samhitā* refers to the historical situation when it states that the people move from the west to east, conquering lands.<sup>2</sup> The colonisation of this vast region shows the process of their immigration which must have taken a long span of time. Their immigration was not planned but casual. Besides, the tempo of their migration depended upon multiplication of their population and the nature of the inhabited land for the means of their support. It is doubtful whether the continuous feuds among the immigrant tribes accelerated or hampered their advancement. In any case, the individual groups of people had to defend their land not only against the attacks of the aborigines retreating to the east but also against the aggressions of their own tribesmen following them. This fact is confirmed by statements contained in the later Vedic texts. The *Śatapatha Brāhmaṇa* mentions that he who is victorious over his enemy and or his own people, has the freedom of movement in the conquered land.<sup>3</sup> The *Yajur Samhitās* also allude to the same fact when these state that those who exert, rule over those who sit idle.<sup>4</sup>

The later Vedic texts show that the spread of the Āryans towards the east took place in stages. It appears that advancement in the region between the Himālayas and the Ganges, usually came to a stop at the long and wide rivers which flow through the plains more or less vertically towards the Ganges.<sup>5</sup> It may not have been different on the southern side of this main river. The water course here forms the only natural defence line. Besides that there may have been exception to the general north-west and south-east directions of migration.<sup>6</sup>

About the mode in which the Āryan colonisation took place there, whether it was primarily a warlike occupation or a cultural penetration. Lassen thinks that the way was opened for the later colonisation of the south of the peninsula by the brāhmaṇa hermits who had crossed the Vindhya and settled in small settlements in the midst of the native habitations, long

before the kṣatriya conquerors. It also has been suggested that the case was not different even in the Yamunā-Gangetic basin. The kṣatriya conquerors followed the brāhmaṇa priests. Rau thinks that the method of religious propagation was more effective for occupying land than the process of waging war.<sup>7</sup> But Zimmer suggests that the new immigrants advancing towards the east had everywhere to face enemies and had to fight fierce battles with the aborigines. He even notes the general warlike character of the migration of the Āryans in the east.<sup>8</sup> Some of the *Brāhmaṇa*<sup>9</sup> texts refer to regular summer raids of the Kuru-Pāṇcālas in the east. Such expeditions into an area invariably started the process which later ended with the conquest of the stretch of the Yamunā-Gangetic basin. They were meant specially for the harvest yields when these plunders were directed against the aborigines, some of whom must have already practised farming. But the farmers did not give up their grains and agricultural fields without a fight. Regarding this, a further indirect proof is also to be found in the later Vedic texts according to which new areas were conquered by fight. They were the kings who conquered new areas which were still covered with forests<sup>10</sup> Consequently they had the first right of possession of the land.<sup>11</sup> It appears that the previous settlers had to be expelled or kept under subjugation before the land could be completely occupied. This could be hardly done in a peaceful way.

The question arises as to whether there were uniformity and unity among the Āryan tribes who were fighting for occupation of land or the seizure of the enemy's animals. This question has been dealt with in detail by historians who, on the basis of the later Vedic texts, arrive at the conclusion that there was no uniformity among all the Āryan tribes in the matters of religious practices and even in languages.<sup>12</sup> This must have delayed the process of their spread in eastern India. Undoubtedly some of the tribes were closely related to each other or had concluded alliances. The Kuru and Pāṇcāla tribes were related to each other.<sup>13</sup> Similarly the Kurus and the Śr̥ṇjayas<sup>14</sup> were united by a common priest. But such alliances were temporary and loose. The Kuru-Pāṇcālas had never a common king although they

have been mentioned as allies. Usually these tribes were at enmity with each other. The Vedic texts refer to the outbreak of wars between the Bharata and Ikṣvāku tribes<sup>15</sup> and again to the battles of the former against the Satvants<sup>16</sup> and Kāśī.<sup>17</sup> The Sibi king Amitratapana Śuśmiṇa fought against Atyarāti Jānaṁtapi.<sup>18</sup> Bands of murderers of the Śālva tribe attacked the Sthúragrhapatyah while they were performing a sacrifice and killed their chief.<sup>19</sup> King Soma was alleged to have a band of robbers in his service.<sup>20</sup> This practice might have been customary with other nobles too. Within tribes we observe feuds among the aristocratic families for establishing superiority or even political authority. A tribe was divided into several smaller units.<sup>21</sup>

The *Rgveda* informs that the early Vedic Āryans had to fight the Dāsas and Dasyus for establishing themselves in the Punjab and they were very conscious of the differences between them and the Dāsas on the basis of colour, facial features, language and religious practices. But the later Vedic texts indicate that the age-old enmity between the two did not continue. In these texts, the term Dasyu does not occur in the sense of a tribe, and Dāsa gets the meaning of a slave. The religious and racial contrasts are completely absent. Perhaps it was on account of the assimilation of the Dāsas and Dasyus in the Āryan society.<sup>22</sup> In eastern India, the Āryans reconciled with the natives who mostly were the Niṣādas, Śabaras, Mútibas, Pulindas and Āndhras<sup>23</sup> (hunters, fishers and semi agriculturists). Concerning this, it is to be found out whether the Āryan immigrants were larger or lesser in population than the natives. Our texts do not furnish comparative demographic data but the description of fighting forces, the pace of the advancement of the Āryans and the area occupied by them prove that the number of the Āryans was not small, for had it been so, they could have imposed themselves as a new ruling minority consisting of the upper classes on the conquered people, as did the Hittites, Kassites and the Mitanni in western Asia. The number of the Dāsas and Dasyus killed and the find spots of the PGW clearly prove that the Āryans were in large number.<sup>24</sup> The distribution of the Āryan languages over the greater part of India also

confirms a mass migration of their speakers.<sup>25</sup> Basham thinks that the fact that the Āryans were able to retain their identity and maintain their culture so completely in a country which had previously been both well populated and highly civilised, implies that they must have come in great numbers, in continuous wars of conquest, lasting over a long period, thus sufficiently providing numerous population which in turn could form the basis of further expansions. The situation was just the reverse of what prevailed in the Near-East, where conquests effected by small bands of warriors resulted in temporary domination, but their numbers being too small they were absorbed after a few generations into the native population.<sup>26</sup>

### **Core and Outlying Geographical Areas**

For studying the material life of a people, it is essential to demarcate the core and outlying areas of their settlement. The former signifies the geographical situation of the settlement of the people while the latter denotes the adjoining regions which saw the expansion of their migration and economic activities. The geographical factors also contribute their shares to the shaping and development of culture. Cultures have length and breadth as well as depth. One should not occupy oneself with the primary task of elucidating the stratigraphy of a particular region. Cultures are the products of human groups occupying any defined geographical area. Maps of the distribution of iron objects, PGW and NBP ware show the geographical area occupied by the Vedic Āryans. But the importance of the geographical distribution varies according to the size of the area under consideration, and to some extent, also to the culture studied. The picture of culture that would emerge, would be a highly complex one, coming into existence, spreading, developing very often as it moved, coming into contact with other cultures, sometimes by bridging and sometimes maintaining an independent, although closely interlocked, existence.

The *R̥gveda* informs that the territory occupied by the early Vedic Āryans was situated between the Krumu (Kurram), Gomati (Gomal) and Kubhā (Kabul) rivers in the west and the Sindhu group of rivers in the east. Most of this territory was

within the sphere of the Indus valley civilization. The *R̥gveda* usually refers to mountains, rivers and tribes of this region. Little is known about the lower Indus region where also the Indus civilisation equally flourished. It appears that the *R̥gvedic* people were not so much familiar with the Gangetic valley as a late hymn of the *R̥gveda* refers to the Gaṅgā only once.

The later Vedic texts inform that during their compositional period the centre of gravity of the activities of the Vedic Āryans shifted from the west to the east. The Kuru-Pañcāla country, corresponding roughly to modern western and central Uttar Pradesh, became the most important centre of its Āryan culture, that of the Punjab and Gandhara being less important. Further expansion in the east had taken place and kingdoms of Kōśala, Kāśi and Videgha were established. The main Āryan advance was down the Gangetic valley, keeping primarily to the north of the river. The greater number of tribes and kingdoms of this period were situated in the north of the Ganges. Of these lying to the south of this river, only a few, such as, the kingdoms of the Cedis, Satvants and Vidarbha, are rarely mentioned. In the Gangetic valley, the Āryans were surrounded by different non-Āryan tribes, who mostly were forest tribes possessing no advanced civilisation and were, therefore, unable to offer stiff resistance. Expansion in the Gangetic valley by the later Vedic Āryans was mainly a matter of clearing forests and founding agricultural settlements. As the activity of forest clearing proceeded, the scope for the independent existence of the forest tribes became more limited and sections of them attached themselves to the fringe of Āryan society.<sup>27</sup>

A study of the *Brāhmaṇa* texts indicates that in the beginning of the later Vedic period, the area occupied by the Āryans in the Yamunā-Gangetic basin was comparatively limited. But by the sixth century B.C. we see wider extension of Āryan culture. Obviously, the intervening period had been one of the extensive migration and colonisation as a result of which the boundaries of Āryāvartta were defined as the Himālayas in the north and the Vindhya in the south, and the eastern and the western oceans in the east and the west, respectively. One of the main lines of expansion at this time lay to the south-west,



embracing Avanti, Saurāṣṭra, Āśmaka and Mūlaka. The advance to the east continued with the occupation of the greater part of Bengal and Kāliṅga. The overall result was that by the end of the later Vedic period, the portion of India occupied by the Āryans was immensely increased. After this, the Āryan influence further south was a matter of cultural penetration.

### Nature of Settlement

The *R̥gveda* informs that the early Vedic Āryans were a group of wandering herdsmen and practised limited farming on a temporary basis. During the later Vedic period we see several new developments in their life. Their political units became larger and the state began to replace the tribe. Several designations of officers were coined and they had influence on the matters of state affairs. They made considerable advance in material life which is attested both by literary references and archaeological finds. City life again began in a small way. The brāhmaṇas and the kṣatriyas increased their status and strengthened their organisation. The rituals were developed. On the basis of all these, most of the historians are of the view that the earlier stage of wandering herdsman was over and that of the later Vedic Āryans as settled farmers began. But Rau, citing illustrations from the *Brāhmaṇa* texts, questions the validity of this nature of settlement.<sup>28</sup> He thinks that even the true meaning of *grāma* does not prove the settled condition as it is taken in the present sense. Besides, cattle rearing appears to have been the main source of material possessions. The sacrifices for cattle wealth and the thriving of the herds surpass those for agricultural fields. Perhaps in most of the cases the semi-nomadic tribes settled only for one or a few harvest periods and then moved on. There were, with the exception of Kurukṣetra<sup>29</sup>, no names for regions where tribal areas are spoken of, the only source being the name of the residents.<sup>30</sup> This way of naming a region continued even in post-Vedic times, but it could only have originated at a time when individual tribe did not possess a fixed area of settlement and called that land its own in which it had just settled at that time. Unfortunately, the topographical statements remain completely dark to us. On

the basis of the foregoing details, it is, therefore, reasonable to think that the later Vedic Āryans were less settled than it is generally thought. Even if we do not deny fixed territories for individual tribes, it would be wrong to deduce from this reason alone that the economy was based solely on farmland. Frequently tribal communities, hunting people and cattle-breeders also designated a certain demarcated area as their own. Without putting up lasting settlement for themselves, they needed only some space for their food, where they could hunt or wander about with their herds and from which they could drive out aggressive foreign elements.

Though Rau argues in favour of the unsettled condition of the later Vedic Āryans, it is difficult to support him in totality. It is true that the early Vedic Āryans were cattle-rearing nomadic people and this character persisted in some cases in the later Vedic times. But it is unreasonable to think that all the later Vedic Āryans were unsettled. We see the names of towns like Kāśī, Kauśāmbī, Rājagṛha, etc. which were capitals of kingdoms. We notice the king ordering his officers to look after the affairs of villages, hymns dedicated for good ploughing of farmlands, germination of seeds, growth of plants and plenty of yield to be stored in houses. Merchants are seen moving for trade and commerce. All these prove a settled condition of the life of the Āryans during this period, though a few exceptions may not be ruled out.

### **Impact of Contacts with Non-Āryan Cultures**

The Vedic Āryans came in contact with several native peoples. In the Indus valley, they came in encounter with the Harappans who certainly enjoyed a superior standing of material life. In the north-east, as we have seen earlier, they came in contact with the forest dwellers who were inferior to the Āryans. In both the cases, the Āryans attempted to preserve their ethnic identity, purity of blood, language and religion. But the Vedic texts indicate that the Āryans could not remain unaffected because cultural contact inducted a number of changes in their internal organisation. The most important

problem which is connected with cultural conflicts is created by the impact of culture on human nature.

It is difficult to assess the degree of impact of the Harappans on the early Vedic Āryans and *vice-versa*. The Ṛgvedic culture was opposed to the Harappan culture and there are certain evidences to prove that only after many centuries some elements of the Harappan culture influenced the conquerors. The immediate impact appears to have been material prosperity of the nomadic Āryans because spoils of war must have added to the wealth and social status of the tribal leaders, who could afford to patronise priests by offering gifts to them.<sup>31</sup> After a few generations, the process of social intermingling might have started because the *Ṛgveda* refers to the conversion of the Dāsas into Āryans by Indra. Some of the surviving priests and chiefs might have been given corresponding position in the Āryan society. Some of the Āryan chiefs and priests might have married the Dāsīs.<sup>32</sup> But these impacts were not felt in the beginning of the Āryan occupation of the Punjab because the *Ṛgveda* gives the impression that such influence was not of great importance. It is to be noted that the attitude of the Vedic poets to the culture of the Dāsas and Asuras was uncompromisingly hostile and unreceptive in the religious matters. Besides, there was another factor, namely, the destruction of the most of the Indus settlements and the bases from which such influence could spread. The Vedic Āryans did not occupy cities to live in, rather they turned the Punjab and Sind into lands of small villages with huts made of wood and reed, the remains of which have long perished. However, some Harappan influences appeared, but these were not so prominent during the Vedic period.

One important result of this contact of the Āryans with the non-Āryans is evident from the language of the Vedic texts. Basham was proved that even the earliest stratum of the language of the *Ṛgveda* is obviously affected by non-Indo-European influences. The language of the *Vedas* contains a series of sounds, the cerebral consonants, which cannot be traced in any other Indo-European tongues, not even in Old Iranian, which is closely akin to Sanskrit. These sounds must

have developed quickly from the efforts of the non-Āryans to master the language of their conquerors. The invaders often married indigenous women whose children would be bilingual, and after a few generations the original language of the Āryans would show the effect of the admixture of aboriginal blood.<sup>33</sup>

The rapid expansion of the Āryans in the later Vedic period had resulted in their being in more thinly populated regions than in the Punjab, because in the eastern region they were surrounded by the pre-existing population of the forest tribes. After sometimes, these tribes were accepted in the Āryan fold but their status was very low as they were not completely Āryanised. During this period the influence of the pre-Āryans on Āryan culture began to be effective. The great increase in the complexity of the caste system which characterises later Hindu civilisation was also stimulated at this time by the necessity of somehow fitting into the framework of the Āryan society a large variety of independent tribes.

### **Collection of Data**

For the study of the later Vedic economy care should be taken for the proper collection of data. In this regard, the first point is the question of completeness versus selectivity. The former is very useful; hence attempts should be made to gather every piece of information from literary and archaeological sources.

The literary sources in all cases may not furnish information for the study of the subject under study because the authors of the texts did not intend to record all prevailing things in a religious literature. In spite of this, the literature contains fossil deposits of information. Every recovery may be made on the strength of this dislodged fossil data. Sorting out of information from these written records of fossil historical materials is the first and, by far, the most important work. The next step should be adopted to trace each fossil to the original stratum to which it was originally related, and if possible, to determine the forces of currents which caused it to be carried and embodied in the environment in which it occurs. In general, the displaced

deposit is undoubtedly recognised by its unaccountable presence in the environment in which it is discovered. In this regard, studies of the cultivation of rice and wheat and the introduction of PGW, iron and horses are very important. The value of literary absurdities should be appreciated and may not be discounted as breaks.

(a) *Literary Sources.* The Vedic literature contains valuable information concerning economic life of the Vedic Āryans. The data collected from it should be allocated in their proper places in a reliable chronological and geographical framework. In writing history, imagination also is very helpful but it should be productive and parsimonious so that assumptions may not overpass their limits. It should not be random and wild speculation at one and the same time.

The whole of the Vedic literature is self laudatory and such statements are never as a rule to be accepted as evidence unless they have been proved by cross examination and other related safeguards. Every statement derogatory to the brāhmanical pretensions, occurring in this literature, is an invaluable evidence. The philosophical thoughts of the Vedic Āryans have received far more attention than their material life because the record pertaining to it is less striking and the evidence are very scrappy and incomplete. Nevertheless, the subject perhaps deserves more intensive probing.

The *Rgveda* is the oldest literary specimen of the Indo-Āryans, which generally is assigned to the period from the 15th century B.C. to the 12th century B.C. (?)<sup>34</sup> It was compiled at different times.<sup>35</sup> It contains 1028 hymns which are divided into 10 *maṇḍalas* or Books, but only Books from 2 to 7 which are called family Books, are considered to be the earliest portions. Even in these Books the Vedic and the non-Vedic traditions have been mixed up. Books 1st, 8th and 10th which account for a good bulk of this text are considered as late additions to it. Most references to field agriculture furnished by them should be used for the phase shading off into the post-Rgvedic period from around<sup>36</sup> 1000 B.C. The 9th Book is the collection of hymns collected from all the parts of

this *Veda* dedicated to Soma. On account of their archaic language and the obscurity of their allusions many passages are not clearly understood. The *Rgveda* does not fall within the period under study but it is essential to utilise it as a source material for proper study of the present subject in order to trace out the origin, development and discontinuation and other related matters of economic life during the later Vedic period. The *Rgvedic* society primarily was in a pastoral stage practising temporary and limited field agriculture and a few arts and crafts. Their trade and commerce were on a small scale. This text shows that though the *Rgvedic* Āryans were in close contact with the *Dāsas* and *Dasyus* whose achievements in different phases of material life, viz. city building, agriculture, arts and crafts and trade and commerce were commendable but they did not imbibe inspiration from them and did not continue their material traditions.

The later Vedic literature generally covers the period from circa 10th to the 6th century B.C. It represents various phases of socio-economic developments. The *Sāma Veda* is the collection of hymns borrowed from the *Rgveda*. It contains only 75 new hymns. The hymns of this *Veda* are very melodious and were recited specially at the *somayāga*. The praises of different gods who are supposed to honour the ceremony with their presence, and prayers for the prosperity of the worshippers and those connected with them, form the main subject of these hymns. Thus, this *Veda* is almost useless to the historian for studying the economic life of the Vedic people.

The sacrificial texts used by the priests are contained in the *Yajus Veda* of which several recensions have come down to us. These texts contain equal parts of verses and prose formulae. Weber thinks that the majority of the former are likewise found in the *Rgveda* though not unfrequently with considerable variations which may be explained partly from a difference of recension, and partly as the result of the adaptation of these hymns to their special sacrificial purposes.<sup>37</sup> Save a few isolated sacrificial calls alluded to in the *Rgveda*, we meet with the prose formulas in this collection. In the older recensions of the *Yajur Veda*, the texts are, as a rule, followed immediately by their

dogmatic explanations. These theological treatises, composed chiefly with the view of elucidating the sacrificial texts and explaining the origin and hidden meaning of the various rites, form one of the most important and informative pieces of literature for studying different aspects of economic life of the later Vedic people as these also show the process of the gradual consolidation of the brāhmanical hierarchy.<sup>38</sup> These texts further contain systematic references to foodgrains, metals, plants, animals, carts, handicrafts and some other requirements of material life. In these sources, we see definite changes in economic life of the Āryans to make it different from that of the R̥gvedic Āryans.

There are several recensions of the *Yajus Samhitā* but the two are very important, namely, the *Kṛṣṇa Yajurveda* and the *Vājasaneyi Samhitā* (*Śukla Yajur Veda*). The former is older than the latter.<sup>39</sup> There are three recensions of the *Kṛṣṇa Yajur Veda*, namely, the *Taittirīya*, *Maitrayaṇi* and *Kāthaka Samhitās*. The last one has another recension of its own called *Kapiṣṭhaal Samhitā*. Von Schroder<sup>40</sup> suggests that the *Kāthaka* and *Maitrayaṇi Samhitās* are comparatively earlier than the *Taittirīya* but Keith refuting his arguments says that the *Taittirīya Samhitā* is earlier than them.<sup>41</sup> The internal evidences prove that the *Taittirīya Samhitā* was mainly composed and compiled in the Yamunā-Gangetic valley.

The *Vājasaneyi Samhitā* is ascribed to Yājñyavalkya and it also was composed in the Yamunā-Gangetic valley. Its subject matter is common with the *Taittirīya Samhitā* but they differ in their arrangements. In the latter, the sacrificial formulae are generally followed by dogmatic explanations and are mixed with verses. But in the *Vājasaneyi Samhitā*, they are classified on the basis of their rituals and dogmatic commentaries. The second point of difference between the two relates to the details of the *hotṛ*. Much importance has been attached to him and his duties in the *Taittirīya Samhitā* but not so much in the *Vājasaneyi Samhitā*. There are 40 chapters in this text (*VS*) which has been handed down entirely into two recensions, namely, the *Mādhyandin* and *Kāṇva*. The former is prevalent

in the northern part of India while the latter in Maharashtra. Both of them have common content with slight differences in respect of sacrificial formulae, orthographic as also orthoepic peculiarities. The *Kāṇva* recension is considered as earlier than the *Mādhyandin*.

An examination of the text of *Vājasaneyī Samhitā* proves that it was composed at different times. The first eighteen chapters were composed earlier than the other 22 chapters, but the chapters from 19 to 25 seem to be older compositions. Looking into the internal evidences, we see that chapters 26 to 29 contain hymns relating to ceremonies which have been already dealt with. It is evident that these are of a supplementary nature. Chapters 30 to 39 are related with new types of ceremonies. The last chapter is also an *Upaniṣad* (*Isopaniṣad*).

Only a quarter of this text (*VS*) has been borrowed from the *R̥gveda* and the remaining portion is in its original form. The partial originality of it is the result of the addition of entirely new ceremonies and the extraordinary development of ritualistic details.

The formulae of the *Vājasaneyī Samhitā* consist of statements indicating the effects of the use of particular rites and hymns. As a rule they are not in the form of prayers addressed to gods. The hymns are meant for the attainment of material welfare in general as well as for obtaining a number of some other things such as cattle and the village. This text refers to the development and consolidation of the caste system. In chapter 30th there are references to a number of mixed castes based on professions practised by them. Besides, the hymns enumerate the names of a large number of birds, animals, foodgrains, plants and finished goods which throw considerable light on different aspects of economic life of the people.

Different recensions of the *Yajus Samhitā* are helpful for the study of local economic history because they were composed and compiled in different regions of northern India. The *Taittirīya Samhitā* places its sphere of activities in the Madhyadeśa because in it the Bharatas and the Pañcālas have been frequently mentioned. The *Kaṭha-Kapiṣṭhala Samhitās* were



prevalent in the Punjab and Kashmir. Possibly these may have been composed by the Kaṭhas who were settled in the Punjab. The *Kapiṣṭhala Samhitā* was named after Kapiṣṭhala, the present Kaithal in the Punjab. The *Maitrāyaṇī Samhitā* was popular in Gujarat and in the territory north of the Narmadā. The *Vājasaneyī Samhitā* was popular in the central and the eastern Gangetic valley.

The *Atharva Veda*<sup>42</sup> is a late addition of the *Trayi*, the three *Vedas*, namely, the *Ṛgveda*, the *Sāmaveda* and the *Yajur Veda*. It derives its name not from the nature of its contents but from a person named Atharvan who was the first priest who produced or invented fire by attrition. He conquered hostile demons by means of miraculous powers. Similar to the *Ṛgveda*, the *Atharva Veda* is original and historical because the other two *Vedas* are merely liturgical compositions. But Whitney and Weber think that the contents of the *Atharva Veda* are not of equal antiquity<sup>43</sup> and spirit of both of the *Vedas* is widely different from each other. Griffith remarks that the *Ṛgveda* pulsates with lively natural feelings and a warm love for nature, while in the *Atharva Veda* there prevails, on the contrary, only an anxious dread of her evil spirits and their magical powers.<sup>44</sup> Max Muller suggests that the hymns of the *Atharva Veda* formed probably an additional part of the sacrifice from a very early time. Roth, Weber, Whitney and Ludwig are of the opinion that they were intended chiefly to counteract the influence of any untoward event that might happen during the performance of a sacrifice. They also contained blessings and various formulae for warding off effects of evil spirits. It possesses an atmosphere of simple animism and sympathetic magic on a cultural level lower than that of the *Ṛgveda*, deriving from the plebeian religion of the Āryans and containing many non-Āryan elements.

The relations of the *Yajus* texts with the *Atharva Veda* is important. It has been suggested that the former ones are earlier than the latter which regularly works over them for magical purposes.<sup>45</sup> But there is no cogent evidence to prove that the *Atharva Veda* as a whole is necessarily later than the reduction of the *Samhitās* of the *Yajus*. On the whole, the *Atharva Veda* belongs to the period of the *Brāhmaṇa* texts and

it is not without significance that its geographical horizon includes a vast region from Gandhāra in the west to Aṅga and Magadha in the east.<sup>46</sup> The mention of tiger is consistent with view because this beast was the most prominent in the east.<sup>47</sup>

The *Atharva Veda* is divided into 20 Books which contain 6000 hymns (*mantras*). In books 1 to 13, the contents are of the most heterogeneous description with no attempt of any kind to systematic arrangement of subjects. They consist principally of prayers, formulas and charms for protection against evil spirits, sorcerers, disease, insects, beasts and other harmful elements. Further, these belong to benedictions, invocations of magical herbs, prayers for children, and long life and success in love and trade. In books 14 to 18, the contents are systematically arranged, Book 19 contains a somewhat miscellaneous collection of supplementary hymns. Book 20 consists *mantras* mostly borrowed from the *R̥veda*. These two Books appear to be later additions to the *Atharva Veda*.

The tone of the *Atharva Vedic* Āryan life is different from that in the *R̥veda* and the *Yajur texts*. It does not emphasise the worship of the elements of nature and the performance of sacrifices for obtaining different forms of property and bliss. It contains references to the life of the common people from "the cradle to grave". It contains enough material for studying the economic life of the people. Animal husbandry was still a main occupation of the people whose economy was based on the cattle wealth. They took care of their domestic animals against disease and wild beasts and prayed for their welfare. The importance of field agriculture had increased and we see the farmers anxious for proper ploughing of fields, sowing operations, germination of seeds, irrigation of fields, protection of plants and rich yield of harvest. Similarly, the prospects of trade and commerce also had immensely increased which could not have been possible had there been no development of arts and crafts. The approach of the *Atharva Veda* towards life is more materialistic than that of the other *Vedas*. Griffith observes that the chief care of an *Atharva Vedic* man was for his health and wealth, and well-being of his family members and cattle, for abundance of harvests, for thriving agriculture and

multiplying cattle. The small merchant might have lived a less settled life but he saw more of the world than the agriculturist. He prayed for gain in trade, protection from robbers and wild beasts. A significant development in the *Atharva Veda* is description of different kinds of grasses, roots, plants, flowers and fruits. The people had achieved marked progress in studying the medicinal properties of the aforesaid objects.

The *Brāhmaṇa* texts form our chief source of information regarding one of the most important periods in the social and mental development of India. They represent the intellectual activity of a priestly class which had succeeded in transforming the primitive worship of the powers of nature into a highly sophisticated system of sacrificial ceremonies. The priests influenced the whole society and claimed for themselves several privileges. Single discourses on the methods of performing sacrifices were called the *Brāhmaṇas* probably because they were intended for the instruction and guidance of priests. Works of this kind have come down to us in connection with all the *Samhitās* generally in more than one version, which often vary considerably in their arrangement and their treatment of the materials.

The authors having a bond of union with the ritualistic school of the Vedic interpretation, very naturally side with the orthodox view that all the Vedic hymns have been composed for application to sacrificial ceremonies. The motive working behind the luxuriant growth and lucid details of these texts is more religious than literary. Besides studying the ritualistic, metaphysical, linguistic and legendary aspects, these texts are informative as records of social, political and economic aspects of life, viz., agriculture, livestock, plants, occupations, trade and commerce.

These are important sources from which a comprehensive view of the sacrificial ceremonies may be obtained. They throw light on metaphysical and linguistic speculations of the later Vedic Āryans. Another important feature of these texts is indicated by the legends contained in them. From a mythological and linguistic point of view, these legends form a connecting link between the Vedic *Samhitās* and the *Brāhmaṇa* texts.<sup>48</sup> In

the latter sources there are passages which are the most valuable source for studying the picture of life and give us records of early struggles which have left no traces in literature of other nations.<sup>49</sup>

To the *Rgveda* belong the *Aitareya Brāhmaṇa* and the *Kauṣītaki Brāhmaṇa* (*Śāṅkhyāyana Brāhmaṇa*). The former consists of 8 parts, each subdivided into 5 chapters, and each chapter into several *khaṇḍas*, the total number of *khaṇḍas* being 285. This *Brāhmaṇa* is mostly written in prose and partly in verse and contains formulae of performing several sacrifices and duties to be discharged by the priests. Its authorship is attributed to *Mahidāsa Aitareya*. The *Kauṣītaki Brāhmaṇa* is attributed to *Kauṣītaka*. It consists of 30 chapters which mainly deal with the food and *soma* sacrifices. There are eight *Brāhmaṇa* texts of the *Sāmaveda*, such as, the *Tāṇḍya Mahā Brāhmaṇa* (*Pañcaviṃśa Brāhmaṇa*), the *Saḍviṃśa Brāhmaṇa*, the *Chāndogya Brāhmaṇa*, *Jaiminiya* or *Talavakara Brāhmaṇa*, *Sāmavidhāna*, *Devatādhyāya*, *Ārṣeya* and *Vaṃsa Brāhmaṇas*. The first four *Brāhmaṇas* are full of mystical speculations and from the historical point of view they are very important. The last four are only but the index of the *Sāmaveda*.

The *Brāhmaṇa* of the *Kṛṣṇa Yajur Veda* is incorporated in its *Samhitā* portion. These are the *Brāhmaṇas* of the *Kaṭha* and *Maitrāyaṇī* schools. The important *Brāhmaṇa* of this *Veda* is the *Taittirīya Brāhmaṇa* which is nothing but a continuation of the *Taittirīya Samhitā*. In this respect the *Kṛṣṇa Yajur Veda* is a departure from the other *Vedas* because in it the characteristics or demarcating features of the *Samhitā* and *Brāhmaṇa* have been mixed up. On account of this, this *Veda* is called *kṛṣṇa* which means black, mixed or confused.

The *Śatapatha Brāhmaṇa* belongs to the *Vājasaneyī Samhitā* (*Śukla Yajur Veda*). It contains 100 *adhyāyas*. It appears that the first nine *adhyāyas* were composed and compiled at one time into a whole, to which 10-14 *adhyāyas* were added later. Even in the time of *Pāṇini* (circa middle of the 5th century B.C.) it existed into two recensions, one containing 1-60 *adhyāyas*, and the other 1-100 ones.<sup>50</sup> This is the best known, the most extensive and, on the merit of its contents, the most

important of all the *Brāhmaṇa* texts. Macdonell thinks that in importance it is next to the *R̥gveda* and the most important production in the whole range of the Vedic literature.<sup>51</sup> The *Śatapatha Brāhmaṇa* has two recensions, namely, the *Mādhyandīn* and *Kāṇva*, of which the former has gained wide celebrity. These deal with the methods of performing several Vedic sacrifices, duties of priests and specific *dakṣiṇās* to be offered to them. This text is a mine of information for the study of the later Vedic economy.

To the *Atharva Veda* belongs the *Gopatha Brāhmaṇa* which is divided into two parts, namely, the *pūrva* and *uttara*. Originally it consisted of a hundred chapters of which only eleven are now extant. From its language and contents this text appears to be much later than the other *Brāhmaṇas*. In some cases its observations appear to belong to much later date. So Rau thinks that this text does not strictly belong to our sources. In spite of this, its source materials may be utilised occasionally because it consists, to a large extent of stanzas borrowed from the earlier *Brāhmaṇa* texts.

The *Brāhmaṇa* texts, as a kind of source, enjoy a very considerable reputation at least with a few western Indologists. They have been compared with the records of the weak minded authors. Just as monotonous in contents as helpless in style, they partly show us, with their hindering identification and their secretive nonsense, the first trials of thinking and speaking of the earliest Indian theologians. The authors are still completely unable to form longer chains of thought; the shortest sentences stand side by side, obviously unconnected logical conclusions are as good as untenable and trends of rational contemplation are as blurred or hardly formulated in the chaos of confused mystical imagination.<sup>52</sup>

It is obvious that such texts are not really suitable for the research of cultural history. However, there is no choice, Chance has preserved only these as the index of that time. The scholars, who attempted to design a cultural picture of the later Vedic society depending on the collection of these hymns were baffled in their attempt. They tried, one may say,

to draw their ideas from the hymns. In spite of it, it would be worthwhile to study the *Brāhmaṇa* texts because undoubtedly the most important and powerful thoughts of Indian culture were conceived in the Brāhmaṇical times when the caste system became deep rooted, and the concept of transmigration of the soul and the doctrine of *ātman* were propounded.

The great sacrifices were performed not only for the ruling classes but also for the prosperity of the people in general. In a certain sense, they were state sacrifices. Of course this task was not easy. A picture can emerge by putting together an unending number of small mosaic stones. The information is fragmentary and short. The theological authors mention such things only by the way. They are only too often satisfied with bare hints. This makes the work very difficult though it also offers great advantages. Individual statements, to a certain extent unintentionally delivered and embedded in other kinds of texts are less exposed to conscious and unconscious references to matters regarding socio-economic life than the main thought of a text, on which generations have worked and in which the opinions often differed.<sup>53</sup> It is noteworthy that the information have been gathered from religious texts, so sometimes it is unavoidable to mention some points without showing their religious and magical contexts.

The *Āraṇyakas* are important works but their main concern is philosophy. Most of them are composite works and contain *mantras*, *Brāhmaṇa* and even elements of *Sūtra*. Their dates, which cannot be definitely fixed, are in any case later than the old *Brāhmaṇa* texts. Among the two *Āraṇyakas* of the *R̥gveda*, the *Aitareya Āraṇyaka* is obviously the more ancient than the *Śaṅk'hāyana* (*Kauṣītaki*) *Āraṇyaka*. The *Taittirīya Āraṇyaka* is connected with the *Yajur Veda*. It is a mixture of verse and prose, and it is the continuation of the *Samhitā* and *Brāhmaṇa* of the same name. The *Bṛhadāraṇyaka Upaniṣad* is the last part of the *Śatapatha Brāhmaṇa*. It is connected with the *Vājasaneyi Samhitā*. In the same text, we notice the beginning of the *Chāndogyopniṣad* and the *Jaiminiya Upaniṣad Brahmana*. The *Āraṇyaka* texts mainly deal with philosophical speculations hence they are not so informative.

The *Upaniṣads* have more concern with religious and philosophical speculations though they are very informative for studying the material life of the people. The most ancient *Upaniṣads* are closely related to the *Brāhmaṇa* portions of the *Āraṇyakas*. They share with the esoteric tendencies starting with discussions of the symbolism of melodies of words and they branch off into philosophical problems. As opposed to the other Vedic texts, which mainly dictate the path of action, the *Upaniṣads* lay greater stress on the path of knowledge. These are closely related to the *Brāhmaṇa* texts and most of them contain certain speculations of the 10th Book of the *Satapatha Brāhmaṇa* and retain the magical aspects.

Undoubtedly the *Upaniṣads* are later than the *Samhitās* and even the *Brāhmaṇa* texts. But the germs of the doctrines of the *Upaniṣads* go back to the date of the *Samhitās*. Conceptions corresponding to the general teachings of the *Upaniṣads* occur in certain hymns of the *R̥gveda*. In the *Vājasaneyī Samhitā* we meet with the *Īśāvāsyopaniṣad*. In the *Brāhmaṇa* texts several *Upaniṣads* are contained. The recognised place for the ancient *Upaniṣads* is in the *Āraṇyakas*, which, as a rule, form an appendix to the *Brāhmaṇa* texts but are sometimes included also under the general name of the *Brāhmaṇa*. Max Muller suggests that like other Vedic texts the *Upaniṣads* maintain a place in the literature of the world as some of the most astounding productions of human mind in any age and in any country.<sup>54</sup>

The earliest *Upaniṣads* are in prose with some verses and citations from the *Vedas*. Their language is close to the *Brāhmaṇa* texts. The oldest of them are two, the longest and the most important the *Bṛhadāraṇyakopaniṣad*, being the next the *Chāndogyaopaniṣad*. In [form and matter they are alike, and contain a few common passages. The *Aitareya Upaniṣad* is equally old and is a part, of the *Āraṇyaka* of the same name. The *Kauṣītaki* also is old and forms a part of the corresponding *Āraṇyaka*. In antiquity it may be grouped with the *Kena* and the *Taittirīya Upaniṣads*. To this group may be added the *Īśa*. These ancient *Upaniṣads* are older than the sixth century B.C., i.e., anterior to the rise of Buddhism.

The metrical *Upaniṣads*, namely, the *Kaṭha*, *Śvetāśvatara*, *Muṇḍaka*, *Māṇḍūkya* and *Praśna Upaniṣads* are late in date and their connection with the *Sam'hitās* is less close. Their theory of soul is intermingled with new ideas, popular versions of the *sāṃkhya* and allusions to the *yoga* practices. In them a vague representation of a personal god is to be noticed. Their language and prosody are no longer to be classed as the Vedic. These *Upaniṣads* are later than the *Brāhmaṇa*<sup>55</sup> texts and show points of contrast with the early Buddhist. Both of them draw a common source of ideas. Taking all these into consideration, their date is often suggested as 500 B.C.<sup>56</sup> The *Muṇḍaka Upaniṣad* is very much influenced by Prākṛit and it contains hundreds of Prākṛitised forms.<sup>57</sup>

Weber and M. Regnaud attempted to fix the dates the *Upaniṣads*, but Max Muller criticised them on the ground of internal and external evidences.<sup>58</sup> He thinks that it is quite clear that a large mass of traditional *Upaniṣads* must have existed before they appeared in their present form. Where more than one *Upaniṣads* contain the same story, told almost in the same words, they are not always copied from one another, but they have been helped to grow independently, in different localities, by different teachers, presumably to serve different purposes.<sup>59</sup>

The *Upaniṣads* make a contrast from the other Vedic texts. They are addressed to a social stratum, different from that implied in the *Brāhmaṇa* texts. If the former texts show signs of criticism against sacrifices, and constitute some sort of rapture with the *Vedas*,<sup>60</sup> still it is no less true that they bathe in the same ambience as the other later Vedic texts and they are in many respects close to the *Atharva Veda*. The general tone of the *Upaniṣads* towards material life is one of detachment because *eṣāṇā* for any worldly possession leads to ignorance and it is not helpful in attaining salvation. The impact of such attitude towards worldly life has been discussed elsewhere in this work.<sup>61</sup>

The study of the economy of the later Vedic period will remain incomplete if the source material as contained in the



*Nighaṇṭu* is not utilised. It contains a collection of synonyms of different terms borrowed from the *Samhitās*, some of which are of much economic importance. In this regard, a study of the synonyms of gold, land, water, animals, foodgrains, plants and several such objects are very significant. The *Nighaṇṭu* contains three sections divided into five chapters, but for the purpose of present study, its first four chapters are useful<sup>62</sup>. The author of this work is unknown and it appears to be the production of united efforts of many persons belonging to different times. Yāska was a commentator on it and he mentions the names of his predecessors who had commented upon it. Hence it appears to have been a work of pre-Baddha time.

From the clear conception of the subject under study, it is essential to scrutinise etymologically the economic terms contained in the Vedic texts because such a study will shed searching light on appropriate meanings of words. In this regard, the *Nirukta* by Yāska is the most valuable and informative source which presents etymological explanations of terms contained in the *Nighaṇṭu*. In order to clarify his views, Yāska cites extracts from the *Samhitās*, the *Brāhmaṇas*, the *Upaniṣads* and the *Āraṇyakas*. Besides, he quotes the views of his predecessors who belonged to different schools of Vedic interpretations. The *Nirukta* explains a state, offers synonym, analysis, number, doubtful derivations, quotations and different interpretations. He has also given illustrations from the contemporary society. While utilizing informations from this text, one should be very careful because sometimes the etymology of a term is very fanciful.

The date of Yāska poses a very controversial problem. Liebig<sup>63</sup> suggests that he belongs to the period of Patañjali, but his observations are based on a vague remark by Kielbarn<sup>64</sup> that the development of a doctrine in different *Śāstras* does not prove the priority in age of different texts. Keith criticises the view of Liebig on logical grounds.<sup>65</sup> Some other scholars, such as, Roth,<sup>66</sup> Goldstucker,<sup>67</sup> Max Muller,<sup>68</sup> Weber<sup>69</sup> and Macdonell<sup>70</sup> also have advanced their own views on the problem of the probable date of Yāska. He is known to Pāṇini<sup>71</sup> and he appears at a more primitive stage of development than the

latter. On this ground it has been suggested that the lower limit of his time is not later than 500 B. C. As this limit has not been questioned so far, while its upper limit is pushed back to as far as 700 B. C. ; it may, therefore, be safely assumed that he lived sometime between 700-500 B. C.<sup>72</sup>

Besides the etymological study of the economic terms contained in the Vedic texts, a philological approach to these terms may also help us in tracing out the origin of some of the objects in different regions and their borrowing which indicates cultural and economic contacts. In the Vedic literature, there are several terms of non-Āryan origin. Their philological study will widen the area of exploration. Linguistic palaeontology is helpful for the study of the origin of economic ideas and objects, as also the scope of their spread and mutual contacts. Comparative philology only is not in a position to help us in reconstructing the history in a complete form. Several economic terms contained in the Vedic texts have their variants or similar terms in Zend, Greek and Latin. These indicate a common heritage.

It is essential to study the *Sūtra* texts because these also deal with the Vedic sacrifices and rules and regulations based on the Vedic injunctions. These may help us in our study of older ideas, and to trace the changes brought in them, their discontinuation and replacement by new ideas practised at the close of the Vedic period or in the post-Vedic times.

The *Kalpa Sūtras* were written under the auspicious influence of various Vedic schools. These deal with the sacrificial and domestic rituals and the customs of everyday life under the three heads, namely, the *Śrauta Gṛhya* and the *Dharma Sūtras*. The *Brāhmaṇa* texts are the source books of the *Śrauta Sūtras*. The relationship between them is so close that some of them appear like systematic summaries of the *Brāhmaṇa* texts. Since the *Brāhmaṇa* texts were mainly concerned with the exposition of the sacrifices, termed as the *Śrauta* sacrifices, popularities falling within the purview of the domestic rituals were not regarded as so equally important as to form the subject matter of systematic discussion in the *Brāhmaṇa* texts. Some of the

important *Śrauta Sūtras* are the *Āśvalayana*, *Sāṅkhāyāna*, *Manava*, *Baudhayana*, *Āpastamba*, *Hiranyakeśin*, *Kātyāyana*, *Lātyayana*, *Drāhyāyana*, *Jaiminiya* and *Vaitāna Śrauta Sūtras*. These texts deal with mainly 14 Vedic sacrifices mentioned in the *Yojus* and the *Brāhmaṇa* texts. They have summarised and simplified the process of their performance. These are useful in studying different materials used in sacrifices and amount of *dakṣiṇā* to be offered to different category of priests.

The *Gṛhya Sūtras* mainly deal with the domestic rituals and thus these discuss the duties to be performed by a householder from his birth to his death. These shed light on different *samskāras* and forms of marriage along with seven main sacrifices and five *mahāyajñas*. These texts constitute a valuable source for reconstructing the socio-religious and economic history of the last phase of the Vedic period. Of the twelve *Gṛhya Sūtras* available so far, only four of them, namely, the *Āśvalāyana*, *Baudhāyana*, *Āpastamba* and *Pāraskara Gṛhya Sūtras* rank as major ones on the basis of content and planning. These are followed by eight other works of a minor character.<sup>73</sup> The four major and earliest *Gṛhya Sūtras* were brought out around 5th-4th century B.C. This period coincides with the beginning of organised civil life in different parts on northern India. A classified list of different domestic topics would bear out that the whole emphasis of these texts is on the performance of a series of domestic rituals centering round a permanent family dwelling house and covering the entire range of life. Some of the *Gṛhya* rituals have concern with the building of a house and agriculture.<sup>74</sup> An additional category of *Gṛhya* rites related to *Kāmya* rituals, the performance of which, through optional, was supposed to ensure material prosperity of the man and his family. It thus followed that stability and resourcefulness of household life were casually basic to the composition of the *Gṛhya* texts. The permanent household was already a feature of the later Vedic society but the compilation and elaboration of these *Sūtras* were taken up only when householdership offered a prospective clientel to the surplus-sharing priesthood. The authors of the *Gṛhya Sūtras* looked.

to the *Brāhmaṇa* texts for guidance and drew upon them considerably.

The *Dharma Sūtras* deal with rules and regulations of conduct and *vyavahāra*. As religious interests would be largely involved in this kind of class legislation, it would naturally call into play the ingenuity of the priestly order. It would create among that tendency towards regulating the mutual relations of all classes of the community which ultimately found its legal expression, towards the close of the later Vedic period, in the *Dharma Sūtras*. These may be looked upon as the proto-types of the Hindu codes of Law. These texts also draw upon the *Vedas* and the *Brāhmaṇa* texts.

There are four important *Dharma Sūtras*, namely, of Gautama, Baudhāyana, Āpastamba and Vasiṣṭha. It is very difficult to fix the dates of their final compilation. Pāṇini informs that the *Dharma Sūtras* were the subjects of study in the *caranās*, schools of Vedic studies.<sup>75</sup> On the basis of internal evidences, it has been suggested that the *Gutama Dharma Sūtra* was compiled sometime between the 4th century B.C. to the 2nd century A.D.<sup>76</sup> The antiquity of other three texts also is not earlier than that of the former. Absolute chronology of these texts also is an impossible task chiefly because the evidences are inconclusive in their cases. As regards internal evidences, with the solitary exception of *Āpastamba Dharma Sūtra* which refers to the *Bhaviṣya purāṇa* these texts do not presuppose any work later than the *Brāhmaṇas*. The external evidence is furnished by passages quoted from these texts in later works. After close examination of evidences, Banerjee suggested that these might have been finally compiled between the 5th century B. C. to the 2nd century A.D.<sup>77</sup>

These texts have their source in the teachings of the Vedic schools and these, called revealed law codes, are in most cases only improved metrical editions of older prose works, which later were prescribed to be committed to memory.<sup>78</sup> Usually these older *Dharma Sūtras* draw upon each other and thus have several common passages. From our point of view, the most useful portions of these texts are the *vyavahāra* and *rājadharma* sections.<sup>79</sup> The former deals with the judicial

procedure for punishing the offenders and law breakers including economic offences and disputes about property. The later has concern with the duties to be discharge by a king for proper running of society, hence he had some economic functions to be discharged.

The early Buddhist literature is also important for studying the later Vedic economy. The Buddha preached his teachings at the end of the later Vedic period and he vehemently criticised the performance of the Vedic sacrifices, authenticity of the *Vedas*, superiority of the *brāhmaṇas* and the *varṇa* organisation based on birth.<sup>80</sup> The teachings of the Buddha were collected just after his death but had undergone changes on account of their subsequent editions and modifications. But the *Gāthās* are supposed to be the oldest stratum of the early Buddhist texts. The past stories appear to be pre-Mauryan, but the present stories reflect the Mauryan society. Attempts have been made to bring them down even upto the *sātavāhana* period, but this view has been critised and refuted.<sup>81</sup> The *Dīgha*, *Majjhima Samyatta* and the *Āṅguttara Nikāyas* together with the *Vinaya* are supposed to be pre-Mauryan.<sup>82</sup> A study of these texts furnish important information regarding changes in economic life just after the termination of the Vedic period. These changes are mainly represented by the NBP levels marking the emergence of cities and the use of metallic coins and iron objects on a larger scale.

Some historians think it right to utilise the *Mahābhārata* as a source book for the study of the later Vedic period on the ground that it reflects happenings of that period.<sup>83</sup> This hypothesis is illogical because the text of the present form of this epic was not composed in the later Vedic period. Its antiquity does not go beyond the 6th or the 5th century B. C. and mainly it is the composition of the Śūṅga and the Gupta periods.<sup>84</sup> Further, Basham criticising this view of rightly comments this epic is so overlaid by assertions of later centuries that no attempt at interpreting them historically has so far won general acceptance. It may never be possible to shift the fact from the fiction. The names of several Kuru kings, such as of Parikṣit and Janamejaya who were the son and the

grandson of Arjuna respectively have been mentioned commonly in the later Vedic texts and the *Mahābhārata*. But the epic in its present form is of less use to the historian even than the *Iliad* or most of the Norse and Irish saga literature. It is as futile to try to reconstruct the history of India in the 10th century B. C. from the *Mahābhārata* as it would be impossible to write the history of Britain immediately after the evacuation of the Romans from Malory's *Morte d'Arther*.<sup>85</sup>

Besides the indigenous literary sources, the contemporary literature of the neighbouring regions with which the Indians of the later Vedic period had cultural and commercial contacts, also should be utilised. Such a study will enable us to find out parallel developments and stages of economy. It would prove very informative regarding trade and commerce. In this respect the study of the *Avesta* is essential because it contains references to the Punjab.<sup>86</sup> This text is the sacred book of the Āryans of Iran who were a branch of the Indo-Europeans. With them the Āryans of India had settled in Iran for centuries. Special agreements exist between Sanskrit and Zend in terminology concerning agriculture and cattle rearing. The language of the *Rgveda* is more closely related to the Iranian group of languages of which the oldest remains are Old Persian and Avestan. In fact, the relationship is so close that both peoples designated themselves as Āryans, and it appears that at some earlier time they constituted a single nation speaking the same language. The earlier Āryan language termed as Primitive Indo-Iranian is the source from which the later Iranian and the Vedic Sanskrit are derived. It seems that as a common people both originally settled in Central Asian region bordering the Oxus and the Jaxartes, and the Aral and the Caspian seas. From there they migrated to Iran, Afghanistan and the Punjab.

The common culture and religion developed by the Āryans in their earlier home is still reflected in the earliest texts of the Iranian and Indo-Āryans respectively. In due course, some minor changes took place but a considerable amount of the common heritage remained. The Iranian Mithra (Vedic Mitra) remained one of their main gods. Fire-worship and the cult of Soma are a common inheritance in both of them. The Vedic

Yama and the Avestic Yima play a common role, Common terms pertaining to economic spheres occur in both languages. A division of society into classes which in India crystallized into the four *varṇas* is closely paralleled in Iran. These people, like the Europeans, effected their transition to agriculture, or at any rate, made considerable advance in agriculture and animal husbandry when they were yet ethnically united. The date of the composition and compilation of the present form of the *Avesta* is a topic of much controversy. It is supposed that only the *Vendidad* survives in its original form which is one of the twentyone original Books of the *Avesta*<sup>87</sup>, but on the whole, it is admitted that the present texts are derived from the texts which existed during the Achaemenian period. The *Gāthās* and *Yast* and the *Vendidad* represent earlier times but the present texts were finally edited in the fourth century A. D.<sup>88</sup>

The language of the *Rgveda*, and the culture and socio-religious traditions of the *Rgvedic* Āryans have sufficient similarity to those of the Indo-Germanic people of early Europe. It warrants that at some early period they must have been in close contact. Undoubtedly, there is similarity in the societies depicted in the Homeric and Vedic poems. Both worshipped the elements of nature. In both, the society is patriarchal and tribal. But neither the Hellenes nor the Āryans of the Punjab, however, retained any recollection of the time when they had been united.<sup>89</sup> The Homeric Greeks had developed their own distinct culture. Their oldest literary records survive in the form of the *Iliad* and *Odyssey* by Homer who lived sometime between 900-700 B. C., roughly corresponding to the later Vedic period. A study of these works indicates that the Greeks of that period were in the Bronze Age, though they used iron less frequently. This takes us back to sometime near about 1000 B. C. when the people of other parts of the world also began to use iron-tools and weapons commonly. A perusal of these Greek epics sheds helpful light on the economic developments which were taking place in a contemporary sister civilisation.<sup>90</sup>

The Greeks and the people of the Punjab were brought into touch through Iran about 510 B.C. (which marks the termination of the later Vedic period), Darius the great, having advanced as far as the head waters of the Indus, sent a Greek mercenary, named Stylax, to sail down the river to its mouth. The account of his adventures was probably utilised by Herodotus (b. 489 B.C.). He has a great deal to tell us about India, especially about the people of Western India. His work is also useful for our study. He has mentioned the climate of the Punjab, and the cotton, and regarded it as superior to sheep's wool of which the Indians made their clothes. He is the first to mention the famous legend of the gigantic ants which guarded the Indian gold.

Indian Ideas influenced the Greek philosophy. In Greek history, preceding the Persian wars, we find the record of the revolt against the simple eschatology of Homer. The thinkers were Indian Greeks of Asia Minor who were in touch with Persia. The views of the founders of Greek metaphysics, namely Xenophanes, Parmenides and Zeno are very much in the same spirit as the authors of some of the later Vedic hymns and the *Upaniṣads*.<sup>91</sup> Orphism<sup>92</sup> appears to have been originated with Pherocydes of Syros (C. 600 B. C.) and his disciple Pythagores (b. 580 B. C.), the latter, according to his biographer Iamblichus, travelled widely studying the esoteric teachings of Egyptians, Assyrians and the brāhmaṇas.<sup>93</sup> India was also passing through a parallel stage of development about the same time or somewhat earlier (700-500 B.C.) Orphism and the Upaniṣadic philosophy abound in parallels.

A study of the *Old Testament* is also desirable. This text refers to the exploits of some of the Assyrian, Phoenician and Iranian kings who had established trade relations with India. Several Sanskrit terms in corrupt Hebrew have been detected in this text. Their critical study throws considerable light on trade relations of India with some of the West Asian countries.

(b) *Archaeological Sources*. Most of the historians utilise only literary sources for writing history, but they do not give due importance to archaeological sources. On account to this



difficulty, a more perfect co-ordination of history and archaeology has not been possible. Archaeological materials provide a historian with the concrete picture of the subject and with exact date, whereas in literature, we may get an exaggerated account and we may never be sure about the actual date of an event. Generally, a historian works on two types of evidence namely, written and unwritten. By making use of archaeological sources, the historian at once broadens the basis of history. The writing of real history is dependent upon the authentic and well-dated ancient literary records and the archaeological materials.

While in respect of the Indus valley civilization archaeological is the only source of our knowledge, information concerning the Vedic Āryans depends entirely on literary texts which were handed down by oral tradition. These literary parts do not provide any proper historical account, as it is not their concern, though a good deal of incidental information of a historical or semi-historical character holds before us a fairly clear and consistent picture of the life and civilisation of the period. During most of the Vedic period, the Āryans built their settlements of wood and they were distributed in small units in villages rather than in towns. Since their houses and furniture were made mainly of wood and other comparatively perishable materials, not much has remained for the archaeologists to record. So, until recently, the Vedic period in India remained archaeologically a complete blank. Even now the position has not improved.<sup>94</sup> However, some of the excavated sites, such as, Hastināpura, Kauśāmbī, Ayodhyā, Atranjikhera, etc., have yielded finds of much historical importance. Excepting the last one, others have been mentioned in the Vedic texts. Since the 1st millennium B.C. history and archaeology have become fully effective partners in the matter of timing.

(i) *Archaeo-botanical Remains.* Archaeological materials comprising both the charred foodgrains and their impressings on the pot sherds are very helpful for writing history. From a large number of ancient sites, remains of cultivated plants and their impressions have been discovered. Impressions of

bamboo-halves, grasses, etc., along with the binding materials used in mud-houses also help us in a long way in historical studies.

There are numerous areas of common interest between archaeology and plant sciences which can be explored to provide solution and elucidation of many knotty problems.<sup>95</sup> The plant help in fixing the chronology. The radio-carbon assay is largely dependent upon organic remains. This mechanism is useful in dating the shifts in plantation of plants, the introduction and extinction of certain plant genera and progressive development of agriculture. Dendrochronology<sup>96</sup> or tree-ring analysis also is very useful. It is a significant archaeological method of dating which was first developed by R.E. Douglass in the first quarter of this century. The basic principle involved in dendrochronology is that the tree rings, which are so clear in the cross sections of most trees, develop in accordance with the marked seasonal climatic changes. Wet climate produces thick rings whereas dry season produces thinner rings. In the regions where the climate is of uniform nature, the growth of the tree-rings is uniform. The rings in modern trees of known age act as a control. These are counted and method with the rings of older specimen discovered from the excavated sites to obtain the growth of individual ring within a specimen. Thus by counting the growth of the rings approximate dates are obtained.

Today, a large number of dating methods are applied though none is so powerful and accurate as the radiocarbon method for periods upto 5000 years. Several methods depend upon the relative concentration or depletion of elements in buried bones. If other conditions were similar, an increase in uranium and flourine and a decrease in nitrogen would indicate greater antiquity. But these methods give only relative ages and not absolute ages. But radio-carbon gives an absolute age and so do some other methods. For Indian archaeology, however only radiocarbon is relevant. In the course of the last 15 years, more than a thousand archaeological samples have been dated. By adopting this method, a chronological framework has been provided for most of the cultures.

The first farmers seem to have appeared in the middle of the third millennium B. C. though, in view of the much earlier beginning of farming in both west and south-west Asia, these dates seem quite late. But recently some sites in the Allahabad district show the presence of grains going back to the 5th millennium B.C. The radio-carbon method of dating suffers from two limitations. It can date only organic remains and can date back only upto 5000 years. In a hot and humid climate like that of India, organic remains generally decay out and the 5000 years limit leaves most of the Stone Age objects out of its range.

Apart from the chronological importance of tree-ring analysis, the recognition of timber provides information of its selective use. This information substantiates the trends of forest development inferred from pollen records. Pollen analysis helps in getting knowledge of the past history of vegetation. Pollen grains are produced and released by flowering plants to carry out a function which is complete within hours or days; yet they can often far more resist the process of decomposition and decay than any other plant material. This fact is important as it enables pollen to be preserved but also allows the use of quite drastic chemical methods for its extraction from the material in which it is preserved. The Pollen areas or zones help to some extent in determining the region of cultivation of particular kinds of vegetation.

From the discovery of remains of plants from Hastināpura<sup>27</sup> it has been inferred that there was no pronounced climatic change in the region in the last 3000 years. The evidence is based upon *dalbergia sissoo* which occurs both in moist deciduous forest and dry deciduous riverine forest. Likewise, plant remains also suggest warm and dry climate.

Several cultivated plants have been introduced into India through diffusion of alien cultures. The cultivated plants in this country can, therefore, provide valuable background information which throws light on the evolution of cultures and contacts among them. Some of the cultivated corn were carried by the people to wherever they went. The diffusion of

wheat culture into India presents an interesting story. The discovery of lentil, grass-pea, and linseed at Navadatoli Mahesvara<sup>98</sup> proves their diffusion into Central India from the Mediterranean, and the extreme west of India.

Besides the cultivated plant-remains, the remains of the used wild plants for making implements, furniture, houses ramparts and pounders have also been found. Some of the identified plant species do not suggest any possibility of their having been grown in the near vicinity of the site. For instance, *cedrus*, *ulmus* and *dalbergia* have been discovered from different sites. *Cedrus* is restricted to the *Himālayas* and *dalbergia-latifolia* occurs in the south, and it seems improbable that these species were grown in the Indus valley about 4000 years ago. Obviously, these timbers must have been imported from the *Himālayas* and the southern parts of India. It is interesting to note that the *Atharva Veda* refers to several herbs and harbal plants to be brought from the *Himālayas*.

Plant life, on the whole, is more sensitive to changes than fauna its fluctuations are capable of giving finer chronological indications. Record of forest-history has been preserved in the bogs of the temperate regions. Not only the remains of trees, their leaves and fruits, but also the membranes of their microscopic pollen grains have been preserved. These pollen grains have been blown into the bog from a broad belt of the country and they tell us of the composition of forests in the whole region.

(ii) *Remains of Bones of Animals.* Bones of animals are very helpful in studying the economic life of the people. Even poorly preserved and fragmentary relics may lead to, atleast, a partial reconstruction of the history of animals reared by the ancient people. The identification of animal species from loose teeth and fragmentary bones requires a special knowledge of anatomy and zoology. The field of possible unknown species is further narrowed, for any given place and period, to the list of species likely to be found. Bones and teeth often provide valuable dating evidence. Besides, remains of domestic animals help in reconstructing the history of domestication, size and

uses of animals, extinction of species, introduction of new ones, and lastly, the food habits of the people.

Mammaleon bones are important as they represent the most important group of animals, their meat being useful for man, both in his hunting stage of culture and in his later food producing stages. From identification of bones, a list of species may be compiled and comparison may be made with the present days birds of the region. Evidence may be found of seasonal occupation of the sites or of a particular hunting or trading people. Further, these may prove the existence of ancient species and their extinction.

Fish and other aquatic creatures have been important as items of food from the earliest times. In some collecting communities with a riverine or maritime orientation, fish formed the main source of food. Shell-fish were probably the first aquatic creatures to be collected, and their remains may indicate the existence of a primitive people with a low level of material attainment.<sup>99</sup> The identity of fish species may indicate the extent to which different fishing methods were developed. Fish hooks discovered from different sites indicate the fishing technique of the people for getting fish for their food.

(iii) *Metallic Objects.* The Vedic literature refers to different kinds of metals for making weapons of war, domestic utensils, agricultural implements and ornaments. The people had realised their medicinal utility for curing diseases. Excavations have also brought to light different kinds of metal which belong to the period of the present study. In this regard, the study of the introduction of iron in India is a very interesting problem. Excepting small iron objects, the metals like gold, silver, copper and brass buried in the earth retain their qualities and are durable. A study of metallic objects has numerous interesting features, such as, the nature of original metal, the process of its purification, fabrication of objects, physical changes resulting in repairs and chemical changes due to burial. Additionally, in the case of antiquities which have passed through trade, there may have been embellishment in order to increase

sale prospects. Further, the metal objects throw light on the source of the metals, trade-routes and contacts among the people of different regions.

Did the technology of copper metallurgy originate in India? Extant archaeological records do not indicate any evidence of experimental and developing stages of copper metallurgy in the region inhabited by the Vedic *Āryans*. In the earliest levels of some sites in Baluchistan and the Indus valley, a few copper objects do appear. Their study, however, has shown that they were made by smelters and smiths who already possessed a sophisticated metal technology. These metal workers appear to have received their technical know-how from Iran. In this country, at Tepe-Sialik and Tal-i-ibbis, archaeologists have unearthed a whole sequence of developing metallurgical techniques dating from the 5th millennium B.C. From the excavations at Tal-i-ibbis, it has become increasingly evident that the Kerman mountains, rich in copper ore deposits, played a significant role in dissemination of metal technology to Afghanistan, Baluchistan and the Indus valley.

Thus, while there is little doubt that the Indus valley people received the technical-know-how of copper smelting from Iran, some scholars think that the Indian chalcolithic metal objects might also have been imported from Iran. This, however, is far from true. We now have archaeological evidences that prove that the chalcolithic metal objects excavated in our country were indigenously made. Sankalia has discovered semifused glass-like material together with copper tools from Ahar in Rajasthan. On analysis, the glass like material was found to be copper metallurgical slag, a waste product of the copper smelting industry. This identification is very significant. It provides evidence of copper smelting at Ahar. It appears that in the chalcolithic period, this place was a centre of copper smelting. It also led to an important corollary, namely, that the Indian chalcolithic copper artifacts were in all probability indigenously produced. In order to gain a greater degree of certainty for our hunches, it is necessary to link the copper artifacts with Indian copper ore deposits and locate the source of metal.

Ancient metal objects contain large number of impurities. Some of them show minute traces of these impurities. It is obvious that these could not have been deliberately fused into the metal. The impurities must have got into the metal from the ore from which it was extracted. These impurities, therefore, may serve as valuable clues in tracing the source of metal. Spectrometric analysis, in which the samples cut from ancient metal objects are exposed to light-source and the spectrum they emit is analysed for their composition, reveals the impurity elements in the samples. These can be compared with the impurities in the likely ore deposits and, in this way, the source of the metal may be determined.

Within the area inhabited by the chalcolith people extensive chalcophyrite ore deposits are located in the Aravalli hills. At many places these deposits are dotted with deep shafts and slag heaps, and these dots are possibly the marks of ancient mining and metallurgical activities. Aravalli copper ore deposits were therefore considered as the likely source used by the chalcolithic metal smelters. Spectrometric studies were carried out on ore samples obtained from the ancient mine pits at Khetri and on metal samples from representative chalcolithic artifacts excavated from sites in Haryana, Rajasthan, Gujarat, Madhya Pradesh and Maharashtra. Impurity patterns of the artifacts and the ore samples showed an agreement of over 92 per cent. It is therefore reasonable to observe that the Indian chalcolithic copper objects were made indigenously and that their metal was extracted from the Aravalli copper ore deposits.

(iv) *Pottery*. Pottery is also a valuable source which may help the study of the material life of a people, and it has been rightly called the alphabet of archaeology. When an archaeologist has no other datable evidence like coins, etc. he has solely to depend on pottery for his reading of the material culture of the excavated site. Even potsherds are usually the most important bits of evidence for studying the material culture.<sup>101</sup> It is so specific in fabric as well as in form, that it does represent a particular cultural trait of group of people or a tribe.<sup>901</sup> The pottery changes very little in its appearance after it is fired and used. It serves as an important evidence of the

people who made and used it. Even metals corrode and disintegrate. Therefore, it should be studied intensively for finding from it in every possible manner the record available in such objects and their associations with other materials. Besides, if the minerological, physical and chemical properties of pottery are determined, information may be gathered about the raw materials selected by the potter and the uses to which they were put.

A study of the basic clay along with the fillers is very essential. The fillers may include chaff or other chopped vegetable matters which were used to reduce the plasticity of the basic clay. Most vegetable fillers burn out during firing, but the cavity left in the hardened clay may contain morphological features of the plant or grain. It is also desirable to study the clay-source in the region to ascertain its local manufacture or import by others. It may throw light on core area and the outer contacts. Particular kinds of pottery belong to specific periods and the peoples hence, they may indicate their antiquity and movement. Drawings on pottery show different aspects of their socio-economic and religious life.

While studying the pottery, a historian should be very cautious and should raise relevant questions. The interpretation of data may often suffer from the natural limitations of conjecture because it is reached through inference. For instance, he may accurately describe the ancient technique of pottery making and may also classify the various forms of pottery. But difficulty arises when he attempts to reconstruct the history of its use and also the social system of production and the process under which certain pottery forms and technique have changed or discontinued. Difficulty may be faced in co-related material culture with the total cultural system of the area of the time they investigate. So the sociological interpretation of pottery would become more meaningful if ethnological data are brought into adequate use.

The type of earthenwares of special archaeological importance are well known. The PGW belongs to the Copper-Iron period and the NBP ware to the predominantly Iron Age. This



distribution pattern of each of these types suggests a particular area of focus though with more or less overlapping boundaries. As for example, the PGW has concentration in the *Sarasvatī* valley and in the Upper *Yamunā-Gangetic* valley but it has been found as far south as Ujjain. The focus of NBP ware is the *Gāṅgā* basin but it has been unearthed from *Taxilā* in the north and Kolhapur in Maharashtra. These have been much studied in terms of the process of cultural diffusion, but no differentiation has been made between pottery making and pottery using cultures. A change in pottery types almost always proves cultural change that involves both those who made pottery and those who used it. Why the PGW and the NBP ware which were widely used in the Gangetic valley discontinued? Was there any positive reason for this? The reasons were not cultural. The more plausible reasons were the laborious technological complexities involved in the making of these types of ware.

Since the fabric, form and decoration of the ware are often directly influenced by the socio-economic considerations of the wares, cautious conjectures regarding cultural change vis-a-vis technological change in the contexts of ancient pottery should be made. If a particular kind of ware is discovered beyond its area of concentration, it does not necessarily mean that the makers of the ware migrated to a new region or even that the ware was physically carried from one place to another. In addition, a change in pottery fashion is no indication of a change in such basic aspects technology. While, according to the demands of the users, the forms and designs have been frequently changing in the past, the tools of potters have remained relatively unaffected by time and tradition.

Thermoluminescence (TL) method for dating archaeological objects is more useful than  $^{14}\text{C}$  method because with this method one can go back to a million years and one can date any heated crystals of quartz which occur in abundance in pottery, hearth lining, sediments, etc. Even fired flint tools can be dated by this method. TL is the omission of light by a non-conductor when heated below incandescence. If we take, for example, an old potsherd and heat it at low temperatures,

it will give out TL. It is because of the fact that it contains radioactive impurities like uranium, thorium and potassium in minute quantities and their radioactive emissions cause damage to the mineral grains in the potsherds by raising their electrons to the trapping centres which, when heated, are detrapped and in this process some light (TL) is emitted. This TL is measurable through some sophisticated electronic devices. If we determine the amount of radioactive impurities in the potsherd and work out the TL dose they can impart per year, one can easily calculate the age of the sherd, that is, when it was last fired. The TL method has still some defects and one has to understand the contaminating radiation received from the environment of the potsherd, etc. This method is still at an experimental stage.

(v) *Coins*. As a source of history, coins are very useful. They explain and exemplify history as known from other sources, and enlighten us on those aspects which cannot be known from other sources. Coins throw light on the development of political economy. They follow a weight system which may be accurate, and their metrology may be influenced by trade considerations or it may merely follow a convention established by practice. But fluctuations in metrology may be due to a period of stringency, political or economic, in the life of the issuing authority. Proportions of alloys also indicate the period of economic crisis. The circulation of coins need not always be confined to the dominion of the issuing authority. They may travel far beyond the borders of such dominions under various circumstances, and their geographical distribution may often indicate the area of political conquest or commercial relations. But sometimes it indicates nothing more than the wider popularity of a coin series. The later Vedic texts refer to some names of coin, such as, the *niṣka*, *śatamāna* and *suvarṇa*. But real metallic coins have not been unearthed from any level prior to the NBP ware layers, and their antiquity does not go beyond the sixth century B.C., the closing century of the later Vedic period. They indicate the emergence of a advanced economy during this period.

(vi) *West Asian Archaeology*. For the study of the later Vedic economy, it is essential to study the west Asian archaeology because during this period, India had established close commercial relations with the countries of west Asia. The remains of Indian exports to those countries, and literary references to them are very helpful to us. The Indians had relations with these countries even prior to the advent of the Āryans in India and this relationship continued even during the Vedic and the post-Vedic times.

### Interpretation of Data

After the data have been collected, attention has been paid to their primary and secondary interpretations. In the former, the approach is mainly philological because it involves the interpretation and ordering of logical items, based on primary evaluation of the writing and grammar of the original sources. This is the stage in which a serious attempt should be made to arrive at some general and as also preliminary interpretation based on what may be called the archival approach. It is based on intensive study of texts of one period and one site. In any archival approach, the most useful results are achieved through prosopography which is the study of the careers of persons occurring in an archive as revealed by their names, titles, professions and functions.<sup>102</sup>

In this regard, the role of the individual<sup>103</sup> in history should not be overlooked, nor the activities of great men should be considered as the principal or even the sole motive force of socio-economic development. Their activities under certain conditions may exert a tremendous influence on the events. The significance of their historical activity depends upon how far they understand the basic needs of economic development and the conditions that will satisfy those needs. A great man is one who sees further ahead than others, and realises the vital needs of his age. Some philosophers of the later Vedic period influenced the material attitude of the people. A perusal of their life and thoughts furnishes interesting information. *Āruṇi Uddālaka*, *Yajñyavalkya*, *Janaka Vaideha*, *Ajātasatru*, *Jaibali Pravāhana* and *Aśvapati* were hankering after spiritual

knowledge, but they did not neglect their material well being. And though this view may be proved with the help of a few passages, yet the main tenor of the *Upaniṣadic* philosophy was rather giving up the world.

Based on primary interpretation of the data, the secondary stage involves interpretations which lie far beyond the narrow scope of philological interpretation. Secondary interpretation is closely connected with the structural approach, which in turn relies on support from the subsidiary concepts of typology and complementary distribution. The concept of typology involves a rigorous segregation of data and their classification by types and subjects. This may be fruitfully applied to the study of the structure of ancient society.

For a clear concept of the structure of history we should use details as briefly as possible but in a manner that we may not exclude any part of the details without relating them to the whole. This means that it is impossible to analyse and understand individual aspects of society without placing them within their total framework. Such terms, for instance, as unfree or slave are meaningless by themselves. They are meaningful only when contrasted with other terms involved in socio-economic stratification, such as, semi-free and free. Structure involves completeness. In a study on economic structure, at the start, all sections and classes of society must be taken into account. The roof of a building cannot be described without relating it to its other parts. In this regard, it is essential to study the relationship among the four *varṇas* as the *vaiśyas* and the *śūdras* were the main producing classes, and the upper two *varṇas* depended upon them for support. Further, it also is necessary to study the horizontal and vertical social stratifications. The former is based on social differentiation, as in those relating to language and religion, while the latter one is built mainly on economic differentiations, as those between the rich and the poor. A society speaks the common language and professes the common religion, but the people represent different economic classes.

After all, while reconstructing the later Vedic economy, and utilising the source materials, attempts have been made to

follow the historical philosophy of *Kalhana*<sup>104</sup> who was of the view that a true historian should act like a judge, and should discard bias as well as prejudice. As it has been worked on this principle, the present work may reveal that the later Vedic people were engaged in seeking material prosperity and their involvement in philosophical speculations did not inspire them to follow an escapist view of life.

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## The Concept of Wealth

In society there are mainly two aspects of life, such as, material and spiritual which are related to each other. In the process of evolution of civilisation material activities start first and then the spiritual activities are favoured by the people. The Vedic *Āryans* performed sacrifices for obtaining desired objects, but it was impossible for them to do so without material such as grain, milk, butter, grass, plants and animals. They could not concentrate their mind on the ultimate reality nor could they develop high philosophical thoughts without food. *Āṣādhā Sāvayasa* thinks that vow consists in fasting; so the sacrificer should take no food at all.<sup>1</sup> Of course' fasting and austerities were prescribed but their main purpose was physical and mental purification leading to concentration of mind to attain the sphere of higher truths.

### Svasti, Yoga and Kṣema

The Vedic people had evolved several terms to denote material and spiritual aspects of life which were considered as essential for the attainment of a balance way of life and for the development of human values. *Svasti*<sup>2</sup> was a common term signifying both the material and spiritual aspects of life. Prayers were offered to gods for obtaining material possessions and spiritually bliss. *Svasti* means good or solid existence (*su-asti*) which is possible only when the people are materially prosperous and spiritually enlightened. The other important term is *yogakṣema*<sup>3</sup> which signifies spiritual bliss and material

possessions. Both *Uvaṭa* and *Mahidhara* think that *yoga* means acquiring material objects and *kṣema* means their protection<sup>4</sup> leading to welfare. But it is very difficult to agree with the view of these celebrated commentators because in some of the Vedic texts *yoga* and *kṣema* have been used in two different meanings. These are two different habits but one of them is to be selected by an individual according to his inclination. It has been stated that the seekers of everlasting peace prefer *yoga* (spiritualism) but the stupid (*mūḍhāh*) persons hanker after *kṣema* which signifies comfort realised by enjoying material life.<sup>5</sup> It should not, however, be concluded that *kṣema* should be rejected and only *yoga* should be preferred. The aspirants of spiritual life have been advised not to indulge themselves only in *kṣema* rather to detach themselves from the mundane aspects of life. The *Upaniṣads* furnish illustrations to prove that even renowned philosophers did not neglect material aspects of their life. *Yājñavalkya* and *Gārgya Bālāki* visited the courts of kings for holding philosophical discussion as well as for obtaining cows and oxen.<sup>6</sup> It is against this background of *yoga* and *kṣema* that the Vedic concept of wealth may be understood.

### Definition of Wealth

The question arises as to what did the later Vedic *Āryans* mean by wealth? A study of the problem indicates that in their views wealth was a comprehensive term indicating different kinds of possessions. Concerning this, their concept closely resembles the modern concept. The Mercantilists think of wealth primarily in terms of gold and silver. Quesney, the father of the physiocratic school thinks that wealth does not consist in the quality of money a nation may possess but in the quantity of raw materials available for the use of its people. John Stuart Mill is of the opinion that wealth includes in its concept all useful things which possess value in exchange, are material and can be accumulated. He considers even talent and skill as the items of property.<sup>7</sup>

The early Vedic *Āryans* considered animals, metals and manpower as the main forms of property. Brave persons were required to fight the enemies and so were the metals for

making weapons. Cows were very useful in their economic life and horses were required on battlefields so the people prayed to the gods for obtaining brave sons, a large number of cows, oxen, horses and metals.<sup>8</sup> The *yajus* and *Brāhmaṇa* texts prescribe certain rites to be performed for having sons, animals, foodgrains and metals. The *Śatapatha Brāhmaṇa* states that if anyone were to imprecate evil on the sacrificer let him be thus cursed, "Thou shall be without offspring and cattle for these two indeed, constitute the substantial possession of a man."<sup>9</sup> Manu being desirous of progeny, performed austerities. He performed *pāka* sacrifice. He offered up in the waters, butter, sour milk, whey and curds, which caused benediction, making him rich in offspring and cattle.<sup>10</sup> In the later Vedic period also the importance of cattle was not less than that in the early Vedic period. The wealth of a person was counted in terms of cattle.<sup>11</sup> It is obvious from the stories of *Nābhānediṣṭa* and *Śunaḥśepa*. The former was the son of Manu who was overlooked by his brothers while dividing the parental property during the lifetime of their father. He was not present on that occasion. After this return, he asked his father about his share in the parental property. Manu solacing him asked him to go to participate as an officiating priest in the sacrifice to be performed by the *Āṅgirasas* where he could obtain cows as gift.<sup>12</sup> *Śunaḥśepa* was sold by his father *Ajigarta* Sauyavasi to prince Rohita for a hundred cows, he tied him to the sacrificial post for another hundred cows and even agreed to slaughter him for additional hundred cows.<sup>13</sup>

The common use of the adjective "*gomat*" applied to rich people proves that wealth constituted mainly of cattle and not of land. In a predominantly pastoral society this was quite natural a phenomenon. Large conventional numbers of cattle made over to priests indicate that the donors and the donees possessed them in considerable numbers. This might have led to the leasing of these cattle to the families of ordinary clads-men on the sharing basis and might have created relations of dependence between herdsmen and cattle owners, but of this there is no direct evidence in the *Rgveda*. The importance of cattle as the form of property may be assumed from the fact

that the forcible confiscation of cows of the *brāhmaṇas* by the king is vehemently condemned because it results in his material disaster.<sup>14</sup> In the Avestic Iran also the cattle, foodgrains and children were counted as the forms of property and were to be properly protected.<sup>15</sup> In Homeric Greece, besides the aforesaid things metals, wives and houses also were considered as the forms of property.<sup>16</sup>

Though the above mentioned objects were considered as the main constituents of property, in the *saṃhitās*, land is not included in the list of material possession. It is to be noted that some of the persons considered farmland as an essential form of property.<sup>17</sup> The probable cause of the omission of land from the list of the general constituents of wealth was the migratory habit of the people. It was inconvenient for the early Vedic *Āryans* to settle at a particular place for a long time and do agricultural works on a permanent basis, so they preferred movable property. The same practice continued even during the early centuries of the later Vedic period. But this situation changed and they settled in different regions and started farming on a permanent basis. On account of this, a house was also considered as an item of wealth.<sup>18</sup> The *Atharva Veda* and the *Brāhmaṇa* texts refer to an advanced stage of agriculture. The later Vedic people were realising the importance of land so they offered prayers to become *sukṣetrīya*<sup>19</sup> (possessed of fertile land). The *Brāhmaṇa* texts refer to the transfer of land<sup>20</sup> by landowners to others. By the end of the later Vedic period, land and houses were considered as forms of wealth. Apart from these, intelligence, spiritual attainments, scholarship and allied things also were counted as the constituents of wealth so the Vedic texts frequently refer to the desire for acquiring *medhā* (intelligence), *varcasvaṃ* (lusture), *vidyā* (knowledge) and *yāsaś*<sup>21</sup> (fame).

In the Vedic texts there are at least twenty-nine<sup>22</sup> terms for wealth some of which have been explained by *Yāska*. Almost all these terms occur in the *R̥gveda* and other *Samhitās*. The most common term denoting wealth was *rayi*<sup>23</sup> which means the object to be given to others. Further it signifies the objects having exchange value. *Dhanam*<sup>24</sup> was so called because it

delighted the minds of those who possessed it. *Draviṇam*<sup>25</sup> was so termed because the people run towards it or they run by means of it. *Suvidātram*<sup>26</sup> derives from the root *vid* meaning to find, with one proposition *su* or from *dā*, meaning to give. The word *vasu* is derived from the root *vas* meaning to desire, so wealth is a desirable object. Property was known by the term *citra*<sup>27</sup> an account of its being excellent or worth of being collected. Wealth is known as *rādha*<sup>28</sup> because the people conciliate with it. *Dama* was a special word, meaning the property worthy of being given to others and *damuna* meant one who was inclined to charity.<sup>29</sup> *Magham* also denoted this aspect of wealth because it has been derived from the root *mahma*<sup>30</sup>, meaning to give. Maghavan was a widely used epithet for India because he was very charitable and blessed his worshippers with wealth. *Lakṣmī* signified material prosperity which was a mark of a great man or was a desirable thing.<sup>31</sup> *Vittam*<sup>32</sup> was the wealth obtained and *Vitti*<sup>33</sup> was the wealth to be obtained in future. Though *Yāska* has collected and commented upon several Vedic terms signifying wealth, his interpretations are not correct in all cases. Most of them are literal comments.

### Importance of Wealth

Wealth was considered as an object which caused the possessor to develop his potentialities and extend the sphere of his influence in society. So desire for wealth (*vittaiṣaṇā*)<sup>34</sup> was but natural. In the Avestic society also wealth was considered as the basis for deciding the social status of a person.<sup>35</sup> The Vedic people went on searching wider areas of wealth for obtaining it.<sup>36</sup> They wished to rejoice in increase of substance and in sap which meant abundance. It was considered that one who enjoyed prosperity, attained the highest distinction.<sup>37</sup> They wished to possess wealth to become the richest men in society. The Vedic texts contain several terms to denote the rich ones, such as the *maghvan*<sup>38</sup>, *bṛhadrayi*<sup>39</sup>, *prabhuvasa*,<sup>40</sup> *vasupati*<sup>41</sup> *rāya*<sup>42</sup> and *gopati*<sup>43</sup>. They distinguished themselves from others, performed sacrifices, patronised the priests and led a comfortable life. The possession of wealth was considered to be important, but side by side, it was thought that greed for riches is bad.<sup>44</sup> In spite of this injunction, the

people did not hesitate to earn wealth. The house possessed of abundance of wealth was a desired object.<sup>45</sup> The *Atharva Veda* contains a hymn in the form of a benediction on the completion of a new house. A blessing has been sought for firm foundation of the house possessed of horses, kine, gladness, nourishment, milk and fatness, so that it may rise up for great felicity and fortune. It has been wished that the house may contain lofty-roofed spacious store full of clean corn.<sup>46</sup>

The Vedic texts refer to the rich and the poor. *Śreyas* was a person, who in comparison to others, possessed the quality of 'Śrī' in a distinguished manner. *Śrī* meant wealth or esteem based on material possession. The status of a householder depended upon his material status.<sup>47</sup> Wives also were considered as the forms of wealth.<sup>48</sup> A lute was played on the arrival of a wealthy person, only he could marry several women and was able to pay a lute-player.<sup>49</sup>

Opposed to such a '*śreyas*' the poor one (*pāpiyas*) was duty bound, had to remain polite, eager to serve and pay *bali*. The differences between the rich and poor have been mentioned in the later Vedic texts in the form of the code of conduct to be followed by the poor persons in their dealings with the rich ones. At the arrival of a wealthy person, the poor one had to get up from his seat<sup>50</sup> because his position was inferior to that of the former. In the honour of the former, the latter had to put off his headgear.<sup>51</sup> He was to be approached submissively by the poor.<sup>52</sup> The poor had to walk behind the rich. He had to expect the grant of his favour<sup>53</sup> and had to remain silent.<sup>54</sup> Fear made a poor person cringe before a rich one, and if the latter one wanted he could push the former from himself.<sup>55</sup>

The poor man followed the rich man<sup>56</sup> and had to obey him.<sup>57</sup> In a dinner, the rich man was served first with food, and it was regarded as a honour of the poor if he ate with the former at his table.<sup>58</sup> It was disastrous for the poor man if he was at enmity with the rich person or if he attempted to go against him or conspired against him. So it was better for him to please him.<sup>59</sup>

Honour was shown by a poor man to a rich one by bringing something for him.<sup>60</sup> This voluntary offering was termed *bali*. Similarly, the common people had to bring *bali* for the king.<sup>61</sup> On the other hand, a poor man was expected not to burden a rich person with requests for something to be given by him.<sup>62</sup>

The relationship between the rich and the poor was similar to that between the eater and food. It has been asserted that every being lives at the cost of another and serves a third person as food. It is not only true in respect of plants and animals but also in human society. The most diverse human relations were observed from the same point of view.<sup>63</sup>

### Earning of Wealth

The *Yajus Samhitās* and the *Brāhmaṇa* texts prescribe rituals, whereby a sacrificer could obtain his desired objects,<sup>64</sup> such as, cattle, sons, horses, metals, grain and land. Even the *Upaniṣads* instruct the seekers of wealth to perform some rituals.<sup>65</sup> In the *Gṛhya Sūtras*<sup>66</sup> the common ritual to be performed for this purpose is termed *ābhyudayika* in which offerings were made to the departed souls on occasions of rejoining. It was performed in the morning and the sacrificer invoke the departed souls to bestow prosperity on him.

The Vedic *Āryans* had realised the importance of personal labour because they were an adventurous people. They<sup>67</sup> considered that even the gods protect and enrich those who exert themselves. Mental aptitude alone has no value if it is not supported by hard labour.<sup>68</sup> One who is afraid of labour cannot obtain wealth.<sup>69</sup> Prayers were offered to the gods for bestowing physical strength so that the people might live for a hundred years while having a great zeal for performing their duties.<sup>70</sup> Their determination and enthusiasm may be assumed from this wish: "Let my two arms be Indra's strength and my hands be deed manly might."<sup>71</sup> The people practised different professions for their livelihood. The son of a *brāhmaṇa* woman was a poet, her husband a physician and she herself was the grinder of corn.<sup>72</sup> The *Rbhus* were exalted to divine honour on account of their skill of chariot making<sup>73</sup> which was compared with competence required for the composition of the Vedic hymns.<sup>74</sup> There

is no evidence of contempt even for leather work.<sup>75</sup> These evidences obviously prove that impurity did not arise from the nature of the work and even the king lent his hands to ploughing.<sup>76</sup>

In the Vedic texts, on the other hand, there are statements to prove that the dignity of labour was not always a matter of pride. The status of productive and working classes deteriorated. The *śūdra* was considered to have been born of evil and was condemned as one who polluted purity.<sup>77</sup> The priest thereby imbued the sacrificer with prosperity and light, while he struck the *vaiśyas* with misery and darkness.<sup>78</sup> The *brāhmaṇas* and *kṣatriyas* represented the good but the *vaiśya* and *śūdra* signified evil.<sup>79</sup> During the post-Vedic times this deterioration in their status further accelerated. The chariot maker was degraded to the status of a *śūdra*<sup>80</sup> and the *brāhmaṇas* professing agriculture, trade and money lending were dishonoured.<sup>81</sup> What was the probable cause of this change of the concept of the dignity of personal labour and of the productive and working classes? From the source which is available to us we find that views about labour have been advanced mostly by the *brāhmaṇa* priests. It appears that they considered the persons who were engaged in productive activities which called for physical labour as inferior to themselves. It is also likely that the *non-Āryans* also pursued several crafts independently, and the *Āryan* artisans also were relegated to the position of the *śūdra*.<sup>82</sup>

The productive agents did not include the whole community but only that section which was engaged in production. Wealthy persons engaged labourers to facilitate productive activities because they could not do arduous works by themselves. In the later Vedic society, the *śūdras* usually worked for others on wages.

From the Vedic texts it is also difficult to clearly differentiate between slaves and servants. The man (*puruṣa*) commonly appears in the list of the tame animals. It proves at least that the slaves were regarded as no better than two-legged animals. The *Taittirīya Brāhmaṇa*<sup>83</sup> states that the *puruṣa* and



*dāsa* were different from each other. Both of them were possessions, and have been enumerated after cows, horses, goats, sheep, foodgrains, gold and elephants. More frequently than *dāsa*, female slaves (*dāsīs*) have been mentioned who were much liked by the nobles and priests. The early Vedic *Āryans* had defeated the aborigines and usually they captured them as prisoners of war. They offered them as gifts to their priests and favourites. It seems that when the male members of the enemies were killed their wives and daughters were reduced to slavery. Trasadasyu gave away fifty women as gifts.<sup>84</sup> The *Atharva Veda* refers to *dāsīs* as wet handed, smearing the pestle and mortar. It indicates that they were engaged in domestic works.<sup>85</sup> The nobles and priests deployed them also in personal services and productive activities because they did not like to maintain them uselessly. Besides some of the Vedic texts inform us that human beings also were the objects of trade, i.e. they could be purchased.<sup>86</sup>

The more common term for the slave or servant was *dāsa*. In the *Vāṇakhilya* of the *Ṛgveda* slaves (*dāsa*s) have been placed in the same category as asses and sheep.<sup>87</sup> The term *dāsa pravarga* may have been assemblage or wealth of slaves.<sup>88</sup> This indicates that towards the end of the *Ṛgvedic* period slaves were increasing in number, but there is no evidence of their being engaged in productive activities. They appear to have been domestic servants serving their priestly and warrior masters.<sup>89</sup> But this view of Sharma is unconvincing because the *Ṛgveda*<sup>90</sup> refers to two *dāsa*s (male slaves) given by Yadu and Turva to their family priests who were "well disposed to serve together with great store of kine". It clearly proves their engagement in productive activities. They could be freely given away. The *Aitareya Brāhmaṇa* mentions that king *Anga* captured ten thousand female slaves from various countries and gave them to his priest *Ātreya*.<sup>91</sup> This number is highly exaggerated. *Aruṇi* enumerates his possessions, such as, gold, cattle, horses, maid servants and dress but does not speak of *dāsa*.<sup>92</sup> In this period maid slaves were owned in large number by kings and priests but male slaves have been rarely mentioned. In the *Nighaṇṭu*<sup>93</sup> there are ten synonyms for servants, but in this list there is no

mention of *dāsa*. This would suggest that the number of male *śúdras* employed as slaves was negligible. Therefore, the view of Keith that in the period of the *Brāhmaṇas* the landowners cultivated their estate by means of slave labour<sup>94</sup> does not hold good.

For the first time, some of the *Śrauta Sūtras* refer to the slaves working on land. The *Lāṭyāyana Śrauta Sūtra*<sup>95</sup> informs that two slaves were to be given away along with grain plough and cattle, suggesting thereby that they were employed in ploughing and could be freely disposed of by their masters. But in some other *Śrauta Sūtra* passages the practice of making gifts of land and the people working on it has been forbidden (*bhūmipuruṣavarjaṃ*).<sup>96</sup> On the other hand, the *Sāṅkhyāyana Śrauta Sūtra* informs us that in *puruṣamedha* and *āṣvamedha* land with men working on it could be given away as sacrificial fee.<sup>97</sup> These passages indicate new developments at the close of the Vedic period. *Śúdras* were employed as slaves working on farmlands owned by landlords and they could be given away as gifts to priests.

Besides *puruṣa*, *dāsa* and *dāsīs*, there were some other category of servants, such as, *anucara* (attendant), *preṣya* (messenger) *parikūṭa* (helper) and *bhritya* (servant). *Pariveśī* was an attendant at table. It is quite possible that these servants were paid workers. It is evident from the fact that for certain purpose even nobles and the common persons also were employed as paid workers.<sup>98</sup>

The labourers and domestic servants presumably belonged to the *śúdra* class but all of them did not belong to the labourer class. Some of them were expert craftsmen who carried on their own business, some possessed herds of animals<sup>99</sup> and were wealthy persons.<sup>100</sup> Their god was *Pūṣan*<sup>101</sup> who was the presiding deity over animals, pastures and farmlands. These references prove that the *śúdras* were animal breeders and small farmers. It is reasonable to think that such *śúdras* might not necessarily serve others. But they had no complete personal freedom because they depended upon others.<sup>102</sup> They lived by their feet<sup>103</sup>, i.e., they were labourers and servants. According to a Vedic myth they were born from the feet of *Puruṣa* (Supreme God), therefore, a fitting occupation had to be found out for them.<sup>104</sup> The *Jaiminiya Brāhmaṇa*<sup>105</sup> states

that the *śūdra* is created from the feet of *Prajāpṛti* without the aid of any god, and therefore, the lords of the house are his gods and he is to earn his living by washing feet of others. The same source further states that as a result of the *aśva-medh*, the nourisher *vaiśya* becomes wealthy and the rising *śūdra* becomes an expert worker.<sup>106</sup> In the *puruṣamedha*, a *brāhmaṇa* is dedicated to priest-hood, a *rājanya* to nobility, a *vaiśya* to the Maruts but a *śūdra* to toil.<sup>107</sup> The *śūdra* symbolised hard work and the idea was gaining ground that *śūdras* were artisans and workers of various kinds.

The two facts that the *śūdras* had their own property and at the same time did not enjoy complete freedom, leads us to look at them as serfs or bonded persons, but they were not slaves in the proper sense of the term. Undoubtedly, they enjoyed a few privileges and concessions. The *Aitareya Brāhmaṇa*<sup>108</sup> states that they were other's servants to be employed at the pleasure of their masters and to be killed at their will. But this statement seems to be an exaggeration because in some cases the lord harmed his own interest by harming his servants and labourers. It is to be noted that in the whole of the Vedic literature, there is no parallel passage, which describes the *śūdra* as one to be expelled and slain at the will of the master. It is very difficult to accept the authenticity of the state of affairs because the particular portion of the aforesaid text appears in later part.<sup>109</sup> Sharma suggests that some of the epithets applied to various *varṇas* were used by a discarded priest to ingratiate himself into the favour of his patron king.<sup>110</sup> It is not without significance that even a *brāhmaṇa* is described as one to be removed at the will of the master. In such a case the position of other *varṇas* may be well imagined.<sup>111</sup> Besides, the *śūdras* were not outlawed because in the well known expiation formula, the singer also tried to purify himself of offence committed against them.<sup>112</sup> In the *Gṛhya Sūtras* two terms, namely, *karmakāra*<sup>113</sup> and *utūla* along with the *dāsa* have been mentioned for the labourers. Sometimes they ran away from the houses of their masters necessitating rite which was performed on the pathway to prevent them from doing so.

The *Rgveda* does not contain any term for wages or wage-earners. It does not have any word for beggars. The institution of wage earning starts functioning at that stage in society when a family acquires fields and pastures which it cannot manage with its own labour resources. Similarly wage earners appear when people are impoverished and discarded on account of class differentiation, but such a situation is not to be found in the *Rgveda*. In the later Vedic texts also there are no references to the wages of labourers deployed in secular productive works though the texts frequently refer to the amounts and forms of *dakṣiṇā* to be paid to the priests.

The Vedic term for source of wealth is *vittāyana*, meaning gathering place of riches. The earth was termed *vittāyanī*<sup>114</sup> because it was the source of riches. The scope of earning wealth was wide. We have already seen that cattle rearing and agriculture were the main sources of earning of wealth. During the later Vedic period, different arts and crafts much developed. At that time mostly landless and poor *śūdras* were engaged as labourers. The increasing production required its disposal to give an impetus to trade and commerce, which were closely related to agriculture, livestock farming and cottage industries. The *vaiśyas* were the main section in society to explore the fields of trade and commerce.

During the early vedic period, the act of illegal seizure of other's property was a source of acquiring wealth. The *Rgveda* refers to several instances of capturing the animals and manpower of *Dāsas* on the plea that cows were lying useless in the countries of the barbarians because they neither got the milk to mix with the juice extracted from *soma* plants nor kindled sacrificial fire.<sup>115</sup> The term *mahādhanam*<sup>116</sup> was a synonym of battle because it yielded immense wealth to the victor. Kings invaded the territories of their enemies and seized their wealth, such as, the cattle, grain, metals and the means of transport. Prayers were offered to Agni for empowering the worshippers with the capacity to capture the enemy's wealth in battle.<sup>117</sup> In contemporary Greece also booty was considered as the source of wealth.<sup>118</sup>

In the predominantly tribal society of the early Vedic times war was a logical and natural economic function. The tribes being primarily herdsmen, lived on dairy products and meat, fought one another and outsiders for the sake of cattle. This is obvious from several terms such as, *gaviṣṭi*, *gaveaṣāṇ goṣu* and *gavya* which all mean war.<sup>119</sup> Other animals, such as, horses, goats and sheep were also captured. Particularly horses may have been mainly in the possession of princes, tribal chiefs and elders. Land and crops did not form the bone of contentions. Women, who are rightly called the producers of producers in a tribal context, were of course important objects for which wars were fought. The wives were needs for replenishing stock. It is for this reason that we always hear of women slaves capture from the subjugated *Dāsa* people. The legacy of women being an important issue in wars continued later in a changed form when some kings fought wars for the hands of beautiful princesses.

We find a member of the *gaṇa*, large fighting tribal unit, announcing in the meeting that he had surrendered everything and concealed nothing in proof of which he showed all the ten fingers of his hands.<sup>120</sup> An *Atharva Veda* hymn exhorts the people to exert together like the spokes of a wheel. Further it mentions their receiving equal shares in connection with the functions of the *gaṇa*.<sup>121</sup> The fact that a member of *gaṇa* surrendered all that he had looted in war to the tribal chief is significant. Unless he was given back a portion of the spoils brought by him and presumably by other members, would be with no means to support himself. They apparently he consisted of cattle, sheep, goats, horses, weapons and women slaves. The *R̥gveda*, does not clearly inform whether food was distributed among members of the kin-based groups of different sizes. The legacy of war continued even in the post-Vedic times because in the *Dharmśāstras* war is recognised as one of the legitimate modes of livelihood.

The *Āryan* god Indra has been described as the conqueror of *Dāsas* who consigned them to the caves.<sup>122</sup> He brought them into subjugation. Prayers have been offered to him for making the *Āryan varṇa* victorious over them. Both the *Dāsas* and *Dasyus* possessed fortified settlements.<sup>123</sup> It seems that the

nomadic *Āryans* coveted the wealth of their foes accumulated in their cities for possession of which they went on a regular warfare with them<sup>124</sup> Desire has been expressed that the wealth seized from the *Dāsas* after they have been subdued by Indra may be distributed among the people.<sup>125</sup> But for the nomadic *Āryans* the greatest temptation was for the cattle of their enemies.<sup>126</sup> On the other hand, the *Rgveda* informs that the Asuras had captured the city of a royal sage named *Dabhiti*, but on their retreat, Indra intercepted them and recovered cattle, horses and chariots and restored them to the prince.<sup>127</sup> It seems that Asuras valued the chariots and horses of the *Āryans*. The destruction of the settlements or fortified cities (*purās*) of the *Dāsas* and Asuras by Indra reminds us of the discoveries of ruined Harappan settlements in western India. On certain occasions, the *Āryans* set fire to the settlements of the Asuras who deserted their possessions without fighting.<sup>128</sup> It is to be noted that the end of Harappan settlement in Rana Ghundai III, is marked with a great conflagration.<sup>129</sup>

Some of the *Rgvedic* references prove that among the *Āryans* also inter-tribal conflicts usually took place. The *avratā* *Āryans* also were victims of attack.<sup>130</sup> Agni has been described as confiscating property both of the *Dāsas* and *Āryans*.<sup>131</sup> Even the *Āryan* enemies were deprived of their riches, probably cattle.

The concept of supreme sovereign (*cakravartin*) was conceived during the early Vedic period which recognises the *asva-medhā*<sup>132</sup> as a pre-requisite for attaining this political status. The performance of this sacrifice has been elaborated in the later *Samhitās* and *Brāhmaṇa* texts. Other political ceremonies, such as, the *rājasūya*, *vājapeya* and *aśvamedha* were formulated for glorifying the king. The *Aitareya Brāhmaṇa*<sup>133</sup> contains the names of some of the ancient kings who conquered territories in different directions and performed the horse sacrifice, such as Janamejaya *Pārikṣit*, *Sudās* *Paijavan* and *Duṣyanta*. The performance of this sacrifice acted as an effective means of promoting social cohesion in that it provided an occasion when the members of the society united and submerged their factional differences in the pursuit of a common purpose. Prosperity

depended upon solidarity. Warfare promoted it thus indirectly leading to economic consequences.<sup>134</sup> Prayers were offered to the gods for obtaining cattle and booty.<sup>135</sup> Indra slayed phallus worshippers and captured the treasure of a fort provided with a hundred gates.<sup>136</sup> The *Atharva Veda* refers to the enemy being driven away from villages, while "seizing those that are to be seized."<sup>137</sup> Indra's messenger *Saramā* found her way to the *Paṇis* to demand the return of stolen cows and to threaten them with destruction in case they failed.<sup>138</sup> One of the *Brāhmaṇa*<sup>139</sup> texts refers to a compact between the gods and demons that the cattle should belong to that party which vanquished the other. War became a tournament for winning a prize.

Though prisoners were taken on the battlefields, a large number of them were led away only to be slaughtered,<sup>140</sup> but some must have been forced to render menial service. Some of the non-combatants were taken prisoner while others were driven away.<sup>141</sup> The Hittite and Assyrian conquerors also brought with them civilian captives and deployed them in their services. In contemporary Greece also, booty was considered as the source of wealth and attempts were made to capture the enemy's wealth in any form.<sup>142</sup>

### Accumulation and Enjoyment

Desire for wealth was but natural which led to its accumulation. Even the great philosophers and priests did not hesitate to acquire and accumulate property in the forms of cattle and gold which they received as gifts.<sup>143</sup> The *Vājasaneyi Saṃhitā*<sup>144</sup> contains the formula for the performance of *vāsordhārā* (stream or shower of riches), a sort of consecration service for Agni for obtaining all kinds of material and spiritual blessings. Its study shows the intense desire of the sacrificer to obtain riches.<sup>145</sup> The people not only tried their utmost to accumulate wealth but also to increase it.<sup>146</sup> The term *rayivṛddha*<sup>147</sup> denoted the person who considerably had increased his wealth.

The *Rgvedic* people performed sacrifices accompanied with prayers to the gods. They were conscious of the powers of gods who symbolised grace, vigour and wealth, and were evoked for obtaining material comforts to enjoy the blessings of the world. Their worship was sincere but materialistic in purpose.

Their ideal of happiness was by and large simple and mundane. It comprised mainly of a hope to live a natural span of life which was a hundred years<sup>148</sup> and an intense desire to have progeny and cattle. They mainly wished to have prosperity, progeny and safety from misfortune. Life was regarded as a blessing and a source of all the pleasures of this world.<sup>149</sup>

Against this picture of the Vedic society of a happy pastoral people, we come across a small section of persons who did not seem to seek the delights of materials life. The reference is to the *munis* figuring in the X *maṇḍala* of the *Rgveda* who rightly have been called by Basham "a class of holy men different from the *brāhmaṇas*".<sup>150</sup> They were concerned with *tapas* (austerities). In the Vedic texts, we see the gradual development of the idea of *tapas*, which means practice of religious austerities.

In the *Upaniṣads*<sup>151</sup> also *tapa* has been extolled as a means capable of obtaining wonderful results. But there came a stage in the *Upaniṣadic* times when it came to be regarded as inferior to knowledge. The former was believed to lead only to the lower bliss of the world of the forefathers<sup>152</sup>. It was considered ineffective without a reshaping of the mind. Therefore, it came to be associated with faith (*śraddhā*) and celibacy (*brahmācarya*). *Yājñavalkya* says that a thousand years of *tapas* without the knowledge of Brahman is of no avail.<sup>153</sup>

The thirst for spiritual knowledge and desire for realisation inspired the ideal of religious medicancy and renunciation of the world. *Yājñavalkya* renounced the worldly life after dividing his property between his wives. The conversation between him and *Maitreyi* aims at showing that the giving up of all material possessions and retiring to the forest completely dedicated to a life of *tapas* was indispensable for the knowledge of Brahman which leads to the attainment of salvation.<sup>154</sup> The *Upaniṣadic* thinkers preached that the seekers after knowledge must get rid of all desires for worldly things. This naturally meant detachment from normal worldly life, not because it was painful, transitory and negligible but because it also distracted the mind. It impeded the attainment of the highest goal by involving the aspirant in mundane interests. The *Bṛhadaraṇyako-*



*paniṣad*<sup>155</sup> states : "Him the *brāhṁṇas* desire to know through sacrifice, gifts and dexterity of fasting. Having known Him one becomes an ascetic, sage, and wiseman. Desiring Him only as their world, mendicants leave their homes. The sages of ancient times did not wish for offspring, they asked, ' . . . who have attained this self, this world ? They having risen above the desire for sons, the desire for wealth and worlds, wander about as mendicants." Thus, a will to give up home and all the normal joys of life was considered, as an essential condition for self-realisation. *Samnyāsa* was a natural outcome as a prestage attainment of knowledge of the *ātman* and of salvation. Naciketas questions the utility of material life and its pleasure. What decaying mortal here below would delight in a life of contemplation of the pleasures of beauty and love, when once he has come to taste the kind of life enjoyed by the ageless immortals?"<sup>156</sup> The antihedonistic tendency now asserts itself behind the destruction of desire which brings in its wake an attitude of contempt towards the human body. This is only a prelude to the state of *vairāgya* which came to be accepted as an essential condition of renunciation.

The Vedic sacrifices were so complex that ultimately they became mechanical and soulless. The belief in the great magical value of the meticulous performance of sacrifices led to the emergence of influential priestly class. The masses found the sacrifices involving slaughter of animals gruesome and shocking. To the illiterate, this ritualistic religion was unintelligible and uninspiring and to the literate it was extravagant and meaningless. The result was a general unrest which developed into a reactionary movement directed at the attainment of divine knowledge and this came to be known as the path of knowledge. The sacrifices came to be considered as leaky boats incapable of taking persons beyond the sea of existence.<sup>157</sup> This movement stimulated spiritual activities on the part of the *Upaniṣadic* seers who were engaged in the quest of the Ultimate Reality. The gods receded into the background, the priests were subordinated, contemplation took the place of worship and *jñāna* that of *karman*. They realised that the everlasting happiness of man consisted not in the possession of this world but in the realisation of the soul. They thought that sacrifices led only

to an illusory heaven after death whereas true knowledge led to immortal bliss even on this earth.<sup>158</sup>

With the emergence of the doctrine of Brahman which is the main theme of the philosophy of the *Upaniṣads*, the knowledge of the self came to be given more prominence. All else became of no value. Sorrows and sufferings of life could be removed by self-realisation.<sup>159</sup> Whatever was earthly about a man was full of sorrow<sup>160</sup> causing sufferings and affliction. The eternal was bliss and the transient painful. Deliverance from sorrow was based on the knowledge of the soul.

In the *Kāthopaniṣad*<sup>161</sup> there are repeated suggestions that the worldly life we are to flee from was one of misery. In the contemplation of this world of finite experience there is nothing but pain. The reason of this pessimistic attitude is hinted at over and over again. The *Chāndogyaopaniṣad* states: "There is no joy in anything finite."<sup>162</sup> All pleasures come to an end, and the remembrance of enjoyments which have gone, makes life doubly bitter. Death is an unavoidable misery. No one is free from disease, old age, separation from loved ones and other ills. Life is fundamentally misery itself. Only Brahman is real, and he who sees this does not see death.<sup>163</sup> In the *Upaniṣads*, there is no appeal to the Vedic personal gods, who were the source of material prosperity and happiness but there are only prayers for deliverance from sorrow.

The growth of the doctrines of transmigration (*samsāra*) and *karman* gave momentum to the forces of pessimism. In the context of the doctrine of *samsāra*, death was always terrible and the fear that one has to die innumerable times was painful. Even rebirth in heaven was not enough.<sup>164</sup> A way had to be found not only to escape the evil of an unhappy and miserable world but also the unending bondage of birth and re-birth because *samsāra* was ruled by *karman*. But it was believed that *karman* was bound up with the desire which was solely responsible for the continuation of the cycle of birth and re-birth.<sup>165</sup> Desire was considered as essential for self-realisation.<sup>166</sup> The problem was, therefore, the destruction of any desire for worldly things which chained a man to the eternal cycle of birth and rebirth holding him in its grip of sufferings. This

necessitated cessation of activity, a life of complete retirement (*nivṛtti*) from any form of *karman*. Thus arose the ideal of giving up or renouncing home, possessions, family and all that stimulated desire. This meant rejection of ordinary human aims, freedom from all the ties of the earth, freedom from all that bound man to the duties and responsibilities of the worldly life. It implied complete separation from the worldly life and passing beyond the pale of community, society and nation.

According to Basham, this pessimism and asceticism originated from a deep psychological uneasiness and a deep feeling of insecurity. The pessimism of this age was not typical of brāhmanism. It also affected Buddhism and Jainism which adopted the attitude of discrediting the human body and apathy towards the transient world. The *Pāli Piṭakas* and the Jain *Sūtras* are full of these pessimistic notes.

It is to be noted that excepting the *Upaniṣads* no later Vedic text furnishes the idea of the rejection of wealth. Even the *Upaniṣadic* philosophers did not instruct the people to discard their material life and pursuit of wealth though they advised them not to indulge in them. Their theory of the rejection of wealth had not considerable impact on the common people. Even the preachers of this theory did not hesitate to accept thousands of heads of cows and pieces of gold as gifts.<sup>167</sup> Some of the philosophers were persons in possession of large domestic establishments and they had land, cattle, servants, gold, clothes and elephants.<sup>168</sup> The king philosophers also did not neglect their material pursuits. Among them, *Ajātasatru* of *Kāśi* and *Janaka* of *Videha* were very famous for offering gifts to theologians.<sup>169</sup>

In spite of the profundity of the *Upaniṣadic* ideas it cannot be said that they had anything to do with the masses. The mystics lived more or less in complete isolation in their being concerned with their own salvation. They were approachable to only a few of the intelligentsia to whom the subtle philosophy of Brahman and *ātman* (soul) could make its appeal. Moreover, they followed an intuitive process and their conclusions were not based on intelligible chain of reasoning but held out merely as the experience of great minds and were to be accepted as

faith. The ascetic, who voluntarily abandoned his wealth performed an act of renunciation which entitled him to the highest regard. By this renunciation he achieved spiritual advancement and was well on the way to salvation. But we must not forget that the ascetic life was not that of an ordinary man.<sup>170</sup>

Admittedly the *brāhmaṇas*, who claimed moral and spiritual leadership, set themselves to release the ideals of dignified austerity which, however, were not always followed in practice. A *brāhmaṇa* who attained good local reputation for the efficient performance of sacrifices and domestic ceremonies might amass considerable wealth and if patronised by kings might become a really rich man. Other *brāhmaṇas*, not sufficiently trained to teach the *Vedas*, became wealthy by farming and trade.<sup>171</sup>

The householder indeed built up the family fortunes and spent part of them at least on the gratification of sensory pleasures. Thus the ideals of ancient India by no means excluded earning of wealth. India had not only a leisured society of pleasure seeking dilettanti but also one of the wealth-seeking merchants and prosperous craftsmen, who, though less respected than the *brāhmaṇas* and warriors, were honoured in society.<sup>172</sup> Albert Schweitzer's view that India was a land of "life negating" ascetics, imposing their gloomy and sterile ideas upon the credulous millions who were their lay followers,<sup>173</sup> seems to be unconvincing. Basham has refuted his view on the ground that an average Indian, though he might have superficial regard for the ascetic and apparently respect his ideals, did not find life a vale of tears from which to escape at all costs; he was rather willing to accept the world as he found it, and to extract what happiness he could from it.<sup>174</sup>

The foregoing facts prove that the theory of the rejection of wealth was not practised in letter and spirit. The theologians did not preach their doctrines openly but preserved them as highly secret, to be transmitted only to deserving aspirants.<sup>175</sup> Even learned persons had to wait for a year in the hermitage of celebrated theologians to qualify themselves for the secret philosophical doctrines.<sup>176</sup> On the other hand, there was the influential class of priestly *brāhmaṇas* who had their hold in

society. They performed sacrifices for their *yajamanas*, such as, *prajākāma*, *paśukāma*, *annakāma* and *grāmakāma*. The early Buddhist texts also furnish information about the influential priestly class who advised persons to perform sacrifices which required materials and thus they gave impetus to production.

### Distribution

Most of the wealth was in the hands of the *vaiśyas* and *kṣatriyas*. The *kṣatriya* kings and the *brāhmaṇa* priests realised taxes and gifts respectively, from the common people. The *R̥gveda*<sup>177</sup> highlights the importance of giving gifts to the priests. It states that the wealthy persons cause their self-destruction by hoarding wealth but the liberal persons are never ruined. They are happy in this life and after death they reside in heaven. But it is to be noted that this hymn eulogizes *dakṣiṇā*, honorarium presented by the institutors of the sacrifices to the priests who performed the ceremonies. It had no concern with the secular aspect of the distribution of wealth. However, this text refers to the necessity of offering food to the hungry and poor by the rich people, but it was only a voluntary act on account of charity not compared by rule. The accumulation of wealth in a few hands could not be checked. The later Vedic thinkers advised the people not only to produce more but also to give attention to offering it to others<sup>178</sup> but it was concerned only in a religious exhortation in the form of sermon to the people in general. They followed a rational view and preached strongly the need of enjoying by giving and not by coveting anybody's wealth.<sup>179</sup> This kind of view developed on account of liberal thinking of philosophers who desired the welfare of all. Besides it was immoral to have an eye on other's property. It proves the moral evolution of the *Āryan* mind in this period. In the *Bṛhadāraṇyakopaniṣad*<sup>180</sup> the importance of syllable *da* has been emphasised in the sense of *dāna* in case of the human beings, whereas in case of the gods it means *dama* (self control and *dayā*) (compassion) in case of the demons.

A study of the *R̥gveda* indicated that the *Āryans* had organised *vidatha* which was a wider tribal assembly.<sup>181</sup> Its redistributive functions are more than clear from two references contained in the *R̥gveda*. At one place, the people are asked to

gather in *vidatha* in which they distributed whatever was brought in by Savitar.<sup>181</sup> At another place, Agni is asked to distribute whatever was available in the *vidatha*.<sup>182</sup> Evidently both Savitar and Agni are the divine counterparts of human tribal chiefs who practised redistribution of spoils of war. They apparently constituted of cattle, horses, weapons and female slaves. They may have been supplemented by game obtained by hunting and some products of cultivation given as *bali*.

The *Rgveda* does not obviously prove whether food was distributed among members of kin-based groups of different sizes. But this can be inferred from an examination of survivals of terms used for food shares and the domestic rites and customs obtaining among the speakers of Indo-Āryans languages, especially in northern India even in present times. One of the earliest terms used for share in *amśa* which is the dialects of eastern Uttar Pradesh and Bihar is used in the sense of meal or food to which an absentee member, invited at ceremonial clan feast, is entitled. In the *Rgveda*, this term (*amśa*) is used in the sense of share distributed by Agni in the *vidatha*.<sup>183</sup> Monier Williams thinks that the term *amśa* has been derived from the root *as*, meaning to eat, and from which nouns such as *aśand* and *prāśana* are formed.<sup>185</sup>

A term for share *bhūga* which is derived from the root *bhaj*, meaning to divide. A verbal formation from the root *bhaj*, to allot or to apportion, has been used in the *Rgveda* in connection with distribution.<sup>186</sup> In the same text the term *bhakta* has been used in the sense of meal.<sup>187</sup> During the post-Vedic times it became a synonym of boiled rice in the north-eastern region of India. On account of this, in the *Pāli* texts, *bhattā* means both meal as well as boiled rice, and in modern languages whatever is given for maintenance is called *bhattā*. Another word used for distribution of food was derived from the root *pariveṣa*. The noun *pariveṣa* meant serving of meal and a server of food was called *pariveṣṭṛ*. The term *pariveṣaka*, distributor of food occurs in the *Pāli* texts.<sup>188</sup>

The significance of the aforesaid terms may be conceived if we bear in mind the tribal analogy. The main cause why the terms for meal/food had to be the same as those for share or

distribution lay in the fact that whatever was obtained by the Vedic communities through collection, production or presentation at an early stage was distributed among its members. It appears that the custom of distributing meals among members of the clan or community was a legacy inherited from the Indo-European phase. This can be inferred from the use of the *geras* in Greek.<sup>189</sup> It means share. In ancient Greece, portions of meat were divided equally and were distributed by lot. But the chine, which was the choicest portion, was reserved as a *geras* for the chief who presided at the common meal. A similar term *grāsa* is used in Sanskrit. It means mouthful and is derived from the root *gras*, meaning to eat or swallow. The geek *geras* and Sanskrit *grāsa* possibly point to a time when the Indo-European tribes were in the food gathering stages and when their members were given shares in the common meal.

The same method appears to have been followed on the occasion of the distribution of wealth in case of the victorious tribal chiefs. It is confirmed by a statements contained in the *Śatapatha Brāhmaṇa* : "Indra and Agni are the nobility (*kṣatra*) and all the goods are common people (*viś*), and whatever the *kṣatra* conquers there the *viś* are allowed to share. Thus, Indra and Agni allowed the *Viśvedevāḥ* a share in the offering."<sup>190</sup>

Besides there were two other methods for distributing wealth, namely *iṣṭi* and *pūrta*.<sup>191</sup> The former means sacrifices. It was the most effective step for the dispersal of surplus wealth. The people belonging to upper three *varṇas* performed sacrifices for the fulfilment of their objectives. The performance of sacrifice was considered to be the deed par excellence.<sup>192</sup> It raised the social and religious status of the sacrificer in the public eyes.<sup>193</sup>

The concept of three debts was pronounced, among which the *devaṛṇa* (debt to gods) could be paid off by performing sacrifices in order to please the gods by offering oblations to them. The person who did not preform sacrifices was stigmatised as an *anaddha*<sup>194</sup> (untruth). Besides, the natural phenomena also necessitated the performance of sacrifices. The people were afraid of the unforeseen natural calamities and freaks of nature that hampered cultivation and damaged the harvest. They believed that all natural phenomna are the visible manifestations.

of gods. This deification of natural phenomena formed the nucleus of the Vedic religion. For the sake of favourable weather and successful cultivation, the people appeased gods through the performance of sacrifices.

There were two kinds of sacrifices, namely, the *nitya* (obligatory) and *naimittika* (occasional). The former was to be performed without fail such as *agnihotra*. The latter included the *kāmya* (wish fulfilling) sacrifices which formed the bulk of the *Yajur* and the *Brāhmaṇa* texts. The *Śatapatha Brāhmaṇa* maintains, "Gods long for oblations, the priests for the sacrificial fee and the sacrificers desire to obtain material prosperity and realise divine bliss, hence the sacrifices are the soul of all beings and are thus the best deeds to be performed."<sup>195</sup> The sacrifice has been termed *vasu* (wealth), *annaṃ* (food) and *bhaga* (prosperity).<sup>196</sup> It also has been considered as the source of all good deeds and of piety.<sup>197</sup>

The *Pañcamahāyajñas*, the five great daily sacrifices, were formulated and developed during the compositional period of the *Brāhmaṇa* texts.<sup>198</sup> Among these, *manuṣyayajña* was important, which later developed into the acts of hospitality to the guests (*ātithyeṣṭi*).<sup>199</sup> On account of the importance of sacrifices the *Brāhmaṇa* texts consider initiation into sacrificial rites as the second birth.<sup>200</sup> A man is not born in a true sense of the term till he performs a sacrifice.

Some of the sacrifices continued for more than a year which required huge material resources. The performance of sacrifices like *aśvamedha* was very expensive and only a powerful king with immense material resources could perform it. The wealthy persons did not consider the amount of expenses involved in the performance of sacrifices but regarded it as an occasion to exhibit their liberality and to gain divine favour.<sup>201</sup> In the *Viśvajit* sacrifice, the sacrificer had to dispose of his entire property in charity and in the *soma* sacrifice, major portion of property was to be offered to the officiating priests. The *kṣatriya yajamāna* who performed the *puruṣamedha*<sup>202</sup> had to offer a portion of his kingdom to the priests but a *brāhmaṇa* who performed this sacrifice had to offer his entire property to the priests as the sacrificial fee. In *sarvamedha*<sup>203</sup> the sacrificer had to give all his



possessions as *dakṣiṇā* to the officiating priests. Thus it is obvious that the performance of sacrifices also was a means for the distribution of wealth in society.

Some of the later Vedic texts maintain that the whole sacrifice is entrusted to the officiating priests.<sup>204</sup> They were authorised persons to conduct the performance of rites for which they received sacrificial fee. The process of the performance of sacrifices became more and more complicated, so the sacerdotal functions were distributed among several distinct classes of priests. Such a distribution of sacrificial duties must have taken place before the close of the period of the hymns and there can be little doubt that at that time the position of the priesthood in the community was that of a regular profession.<sup>205</sup> The performance of sacrifices not only benefited the officiating priests but also the *yajamānas*. It has been said that the sacrificer after his death reaches heaven by holding fast to the sacrificial fee.<sup>206</sup> It also has been maintained that any sacrifice without the offering of sacrificial fee to the priests is similar to a cart without the bullocks, so however small, *dakṣiṇā* should be paid to them.<sup>207</sup> Asuri thinks that the sacrificer should pay *dakṣiṇā* according to his paying capacity<sup>208</sup> and in no case the sacrifice should be performed without offering it to the officiating priest. The sacrificer, who does not pay it to the priest, forfeits his claim to divine bliss and is subjected to sufferings caused by divine wrath. *Dakṣiṇā* has been compared with the moon because it is pleasing to the priest and helps the sacrificer after his death to walk in light.<sup>209</sup> The priests also were instructed not to be overgreedy. Concerning this, the *Śatapatha Brāhmaṇa*<sup>210</sup> states : "Just as the sacrificer forfeits his rewards by non-payment of *dakṣiṇā* to the officiating priest, the latter also is deprived of the bliss of heaven if he is greedy and bargains with the former over the amount of *dakṣiṇā*."<sup>211</sup> In spite of this religious sanction, the priests in many cases did not restrain themselves and there are illustrations to prove that *dakṣiṇā* had its demoralising effect on them.

The offering of gifts to the priest in sacrifices was so important that numerous terms were coined to denote a liberal person. *Sudātā* was a liberal donor. It was a epithet applied to *Yyaṣ'ṭ* because he distributed wealth among his worshippers.<sup>212</sup>

*Anarsarti* denoted the person whose gifts were not unpleasant.<sup>213</sup> *Draviṇodā* was the giver of wealth<sup>214</sup> and *Draviṇasaḥ*<sup>215</sup> denoted the person who sat down to distribute wealth. It was maintained that offering of gifts purified the heart of donor, so prayers were offered to the gods for bestowing desire for offering to the priests and needy ones.<sup>216</sup>

A study of offering of gifts helps us in knowing the changing items included in the listing of *dāna* and their correlation.<sup>217</sup> The earliest references to *dāna* come from the *dāna stutis* of the *Rgveda*.<sup>218</sup> These are the hymns in praise of those who offered generous and handsome gifts. These *stutis* mention the occasions and objects of offering gifts. Mostly the recipients were the priests and birds. The event was mainly a successful battle or cattle raid or the destruction of the foe. The gift was offered therefore not so much in the spirit of charity as symbolic of success and as an investment towards further success on future occasions. The listing of wealth was an indication of status of those who offered large gifts, such as *Kaśu*, *Divodāsa* and *Pṛthu* were acknowledged as being more powerful and wealthy than those who made lesser gifts.

The gifts were objects of wealth and on many occasions were recorded exaggerated figures. The most prized objects were cattle with figures ranging from a hundred to sixty thousand head of cattle.<sup>219</sup> Horses came next at property and although smaller numbers are listed they are often described in greater detail than the cows. There is a preference for stallions over mares, but in bovine wealth the performance is for cows. Other gifts include wagons, chariots, maidens, camels, treasure chest, garments, gold and pots.<sup>220</sup>

Among the gifts, there is noticeable absence of the mention of land. Even grain is rarely listed as an item of *dāna*. This is indicative of the relative unimportance of land as an economic unit. It has been argued that the *Rgvedic* king was essentially a protector of cattle and not of land.<sup>221</sup> In the *Rgveda*, land is seen in essence as territory encompassing both farmland and pastures. The lifting of cattle was a more serious economic problem than trespassing into fields. But some of the later Vedic texts include land as an object of recognised *dāna*.

As far as the redistribution of wealth even at the sacrifice was concerned it seems by now to have been limited to the *brāhmaṇas* and *rājanyas*. Thus, tribal wealth acquired through the labour of the *viś*, whether in war or in peace, was channelled via the king to the priests.<sup>222</sup> In such a situation there must have been a distinction between those who were the possessors of wealth and the rest of the tribe.

The Later Vedic texts gradually introduce a change in the concept of *dāna*. It is no longer the arbitrary of a generous patron celebrating his success. It is now less a channel of redistribution of wealth, or, much more pointedly, a channel of deliberate exchange. The changing concept is expressed in the more frequent use the term *dakṣiṇā*. The donor and the recipient remain the same.

The appropriateness of the gift, and the faith with which it was given, are emphasised and the place and time are made much more fixed. This is done by a closer linking of gift giving with the sacrificial ritual via *dakṣiṇā*. The justification for *dāna* is also spelled out. Gods and the *brāhmaṇas* vested in the *Vedas* were two kinds of *devaa*. The former were propitiated through sacrifices and the latter through *dāna*.<sup>223</sup> It is also at this point that there is mention of fields and villages as appropriate items of *dāna*.<sup>224</sup> *Pasu* is very significant but some texts disapprove the acceptance of animals as objects of *dāna*, and prefer gold and land instead. This is not surprising since by the middle of the first millennium B.C. animal wealth was an economic asset was gradually being replaced by land. The concept of *iṣṭi* and *pūrta* become more central to procedure. With a distinction being made not only between *iṣṭi* and *pūrta* but between *iṣṭi* and *dakṣiṇā*. This is a ritual distinction but not altogether unrelated to the relative decline of livestock breeding and increase of agriculture. The *iṣṭi* which is the offering made to the gods during the performance of sacrifice is almost invariably a mixture of cake of some form of cereal, the most frequently used or cereals being varieties of rice. The *dakṣiṇā* on the other hand, is in most cases an ox, a cow, generally a single animal with specified markings or else a unit of gold. The number of animals is considerably less than the numbers listed in *dāna-stutis*. For the seasonal sacrifices

*dakṣiṇā* may include a chariot and mares or stallions.<sup>225</sup> The more spectacular *dakṣiṇā* was given during the *soma* rituals of the *Yājasūya* which was in the form of livestock but the figures are highly exaggerated.

Charity appears to be of primal importance for the householders. The *Dharma Sūtras* maintain that it should be within one's means and should never be indiscriminate. Besides, *Āpastamba*<sup>226</sup> forbids one to make any gifts to anybody who begs alms for sensual pleasures. Gautama is so strict on the point that he thinks that one should not give anything that may be utilised for immoral purposes even though a promise has already been made.<sup>227</sup> Among the persons deserving gifts from a householder, the most noteworthy are students, persons asking for money for defraying expenses of marriage, performing sacrifices, getting medicines for the diseased, the destitute and travellers.<sup>228</sup> The ritual link is broken or is at least replaced by a status link. Not all texts, however, accept that the link is broken. The *dakṣiṇā* is seen as a bond between the donor and the recipient, if not as an act by which the recipient is placed under an obligation to the donor. This implies a danger which can only be averted by careful consideration of the propriety of gift, place and time.<sup>229</sup> It is a most question as to whether it was the ritual consideration or whether it was a plea to divert attention from regarding *dakṣiṇā* as a fee.

Heesterman suggests that the entire clan took part in the ritual and the wealth was shared. This would be more characteristic of the potlatch. In course of time a ritual may have moved into the hands of the sacrificial priests and the others may have become observers. In the later Vedic texts, representations of all sections of community are associated with several public sacrifices, specially the royal consecration ceremony. These people were fed on the occasion. This practice continued even during the post-Vedic times. The *Śatapatha Brāhmaṇa* prescribes the number of *brāhmaṇa* priests to be fed on the occasions of the performance of certain sacrifices.

The symbolic nature of *dakṣiṇā* is evident from the continued gifting of cattle in a society where land was becoming increasingly more lucrative. Clearly golden seats and golden dice

would have to be converted into mudane objects for the priests to derive a livelihood from these gifts. The question is whether *dakṣiṇā* was over and above the normal livelihood of the priest or his main source of income. Given the nature of the later Vedic society where there are not too many references to *brāhmaṇas* owing land or large herds of cattle, it is likely that *dakṣiṇā* was the main source of their livelihood.

*Dakṣiṇās* associated with particular royal rituals as part of the major sacrifices often constituted of most valuable objects used in the ritual to be gifted away to the priests. The *adhvaryu* received the chariot of the sacrificer and the golden dice used in the symbolic game. The carts were distributed among other priests as were also the cows used in the mock cattle raid.<sup>230</sup> The *adhvaryu* and *hotṛ* who recited the legend of *Śunaḥśeṣa* at the *rājasūya*, were given the golden seats on which they sat for the recitation. In addition they also received a certain number of cows.<sup>231</sup> In this sacrifice, *catuspat kṣetra* was given to a priest. It has been suggested that this was the land used in a royal ploughing rite as part of the *rājasūya*, being the survival of a rudimentary agrarian fertility rite.

In all these *dakṣiṇā* is specially linked to a particular ritual or ceremony. Heesterman argues that *dakṣiṇā* is not a sacrificial fee or salary, it forms a part of the bigger share of gift exchange.<sup>232</sup> His main point is that *dakṣiṇā* was given to both the *ṛtvij* (officiating priests) and to other *brāhmaṇas* of the *prasarpaka* category whose roll was essentially that of observers sitting in the *sadas* (a shed erected in the sacrificial enclosure).

The collection of *dakṣiṇā* was not restricted only to the sacrificers, because the life of an *Ārya* was now based on *samskāras*, the rituals of the individual biography, the prescription and practice of which ensured wellbeing. The definition of donor gradually began to include more than just the king or the tribal chief, for others were also required to preform *samskāras*. This widening definition of donor in terms of social categories reaches a qualitative change in the post-Vedic times.<sup>233</sup>

*Pūrta* meant the works of public utility, such as feeding of the poor, digging out wells and tanks, building rest houses and

establishing public kitchen and water booths. Such works were performed by wealthy persons.<sup>234</sup> The thinkers emphasised the the moral may of life which rested on universal love, truth and charity. Sacrifices ceased to be the common means for the distribution of wealth and later *pūrta* became the effective instrument for the disposal of surplus wealth. At the close of the later Vedic period, Buddha preached the cult of non-violence and vehemently criticised the utility of sacrifices. People linked more to expend on the works of public utility rather than offering *dakṣiṇā* to the priests. In spite of the above mentioned methods resulting in the distribution of wealth, the evils of the accumulation of wealth, and the miseries of poverty existed in the Vedic society.<sup>235</sup> Poverty was considered to be one-eyed, barren, very crooked and hideous and to cause severe sufferings to the poor.<sup>236</sup> So prayers were offered to the gods for removing it.<sup>237</sup>

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## State and Economy

The satisfaction of material needs is the basic condition of social order. It shapes the socio-economic pattern so that the state may not be separated from its economic responsibilities. Political power is essential for regulating the economic principles and for giving impetus to people for production to help them in their material prosperity and protect their life and property. A state having its aim only at maintaining law and order can never exist for long without being supported by a strong material base which is possible only if it is interested in the material wellbeing of the people and in making some concrete efforts to attain this end. It is to be seen whether the later Vedic kings evinced interest in the prosperity of the subjects, and if they did, to what extent their effort was successful.

### Role of the King

A perusal of the *Rgveda* shows that the early Vedic *Āryans* were engaged in wars and plunders and their political institutions were military oriented. Due to this, information regarding the king's role in the material life of the people is lacking. It was expected from him that he would protect their animals from cattle lifters and wild beasts. In the later Vedic period the king had to play a vital role in the economic life of the people. It was his unavoidable duty to protect his subjects from external aggressions and internal disturbances. This involved him in military and police activities. He was considered

as the protector of the people,<sup>1</sup> and to that effect he had to take an oath<sup>2</sup>

In the *rājasūya*, the priest offered a bow with three arrows to the king asked him to protect the people.<sup>3</sup> How signified temporal power with which he had to protect his subjects.<sup>4</sup> He protected them from external attacks with the help of his army, and from the anti-social elements with the help of the *ugras* (policy officers). In the later Vedic period, the law and order problems also became acute. Theft of cattle was a usual happening which caused immense material loss. So he had to protect them from cattle-lifters. The *Paṇis* who were notorious cattle-lifters in the *Rgvedic* times, committed economic offences in different ways. Generally thefts were committed in villages which were the centres of production. So prayers were offered to Agni for the eradication of thieves.<sup>5</sup>

The king had to fight battles in order to repulse external attacks and to extend his territory. The gains from battles were lucrative because the victor captured immense booty<sup>6</sup> such as, the cattle, metals, chariots, prisoners of war and foodgrains. The term *pradhana*<sup>7</sup> is a synonym of battle because property was obtained by it. *Dhanañjaya* was an epithet of Indra on account of obtaining wealth in battle.<sup>8</sup> Mudgala won a thousand properly nourished kine in the battle.<sup>9</sup> The booty was an important prospect of battles. Casual raids were made on the territories of the enemies in which chariot drivers played important role. So their status was raised to that of a *ratnin* at whose house the king offered oblations to the *Asvins*<sup>10</sup> who had horses as their *vāhanas*. The chariot drivers of the Bharatas claimed  $\frac{1}{4}$  of the booty as their share which the former had seized from the Satvants.<sup>11</sup> The view that in the Vedic times *Samgrahitṛ* was a collector<sup>12</sup> of taxes or a treasurer<sup>13</sup> appears to be baseless because he was associated only with horses and chariots.<sup>14</sup>

Usually wars were, in all practical purpose, no better than raids for confiscating property of the enemies. The view that the troops of the adversary were usually a hoard of plunderers was attributed even to Soma.<sup>15</sup> Probably such raids were organised in the summer but the *Taittiriya Brāhmaṇa*<sup>16</sup> informs that the

Kuru-*Pañcālas* raided the territories of their enemies towards the east in the winter and returned to their own post in late summer. Therefore, at the outbreak of hostilities, one's property was first taken to safety. Animals were driven to distant and safe places. The success of raids depended more upon the soldiers; so they claimed a lion's share of booty and considered war as their exclusive privilege.

The king could not protect his kingdom without a well-organised and trained army equipped with superior quality of weapons. In this matter, he was assisted by *senāni* who, without exceptions, appears to be the foremost among the functionaries of the kingdom. In body politic he ranked next to the king. It is confirmed by a story in the *Aitareya Brāhmaṇa*<sup>17</sup> that king *Atyarāti* promised his priest *Vasiṣṭha* Satyahavya that he would crown him as king after getting victory over the Uttarakuru and he himself would be satisfied with the status of a *senāpati*. The scope of the functions of *senāni* was limited only to military affairs on the battlefield. He personally commanded the forefront of the army. He was the leader of the four-fold army, namely, the infantry, war chariots, cavalry and elephantry. The *R̥gveda* informs that the army of the *Āryan* tribal kings was unquestionably superior to the army of the *Dāsas* and *Dasyus*. In the Vedic period, infantry undoubtedly formed the most effective arm of the *Āryan* forces. Arrows, bows, swords and spears were the main weapons. *Grāmaṇi* also was a military officer who played an important role on the battlefield.<sup>18</sup>

After he was crowned as a king, the *Kṣatriya* was empowered with the impulsion of Savitar, arms of the *Aśvins*, hands of *Pūṣan* and the strength of *Upāṃśu* for slaying the *rākṣasas*.<sup>19</sup> The question arises as to who they were. *Rākṣasa* is a comprehensive term. In the *R̥gveda*, the former does not indicate a tribe.<sup>20</sup> It probably denoted a wicked spirit and it appears that it meant the thief as well who operated in the darkness of the night. The king had to protect his subjects from these anti-social elements. Some of the *Atharva Veda* hymns refer to the same characteristics of thieves who deprived the persons of their possessions and also harassed them in several other ways.<sup>21</sup> The *rākṣasas* slept at night for a while.<sup>22</sup> In the

*puruṣamedha* they have been dedicated to the night.<sup>23</sup> They have been mentioned as *piśāc*.<sup>24</sup>

That kingdom was considered as an ideal one in which there was not even a single thief. The king had to see that the possessions of the people may not be stolen by the thieves. In spite of this in society different kinds of economic offences were committed.

Different terms were in vogue to denote particular kinds and categories of thieves.<sup>25</sup> The *Atharva Veda* mentions the methods of their operations.<sup>26</sup> Here we are concerned only with economic offences. *Āyādhin* was a robber who sometimes operated with a gang of followers. *Taskaras* were smugglers and *paripanthins* were highway robbers. The *kuluñcas* were land grabbers. *Parimoṣin* and *muṣanta* were ordinary thieves. *Stāyu* meant a thief who committed daring dacoity and looted property of others. There were several grades of economic offences but the most severe was the theft of gold. There were some persons who lent money on interest and they sometime might have exploited the poor by realising high rated interest from them. Traders and artisans also committed economic offences and also were to be punished by the king.

The Kings were required to take every step to check the activities of thieves living in their kingdoms. Some of the Vedic texts prescribe certain rites to be performed for their eradication.<sup>27</sup> They, when captured, had to go through ordeals and when found guilty were severely punished.<sup>28</sup> King *Aśvapati* of the Kekaya *janapada* was so efficient in suppressing the thieves that he boasted that his kingdom was completely free from them.<sup>29</sup> With the emergence of towns and developing economic activities, the problems caused by the thieves also increased. The early Buddhist texts also refer to the steps adopted by the kings to have a check on their activities. The authors of the *Dharma Sūtras* have elaborated the punishment to be awarded on thieves. For theft, in general, a *sūdra* thief had to restore the stolen property eightfold to the owner. But it was to be repaid sixteenfold, thirty two fold and sixty four fold by the *vaiśya kṣatriya* and the *Brāhmaṇa* thieves, respectively,<sup>30</sup> According to *Āpastamba*, a man, unintentionally

misappropriating fuel, water, roots, fruits, perfumes, fodder and vegetables of others, was to be taken to task. But for doing so intentionally, he was to be deprived of his garments.<sup>31</sup> It is noteworthy that in the *Dharma Sūtras* there are provisions for punishing not only the criminals but also the abettors. For aiding a thief or receiving a stolen property, a person was to be treated like a thief.<sup>32</sup> The offenders belonging to all the social groups were punished but some of the *brāhmaṇas* claimed to be above the common law. At the end of the *rājasūya*, the chief officiating priest turned to the assembled people and said: "Here is your king, O people, for us, our king is the god Soma".<sup>33</sup> The priestly class claimed several privileges in law, such as, exemption from execution, torture and corporal punishment.

Some sporadic references show that physical punishment was inflicted upon the offenders.<sup>34</sup> In certain cases punishment was imposed in the form of cows. The *Taittirīya Saṃhitā* maintains: "Judge shall sentence anyone who insults a *brāhmaṇa* to a punishment of a hundred cows, for beating him the punishment is a thousand (cows), and causing physical injury to him resulting in bleeding, the punishment should be beyond a thousand (cows)." These numbers are highly exaggerated, but undoubtedly the offender had to suffer by offering his cows as penance. In certain crimes, the criminals, had to perform purificatory rites which were very expensive and were burden even on the richer person.

At the close of the later Vedic period, animals and agricultural land were treated as the most valuable forms of property of the people. The *Yajur Saṃhitā*<sup>35</sup> refer to disputes over them, which were settled amicably by the concerned parties by mutual negotiations or with the help of mediators or by the king. Detailed accounts of disputes over different forms of property and their settlements have been discussed in the *Dharma Sūtras*.<sup>36</sup>

In order to exercise control on the activities of economic offenders, the king had appointed some officers, namely, the *jivagr̥bh*<sup>37</sup> and *ugra*<sup>38</sup> who appear to function as police officers. The former was a subordinate officer whose main function was to arrest the culprits. *Ugra* was an officer-in-charge of villages who took care of safety of life and property of villagers. He



waited upon the king with food and drink when he stayed in villages in course of his tours in the kingdom.<sup>39</sup> He was a powerful man<sup>40</sup> who has been compared with wind in swiftness and strength.<sup>41</sup> Usually his post was hereditary<sup>42</sup> and he belonged to a caste other than the noble (*arājan*<sup>43</sup>). The very designation of his post proves that his functions were of violent nature.

What happened if the king did not protect his subjects or in case he became an autocrat or oppressive? The Vedic texts clearly state that the people were the source of king's power. They revolted against an oppressive ruler. In such a critical situation the priests played an important role. They advised the king to offer oblations to the gods and perform certain sacrifices for making him superior (powerful) to his subjects. But performance of sacrifices did not always help him and might of the people proved stronger in dethroning and sometimes expelling him from his kingdom. The *Pañcaviṃśa Brāhmaṇa*<sup>44</sup> states that the expelled kings attempted to come back to power, but some of them were again expelled. The oppressive and negligent kings did not live peacefully in their kingdoms. A king in exile was termed *aparuddha* (*apabhūta*)<sup>45</sup> and his returning to the kingdom was known as *avagam*. The frequency of minor revolts and the change of ruler may be guessed from numerous sacrifices prescribed to be performed in case the exiled kings wanted to regain their kingdoms with the help of magical power.<sup>46</sup> In numerous cases, the banished kings appeased their subjects to obtain their lost kingdoms. This fact alone should be enough to prove the superior power of the people. Wherever our texts assure us of the inferiority of the strength of the common people, they do so wishfully only to present a bright picture of the power and efficiency of priesthood and the nobility allied to it.<sup>47</sup> Any kind of disturbance in administrative system due to bad relations between the subjects and the king was termed *pāpavasiyas* (a) or *pāpavasyas*, i.e., mixture of the subjects and the king. It is one of the oldest terms in Indian polity and surely a forerunner of *varṇasamśraya* of the post-vedic times.<sup>48</sup>

King was not only the protector of his subjects but also the protector of law (*dharmapati*). In order to put a check on the activities of the law breakers who created hindrance in the way

of material prosperity of the people and caused disorder in society, he had to enforce the law (*dharma*). It was considered that *dharma* is of supreme importance and as it is above the *kṣatra* so there is nothing superior to it.<sup>49</sup> *Dharma* embodies the principles of law, building up the socio-economic setup. *Dharma* is truth<sup>50</sup> and it consists of customs, usage, duties and moral order.<sup>51</sup>

The Vedic texts mention that *Varuṇa* is *dharamapati*<sup>52</sup>, the protector of law. It has been stated that as *Varuṇa* enforces law among the gods and punishes those who violate the rules of law, Similarly, the human king practices the same among the mortals and punishes those who violate the rules of law and thereby, cause confusion in society.<sup>53</sup> The throne was the symbol of royal power and the king by performing a rite related to *Varuṇa* also became the lord of justice. He got an exalted status and the people went to him for having justice.<sup>54</sup> In this capacity, he was exempted from death penalty and was even unpunishable<sup>55</sup> though there are several stories which inform us that wicked kings were punished. In the Avestic Iran also the same concept of kingship was in prevalence because Yima, the first king was the maker of law and it was the king's duty to enforce the rules of law for the protection and nourishment of the people.<sup>56</sup> The king was a symbol of truth, so he had to follow the truth. Falsehood, evil thoughts, bad meanness and malice, etc., were regarded as unbecoming royal dignity.

The Vedic king had judicial powers but scanty references to them do not help us to fix their definite scope. The concept of *dharma* is so vague, confusing and extensive that it appears to be difficult to draw a clear line of demarcation between civil and criminal laws and even between law and religious commandments. Generally it may be accepted that right and wrong had at first a purely magic character. It was held that every bad action stuck invisibly to the offender and manifested itself in bad luck, poverty and sufferings. One could protect oneself from the evil by magic, observance of vows and performance of rites. The offender wanted to be rid of the effects of his guilts and our sources have prescribed rules to

this effect. The system of personal spiritual atonement (*prāyaścitta*) was also there. It was not left out to the will of the offender as in certain cases he was forced by his clansmen to observe the rules of *prāyaścitta*, otherwise he could be excommunicated from his community. But, it is unconvincing to think that the community and the ruling authority were satisfied with a mere personal purification of the criminal. In cases of theft and robbery, one would have at least insisted on compensation.

The scope of king's duty included maintenance (*bharaṇa*) of the subjects. It was his function to remove their poverty and miseries so that they could be prosperous.<sup>57</sup> He was created by *Prajāpati* and thus, it was expected that he would protect and nourish his people.<sup>58</sup> He was the *rāṣṭrabhṛt*.<sup>59</sup> For the first time, the term *rājanya* has been used in the *Taittirīya Samhitā* in its appropriate administrative sense where it has been stated that a true *rājanya* is one who protects his subjects and makes them happy.<sup>60</sup> Griffith thinks that this term has been derived from the root *raj* (passion<sup>61</sup>) but this appears to be unconvincing. In the post-Vedic texts, this term is used for the king who really pleased his subjects by ensuring their safety and general prosperity.<sup>62</sup>

The king was identified with glory and was associated with food and security of one's belongings.<sup>63</sup> The *Brāhmaṇa* texts furnish information about the *bhartṛ* (sustainer) and the *bhāryāḥ* (dependents). The *Jaiminiya Brāhmaṇa*<sup>64</sup> informs that in the context of the administration of a king, the term *bhāryāḥ* clearly meant the subjects who were dependent upon him. *Dirghatamas Māmateya Aucathya* appointed *Dirghśravas* as his *adhyakṣa* to look after his *bhāryāḥ*, i. e., his subjects, whom he had to provide with food.<sup>65</sup> later, the term *bhāryā* was used in the narrow sense of wife who was dependent upon her husband (*bhartṛ*) for sustenance.<sup>66</sup>

The relationship between the *bhartṛ* and the *bhāryāḥ* depended upon the nature of their mutual relationship. The king provided them with the means of livelihood mostly by protecting their agriculture fields and cattle. He supported the priest by offering foodgrains to them. In this context, the *Jaiminiya Brāhmaṇa*<sup>67</sup> states: "Neither a priest, should deceive his

sovereign, nor a sovereign his priest, because food is common to them. Therefore, when a priest gets into a high position, he wishes for a sovereign as a second protector of his abundance of food, and when a sovereign obtains the same position he wishes for the same reason a priest. One who knows this, finds a sovereign, a sustainer." It was an economic burden on the king if he supported his subjects from his own means because it involved heavy expenditure. Concerning this the *Śatapatha Brāhmaṇa*<sup>68</sup> mentions that the person is wealthy who has less dependents but more cattle. The kings were reminded of their responsibility of supporting their subjects.<sup>69</sup> They had to perform certain rituals for being competent enough to support them. It is a specially interesting information that a victorious king usually let his dependent people have share of the booty.<sup>70</sup> The king, by not supporting them, antagonised them and became an adversary among his own people.<sup>71</sup>

Fraser thinks that the chief dignity of primitive races is most profoundly connected with the position and activity of a priest god, fertility magician or rain maker.<sup>72</sup> Therefore it is not surprising that we see such conceptions in the Vedic texts in which the king acted as a fertility magician. He had of course his duty to care for rain and to see that the plants and animals thrived. He was also responsible for the happiness and sorrow of his tribe. For this he had to take the assistance to the priest who was expert in the methods of the performance of sacrifices. The significance of the regular monsoon depression for the vegetation of India may be well understood. The absence of rain caused famine which could cost the lives of the human beings and creatures because rain meant food.<sup>73</sup> The *Śatapatha Brāhmaṇa* maintains that the waters are the law (*dharma*). If it rains down on the earth, then everything goes well in agreement with the law. But in case if there is drought, there is anarchy in society for want of food.<sup>74</sup>

It was considered that every action in a sacrifice produced its effect in a mysterious way. The offerings and oblations made at the sacrifice streamed upto heaven and came down from there in the form of rain. It caused the growth of plants on which the life of both human beings and animals depended.<sup>75</sup>

This conception may appear to us heterogenic but it was a commonly accepted idea. The waters benefited all the people of a region. It is evident that the individual did not sacrifice for pleasing rain gods because it was an expensive affair. Rau thinks that the chief of the tribe performed such sacrifices.<sup>76</sup> It is obvious from a prayer prescribed to be offered to the gods. The monarch consecrated with the *vājapeya* even denied himself for the rest of his life the pleasure of a certain food so that there should never be shortage of this food for his subjects.<sup>77</sup>

In some of the *Brāhmaṇa* texts it is stated that every action of the king, whether intentional or unintentional, bears fruits. The offences committed by the kings would be punished by gods by afflicting him with natural calamities resulting in sufferings to him and his subjects. Therefore, he had to check his ways of life. For purifying himself, he had to offer prayers, perform sacrifices, observe vows, practice penance and offer gifts. In these texts there are several stories of ancient kings to prove the firm conviction that all natural happenings were considered to be caused by good or bad actions of the ruling king.

The Vedic texts refer to several ancient kings who properly nourished their subjects. King *Pṛthu* appropriated all food on the earth and acquired supremacy over wild and domestic animals.<sup>78</sup> Concerning the delightful picture of the happy rule of king *Parikṣit*, it is stated that he ensured peace and prosperity in his kingdom. A husband tells his wife : "Ascending his throne, *Parikṣit*, best of all, hath given us peace and rest.", while the wife asks : "which shall I set before these, curds, gruel of milk or barley brew ?"<sup>79</sup> *Jānaśruti Pautrāyaṇa* had established several charity homes where cooked foods was offered to the poor and needy persons.<sup>80</sup>

A perusal of the *rājasūya* ceremony shows that the king was the central figure for giving impetus to persons practising different professions. On this occasion their presence was essential.<sup>81</sup> This proves that he was closely associated with them. The sacrificial waters were invoked to inspire him to cause immense material prosperity.<sup>82</sup> He is described as wandering in his materially prosperous kingdom.<sup>83</sup> When the newly crowned king sat on the throne, the priest thus addressed him : "To thee" this

kingdom is being given for the development of agriculture, for the common good, for prosperity and nourishment of the subjects."<sup>84</sup> On account of his good deeds he was considered to be a great personality.<sup>85</sup> He sprang from the *Vrātya* and moving towards the people he gave them food and nourishment.<sup>86</sup> On the earth, he was similar to *Varuṇa* who was "*suśloka sumāṅgala satyarājan*".<sup>87</sup> *Suśloka* meant the person with a widespread fame and *sumāṅgala* denoted someone whose activities were auspicious. While performing the *sautrāmaṇi* the king uttered: "May my head be prosperity and fame be my mouth, joys be my fingers and delight my limbs."<sup>88</sup> Thus it is obvious that he tried for his prosperity which depended upon the safety of life and prosperity of his subjects.

### Role of Vidatha, Samiti and Sabhā

Some historians think that in the early Vedic period the *Vidatha* had to discharge some economic functions, namely, the distribution of whatever was produced, presumably food. This hypothesis has been made on the basis of the wrong interpretation of the term *dhīra* which occurs in a *R̥gvedic* hymn.<sup>89</sup> Sharma interprets *dhīra* as *vīra* (a above man) and thinks that the brave ones distributed whatever was produced.<sup>90</sup> But his contention is unconvincing because *dhīra* does not mean a brave man, but it means a man who has spiritual insight and who discards material belongings considering them to be of transitory nature.<sup>91</sup> Thus this hymn does not prove the distribution of products by the *vidatha*. This institution continued to exist even in the later Vedic period, but it never had any concern with economic activities.

The *Samiti* was the most popular assembly of the Vedic *Āryans* but there is no reference to prove that it ever acted in favour of the material life of the people. Mostly it was interested in the military and political aspects of tribal life. In the later Vedic period, the *Samiti* had lost its earlier importance and usually it acted as an elite society. Learned persons went to the *Samiti* to discuss matters of religious and metaphysical importance. The common people had no access to it.<sup>92</sup> *Samiti* and *senā* stood together and the former acted as a war council.<sup>93</sup>

Similar to *Samiti*, *Sabhā* was also an ancient institution.

Zimmer rightly suggests that in the Vedic texts *Sabhā* has been used for denoting several things, one of which was the meeting place of the village community. Sometimes, it designated the community hall where the meetings were held. It denoted also the recreation hall or gambling hall. It was the name of the king's court. In the present context, it is fair to discuss the economic functions of *Sabhā*.

The earliest reference to *Sabhā* occurs in the *Rgveda*<sup>94</sup> which mentions that as a blessing a *Sabhāvan* son was desired along with have friends, kine, sheep, horses and broad based wealth. The *Taittirīya Saṃhitā*<sup>95</sup> informs that the person cannot obtain splendour who was no *Sabhā* though he has built his house. Further, the same text states that *Sabhā* of a *brāhmaṇa* consists of his animals. After the completion of a certain rite, the sacrificer had to step towards the east and had to utter: "This sacrifice, O Agni, brings cows, sheep, horses, and the sacrificer obtains a *Sabhā* and a thousand heads of cattle."<sup>96</sup> It appears, therefore, that the *Sabhā* of a *brāhmaṇa* consisted of his animals and sons who lent splendour of his household.<sup>97</sup> There are Valid grounds to prove that this institution had concern with the welfare of the animals because livestock farming was one of the main professions of the Vedic *Āryans*.

The *Sabhā* had concern not only with the animals but also with agriculture. In the *Taittirīya Saṃhitā*<sup>98</sup> a rite has been prescribed by performing which one could be rich in foodgrains. A person had to go the *Sabhā* of his adversary reciting a particular hymn and had to gather blades of straw. Rau suggests that in this context *Sabhā* meant a threshing floor. The *Maitrāyaṇī Saṃhitā*<sup>99</sup> informs that the people who went to bring back an expelled king to rethron him by rites of exorcism, collected some dust from his footprints and then going around against the wind, scattered it from the *Sabhā* of a *grāma*vādīn. Later, rice was collected from his house. From this co-existence of house and *Sabhā*, it seems that the latter was not the hall or a building to live in, but was a farm house. This confirms the earlier statement that *Sabhā* designated the threshing floor. This interpretation is further substantiated by the *Chāndogyaopaniṣad*<sup>100</sup> which differentiates the *Sabhā* of *Prajāpati* from his

residence. Further, these references prove that *Sabhā* was the possession of an individual and from these we may infer that it did not always mean the gathering of village community or a community hall.

The *Sabhā* was the king's court to discharge some economic functions related to revenue. The *Atharva Veda*<sup>102</sup> mentions that the courtiers of Yama raised 1/16th part as their share of the merit of the departed souls. It may be concluded that the nobles at the king's court collected taxes from the subjects, the rate being the 1/16th part of production. Obviously the king's *Sabhā* had concern with taxation.

Some of the Vedic texts inform that *Sabhā* acted as a judicial court<sup>103</sup> and the people went to it for having justice. The king himself or his courtiers or the judge heard the cases and delivered judgement. It is quite right to think that cases concerning disputes over property also were settled by the *Sabhā*.

The *Sabhā* continued to exist as an institution discharging its economic functions even at the end of the Vedic period. *Yāska* commenting on a hymn of the *Rgveda*<sup>103</sup> refers to a custom as prevalent in the south that a woman, without any person to support her, went to the *Sabhā* for obtaining material assistance for her subsistence.<sup>104</sup> It appears that *Sabhā* extended support to helpless persons but it is not clear whether it was the *grāmsabhā* or the *rājasabhā* which functioned to support the destitute women.

### Scope and Functions

By the end of the later Vedic period, the popular assemblies and lost their political power, but another element in the state was gaining influence. It consisted of the *ratnins* the relatives and countries of the king who were regarded as so important that at his royal consecration ceremony some special sacrifices were performed to ensure their co-operation and loyalty. The *ratnins* indicate a rudimentary ministerial system and civil service. A study of the nature of their posts proves that some of were associated with economic affairs in different ways.

(i) *Grāma and Grāmaṇi*. In the *Rgveda* the term *Grāma* occurs only 15 times whereas the term *jana* occurs 275 times and *viś* 170 times. It indicates that the social organisation of the



early Vedic *Āryans* was based more on the *jana* and *vis* organisation than on the basis of village. *Grāma* generally translated into village, usually denoted a band of wandering animal breeders. This hypothesis is fully substantiated with the legend of Cyavana.<sup>105</sup> People belonging to a *grāma* had a common name, and cows and sheep formed their animal stock. The leader of a *grāma* could be called *sresthin*.<sup>106</sup> Such a *grāma* carried all its possessions on wagons and moved from one place to another. Noise on such marches was termed *grāmaghoṣa*. It has been mentioned along with the creaking of wagons, the rushing of rain, the crackle of fire, the murmuring of water and the bellowing of animals.<sup>107</sup> Usually such movements put the wanderers to such strain that after one day's march, there followed a day of rest. In unknown areas the services of guides were used who were well acquainted with the land.<sup>108</sup> *Jaiminiya Brāhmaṇa* mentions the functions to be discharged by such a guide. It states that he guided the people saying: "That is a good way we want to go along it. That is a convenient place, there we went to cross. That is a good place for rest, there we went to camp."<sup>109</sup>

Sometimes, in course of wandering or camping, two or more villages were encountered in terms of war. Such fight or skirmish was termed *samgrāma* which usually broke out for animals and pastures. On this ground, it has been argued that *grāma* in the *Rgveda* denotes a fighting group rather than a village in the general and ordinary sense of the term. It seems that *grāma* was a new institution superimposed on *vis* but it had somewhat a military character as it meant also the dwelling place of the fighting group of people.<sup>110</sup> Originally it might have contained members of a single clan engaged in fighting and winning new lands. But it could also include families of different clans.<sup>111</sup> Hopkins and Rau think that *grāma* was a host and even there was the *grāma* of gods and animals.<sup>112</sup>

On the other hand, in some of the Vedic texts *grāma* has been used in the sense of a permanent settlement. The *Aitareya Brāhmaṇa*<sup>113</sup> informs that villages in eastern India were larger and more thickly populated while all that was in the western region of the country, was a vast tract of desert. It proves that the shifting of population was taking place from the *Sarasvati*

valley to the Gangetic plain. Further, it refers to the deserts of Rajasthan where there were a few villages situated at a long distance from one another. A great highway connected several villages<sup>114</sup>, and a *grāma* served as a place for rest during any journey through the wilderness.<sup>115</sup> A man whom robbers misguided and looted in the desert and discarded him with fettered hands and covered eyes, returned to his own village travelling from village to village.<sup>116</sup> It was a sign of good neighbourly relations, if the borders of two villages were close to one another.<sup>117</sup> In such a situation the villagers could defend themselves from dacoits and wild beasts. The boundaries of villages were properly demarcated.<sup>118</sup> These were the marks of settled life and as such they also differentiated the cultivated grain and domesticated animals from the wild ones.<sup>119</sup> In a village one felt quite homely and properly sheltered, while the wilderness was always a source of terror.<sup>120</sup> Some of the villages were comparatively larger (*mahāgrāma*<sup>121</sup>) and as these have not been mentioned in the *Samhitās*, it appears that in the compositional period of the *Brāhmaṇa* texts, villages, on account of growing economy, were rapidly developing.

The double sense of the term *grāma*, i. e., a band of wandering group and a village, creates two problems as to which meaning is earlier and how the change of meaning is to be explained. As regards the first part of the problem, it is to be noted that in the older portions of the *Rgveda* and the later Vedic texts, *grāma* has been always used in the sense of a fighting group and a group of people wandering with their livestock.<sup>122</sup> The definite indication of *grāma* in the sense of a fixed settlement appears in the comparatively later texts. But this view should not be considered as conclusive, though it may encourage our surmise when we are given to know that wandering herds become indeed occasionally settled whereas settled tribes rarely become wandering herdsmen.

Regarding the second part of the problem, Rau has drawn our attention to a statement contained in the *Jaiminiya Upaniṣad Brāhmaṇa*<sup>123</sup> which states : "In the autumn the herbs ripen and are harvested. The winter is the end of the year and in this season the movement of people is also brought to an end, i. e., they cannot work outside. These two join their two ends.

forming a cyclic order of seasons, making the year unending. These are its two ends, namely, the winter and spring. Accordingly, the two ends of the *grāma* are joined together. Similarly, the two ends of a necklace come together and so a snake joins its head with its tail while resting in a coil." On this analogy it has been suggested by Rau<sup>124</sup> that two ends of a *grāma* therefore, run into each other. It is round like a necklace or a resting snake. The comparison may be easily explained if we realise how a trek of bullock carts stayed at a place. There the column formed a circle so that the head of the train came into contact with the last cart. Such a camp was of course most easy to defend, the animals could be taken into the centre, the leader of the troop could keep a watch over his people and vehicles. Here, *grāma* obviously stands for a waggon stronghold, and with the beginning of settlement, the form of such a waggon stronghold was most probably retained, the carts being only replaced by permanent huts so that roundings were formed. Through this link the change of meaning may be assumed.

The people forming the village community were termed *sajātaḥ* because they belonged to the one and the same group. It was desired to win over them or to have control over them (*sajātakāma*). For fulfilling this objective, certain rites were performed. A study of prayers offered on such occasions indicates that the sacrificer wished that the *sajātaḥ* may be numerous, amicable and obedient. Above them stood the *grāmaṇi* who was an important official of the king.

The importance of villages increased on account of their being centres of economic activities; hence *grāmakāma* (desire of obtaining a village) became a coveted thing. The *Yajur saṃhitā*s prescribe some rites to be performed by the person desirous of obtaining a village. Such rites were commonly known as *grāmyeṣṭi*. The nature of *grāmakāma* is a controversial problem. It indicates either the grant of regalian rights by the king or the acquisition of the right of ownership of village land. It is also possible that the simple process of becoming the chief of a village by one's own exertions is contemplated. It is obvious that the king had established his control on villages. It is confirmed by a statement contained in the *Praśnopaniṣad*.<sup>125</sup> The

person who obtained a village was known as *grāmi*. In society, his status was high. It has been maintained that the god to whom an offering is made for *grāmakāma*, subjects his tribesmen to him and makes them obedient to him.<sup>126</sup>

The Vedic texts refer to *grāmaṇi*<sup>127</sup> who appears to have been an officer mainly concerned with village affairs. He is enumerated as one of the three categories of prosperous persons including a learned *brāhmaṇa* and a warrior. Weber thinks that originally he was a troop leader and afterwards became the village chief.<sup>128</sup> Zimmer is of the view that he was the leader of the local people and probably was identical with *vrajapati*.<sup>129</sup> The *Rgveda* informs that he was a troop leader who led the village folk to the battlefield.<sup>130</sup> The king conquered villages and had the epithet "*grāmajit*".<sup>131</sup> In these battles, *grāmaṇi* helped him. His original military character is evident from the fact that in the Vedic texts he is associated with *senāni* along with chariot-drivers in the army.<sup>132</sup> After victorious encounters, the king, of course, received the major share of the loot but *grāmaṇi* also did not return with empty hands.

It seems that when the military needs of the kingdom on the village level were no more felt, the *grāmaṇi* became the village headman.<sup>133</sup> Even in the early Vedic period his office was proverbial for prosperity.<sup>134</sup> In the later Vedic times he became more an administrative officer than a military commander because he has been dedicated to authority<sup>135</sup> and might in the symbolical victims of the human sacrifice. The king was the central authority and *grāmaṇi* was a local officer. Both of them were entrusted with the duty of protecting the crops.<sup>136</sup> The affiliation of *grāmaṇi* with the peasantry may be assumed from the fact that in *ratnahaviṃśi* ceremony, the king offered cake to the Maruts at his house. The Maruts were considered as peasants, and the village head was also a peasant. On this occasion the king offered a bull to the priest which is associated with agriculture, so obviously *grāmaṇi* belonged to the peasantry.<sup>137</sup> Besides, he entertained the villagers and in the *puruṣamedha* he was a symbolical victim of *ṛṣita*.<sup>138</sup>

There were several *grāmaṇis* in a kingdom and they were

trustworthy officers of the king. It is clear from the statement that one hundred sons of *grāmāṇis* having quivers filled with arrows, were employed to protect the sacrificial horse of the *aśvamedha*.<sup>139</sup> It further indicates that though the military functions of *grāmāṇis* were reduced, they did not cease, and possibly they were officers to maintain law and order in their respective villages.

The epithet *vaiśya* was applied to *grāmāṇi*<sup>140</sup> and this indicates that he was a commoner. His office was held to mark the topmost point in the career of a *vaiśya*. He became prosperous through his office<sup>141</sup> and on account of that his status was compared with that of the king.<sup>142</sup> His post was considered to be a mark of the greatest fortune for the man who occupied it. The *Atharva Veda* identifying a magical amulet with *grāmāṇi*, vigour, riches and plenty, suggests that the *grāmāṇi*'s office was not only a cause of his material prosperity but also an office of political authority.<sup>143</sup> *Grāmāṇi*, along with *sūta* and other officers, has been enumerated in the list of persons of royal entourage, whom a newly crowned king desired to have as his subjects.<sup>144</sup> This proves the inferior status of *grāmāṇi* and *sūta* as compared with that of the princes and nobles, but it appears that they enjoyed privileges by virtue of their being enlisted as persons in close association with the king. However, the status of *grāmāṇi* was inferior to that of *sūta*,<sup>145</sup> because in the *rājasūya*, the latter offered the sacrificial sword to the former, making him inferior to himself. *Grāmāṇi* also obtained the status of a *ratnin*<sup>146</sup> which proves the importance of villages.

The question is how the *grāmāṇi* was appointed. It is, however, very difficult to say as to whether he was appointed by the king or was selected by the villagers. His post was one of importance, so a new *grāmāṇi* was duly consecrated and had to pay attention to the welfare of the village folk.<sup>147</sup> It was essential for him to have cordial relations with the villagers because he had to work among them. It is confirmed by a rite prescribed in the *Śatapatha Brāhmaṇa*<sup>148</sup> that in the *rājasūya* he offered the sacrificial sword to a kinsman and both mutually handed it on, so that there should be no confusion of classes, and society may be in proper order.

It has been suggested that as a village head, he realised taxes from the villagers.<sup>149</sup> Egging thinks that he was a hereditary territorial proprietor living in the capital.<sup>150</sup> This view appears to be unconvincing because in the Vedic texts there is nothing to prove that he always stayed in the capital. The view of Jayaswal that he was the head of the township<sup>151</sup> seems to be erroneous because in the later Vedic age urban life was not developed to such a degree as to necessitate a special officer to manage the affairs of the city or town. It appears that *grāmaṇi* was the intermediary between the king and the villagers as he might have been responsible for the payment of the tribute paid by the villagers to the superior royal officials.

(ii) *Sūta*. Similar to *grāmaṇi*, originally *sūta* was also a military officer and both of them have been associated with each other.<sup>152</sup> His status was next to the king's brother,<sup>153</sup> but was superior to that of *grāmaṇi*.<sup>154</sup> The *Śatapatha Brāhmaṇa*<sup>155</sup> informs that *sūta* and *sthapati* were equal in rank, but the former was above the rank of *kṣattr* and *saṃgrahitṛ*. The office of *sūta* was considered so important that an aspirant, for this office had to preform a rite.<sup>156</sup> His person was regarded as secure and unkillable.<sup>157</sup> The original military character of his post is obvious from the fact that the sacrificial horse of the *āśvamedha* was protected by one hundred sons of *sūtas* who were well equipped.<sup>158</sup> Besides, at the house of the *sūta*, the king offered oblation to *Varuṇa* because the former signified spirit among the human beings and the latter among the gods. On this occasion, the priest obtained a horse as his fee.<sup>159</sup> Similar to the post of *grāmaṇi*, the nature of his post also underwent a change and he also became a spokesman of the villagers. The common people waited upon the king with him as their spokesman.<sup>160</sup> He had the epithet of *vaiśya*.<sup>161</sup> In collaboration with *grāmaṇi* he looked after the village affairs.<sup>162</sup> The exact nature of his functions regarding the village administration is not known to us. However, it appears that he accompanied the king on his tours in the kingdom.<sup>163</sup> The daughters of *sūtas* formed the retinue of *parivṛtakā*, a queen. In the *puruṣamedha* he was dedicated to dance and songs.<sup>164</sup> So it seems that his post had also concern with the means of recreation. On this basis, it has been suggested that he was a bard. After examining

the works to be performed by him, Eggling rightly thinks that he was a herald who accompanied the king both in war and peace, and negotiated with the enemy. In war he always remained by the side of the king so that he might have easily taken over the duty of a chariot driver. Even his association with dance and song may be accounted fairly by the fact that at court festivities it was he who organised the display of dance and music for entertainment. Rau cites an appropriate parallel from the *Iliad* that the herald Pontonoose went to invite the musician Demodokos, brought him to the king's court, offered him a seat, gave him a harp to play upon and served him with food and drink.<sup>165</sup> Similarly, *sūta* also was the organiser of ceremonies and festivities and quite likely he himself might have been a dancer and musician.

(ii) *Govikartṛṇ* (*govikartana*). The beasts and birds were harmful to human life, domestic animals and standing crops because most of the villages were situated amidst the forests or in their vicinity. So it was essential to control them. It appears that *govikartṛṇ* discharged this task. The etymological analysis of this term proves that he was the cutter-up of cattle, i.e., butcher. On this ground, it is argued that he killed them and procured beef which was one of the chief items of food of the Vedic *Āryans*.<sup>166</sup> This view has been confirmed by discovery of split cattle bones from Hastināpura and elsewhere.<sup>167</sup> At least in the later Vedic period, his status as a *ratnins*<sup>168</sup> was not disrespectful because in some of the *Brāhmaṇa* texts beef has been mentioned as an appreciated item of food.<sup>169</sup> But in the *Vājasaneyi Saṃhitā* he is a despised man who has been dedicated to death.<sup>170</sup> Possibly it was on account of his functions related to killing of beasts, birds and even domestic animals for procuring meat. He seems to be regarded as the chief huntsman,<sup>171</sup> who cleared the forests from beasts.<sup>172</sup> The necessity of such an officer was realised even in the post-Vedic times. Megasthenes informs that the king had employed hunters to catch and kill beasts which caused harm to crops and human life.<sup>173</sup> *Govikartṛṇ* appears to have been the predecessor of *sūnādhyakṣa* of the Mauryan times.<sup>174</sup>

(iv) *Kṣattṛ*. He was one of the *ratnins*<sup>175</sup> of the king but

the Vedic sources furnish scanty information for the study of the functions which were performed by him. Besides him, there was a subordinate officer of the same designation (*anukṣattṛ*).<sup>176</sup> It is very difficult to find out the original meaning of the term *kṣattṛ*, Luders deals with this problem in detail. He thinks that this term is derived from the root *kṣad*, meaning to carve, so originally it may have meant a carver. In a broader sense, he was a distributor of dishes in the aristocratic household.<sup>177</sup> Luders further suggests that he was not an ordinary carver of meat and distributor of food because there was another high officer, *govikartṛ*, to kill the animals. It seems that *kṣattṛ* was an important official on whom the care of the whole royal household was incumbent. Such a high status of *kṣattṛ* may be ascertained from a narrative in the *Chāndogyaopaniṣad*<sup>178</sup> that he slept by the side of his lord *Jānaśruti Pauṛāyaṇa* on the roof of his palace. His close association with the royal family is evident from the report that he cut jokes with *pālāgali*, a queen, at the horse sacrifice.<sup>179</sup>

The Vedic references prove that *kṣattṛ* was a distributor of food because Agni has been mentioned as *kṣattṛ* in the sense of distributor of good things to his own worshippers.<sup>180</sup> At the end of the harvest song, two *kṣattṛs* of *Prajāpati* were invoked for fatness and plenty.<sup>181</sup> Among the blessings denied to a king, in whose kingdom a *brāhmaṇa* dame was detained, a *kṣattṛ* wearing a gold necklace also has been included.<sup>182</sup>

It appears that in the later Vedic period, *kṣattṛ* was associated with agriculture. The *Śatapatha Brāhmaṇa* mentions that at the *rājasūya* the king offered oblations to Indra at the house of *kṣattṛ* and gave a bull to the priest as his fee.<sup>183</sup> Indra and bull, both are associated with agriculture. Later, the meaning of *kṣattṛ* underwent a change. Ghoshal thinks that this term means chamberlain<sup>184</sup> (*mahāpratihāra*). According to Uvata and Mahīdhara it means an officer-in-charge of chariots.<sup>185</sup> They have missed the original meaning of *kṣattṛ* as the distributor of food. In the medieval times, his status was so degraded that sometimes he was employed to hold umbrella over the king's head.

(v) *Takṣan*. On account of the importance of wood craft,



due respect was accorded to the carpenters.<sup>186</sup> *Takaṣan* is included in the list of victims at the human sacrifice where he has been dedicated to firmness and dexterity. Due to the importance of his craft he was accorded the status of a *ratnin*.<sup>187</sup> Rudra also had the epithet of *takṣan*.<sup>188</sup> He enjoyed a respectful place in society and his food was allowed to be consumed by the persons of higher *varṇas*.<sup>189</sup> In the post-Vedic times also there was a high functionary of the state who made different objects of wood for sale.<sup>190</sup>

(vi) *Rathakāra*. Chariots were very useful on the battle-fields and also were means of communication; so a class of chariot makers came into existence. In the later Vedic period, the demand for chariots increased much, so, *rathakāra* also was included in the list of *ratnins*.<sup>191</sup> The protectors of horse of the *aśvamedha* were advised to stay at the house of a chariot maker during its wandering time.<sup>192</sup> It points to his association with the king. During the post-Vedic times, he appears to have been the counterpart of the *rathādhyakṣa*<sup>193</sup> who was an officer-in-charge responsible for making of different kinds of civil and military chariots.

(vii) *Karmāra*. During the later Vedic times, different arts and crafts were developed in which metal played a significant role. The *karmāra* (iron smith) was an important person, so in one of the Vedic texts he has been enlisted as a *ratnin*.<sup>194</sup> He was a part of the gathering of the common people around the newly crowned king.<sup>195</sup> His emergence and status indicate that he was an important person patronised by the king.

(viii) *Taxation*. The *Rgveda* informs that the kings did not have any regular source of income in the form of taxes for maintaining their army and royal dignity. They had to depend upon the tribal militia and consequently what they received in the form of spoils of war was to be distributed among the tribesmen presumably in equal shares. It is most likely that the chief was given a special share as was the practice in Homeric Greece, but this share depended on the consent and goodwill of his clansmen. It might have been given to him in recognition of his prowess. Eventually this gave rise in post-Vedic times to the principle that the king was entitled to taxes

in lieu of the protection he gave to the people. The practice that the best horse or the best elephant was given to the king was also a remnant of tribal society in which the community gave the best to the tribal chief. In the cattle rearing early Vedic society, as a token of their love for the warlike and other qualities of the king, he was given by his subjects a portion of their cattle or of dairy products<sup>196</sup> as *bali* (voluntary offering). But in an essentially tribal pastoral society there was little scope for collecting any tax from the tribesmen and outsiders.

Taxes on regular basis are conceivable only in a full-fledged agricultural society but farming was not important in the socio-economic formation represented by the earlier portions of the *Rgveda*. In this text there are only twenty two references to agriculture and ploughing operations. Only a few of them occur in book IV where again relevant passages are considered to be of late authorship. The rest of such references which comprise the greater bulk occur in Books I and X. The only cereal produced by the *Rgveda* *Āryans* was barley which could serve as food for the people and fodder for animals. The two staple crops of the country namely, wheat and rice, have not been mentioned in this text. Naturally there is no mention of the gift of foodgrains in the *Rgveda* and its payment in the form of tax to the king was out of question.<sup>197</sup>

Taxation was a remarkable development of the later Vedic period when territorial kingdoms were established. In such a situation, the scope of functions of kings widened, necessitating resources to execute them. The kings could not discharge their duties without a strong financial base. They did not pursue private economy to an extent which could be considered sufficient. There were three points which compelled them to realise taxes from their subjects; firstly, for supporting themselves and their family members in a considerably luxurious way, secondly, for maintaining the dignity of their courts and thirdly, for having reserved cereals and other forms of property for emergency period. Taxes were essential condition for their existence and survival. In this context the *Aitareya Brāhmaṇa*<sup>198</sup> states: "The king drinking *soma* juice in a certain sacrifice is placed in fortune and shines everywhere like the sun. From all directions,

he exacts tribute, his kingdom becomes stronger and he is not to be shaken." So, taxes were imposed on the people who were considered as the root of the kingdom<sup>199</sup> because they were the source of the king's strength.<sup>200</sup> It indicates that they had to pay taxes to the king. Sometimes the king exploited them. Concerning this, the *Śatapatha Bārhamāṇa* maintains: "The wielder of the royal power feeds on the people, he is the eater and the people are the food, he is the deer and the people are barley."<sup>201</sup> The royal power indeed presses hard on the people and the king is apt to strike them down."<sup>202</sup>

The people willingly paid a part of the their products to the ruler as a token of his honorarium in return for their protection by him. Whatever belonged to the people, the king had a share in them.<sup>203</sup> On the occasion of the performance of *rājasūya*, several divine and mortal beings were prayerfully invoked and requested respectively to protect the king. In this regard, the *vaiśyas* were requested to protect him with their wealth.<sup>204</sup> It means that the persons engaged in production had to pay taxes to the king. In the subsequent period, *bhāga* became a conventional term to denote the king's share in agricultural products. The term *viśamattā*<sup>205</sup> was used as an epithet of the king which proves that he sustained himself by means of taxes realised from his people.

When the taxes became a regular feature, it was realised that some rules and regulations should be formulated. For the first time, Uddālaka thought on this problem and laid down rules of taxation. His views contained in the *Atharva Veda*<sup>206</sup> indicate that really he was the father of Indian revenue system and his thoughts were the main basis on which the post-Vedic political thinkers founded and developed their principles of taxation. Uddālaka thinks that the amount of taxes realised from the subjects is not the personal possession of the king for his enjoyment. The aim of taxation is to protect and nourish the people.<sup>207</sup> In this regard the terms *avi* and *svadhā*, meaning protection and nourishment respectively, are very significant. In the post-Vedic times these two terms were substituted by *rakṣaṇam* and *pālanaṁ*. Uddālaka further suggests that financial resources are essential for protecting and nourishing

the subjects.<sup>208</sup> The effects are significant if the king expends amount on these heads. On account of this, he becomes *abhavan* and *prabhavan*, meaning materially prosperous and influential, respectively.<sup>209</sup>

Concerning the basic factor which impels the king to realise taxes from the subjects, and the subjects to pay to the king, Uddālaka thinks that *kāma* (desire) is a dominant factor because it is the giver and receiver of taxes.<sup>210</sup> The king had powerful desire to realise taxes from his subjects and for that he could use his coercive power, and his subjects also had a desire to pay them to him willingly under coercion. While imposing taxes on them, the king had to seek their approval, whether the rate was reasonable or not.<sup>211</sup> Religious sanctity was associated with the payment of taxes because it was considered that the taxpayer after his death, attains the heaven.<sup>212</sup>

Regarding the method of realising taxes from the subjects, it was supposed that the king would adopt proper method. While performing the *rājasūya*, he had to go through a rite in which he prayed to the mother Earth not to injure him, and in turn, assured her that he would not injure her. He entered into friendly relations with her which was considered to be one between the mother and the son as neither of them injures anyone wishes each other's welfare.<sup>213</sup>

It certainly proves that the king liked to cultivate good relations with his subjects. They also looked upon him as their protector and paid due respect to him.<sup>214</sup> They paid to him due share as a mark of homage and were grateful to him.<sup>215</sup> It seems that usually he realised taxes by sweet and persuasive methods but in some abnormal situations he could use his coercive power.

The Vedic texts inform us that mainly there were three kinds of taxes, namely, *bali*, *bhāga*, and *śulka* which were realised by the kings. It appears that *bali* was a voluntary tax, the rate of which was not fixed. Mostly, it was a tribute paid to the king or an offering made to a god.<sup>216</sup> In the *Gṛhya Sūtras*, it has been used in the sense of offering food to the gods, domestic deities, birds and animals and even to the inanimate objects.<sup>217</sup> The victors realised *bali* from the defeated kings in

order to prove their political superiority over them. The *Aitareya Brāhmaṇa*<sup>218</sup> mentions the names of some of the kings who realised it from the defeated rulers, such as, Janamejaya, Somaka, Sahadeva, Śrājaya, Bhīma Vaidarbha, Nagnajit Gāndhāra, Arindama, Kratuvid, Jānaki and Sudāsa Paijavan. This practice was so common that it was used as an illustration to denote an inferior bringing *bali* to his superior and vaiśya bringing it to the king.<sup>219</sup> The *Brāhmaṇa* texts prescribed some rites to be performed by the king for ensuring its payment by his subjects.<sup>220</sup> A newly crowned king was blessed with the receipt of much *bali* offered to him.<sup>221</sup> It appears that during the later Vedic period its nature underwent a change. A prayer contained in the *Atharva Veda* refers to the competence of the king for realising *bali* from his subjects.<sup>222</sup> The term *baliḥṛ*<sup>223</sup> was applied for him because he realised *bali* from his subjects which ceased to be a voluntary offering as it became a regular tax the rate of which (*mātrā*) could be measured (*mitā*).<sup>224</sup>

*Bhāga* is derived from the root *bhaj*, meaning to distribute or divide.<sup>225</sup> The people engaged in productive activities had to give the king some shares of their produce. During the post-Vedic times, *ṣaḍbhāga* was a conventional term to denote the 1/6 of agricultural produce as the king's share which was paid to him as tax. The *Dharma Sūtras* throw considerable light on *bhāga*. They state that the king should realise 1/6 of the total produce of foodgrain, meat, honey, ghee, herbs, flowers, perfumes, roots, fruits, wood, hide and objects made of bamboo.<sup>226</sup>

For the first time, a new kind of tax, namely, *śulka*, has been mentioned in the *Atharva Veda*,<sup>227</sup> but its real nature is not known. In the post-Vedic times it was a tax to be realised from the merchants. The common people have been exhorted to pay *śulka* to the king,<sup>228</sup> so its post-Vedic meaning does not hold good. Regarding the rate of *śulka* Uddālaka<sup>229</sup> thinks that it should be 1/6 which is near about 6½ per cent. It is not known whether this rate was imposed on commercial objects or was a general term to denote any kind of tax. If it was a commercial tax, it proves the development of arts, crafts and trade. The king thought it proper to realise tax from the

craftsmen and merchants.

The early *Dharma Sūtras*<sup>230</sup> refer to the nature of *śulka*. One-fiftieth of the cattle was payable annually to the king by those who lived by cattle rearing. The same rate has been prescribed for income derived by money lending. This rate is closely approximate to the Vedic rate of *śulka* which was 1/16. Of marketable commodities sold in the country, the king could realise 1/10 as *śulka* and of those sold in foreign countries, he took 1/20. According to *Baudhāyana*<sup>231</sup> the king had to obtain 1/10 of the merchandise obtained by maritime trade. Gautama lays down that craftsmen, day labourers, boatmen and coachmen should each do a piece of work for king every month which could be treated as tax payable by them.<sup>232</sup>

The question arises as to in which form the taxes were realised. The later Vedic texts refer to different denominations of coins but not even a single piece of metallic coin has been found which may be dated prior to the 6th century B.C. It is obvious that taxes were not realised in cash but in kind which was easily available and convenient to offer. Sometimes, it was realised in the form of kine and other animals which also were used as the means of exchange.

(ix) *Control on Gambling*. In some of the Vedic texts, *akṣāvāpa*<sup>233</sup> has been mentioned as a *ratnin*. On the evidence of the *Kautilya Arthaśāstra*, Jayaswal suggested that he was the Accountant General who maintained records of income and expenditure.<sup>234</sup> This view appears to be unconvincing because during the later Vedic times, the matters concerning income and expenditure were not developed to such a degree as to require a high officer to manage them. So, *akṣāvāpa* should not be taken in the sense of the Accountant General. In the Vedic texts, he is mentioned as a dice thrower.<sup>235</sup> The importance of the dice game in the life of the Vedic *Āryans* is proved by the fact that the dice thrower was also counted among the *ratnins*.

In this game the defeated persons had to suffer much and sometimes their condition became very miserable. The *Rgveda*<sup>236</sup> narrates the laments of a dicer who had lost all his property

including his wife. Such a person was the most wretched one who was hated by all but there was none to give him comfort. He was similar to a costly horse grown old and feeble. Such a dicer wandered homeless, in constant fear, in debt and to seek riches he went by night into the home of others. There might have been several such sufferers in the Vedic society. It appears that *akṣāvāpa* was the officer-in-charge of gambling houses which were usually located in the *sabhā*. He regulated the play by controlling fraudulent methods of playing and saved many from ruin. In this respect, his role was very significant. Basu thinks that he was a public officer who superintended the gambling halls and collected revenue therefrom.<sup>237</sup> But in the Vedic texts there is nothing to prove that he collected taxes from the dicers. It appears that he also was in-charge of royal gambling hall and arranged dice play for the king, members of the royal family and their friends. The status of the *akṣāvāpa* was lowest among the *ratnins*. It is confirmed by the fact that the king did not go to his house to offer *havis* to him on the occasion of the performance of the *rājasūya*. *Gavedhukā* seeds were brought from his house and oblation made of them was offered to Rudra in the palace.<sup>238</sup> In this offering, dice board and dice have been mentioned, and in the list of sacrificial fee, a bi-coloured bullock, a claw-shaped knife and a dice board with a hair of horse have been prescribed.<sup>239</sup>

Some historians think that the designations of *ratnins* do not prove that they had anything to do with the actual functioning of the government and the part played by them in administration was not real.<sup>240</sup> Basham argues that the *ratnins* did not form a ministerial council. They were not ministers but simply important people associated with the king. They had the power to do harm and their loyalty was, therefore assured by special magic or religious rituals. Rau also suggests that they were influential persons at the king's court and formed the circle of "precious things" of the ruler because they were considered as king makers. In the Vedic texts, they have been enumerated without any principle of order and the lists containing their designations vary from each other, and these hardly furnish any indication of their functions. But some of the *Brāhmaṇa* texts

furnish individual notes which at least throw some light on the subject.<sup>241</sup>

The aforesaid view may be logical but on the basis of the Vedic evidences it also should be accepted that they were sustainers of kings<sup>242</sup> and were considered as the limbs of ruling power.<sup>243</sup> The fate of the king depended upon them,<sup>244</sup> so he made them his own faithful followers.<sup>245</sup> We have already seen that on the occasion of the performance of the *rājasūya*, the ceremonial sword which signified sovereignty, was passed on to *grāmaṇi* and *sūta* to make them subordinate to the king.<sup>246</sup> These points obviously indicate that they were practically the real functionaries of kingdom whose co-operation was essential for the proper functioning of administrative machinery. Among them the *senāni*, *grāmaṇi* and *sūta* played significant role.

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33. TB, 1.7.4.2 ; 1.7.6.7.
34. TS, 2.6.10.2 cf. Zimmer, H. AIL, p. 209.
35. MS, 2.2.11; 2.5.4; TS, 2.2.1.2; 2.2.3.1.
36. Banerjee, A. G., *Dharma Sūtras*, pp. 90-120.
37. RV, 10.97.22.
38. *Ibid.*, 7.38.5 ; 10.27.11.
39. BU, 4.3.37-39.
40. RV, 7.38.6.
41. SB, 6.1.3.13.
42. *Ibid.*, 14.6.8.2 ; BU, 3.8.2.
43. TB, 3.8.5.1.
44. PB, 2.3.7.
45. TS, 3.4.8.2.
46. *Ibid.*, 2.1.4.7-8; 3.4.8.2.; M.S., 2.2.1; 2.2.10; KS, 10.8-9; SB, 12.9.3. 1-6; AB, 8.10.7; PB, 2.10.4; JB, 1.137.
47. Rau, W., *op.cit.*, p.129.
48. *Ibid.*, *op.cit.*, p.66.
49. BU, 1.4.11-15; Ghoshal, U.N., *A History of Indian Political Ideas*, p. 23.
50. SB, 6.7.3.11.
51. RV, 5.11.1. 7.89.5; 10.56.3.
52. SB, 5.3.3.6; AB, 8.12.23.
53. RV, 7.89.5.
54. SB, 5.3.3-9.
55. SB, 5.4.4.7.
56. *Vendīdād*, 2.1.3-6.5, SBE, Vol.4, pp.12, 17.
57. AV, 19.24.1-5.
58. TS, 7.1.1 ; SB, 2.1.4. 1ff.
59. SB, 9.9.1.1; 9.4.11. 1ff.
60. TS, 15.8.1-2.
61. Griffith, R. T. H.; *Hymns of the Atharva Veda*, Vol. 2, p. 192.
62. Roy, B. P., *op.cit.*, p. 59.
63. SB, 13.2.2.2-5.
64. JB, 3.23, 257.
65. Rau, W., *op.cit.*, p. 35.
66. AB, 7.98, SB, 14.6.7.1; BU, 3.7.1; 4.5.1; TB, 1.8.8.1, 14.7.3.1.
67. JB, 1.278.
68. SB, 2.3.2.18.
69. *Ibid.*, 2.3.4.7.
70. *Ibid.*, 10.3.5.9; 14.4.1.20; BU, 1.3.18.
71. AB, 7.98; SB, 14.6.7.1; BU, 3.7.1.; TB, 1.1.8.1.; 14.7.3.1.

72. Vide Rau, W., *op.cit.*, p. 90.
73. *TS*, 5.4.9.2.
74. *ŚB*, 2.1.6.24.
75. *JB*, 1.278.
76. Rau, W., *op.cit.*, p. 90.
77. *ŚB*, 5.2.2.4; 7.2.4.14; 9.3.4.4.
78. *Ibid.*, 5.3.5.4.
79. *AV*, 20.127.1-10.
80. *CHU*, 4.1.1.
81. *VS*, 30. 1ff.
82. *AV*, 4.8.9.
83. *Ibid.*, 4.8.3.
84. *ŚB*, 5.2.1.25.
85. *Nirukta*, 2.3. Cf. *TB*, 3.9.7.3.
86. *AV*, 15.8. 1ff.
87. *VS*, 20.4.
88. *Ibid.*, 20.5-6.
89. *RV*, 3.28.4.
90. Sharma, R.S., *PIIAI*, p. 63.
91. *RV*, 3.28.4, *KU*, 1.2.2.5.11.12; 2.3.6; *MU*, 1.1.6; 3.2.1.5.
92. *ŚB*, 14.9.4.17; *BU*, 6.4.18; *CHU*, 5.3.1.
93. *ŚB*, 8.6.1.16.
94. *RV*, 4.2.5.
95. *TS*, 1.7.6.7.
96. *Ibid.*, Rau, W., *op. cit.*, pp. 75-76.
97. Basham, A. L., *op. cit.*, p.77.
98. *TS*, 3.4.4.5-6.
99. *MS*, 2.2.1.
100. *CHU*, 8.14.1.
101. *AV*, 3.24.1.
102. *VS*, 30.3.; *TB*, 3.4.2.
103. *RV*, 1.124.7.
104. *Nirukta*, 3.5.
105. *ŚB*, 4.1.5. 1ff; 2.5.1.13; Hopkins, E.W., *JAOS*, Vol. 26, (1905) pp. 58-60.
106. *JB*, 1.30.4.
107. *Ibid.*, 1.143.
108. *KS*, 20.7.24.10; *GB*, 2.2.8; *TB*, 3.8.29; *ŚB*, 13.2.3.2.
109. *JB*, 2.424.
110. *RV*, 1.94.1; 2.13.7; 10.149.4; *TB*, 1.5.1.
111. *Ibid.*, 1.114.1; 8.7.11.
112. Rau, W. *op.cit.*, p. 52, *PB*, 6.9.2; 17.10.2.
113. *AB*, 3.44.
114. *CHU*, 8.6.2.
115. *JB*, 2.422.426.

116. *CHU*, 6.14.1-2.
117. *TB*, 3.9.1.4.
118. *MS*, 4.1.1; *KS*, 19.11; 28.10; 30.10; *SB*, 13.2.4.2.
119. *TS*, 5.2.5.5; *SB*, 3.8.4.16; *PB*, 16.1.9.
120. *RV*, 1.44.10; 1.11.4.1; 10.146.1.
121. *JUB*, 3.13.8.
122. *Ibid*, 1.35.5. ff.
123. *Ibid*., 1.35.5. ff.
124. Rau, W., *op.cit.*, p. 54.
125. *PU*, 3.4, cf. *BU*, 4.3.37-38.
126. *TS*, 1,3.2.2; 2.2.8.1; 2.3.9.2; 2.5.6.7.
127. *RV*, 10.62.11; *TS*, 2.5.4.4; *AV*, 3.5.7; *SB*, 3.4,1.7.
128. Vide Ghoshal, *HPL*, pt. 1, p.20.
129. *Ibid*.
130. *RV*, 1.100.10; 3.33.11; 10.27.29.
131. *Ibid*., 5.5.9; 8.97.5.
132. *VS*, 15.19; *TS*, 4.4.3; *KS*, 17.19; *MS*, 2.8,10; *VI*, I, p.247.
133. *TB*, 2.7.18.5.
134. *RV*, 10.62.11; 10.107.5-6.
135. *VS*, 30.30.
136. *KS*, 10.3.
137. *SB*, 5,3.1.6.
138. *VS*, 30.6, *TB*, 3.4.15.
139. *SB*, 13.4.2.5.
140. *MS*, 2.6.5; *SB*, 5.3.1.6; *TB*, 1.4.8.
141. *TS*, 2.5.2.4, *MS*, 1.6.5.
142. *SB*, 8.6.2.1.
143. *AV*, 19.31.12-13,
144. *Ibid*, 3.5.7,
145. *SB*, 5.4.4.18.
146. *Ibid*, 5.3.1.5; *TB*, 1.7.3.
147. *AV*, 19.31.12.
148. *SB*, 5.4.4.19.
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150. Eggling, J; *SBE*, Vol. 12, p. 61.
151. Jayaswal, K.P., *Hindu Policy*, p. 202.
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153. *SB*, 5.4.4.17.
154. *Ibid*, 5.4.4.17.
155. *Ibid*., 5.4.4.17-18.
156. *BSS*, 13.3ff.
157. *TS*, 4.5.2.1; *VS*, 16.18; *MS*, 2.9.3.
158. *SB*, 13.4.2.5.
159. *Ibid* ,5.3.1.5.
160. *MS*, 4.3.8.

161. *SB*, 5.3.1.6; *TB*, 1.4.8.
162. *BU*, 4.3.37-38.
163. *Ibid*, 4.3.37-38.
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167. *AI*, nos. 9-10, pp.91-92.
168. *MS*, 2.6.5; *SB*, 5.3.1. ff.
169. *SB*, 3.4.12, 7.5.2.4; 11.7.2.1, *AB*, 2.3.4.
170. *VS*, 30.10; *Cf. TB*, 3.4.10.
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175. *TB*, 3.8.5.3.
176. *VS*, 30.11; *TB*, 3.4.49.
177. Vide, Rau, W., *op.cit.*, p. 110.
178. *CHU*, 1.4.5.
179. *SB*, 13.5.2.8.
180. *HV*, 26.13.
181. *AV*, 3.24.7.
182. *Ibid.*, 5.17.12. ff.
183. *SB*, 5.3.1.3.
184. Uvaṣa and Mahādhara on *VS*, 16.26.
185. *VS*, 16.27.
186. *Ibid.*, 30.6; *CF TV*, 3.4.2.1.
187. *MS*, 2.6.5.
188. *Ibid.*, 2.9.5, *VS*, 16.17.
189. *KS*, 12.10; *MS*, 2.4.1.
190. *KA*, 2.17.
191. *MS*, 2.6.; 5.4; 3.8; *VS*, 18.27.
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198. *AB*, 7.5.34.
199. *VS*, 20.10.
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201. *Ibid*, 6.1.2.25; 9.1.1.15.
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203. *SB*, 5.2.9.6.
204. *Ibid.*, 9.1.1.25.
205. *VS*, 10.2.
206. *AB*, 1.17.
207. *AV*, 3.29.1-8.
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209. *AV*, 3.29.2.
210. *Ibid.*, 3.19.2.6.
211. *Ibid.*, 3.29.6-8.
212. *Ibid.*, 3.29.3-5.
213. *Ibid.*, 3.29.4-5.
214. *SB*, 5.4.3.20-21.
215. *Ibid.*, 3.9.3.7.
216. *Ibid.*, 4.3.3.10.
217. *RV*, 1.70.9; 5.1.1.10; 7.6.5; *AV*, 6.11.1; 10.7.39; 10.8.15; Sharma, R. S., *Land Revenue in Ancient India*, p.7.
218. *SGS*, 2.14; *AGS*, 19.2.
219. *AB*, 1.35.8.
220. *SB*, 11.2.6.14.
221. *AB*, 8.34; *TB*, 2.7.18.1-2; *SB*, 1.3.2.15.
222. *AV*, 3.4.3.
223. *Ibid.*, 11.1.20.
224. *Ibid.*, 7.6.5; 10.173.6.
225. *Ibid.*, 11.1.6.
226. *Nirukta*, 1.7.
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228. *AV*, 3.29.1-10.
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231. Banerjee, S. C., *op.cit.*, p.123.
232. *BDS*, 1.18.14.
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234. *TS*, 1.8.9; *MS*, 2.6..5; *KS*, 15.4; *TB*, 1.7.3; *SB*, 5.3.1ff..
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## Agriculture

A perusal of the *R̥gveda* proves that the early Vedic Āryans were mainly a pastoral people. Linguistic evidences indicate that pursuit of animal husbandry was more prevalent than agricultural activities.<sup>1</sup> It appears that they practised agriculture secondarily but later they came to realise its importance.<sup>2</sup> In their settlements in the Punjab and Sind, farming was already in an advanced stage. A story in contained the *Śatapatha Brāhmaṇa*<sup>3</sup> indicates that agriculture was one of the causes of the victory of the Asuras over the Devas. It obviously refers to the practice of agriculture by the Indus valley people. The text states : "Even the foremost of the Asuras were still ploughing the fields and sowing seeds, those behind them were engaged in reaping and threshing. Even though fields were not tilled the plants brought forth cereals for them. This now caused anxiety to the gods who realised that owing to that enemy caused damage to them. They decided to find out means as how to upset the agricultural activities of the Asuras that they (gods) might be victorious and the Asuras might be defeated." It clearly proves the realisation of the importance of agriculture by the Āryans who without thriving agricultural base could not defeat the Indus valley people. Further, they prayed to Indra for getting wide fields, vast treasures, extensive pastures and other riches.<sup>4</sup> A son who would own agricultural fields was also desired.<sup>5</sup> Even the gamblers were advised not to play dice but to pursue agriculture and acquire wealth.<sup>6</sup>

It appears that the high-ups of the society considered agriculture as an inferior occupation. The tiller of land was ill looked upon as a dull, stupid individual because he was neither wise nor learned. Even his speech exhibited his low level of culture.<sup>7</sup> Perhaps this kind of condemnation was attributed to the cultivators for the simple reason that agricultural work mainly required physical labour which proved to be a handicap to gaining the Vedic knowledge. Baudhāyana also condemns agriculture on the same ground.<sup>8</sup> Very soon, this notion of agriculture came to an end. Concerning this, the *Atharva Veda* states: "These men depend for their livelihood on grains. Such men are successful in the cultivation of their agricultural fields."<sup>9</sup> It is interesting to note that in contemporary Iran also the same concept of agriculture was in vogue. The *Avesta* mentions that the person enjoys the earth with greatest of joy, who cultivates the fields for foodgrain and fruit bearing trees because proper cultivation of the farms causes material prosperity.<sup>10</sup>

### Meaning of Ksetra

From the Vedic references it appears that originally *kṣetra* did not mean agricultural field but an abode. This term has been derived from the root *kṣi*, meaning to dwell; hence *kṣetra* was the place of settlement and *kṣetrapati* was its owner and protector.<sup>11</sup> It shows that agriculture was associated with settlement because in pastoral economy agricultural operations could not be practised on a permanent basis. Prayers were offered to *Kṣetrapati* (persiding deity over settlement) for protecting the kine and horses.<sup>12</sup> It also indicates that a *kṣetra* was a settlement with surrounded pastures. Neighbouring areas, where cultivation work had started, were occupied. So these were also known as *kṣetra*.

### Earth the Sustainer

Throughout the ancient world, the earth was identified with the Mother goddess.<sup>13</sup> She was regarded as a goddess of fertility. In the Indus valley the people had developed the concept of the Mother Earth as the goddess of fertility and vegetation. From Harappā an interesting seal has been

discovered portraying an agricultural harvest scene.<sup>14</sup> On one side of the seal, the figure of a nude female has been depicted upside down whose legs are apart and a plant is issuing from her womb. On the other side, figures of men and women have been depicted. The association of Mother Earth with vegetation is confirmed by another seal where a horned female figure stands between two branches of a tree with her hair falling down in coils.<sup>15</sup> The Vedic Āryans also had conceived the idea of the goddess of fertility in the form of the Mother Earth.<sup>16</sup> The *Prthivi Sūkta* of the *Atharva Veda* is an unparalleled piece of literature dedicated to the praise of the earth.<sup>17</sup> The attachment of the people to it was but natural as they considered it as a cow, the source of prosperity.<sup>18</sup> They thought that the earth was the sustainer of all, nourishing them with love and feeding them with her milk in the form of roots, fruits and foodgrain.<sup>19</sup> On account of these considerations, the earth was considered as the greatest receptacle.<sup>20</sup> The earth was *dharani*<sup>21</sup> because it supported all. It was *bhūmi*<sup>22</sup> which means the resting place or foundation. All rest on it and it is the basis of the existence for all. The gods spread it out, so it was known as *prthivi*.<sup>23</sup> It was *citrā*<sup>24</sup> because variegated things were produced on it. Considering these things, the later Vedic Āryans rightly considered *bhūmi* as the best of the three divisions of the universe.<sup>25</sup>

### Types of Land

Land was classified into two main categories, namely, *kṣetra* which signified settlement, and *vana*, the area covered with the forest.<sup>26</sup> *Urvarā* was the fertile land and its opposite form was *anurvarā* (barren land).<sup>27</sup> *kṛṣya* was arable land on which agriculture could be carried on. The *Yajus Samhitās* refer to some other kinds of land such as tracts in hill area, open plains, stream land, slopes and undulating regions, flat surfaces with green pastures, low fertile regions and cultivable lands with home steads.<sup>28</sup> Desert was the piece of land covered with sands where there was no sign of life. The forest was not considered so.<sup>29</sup> The *Brāhmaṇa* texts mention an extensive desert in the Sarasvatī valley where water was not available to drink; so the persons going through it had to suffer much and consequently they



died.<sup>30</sup> Besides, different kinds of the nature of soil were known, such as *sarkarā* (salty), *sikatā* (sandy) and *aśmān* (stony).<sup>31</sup>

*Vāstu* was the land on which a house was built. It was absolutely private property of the settler and was cited as an item of private property.<sup>32</sup> *kṣetra* was used in the sense of farm land which was carefully measured and protected.<sup>33</sup> It indicates that the system of separate holdings existed during the Vedic period. *Khila* (*khilva*) denoted waste land which was barren.<sup>34</sup> Pischal thinks that *khila* meant pasture land where cattle grazed, but Oldenberg takes it as the unfertile land which lay between cultivated fields.<sup>35</sup> *Khila* meant a supplement so it might indicate those tracts which could be supplanted to cultivated land and thus indicated forest and pasture land where agricultural activities were not carried on. *Vraja* and *araṇya* might come under the purview of *khila*. The former denoted the place where the cattle went for grazing; so generally it appears to have been the pasture land. *Suyavas* signified a good pasture<sup>36</sup> and *gavyūti* was held to denote a grassy land for grazing the cattle.<sup>37</sup> The term *gavya* was used in the same sense<sup>38</sup> and it also denoted a measure of distance.<sup>39</sup> *Araṇya* meant forest which was covered with different kinds of plants, trees, bushes and grasses. It was infested by wild beasts; hence prayers were offered to the gods for ensuring protection from them while passing through it either for travel or for grazing the cattle.

### Reclamation of Land

It was essential to acquire land for cultivation for which the cultivators had to clear the forest and pastures. Natural vegetation handicapped the progress of the pioneers of agriculture and the problem of forest clearance created several difficulties for them.<sup>40</sup> The early farmers liked to cultivate the areas which were devoid of forests.

An effective agent of clearance of forest was fire. This method was quicker and less toilsome. Forest conflagration was a common happening.<sup>41</sup> There was possibility of the pollution of the *agnihotra* fire with it, for which expiation was prescribed.<sup>42</sup> The practice of burning forest was resorted to on such a large scale that the earth became afraid of excessive burning.<sup>43</sup>

The *Śatapatha Brāhmaṇa* informs that prior to the date of its final compilation, the region between the Sarasvatī and the western banks of the river Sadānīrā<sup>44</sup> was covered with forests which were burnt down by Videgha Māthava who was accompanied by his priest Gautama Rāhugaṇa. It proves the reclamation of land for settlement or paving the way for its further extension by burning the forests.<sup>45</sup> The brāhmaṇas did not cross the Sadānīrā on account of two reasons, first, the region to its east was not Āryanised and second, that it was not cultivable due to its being marshy.<sup>46</sup> But later, the situation changed and the region to its east also was reclaimed for cultivation after which it was Āryanised.<sup>47</sup> This story definitely proves the reclamation of north Bihar for settlement.

The *Taittirīya Saṃhitā* informs that forest was burnt down only to be reclaimed for cultivation or settlement; otherwise, it was left untouched.<sup>48</sup> It was not merely that the fire cleared the land, but the remains of ash left a rich deposit of potash which caused increased yield of grains which was not possible on normally cultivated fields.

The axe played an important role in clearing the forest land for cultivation; so it (*svadhiti*) was the symbol of a pioneer. Cutting of trees by axes has been frequently referred to in literary sources. In certain sacrifices particular kinds of wood were prescribed which were not to be cut down by an axe.<sup>49</sup> The services of wood-cutters became invaluable on account of their skill. During early times, axes were made of bronze and copper which were not to effective.

Even when the jungles were burnt, the deep-rooted and hard fibrous trees growing in the Gangetic valley would have to be uprooted by iron tools. In clearing the vegetation of eastern Uttar Pradesh and Bihar, stone and copper tools were found to prove ineffective. The thick forests of this region certainly posed a challenge to human ingenuity, but the neighbouring areas provided iron with which the forests could be turned into arable lands and settlements. South Bihar possessed rich mines of copper and iron ores of good quality and, therefore proved a paradise for the iron users who might have taken advantage

of the technology of the copper users. It appears that after clearing the forest, the reclaimers demarcated the area and established their claim over it.

Continuous cropping of a reclaimed tract without rotation rapidly exhausted its fertility which necessitated frequent shifting of the area of cultivation. The effect of letting the animals to graze to prevent the regeneration of forest undoubtedly led to the conversion of the temporary clearance of fields into permanent ones. During the earlier stages of farming, stock raising predominated over cereal cultivation even on rich soil. It is conceivable that shifting agriculture could have persisted for centuries in association with pastoral activities.

### Ownership of Land

The concept of proprietary rights in agricultural land and the nature of various types of land tenure in ancient India still continues to be the topics of discussion among the scholars. It appears that private ownership was not the uniform and universal principle of land tenure. Although Maine's analogy with the Teutonic mark is now discredited<sup>50</sup>, Baden Powell's<sup>51</sup> theory of undiluted private ownership supported by most of the scholars cannot also be definitely accepted after closer scrutiny.<sup>52</sup> Hopkins rightly observes that the general Hindu theory of impartible estate is a distinct blow<sup>53</sup> to the sweeping generalization made by Baden Powell when he states that the early Āryans recognised only private ownership in land.

Originally the king's title to ownership of all land was identified with the communal title, as he was the communal head of his people. With the increase of his political powers and bifurcation of royal and communal jurisdiction he emerged as an important factor in the land system. He developed certain prerogatives over the land. The *Śatapatha Brahmana* states that the grant of a settlement to any person by a kṣatriya with the approval of the clan is alone to be regarded as legally valid.<sup>54</sup> It evidently refers to the public land and not the private land of free men. It appears that while gift of such land with the tribal consent was a customary law, it was sometimes arbitrarily

disposed of by the ruler, thus generating a tendency to reduce public lands in the interest of king's private estate.<sup>55</sup>

The king was considered as the owner of entire land in his kingdom<sup>56</sup> but the individuals and the joint families also owned it.<sup>57</sup> The view has been criticised by some scholars, who think that the ownership of land by the king during the early Vedic period denoted only the exercise of political power by him.<sup>58</sup> In other contemporary Indo-European societies also there did not exist the practice of state ownership of agricultural land. The passages quoted by Hopkins merely indicate that the king realised taxes from all exempting the brāhmaṇas.<sup>59</sup>

During the early Vedic period the king could not establish his permanent right even on agricultural land. Besides pressure on land was not much as the main profession of the Āryans was cattle rearing. So it did not matter as to who tilled what land and how much. The earliest concept of the ownership of land was derived from the first occupation when there was less demand for land.<sup>60</sup> During this period there did not exist the tax like *bhāga* (king's share in agricultural produce). The king realised *bali* which was a voluntary tax.<sup>61</sup> It also suggests that the royal right was not completely established over agricultural land. We have already seen that the *Rgvedic* hymns frequently refer to the offering of gold, cows, horses, chariots and female slaves to priests as gifts; land is nowhere mentioned as an object of gift. It also proves that excessive importance was not attached to land though it was not the case with movable properties; so the king did not establish his absolute right over agricultural land owned by his subjects.

Majority of scholars think that the system of private ownership of agricultural land was in real practice. Maine was the staunch propounder of the theory that agricultural land was owned and cultivated by persons grouped in village communities.<sup>62</sup> The theory of individual ownership of land has been advocated by Baden Powell<sup>63</sup>, Jayaswal<sup>64</sup> and Banerjee<sup>65</sup>. There are ample evidences to prove that the cultivator's right over agricultural land was recognised. The *Rgveda* refers to one's own field being as essential as one's hair on the head as a personal

possession.<sup>66</sup> The terms like *kṣetrapati* (owner of land)<sup>67</sup> and *kṣetrapatni*<sup>68</sup> (wife of the land owner) prove the individual ownership of settlement even if it was on temporary basis. Fields, as one's own children, were regarded as a possession.<sup>69</sup> Indra was prayed for granting land and gold.<sup>70</sup> The agricultural holdings were carefully measured.<sup>71</sup> The view that the individual ownership of land in the early Vedic period was in a very limited sense<sup>72</sup>, does not hold good. It appears that private ownership was established only over the agricultural land but the *khilya* was the possession of the whole village community.<sup>73</sup>

During the later Vedic period the political and economic character of the state changed. It had its impact on the nature of the ownership of land. The king also had concern with the promotion of agriculture.<sup>74</sup> Consequently, he assumed some authority over farm holdings. An *Atharvedic* prayer for the grant of share in village to the king, indicates that the villagers paid some portions of their agricultural products to the king.<sup>75</sup> There could have been hardly any room for this prayer had he been already a master of the agricultural land. Keith rightly observes that there cannot be any doubt that the king controlled the land of the tribe.<sup>76</sup> It is not, however, necessary to mention him as the owner of all land. He had the right to expel his subjects from his kingdom at his sweet will but not on account of his ownership of land. These considerations point to his political superiority rather than to ownership proper.<sup>77</sup>

Even when the king gave land grants to his own associates and favourite ones, he did not grant ownership as such but conferred certain privileges like the dues to be realised from the cultivators. There is an obvious distinction between this action and the conferring of ownership in real sense. The Vedic *Śaṁhitās* and the *Brāhmaṇa* texts do not furnish details about the grant of land to the brāhmaṇas and others. During the post-Vedic period the *Dharma Sūtras*<sup>78</sup> state that the document offering such grant of land should be written on a piece of cloth or a copper plate. Marked with his own seal, the document should contain the names of the three immediate ancestors of the donee, the area of the piece of land and an imprecation against him

who may misappropriate the donation. During the last phase of the later Vedic period, agricultural land was considered as a private property.<sup>79</sup> The joint family life was the order of the day and the father was the owner of the family property whether land or cattle or gold.

Some rituals also testify to the individual ownership of land. Rites were prescribed for winning in the case of any dispute over a field. One had to make an offering to Indra and Agni on eleven potsherds if there was any such dispute.<sup>80</sup> Besides, there were persons who acted as mediators to settle the cases of disputes concerning fields and divided the agricultural and other kinds of land among the members of a family in case of partition.<sup>81</sup> Farm holdings were demarcated by boundary lines for separating them from each other. Land grabbing was a practice either in the form of forcible occupation of fields of others or occupying the areas of neighbouring fields by cutting gradually the boundary lines. Rudra was regarded as the lord of land grabbers.<sup>82</sup>

The *Aitareya Brāhmaṇa* informs that mainly the vaiśyas were cultivators of land. They were tributary to another (*anyasyabalikṛt*), to be lived upon by another (*anyasyādyah*) and to be oppressed at will (*yathākāmajyeyah*).<sup>83</sup> On the basis of these epithets some scholars think that these characteristics refer to the tenant's ownership of land.<sup>84</sup> A direct reference to king's association with the land occurs in the same text wherein it has been advised that a brāhmaṇa, a kṣatriya and a vaiśya should beg a piece of land for performing sacrifice from a kṣatriya (king), and he in turn, should ask the sun who is the divine lord of all.<sup>85</sup> It merely indicates his sovereign power on the kingdom rather than his personal ownership.

Ownership implies unrestricted power of the disposal of property but in the *Samhitās* there is no evidence of granting ownership of land to others by the king. For the first time, some of the later Vedic texts refer to the grant of a village by a king to a philosopher<sup>86</sup> and a piece of land to some person by king Viśvakarman Bhauvan but the Mother Earth censured this action<sup>87</sup> of the latter. It indicates that kings were already claiming ownership of land but their action was regarded as

some sort of an innovation and was strongly opposed by some persons. At the *aśvamedha*, the sacrificial fee did not include land and even in one day sacrifice (*ekāh*) land and śūdras could not be offered as *dakṣiṇā* to the officiating priest.<sup>88</sup> But in *sarvamedha* and *puruṣamedha*,<sup>89</sup> all possessions including landed property could be offered as sacrificial fee to the priests and other worthy recipients. But the *Aitareya*<sup>90</sup> *Brāhmaṇa* informs that the *catuṣpadakṣetra* was granted by the king to the officiating priest, when he was going through the royal consecration rites. In this case, the consent of the tribe was not sought. It is obvious that the particular piece of land belonged to the king as the crown land. This also proves individual ownership of land.

The early Pāli texts inform that the king had absolute power over his crown land but he had very limited authority over the lands owned by his subjects. The *Jātaka*s and some of the older *Dharma Sūtras* clearly differentiate between the private land and the crown land.<sup>91</sup> Terms like *khetṭapati* and *khetṭasāṃhika* signify the owner of land.<sup>92</sup> The sale and mortgage of land were in practice. Āmrapālī and Jīvaka donated their mango groves to Buddha without any restriction. The story of the offering of Jetavana by Anāthapiṇḍaka to Buddha also proves that at the end of the later Vedic period there existed private ownership of land. Some of the *Jātaka* stories further prove that the king could not confiscate private holdings without the consent of the owner and paying adequate compensation to him. In the time of the Buddha, a major change in the agrarian structure was marked by the emergence of large estates owned by the individual kṣatriya families. The criterion of wealth came to be associated more with land and money and less with cattle, which had been the measure of riches in the Vedic literature. The transfer of land took place largely within the same social group that had earlier maintained joint ownership.<sup>93</sup>

If private ownership of land was in vogue, the problem is whether it belonged to the head of the family or to all the members of the joint family. The Vedic texts mention that generally the head of the family (*gṛhapati*) was considered as

the owner of the family property; but the major male members had their share in it.<sup>94</sup> But the legend of Viśvāmitra expelling some of his sons from his kingdom<sup>95</sup> as also the stories of Śunaḥśepa<sup>96</sup> and Naciketā<sup>97</sup> prove autocratic authority of the father over his sons which could be applied on family property as well.

Regarding the land holdings, it seems probable that during the early periods these depended upon the requirements of the families and their capability to reclaim forests and waste land. In consideration of a comparatively small population and the availability of waste land for cultivation, the position of cultivators was made quite lucrative and sought after. In this context, there was neither a chance nor the practice to dislodge the tenants from their established hereditary rights. Their respective positions were unchallenged, provided they paid taxes to the king. The *Brāhmaṇa* texts throw considerable light on the grades of land holding but it appears that the *gṛhasṭhas* were ordinary land holders whereas the *mahāgṛhasṭhas* were the big landlords. The early Pāli texts furnish significant information regarding land holding. Some land holders had extensive farm holdings to be ploughed by 500 ploughs.<sup>98</sup> Some of them had 1000 *karisas* (equivalent to 880 acres) of cultivable land.<sup>99</sup> There were small land holders who could cultivate their fields single-handed or with the help of hired ploughs and labour. The *gāmabhojakas* probably possessed extensive cultivable land.

### Importance of Cereals

The early Vedic Āryans had realised the importance of cereals as the chief means of physical existence. The *Ṛgveda* contains hymns dedicated in praise of food.<sup>100</sup> These describe that food sustains us and enables us to do work. The *Atharva Veda* refers to the peasants who were proud of having produced Foodgrain.<sup>101</sup> Further, it has glorified boiled rice in comprehensive way which symbolises the whole universe with its varied creations.<sup>102</sup>

The *Brāhmaṇa* and the *Upaniṣad* texts surpass the *Samhitās* in glorifying the importance of cereals. The *Upaniṣadic* philosophers have compared the cereals with Brahman.<sup>103</sup> Truly the beings are born from food. After birth they live by food, and



after death they enter into food because from it semen is created in the body of the father and from it a person is born.<sup>101</sup> The *Taittiriya Upaniṣad* narrating the importance of food states: "The person is consisted of food, this indeed is his head, this is the right side, this is the left side, this is the body and this is his foundation."<sup>105</sup> On account of this ground cereals have been compared with *prāṇa* (vital life force<sup>106</sup>). The *Aitareya Brāhmaṇa* accords the status of father to them.<sup>107</sup> Caikitāneya Dālbyha considers food as a shelter of *prāṇa*. He thinks that without getting energy from food, the body cannot function and without food it cannot exist, The *prāṇa* discards the body which has become too weak without getting nourishment from food.<sup>108</sup> Uṣasti elaborates these points advanced by other theologians. He considers food as *pratihāra* (guard or protector) of the body.<sup>109</sup> The *Avesta* also holds the same view as it states that no one who does not eat has the strength to do any work. By eating the grains, he lives, while being not able to get the same, he passes away.<sup>110</sup>

Cereals were considered to be the mark of the socio-economic status of a men. In this regard the *Aitareya Brāhmaṇa* remarks: "He who has most of food shines most on the earth, and he who knows this fact shines forth among his own people and becomes the most influential man,"<sup>111</sup> Considering the influence of cereals for food, the people prayed to the gods for the plenty of grains in their houses. In this regard, the *Atharva Veda* states: "As the rain fills the reservoir with much water and does not allow it to become dry, so too our houses may be full of the stock of grains which may not diminish."<sup>112</sup> Certain sacrifices were performed for possessing grains as a boon from gods.<sup>113</sup>

The Vedic texts inform that it was not an easy task for people to feed themselves and their cattle in spite of the fact that the region inhabited by them was fertile and the climatic conditions were favourable. Hunger has been regarded as the real enemy of the people.<sup>114</sup> It has been identified with miseries and death.<sup>115</sup> On the other hand, heaven has been mentioned as the place where hunger and thirst are unknown.<sup>116</sup> Although disease and enemies gave a hard time to the Vedic people, the

Vedic texts mainly ring with fearful incantations of supernatural powers for rain and food. All other troubles and worries of life seemed insignificant. Rau has drawn our attention to the fact that reality has usually been overlooked by the Vedic scholars and consequently fanciful theories about the Vedic Indians have been advanced. It is often alleged that the passiveness of the Indians and their inclination to religion and their imaginative pre-occupations were due to favourable circumstances which made food easily available without much exertion. They lived in a fools paradise and had nothing to do except contemplate the problems of metaphysics lying under trees and enconced in lovely landscape or to kneel before lotus flowers as a set of peaceful people.<sup>117</sup> The Vedic evidences do not confirm these romantic views. The *Sam'itās* contain several prayers for riches and they prescribe rites to be performed for gaining wealth which was regarded as morally desirable for the ordinary man, and indeed essential to a full and civilised life.<sup>118</sup>

### Process of Agricultural Operation

The Indus valley people had developed the method of agricultural operation to an advanced stage and the early Vedic Āryans possibly learned this technique from them. The *Atharva Veda*<sup>119</sup> informs that among the Vedic Āryans it was king Pṛthu Vainya who, for the first time, systematized agriculture but in the *Rgveda*<sup>120</sup> this credit has been given to the divine Aśvinī. The Vedic texts throw considerable light on the gradual process of agricultural operations.<sup>121</sup> At first the soil was prepared by ploughing the land which was followed by sowing the seed. Then the plants were irrigated and proper care was taken for plant protection. When the crop was ripe it was harvested and brought to the threshing floor where the grains were separated from the stalks and were stored in houses. This process has been summed up in a *sūkta* of the *Rgveda* dedicated to Kṣetrapati.<sup>122</sup> The *Atharva Veda* also contains a similar *sūkta* which may be called the Vedic farmer's song.<sup>123</sup>

(i) *Knowledge of Weather.* Knowledge of weather plays an important role in agricultural operations. In fact, it is one of the decisive factors in the development of agriculture. Scientific

and technological progress open up possibilities for the most effective utilisation of wealth and forces of nature in the interest of people. The knowledge of seasons acquired by the later Vedic Āryans was very useful. They knew that the clouds pour water. The wind, cloud and the sun working in conjunction cause the herbs to become ripe.<sup>124</sup> They were familiar with sowing and harvesting seasons. A year was divided into six seasons of two months each. The advent of each season was held with pleasure and each was a source of enjoyment in its own way. Meteorological observations leading to prediction of rainfall and scarcity of water, etc., were made by experts, which generally were correct as they were based on the positions of stars and the direction of wind. They observed that on account of cold wind the plants bent down and the farmers made them to stand again.<sup>125</sup> The seasons and crops were considered as divine agents distributing treasures and eradicating evils and hostilities.<sup>126</sup>

(ii) *Agricultural Tools.* The Vedic literature furnishes names of different kinds of agricultural tools, such as, spade, picks, plough and sickle which were made of wood and copper and rarely of iron. In comparison with modern equipment, these appear to be primitive. It is difficult to ascertain whether the Āryans borrowed them from the Indus valley people or innovated them with their own ingenuity.

Spade was the most common, cheap and useful tool to dig out the farmland for preparing soil. It required less labour. Small plots could be easily dug out with the help of a few labourers. It was the most useful in cutting layers of hard soil, taking out roots of plants from the earth and also for making the demarcating boundaries of fields. The *Brāhmaṇa* texts inform us about the form of *abhri*.<sup>127</sup> It was hollow,<sup>128</sup> or a span long and some of them were a cubit long.<sup>129</sup> It was of different shape and size. Generally an *abhri* was sharp on one side only but some of them had sharp edges on both sides of the lower portion for which they were compared with the tongue of a person.<sup>130</sup> An *abhri* was held by means of a handle usually made of a piece of bamboo (*vaiṇavi*)<sup>131</sup> which was inserted in its upper part.<sup>132</sup> Its upward, middleward and downward

movements have been mentioned during the process of digging out the sacrificial ground in a certain ritual.<sup>133</sup> *Abhri* was a tool used for levelling the piece of land on which a sacrifice was to be performed and also for digging holes for erecting sacrificial posts and for making altars.<sup>134</sup> On account of its utility in agricultural operations and sacrifices, hymns have been dedicated to it.<sup>135</sup>

Though *abhri* was a digging tool and it has been translated into spade by the authors of the Vedic Index,<sup>136</sup> the existence and use of true spade has been doubted. It has been argued that *abhri* does not convey the meaning of a real spade. Its description in the Vedic texts points more to mattock than the spade. This observation may be true but it does not mean that the Vedic Āryans were not familiar with a real spade. Its existence and use have been confirmed by the discovery of a fairly well preserved blade of an iron spade discovered from Ujjayini, Pd. I (750-500 B.C.). This was used to cut hard black soil for making the rampart which was incidentally left out there.<sup>137</sup> It also might have served agricultural purpose.

Plough was more useful than spade and mattock. It was drawn for ploughing the land, so this process was termed *kṛṣi*. The zend term for ploughing was also *karša*. Fields on a larger scale could be tilled with plough, so it was a mark of material prosperity of a farmer. The breaking up of the glebes of the agricultural farms for levelling the land prior to sowing the seed, was mainly aimed at bringing about the necessary improvement in the physical suitability of the soil. It was done mainly with a view to ensuring the healthy growth of crops.

The problem of the origin and use of plough has been a debatable topic.<sup>138</sup> It has been suggested that the earliest tool of agriculture for cultivation was digging stick which, sometimes, was shod with a socketed metallic point or small shovel. It was developed into a man-driven plough with a handle on the root, and a vertical piece of wood or bamboo tied to the upper part of the stick drawn by men which developed into conventional form of plough driven by the oxen.<sup>139</sup>

Bloch thinks that the Vedic Āryans might have borrowed a superior type of plough from the Babylonians. It had a handle

fitted with a tube for sowing seeds while the ploughing was in progress.<sup>140</sup> According to him the Vedic *sira* was such a plough-sower of the Babylonian type. This view seems to be unconvincing for the reason that the Vedic texts describe the ploughing of land followed by the sowing of seeds. So, its borrowing by the Vedic Āryans from Babylonia does not arise.

It has been suggested by a noted historian that the Harappans did not know the use of plough for cultivating their fields.<sup>141</sup> They dug them themselves with digging sticks or other tools. This view has been confirmed by the fact that plough has not been depicted either on potteries or seals. But recent excavations at Kalibangan have brought to light the use of plough in the Sarasvatī valley even before the date of the Harappan culture. At this place furrow marks have been uncovered in a field outside the city's fortification which date to the pre-Harappan period.<sup>142</sup> The possibility that the plough might have been known to the Harappans on the basis of a particular sign in the script resembling the Sumerian sign for plough has now been corroborated by these furrow marks.<sup>143</sup> On a purely impressionist view it seems unlikely that a sufficient food surplus could have been possible to maintain the cities without plough agriculture on a systematic way and larger scale.<sup>144</sup> It is reasonable to think that the Harappans might have plough for ploughing their fields and the early Vedic Āryans borrowed it from them. It was made of perishable material like wood, hence its remains have not been discovered so far. Thus the view of Sharma that the chief contribution of the *R̥gvedic* Āryans to the development of agriculture was the introduction of cultivation by means of plough drawn by oxen,<sup>145</sup> does not hold good.

In the Vedic literature, the most common term for plough is *lāṅgala*. J. Przyluski and T. Burrow attempt to prove the Mundā origin of this word. In Dravidian it occurs as *nāṅgala*. Pokarny associates it with the Indo-European *leg/leng*.<sup>146</sup> It is to be noted that there are several places in the Punjab and Haryana having *nāṅgala*-ending place names which prove the use of plough for cultivating fields on a large scale, or, at least, it proves the importance of plough.

The Vedic plough was an implement fashioned with an eye to beauty and with artistic taste. It was evidently something of which the owner could be proud. It was made of hard wood like *udumbara* and *khadira* so that the land could be easily ploughed.<sup>147</sup> *Sira* (plough) was itself considered as the embodiment of food and ploughing of the sacrificial ground by it was regarded as an offering of food to Agni.<sup>148</sup> The plough (*sira*) was attached to a pole (*iṣā*) and a yoka (*yuga*) was attached to it at its upper side.<sup>149</sup> The yoke had two ends which were kept and fastened on the shoulders of oxen with cord. The lower end of the pole was fastened with the plough proper and in the same lower portion a handle was fitted with lance which was pointed and had a smooth look.<sup>150</sup> The *Jaiminiya Brāhmaṇa*<sup>151</sup> informs that the *lāṅgala* was termed *vakraṃlāru* because it was made of wood and its shape was bent. The plough was fitted with a plough-share which signified material prosperity of the cultivator ensuring his longevity and spiritual bliss. So an smulet<sup>152</sup> made of *khadira* wood in the shape of it was tied to the neck of the person desirous of all kinds of foodgrains, cattle, progeny, strength, glory, favour and sight. The *Śatapatha Brāhmaṇa*<sup>153</sup> states that the plough was fitted with a metal tip. Rau has doubted the use of ploughshare made of metal,<sup>154</sup> but his view seems to be unreasonable for the simple reason that it was convenient to plough the land with metallic ploughshare. Copper and iron were abundantly available to make ploughshare or for tipping the plough with either of them. It is noteworthy that no well-preserved piece of ploughshare made of iron has been discovered from any PGW yielding site. However, such a piece belonging to the post-Vedic times (4th century B.C. has been found at Dhatwa, a village on the Tapi in Gujarat which was an important iron melting site.

The first ploughing of the season was inaugurated amidst rituals. Elaborate invocations and supplications were offered to the gods presiding over agriculture.<sup>155</sup> In such a *lāṅgalayajña*, curds, rice, fried grains and other things were offered to the gods and the bullocks were fed with honey and ghee.<sup>156</sup> At the first ploughing, a brāhmaṇa had to touch the plough in order to make the occasion auspicious.<sup>157</sup> While ploughing the field,

the ploughman controlled the plough and the bullocks with the help of a handle and a stick (*aṣṭrā*), respectively.<sup>158</sup> Some of the Vedic texts mention more than two oxen yoked to the plough. Sometimes their numbers increased<sup>159</sup> upto 4, 6, 8, 12 and 24. On the basis of these references it has been argued that such unusual numbers of oxen point either to deep ploughing or to hardness of the soil.<sup>160</sup> Ghosha thinks two alternatives, first, it indicates improved method of tillage resulting in the production of agricultural surplus. A multi-plough was adopted to draw a heavy iron ploughshare required for the breaking of hard soil.<sup>161</sup> This practice has historical parallel elsewhere. The ancient Germans also invented a system of tillage appropriate to the heavy clay lands of north European forests. They practised deep cultivation by yoking eight oxen to a plough.<sup>162</sup> Second, such a plough was used to produce grains of special sanctity necessary for rituals. These explanations appear to be unconvincing because such a heavy plough was not required to plough the soft soil in the Yamunā-Gangetic valley. The Vedic texts nowhere prescribe the use of grains of special sanctity produced by this method of ploughing.

Rau suggests that such number of oxen were prescribed to be yoked to the plough due to the greed of the priests<sup>163</sup> because these were to be presented to the *adhvaryu*.<sup>164</sup> His view seems to be convincing but the greed of the priests was not the only cause for yoking unusual numbers of oxen to a plough. A perusal of the contexts in which such numbers of oxen have been mentioned proves the hollowness of the views of aforesaid scholars. It is to be noted that such numbers of oxen have been mentioned as yoked to a plough only for ploughing the sacrificial ground and never in connection with the ploughing of agricultural fields. The Vedic texts inform that such numbers of oxen are symbolical in nature. The six oxen represent six seasons and 12 oxen signify 12 months of a year. Likewise, 24 oxen represent 24 *pakṣas* of a year.<sup>165</sup> So these should not be taken in the sense of usual numbers of oxen in actual agricultural operations.

Though grains were produced both on ploughed and unploughed land,<sup>166</sup> it was essential to plough agricultural fields

for sowing seeds in order to harvest improved variety of crop. The *Śatapatha Brāhmaṇa*<sup>167</sup> maintains that furrow is like the womb in which seeds are sown, and if one casts seed into unploughed field, it would be like sowing seeds in any places other than into the womb. A somewhat similar view has been mentioned in the *Avestā*<sup>168</sup> that he, who would plough the land, unto him will the earth bring forth plenty like loving bride. The bride will bring forth children and the earth will bring forth plenty of grains and fruits. So, attempts were made to plough the land properly. In ploughing, mistakes were but natural which were corrected. This act has been compared with the correction made by the priest reciting the Vedic hymns.<sup>169</sup> Prayers were offered to the gods for enabling the ploughshare (*phala*) to plough the land properly and the tillers to ply rightly with their oxen.<sup>170</sup>

It is worth knowing as to who ploughed the land. *Śrapati* was the landlord or the owner of the plough who did not plough his fields himself because it was below his dignity. This act of ploughing was looked down upon by the aristocratic people.<sup>171</sup> The landlords belonging to upper classes might have engaged ploughmen to do the work. But the small farmers belonging to the *vaiśya* and *śūdra* classes ploughed their fields themselves.

(iii) *Manuring*. Only proper ploughing was not an essential condition for good crop. The production of grains depended much upon the nature of the soil. The fertile soil provided strength to the standing crop and acted as a store house of water and mineral nutrients which in turn were vital factors for controlling the rate of the growth of plant and the final yield of the land. In intensive cropping, plants absorbed large quantities of water and nutrients from the soil, In order to maintain these, it was necessary to preserve them through the use of manure. The term for manure was *purīṣam* which has been derived from the root *pr*,<sup>172</sup> meaning to fill. The Vedic *Āryans* were well acquainted with the utility of cowdung. Since it surcharged the soil with sap, it was collected for manuring the fields for higher yield of grains.<sup>173</sup>



(iv) *Sowing*. After ploughing and manuring the soil, the most important act was to sow the seed. It was an auspicious occasion, so prayers were offered to the gods, such as, *kṣetrapati* (god of agricultural fields), *Soma* (god of plants), *Pūṣan* (god of fertility) and *Indra* (god of rain) for letting out the tender shoots and growth of plants resulting in increased yield of grains.<sup>171</sup> *Sītā* was the goddess of furrow<sup>172</sup> who was invoked for grant of blessings and rich crop. *Sītāyujña*<sup>173</sup> was performed only on a ploughed field to secure protection of the crop. A huge quantity of food was cooked of barley and rice grains and offered to *Sītā*, *Yujā* and *Bhūti*. A *bali* was also offered to the demons who were the protectors of furrow. What was the necessity of such magical rites in agricultural operations? It seems that the early pastoral Vedic *Āryans* had not to bother much about their cattle because they lived on fodder which was easily available in abundance. On the other hand, the work of tilling, sowing and reaping was slow, arduous and uncertain. It required patience and faith. Accordingly, they, depended upon fate, and to acquire divine grace, they took resort to magic.<sup>177</sup>

One of the means for increased yield of grains was to sow improved variety of seed<sup>178</sup>. It was a highly technical job involving quality, testing of seed and safe storage. The seed, prior to sowing, required modification for easy germination.<sup>179</sup> It included selection of good quality of seed, scrutiny of healthy ingredients, removal of wornout grains and keeping them in water to facilitate early germination in the field when sown.

The *Śatapatha Brāhmaṇa* describes a person who was going to sow seed in his field.<sup>180</sup> He was expected to play an important role in agriculture because healthy growth of crop depended upon his skill. So, in the *rājasūya* he has been dedicated to welfare.<sup>181</sup> The *Avesta* also praises the work of a sower in a befitting manner: "He who sows seeds, sows holiness and he makes the law of Mazda spread as much he can with a hundred acts of adoration, a thousand oblations and ten thousand sacrifices."<sup>182</sup>

There were several methods of sowing, such as, scattering the seeds in the fields or pouring them along the furrow.<sup>183</sup>

Digging stick was one of the earliest tools of food gatherers and with these sticks holes were made into the earth for sowing the seeds. The sown seeds were covered with soil either by levelling the field with the help of a roller (*matya*)<sup>184</sup> or by ploughing it again.<sup>185</sup> Divine blessing was sought during the sowing of seed for their proper germination and growth.<sup>186</sup> Moisture healed what was damaged or torn in the earth.<sup>187</sup> After a few days the sown seeds were impregnated,<sup>188</sup> and thereafter grew into shoots and plants.<sup>189</sup>

(v) *Rotation of Crops.* The farmers had the knowledge of the importance of the rotation of crops.<sup>190</sup> Continuous cropping was the usual practice<sup>191</sup> but the system of following was also known. In the course of a year two crops were harvested in the same field.<sup>192</sup> Barley was sown in winter which became ripe in summer whereas paddy was sown during the rainy season and was ripe in autumn. Beans and sesamum were sown during autumn which became ripe during the winter.<sup>193</sup> In the post Vedic times also two crops were produced in a year which was a great source of wonder to the Greek travellers to India. In wetter parts of northern India the two crops might even grow without irrigation while in the plains a summer crop of rice would grow during the rainy season and a second irrigated crop in the dry seasons.<sup>194</sup>

(vi) *Cultivated Cereals.* After agriculture was once established, attention was directed towards the cultivation of grains on a systematic and larger scale. It was because the roots, fruits and livestock did not provide the main food basis of the more civilised society. The produce could be easily stored which could last for a long time and could sustain population against crop-failure.<sup>195</sup>

*Dhānya* which has its Indo-European origin was a common term to denote the grains.<sup>196</sup> In zend it is *dāna*. The horse was called *dhānyād* because in addition to grass, it was fed with grains.<sup>197</sup> *Dhānya* did not exclusively denote paddy but all kinds of grains and for it (paddy) there was a special term *dhānam*.<sup>198</sup> In the *Rgveda* the only name of cereal is *yava* which signified grain in general and barley in particular. But it does not mean that the *Rgvedic Aryans* did not cultivate or consume

other varieties of cereals. Archaeological excavations have brought to light cereals other than barley from the levels which are assignable to the *Rgvedic* period. In the later Vedic texts eleven different varieties of cultivated grains have been systematically enumerated.<sup>199</sup> The cultivated cereals (*grāmadhānya*) and wild ones (*āraṇyadhānya*) were both considered as bestowing vital strength on the sacrificer.<sup>200</sup> *Misradhānya* denoted mixed cereals which were produced by mixing and sowing seeds of more than one variety of corn.<sup>201</sup> The following were some of the important cultivated cereals.

(a) *Vrihi* (paddy). It is the most important grain produced in the tropical regions. It grew during the rainy season, so it was termed *varṣavṛddha*.<sup>202</sup> Some scholars think that the early Vedic *Āryans* were not acquainted with paddy because the *Rgveda* does not refer to it. It has been argued that as the *Rgvedic* geographical regions mainly included western India which was a wheat producing zone, so the text does not mention paddy. This argument appears to be unconvincing on the evidence of recent archaeological discoveries of paddy grains cultivated in this region. So during this period, the cultivation of paddy should not be ruled out. It is worth mentioning that riverine region of the Punjab was a suitable paddy growing zone.

The later *Samhitās*, the *Brāhmaṇa* and *Upaniṣad* texts frequently refer to *vrihi* both for domestic and sacrificial use.<sup>203</sup> In these texts, paddy and barley have been stated as essential foodgrains bestowing strength on the sacrificer. The breaths have been compared with both of them.<sup>204</sup> It has been maintained that the sacrificer could get the same merit by offering paddy and barley to gods which he could acquire by slaughtering animals in sacrifices.<sup>205</sup> Some of the Vedic texts contain a story which describes the sacrificial origin of paddy. It is stated that once the sacrifice had entered the earth the same being surrounded by gods turned into paddy. They wished to perform their animal sacrifice with rice.<sup>206</sup> The paddy grain has been compared with an animal which was the victim of sacrifice : "The chaff and straw of it are the hair of the animal,

its husks the skin, its smallest particle the blood, its flour represents the flesh of the sacrificial victim and other substantial parts are forks.<sup>207</sup> The slaughter of animals in sacrifices was not favoured, so rice and barley were prescribed in lieu<sup>208</sup> of animals. This fine changeover developed when the people began to question the utility of sacrifices involving the slaughter of animals.

The sacrificial importance of rice has been highly lauded and it was considered as representing the head of the sacrifice.<sup>209</sup> *Caru* was a commonly used oblation made of rice grains and milk. It was the symbol of nourishment because both rice and milk contribute to nourishment. The sacrificer, by preparing *caru*, enjoyed the benefit of nourishment.<sup>210</sup> Both rice and barley formed the materials for making *havis* to be offered to gods. It was prepared with the milk of the *vrata* cow.<sup>211</sup>

The later Vedic texts refer to several varieties of paddy which were produced in different parts of northern India. Each of them had its own characteristics. *Kṣṇavṛiḥi*<sup>212</sup> (black paddy) and *sūkḷavṛiḥi*<sup>213</sup> (white paddy) were the most common varieties of paddy. *Āśudhānya*<sup>214</sup> was a swift growing variety which was ready for harvest within a short period of two months. *Hāyana*<sup>215</sup> was a paddy having red husk which took one year to ripe. It is identified with the post-Vedic *saṃvat-sarapakvavṛiḥi* as referred to by *Pāṇini*.<sup>216</sup> *Nivāra* was a wild variety of paddy which grew in shallow tanks.<sup>217</sup> It was regarded as a sacred grain. In *rājasūya*, cake made of rice of *nivāra* was offered to *Bṛhaspati*.<sup>218</sup>

*Mahāvṛiḥi*<sup>219</sup> was the most important variety of paddy with grains larger in size in comparison with other varieties. In taste also it was superior to others. So, on these considerations, it has been regarded as the *saṃrāt* among the grains.<sup>220</sup> It was termed *mahāśālī* because it was a prized food item used specially by the rich peasants and the nobles whose household establishments were comparatively larger, proving their superior material prosperity. Its superior quality both in size and taste has been elaborated in the statement that *vṛiḥi* represents the *kṣātra*, and by bringing *sprouts* of such grains the priest places power in him. But the *mahāvṛiḥi* signifies the universal sovereignty and

by bringing sprouts of its grains he places universal sovereignty<sup>221</sup> into the hands of the king.

The Vedic sources do not inform us where the *mahāsālī* (*mahāvrihi*) was produced. During the post-Vedic times *Patañjali* informs that it was produced mainly in Magadha.<sup>222</sup> It has been corroborated by *Accounts* of Huen Tsang, a Chinese traveller, who visited India in the first half of the seventh century A.D. He refers to a distinct variety of rice produced in Magadha with larger grains which were shining and their taste was exquisite.<sup>223</sup> Hwui-Li, the biographer of Huen Tsang informs that *mahāvrihi* grown in Magadha was termed in Chinese "*Kung-ta-jin-mai*," meaning the "rice served to the great householders."<sup>224</sup> So, *mahāvrihi* should be identified with *bāsamati* or patna rice which is famous for its shining colour and excellent taste.

Archaeological evidences confirm that rice was produced in northern India even during the neolithic and chalcolithic periods. Excavations<sup>225</sup> conducted at Mahagara, 85 km, south-west of Allahabad in the Belan basin have brought to light carbonised rice along with wheat and barley. Their scientific analysis proves that these rice samples belonged to a period about 7000 years ago, i.e., *circa* 5000 B.C. It is the earliest evidence of the cultivation of paddy in India. Its remains have been unearthed from the OCP, B and R ware. PGW and NBP were levels at Atranjikhara.<sup>226</sup> Its discovery from all the levels proves that rice was a staple food of the inhabitants of this place. In this region, there was suitable climatic condition for the cultivation of paddy. In the NBP levels at this place, rice formed more than 98% of the entire cereals. It appears that from pd. III (PGW levels) onwards, the food habit of the people might have changed. They began to consume rice more than wheat and barley. Rice husks were used as a binding material in mud plaster of houses at *Hastināpura*<sup>227</sup> (800 B.C.). The excavations at Chirand<sup>228</sup> in Western Bihar have brought to light the samples of paddy belonging to *circa* 1800 B.C. Rice husks have been unearthed from Bidipur<sup>229</sup> in Orissa. A scientific analysis of these husks proves that these were not husks of wild rice but of cultivated ones. Even as early as

1200 B.C., rice was cultivated in the *Narmadā* valley.<sup>230</sup> Excavations at Naugava and *Vidīṣā* have brought to light the charred remains of rice proving the cultivation of paddy in the Malwa region in the chalcolithic period.

In western India, namely, in the Punjab, Sind, Gujarat and Rajasthan, there were several prosperous centres of Harappan culture. Generally it was thought that the Harappans had no knowledge of rice because the excavated sites of the *Harappā* culture, namely, Mohenjodaro and *Harappā* did not yield remains of paddy in any form. But this view has been disapproved by the discovery of rice husk at Rangapur<sup>231</sup> (pd. IIA, C.2000-1500 B.C) mixed with mud as a binding material for plastering walls. From Lothal, remains of charred rice stored in a jar have been discovered which point to the cultivation of paddy in that region.<sup>232</sup> Of particular interest is the unearthing of rice husks and spikelets embedded in clay and pottery at this site. Their presence in these outlying Harappan contexts and apparent absence in the Indus valley calls for a fresh study in this line.<sup>233</sup>

The excavations at Ahar<sup>234</sup> in Rajasthan have brought to light some sherds which have impressions of rice husks. In quite a few of the potsherds, husk was discovered in larger numbers. These impressions belong to the long grains of *Oryza sativa* which is not a wild variety of rice. It obviously proves that paddy was cultivated even in Rajasthan which then might have been a tropical region.

The foregoing evidences prove that rice was produced in India in a vast region extending from Gujarat to Bihar and Orissa, and from the upper Gangetic valley to the *Narmadā* valley. In this context, it is essential to discuss the problem of the origin and spread of cultivation of rice in India. Fairervis thinks that it may indeed have begun in the Indus basin itself as a supplement to wheat and barley and it might have spread from there.<sup>235</sup> Agrawala holds the view that the cultivation of rice started at Lothal and Rangpur in Gujarat and spread eastward to Atranjikhhera, *Hastināpura* and Navadatoli, and then on to West Bengal and Bihar in a circuitous way. According to him, the Black and Redware using people were

responsible for the introduction of rice cultivation in Indian agriculture.<sup>236</sup> This hypothesis is not, however, tenable from botanical point of view because there is a consensus of opinion among the botanists that rice cultivation originated somewhere in South-East Asia and that the diffusion took place from east to west. Choudhary doubts whether the remains of rice discovered at Lothal and Rangpur could be taken as remnants of cultivated rice. In his view the remains may be of wild rice which grows even at present on the marshy land of Gujarat.<sup>237</sup> In the context of Mahagara, it is convincing to think that it was probably first cultivated in the swampy Ganges valley by the neolithic people. Probably from here its cultivation spread to other parts of the country.<sup>238</sup>

(b) *Yava* (barley). Barley appears to have been the earliest known staple food of the Indo-Europeans. In different *Āryan* languages somewhat similar terms have been used for it. Its original form was *yere* which in the Vedic Sanskrit and Zend is *yava* and in Greek it is *jea*.<sup>239</sup> In the epics of Homer, barley has been mentioned as a common foodgrain of the then Greeks.<sup>240</sup> It has been suggested that originally *yava* was a wild variety of cereal.<sup>241</sup> In the *Rgveda* it is the only cereal where name is worth mentioning but it has been doubted whether it denoted cultivated real barley or was a generic term to mean all vegetation.<sup>242</sup> Some of the later Vedic texts also refer to *yava* in the sense of grass to be fed to animals.<sup>243</sup> It is interesting that Homer also has mentioned barley as fodder for horses.<sup>244</sup> One of the epithets of Agni was *yavasād* because he consumed it being offered in the form of oblation or destroyed its wild variety in forest fire.<sup>245</sup> The Vedic texts refer to several terms derived from *yava*, such as, *Yavyāvatī*, a river whose basin was famous for the production of bumper crop of barley.<sup>246</sup> *Yavasirā* was an epithet of *soma* plant because the powder of barley grains was mixed with its juice.<sup>247</sup> *Yavas* (*yevasa*) was an insect which destroyed the barley crop.<sup>248</sup> *Yavamanta* was the person who possessed a huge quantity of barley grains.<sup>249</sup>

From the later *Samhitās* onwards, *yava* has been used in the strict sense of barley grain.<sup>250</sup> *Yavaya* meant stalk of its plant.<sup>251</sup> The eyebrows of Agni have been described as made

of barley grains.<sup>252</sup> The stalks of its plants were objects of attraction on account of their being tawny-brown in colour with silvery ears.<sup>253</sup> In comparison of other similar plants, the barley plants were considered to be more moist and sturdy.<sup>254</sup> Its grains being hard were compared with a military commander. The priest, on the occasion of the king's *mahā-bhiṣeka*, brought barley sprouts to be placed on his head for bestowing on him the same skill and strength.<sup>255</sup> Barley and paddy were considered so important that they have been mentioned as the two sons of *Prajāpati*.<sup>256</sup> Several kinds of preparations were made of barley.<sup>257</sup> Regarding the nomenclature of *yava*, the *Brāhmaṇa* texts mention an interesting story. Once the plants, excepting the barley, went away from gods. The latter ones with the help of barley attracted all the plants of their foes towards themselves. They attracted (*yu*) them with it hence they called it *yava*, meaning the attractor.<sup>258</sup>

The Vedic texts mention mainly two varieties of barley. *Govidhuka* (*ā*) was a wild variety grown in the rainy season which resembled coarse barley. It was much liked by the animals, so it was termed *govidhuka*<sup>259</sup> (*ā*). *Upavāka* was another variety<sup>260</sup> which later was termed *indrayava*.<sup>261</sup> It formed an essential constituent of gruel and groats.<sup>262</sup>

On the basis of the rows of its grains, barley had two main varieties, namely, two-rowed and six-rowed, both of which probably originated in Palestine and Arabia from the wild variety termed *hordemum spontaneum*.<sup>263</sup> The problem of the origin and spread of the cultivation of barley has been much discussed by historians. It has been argued that so far the evidences prove, barley and wheat cultivation began considerably earlier than elsewhere in the riverine regions of the ancient East, an extensive subtropical arid land from the Nile to the Indus.<sup>264</sup> Wild variety of barley from which the cultivated varieties originated, is found in a vast region from Russian Turkistan to Tunisia.<sup>265</sup> The Russian botanist Vavilov thinks that Abyssinia was the centre of earlier cultivation of barley,<sup>266</sup> but archaeological evidences do not prove it. Remains of six-rowed barley have been discovered from Harappā which, in botanical terms, are known as *hordum vulgare* L. var *hexastichon*. This variety is still produced in the



Punjab, Kashmir and Afghanistan. Records of barley are not scarce and they are represented by a few grains. *Hardum vulgare* var. *nudum*, another variety, has been discovered from Mohenjodāro.<sup>267</sup> Kalibangan in Rajasthan is the only site wherefrom abundance of barley grains have been unearthed. Its remains have been discovered from all the four levels (OCP, B & R, PGW and NBP wares) at Atranjikhhera in the upper Gangetic basin.<sup>268</sup> Barley is a winter crop; its requirement is moderate and it grows well under irrigation. Present experience, however, shows that it grows fairly well even without proper irrigation system. The vast region of northern India was a suitable region for its production.

(c) *Godhūma* (wheat). A study of the Indo-European group of languages indicates that the early Āryans before their dispersal to different regions were acquainted with barley but not with wheat. It appears that only the Indo-Iranians had the knowledge of this cereal, so they had a common term for this, i. e. *godhūma* in the *Vedas* and *gandūm* (*gantūm*) in the *Avesta*.<sup>269</sup> On the contrary, Schrader thinks that wheat was known in prehistoric European culture. He suggests that the term *hordeum* may have been an equivalent to Sanskrit *godhūma* and the zend *gandūm*.<sup>270</sup> But in the *R̥gveda* there is no mention of wheat though the early Vedic Āryans were settled in the wheat producing region of western India. It appears that they liked barley much more than wheat, and as they might have considered the later as a staple food of the Asuras, so they did not mention it. But in the later *Samhitās*<sup>271</sup> and the *Brāhmaṇa*<sup>272</sup> texts *godhūma* has been frequently referred to. In these texts it has been differentiated from rice and barley.<sup>273</sup> It is interesting to remark that these two grains have been prescribed to be used in sacrifices in different ways and forms but the use of wheat has not been prescribed. It seems probable that the later Vedic Āryans popularised the cultivation of wheat in the Gangetic valley. Different preparations of wheat were made and tastefully enjoyed.<sup>274</sup> The Homeric Greeks also produced wheat along with barley.<sup>275</sup>

The question arises about the origin of the cultivation of wheat and the process of its spread in India. Two varieties of

wild wheat are well known. The cultivated variety of one of them, i.e., *triticum diccum* was produced in Egypt and continued to be used until the classical times. Another wild variety termed *emmer* was grown in Mesopotamia, Iran and Armenia. A still inferior wild variety known as *einkorn* (*triticum monococcum*) grew in Anatolia, Syria and in the Balkans.<sup>276</sup>

A variety of wheat, superior to *immer*, was produced in early times which is termed *triticum vulgare*. Its improved variety provides the world's supply of wheat today. Archaeological evidences prove that it was produced by the later pre-historic people of Mesopotamia. It was certainly cultivated by the Indus valley people. Remains of *triticum compactum* (club wheat) have been discovered from Mohenjodaro<sup>277</sup> and Harappā.<sup>278</sup> *Triticum sphaerococcum* is known as dwarf wheat which is still produced in the Punjab.<sup>279</sup>

It is difficult to ascertain whether wheat cultivation was started in the Indus valley through Mesopotamia or independently. The wheat of wild variety grew in north-west India as its remains have been unearthed from the neolithic site<sup>280</sup> at Burzahoma. During the chalcolithic period, its cultivation was popularised in the north and central India.<sup>281</sup> The chalcolithic wheat belongs to *triticum vulgare compactum* kind, its centre of origin being outside India. How its diffusion took place in the Indus valley? This wheat culture is associated with barley also. The botanical evidences tend to prove that the Harappan culture had emerged from an influx from the west. It is also indicated at Navadatoli-Maheshwar.<sup>282</sup> The remains of this variety of wheat have been discovered in Afghanistan at Deh Morasi Ghundai dating to C. 3000 B. C.<sup>283</sup> In this context, it may be suggested that wheat cultivation was started in India in earlier times and was popularised by the Indus valley people in the Indus valley and later by the Āryans in the Gangetic valley. At Atranjikhhera, for the first time, remains of wheat were discovered from the PGW levels along with rice and barley. At this site, its cultivation is confirmed even upto the NBP ware layers.<sup>284</sup> It is also an interesting point to note that remains of wheat have been discovered from the neolithic site at Mahagara in the middle Gangetic valley. Perhaps parallel to west Asia, cultivation of this

cereal might have been started in India independently.

(d) *Māṣa*. It appears that *māṣa* was known to the Indo-Iranians<sup>285</sup> because in the *Avesta* also it has been referred to as *māṣa*. In northern Indian languages, it is termed *ūrada*. Like barley, it also was considered very sacred. Different kinds of preparations made of *māṣa* were offered as oblations to the gods and departed souls. In the Vedic texts, it has been mentioned in several contexts.<sup>286</sup> It was sown during *hemanta* (autumn) and harvested in *śiśira*<sup>287</sup> (winter). Its inferior variety was termed *kulmāṣa*<sup>288</sup> and as it was not liked by the persons of noble families, so it was wasted away.<sup>289</sup> But it was consumed by the poor<sup>290</sup> in different forms, such as, pulse and gruel. Its remains have been discovered from the NBPW levels at Atranjikhhera.<sup>291</sup> The evidences of its cultivation in the Narmadā valley in circa 1200 B.C. have come to light from excavations at Novadatoli-Maheshwar.<sup>292</sup> From the point of view of economy, its cultivation is certainly an advancement over that of gram and *khesāri*. The former could be produced in the spring and summer or even in the winter in the Deccan, while the cultivation of the latter one was strictly confined to only one season, namely, the winter.

(e) *Tila* (sesamum). The remains of sesamum discovered from Mohenjodaro<sup>293</sup> and Harappā<sup>294</sup> prove that it was produced in the Indus valley at least before 1500 B.C. The *R̥gveda* refers to it, but in the later *Samhitās* and the *Brāhmaṇa* texts, it has been mentioned in several contexts.<sup>295</sup> Its grains were commonly used in sacrifices. Paddy and sesamum have been compared with the cow and the calf, respectively.<sup>296</sup> Sesamum grains were widely used for extracting oil for consumption. For this purpose, it was used on such a large scale that Sanskrit term *tailam* for oil is derived from it. Like *māṣa* it was also cultivated during the *hemanta* and *śiśira*.<sup>297</sup> It had its two varieties, namely, the cultivated one and wild one.<sup>298</sup> Its buds appeared very beautiful<sup>299</sup>, and the dried plants were used as firewood.<sup>300</sup> *Tilaudana* (boiled sesamum) was taken on special occasions.<sup>301</sup> *Jaratila* was a wild variety of sesamum; its use was prohibited in sacrifices.<sup>302</sup>

The question arises as to wherefrom did the sesamum come to India or whether it is indigenous. The study of this problem is very interesting because the history of cultivated plants is

interwoven with the history of mankind. Also the impact of plants on the people is so significant that domestication of each crop created a demand for a necessary complementary element in human diet and culture.<sup>303</sup> We have already seen that it was produced in the Indus valley, and in Sumer it was cultivated at least in the beginning of the third dynasty at Ur (2350 B.C.).<sup>304</sup> It might have been brought to Sumer from the Indus valley or *vice versa* because both had established cultural and commercial relations with one another. The problem of the first cultivation of sesamum has been studied by scholars who have come to the conclusion that for the first time its cultivation began near the headwaters of the Niger river in Africa.<sup>305</sup> The African people might have popularised its cultivation in Sumer from where possibly the Harappans brought its grains to the Indus valley and started its cultivation. The earliest exodus of people to reach India were Negroids from Africa.<sup>306</sup> The skeletons showing Hemitic Negroid features have been discovered from microlithic culture<sup>307</sup> at Longhaj (Gujarat). This may be the story of sesamum which spread from Africa to Sumer and Indus valley with the migration of the people. Certainly it was cultivated in the Indus valley at the time of the advent of the Āryans in that region who also adopted its cultivation and included it in their dietary. It gained religious importance and now it is strange that many of us hardly think that it has come from Africa.

It has been suggested that the Vedic priests disapproved its use in rituals.<sup>308</sup> But this view is groundless. We have already seen that numerous Vedic texts prescribe its use in sacrifices and this possibly indicates the influence of the religious practices of the Indus valley people on the Vedic rituals. Further, it has been argued that sesamum was associated with fertility and it is related with matriarchal traditions.<sup>309</sup> The basis of this connotation is a prescription in the *Bṛhadāraṇyakopaniṣad* that a couple desirous of the birth of a son should eat rice boiled in milk but for being blessed with a learned daughter they should eat rice boiled with sesamum.<sup>310</sup> Milk along with rice in case of son refers to the pastoral traditions of the early Āryans but the association of sesamum with daughter suggests that it belongs to the matriarchal tradition of the Indus valley people.

(f) *Mudga*. It was a kind of bean which in the *Vājasaneyī Samhitā*<sup>311</sup> has been mentioned in the list of vegetables. Its grains were boiled with milk or water (*mudgaudana*) and were eaten<sup>312</sup> with relish. It was consumed as one of the pulses. It appears to have been a grain of some importance as personal names also were given after it, such as Mudgala, meaning the person who possessed *mudga* or consumed it. Basham thinks that in India it is classed as a grain, but being a leguminous plant, it cannot be considered as a corn.

(g) *Khalva* (gram). The history of the cultivation of gram is very interesting. Generally it is thought that it grew wild in pre-pottery levels of Jericho<sup>313</sup> (C. 6250 B.C.). Its presence at this place in the Bronze Age is undoubted. Linguistic evidence of its cultivation in Egypt goes back to the 18th century B. C. It has been mentioned as falcon-faced<sup>314</sup> which is a true description of its shape and superficial structure. It appears that its cultivation spread from Egypt to the region of Fertile Crescent.<sup>315</sup> To this may be added the sites recently discovered in southern Turkistan. From there it reached the Indus valley via Iran and Afghanistan and from there to the Gangetic valley. But this suggestion is tentative and needs confirmation. Remains of gram have been found at Atranjikhhera<sup>316</sup> from the OCPW levels. This is so far, the oldest record of its cultivation in the upper Gangetic valley. Gram was grown in the *Narmadā* valley<sup>317</sup> in circa 1200 B.C. Since then, its cultivation has spread all over the country so widely that it is now the most important pulse crop produced in India, ranking fourth among the grain crops in acreage and production.

The Vedic texts refer to gram and its use in different forms. The *Vājasaneyī Samhitā*<sup>318</sup> mentions it as a sacred grain and according to the *Atharva Veda* it was used for preparing pulse.<sup>319</sup> Mittre thinks that as gram is associated with horses which were invaluable to the *Āryans*, so its records should be used as pointing to the advent of the *Āryans* in India<sup>320</sup> But this view appears to be unconvincing because though gram is fed to horses in large quantity, it is also eaten by other domestic animals and even human beings. So its presence at ancient sites should not prove its exclusive association with horses.

(h) *Priyangu*. It was an inferior quality of corn<sup>321</sup> which is identified with panic or *setaria Italica*. Among the herbs as it represented enjoyment of pleasure, so in sacrifices it was used as an oblation. On the occasion of the royal consecration its sprouts were placed on the head of the *kṣatriya*<sup>322</sup> (king). Its grains were characterised by their gold-like husks.<sup>323</sup> This corn is of common cultivation in the South-East Asia. The Chinese records indicate that the history of its cultivation in China goes back to the third millennium B.C. and it seems that it spread in the west via India.<sup>324</sup>

(i) *Aṇu* (millet). *Aṇu* is a comprehensive term which includes several kinds of grains of considerably small size<sup>325</sup> and less nourishing than other grains. They could be cultivated in climate too tropical and suitable for wheat and barley cultivation and too dry for rice. The millet crops could resist humidity and even severe drought and might be grown in different adverse conditions. This accounts for their common use in many regions.

The botanical evidences prove that the areas of first cultivation of millet lay in the same regions as those of wheat and barley. In ancient times, it was cultivated in the Mediterranean region.<sup>326</sup> It appears that millets of several varieties were cultivated in Rajasthan between 1800-300 B.C. Some potsherds excavated from Ahar<sup>327</sup> bear fixiform impressions in the form of cavities showing the surface and the lateral views of the grains. An analysis of these impressions proves that those belong to millets, such as, *panicum miliaceum* (*cīnā*), *sorghum vulgare* (*jowār*), *pennisetum* (*bajārī*), *setaria* (*keonī*) and *eleusine corallana* (*torī*), etc. A wild variety of *jowar* originally belongs to the Island of San Antonic in Africa from where it was introduced and domesticated in Egypt by the pre-historic people. Its earlier cultivated remains have been found in the tombs of Egypt (2200 B. C.). Probably it was introduced in Mesopotamia via Egypt and thence to India in the Indus valley and Rajasthan.<sup>328</sup>

*Śyāmāka* belong to the *aṇu* group of cereals but on account of its importance it has been mentioned as an independent variety of grain.<sup>329</sup> It was so light in weight and so small in size that it was used as a simile to indicate the lightness of things.<sup>330</sup> One of its characteristics was speedy growth of its plants,<sup>331</sup> so

in the *rājasūya* its cake was offered to Soma. It was the most liked food of pigeons.<sup>332</sup> Its grains being boiled with water were eaten by the people.<sup>333</sup>

Besides the above mentioned corn, some of other ones were also produced. The remains of *khesāri* (*lathyrus sativus* L) have been discovered from the OCP levels at Atranjikhhera.<sup>334</sup> It is the oldest record of its cultivation in India. It now grows as a weed on dried up paddy fields. It has a bad reputation as it causes paralysis when eaten frequently. *Masūra* was a kind of lentil (*ervum hirsutum*) and was used in pulse.<sup>335</sup> *Sarsapam* (mustard) was used for extracting oil and its different varieties were used as medicine as also for removing the effects of evil spirits.<sup>336</sup> *Amba* (*namba*) was a grain which has not been identified.<sup>337</sup> *Khalkula* was a cultivated grain which has been identified with *kulthi*. It was prescribed to be used in certain rituals.<sup>338</sup>

(viii) *Irrigation*. Water was considered as the vital source of the existence of all.<sup>339</sup> It was held that it is the essence of plants.<sup>340</sup> The necessity of irrigation may be assumed from the fact that during the preparation of the site of the *āhavanīya*, water filled in five jars was poured on the ploughed as well as on the unploughed sites for getting rains on both types of land for the proper growth of vegetation.<sup>341</sup>

The *R̥gveda* informs that the peasants depended mainly upon rain for irrigating their fields.<sup>342</sup> They prayed to Parjanya and Indra for pouring adequate rain waters for the production of sufficient grains.<sup>343</sup> Dyaus Pitar and *Pr̥thivī* were the original divine pair created from the primeval cosmic waters by *Tvaṣṭṛ*. From them Indra was born. It has been said that Parjanya pours waters on the earth and the plants are grown in her womb. It shows the importance of rain waters for the germination and growth of plants. The three hymns of the *R̥gveda* dedicated to Parjanya and the frogs are clearly intended for rain charms.<sup>344</sup> Prayers were offered to the gods, such as, *Varuṇa*,<sup>345</sup> Indra and Parjanya for pouring timely rain waters.

The Vedic literature informs that the *Āryans* had the scientific knowledge of the process of rain, such as, heating of water by the rays of the sun resulting in evaporation and condensation

of vapour.<sup>346</sup> They thought : "Heat was the original source of water. The latter wished to be many so it procreated itself and emitted food, therefore, whenever it rains, there is abundant food."<sup>347</sup> The *Chândogyaopaniṣad* states that water is more important than food (grains), therefore, when there is not sufficient rain, living creatures become sick with the apprehension that food will now become scarce, and when there is rain, they are happy with the thought that crop will become abundant.<sup>348</sup> Considering such importance of rain waters, prayers were offered to gods for granting material prosperity to the people in the form of good harvest and for causing growth of fodder for feeding the animals. The *Atharva Veda* compares the priest's contributions to the prosperity of the sacrificer with the rain waters causing the proper growth of plants.<sup>349</sup> Excess of rain as well as inadequate rain both were harmful to the plants, so prayers were offered for timely and adequate rain waters.<sup>350</sup> The rain has been personified as the clouds and thunder which caused the seeds to germinate and to grow abundantly.<sup>351</sup>

The sacrificer came to be endowed with special power when the rituals connected with the rains were performed in a perfect manner. *Devāpi* did procure rain for his patron *Śāntanu* through rain charms.<sup>352</sup> The later Vedic texts prescribe several rituals to be performed for procuring rain for the growth of plants resulting in abundant yields.<sup>353</sup>

Besides the rain waters, the cultivators depended upon flood-irrigation.<sup>354</sup> In the region of the settlement of the later Vedic *Āryans* there was a network of rivers.<sup>355</sup> These were the Ganges, *Yamunā*, *Sadānīrā*, *Kauśiki*, *Sarayū* and the *Śoṇa*. During the rainy season, they flooded the vast regions of eastern India, deposited fertile silt in the fields and watered the plants. The rivers thus caused the growth of rich harvest, so they were considered as mothers and spirits of fertility. During the early Vedic period the *Sindhu* and *Saraswatī* played the same role in the prosperity of the people of the Punjab and Sind. But like the rain, the flood was also uncertain and sometimes it caused devastation by washing away standing crops, domestic animals and even the settlements. Possibly the people had taken measures to tame the rivers and protect their crops from damage



caused by the floods. Evidently, sometimes they built strong embankments.<sup>356</sup> Excavations of ancient sites confirm that the people protected their urban settlements by building mud or brickwalls, so it appears that they took steps to protect their rural settlements and crops from floods. Even after the rainy season, the rivers were a source of water for irrigating the fields. It was very easy to lift water from the rivers because it did not involve much expensive labour. Sometimes, dams were built for utilising the river waters for that purpose. In the times of the Buddha, the *Śākya*s and the *Koliya*s utilised the waters of the river *Rohiṇi* for irrigating their fields.<sup>357</sup> *Rodhas* denoted the dam which restrained the flow of the stream or the river.<sup>358</sup> The river *Sadānirā* did not dry up even during the summer<sup>359</sup>, so its water could be utilised to irrigate the fields.

Rain and floods were natural means of irrigation but as these were not dependable so artificial means were also adopted, *Khanitri*<sup>360</sup> denoted all the artificial means for obtaining water, such as, wells, tanks, ponds, canals and lakes. Wells appear to have been the most convenient and useful source of artificial irrigation on account of being easily dug out. *Avata*<sup>361</sup> was an epithet of the well which meant an artificial hollow in the earth containing water. It was in contrast with the *utsa*,<sup>362</sup> meaning natural spring. The well has been described as an unfailing source of water but was dangerous to unwary persons and animals. *Kakāṭa* was a well having less water and *reṇukakāṭa* contained sandy water so it was useless. The Vedic references show that water was lifted from the well by means of a wheel, a strap and water pails.<sup>363</sup> The *Ṛgveda*<sup>364</sup> refers to a device termed *āsmacakra* for the same purpose. It is difficult to find out its exact functioning but it may be conjectured on the basis of its description in the Vedic texts. It appears to have been a wheel made of a piece of stone with the help of which water was easily drawn from the well in a pail (*koṣṭa*) tied to a strap of leather (*varatra*) or a rope usually made of *munja* grass.

In the Vedic literature different types of tanks have been mentioned which might have been used for irrigating agricultural plots. *Hrada* was a lake or big tank<sup>365</sup>, while *Vesanta*<sup>366</sup> was a lake of bigger size but smaller than a *hrada*. *Vesanti*<sup>367</sup> was still

a tank of smaller size. *Sara*<sup>368</sup> also denoted a tank. In the *Rgveda* the tanks have been classified into two types, namely, the bigger ones with sufficient water and the small ones with less water.<sup>369</sup> During the rainy season enough water was stored in tanks which could be utilised for irrigating agricultural fields. In rural areas tanks still play the same vital role. The method of lifting water from tanks might have been the same as in practice nowadays in northern India.

In the *Vedas* there are references to *kulyā*<sup>370</sup>, an artificial water course flowing into a reservoir. Canal was cut from a river as well. Allegories referring to the former as a calf and the latter as a cow indicate that rivers were the source of canals.<sup>371</sup> Rituals were performed on the eve of the opening ceremony of letting out the river waters to flow through the canals.<sup>372</sup> Though *kulyā* is meant canal but it has been suggested that during the Vedic period there did not exist big canals because the *Āryans* had not attained technological skill to excavate and maintain them.

(viii) *Plant Protection*. The farmers expected abundant yield of foodgrain in such a huge quantity that their "earthen storage jars might burst and the heaps of grain might become inexhaustible like the ocean."<sup>373</sup> But it was impossible to attain this end without protecting plants from animals, insects and natural calamities. Drought and lightning caused damage to standing crops. Prayers were offered to Indra and Rudra for protecting them from these natural calamities.<sup>374</sup> Most of the villages and agricultural fields were surrounded by forests; so wild animals, such as, the elephants, deer, hare, monkeys and even domestic ones, such as, goats, cows, sheep, etc., damaged the standing plants. In order to ward them off the cultivators raised fences of bamboo and other materials around their fields. Birds were also a source of damage to crops. So different methods, such as, clapping of hands or verbal sounds were applied to ward them off from the fields.<sup>375</sup> Rats destroyed the plants, stole away grain and stored them in the holes made into the earth. On account of their activities, they rightly were called *múṣa*, i. e., one who steals. It is an Indo-European word which survives in English (mouse) in the same sense. Wild grasses also hampered the

growth of plants<sup>376</sup>, so they were uprooted with the help of weeding tools made of wood and copper or iron.

In the *Samhitās* and the *Brāhmaṇa* texts several spells and rites have been prescribed to be performed for warding off harmful insects. The anger of cultivators against the insects harmful to the grain and plants in the field has been forcefully expressed in the *Atharva Veda*:—<sup>377</sup>

“Slay ye the *tarda* (borer), the *samaṅka* (hook) and the mole, O *Aśvins*, cut off their heads and crush their ribs, shut their mouths, that they shall not eat the barley, free ye, moreover, the grain from danger. Ho *tarda* (borer), ho locust, ho *gabhya* (snapper), ho *upakvasa*, as a *brāhmaṇa* eats not an uncompleted sacrifice, do ye, not eating this barley, without working injury, get out. O husband of the *tards* (female), O husband of the *bhaga* (female), ye of the sharp teeth, listen to me. The *vyadvāras* (rodents) of the forest, and whatever other *vyadvāras* (there are), all these we do crush.” In spite of these precautions, sometimes, crops were badly damaged and the people suffered from famine. Once the crops in the Kuru country were damaged by the *mataci* and consequently the people were in distress to sustain themselves.<sup>378</sup>

(ix) *Harvesting*. The people were acquainted with different crop cycles. Two crops were harvested in a year. The *Śatapatha Brāhmaṇa*<sup>379</sup> states that winter subjects the creatures to its will, hence in this season plants wither and the leaves fall off the trees, the birds retire and fly lower and lower. Verily he who knows this makes that locality wherein he lives his own, for his own happiness and obtaining food.” The *Aitareya Brāhmaṇa*<sup>380</sup> informs that the crops first ripen in the south, (i.e., the *Dakṣiṇāpatha*), so one who wished for food had to go there.<sup>381</sup> Summer crops, such as, barley and wheat were harvested in *caitra* (March-April) but paddy in *kārttika* (November-December).

The standing crops, when ripe, were harvested with sickles (*dantya*).<sup>382</sup> It appears that in pre-metallic stage, bones of animals might have been used for making them. This practice survived during the Vedic age which is attested by an injunction of the *Bhāradvāja Śrauta Sūtra*<sup>383</sup> that the *darbha* grass to be used in.

the *somayāga* should be cut with a sickle made of the rib of either a horse or a bull. Later sickles made of copper and iron were used for harvesting crops which is confirmed by the find of an iron sickle blade from *Hastināpur*<sup>384</sup> pd.III. Along with several iron tools dating back about 500-1000 B.C. a sickle blade made of iron has been discovered from Runija, a site about 60 km. from Ujjain in Madhya Pradesh. A sickle was also known as *dātra*<sup>385</sup> and *dātī*.<sup>386</sup> The synonym of *dātra* in modern Persian is *dās*. The *Śatapatha Brāhmaṇa* informs that the farmers went to the fields with sickles in their hands and harvested the standing plants upto the root above the ground.<sup>387</sup> Interestingly enough, in the *Iliad* the harvesting of plants of wheat and barley with sickles has been compared with the falling of the bodies of killed soldiers on the battle-field.<sup>388</sup>

The harvested crop was collected and bundles were made out of it<sup>389</sup> which were carried to the thrashing floor. Oxen were used for separating grains from stems by treading them. Occasionally, smaller bundles were beaten out on the floor for separating grains from the plants.<sup>390</sup> Then with the help of winnowing basket (*sūrpa*)<sup>391</sup> grains were separated from chaff. *sūrpa* has been termed "rain grown" because it was made of reeds or cane or rushes which grew with the help of rain. It was also made of stripes of bamboo. Winnowing<sup>392</sup> (*niṣpavana*, *vivecana*) was performed in the wind to clean the grains by shaking the *sūrpa* (*śyama*)<sup>393</sup> repeatedly (*parāpāram*). *Avivekaṃ*<sup>394</sup> denoted the grain not separated and shifted from the chaffs. The winnower was known as *dhānyakṛta*<sup>395</sup>

The new grains were sacred because they were the products of hard labour of the farmer. So a minor ritual was performed on the occasion of eating them for the first time in the harvesting season. It was known as *navaprāśana* and was performed by the person who had not yet set up the *śrauta* fire.<sup>396</sup> It was similar to *āgrayana*, an agricultural ritual of the type of *iṣṭi* performed by an *āhitāgni*.<sup>397</sup> It was performed on the new moon day or the full-moon day. The oblations offered to the gods differed from season to season. In the rainy season, boiled *śyāmāka* grain either in milk or water were offered to Soma but in the autumn a cake made of the newly harvested paddy placed

on 12 *kapālas* was offered to *Indrāgni*.<sup>398</sup> A cake made of old paddy placed on eight *kapālas* was offered to Agni as an additional deity. In the spring, when barley was ripe, its grains were offered to different deities. If one had not performed the *āgrayaṇa*, he could feed the *agnihotra* cow with new grain and could offer *agnihotra* with her milk.<sup>399</sup>

(x) *Storage*. The grains were measured, if necessary, and were stored in houses. The Indus valley people built large granaries for storing grain but not such a single granary has been unearthed at any excavated site in the Gangetic valley. Its absence proves limited surplus production and trade on a small scale. Mostly the people of the Vedic Age stored grain in *sthivi*<sup>400</sup> (bushel) and a person possessing such several *sthivis* was known as *sthivimant*.<sup>401</sup> Barley has been mentioned as coming out of a *sthivi*.<sup>402</sup> *Urdaram* and *kṛdaram* were also storage devices.<sup>403</sup> The former was cylindrical in shape with perforation on the top and had an opening on the upper part. In the *kṛdaram* a hole was bored on its lower part for taking out of grain.<sup>404</sup> These were made of mud and were of different shape and size. Numerous types of earthen jars were also used to store grain, some of which have been unearthed from excavated sites of the later Vedic period. The *Śatapatha Brāhmaṇa*<sup>405</sup> informs that besides earthen jars, grains were stored in leathern bags as well as in jars made of wood. Storage of grain in jars above did not ensure its safety because rats were a menace even in those days as they destroyed stored grain. So strong protective measures were taken against them.<sup>406</sup>

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100. Now will I glorify food that upholds great strength,  
By whose invigorating power Trita rent Vṛtra limb from limb.<sup>1</sup>  
O pleasant food, O food of meath thee have we chosen for our own,  
So, be our kind protector thou.<sup>2</sup>  
Come hitherward to us; O food, auspicious with auspicious help,  
Health bringing, not unkind, a dear and guileless friend.<sup>3</sup>  
These juices which, O food, are thine throughout the regions  
are diffused.  
Like winds they have their place in heaven.  
These gifts of thine, O food, food most sweet to taste.  
These savours of thy juices work like creatures that have  
mighty necks.<sup>4</sup>  
In thee; O food, is set the spirit of great gods,  
Under thy flag brave deeds were done, he slew the dragon  
with thy help.<sup>5</sup>  
If though be gone unto the splendour of the clouds,  
Even from thence, O food of meath.  
Prepared for our enjoyment, come.<sup>7</sup>  
Whatever morsel we consume from waters or from plants of  
earth, O Soma, wax thou fat thereby.<sup>8</sup>  
What Soma, We enjoy from thee in milky food or barley  
brew, Vātāpi, grew thou fat thereby.<sup>9</sup>  
O vegetable, cake of meal, be wholesome, firm, and strengthening.  
Vātāpi, grow thou fat thereby.<sup>10</sup>  
O food, from thee as such have we drawn forth with lauds  
like cows, our sacrificial gifts,  
From thee who banquetest with gods, from thee who banquetest  
with us. 11.

—RV, 1.187.1-11.

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106. *VS*, 1.20; *CHU*, 7.9.2.; *BU*, 5.12.1.
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122. *RV*, 4.57,1-8.
123. Wise and devoted to the gods the skilful men bind plough-ropes fast.

And lay the yokes on either side.<sup>1</sup>

Lay on the yokes and fasten well the traces : formed is the furrow; sow the seed within it.

*Virāj* vouchsafe us hearing fraught with plenty,  
Let the ripe grain come hear and near the sickle.<sup>2</sup>

The keen-shared plough that bringeth bliss,  
furnished with traces and with stilts.

Shear out for me a cow, a sheep, a rapid drawer of the car,  
a blooming woman, plumb and strong.<sup>3</sup>

May Indra press the furrow down, may Pūsan guard and cherish her.

May she, well stored with milk yield milk for us through each  
succeeding year,<sup>4</sup>

Happily let the shares turn up the plough land, the ploughers,  
happily follow the oxen.

Pleased with our sacrifice, *śunā* and *sīra*, make the plants  
bring this man abundant produce.<sup>5</sup>

Happily work our steers and men, may the plough furrow happily.

Happily be the traces bound. Happily ply the driving goad.<sup>6</sup>

*Śunā* and *Sīrā*, welcome ye this land, and with the milk  
that ye have made in heaven.

Bedew ye both this earth of ours.<sup>7</sup>

Auspicious *Sītā*, come though near ; we venerate and  
worship thee.

That thou mayst bless and prosper us and bring us fruits  
abundantly.<sup>8</sup>

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## Plant Economy

Since immemorial past, contact of the people with the plants has been very close. In the beginning of civilization human beings gathered their food from the plants. In course of time they came to know their characteristics and developed wild plants into cultivated ones. The Indus valley people had the knowledge of plants which they used in many ways. On their seals and pottery works, the figures of plants, leaves, grasses, creepers, flowers and fruits may be seen. The Vedic *Āryans* had also realised the importance of plants and dedicated hymns in their praise. In the *R̥gveda*<sup>1</sup> there are references to 99 species of *auśadhis* (herbs or plants). The *Yajus̥ Samhitās* enjoy a wider scope by containing names of plants of sacrificial and medicinal use. So far they have mentioned 82 kinds of plants.<sup>2</sup> The *Atharva Veda* appears to have been the earliest encyclopaedia of ancient Indian plants.<sup>3</sup> It refers to at least 288 varieties of plants<sup>4</sup> and mentions their botanical characteristics and medicinal ingredients. The *Brāhmaṇa* texts mostly refer to the plants of sacrificial use. The *Kalpa Sūtras* are the most informative sources which mention at least 519 different plants.<sup>5</sup>

### Importance of Plants

The early Vedic *Āryans* grazed their animals in pastures and gathered their food from roots and plants. This helped them to realise their importance. With their spread in the Gangetic valley during the compositional period of the later

*Samhitās* they had to clear the forests for their settlement. They came to learn the use of cultivated and wild species of plants. The importance of these plants for the very existence of human being and animals has been highlighted in the *Śatapatha Brāhmaṇa*<sup>8</sup> which states that both the gods and Asuras contended for superiority regarding plants. The latter by using magic and poison destroyed wild and cultivated plants on which human beings and animals subsisted, hoping that in this way they might overcome the gods. As a result of this, neither did human beings eat food nor did animals graze, and consequently from want of food the creatures wellnigh perished.

The terms *vrkṣya*<sup>7</sup> and *vānuspātya*<sup>8</sup> denoted the fruits of tress. The fruit yielding trees were considered superior to those (trees) which did not yield fruits.<sup>9</sup> For the possession of former kind of trees, a certain rite was to be performed in which the sacrificer had to eat the fruits of the desired tree and had to offer the wood of such trees to Agni.<sup>10</sup> Fruits and honey were obtained from plants which formed items of dietary.<sup>11</sup> On the day of performing any kind of sacrifice, the sacrificer had to observe fasting; but *Yājñavalkya* thinks that he can eat only what grows in the forest, be it plants or fruits. *Barku Vārṣṇa* also allows him to eat wild beans.<sup>12</sup>

The plants were useful for building houses. In villages most of the houses were built of wood and straw. Excavations of ancient sites have revealed the use of these materials for building mud houses. At Atranjikhhera (pd. III) representing the PGW culture, post-holes over thick mud floor have been discovered which prove that thatched roofing on bamboo or wooden<sup>13</sup> posts was in vogue. Some houses were completely built of wood and were comparatively durable. It was convenient to build houses of wood, bamboo and straw because these were easily available in villages. For re-enforcement of mud walls, husks and straws of paddy were mixed with mud as it is evident from the excavations at *Hastināpura*. The *Atharva Veda*<sup>14</sup> informs that usually the houses were made of wood and reeds. Those were constructed with 2,4,6,8 and 10 side posts depending upon the size of the house. The roof of every house was supported by beams. It was made of mats of reed and side

walls were made of straw to which the main entrance was provided.

In the life of the Vedic *Āryans*, chariots played significant role. Those were made of hard wood. Different types of vehicles, such as, carts, etc., were made of wood and bamboo and sometimes these were covered with mats. The use of wood for making these vehicles accounted for the accelerated movement of people in their migration to distant places; so the *Śatapatha Brāhmaṇa* rightly mentions that there are two kinds of objects coming from trees, namely, the wheels of chariots and wagons.<sup>15</sup>

Agricultural implements, such as, the plough, hoe, handles of spades and sickles also were made of hard wood. In domestic life utensils made of wood also were used. The poor people could not afford metallic utensils, so they used earthen pots or pots made of wood, such as, containers, lids, dishes, mortars, pestles, etc. Furniture, such as, cots, chairs, stools, thrones, foot stools and boxes were made of different kinds of wood.

The plants were not only useful objects but also they were revered and worshipped as gods or their abodes.<sup>16</sup> The Indus valley people had associated religious sentiments with trees. The Vedic *Āryans* considered them as the bestowers of life. On this basis they looked for the abode of immortal gods in plants. The *soma* plant was regarded as the very embodiment of god, and the complete IX Book of the *R̥gveda* contains hymns in praise of its qualities as of such being its intoxicating and thought-provoking juice which also bestows spirit and energy. The trees, such as, *palāśa*, *nyagrodha*, *khadira*, etc., were considered to be very sacred. In sacrifices pieces of wood were offered to Agni. Sacrificial posts of different shape and size were framed of wood. The Vedic texts prescribe specific trees to be cut down for making particular kinds of posts to be erected on the site of the sacrifice<sup>17</sup> of special kind. Chips of a tree obtained at the time of its cutting for making a sacrificial post were used as oblation to be offered to Agni. This offering was termed *śakalhoma*.<sup>18</sup> In certain sacrifices the sacrificer kept

the sacrificial fire burning throughout the night by using such chips.<sup>19</sup> Besides, several kinds of sacrificial utensils were made of wood.<sup>21</sup>

The people are highly appreciative of the plants for their aesthetic value. In every age and stage in civilization men and women have been fond of flowers and garlands for their personal decoration. Their passionate love is expressed in their fascinating and gorgeous descriptions in literature. The lotus flower has been mentioned in the Vedic texts in the contexts of sacrifices. Different kinds of cosmetics used for increasing physical beauty were made of flowers, bark, leaves and roots of plants.

### Forests

From the economic point of view the forests were very resourceful. *Aranya*<sup>21</sup> was contrasted with settlement alongwith agricultural land.<sup>22</sup> On account of its dense trees, the forest was the most convenient shelter to the thieves.<sup>23</sup> The people did not like to build their houses amidst dense forest for fear of beasts and dangerous reptiles, which were harmful to their life, their domestic animals and standing crops. It was a laborious work to clear the forests for settlement and agricultural operations. In spite of this, the *vānaprasthins* retired to the forests where they meditated and thought over vital problems of life and metaphysics. The *Āranyaka* literature was composed by them in forests.

There are ample evidences to prove that originally the *Yamunā-Gangetic* valley was a thick monsoon-fed forest. The present alluvial plains are a result of deforestation on a larger scale at the hands of the settlers. This region with its forests and hard calcareous soil was not a congenial place for systematic agriculture in the Copper-Bronze Age. The archaeological evidences prove that prior to the PGW period there were no large settlements in this region. In western *Yamunā-Gangetic* valley evidences of the Harappan settlements are evident but the people could not go further east which was the region of heavy rainfall and dense forests. The copper technology was not so effective in agriculture on larger scale. The Copper

Hoard people did not have permanent settlements even in the western *Yamunā-Gangetic* valley. They appear to have been a nomadic people.<sup>24</sup> The *Āryans* changed the face of this region. Being an adventurous people, equipped with iron technology, they were successful in clearing forests and cultivating the reclaimed land.

The kings also realised the importance of forests and adopted adequate steps for their protection from devastation. The *Vājasaneyī Samhitā* refers to *vanapa*, a servant of the king who was in-charge of protecting the forests from being misused by human agencies.<sup>25</sup> With the growth of population, the forest land was being encroached upon. As forests were the property of the king, so the appointment of *vanapa* was a step in right direction. In spite of this, some natural elements destroyed the forests, such as, *dāva* (forest fire) caused conflagration particularly during the summer.<sup>26</sup> Like *vanapa*, there was *dāvapa* who was the counterpart of present days fire brigade with his special duty to prevent the occurrence of conflagration in forest. These two officers are to be specially mentioned because both were counted among the public employees.

The forests were classified into two types. *Aranya* was the common term to denote the forest of a medium size but *dirghāranya* signified an extensive forest. Sometimes these terms have been substituted by *vana* and *mahāvana* respectively. In the *Yamunā Gangetic* basin the *Naimiṣāranya*<sup>27</sup> was a renowned forest. Several sages and scholars had established their *āśramas* there. So it became a centre of learning. It is identified with Nimasara situated on the banks of the river *Gomati* at a distance of 45 miles north-west from Lucknow. Another important forest was the *Khāṇḍava* which marked the boundary of the Kuru country.<sup>28</sup> The *Paurāṇic* sources locate this forest on the banks of the river *Aśvarathā* (*Yamunā*). Though the *Khāṇḍava* is supposed to have extended from present Bulandasahar to Sharanpur in Uttar Pradesh, really it extended to the south of *Kurukṣetra*.<sup>29</sup>

The forests were useful but as they were sources of perpetual dangers to travellers and villagers, so the people prayed to

*Aranyāni*, the goddess presiding over forests to be protected from the beasts and dacoits. They sought her help in finding out safe routes in their travels. She was the mother of beasts and all sylvan things with stores of food without tillage.<sup>30</sup> The conception of forest as a mother was quite natural since it was the source of food in the forms of wild grain, roots, fruits, herbs and meat obtained from the birds and beasts. In the *R̥gveda* some hymns have been dedicated to *Aranyāni* in which a wish has been expressed for protection of life and property from wild beasts and bestowing abundance of wealth on her worshipper.<sup>31</sup>

### Parts of Plants

In the Vedic texts different parts of plants have been mentioned,<sup>32</sup> such as, the *mūlam* (root), *tūla* (panicle), *kāṇḍa* (stem), *valśa* (twig), *parṇa* (leaf), *skandha* (branches) *puṣpaṃ* (flower) and *phalaṃ* (fruit). The root was the lowest part of a plant and it was inserted into the ground. It appears that outer bark of a plant was like its skin which protected it from heat and cold.<sup>33</sup> The rising flames of Agni have been compared with the young trees growing with their branches high up in the sky. As the plants generally grew on moist land, so people preferred to plant saplings on such land which was suitable to their growth.<sup>34</sup> It was also noticed that in a year the trees yielded fruits only once.<sup>35</sup>

The Vedic *Āryans* had studied the living organism in plants. They knew that they have vital life force in them which makes them experience sorrow and happiness. This conclusion was based upon the belief of theologians that all are the manifestations of the Universal Soul, there being only a difference in the degree of consciousness among the manifest objects. The plants cannot speak but they have the feeling of sorrow and happiness. The *Bṛhadāraṇyakopaniṣad* mentions that 'a plant is just like a human being: "Like the hair and skin in the human body, the plants have the leaves and bark. As blood rushes out from the human body, so sap flows from the tree. When struck, the human body lets out a stream of blood. This also happens to the tree. In the human body, there are several layers of flesh so also in the plant there are under-layers

of wood. The muscle in the human body is similar to the fibre in the plants. The bones are like wood within and the marrow resembles pith. A tree, when cut, grows up again from the root, so too a man struck by death, is born again. As the tree would not spring up again in a new form, if uprooted completely, so too a man released from the bondage of death is not born again.<sup>36</sup> It is interesting to note that a somewhat similar view was held by the ancient Jews.<sup>37</sup> The *Chândogyopaniṣad* states that a tree being struck at its root bleeds, but is still alive. If someone would strike at its middle, it would bleed but still it remains alive. It continues to alive even if struck at its top. It is because it is charged with life. It continues to stand eagerly sucking moisture and rejoicing. If the life leaves it, it dries up. If life leaves it partially, it also dries up partially. If the life leaves the whole of it, the entire tree dries up. Similarly when the *jīva* leaves the body, it dies.<sup>38</sup> Further, worn out trees have been compared with a milked out cow or with an ox that has been tired out by drawing the cart.<sup>39</sup>

The foregoing statements prove that the later Vedic *Āryans* had made minute observations on plants and had drawn conclusions which still are true. But they did not continue their studies in a systematic way.<sup>40</sup> So, like other positive branches of science, botany could not be developed. To a little extent, the persons practising *Āyurveda* continued to study the characteristics of plants for medicinal use, references to which may be found in the treatises on *Āyurveda*.

### Classification of Plants

In the Vedic texts, the whole creation has been classified into four groups, namely, the *aṇḍaja* (born from the egg), *jīvaja* (born from the living things), *śvedaja* (sweat born) and *udvijja* (born from a sprout).<sup>41</sup> The plants have been included in the last group. Again *udvijja* has been classified into four types, such as, *auśadhi* (medicinal herb), *vanaspati* (trees in general), *latā* (creeper) and *trṇa* (grass).<sup>42</sup>

Plants were classified into two main classes, such as, the *grāmya* (cultivated) and *āranya* (wild).<sup>43</sup> The former class signified the plants which were transplanted and grown by

artificial methods. They grew in time and their flowers and fruits lasted long and became ripe in specific seasons. But the later ones grew without cultivation and their fruits and grains were ripe before time. On the basis of their characteristics also plants have been classified into several varieties, such as, those which expand, those that creep, those having numerous stalks, those that have numerous joints and those having spreading branches.<sup>44</sup> These facts obviously indicate that the later Vedic people had studied plants from different angles of view.

(i) *Auṣadhi*.

The *Ṛgveda* contains an independent and separate *sūkta* dedicated to the praise of herbs. It states that the use of herbs for curing diseases was known even in hoary antiquity. The *auṣadhis* having excellent powers and hundreds of forms may remove all types of ailment, so they are our mothers. They will lead us to success in life like mares who are winners of races. A person having store of herbs is like a mightily prince stationed in the middle of his host, and the physician is really a fiend-slayer and chaser of diseases. Herbs are the embodiment of nourishment and strength which regenerate the human body and mind. The *Ṛgveda* compares the healing power of herbs with the coming out of cattle from the stall. Further it states that the medicinal plants really are relievers and restorers so they keep far away whatever brings disease, and save the vital breath.<sup>45</sup> Some of the important herbs were as follows :

*Apāmārga* (*achyranthes aspera* Linn) was used for curing different kinds of ailment. The *Atharva Veda* mentions its characteristics and its medicinal ingredients.<sup>46</sup> In *Hindī* dialects it is identified with *ciracirā*. Its branches tend only towards one direction and the fruits towards the other. It was considered as a symbol of vigilant circumspection.<sup>47</sup> It was also used in witchcrafts.<sup>48</sup> In *rājasūya* its fruits were used in the *apāmārga* offering<sup>49</sup> in order to drive out the demons. Its taste is bitter and is used for purifying the blood and curing wounds.

*Arka* (*calotropis procera*) grew wild. Its flowers and fruits were used in certain sacrifices.<sup>50</sup> It was considered as growing



and spreading from the resting place of Rudra,<sup>51</sup> so its flowers and fruits are offered to him. Its white juice is used for curing the diseases of eyes. In the *Śatapatha Brāhmaṇa*<sup>52</sup> its different parts have been compared with the human body. Amulets made of its wood were put on for ensuring health.<sup>53</sup>

*Arundhati* was of golden colour and had a hairy stem.<sup>54</sup> It attached itself to trees such as *aśvattha* and *nyagrodha*.<sup>55</sup> It had healing power and was used to cure wounds and it induced cows to yield much milk.<sup>56</sup>

*Ādāra* (*cymbopogon martini* wats) was a substitute for soma plant,<sup>57</sup> and sometimes it has been identified with *pūtika*.<sup>58</sup> The *Śatapatha Brāhmaṇa*<sup>59</sup> informs that its wood, when offered into fire, increased its flames; so it seems that it was inflammable. It appears that *Sāyaṇa* also had no knowledge of its exact form and nature because he has identified it with grass and sometimes with a creeper or milk yielding plant.<sup>60</sup> It seems that it was a plant of hard wood of which churn-stuff was made.<sup>61</sup>

*Añjana*<sup>62</sup> was a plant with scented wood (*añjanagandhi-surabhi*). The *Atharva Veda*<sup>63</sup> informs that it grew wild on the Trikakuda mountain and on the banks of the *Yamunā*. It is confirmed by the *Śatapatha Brāhmaṇa*<sup>64</sup> that it grew in mountainous regions. It was used for making ointment for protection from all sorts of eye diseases.

*Āsuri* as a herbal plant has been mentioned in the *Atharva Veda*.<sup>65</sup> It appears that it was used as a medicine to cure leprosy. But it is difficult to identify this plant.

*Bṛhati* was a medicinal plant. Its flowers were white and it yielded fruits. It was commonly used as a medicine to be served to the newly born baby. Usually it has been mentioned in the *Sūtra* texts.<sup>66</sup>

*Cipadru* was a medicinal herb but till now it has not been identified.<sup>67</sup>

*Haridrā*<sup>68</sup> (*haridru*, *hāridrava*) is identified with *haldī* (Hindi). Its botanical term is *adina cordifolia*. It grew wild but was also cultivated. Its plant was small and leaves were green and of

large size. Its balls were the most useful objects which yielded yellow ingredients for dyeing clothes and preventing greying of hair.<sup>69</sup> Powder made of *haridā* mixed with water was rubbed on the body to make the skin smooth and soft. It was used to cure several ailments. Still it is used as a spice.

*Gulgulu*<sup>70</sup> was a tree which yielded solidified scented juice. It was highly inflammable, so it was considered as the resting place of Agni. In appearance it was similar to meat. *Gulgulu* was a *homadravya*<sup>71</sup> which emitted divine scent<sup>72</sup> (*devasurabhi*). The *Atharva Veda* mentions that smoke created by *gulgulu* had the power to kill the germs of tuberculosis.<sup>73</sup> Even now, *gulgulu* is used as a *homadravya*.

*Haritaka*<sup>74</sup> (*terminalia chebula*) is identified with *harre* (Hindi). It grew wild in forests. Its fruits were very useful and were used as medicine conducive to digestion.

*Jaṅgida*<sup>75</sup> (*hibiscus rosa sinensis* L.) is identified with *vacā*.<sup>76</sup> It was used to cure diseases, such as, fever, rheumatic pain, consumptive cough and pleurisy.<sup>77</sup> It was so useful and effective that it was considered as the most excellent herb. The *Atharva Veda* praises it in these words: "The ancient herbs surpass thee not, nor any herb of recent days."<sup>78</sup> As the protector of the health of a person it has been compared with a guard protecting wealth in the treasury.<sup>79</sup> It has been stated as being "produced from the juice of ploughing";<sup>80</sup> so it seems to have been a cultivated plant. Its wild variety was also known.<sup>81</sup> Sāyaṇa says that it grew abundantly specially in the area of Vārāṇasī.

*Jivanti*<sup>82</sup> was an evergreen plant possessing power to regenerate life in a sick person. The *Atharva Veda* mentions that it was a medicine for ensuring sound health. It was a preserver of health, a queller of disease and full of power.<sup>83</sup>

*Kṣetrianāśini*<sup>84</sup> was a herbal plant which was perhaps used to cure some hereditary disease like pulmonary consumption. Griffith thinks that the hereditary disease was from the mother's body which was considered to be its source.

*Kuṣṭha*<sup>85</sup> (*costus speciosus*) grew on the high peaks of the *Himālayas* and was used for curing numerous ailments. So it was thought that it possessed divine powers.<sup>86</sup> On account

of its utility it was regarded as one of the most useful medicinal herbs.<sup>87</sup> The credit of discovering its medicinal ingredients has been given to king *Ikṣvāku*.<sup>88</sup> It was very useful in curing leprosy.

*Nārāci* denoted perhaps a poisonous plant.<sup>89</sup>

*Nyastikā*<sup>90</sup> is identified with *śaṅkhapuspikā*. It was a herb which helped to increase intelligence. It purified blood and ensured health. Amulets made of its wood were put on the body for obtaining brightness.

*Pāṭā*<sup>91</sup> (*lypea hermandifolia*) was known by several other terms such as *subhagā*, *devadūtā*, *uttānaparṇā* and *sahasvatī*. It had magical powers; so the *Ṛgveda* prescribes its use for removing obstacles,<sup>92</sup> especially the *Sapatnī bādhanam* (dangers of co-wife). The *Atharva Veda* prescribes for a person wishing to be victorious in debate to eat its sanctified roots and to put on a garland of its seven leaves on his head.<sup>93</sup>

*Pippalī*<sup>94</sup> was a medicinal herb. It has been suggested that it should be identified with the berry of *pippala*;<sup>95</sup> but it appears to be unconvincing because in later texts it has been mentioned as a plant. The *Atharva Veda* mentions that it was a divine herb having power of regenerating life. It healed even deep wounds. It seems that it was a very curative medicine in case of wounds because it has been mentioned as "healer of sickness caused by wounds and healer of the missile's rent."<sup>96</sup>

*Pramandani*<sup>97</sup> has been mentioned along with *gulgulūḥ* and *aikṣagandhi* so it appears that it was a plant having scented wood and it was used as a *homodravya*.

*Prṣṇiparṇī*<sup>98</sup> (*hemionitis cordifolia*) was a plant having variegated leaves. Roth identifies it with *lakṣmaṇā*, a herb supposed to ensure the birth of male child or curing barrenness. It appears that mainly it was taken as a medicine to prevent abortion. The *Atharva Veda* states that its use removes *Nīṛṛti*, the goddess of death and misfortune who rejoices at the destruction of an unborn babe.<sup>99</sup> It was put on the body in the form of an amulet for removing the evil effects of demons.<sup>100</sup>

*Punarnavā*<sup>101</sup> was a medicinal herb which dried up with summer but grew profusely in the rainy season. It is identified with *gadhapūranā* (Hindī). Juice extracted from its plant is still used to cure eye-diseases. It is consumed as vegetable to increase blood in the body.

*Rajani*<sup>102</sup> (*rājikā*) was a herb to cure leprosy. Griffith thinks that it is the name of the *curcuma longa* which may have been one of the plants used in the treatment of leprosy. The *Atharva Veda*<sup>103</sup> refers to two kinds of this disease, namely, disease communicated by contact of a leper and caused by the sufferer's own sins or irregularities. *Rājikā* was used to cure both kinds of this disease. When applied, it cured wounds and made the affected part have natural colour.

*Rāmā*<sup>104</sup> has been identified by *Sāyaṇa* with *bhṛṅgarāja*, a variety of grass with green leaves and juicy stems. Generally it was used for curing greying of hair and causing cooling effect in case of headache.

*Rohiṇi*<sup>105</sup> (*soymida febrifenga* A. Juss) was very useful in the diseases of bones. It was used as a binding material over the broken bone in the body which made them join together. Besides, it was taken as medicine for curing wounds caused by falling or being struck with a small piece of stone.

*Safaka* was a plant growing in water.<sup>106</sup> The *Āpastamba Śrauta Sūtra* terms it *bhojyajalaja*<sup>107</sup> which also proves that it grew in tanks. Majumdar identifies it with *śṛṅgāṭaka*<sup>108</sup> (*irapa bispinosa*). It also has cooling effects.

*Sahasraparṇi* was a very useful herb. It was supposed to bestow vigour. It was a wide spreading grass with one thousand leaves. It contained a hundred tendrils and 33 descending shoots.<sup>109</sup> In colour it was brown.<sup>110</sup>

*Sanḥkhaṇḍi*<sup>111</sup> was a herb which increased intelligence. It purified water stored in jars. It was taken with milk. Its root was used for curing several diseases, so in the *Pāraskara Gṛhya Sūtra* it has been termed *sarvaśādhi*.<sup>112</sup>

*Śaṇā*<sup>113</sup> (*crotalaria juncea* L) was used as a medicine curing *viṣkandh*, a disease which acts as a hindrance to proper growth

of body. Usually, amulet made of it was tied on arms. It was of two varieties, namely, wild and cultivated. Its fibres were used for making threads for weaving coarse clothes. Some of the *Śrauta Sūtras* have prescribed it for making girdle (*mekhalā*) to be put on by the sacrificer. It should be identified with *sana* or *sanai* (in Hindi) which is grown during the rainy season. Macdonell and Keith identify it with hemp.<sup>114</sup>

*Śatavāra* (*asparagus racemosus*) contained properties which were used to cure several diseases.<sup>115</sup> It was the most effective medicine to cure ailment caused by dog bites.<sup>116</sup> Its tops were yellowish.<sup>117</sup> Griffith thinks that it was not a medicinal herb but a powerful amulet made of several medicinal herbs, mainly of *darbha*.<sup>118</sup> His view appears to be unconvincing because the top of the *darbha* is not yellowish and it is not used for curing dog bites. It should be identified with *śatavāra* (in Hindi). *Sāyaṇa* thinks that it signified a medicinal herb with the properties effective in curing hundreds of diseases, but it is only the literal meaning of the term.

*Śrakṭya*<sup>119</sup> (*tilaka*)<sup>120</sup> was a very sacred plant which has been mentioned as "best among the *auśadhis*."<sup>121</sup> It was used as medicine for curing ailments. The *Atharva Veda* describes the importance of *maṇi* (amulet) made of this plant. It was tied on arms for preventing fear and ensuring protection from beasts, diseases and adverse elements of nature.<sup>122</sup>

*Śitikā*, as the name suggests, was a medicinal herb which contained soothing ingredients.<sup>123</sup> It was full of fresh juice, so it was considered as a soothing herb.<sup>124</sup> It was applied on burns for the relief of the victim.

*Śirīṣa*<sup>125</sup> has been frequently mentioned in the *Gṛhya Sūtras*. Its flowers were used as medicine.

*Syāma*<sup>126</sup> was a medicinal herb of black colour which was used for curing untimely greying of hair. It should be identified with black variety of *bhṛṅgarāja*.

*Sadampūṣpa*<sup>127</sup> was a medicinal plant which has been mentioned as *sahasracakṣu*, having a thousand eyes. *Sāyaṇa* comments that its leaves were similar to the shape and size of eyes. It possessed magical powers, so amulets made of it were tied on arms.

for warding off evil effects of demons. It was used to cure victims of bites of serpents.

*Soma* has been mentioned in the Vedic texts and the *Avesta* as a plant of divine origin and bestowing life and light. On this basis it was termed *samrāt* among the plants.<sup>128</sup> The IX *maṇḍala* of the *R̥gveda* contains hymns describing different aspects of *soma*. The Avestic *homa* and the Vedic *soma* both are derived from the root *sú* (zend *hú*), meaning, to press or produce.<sup>129</sup> It denotes a spirituous liquor extracted from a certain plant which grew on the mountains. The potent juice endowed the feeble mortals with divine powers and for sometime freed them from the earthly cares.

It appears that *soma* was the product of the west, so usually it was brought from there to the east. Mostly it was used in sacrifices for extracting juice to be offered to gods. Religious and spiritual sanctity was accorded to it, on account of which it was placed above commercial transactions.<sup>130</sup> The priest, using it for commercial purpose, was considered to be a degraded person. However, in certain cases he was allowed to accept *dakṣiṇā* in forms of gold, cow, goat, and a piece of cloth which also were considered as sacred.<sup>131</sup> *Soma* plants were brought to the site of sacrifice on bullock carts.<sup>132</sup> In some cases these plants could be exchanged with a ruby and yellow eyed cow because the leaves of the *soma* plant also were of the same colours and form; so it was considered to be exchanged with its own form and deity.<sup>133</sup>

The Vedic literature and the *Avesta* describe the *soma* plant in detail. *Hoam* grew on the Alburz mountains and its use was popularised by prophet Hoama who is said to have bestowed his own name on it. The twigs of its plants were rubious in colour (*aruṇa*)<sup>134</sup> or tawny (*hari*).<sup>135</sup> These grew wild on mountains in the white half of the month (*śuklapakṣa*) and ceased to grow in the dark half of the month (*kṛṣṇapakṣa*). It did not grow in the Yamunā-Gangetic valley, so it was an arduous job to bring it from the western mountainous regions. It was for this reason that the *Śatapatha Brāhmaṇa*<sup>136</sup> prescribes several substitutes for it. *Phālguna* plant was such a substitute which

was of two varieties, namely, the red flowering plant and the brown flowering plant. The latter specimen was preferred because it was akin to the *soma* plant, i. e., it was brown in colour like the colour of a hazel cock. If it was not available, it could be replaced by *śyenahṛta* plant. *Ādāra* plants also could be used in case the *śyenahṛta* was not available. If the sacrificer could not get even that, he could use instead brown *dūrvā* as its brown colour made it look like the *soma* plant. In the case of non-availability of this, he could use any kind of yellowish *kuśa*. Other substitutes of *soma* plant were *praprotha*<sup>137</sup>, *pūtika*<sup>138</sup>, *uśanā*<sup>139</sup> and *prṣṇiparnī*.<sup>140</sup> The last one had speckled leaves and its wood was used as an amulet against effects of evil spirits.

Though the characteristics of *soma* plant have been mentioned in the texts, it is very difficult to identify it. Several historians and botanists, such as, Roth<sup>141</sup>, Max Muller<sup>142</sup>, Baker<sup>143</sup>, Dyer<sup>144</sup>, and Schindler<sup>145</sup>, attempted to identify it. According to the findings of Schindler, the *hoam* plant grows to the height of four feet and consists of circular fleshy stalks of whitish colour and has a sweetish taste.<sup>146</sup> After being preserved for a few days, it turns sour and its stalks become yellowish-brown and break easily at joints, forming small cylindrical pieces. In this condition they lose their leaves which are small. It shows that *soma* is a plant whose identification may be established with the *sacrostama* (milk weed) or some other group of *asclepiads* such as, the *pariplocaaphylla* which has been traced by Haussknecht to 3000 feet in the mountains of Iran, and is common in Afghanistan.<sup>147</sup> Watt thinks that Afghan grape was the real *soma* but according to Rice it could also be a sugarcane. Rajendra Lal Mitra suggests that the *soma* plant should be identified with hop. Hillebrandt thinks that neither hops nor the grapes can be pin-pointed as being *soma*.<sup>148</sup> Recently Wasson<sup>149</sup> has identified it with *amonita muscaria*, the brilliant red mushroom with white spots. His view has been criticised by John Brough<sup>150</sup>, but this criticism has not closed the controversy by any means. Philologists and Sanskrit scholars, such as, Bailey and Ingalls, however, support Wasson.

*Tajadbhāṅga*<sup>151</sup> was an easily breakable plant which is identified with *eranda* (castor oil plant)<sup>152</sup>, but Whiteny takes it to be

hemp.<sup>153</sup>

*Tarakā* was used for curing different kinds of chronic and hereditary diseases.<sup>154</sup> *Vaiṣṇavā* was also such a medicinal herb<sup>155</sup>, but it is difficult to identify both of them.

*Tulasī* plant, so sacred for the *Vaiṣṇavas* has been mentioned only for a few times in the late texts.<sup>156</sup> Its importance in religion and medical science developed during the post-Vedic times.

*Trāyamāṇa*<sup>157</sup> (*gentiana kurroo royal*) was a herbal plant but its exact identity has not been established.

*Viṣāṇaka*<sup>158</sup> was used as a remedy against *vātikāra* a disease caused by wind.<sup>159</sup>

*Viṣā* (*viṣātakī*) was a species of *anti-aphrodisiac* plant. It was a poisonous plant. The *Atharva Veda* refers to it as a rough plant which was used against an adversary to minimise his manly strength.<sup>160</sup>

#### (ii) *Vrkṣa*

*Ajaśṛṅgi* (*gynandropsis pentayhylla* DC) was termed as a demon destroyer<sup>161</sup>, so it seems that its wood was used for making amulets to be tied to the body or was used as medicine to cure effects of evil spirits. It appears that its leaves were similar to the horns of a goat. Its synonym is *arātakī*.<sup>162</sup>

*Āmalaka*<sup>163</sup> (*imbilica officinalis gaertn*) was a sacred tree, its fruits being named after it. Being medicinal properties, these were used in different forms. The *Āyurvedic* texts of the post-Vedic times furnish detailed information about the use of their fruits for curing ailment.

*Āmra* (*mangifera Indica* L) has not been referred to in the *Samhitās*. The *Bṛhadāraṇyakopaniṣad*<sup>164</sup> mentions it. In the *Jaiminiya Brāhmaṇa*<sup>165</sup> its name has been enumerated along with *badara*. The *Dharma* and the *Gṛhya Sūtras*<sup>166</sup> prescribe its fruits to be offered to priests on the occasion of the performance of the *srāddha* ritual. In the *Jātaka* stories there are references to several mango groves some of which were donated to the Buddhist *saṃgha*.

*Aratu*<sup>167</sup> was a plant. As its wood was very hard so the axles of chariots were made of it.<sup>168</sup>



*Aukṣagandhi*<sup>169</sup> denoted a plant having the smell of bulis grease. Perhaps it was a fragrant plant.

*Aśmagandhā*<sup>170</sup> (*withamia somanifera dunal*) is identified with *aśvagandhā*, meaning horse smell. It contained medicinal properties and is still used for preparing medicines.

*Aśvattha* (*ficus religiosa* L) was considered as one of the most sacred trees. On some of the Harappan seals and potteries we may see the figures of *aśvattha* (*pipala*) tree.<sup>171</sup> One very interesting seal found from Mohenjodaro depicts, a horned goddess in a *pipala* tree. She is being worshipped by a figure wearing horns. A goat with a human head is watching the ceremony and seven pigtailed women are in attendance.<sup>172</sup> It appears that the Vedic *Āryans*, influenced by the Indus valley people, attached religious sanctity to this tree. The Vedic literature refers to it in different contexts. Sacrificial vessels were made of its wood.<sup>173</sup> Its hard wood formed the upper piece of *araṇi* used for kindling the sacrificial fire.<sup>174</sup> In certain sacrifices its wood was used for offering to gods. It was a sacred tree under the shadow of which gods were supposed to rest.<sup>175</sup> The berries of *aśvattha* were used for curing wounds.<sup>176</sup> This plant grown on the *śamī* tree contained medicinal ingredients.<sup>177</sup> Amulets made of its wood were tied to body for protection from evil spirits.<sup>178</sup> The fruits of *pipala* were common edibles of birds.<sup>179</sup> When ripe, they were reddish and blackish and were consumed even by the human beings.<sup>180</sup>

Due to its importance and hard nature of its wood *aśvattha* was considered to be the *kṣatriya* among the trees. The *Aitareya Brāhmaṇa* mentions that the *kṣatriya* drinking the juice prepared of the fruits of *aśvattha* beautifies himself with lustre and sovereignty.<sup>181</sup> Its *kṣatriya* status may be properly assumed from the fact that it was called *burst* (*vaibābha*) because it splits asunder the crevices of wood or stone where its seed has germinated and grown.<sup>182</sup>

*Burbura*<sup>183</sup> (*asacia nilotica*) is identified with *babula*. It is a wild plant with thorns. Its remains have been discovered from the OCP levels at Atranjikhhera.<sup>184</sup> It is indigenous to Sind, Rajasthan, Gujarat, Uttar Pradesh, Madhya Pradesh and

Maharashtra. At Atranjikhhera, it was a local forest product. At this place, from the same levels, dry pods of *babula* have been discovered. Perhaps these were used for feeding the animals. It is also possible that a few dry pods attached to the *babula* tree, which was felled, somehow found their way into the floor of the shelter.

*Badara*<sup>185</sup> (*zizyphus*) was a wild plant. Its branches were thorny and leaves very small. It yielded fruits of different shape and size, usually of yellow and red colours. The remains of this plant have been discovered from Harappā.<sup>186</sup> Parker mentions six species of *badara* growing in the Punjab.<sup>187</sup> We are not sure to which species the timber from Harappā belongs. All that can be said is that it was locally available and was used for making mortar for pounding grain. In the Vedic times its fruits were eaten and were also offered as oblations to the gods.<sup>188</sup>

*Cira* (*pinus roxburghii*) grows on the lower hills of the north-western mountains. In ancient times, it was used for building of houses. Its remains have been unearthed at Atranjikhhera<sup>189</sup> from the OCP and PGW levels. These are charred pieces. It has been suggested that it was not a local forest product but was brought to that place to be used as an incense for certain rituals.<sup>190</sup> But in absence of any positive proof to substantiate this suggestion, it is very difficult to accept this view.

*Candan* (*santalum album*) has been, for the first time mentioned in the *Nirukta*.<sup>191</sup> Later it has been referred to in the *Dharmic*, *Grhya* and the *Śrauta Śūtras*.<sup>192</sup> Paste made of its wood was applied on the forehead and other parts of the body. It was famous for its mild scent. Amulets made of its wood were tied to the body for curing diseases.

*Eraṇḍa*<sup>193</sup> was the castor oil plant. It grew wild, but was also cultivated. Its leaves are used as fodder to be fed to animals and seeds are used for extracting oil.

*Hiranyaparna*<sup>194</sup> was a plant whose leaves were yellowish or shining like gold. The references to it indicate that it was used in sacrifices. It is difficult to identify it.

*Jambila*<sup>195</sup> was a fruit yielding plant. It is identified with *jamirā*, a variety of lemon of large size.

*Kampillaka*<sup>196</sup> (*Kāmpila*) was a plant of hard wood. Its leaves were used in sacrifices and *manthani* (churn staff) was made of its wood. It was used as medicine to cure fever.

*Kapitthaka*<sup>197</sup> was a wild plant. Its root boiled with milk and rice was used as a charisma for influencing others. Its wood was very hard. Its leaves and flowers were used in rituals.<sup>198</sup>

*Karañja*<sup>199</sup> was a wild plant. It was regarded as an impure tree, so its wood was not prescribed to be used as *samidhā*<sup>200</sup> and its fruits were also not considered edible.<sup>201</sup>

*Karkandhu*<sup>202</sup> (*zizyphy nummularia w.h.*) is the jujube. It was considered to have originated from the mouth of Agni.<sup>203</sup> Its plants and fruits were termed by the same name. In vernaculars it is known as *jāmuna*. It grew wild. Its fruits were red (*rohita*).<sup>204</sup>

*Karira*<sup>205</sup> was a plant of soft wood. It grew wild during the rainy season. Especially it grew abundantly in the mountainous regions. *Sāyaṇa* thinks that it was a common tree in the *Uttarāpatha* which yielded very sweet fruits. The powder made of the fruits of *Karira* were used in sacrifices. This plant had medicinal utility. Its roots and branches were used for destroying germs. Its wood was used for performing *kariri* rituals to ward off drought.<sup>206</sup>

*Kāśmārya*<sup>207</sup> (*gmelina orborea*) was considered of divine origin. Its wood was placed to the south of the sacrificial altar to ward off the devils.<sup>208</sup> Some of the *Śrauta Sūtras* prescribe its wood for making sacrificial utensils.<sup>209</sup>

*Kūrca* was a very useful plant.<sup>210</sup> It contained medicinal properties which were effective in curing dysentery. Amulets and beads made of its wood were tied to the arms as medicinal charms. Its charred remains have been discovered from *Hastināpura*,<sup>211</sup> pd. III. It appears that *kūrca* (seat) was made of it.

*Khadira* (*acacia catechu willa*) is one of the important trees mentioned in the Vedic literature. On one of the Harappan seals the figure of this tree encircled by a railing has been depicted.<sup>212</sup> Its wood was very hard (*bahusāra*)<sup>213</sup> so the bolts of the axle of a cart were made<sup>214</sup> of it. Sacrificial utensils like jars, lids, spoons and *sphya* (implement shaped like a sword) were made of its wood.<sup>215</sup> The king sat on the throne made of *khadira*

wood to ensure the durability of his reign.<sup>216</sup> The *Śatapatha Brāhmaṇa* states a story regarding its divine origin and supernatural powers. Once Kadru took possession of the *soma* plant by means of a stick made of *khadira* wood. For this reason, the sacrificial stake and *spīya* are made of its wood.<sup>217</sup> This plant originated from the bones of *Prajāpati*; so its wood is very hard.<sup>218</sup> The same text recommends erection of sacrificial posts made of *khadira* wood on the site of the performance of *aśvamedha*. Doing this, the sacrificer went to heaven after his death.<sup>219</sup> Amulets made of *khadira* wood were put on the body for ensuring health.<sup>220</sup> Besides, agricultural implements and vehicles also were made of its wood. Excavations have brought to light well preserved beams of *khadira* which were used as a building material at *Ujjayini* (pd. I, 750-500 B.C.). These beams are extremely hard and vary from 13 to 18 feet in length.<sup>221</sup>

*Kharjūra* (*phoenix sylvestris roxb*) denoted both its plant and fruits. It grew wild and yielded juice and fruits. Some badly carbonised seeds of *kharjūra* discovered from Mohenjodaro prove its existence in the Harappān culture.<sup>222</sup> The *Taittiriya Samhitā* refers to its mythological origin when it states that while the *yatis* were being eaten, their heads fell away and they turned into *kharjūra*.<sup>223</sup> Its fruits were used in sacrifices.<sup>224</sup>

*Kimtuka* has been mentioned in the Vedic texts since the *Rgveda* onwards.<sup>225</sup> It has been derived from the root *kṛms*, meaning to illumine. It was a tree of bright and beautiful flowers.<sup>226</sup>

*Kṛṣṇāla*<sup>227</sup> was a plant of medium size. It yielded hard but small fruits known by the same term. It was a unit of weight. In colour it was red and black. In a ritual (*śatakṛṣṇāla*) a hundred *kṛṣṇālas* were offered to Agni as it was believed that it would increase fame and longevity of the sacrificer.

*Laurel* (*terminalia tomentosa*) was a kind of shrub with glossy leaves. Its charred remains have been reported from the NBP levels at Atranjikhhera.<sup>228</sup> It grows all over the country and is one of the commonest plants of Indian forests.

*Madugha*<sup>229</sup> was a very sweet plant. Its literal meaning is honey-yielding. It was a medicinal plant and its sweet juice was

supposed to nourish the baby in the mother's womb. Pregnant women tied amulets made of its wood to their arms for the safety of the baby.<sup>230</sup> It is identified with *jyeṣṭhīmadhuk*.

*Madāwati*<sup>231</sup> was an intoxicating plant.

*Mañjiṣṭhā*<sup>232</sup> was a plant of red colour. Its barks and flowers were used for extracting juice for making red colour. The kṣatriyas had to put on clothes of *mañjiṣṭhā* colour on the occasion of the performance of their sacred thread ceremony.<sup>233</sup> In vernaculars, it is termed *mañjiṣṭhā*.

*Madhula*<sup>234</sup> was a plant which was used for removing mosquitoes and curing victims of serpent bites.<sup>235</sup>

*Nalada*<sup>236</sup> (*narad siachys*) is identified with *jatāmāsi* in Hindi dialects. Its flowers are of red colour and knotty.

*Nyagrodha* (*figus Indica*) was a sacred tree. It is identified with *vaṭa* tree. In the Vedic literature it has been mentioned since the *Atharva Veda* onwards. The *Aitareya Brāhmaṇa*<sup>237</sup> informs that it grew abundantly in the region of *kurukṣetra*. The *Chāndogyaopaniṣad*<sup>238</sup> draws an analogy between growing of the seed of *nyagrodha* into a big tree and the manifestation of the universe from Brahman who is even smaller in size than the former. The *Śatapatha Brāhmaṇa* states that this tree was termed *nyagrodha* due to its downward (*nyaga-rodha*) growth. It had the characteristic of bending its branches down to the ground and developing new secondary trunks. So a single tree, in course of time, formed a large grove. It was noted that it never grows straight but slightly inclines to one side.<sup>239</sup> Divine origin has been attributed to it for making this plant<sup>240</sup> a substitute of *soma* which did not grow in the plains of northern India. It has been enjoined that a *kṣatriya* should not drink the juice prepared of *soma* plant. He may however, take the same extracted from the airy descending roots of *nyagrodha* together with the fruits of *udumbara*, *aśvattha* and *plakṣa* trees.<sup>241</sup> In this context it is remarkable that the airy descending roots of *nyagrodha* are as reddish as the top of the *soma* plant; so these were an appropriate substitutes for the real *soma*. The drinking of this juice by a *kṣatriya* has been justified on the ground that in the human society he occupies the same place as *nyagrodha* among the

plants. It is firmly established in the earth, and by means of its descending roots, it expands itself in all directions, and, therefore, it is a sign of the great extent of the *kṣatra* power over the whole earth. He also gets a firm footing in his kingdom and his rule cannot be overthrown.<sup>242</sup>

In sacrifices the sacrificial pots and utensils made of the wood of *nyagrodha* were used.<sup>243</sup> In the post-Vedic times, its saplings were planted by the sides of roads for shadow to the travellers.<sup>244</sup> Its milky juice and airy descending roots are used as medicines for curing certain diseases.

*Palāśa*<sup>245</sup> (*butea frondosa*) was considered as one of the most sacred trees and its wood was used in sacrifices for several purposes. Among the plants, it has been accorded the status of a *brāhmaṇa*.<sup>246</sup> The sacrificer, willing to acquire spiritual knowledge and gain lustre, was advised to establish the sacrificial post made of *palāśa* wood because it signified beauty among the trees and was considered as the womb of all plants.<sup>247</sup> Amulets made of its wood were tied on arms for ensuring health and material prosperity.<sup>248</sup> Sacrificial utensils, such as, jars, ladels, lids, and cups were made of its wood.<sup>249</sup> It was considered that *palāśa* tree grew out of the flesh of *Prajāpati*; so its juice is red.<sup>250</sup>

*Plakṣa* (*ficus infectoria*) is the fig tree which is larger in size than others and appears more attractive than them.<sup>251</sup> Its fruits are small in size and white in colour. Some of the Vedic texts<sup>252</sup> narrate its mythological origin in order to prove its sanctity and purity. They state that once when gods seized an animal for sacrifice, its sacrificial essence flowed down on a certain place out of which a tree sprang up. As gods beheld it, it was called *prakhya* (visible), because *plakṣa* undoubtedly is the same as the former (*plakhya*). Its wood was used for making utensils for sacrificial use. The seed of *plakṣa* was very small in size but was shining in colour. The *Aitareya Brāhmaṇa* maintains that *plakṣa* fruit signifies independence and brilliancy, so the *kṣatriya*, by using the wood of this tree in sacrifices, earns the same virtues for himself.<sup>253</sup>

*Pīlu*<sup>254</sup> (*salvadora persica*) was an ever green tree of the same species as the *śamī*. It grew abundantly in the *Vāhika* country.

Its berries were smaller in size. In the Punjab it grows abundantly and its fruits are termed *pilakanā*. During the post-Vedic times, *Pāṇini* refers to its berries (*pilukuna*).<sup>255</sup>

*Pramanda*<sup>256</sup> was a sweet scented plant. It has been enumerated along with *gulḡulū* and it seems that it was used as a *homadravya*.

*Praprotha*<sup>257</sup> was a substitute of *soma*.

*Pūtudāru* (*pūtudru*) has been identified with *cedrus deodar*. It is a very ancient species of plant. Its wood was used for making coffins at *Harappā*.<sup>258</sup> In the Vedic texts, it has been mentioned as a sacred tree. Its wood was very light and was famous for its sweet smell. It was easily inflammable.<sup>259</sup> Sticks made of its wood were used for enclosing the *uttaravedi*.<sup>260</sup> *Yūpas* (sacrificial posts) also were made of it. Charred remains of its wood have been discovered from a portion of floor showing somewhat a mosaic structure at Atranjikhhera from the NBP ware levels.<sup>261</sup>

*Rohitaka*<sup>262</sup> was one of the sacred trees. Its wood was used for making sacrificial post. In sacred thread ceremony, the *brahmacārin* had to hold a stick made of its stem. It appears that it grew abundantly in Kurukṣetra and the place Rohitaka in Haryana was named after it.

*Śāla* (*tectona grandis* lin) has been mentioned mostly in the *Gṛhya Sūtras*.<sup>263</sup> Its wood was very hard. It was a very fine species of tall plant and its wood was used for making houses and furniture. Its remains have been reported from the B and R ware levels at Atranjikhhera.<sup>264</sup> Teakwood is one of the most valuable timbers. It grew wild and there were *śāla* forests in northern India. Gautama Buddha had died in a *śāla* forest near *Kuśinārā*.

*Śikhaṇḍī*<sup>265</sup> has been mentioned in association with trees of larger size (*mahāvṛkṣa*), such as, *aśvattha* and *nyagrodha*. It has not been identified.

*Śalmali* (*salmalia maleborica*) was one of the useful trees. It contained poisonous ingredients.<sup>266</sup> It is interesting to note that poison extracted from this tree is still used for tipping arrows.<sup>267</sup> Its flowers were red and beautiful and when ripe, yielded soft cotton. Its seeds were black and poisonous.<sup>268</sup> The timber of

*sālmali* being very light, was easily portable on bullock carts.<sup>269</sup> This tree was distinct from other trees in the sense that it was the tallest among them and had the most quick growth.<sup>270</sup> It was termed *Śālmali* because it was easy to pierce its wood or because it was covered with pricking thorns.<sup>271</sup> Ceremonial chariot was made of its wood and decorated with its flowers. The *Grhya Sūtras* forbid the use of its wood as *śamīdhā*.<sup>272</sup>

*Śamī* (*prosopis spicigera* or *acacia suma*) was one of the most sacred trees. Its wood was very hard, so the stick made of it and fitted into a hole in a lower block was twirled like a carpenter's brace in order to produce sacrificial fire by friction. On account of this, it was supposed to contain fire in its womb. But the *Śatapatha Brāhmaṇa*<sup>273</sup> informs that its wood is not inflammable, and when placed into fire, it does not increase its flames. Hence it is termed *śamī* (peaceful, pacifier). This tree grew abundantly in the dry arid zones of the Punjab, Rajasthan and Sind. It had hundreds of branches and its leaves were of large size.<sup>274</sup> The juice extracted from *Śamī* tree was used as a medicine for causing the lustrous growth of hair.<sup>275</sup> Its fruits were termed *śamīdhānya*.<sup>276</sup> Its leaves and wood were used for curing ailment. Different kinds of posts for sacrificial use were made of its wood.

*Sidhrakā* was a tree and its wood being very hard was termed *sāravṛkṣa*.<sup>277</sup> Its timber was used for making furniture.

*Śimśapa* (*darbergia sisso*) was a very useful tree. Its leaves were very small and branches had luxurious growth on its tall body. Its wood was used for making houses, furniture and agricultural implements. The Harappāns had knowledge of this tree. An interesting representation of its leaf has been reported on an earthen ware discovered from Harappā.<sup>278</sup> Remains of black *sisso* (*dalbergia latifolia*) also have been reported from the same site. There its wood was used for making coffin.<sup>279</sup> The *R̥gveda* informs that the wheels of carts and chariots were made of its wood.<sup>280</sup>

A study of *śimśapa* tree helps us to know that it grew abundantly in western India, specially in the regions of Gandhāra, Baluchistan, Sind and the Punjab. It grew wild in eastern



regions as well. Its remains have been discovered from Hastināpura<sup>281</sup> (pds. II-III) and Atranjikhhera<sup>282</sup> from the Upper and Middle Gangetic Valley. It seems that India is the place of its origin wherefrom it spread to the west. The inscriptions of Darius I mention that the wood which were brought from Gandhāra and Karmān were used for building his palace at Sūsā.<sup>283</sup> The Akkadian *yakā* was termed *mis-ma-kon-no* which was a durable wood.<sup>284</sup> It was a very tall tree and its wood was used for different purposes, sometimes with cedar, and sometimes without the latter. Although Darius had imported it from Gandhāra, it is known that this tree grew in Babylonia and it was planted by Sennacherib in Assyria.<sup>285</sup> *Mis-ma-kan-na* meant the tree of Makan of Magan which was the ancient name of Makran coast in Baluchistan. Sisso still grows in that region and is termed *jug* or *jux*. The Akkadian term *yakā* appears to have been the corrupt form of *jax*. It is the *sisso* of India, its Sanskrit term being *simsapa*, in Pasto it is *sewa* or *jagar* which corresponds to Baluchī *zaghah*.<sup>286</sup> This tree was widely known in the Near-East and the Noah's arch was also built of its wood (*syam*).<sup>287</sup> Trade in this wood from India to Iran continued even upto the early centuries of Christian era as its logs were exported from Bharukaccha to Iran.<sup>288</sup>

*Svadhā*<sup>289</sup> and *svadhiti*<sup>290</sup> were insignificant plants, their exact identity being unknown. However, Roth thinks that *svadhiti* was a plant of hard wood.

*Tilvaka* (*symlocos recemosa*) was one of the sacred trees. Sacrificial posts were made of its wood.<sup>291</sup> Among the plants it was considered as *vajra*.<sup>292</sup> Dead bodies were not disposed of near it. In some of the *Gṛhya Sūtras* its use as firewood has been forbidden.<sup>293</sup>

*Tūryantī* was a wild plant. Its leaves and flowers were white and yellow. It blossomed at the mid-day. Its flowers were placed at the feet of one's wife to secure quick delivery of the child.<sup>294</sup>

*Udumbara* (*ficus glomerata*) is identified with *gullara* (in Hindi). The *Rgveda* does not refer to it but in the later Vedic texts it has been frequently mentioned.<sup>295</sup> It grew wild.<sup>296</sup> Its wood was very hard and durable. The flowers of *udumbara*

were invisible, so they were used as a simile for non-existent things. Its fruits, when ripe, were as sweet as honey.<sup>297</sup> It had the characteristic of yielding fruits thrice a year.<sup>298</sup> This tree was considered as the most excellent of all the plants. It was believed that as it contained whatever pith and vital sap it had it was always moist and full of milky juice. It was held that the sacrificer by offering its wood to Agni gratified him by every kind of food.<sup>299</sup> It was considered that the sacrificer having established a sacrificial post made of *udumbara* wood (*audumbari*) ensured for himself strength and vigour because it symbolises strength.<sup>300</sup> Sometimes it was as high as the sacrificer and had a knot directed to the east. That was the thickest of all sacrificial posts erected in the *sadas* and over it a *chadis* (cover) was laid.<sup>301</sup> A *udumbara* tree was considered as the embodiment of strength, the royal throne was made of its wood with a view that it would bestow strength on him.<sup>302</sup> The *kṣatriya*, going through the *rājasiya* ceremony, enjoyed the juice prepared of the fruits of *udumbara* because it was considered that it would nourish the king designate with all vigour.<sup>303</sup> Containers made of its wood were used for mixing different kinds of liquors in sacrifices.<sup>304</sup> Other sacrificial utensils also were made of its wood. Amulets made of *udumbara* wood were used for obtaining material prosperity and warding off evils.<sup>305</sup>

*Varaṇa*<sup>306</sup> was a sacred plant which has been frequently mentioned in the Vedic texts. Its wood was used for making sacrificial implements. It contained medicinal properties, so it was believed that tying of an amulet made of its wood will cure tuberculosis. This plant grew wild on the banks of the river *Varaṇavati* which got its name after it.<sup>307</sup>

*Vibhidaka* (*terminalia bellerica*) was known to the early Vedic people. It grew wild on the slopes of mountains and *akṣas* (dice) were made of its seeds<sup>308</sup>. Its fruits were termed by the same name (*akṣa*) and were used as medicine conducive to digestion. The word *akṣa* in the context of gambling is roughly translated into "dice" but the *akṣa* in the earliest gambling games was not dice but small hard nut called *vibhidaka* or *vibhiṣaka*.<sup>309</sup> *Akṣa* played an important role even in polity. Among the chief men

of the realm whose loyalty was confirmed by a special ceremony at the consecration of the king was the *akṣāvāpa*<sup>310</sup> (thrower of nuts of dice) evidently the organiser of royal gambling parties. *Akṣa* also denoted the axle of a chariot. On this basis it has been suggested that the wood of *vibhidaka* might have been commonly used for making it. Sometimes, the term *akṣa* denoted the *vibhidaka* tree.<sup>311</sup>

*Vikaṇṭaka* (*fiacourtia sapida*) was a sacred tree and in some sacrifices it was offered first to Agni.<sup>312</sup> As its name indicates, it had no thorns and was very soft.<sup>313</sup> A sacrificial pot called *urdhvapātra* (*ekapātra*) with raised brims was made specially of its wood. It was one *prādeśa* high, contracted in the middle, and was shaped like a mortar with a spout. It was used for holding juice from which offerings were made to deities.<sup>314</sup>

*Vilva* (*aegle marmelos* *corr*) has been mentioned in the Vedic texts since the later *Samhitās*<sup>315</sup> onwards. Its leaves and fruits possessed medicinal properties which were used for curing ailment. These had soothing effects on the patients. Sacrificial posts<sup>316</sup> were also made of its wood. The green leaves and ripe fruits of *vilva* were offered to the gods and even now these are offered to *Śiva*. Amulets made of its wood were tied on arms for removing the harmful effects caused by evil spirits and diseases.<sup>317</sup> The *vilva* tree was considered as the symbol of fatness and fertility because it increased in size from its roots upto the top and yielded fruits every year without fail. The sacrificer desiring prosperity had to erect the post made of its wood on the ground of sacrifice.<sup>318</sup> Its fruits, when ripe, were yellowish and very tasteful.<sup>319</sup> They were ripe by the summer. The *Śrauta* and *Gṛhya Sūtras* recommend the use of its wood for several rituals in many ways and forms.<sup>320</sup>

(iii) *Tṛṇa*. The Vedic texts refer to a large number of names of grasses which were used for different purposes. A widely used term for grass was *barhi*<sup>321</sup> which indicates the general characteristics of *tṛṇa*, i.e., which grows rapidly. Grasses like *muñja* and *sara* were used for building houses. Some grasses had got religious sanctity, such as, *kūśa* and *dūrvā* which were commonly used in sacrifices. Strings, cords and ropes made of *muñja* and *śaṇa* were used for different purposes.<sup>322</sup> Household

objects like containers, baskets, mats and several other articles were made of grasses. Besides, these had medicinal properties and were used for curing certain diseases. Some of the important grasses were as follows :

*Arjuna* as a plant has been not mentioned in the *R̥gveda* but it occurs in the sense of white colour.<sup>323</sup> The *Kāṭhaka Saṃhitā*<sup>324</sup> informs that there were two species of this plant, namely, white and brown *arjuna*. The later species, on account of its colour similar to *soma*, was used as a substitute of this plant.<sup>325</sup> Sometimes it has been termed *phālguna*.<sup>326</sup>

*Andikā* was a grass whose leaves and fruits were of the shape of an egg.<sup>327</sup> It may be identified with *nagaramothā*. It is used as a medicine to cure fever. It also has been identified with seeds of lotus but it appears only an hypothesis.

*Aśvavāla*<sup>328</sup> was a species of wild reed of the class of *saccharum spontaneum*. These were strewn on the ground of the sacrifice for making seats for the priests.<sup>329</sup> Roof of the house was also made of this grass and it was mixed with mud to give strength to the wall which was further strengthened by plaster of mud mixed with husks of paddy grains. Its remains have been discovered from the mud plaster at *Hastināpura*.<sup>330</sup>

*Bhaṅga* (*cannabis sativa*) was hemp. In the *R̥gveda* it has been used as an epithet of *soma* plant.<sup>331</sup> It grew wild. Its plant was small and leaves were very green. It is identified with *bhāṅga* which produces mild intoxication. Some of the *Sūtra* texts prescribe its use in certain rituals.<sup>332</sup>

*Darbha* (*imperata cylindrica beaur*) was considered as one of the most important grasses and was used in sacrifices.<sup>333</sup> Its characteristics have been mentioned in the Vedic texts. One such characteristic is that it spread rapidly and re-rooted so rightly which accounted for it being termed "having thousand joints."<sup>334</sup> It had several roots (*bhūrimūla*), thousands of leaves (*sahasraparṇa*) and hundreds of stalks (*śatakāṇḍa*).<sup>335</sup> It had medicinal ingredients and was used for having soothing effects on the mind and body.<sup>336</sup> Amulets made of it were used for protection against falling of hair and ensuring their healthy growth.<sup>337</sup> Among the herbs it was considered as invaluable.<sup>338</sup>

The *dharba* grass was also used in sacrifices for strewing the ground for placing oblations and sitting of priests and sacrificers.<sup>339</sup> *Śulba* (rope made of *darbha* grass) woven in 3 or 5 strands was used for lying the *prastara* (stone pieces) in *soma* sacrifice.<sup>340</sup> *Viśūrmikā* (handful of *darbha* grass) was used instead of fuel logs for carrying fire.<sup>341</sup> *Veda* was a bunch of *darbha* grass tied with a rope. It was given the shape similar to a calf's knee or a woven basket or a hand with three strands and was used for sweeping the altar.<sup>342</sup> *Vedoparivāsan* (cut up top portions of *darbha* blades) was used for cleaning the sacrificial ladles.<sup>343</sup> The *darbha* grass is said to have sprung from the heaven.<sup>344</sup> Various sanctifying and other far reaching supernatural powers have been ascribed to it. Sometimes it has been equated with *soma*.<sup>345</sup> The *Taittirīya Saṃhitā* states that *darbha* contains both kinds of food because it is both water and plant. It has sprung up from the water released from the body of *Vṛtra*; so it signifies water. By offering it to Agni, the sacrificer gratifies him by both food and drink.<sup>346</sup> The *Atharva Veda* mentions that this grass was the embodiment of vigour<sup>347</sup> and signified durability on the ground that its roots were so deep rooted that it was difficult to eradicate them.<sup>348</sup> Sometimes it is identified with *kuśa*<sup>349</sup> but this identification is unconvincing because the descriptions of these two indicate that they were different from each other.

*Dūrvā* (*panicum dactylon*) was also considered as one of the most sacred grasses. It grew properly on damp soil.<sup>350</sup> Like *darbha*, it also spread rapidly on the ground and even during the summer it did not dry. Its different species were known to the Vedic people, such as, the *sāṇḍadūrvā* whose roots were similar to eggs.<sup>351</sup> *Pakadūrvā* grew on the spot where the dead body was cremated.<sup>352</sup> *Śāda* was a very tender species of *dūrvā*. The term *śādvala*, meaning a green grassy piece of land has derived from *śad*. *Sahasrakāṇḍa* was an epithet of *dūrvā* which indicates that it spread much on the ground. The *Atharva Veda* contains a *sūkta* dedicated to *dūrvā*.<sup>353</sup> It was taken as medicine for curing certain physical disorders.<sup>354</sup> On account of its importance it was considered to be of divine origin.<sup>355</sup> It was used in sacrifices and still this practice is in vogue. On

account of its durable and hard nature pertaining to the power of remaining existent, it was accorded the status of *kṣatriya* among the grasses. It signified the *kṣatra* power because like the latter it spread its power (branches) in all directions. The *kṣatriya* sacrificer by offering *dūrvā* in sacrifices became indomitable in his kingdom where he became well established because *dūrvā* had a firm rooting on the earth.<sup>358</sup>

*Gavidhukā*<sup>357</sup> (*coix barabata*) was a useful grass. Its grains were boild with rice or barley for preparing gruel.<sup>358</sup> Flour of *govidhukā* was offered to Rudra,<sup>359</sup> but sometimes its seeds which were of inferior quality have been considered as refuse.<sup>360</sup>

*Ikṣu* (sugar cane) is the most important variety of grass which plays a vital role in the material prosperity of the people of the regions in which it is cultivated. For the first time it has been mentioned in the *Atharva Veda* where its characteristics have been mentioned in a systematic manner. Sugarcane was considered as the symbol of sweetness.<sup>361</sup> Its tender shoots have been compared with the eyelashes of *Prajāpati* and its pieces with his eyelids.<sup>362</sup> Fresh juice extracted from sugarcane was a favourite drink of the people. It appears that originally it grew wild, but for the first time king *Ikṣvāku* of *Ayodhyā* cultivated it and improved the technique of its cultivation.<sup>363</sup> The *Atharva Veda* contains a love song pertaining to sweetness of the juice extracted from sugarcane which really is a charm to win and secure a girl's love.<sup>364</sup>

*Iṣikā* was a reed like grass<sup>365</sup> which should be identified with *sikkī* (in *Hindī*). It grew rapidly in the rainy season. *Sūrpa* and some other light objects were made of it.<sup>366</sup> *Iṣikā* was regarded as the symbol of fragility. It was used for applying collyrium to the eyes of the sacrificer.<sup>367</sup> *Rarāṭi* (a pediment) was made of a garland of twisted *iṣikā* grass which was suspended in front of the *havidhānīyamandapa* on two posts having a bar connecting them.<sup>368</sup>

*Katṛṇa* was a fragrant grass which may be identified with *sugandhitejan*<sup>369</sup>.

*Kāśa*<sup>370</sup> was a kind of wild cane which was used for making mats. It was supposed that it had the power to remove the

effects of evil spirits. Its hard form may be assumed from the fact that a *kṣatriya* had to put on a *raśanā* (rope) made of it on the occasion of his sacred thread ceremony.<sup>371</sup> In sacrifices, it was a substitute of *kūśa*.<sup>372</sup>

*Kūśa* was a very sacred grass and its use in sacrifices was a common practice.<sup>373</sup> It had some sanctifying power, so it was spread on the ground of sacrifice on which oblations were placed. The sacrificer and priests also sat on them. *Kūśāsona* (mat made of *kūśa*) was used for the same purpose. The *kūśa* grass afforded lurking place for serpents.<sup>374</sup> The *Gṛhya Sūtras* recommend the use of this grass in several ways, such as, for strewing round the sacrificial fire in 3 or 4 layers,<sup>375</sup> for sprinkling water round the same, and also as *pavitrā* (a bunch of *kūśa* grass for purifying sacrificial objects). This grass was held over a vessel into which water was decontaminated for preparing the *prokṣaṇi* waters.<sup>376</sup> On the mat woven of this grass, blood of the sacrificial animal was poured.<sup>377</sup>

*Muñja*<sup>378</sup> grew wild so abundantly in the western mountainous regions that the Vedic *Āryans* named a particular mountain as the *Muñjavanta*,<sup>379</sup> meaning "abounding in the *muñja* grass." *Muñja* is so called because it is thrown out (*muc*) by a kind of rush.<sup>380</sup> Like some other grasses, it was also considered as sacred, and was used in sacrifices for securing protection, because it was considered as womb which does not injure the child.<sup>381</sup> Cords made of *muñja* grass were used for making girdles (*mauñjī*) for the students and ascetics.<sup>382</sup> Cots and some other furniture also were woven with the cords made of this grass, which also were used for fastening the cattle. The net woven with its strings was used for filtering the *soma* juice.<sup>383</sup> Its stalks were used for making baskets and *sūrpa*. This grass was light in weight, hence it was known as *suśira*, which means hollow.<sup>384</sup> It was used for making plaited part of the throne.<sup>385</sup> *Viśākhadāman* was a two pranged cord, 3 in number, and was made of *muñja* grass with which a calf, a she-goat and a lamb were tied to a peg in *pravargya*.<sup>386</sup> The strings of the *vāṇa* (a harp) were made of this grass. It was played at the chanting of a *stotra* at the *mahābrata*.<sup>387</sup> Still *muñja* grows wild in rural areas and is used for different purposes.

*Nāḍa* was a variety<sup>388</sup> of reed (wild cane) which grew on the banks of lakes and tanks<sup>389</sup> or in moist soil. It grew abundantly during the rainy season, hence sometimes it was termed as *vārṣika*.<sup>390</sup> It grew profusely and increased like<sup>391</sup> the hair on head. Its plants were used for making mats. Mainly, the women were engaged for (making) mats and other objects of this grass.<sup>392</sup> Sometimes, its plants were used for making big mats which were spread on cots. Such a bed was termed *nāḍaṅḍalu*.<sup>393</sup> It is known as *narakaṣa* in vernaculars. It is interesting to record that a variety of wild cane was used along with husks of rice to reinforce the mud walls with plaster as observed at *Hastināpura*. As rains were expected to be heavy in all the regions where the PG ceramic occurs, the roof may have had a thatch because mud could hardly be dependable and the cane should have played a prominent role in it, perhaps as the wattle base.<sup>394</sup>

*Sara* was a species of reed<sup>395</sup> which grew profusely in watery regions, hence it was rightly considered as the "flower of the waters."<sup>396</sup> Its plants were very weak and fragile and were easily to be broken.<sup>397</sup> It was very light, so it was used for making arrow<sup>398</sup> shafts. Sometimes girdles were also made of this grass.<sup>399</sup>

*Vaṁśa* was the strongest and the longest variety of grass which grew wild in forests or around the villages. It was so called because it grew in forest (*vana-saya*). It could be divided into different parts.<sup>400</sup> Its charred remains have been discovered from Harappā.<sup>401</sup> In rural areas, it is used mostly as a material for house building. In ancient times, it was used for the same purpose.<sup>402</sup> In this connection, the term *prācinavaṁśa* is very significant. Its literal meaning is east-oriented bamboo. It was the supporting beam, the end portion of which protruded over the door lintels.<sup>403</sup> Since these beams were used for the construction of the *śālā*, the shed itself was commonly known as *prācinavaṁśa*. Carts, baskets, chairs, and fences around the fields were made of it. Personal names were also given after it, such as *Prācinavaṁśa*.<sup>404</sup> It was very hollow and was known as *veṇu*.<sup>405</sup> It was used for making bow.<sup>406</sup> *Kārotara*<sup>407</sup> (sieve) made of bamboo was placed over the hide of a bull



through which *surā* was purified. *Pājaka*<sup>408</sup> was a basket made of it in which *brahmaudana* was kept.

(iv) *Latā* (creepers). Mostly, the creepers grew during the rainy season and were used mainly for fodder, medicine, vegetable and decorative purposes. Generally, the creepers were of three varieties, namely, those which spread on the ground, those which grew and spread on the water, and those which climbed the trees.

*Alaśālā*<sup>409</sup> which denotes a grain creeper occurs only once in the *Atharva Veda*.

*Āla* appears to mean weed<sup>410</sup> which forms a part of three other words<sup>411</sup> denoting grass creepers.

*Amūlā* was a plant without root.<sup>412</sup> It is identified with *methonica superba* which was used for poisoning arrowheads.

*Avakā* was a water creeper which has been frequently mentioned in the *Brāhmaṇa* texts.<sup>413</sup> It had sacrificial importance.<sup>414</sup> It was a symbol of water and rainy season. So it appears that it grew abundantly in the rainy season. It has been identified with *blyxa octandra*, a grassy plant growing in marshy land. Weber identifies it with lotus flower.<sup>415</sup> In the *Śatpath Brāhmaṇa* it has been termed as *vetas*.<sup>416</sup> Its later name is *śaivāla*<sup>417</sup> which in vernaculars is known as *sewāra*. It spreads on the surface of water in tanks and lakes and gives protection to the fish. The older term for *śaivāla* is *śipāla*,<sup>418</sup> hence a tank or lake overgrown with it is termed *śipalya*.<sup>419</sup> It was symbolic of durability and growth, hence it was prescribed to be used in certain sacrifices for ensuring longevity and prosperity of the sacrificer.

*Bhūmipāśa*<sup>420</sup> was an insignificant creeper which spread on the earth like a net and held it firmly. It has not been identified.

*Kiyāmbu*<sup>421</sup> grew on the spot where the dead bodies were buried. Its literal meaning is 'having some water'.<sup>422</sup> It was considered as an inauspicious creeper.

*Kumuda*<sup>423</sup> was a water creeper, and for the first time, along with others, it has been mentioned in the *Atharva Veda*. In its appropriate literal sense it denotes white water lily. Its small

plants and flowers were termed as *kumudini*. It grows in tanks during the rainy season and withers during the summer.

*Libuja*<sup>424</sup> denoted a creeper that climbed the tree. It has not been identified.

*Nilāgalaśālā*<sup>425</sup> was a grain creeper.

*Puṣkara* is a very famous and useful creeper which has been mentioned in the Vedic texts in different contexts. In its true literal sense, it stands for blue lotus.<sup>426</sup> Its sweet fragrance has been beautifully described.<sup>427</sup> Generally, it grew wild in tanks and lakes, so these got the name of *puṣkaraṇi*.<sup>428</sup> Its leaves and stalks were green. Since the earliest times, *puṣkara* has been used as an item of physical decoration<sup>429</sup> (*vapus karman*). The *Aśvinikumāras* have been described as *puṣkarasarj*<sup>430</sup> (wearing garlands of lotus flowers). The bowl of the ladle was termed as *puṣkara* because its shape resembled the lotus bud.<sup>431</sup> It contained sweet fragrance, hence usually bees sat on it for sucking its honey. So they were known as *puṣkarasād*.<sup>432</sup>

*Puṇḍarika*<sup>433</sup> was the white species of lotus, of which garlands were made.<sup>434</sup> In the Vedic texts, the shape of the human heart has been compared with the shape of a *puṇḍarika*.<sup>435</sup> The people liked to have tanks with<sup>436</sup> *puṇḍarika* in the vicinity of their houses for beautifying the surrounding. The Vedic seers practically overlooked the aesthetic aspect of the lotus. Only once in the *Rgveda*, lotus pond has been mentioned as the most beautiful place.<sup>437</sup> In the *Brāhmaṇa* texts, lotus has been symbolised as an immortal element.<sup>438</sup> In the Vedic philosophy, it has a deep mystical significance because it symbolises the cosmic waters.<sup>439</sup> On account of this, its flowers and leaves were prescribed to be used in sacrifices.<sup>440</sup> It was the symbol of prosperity and immortality; so it was put on different auspicious occasions for ensuring prosperity to the sacrificer. In the post-Vedic literature, *puṣkara* became the usual simile of love, beauty, tenderness and immortality. In the times of the Buddha, several *puṣkaraṇis* existed in different localities. The *abhiṣekapuṣkaraṇi* at *Vaiśālī* was very famous and only a few privileged ones were allowed to touch its waters. Till now, the lotus flower has retained its importance and is a coveted

object for the connoisseurs of refinement and beauty.

*Pūtirajju* was a creeper which has not been identified.<sup>441</sup>

*Saphaka*<sup>442</sup> appears to have been an edible waterplant or fruit, perhaps the waternut.<sup>443</sup> It was so called from its leaves being shaped like hoofs.

*Urvārū*<sup>444</sup> is the cucumber and its fruit was termed as the *urvārūka*<sup>445</sup> which is *kakaḍi* in vernaculars. In the Vedic texts, it has been a usual simile to denote the release of man from the bondage of death.<sup>446</sup>

*Vetas*<sup>447</sup> was a water plant or creeper of the class of *galamus rotang* or a similar reed. On account of its growth in water, it was termed as *apsuja*.<sup>448</sup> Its colour was yellowish, so sometimes it was known as *hiraṇya*.<sup>449</sup> *Vetasavanta* denoted the person who possessed *vetas* in plenty.<sup>450</sup> It was elastic, hence chairs, baskets, sacrificial thrones and shafts of bows were made of it. It was used in sacrifices, and was the symbolic of elasticity and durability.

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175. *AV*, 5.4.3; *CHU*, 8.5.3., *KB*, 1.3; Cf. *RV*. 10.97.5.
176. *AV*, 6.110.1.
177. *Ibid.*, 6.11.1.
178. *Ibid.*, 2.6.8; 3.6.1.
179. *RV*, 1.164.20-22, *VS*, 28.20.
180. *AB*, 7.35.4.
181. *AB*, 7.5.32; Cf. *AV*, 3.6.6 .
182. *AV*, 3.6.2.3; 8.8.5.
183. *Nighaṇṭu*, 1.12.
184. Choudhary, A. K., *AAFI*, p. 33.
185. *KS*, 12.12, *KS*, 3.11, *TB*, 1.8.5., *SB*, 5.5.4.10.
186. Choudhary and Ghosh, "Plant Remains from Harappa", *AI*, no. 7, pp. 14-16.
187. Vide *AI*, no.7, pp. .14-16.
188. *VS*, 21.30-31.
189. Choudhary, K. A. *op. cit.*, pp. 29-45.
190. *Ibid.*, p. 77.
191. *Nirukta*, 11.5.
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193. *ŚA*, 12.8.
194. *KS*, 30.2.9; *MS*, 4.13.7; *TB*, 2.6.17.7; 3.6.11.2.
195. *MS*, 3.15.3; *KS*, 5.13.1, *VS*, 25.3.
196. *AV*, 2.10.1-2.
197. *Ibid.*, 4.4.1 8.
198. *PGS*, 1.21.
199. *RV*, 1.53.8; *AV*, 20.21.8.
200. *KGS*, 2.6.9.
201. *Āp. DS*, 1.5.17.26.
202. *VS*, 19.23, *SB*, 5.5.4.10; *JB*, 2.15.6.5.
203. *AB*, 8.3.17.
204. *VS*, 24.2.
205. *TB*, 1.6.4.5; *ŚB*, 2.5.2.11.
206. *KS*, 1.10.13.
207. *TS*, 5.27.3-4; *ŚB*, 3.4.1.6; 4.3.36.
208. *ŚB*, 7.4.37-41.
209. *Āp. ŚS*, 1.2.30; *BŚS*, 4.1; *KSS*, 17.4.12.
210. *AI*, nos. 10-11, pp. 133-34.
211. *Ibid.*, pp. 130-33.
212. Vats, M. S., *op. cit.*, pp. 30-31.
213. *ŚB*, 13.4.4.9; Cf. *AV*, 8.8.3.
214. *RV*, 3.53.19; 3.15.19.
215. *AV*, 3.6.1; *KŚS*, 1.3.33; *TS*, 1.6.8.2-3.
216. *ŚB*, 5.4.4.12.
217. *ŚB*, 3.62.12.
218. *Ibid.*, 13.4.4.5-9.
219. *Ibid.*, 13.4.4.5-9; *AB*, 2.1.1.
220. *TS*, 3.5.7.1.
221. Banerjee, N. R., *IAI*, p. 17.
222. *TS*, 2.4.9.2; *KS*, 11.10.
223. *TS*, 2.4.1.2, *KS*, 11.10.
224. Marshall, S. J., *op. cit.*, Vol. II, p. 587.
225. *RV*, 10.85.20, *AV*, 14.1.61.
226. *Nirukta*, 12.8.
227. *TS*, 2.3.2.2-3, *MS*, 2.2.2; *KS*, 11.4; *TB*, 1.3.6.7; *BŚS*, 11.1, 13.23.
228. Choudhary, K. A., *op. cit.*, p. 55.
229. *AV*, 1.34.4., 6.102.3; *VI*, II, 122.
230. Vide Sharma, Priyavrata, *op. cit.*, p. 112.
231. *AV*, 5.12.2.
232. *ĀA*, 3.2.4; *ŚĀ*, 8.7.
233. *ŚGS*, 1.23.1.
234. *RV*, 1.191.10-13; *MS*, 4.9.1; *TA*, 4.2.5; 5.2.13.
235. *AV*, 5.15.1; 7.5.6.2.
236. *Ibid.*, 6.102.3; *AB*, 3.2.4; *ŚĀ*, 11.4.
237. *AB*, 6.102.3; *AB*, 3.2.4; *ŚA*, 11.4.
238. *CHU*, 6.12.1-3.



239. *SB*, 13.2.7.3.
240. *Ibid*.
241. *AB*, 7.5.30.
242. *Ibid.*, 7.5.31.
243. *TS*, 7.4.12.1; *VS*, 23.13.
244. *PE*, VII & Mookerjee, R. K., *Asoka*, p. 236.
245. *RV* 10.97.5; *AV*, 5.5.5; *SB*, 3.3.4.10; *PB*, 9.5.4.
246. *SB*, 6.6.3.7; 1.1.1.4.
247. *AB*, 2.1.1; *SB*, 13.4.4.5.10.
248. *AV*, 3.5.8; 18.5.53.
249. *TS*, 3.5.7.2; *MS*, 4.1.1; *KS*, 15.2; *TB*, 1.1.3.11; *PB*, 21.4.13.
250. *SB*, 13.4.4.5.10.
251. *TS*, 7.4.12.1; *AV*, 5.5.5; *SB*, 3.8.3.10-12; *TB*, 3.8.19.1; *AB*, 7.3.2.8.16.
252. *TS*, 6.3.10.2; *SB*, 3.8.32.
253. *AB*, 7.5.32; 8.3.16.
254. *AV*, 20.135.12; *GDS*, 1.23.
255. *Ajta*, 5.2.24.
256. *AV*, 4.37.3.
257. *PB*, 8.41.
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260. *Bh. SS*, 7.5.1.
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262. *MS*, 3.9.3; *JB*, 159, *KSS*, 6.19, *FSS*, 1.6.1.5; *Ap. SS*, 1.2.30; *PGS*, 1.21.
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273. *SB*, 2.1.4.5; 11.5.1.13; 13.8.4.1.
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300. *TS*, 5.2.8.7; *SB*, 6.1.2, 3.2.1.33.
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303. *Ibid.*, 7.5.32.
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315. *AV*, 3.6.6; *AB*, 7.5.32.
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325. *SB*, 2.1.2.11; *AB*, 5.15.
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327. *AV*, 4.35.5; 5.17.16.
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390. *AV*, 4.19.1.
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403. *BSS*, 6.1; *Ap. SS*, 10.34.
404. *CU*, 5.2.1.1. *JUB*, 3.7.2; 3.10.1
405. *TS*, 5.1.1.4.
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417. *VI*, I, 39.
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422. *TA*, 6.4.1.2.
423. *AV*, 4.34.5.
424. *RV*, 10.10.13; *PB*, 12-13.11; *Nirukta*, 6.28.
425. *AV*, 6.16.4.
426. *RV*, 6.16.13; [*AV*], 11.3.8; *SB*, 4.5.1.16.
427. *AV*, 12.1.24.
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430. *RV*, 10.184.2; *AV*, 3.32.4; *SB*, 4.1.5.16.
431. *RV*, 6.72.11; *AB*, 7.5.
432. *TS*, 5.5.14.1; *VS*, 2.4.31.
433. *RV*, 10.142.8; *TB*, 1.8.2.1.; *AB*, 3.2.4; *BU*, 2.3.10; *CU*, 1.6.7.
434. *TB*, 1.8.2.1.
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436. *Ibid.*, 6.106.1.
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438. *SB*, 10.5.1.5.
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## Birds and Animals

Hunting and fishing appear to have been the earliest means of livelihood of the primitive people, but later, with the development of civilisation, they began to domesticate animals, thus making pastoral occupations one of the main props of their livelihood. This period marked one of the stages of evolution preceding agriculture in which the animals played an important role. The stage of pastoralism is associated with unsettled life. It is also associated with economic backwardness or with the immigration of population into a new region where it is very difficult to practise agriculture. This was also the case with the early Vedic *Āryans*. Pastoralism is often a less stable economy than cultivation. It exists on the margins of sedentary areas with which it has close economic ties. Pastoral life is comparatively easy and agreeable where as agriculture is comparatively more arduous and tiresome and is never voluntarily adopted by people who have not been accustomed to it. The life of the pastoral people, on the contrary, is an almost unbroken holiday. Their herds and flocks supply them with all that they require and enable them to lead a tranquil indolent life. It existed in several regions where even agriculture supported a denser and more prosperous population. The problems concerning the domestication of animals and the use of livestock do not relate only to the pastoral economy since domesticated animals are possessed and used by varieties of people from hunters to plough cultivators.

### Utility of Birds and Animals

The animals supplied the items of food. These could be obtained from animals in two ways ; firstly, the cattle yielded milk which formed an important food item in different forms, such as, curd, butter and ghee. Varieties of preparations were cooked in combination with these dairy products. Secondly, they were slaughtered for obtaining meat. Among these the bull, the ram and the he-goat were important.<sup>1</sup> Some of them were slaughtered in sacrifices. The *Śatapatha Brāhmaṇa*<sup>2</sup> mentions that the animals could be multiplied and reared properly at a settled place. So the gods offered two oblations in the *gārhapatya* because it symbolises a house (*gr̥ha*) and it being a resting place, food gained by them in the form of animals did not go away from them. The same text further states that the cattle being food do not go away from the person who does not hurt them. Such persons do not suffer from hunger.<sup>3</sup> Animals have been identified with *Pūṣan* who signifies nourishment.<sup>4</sup> On the basis of these references to the animals yielding food items, Rau thinks that the possession of cattle was for the ancient *Āryans* a main source of food.<sup>5</sup> Though the animals were killed for obtaining meat, the *Śatapatha Brāhmaṇa* prohibits the consumption of the meat of some animals like *bos quarus*, *gayal*, camel and *sarabha*<sup>6</sup> (probably a kind of deer<sup>7</sup>).

A study of animal remains discovered from *Hastināpura*<sup>8</sup> (Pd. II) throws considerable light on the food habits of the people. The occurrence of charred bones of humped animals (buffalo, sheep and pig, etc.) bearing definite cut marks on them prove that these animals were slaughtered for food.<sup>9</sup> The use of beef and pork may perhaps be underlined since these items fell into disuse or their consumers began to be condemned. The *Yajur Saṃhitā*s and the *Brāhmaṇa* texts prescribe different kinds of animals with specific marks on their bodies as signs of their being fit to be slaughtered in sacrifices. The meat of such animals was enjoyed with relish even by the *brāhmaṇa* priests. But on account of the importance of cow, its slaughter was prohibited.<sup>10</sup>

The growth of vegetarianism was of course linked with the doctrine of non-violence. It was known in the days of the

*Upaniṣads* and was further encouraged by Buddhism and Jainism, which were largely responsible for the gradual disappearance of the greater Vedic sacrifices which were responsible for the killing of a large number of animals.

The early Vedic Āryans depended upon animals for their clothing because they had no knowledge of cotton. The *Rgveda* mentions that though they put on clothes woven of wool and other materials, still they used clothings made of leather. The later *Samhitās* also refer to both these materials of clothings. The *brahmacārins* and ascetics usually put on coverings made of the leather of the deer, tiger and lion. The sheep yielded different varieties of wool which were used as raw materials for making garments. The hair, bones and horns of animals were used for making several objects of personal use. Finger and ear-rings, hair pins and several such ornaments were made of their bones. Rings made of animal's horn have been discovered from Hastināpura.<sup>11</sup> Their hides were materials for making containers for storing grain and liquids. The *Śatapatha Brāhmaṇa* states that Vṛtra, on being struck, lay contracted like a bottle made of leather drained out of its contents, and like a leather bag with the barley meal shaken out.<sup>12</sup> The Vedic texts refer to some of the containers made of leather, such as, *dṛti*<sup>13</sup>, a bag to contain fluids. Milk and drinks were also stored in it.<sup>14</sup> *Bhastrā* denoted a leathern bottle.<sup>15</sup> Cords and ropes were also made out of leather for fastening the animals and also were used in chariots and carts.

In agriculture the animals played a significant role. Without oxen, fields could not be ploughed and forest lands could not be reclaimed. On account of this, these were considered as the very embodiment of grain.<sup>16</sup> For the growth of plants it was essential to provide them with nutrition. Cowdung served this purpose. The *Avestic* Iranians also considered the place very flourishing where flocks and herds yielded most of the dung.<sup>17</sup> The oxen, horses and the buffaloes were yoked to carts for transporting commodities from one place to another.

The animals increased the mobility of the people because these were used as beasts of burden and as the means of transport and communication. Oxen, camels, horses, mules, elephants



and asses, etc., were used for this purpose. Horses were the swiftest means of mobility; hence these were very useful on battlefields. Inland trade depended upon the beasts of burden because the commodities were transported by means of carts driven by oxen and other animals.

During the Vedic period there did not exist any real metallic coin as a medium of exchange. However, this purpose was served by means of animals, such as, the cow, sheep, goat, etc., which were used for exchanging commodities. In other Āryan societies like those of the Avestic Iranians, the animals were also used as the medium of exchange. The English term pecuniary, meaning money, is derived from the Latin word *pecu*, meaning the cattle. It corresponds to Sanskrit *paśu*. Even in the subsequent periods, the animals were used as the medium of exchange though there existed metallic coins.

In battles, the animals played a decisive role. The horses were yoked to chariots which were effective in many ways. The horse riders decided the fate of battles. The elephants also were used on battlefields. Tips of arrows were made of the bones of animals which have been discovered from Alamagirpur from the PGW levels.<sup>18</sup> Apart from these, the hides were used for making quivers, gloves, covers of chariots, scathes of swords and strings of bows.

In the religious life of the people, the animals held a prominent place. Even in the pre-Vedic times, the Indus valley people accorded respectful religious sanctity to them and worshipped them either as gods or their representatives or as their vehicles. The Vedic people attached great religious sanctity to them. In sacrifices, milk, curd, butter and ghee of cows were offered to the gods. In one of the Vedic texts, the reason of offering these dairy products has been explained. It has been stated that it is milk which living beings readily take when they are born. It bestows strength, stamina, glory and prosperity; so the sacrificer offers oblation of milk to the gods for gaining these boons, thinking that it signifies them.<sup>19</sup> It is on milk that the creatures subsist and are preserved; so they offer oblation of curd, the embodiment of preservation.<sup>20</sup> Ghee (*ghṛta*) is the essence of this universe for it is the sap of life of both waters and plants,

so by offering it as an oblation, the sacrificer gratifies the sacrificial fire by the life sap of this universe.<sup>21</sup> Also it was especially suitable for kindling the sacrificial fire on the altar.<sup>22</sup>

In sacrifices the hide of black antelope was used for making seats for the priests and sacrificers. It was put on as garment because it was considered as a sacred thing. It was considered to be the perfect form of sacrifices and the symbol of the four *Vedas*; so it was used for husking and brushing the sacrificial grain on it in order that nothing of oblation could get split.<sup>23</sup> Animals, such as, horses, pigs, oxen, sheep, goats, rams, camels and deer were prescribed to be slaughtered in sacrifices. These were also offered as *dakṣiṇā* to the priests. The cows were considered as the most sacred objects of gift. The Vedic literature refers to some of the characteristics of such animals. Rules were formulated for selecting particular kinds of animals to be offered in sacrifices or to the priests.<sup>24</sup> Some of the *Brāhmaṇa* texts mention that initiation into the sacrifice waits upon a man who is rich in cattle.<sup>25</sup> It obviously proves that a rich cattle owner could perform sacrifices. In some of the sacrifices slaughter of animals was optional, but in most of them it was essential.<sup>26</sup>

The practice of slaughter of animals in sacrifices was so deep rooted that the *Gṛhya* and the *Śrauta Sūtras* also elaborate the method of their immolation. *Agnisomiya* was a sacrifice relating to Agni and Soma. This rite was considered at the *prakṛti* (archetype) of all animal sacrifices.<sup>27</sup> *Sūlagava* was a rite in which the limbs of a slaughtered ox were offered to Rudra. It was mainly a domestic animal sacrifices.<sup>28</sup> In certain cases, the bull could be set free if the people disliked it being slaughtered.<sup>29</sup> A cow also could be an alternative.<sup>30</sup> This rite was performed in the autumn or spring outside the village after midnight or early in the morning.<sup>31</sup> The blood of the sacrificed bull or cow was offered to four quarters. The remaining portions were buried into the ground.<sup>32</sup> *Nirudhapaśubandha* was an independent rite which was considered as a model for animal sacrifices. It was performed once or twice a year<sup>33</sup> and continued for one or two days.<sup>34</sup> In it, the sacrificial victim was a goat. Its belly was cut open to draw out its omentum which being roasted was offered to Indra and Agni. The *Patniśaṃayāya* offerings were made with

the flesh of its tail.<sup>35</sup> *Kratupaśu* was one of the four basic features of *Somayāga*.<sup>36</sup>

The *Vājasaneyi Samhitā* informs that in the *asvamedha* the sacrificial animals were tied to the *yūpas* (posts). They all were domestic animals and their total number was 327. Similarly, 282 wild animals, ranging from an elephant to a fly, were tied to the stakes. These were confined to be freed after the completion of the sacrifice. The total number of the victim<sup>37</sup> animals was 609. It appears to be an exaggeration but it should be noted that the *asvamedha* was the most important tribal solemnity of rare occurrence and that every effort was made to perform it with all possible grandeur.

The method of sacrificing the animals was very cruel. The victim was tied to a stake (*yūpa*) made of *palāśa* or *khadira* or *udumbara* or *vilva* wood, the selection of the wood depending upon the boon one wished to obtain.<sup>38</sup> *Pāśa* or *rasanā* (noose) was used for strangling the victim; thereafter, it was loosened and the victim was pierced with some one-pronged fork.<sup>39</sup> *Parivyayaṇa* was a rite of putting a rope round the *yūpa* to which the victim was tied.<sup>40</sup> *Paryāṅgya* denoted a group of 12 animals whose limbs were tied to the limbs of the sacrificial horse with a board made of *plakṣa* wood.<sup>41</sup> *Samjñāpana* was the act of killing a sacrificial victim by choking or strangulating it with a halter round its throat stopping it from giving out a cry. It was a killing without causing a wound, i. e. it was a bloodless killing. It is an euphemistic technical term which means that the victim is made to give consent to its own killing. *Samjñaptahoma* was an oblation offered by the *adhvaryu* on the *āhavantiya* for the immolated animal in a sacrifice.<sup>42</sup> *Samitṛ* was the priest, who slaughtered the animals by suffocation or strangulation or by cutting it with a sharp weapon, such as, a knife or an axe. Sometimes the knife was fitted with blades on both sides.<sup>43</sup> The *Samitṛ* acted under the direction and command of a superior priest who directed (*vi-śās*) him to kill the victim.<sup>44</sup>

Though the slaughter of animals had got scriptural sanction, some rationalists considered it as useless and also as an act of cruelty. They vehemently criticised it. Some of the *Brāhmaṇa* texts prescribe the offering of grain to the gods instead of

slaughtering animals. In this context, it is worth referring to a statement contained in the *Śatapatha Brāhmaṇa*:<sup>45</sup> "At first the gods made of man as the sacrificial victim but sacrificial essence went out of him and entered into a horse. Subsequently it entered into an ox, a sheep and a goat. When the last mentioned animal was killed in a sacrifice, the sacrificial essence entered into the earth. The gods dug it up and found it in the forms of rice and barley." This text further states that these two varieties of grain signify sacrificial essence, so, by the offering of oblation made of rice and barley, one performs the "fivefold animal sacrifice."<sup>46</sup> When the rice cake still consists of rice meal, it is the hair. When the sacrificer pours water on it, it becomes skin. When he mixes it with the former it becomes flesh. When it is baked, it becomes bone, and when he is about to take it off the fire and sprinkles it with butter, it changes itself into marrow. This is the completeness which they call the fivefold animal sacrifice.<sup>47</sup>

The aforesaid statement enlightens us on the gradual refinement of the ideas of people concerning the sacrificial victims. On certain occasions, the sacrifice of an animal was only symbolic. In the *Varuṇapraghāsa*<sup>48</sup> rite in which a ram and an ewe were to be slaughtered in honour of Varuṇa, the figures of these animals were made of barley flour with their respective sex marks, and wool of *eḍaka* species of ram was to be struck to both of them. These reproductions of the figures of the two animals were slaughtered in this sacrifice, but not the real ram and ewe. In another sacrifice, the figurines of sheep (*meṣapratikṛti*) were made of *karambha* flour and were placed into the *āmikṣā*.<sup>49</sup>

The animals formed the bulk of material wealth and the person possessing several heads of cattle was accorded a respectful place in society.<sup>50</sup> On the occasion of the marriage of the daughter, cattle were offered as gifts. It was thought that food preserved the life, clothes protected the body from cold, the ornaments of gold beautified it but marriage helped in getting a large number of cattle.<sup>51</sup> The possession of chariots and carts driven by horses, oxen and mules was taken into account while judging the social status of a person.<sup>52</sup> The possession of an elephant was the mark of material prosperity. The animals left their mark on different aspects of the social life of the Vedic Āryans. Some

of the *Brāhmaṇa*<sup>53</sup> and the *Śrauta*<sup>54</sup> texts refer to a sacrifice called *gosava* which reminds us of a record of primitive promiscuity. It proves the impact of the behaviour of animals on the life of the Vedic Āryans. The performers of this ritual were required to 'behave like animals' (*paśuvrata*) for one year. It is of special interest because the rite involved incest with one's own mother, sister and women of one's own *gotra*. Though it had scriptural sanction, it was not performed because it went against the established moral conventions.

Animal husbandry was a factor in the formation of some social groups. The Vedic texts refer to *goṇī* (cowherdsman), *ajapāla* (goat herdsman), *aśvapa* (horse rearer), *hastipa* (elephant keeper) and *avipāla* (sheep herdsman). Rau thinks that they do not appear anywhere as the owners of the animals entrusted to them.<sup>55</sup> His view appears to be unconvincing. In some cases, as in that of *hastipa* and *aśvapa*, they might not have been the owners of animals. The *ajapālas*, *goṇīs* and *avipālas* might have possessed their own animals as they do even today. Some other social groups were also formed whose main concern was the slaughter of animals. For example, *samītṛ* a class of priests who killed the sacrificial victims and dismembered their bodies. *Goghāta* belonged to the class of butchers who slaughtered the animals for obtaining meat.

The Āryans had adopted different means of recreation. In this respect, birds and animals also helped them because they had made some of them as pet ones. They nourished different kinds of birds and animals.

The foregoing details show that the cattle and birds were very useful in the life of the later Vedic people. They formed the backbone of their economic life<sup>56</sup>, hence cattle lifting was a common practice. The person whose cow was lifted suffered from much loss. It has been remarked that if a man becomes unhappy losing even a single cow, the condition of a person who has lost many cows becomes unimaginably miserable. Prayers were offered to the goddess Rātri to ward off the dangers caused by the cow lifters.<sup>57</sup> The anger of the people against them has been expressed in a very harsh manner: "Whatever robber comes today, mischievous mortal enemy, let night go forth, encounter

him and smite away his neck and head. The robber who comes hitherward goes crushed and mutilated.<sup>58</sup>

The cattle were so indispensable that the existence of a house could not be imagined without them<sup>59</sup>. The people considered the possession of cows as the embodiment of vigour, so on the occasion of the *rājasūya*, one hundred or more cows were stationed to the north of *adhvaryu*. It was done for stimulating the king with vigour<sup>60</sup>. The cattle were considered to be the retinue of the priestly *brāhmaṇas* as most of them were not engaged in agricultural activities<sup>61</sup>.

Besides offering prayers to the gods for obtaining cattle, the people performed certain sacrifices for the same purpose. In a certain sacrifice, the recitation of a particular hymn ensured the *vaiśya* sacrificer the possession of cattle<sup>62</sup>. For this purpose, the *pragātha* was repeated with proper modulation of voice<sup>63</sup>. It was also prescribed that a person wishing to obtain the cattle should let the sacrificial post remain on the original spot even after the completion of the sacrifice<sup>64</sup>. By performing a certain rite, a man could get a greater number of cattle, but by performing a particular rite he could cause destruction of the cattle of others<sup>65</sup>. The priest, by reciting the hymns while altering the *padas*, gave the sacrificer a firm hold over the cattle. That is the reason why the man having obtained a footing among them, rules over them and enjoys them as they are at his disposal<sup>66</sup>. Some other rites are prescribed for obtaining the cattle<sup>67</sup>. In sacrifices, the sacrificer first asked for the cattle<sup>68</sup>, then for sons, health and longevity, but seldom for a seat in heaven after death. The *Āpastamba*<sup>69</sup> *Śrauta Sūtra* refers to *śakamprasthāyīya*, an ancillary rite of *darśa*, in which the priest proceeded, taking with him milkpails for offering an oblation with a desire of obtaining cattle for the sacrificer. Prayers were offered to the gods for letting the sacrificer's cattle be auspicious to him<sup>70</sup>. The Avestic Iranians also held the view that the earth felt most happy where there was a maximum increase of flocks and herds<sup>71</sup>.

### Classification

According to the classification of the whole creation<sup>72</sup>, the animals come under the *jīvaja* category because their procreation is possible by co-habitation. But the birds come under the

*aṇḍaja* class. The Vedic philosophers think that *prāṇa* (the vital life-force) and *citta* (mind) are the two characteristics of life which are found in them, but their mind is not so developed as those of the human beings, hence the animals are used by them after they have been properly trained by men.

What was the criterion for classifying the animals? They were divided into certain classes on the basis of their particular characteristics<sup>73</sup>. They were placed under three classes, viz., *vāyavya* (birds), *āranya* (wild beasts) and the *grāmya* (those which are domesticated). It is interesting to note that the *Avesta* has also classified the animals into three classes, such as, beast that live on the tops of mountains, and those that live under the shelter of stables. In both the classifications beast and domestic animals are common<sup>74</sup>. Wild beasts often created havoc in villages as they preyed upon both cattle and human beings<sup>75</sup>. The birds were also included in the class of *paśu* because they were also tamed for domestication. The *āranya* and *grāmya* classes were based upon the non-domestication and domestication of animals respectively.<sup>76</sup> Both classes of animals were desired because they were useful to human beings<sup>77</sup>. The tame and wild categories each had seven kinds which were generally considered as useful<sup>78</sup>. The characteristics of both classes of animals have been discussed in the Vedic texts. The domesticated animals were not allowed to remain with the ferocious beasts for fear of being injured by them<sup>79</sup>. The people wished to break the teeth and necks of such dreadful ones<sup>80</sup>.

The animals were classified on the basis of their physical characteristics, such as, the *ekasapha*<sup>81</sup> (whole-hoofed) for example, the horse and ass, and *kṣudra* (small creatures) such as, the goat and sheep<sup>82</sup>.

The *āranya* (forest animals) were classified into some sub-classes<sup>83</sup>, such as, the dreaded beasts, and winged creatures represented by birds like *hamsa* and *suparṇa*.

The animals were classified on the basis of their foot, such as, the *dvipād* and *catuspad*, having two and four feet, respectively<sup>84</sup>. The animals were generally *catuspad*<sup>85</sup>.

Further, the animals were classified on the basis of their eating habits<sup>86</sup>, such as, the *hastādānaḥ* (those which took hold with the hand), for example, the monkey and elephant, and *mukhādānaḥ*, animals which took their meals by mouth. *Kravyād* denoted the creatures which ate the flesh of dead ones. There were carnivorous animals, such as, the lion, tiger, Jackal and vulture.

The nature of work to be performed by animals was also a basis of their classification. *Prayogya*<sup>87</sup> seem to have been animals used for driving chariots and carts. Its equivalent term<sup>88</sup> was *vāhana*. In this class, horses, asses and bulls were included. *Vaha*<sup>89</sup> denoted those animals which were used for ploughing fields, such as, the oxen.

The animals were classified into several classes on the basis of their teeth<sup>90</sup>, such as, the *ubhayadantaḥ*<sup>91</sup>, meaning the animals having a double row of teeth, like the horse and ass<sup>92</sup>. *Anyatodantaḥ* had a single<sup>93</sup> row of teeth, such as, the sheep and goat. A study on the basis of classification of animals shows that the later Vedic people had minutely studied their different characteristics. Archaeological excavations have also confirmed the existence of these animals and birds during the period under study.

#### Vāvavya (birds)

The Indus seals, potteries and terracottas present to us a wide range of birds which were known to the people. The Vedic Āryans had acquaintance with several birds. Their first and the foremost utility was that they were used as food<sup>94</sup> because they could be easily hunted. But eating of the flesh of certain birds was forbidden during the period of the performance of certain rituals<sup>95</sup>. Such birds were destructive in the sense that they devoured grain and damaged the crops. There were professional hunters to catch and kill them<sup>96</sup>. In the religious life, the birds had some significance. *Garuḍa*, *suparṇa* and *hamsa* being the vehicles of gods, presented some mystic symbols. The *Yajur Samhitās* and the *Brāhmaṇa* texts prescribe altars so designed as to represent the shape of different birds<sup>97</sup>. It was supposed that the shape of the altar would yield specific type of result for the sacrificer. It is interesting to note that some of the altars designed on the shape of the *śyena* have been discovered at



Kauśāmbi<sup>98</sup>. Besides, the flights of birds were closely watched because they were interpreted as the indications of the will of gods or of future events<sup>99</sup>. They were considered as the messengers of the seasons, hence particular birds were prescribed to be sacrificed in different seasons<sup>100</sup>. Some birds stood for good omen, while some others like the owl and ove were the harbingers of evil. Such beliefs were prevalent in some other ancient societies as well<sup>101</sup>.

The birds were termed as *pakṣi* because they had wings. They were known as *vihaṅga* because they flew in the sky. *Suparṇa* was a general term for birds having beautiful wings. The strength of birds depends upon their wings because they fly and move when they contract and stretch their wings<sup>102</sup>. The *Dharma Sūtras* classify them into three main classes, namely, *vikira* (*viṣkira* or *viviṣkira*), *pratuda* and *kravyāda*. *Viṣkira* denotes those birds which eat insects, corn, etc., after scattering them with their legs. Baudhāyana enumerates *tittira*, *kapota*, *kapiñjala*, *mayūra* and *vāraṇa* under this class<sup>103</sup>. *Pratuda* denotes those birds which eat things after pecking them with their beaks. *Kravyāda* is the name of those which eat only flesh, such as, *gṛdhra*, etc. Other minor birds are *raktapāda* (having red-legs), *raktatuṇḍa* (having red beaks) and *jālapāda* (web-footed).

*Balāka* (*baka*) was an aquatic bird which lived on trees by the side of tanks and rivers. It was noted for its white colour and it lived on aquatic creatures. Its feminine was *balākā*<sup>104</sup> which was a sacrificial victim offered to *Vāya*, but *balāka* was offered to the sun<sup>105</sup>. Personal names were given after it, such as, Gārgya Bālāki. *Kaṅka* was a similar bird which is identified with the heron. In sacrifices, it was dedicated to the quarters as it flew in different directions<sup>106</sup>. The concentration with which it waits to catch fish, its food, has become proverbial<sup>107</sup> (*kaṅka-citta*). Such concentration as that of the heron was to be attained by the *yogis*. In the *Gautama Dharma Sūtra* the eating of its flesh has been prohibited<sup>108</sup>.

*Gṛdhra*<sup>109</sup> was characterised by its swift flights and fondness for carrion<sup>110</sup>. Its eyes were sharp enough to see things lying even at distant places, hence it became the symbol of greed<sup>111</sup>. As it

ate the flesh of dead bodies so it was considered as an inauspicious bird.

*Haṃsa* (goose) was one of the most commonly known birds of the Vedic Āryans<sup>112</sup>. Like *balāka*, it was also an aquatic bird<sup>113</sup> (*udapruta*) and flew high in the sky<sup>114</sup>. Its colour was generally white but its sub-variety had blue colour on its back (*nilapṛṣṭha*)<sup>115</sup>. Such a *haṃsa* appeared very beautiful. It is the only bird which was credited with the power to separate *soma* juice from water<sup>116</sup>. Later *soma* was replaced with milk and the bird's power to separate it from water became a popular simile to be used to exemplify the power of discrimination. It is suggested that actually the goose cannot do like that. It resided in lakes or big tanks abounding in lotus. When it sat on the stalks and pecked it, a juice was exuded, which was designated by the term *kṣīra*. It also came to be known as a term used for milk. Thus the bird, as it floats on the lake, may be said to drink milk out of water<sup>117</sup>. In the *Yajur Saṃhitā*s it is mentioned as a sacrificial victim offered to Vāta<sup>118</sup> and Soma. On account of its white colour it was considered as a symbol of purity.<sup>119</sup> The use of its meat has been prohibited by Gautama<sup>120</sup>.

*Koka*<sup>121</sup> (*pika*)<sup>122</sup> is identified with *koel*. Though black in colour, it appeared very beautiful. In Indo-European languages similar terms indicated it; such as, *kokkue* in Greek and *coculus* in Latin. Personal names were given after it, such as, *Koka*<sup>123</sup> who was a prince. Its special characteristic was that it sang only in spring and remained silent the rest of the year. That is why it was considered as the harbinger of spring. Its feminine was *kokilā* whose melodious notes have been much praised.

*Kapota*<sup>124</sup> (pigeon) is a familiar bird which was known to the Indus valley people.<sup>125</sup> In the Vedic texts it has been mentioned since the *Rgveda* onwards<sup>126</sup>. Considered as a bird of ill-luck, it was feared as the messenger of death<sup>127</sup>. In other Indo-Āryan societies also it was known in the same sense. Its accidental arrival in the house was considered as a bad omen. In order to ward off its evil effects, prayers were offered to the gods<sup>128</sup>. It has been associated with *Yama*, the god of death<sup>129</sup>. In Greece, it was termed as *parra*, which means the harbinger of death<sup>130</sup>.

It was known as *pārevata* which, in vernaculars, is *parevā*. Its colour is either dark grey or white. In the *asvamedha* it was dedicated to Varuṇa<sup>131</sup>. Its meat was not consumed.

*Kalaviṅka*<sup>132</sup> (sparrow) was considerably a bird of small size which is known as *gauraiyā* in Hindi dialects. It was known to the Harappans<sup>133</sup>. In colour, this bird generally was brown. It lived in nests made by it in human habitations. In sacrifices, it was a victim to summer<sup>134</sup>. The notes of this bird have been compared with the stammering of a drunken person.

*Kapiñjala*<sup>135</sup> (francoline partridge) was a famous bird. It is known as the white heron (*svetabaka*)<sup>136</sup>. In sacrifices it was dedicated to spring<sup>137</sup>. It appeared mainly during this season. The *Rgveda* considers it as a very auspicious bird which heralded good fortune<sup>138</sup>. It has been compared with a priest because it chanted melodious notes which sounded as sweet as the recitation of hymns by the priests.<sup>139</sup> Its every act was considered to be auspicious<sup>140</sup>. It was called *kapiñjala* because it was swift like a monkey, or it was slightly brown, or it produced a melodious note<sup>141</sup>. Its cooked flesh was offered to the child at *anna-prāśana*<sup>142</sup>.

*Kukkuta* (cock) is a very useful domesticated bird which was known to the Harappans<sup>143</sup>. Perhaps the most widely appreciated of pre-historic India's gift to the world is the domestic fowl. Ornithologists have agreed that all domestic species descend from the wild Indian jungle fowl<sup>144</sup>. The Harappā people knew the domestic fowl, though its remains are few and it is not depicted on the seals. It was probably first tamed by neolithic Indians in the Ganges valley, whence it found its way by the Burma route to China, where it appeared in the middle of the 2nd millenium B.C. The Egyptians knew it at about the same time as a rare luxury bird. It has not been mentioned in the *Rgveda* but references to it have been made since the *Yajur Samhitās* onwards<sup>145</sup>. It had its other names, such as, *kutaru*<sup>146</sup> and *kukaran*<sup>147</sup>. It was termed as the *pārodarśa*<sup>148</sup> because it foresaw the sunrise and uttered its notes early in the morning. Its another term *kṛkavāku*<sup>149</sup> has affinity with its name in other Indo-European languages, such as, *Zend kaharkas*, *Pas cirka* and *Greek kepkos*<sup>150</sup>. In ancient Iran it was considered as a very

sacred bird. It appears that it was brought to Greece from Persia where it was known as the Persian bird. In the *Yajur Samhitās* it has been dedicated to the sun as it heralded its rise in the morning<sup>151</sup>. Sometimes it was dedicated to Agni because its plumage was red<sup>152</sup>. It was dedicated to the goddess Anumati<sup>153</sup>. It was either black or red or white or of mixed colours. It appears that cock was domesticated, but its wild variety was also known as in the early Pāli texts the *grāmyakukkuṭa*<sup>154</sup> has been differentiated from the *āranya* one. The domesticated cock was tastefully eaten. It is very difficult to say whether the eggs were consumed or not, as there is not even a single reference to this in the Vedic texts. The melodious but firm notes of the cock were used as a simile describing the person who spoke in sweet but firm voice<sup>155</sup>.

*Krauñca*<sup>156</sup> has been identified with curlew or snipe. It had the power of extracting milk from water when the two fluids were mixed together<sup>157</sup>. In this capacity it was similar to *hamsa*. In the *aśvamedha* it was dedicated to Indraṅgni<sup>158</sup>. During the post-Vedic times the pair of *krauñca* had inspired Vālmīki to write his immortal epic the *Rāmāyaṇa*.

*Kuṣītaka*<sup>159</sup> was an aquatic bird which is identified with the sea-crow. Names of persons were given after it, such as, Kuṣītaka and his son Kauṣītaki both of whom were philosophers<sup>160</sup>.

The *mataci*<sup>161</sup> had destroyed standing crops in the Kuru country, and consequently had caused famine. Śaṅkarācārya thinks that it meant thunder-bolt, while Ānandatīrtha takes it for hailstorm. In the *Śabdakalpadruma*, it has been mentioned as a kind of a small red bird. Jacobi suggests it to be an insect. If we accept his interpretation it appears that it was not a bird at all.

*Mayūra* (peacock) was a favourite bird of the people in the days of the Harappan culture which is obvious from its motifs depicted on earthen pots<sup>162</sup>. In the Vedic texts it has been mentioned from the *Rgveda* onwards<sup>163</sup>. Its multi-coloured tail made it an attractive bird. Its feathers were used in charms and were put on in the head-dress. Its meat was very delicious. In the *aśvamedha* it was dedicated to Mitra.<sup>164</sup> Indra has been invited

to come to the devotee joyfully like a peacock with its upraised tails<sup>165</sup>. The peacock was a wild bird which was abundantly found in the forests. During the post-Vedic times, it was exported to the west Asian countries as a highly prized commodity. In the Jātaka stories we read of whole villages crowded with peacock rearers, who supplied their birds to kings and wealthy people, at first largely for food but later chiefly for ornament<sup>166</sup>.

*Śakuna*<sup>167</sup> was small in size and was considered as a bird forecasting future happenings. Its arrival in the house followed by its notes indicated the arrival of a guest<sup>168</sup>. *Śakuna* was the crow as its colour was black (*kṛṣṇa*)<sup>169</sup>. It was also known as *kāka*<sup>170</sup> and *vāyas*<sup>171</sup>. *Sakunī* was smaller in size and it foretold ill-luck.<sup>172</sup> Some Vedic hymns were recited in certain sacrifices early in the morning before its notes could be heard<sup>173</sup>. *Śakuna* was a sacrificial victim in the *āsvamedha*<sup>174</sup>. Personal names also were given after it, such as, *Śakunī* who was the son of king Subala of Gandhāra.

*Śakunta*<sup>175</sup> was a small bird, whose still smaller varieties were known as *śakuntaka* and *śakuntikā*<sup>176</sup>. *Śakuntī* was the feminine of *śakunta* which was considered as a bird of omen<sup>177</sup>. Personal names<sup>178</sup> also were given after it, such as, *Śakuntalā*. The *śakuntikā* was characterised by its swift and unstable movements and notes.

*Suparṇa* is the most important bird in the Vedic literature and has been mentioned in detail. It was so called on account of its beautiful wings (*su-parṇa*)<sup>179</sup>. It was famous for its swift flights in the upper sky. On account of that, it was considered as the symbol of the sun and the vehicle of Viṣṇu. Like *hamsa* and *krauñca*, it was also credited with the power to separate milk from water<sup>180</sup>. *Mahāsuparṇa* was its larger variety<sup>181</sup>. Generally *suparṇa* is identified with the eagle which was an Indo-European bird. Its names in Indo-Asiatic and European languages have close affinity to each other, such as *śyena* in Sanskrit, *saena* in *Zend* and *sin* in Armenian<sup>182</sup>.

*Suparṇa* was considered as the child of *śyena*<sup>183</sup>, but sometimes it has been differentiated from the latter<sup>184</sup>. *Śyena* was a strong bird which preyed upon other birds and has been

mentioned as the swiftest among the birds<sup>185</sup>. It was a terror to smaller birds<sup>186</sup>.

It is essential to discuss the nature of *suparṇa* and *śyena*, In the Vedic texts, both stand<sup>187</sup> for the eagle, which was a swift flying bird. Both were related to each other and both the terms became interchangeable<sup>188</sup>. The swift flying *śyena* was supposed to bring *soma* from heaven<sup>189</sup>, and the *suparṇa* was supposed to bring nectar. In certain sacrifices, both had religious significance as sacrificial altars were made of their models<sup>190</sup>. The flying *śyena* symbolised the sacrificers ascent to heaven. In sacrifices, *suparṇa* was dedicated to Parjanya<sup>191</sup>. In other cultures also the eagle was considered as a sacred bird, such as, in Harappā, Egypt, Sumer and Greece<sup>192</sup>. *Suparṇa* was termed as *garuḍa*. It was a natural enemy of the snake. This account goes back to the Harappan culture which subsequently was developed in the Vedic and post-Vedic texts. A seal from Harappā contains the figure of an eagle on whose two outstretched wings there are two snakes. Possibly, it is the proto-historic prototype of *garuḍa* which, as a *vāha* of Viṣṇu is often represented as flying with a snake in its beaks<sup>193</sup>.

*Suka* (parrot) is a very ancient bird which was domesticated even in the Indus valley<sup>194</sup>. It was a very intelligent bird which imitated the notes of its nourisher. Its body was slightly green with a red mouth. It was trained to utter words distinctly like a human being. That is why it was termed as the *puruṣavāk*. On account of this capacity, in the *aśvamedha*, it was dedicated to Sarasvatī, the goddess of speech and learning<sup>195</sup>.

*Tittira* (partridge) was a well-known bird which has been mentioned several times in the Vedic texts<sup>196</sup>. It had variegated<sup>197</sup> plumage. It was known as *tittira* on account of its hopping or because it had spots of the size of a sesamum seed on its body<sup>198</sup>. In other Indo-European societies it was well known as *tedzrev* in Persian and *tetrao* in Latin<sup>199</sup>. It had sacrificial importance and in the *aśvamedha* it was dedicated to the rainy season<sup>200</sup> or to the serpent<sup>201</sup>. This bird was so famous that some of the Vedic texts got their titles after it; for example, the *Taittirīya Saṃhitā*, *Taittirīya Upaniṣad* and the *Taittirīya Āraṇyaka*. Its flesh was used as food for a child at the *annaprāśana* and was

prescribed for those who were desirous of spiritual eminence<sup>202</sup>.

*Ulúka* (owl) is identified with *ullú* in the north Indian vernaculars. In Latin it was named by a similar term *ulúla*. Its main characteristic is that in the day it remains in its nest but comes out of it at night. It was known to the Harappans<sup>203</sup>. Among the birds, it is considered as the dullest, so it is often used as a symbol of dullness. But it is a purely Indian superstition. In Europe it is traditionally the emblem of wisdom, like *kapota*. It was also considered as an inauspicious<sup>204</sup> bird. In sacrifices it was dedicated to plants<sup>205</sup>.

Besides these, some other important birds have been mentioned in the Vedic texts, though some of them have not been identified. *Varttika*<sup>206</sup> has been identified with the quail and it was dedicated to autumn, indicating that it mainly appeared in that season, *Kakara*<sup>207</sup> and *vikakara*<sup>208</sup> were dedicated to winter, so it seems that those were the birds of the winter season<sup>209</sup>. *Madgunjalakāka*<sup>210</sup> was an aquatic bird which dived deep into the water, and it was dedicated to Mitra in sacrifices. It may be identified with *jalamurgi* (in Hindi). *Cakravāka*<sup>211</sup> (*cakavā* in dialects) was a very famous bird which was dedicated to Varuṇa. So we can surmise that it was also an aquatic bird. In the *aśvamedha* it was dedicated to echo because its cries for *cakravāki* was very<sup>212</sup> loud. The *cakravāka* couple was considered as symbolic of conjugal<sup>213</sup> love and constancy. *Casa*, a blue bird, was dedicated to Somāgni<sup>214</sup>. *Lava*<sup>215</sup>, *kulikā*<sup>216</sup>, *pāruṣṇa*<sup>217</sup> and *goṣādi* (*mainā*) were dedicated to Soma. Tvaṣṭṛ, Agni and Devī, respectively. Like *śuka*, *goṣādi* was a very intelligent bird which would quickly imitate the notes of other birds or human speeches. *Sicapuḥ*<sup>218</sup>, *jatuh*<sup>219</sup> and *dātyuḥ*<sup>220</sup> were dedicated to the nights and the months. *Āri*<sup>221</sup>, *vahasa*<sup>222</sup>, and *darvidā*<sup>223</sup> (woodpecker) were dedicated to Vāyu. *Pañga-rāja*<sup>224</sup>, *alakṣu*<sup>225</sup> and *plava*<sup>226</sup> were dedicated to Bṛhaspati, Antarikṣa and the river goddess, respectively. *Sarga*<sup>227</sup>, *Sṛījay*<sup>228</sup> and *syandaka*<sup>229</sup> were sacrificial victims to Mitra. *Kālakā*<sup>230</sup> was dedicated to Vanaspati. *Kulipaya*, an aquatic bird, was dedicated to the<sup>231</sup> sea. *Suśilika*<sup>232</sup>, *jahaka*<sup>233</sup>, *ordra*<sup>234</sup> and *kvaci* have not been identified,

**Āraṇyapaśu (wild animals)**

In the *Sam'itās* there are several prayers which were offered to the gods for restraining the wild beasts from entering the villages, *goṣṭhas* and agricultural fields<sup>235</sup>. Hunting was a favourite pastime of the people<sup>236</sup>. There are several similes in the Vedic texts which indicate the practice of hunting on a considerably large scale. The term *mārgara* (enemy of the wild animal) denoted a hunter.<sup>237</sup> Mostly deer (*mṛga*) were preferred for hunting in which bows, arrows, nets<sup>238</sup> and some other instruments were very useful. The nobles hired dog-keepers who with their ferocious hounds obviously drove the beasts towards the hunters<sup>239</sup>. The method adopted by professional hunters was hardly sportsmanlike. They caught the animals in pits (*āvrska*)<sup>240</sup> or enticed them with bait (*bimba*)<sup>241</sup> in order to kill them from a covered hide (*ākha*)<sup>242</sup> or with poisoned arrows<sup>243</sup>. Hunting while creeping was also in practice<sup>244</sup>. The bird-catchers used noose (*pāśa*)<sup>245</sup> and notes (*nidhā*)<sup>246</sup> to catch them.

*Gomṛga*<sup>247</sup> is identified with *gavaeus* which is a species of wild animal found in forests and mountainous regions. It is also identified with *ṛṣya* or *nilagāya*, but it is to be noted that *gavaya* and *ṛṣya* are not identical as they have been differentiated from each other<sup>248</sup>. *Gomṛga* has been dedicated to Vāyu<sup>249</sup>. Its leather was used in the *aśvamedha*<sup>250</sup>.

*Hariṇa*<sup>251</sup> (deer) has been mentioned in the Vedic literature in different contexts. It was known to the Harappans who have delicately depicted their graceful figures on their potteries<sup>252</sup>. Possibly, they killed them for meat or had domesticated them as pet animals. During the Vedic times the deer were the usual target of hunters because their meat was soft, delicious and easily digestible. Their hide was used as spread in houses or on the sacrificial ground. They were very fond of eating barley and usually destroyed the standing<sup>253</sup> crops. Their horns were of different shapes and were supposed to contain medicinal ingredients<sup>254</sup>. Amulets made out of them were worn by persons suffering from specific ailments<sup>255</sup>. The *Vājasaneyi Saṃhitā* mentions different varieties of deer which were dedicated to the gods in sacrifices<sup>256</sup>. For example, *ṛṣya* (black deer) was dedicated to Vasus, *ruru* (stag) to Rudra, *nyaṅku* to Āditya, *pr̥ṣat* (spotted



deer) to different gods, and *kuliṅga* (antelope) to Sandhyā. *Ruru* was one of the varieties of deer.<sup>257</sup> *Ṛṣya* was a whitefooted deer, and *nyaṅku* was considerably of small size<sup>258</sup>. The discovery of the bone remains of the deer from Hastināpura<sup>259</sup> (Pds. 2nd and 3rd) with cut marks with sharp instruments apparently shows that they were killed for meat.

The most sacred species of *hariṇa* was *kṛṣṇamṛga* whose hide was considered fit for spreading on the sacrificial ground and for use by priests and ascetics as their garments<sup>260</sup>. *Kṛṣṇaviṣṇa* was the horn of this variety of deer<sup>261</sup>. *Kaṇḍuyāni* was made of it which was used by an initiated sacrificer for scratching himself when necessary<sup>262</sup>. In certain sacrifices the sacrificer gathered the sacrificial clay in the skin of black deer which itself was considered as a sacrifice.

*Hastin*<sup>263</sup> (elephant) is one of the mightiest animals. In India it was tamed even during the proto-historic times as the seals of the Indus valley culture bear their figures<sup>264</sup>. The occurrence of a manger in front of an elephant on a seal discovered from Mohenjodaro, proves that there the animal was fed. Its figures have been depicted on the seals found from Lothal which was an important ivory exporting centre. It may be mentioned that Saurāṣṭra was rich in elephants even in the early historic period<sup>265</sup>. From Kalibangan lumps of clay with seal impressions of the figure of an elephant have been found in which it is caparisoned<sup>266</sup>. This animal rarely breeds in captivity, and, therefore, it had to be hunted and captured alive. Special forest tracts were designated as elephant preserves, inhabited by trackers, hunters and tamers, in the employ of the king. Generally, the ownership of elephants was confined to kings and chiefs. Peasants living in the vicinity of elephant forests must have cursed the depredations of these beasts, which would frequently leave the jungle to raid the clearings. The *Rgveda* refers to them in different contexts. The early Vedic Āryans were acquainted with these animals as they abounded in the region in which they were settled<sup>267</sup>. The splendour of Agni has been compared with the splendour of an elephant<sup>268</sup>. *Ibha* was the most common term for this animal<sup>269</sup>, and its possessor, termed as the *ibhya*<sup>270</sup>, was a wealthy person. The *Rgveda* qualifies them as disciplined

and obedient which goes to prove that they were duly trained<sup>271</sup>. They were deployed on the battle-fields<sup>272</sup>. Their habits attracted the attention of the people. The usual irritants of an elephant were the flies<sup>273</sup>. The habit of an elephant of scattering dust on its body has been well described<sup>274</sup>. The she-elephant was used for capturing the male ones<sup>275</sup>.

Religious sanctity was attached to the elephant which was considered as the vehicle of Indra. It was the symbol of royalty and was possessed by kings and nobles<sup>276</sup>. On account of its massive physique and power it had a prominent place among the wild animals<sup>277</sup>. Its name has been mentioned along with the monkey and the human beings in the sense that all these take hold of things by the hand<sup>278</sup>, the trunk of the elephant being regarded as its hand. Its black colour and white tusks tipped with gold beautified its body<sup>279</sup>.

In the later Vedic texts, references to the elephants are numerous because they were found abundantly in the dense forests of the eastern region. They were tamed and trained for being deployed on the battle-field. It is obvious from this fact that Rudra has been mentioned as sitting in a stronghold on the back of an elephant to fight his enemy therefrom<sup>280</sup>. The stronghold appears to be the *haudā* in which the warriors sat to discharge arrows on the enemy. *Hastipa* was the elephant-attendant<sup>281</sup> who looked after it. In the *śvamedha* it was a sacrificial victim to Prajāpati<sup>282</sup>, and sometimes to the Himavān<sup>283</sup>, presumably on account of its massive body or its abundance in the Himālayan region. During the later Vedic period its importance was greatly appreciated. In the *Atharva Veda* there is a complete *sūkta* describing the taming of the elephant. In the *Brāhmaṇa* texts, it has been mentioned as an object of gift to be offered to the priests. King Aṅga and Dauṣṇanti had offered ten thousand elephants to the brāhmaṇas on the occasion of the performance of the *śvamedha*<sup>284</sup>. By the time of the Buddha, the elephants assumed full importance on the battle-field and became indispensable instrument in demolishing the city walls and gates which explains why they got the epithet of *purabhetṭā*<sup>285</sup>.

*Khaṅga* (*khaḍga*), rhinoceros was a beast of dense marshy forests. In the Indus valley it was found in large number. Its

representations appear on the Indus seals. It has not been mentioned in the *Rgveda*, but the later *Samhitās*<sup>286</sup> refer to it. In the *Saṅkhāyana Śrauta Sūtra*<sup>287</sup> the hide of rhinoceros is mentioned as the covering of a chariot. Baudhāyana prohibits the eating of its flesh though Āpastamba permits to consume it. Vasiṣṭha refers to the difference of opinion on the prohibition of its flesh<sup>288</sup>. Āpastamba commends the feeding of brāhmaṇas with the flesh of *khadga*<sup>289</sup>.

*Kapi* (monkey) is a very ancient beast which was known to the Harappans<sup>290</sup>. Usually, the monkeys lived in forests and destroyed the standing crops of the neighbouring fields. They devoured the fruits of trees and other things, hence, economically they were very harmful. Dogs have been mentioned as their natural enemies, so they are usually employed to ward the monkeys off from the villages and agricultural fields<sup>291</sup>. The monkeys were subsequently tamed as pet animals and were trained to perform acrobatic exercises for the recreation of the people. In *aśvamedha*, it was dedicated to the king, presumably because both of them were equally fickle-minded<sup>292</sup>.

*Nakula* (mongoose) is a small creature, and generally its colour is brown. It was well-known to the Indus valley<sup>293</sup> people because its bone remains have been found at Mohenjodaro and Harappā<sup>294</sup>. This species is till now widely distributed in India. It is of the class of *h. auropunctatus*. The main characteristic, for which it is famous, is its skill which is probably supposed to enable it to bite the serpent into pieces and again to join them together<sup>295</sup>. It proves that *nakula* is the natural enemy of the serpent. In consideration of this, it was used to remove the poison on account of snake bite<sup>296</sup>. In the *aśvamedha* it was dedicated to Púṣan, the pastoral god<sup>297</sup>.

*Rkṣa* (bear) was known to the people since the days of the *Rgveda*<sup>298</sup>. It was black in colour and its body rather hairy. It had the capacity to climb a tree swiftly. Possibly, it was tamed and trained to perform acrobatic feasts.

*Sarabha*<sup>299</sup> is a fabulous, eight-legged beast, dwelling in the snowy mountains. It was a foe of lions and elephants. It has been described as akin to the goat<sup>300</sup>. The authors of the Vedic Index identify it with a kind of deer<sup>301</sup>.

*Saśa*<sup>302</sup> (hare) was a small creature which was known to the Harappans<sup>303</sup>. It had very soft hair on its body. In colour, it was either white or brown. It had the capacity to run faster than the dogs. Its meat was very soft and delicious. In the later Vedic texts it has been mentioned several times<sup>304</sup>.

*Simha*<sup>305</sup> (lion) is one of the mightiest and most ferocious beasts. It is a terror even to the elephants. On account of its might and cruelty it has been considered as the emperor among the beasts<sup>306</sup>. The term *simha* has been derived from the root *hims* (to injure) or *han* (to kill).<sup>307</sup> Its roars were so loud that those were compared with the sounds of a drum<sup>308</sup>. It was found in dense forests and hills<sup>309</sup>, where water was easily available. It was so strong and ferocious that it killed even an elephant. It was very dangerous to animals and human beings<sup>310</sup>. In Homeric Greece also it was considered as a dangerous beast which attacked the cattle in pastures and woodlands<sup>311</sup>. On account of its superior strength and prowess, it was a usual simile to lay stress on the might of an emperor (*simhapratiko*)<sup>312</sup>.

It is generally believed that lion is an Afro-Asiatic beast. In Indo-Germanic languages its name is not found. Even its Sanskrit term *simha* has not been traced to Indo-European root, and Greeks also knew it by an undoubted loan word which was derived from Hebrew *laish*, so, it is inferred that lion was not known to the Indo-Europeans. The Indo-Iranians, while yet united, had not made an acquaintance with the lion because its name does not occur in the *Avesta*<sup>313</sup>. It appears that the Rgvedic Āryans saw them in the Punjab.

*Śṛgāla*<sup>314</sup> or *kroṣṭa*<sup>315</sup> (jackal) was a small creature of the size of a dog. It belonged to the class of the wolf. Its epithet was *gomāyú*, meaning lowing like a cow. It hid itself in bushes and was very skilful in lifting kids and other small creatures. In sacrifices it was dedicated to Anumati<sup>316</sup>. It was regarded as extremely abominable. Baudhāyana states that a mark representing this animal should be made on the forehead of a brāhmaṇa who has committed the sin of *brahmahatyā*, etc, before he has been banished from his house<sup>317</sup>.

*Vyāghra* (tiger) is a very dangerous beast. In the *Rgveda*

there is no mention of it. In the *Avesta* it has not been mentioned as a beast of prey<sup>318</sup>. For the first time it has been referred to in the *Atharva Veda*<sup>319</sup>. The fact that the Ṛgvedic Āryans had no knowledge of tiger in the Punjab does not prove its non-existence in that region, because there are archaeological evidences to prove that it was well-known to the Harappans<sup>320</sup>. What may be the explanation for this? It appears that in the forests of the Punjab there were a few tigers and the early Vedic Āryans did not mention them because the *Ṛgveda* is a book of prayers. On the other hand, the later Vedic texts were composed in eastern India where mention of tigers is very common. It was known as *vyāghra* because it had the habit of smelling things or it found out its prey by smelling<sup>321</sup>. It was termed as *puruṣād*<sup>322</sup>, (man eater) so prayers were offered to the gods to ward it off from human habitations. The people attempted to kill them or to break<sup>323</sup> their limbs. It was considered as an embodiment of cruelty and rapacity, and was the symbol of death<sup>324</sup>. Its two frontal outstretched teeth were very fearful and dangerous<sup>325</sup>. Its colour was slightly yellowish with black stripes on the body, so it was considered as the image of beauty<sup>326</sup>. On account of its prowess, it was considered as the king among the beasts. Its hide was spread on sacrificial ground on the occasion of the performance of the *rājasūya*. It was supposed that the hide would spread the sacrificer's realm making its foundations solid<sup>327</sup>.

*Vṛka*<sup>328</sup> (wolf) was known to the people since the *Ṛgveda* and onwards. In colour it was reddish (*arūṇa*)<sup>329</sup>. It was the natural enemy of goats, sheep and calves. It went to the villages at night and preyed upon them<sup>330</sup>. Even in the day time, it attacked them. It was dangerous to human beings, hence, prayers were offered for its removal to distant places<sup>331</sup>.

*Vṛṣadamśa*<sup>332</sup> (cat) was a small semi-wild creature and was known to the Harappans<sup>333</sup>. It was of different colours, such as, black, white and grey. In appearance, it was like a small tiger. Its habit was to move from house to house<sup>334</sup>. Its teeth were very sharp and strong<sup>335</sup> with which it preyed upon rats. From the economic point of view, it was useful, because it reduced the number of rats which devoured the grain of cultivator.

#### Grāmyapaśu

In the agro-pastoral society of the later Vedic Āryans, the

animals played an important role. In comparison with the *Rgveda*, the later Vedic texts throw more light on different aspects of animal husbandry. Archaeological evidences also corroborate the data supplied by them. Though the later Vedic texts enumerate the cow, the horse, the goat and the ram as the most useful for domestic purpose<sup>336</sup>, yet not less importance was accorded to other numerous animals as noted below :

*Aja*<sup>337</sup> (goat) was a small but useful animal which was termed as *chāga*<sup>338</sup> and *basta*<sup>339</sup>. *Ajā* was the she-goat. *Mahā-aja* denoted considerably larger and improved breed of the goat<sup>340</sup>. The goat accompanied the sheep as a domestic animal (*ajāvayaḥ*) and was put to similar uses<sup>341</sup>. Among the animals, it was accorded the status of the *brāhmaṇa*<sup>342</sup>, because it was a simple creature, and further, it was considered as the *vāhana* of Agni, who was the most sacred deity of the Vedic Āryans. For pleasing the gods, goats were slaughtered in several sacrifices<sup>343</sup>. It was supposed that the hornless and bearded he-goat had the characteristic of five sacrificial animals, so, if the latter were not available, such a goat alone could be slaughtered<sup>344</sup>. Remains of the bones of he-goat have been discovered from the *śyenaciti* site at Kauśāmbī which attest the literary information<sup>345</sup>. The meat of goat was more easily available, and its milk, which contained medicinal properties, was very useful for the children<sup>346</sup>. In the *Vaśiṣṭha Dharma Sūtra* the use of milk of a she-goat, within ten days of its giving birth to a young one, is prohibited<sup>347</sup>. Its milk was offered to the gods for pleasing them, so that they could bestow prosperity on the sacrificer<sup>348</sup>. It was believed that the sacrificial essence remained for the longest time in the goat, and this made it pre-eminently fit for being sacrificed<sup>349</sup>. Till now, it is the most common animal to be sacrificed and offered to the gods. The reason was that it was easily available and was comparatively cheaper than other animals. Its meat was consumed and its hide was used for making spreads, containers and clothes. It was one of the items of exchange. Like cow and gold, it was a unit and means for exchanging the *soma* plant from the *brāhmaṇas*<sup>350</sup>, so it was termed as the *paramapaśu*<sup>351</sup> (the creature of the highest grade). In comparison with other animals the she-goat gave birth to more kids, and that also she did three times a year<sup>352</sup>. So from the economic point of view a she-goat was very

profitable. Divinity was also attributed to the goat. It was believed that it was created by Prajāpati from his mouth<sup>353</sup>. Its origin has been ascribed to the glow of Agni<sup>354</sup>, hence it is his vehicle. It was considered as the representative of Púṣan<sup>355</sup>.

It has been suggested that the Indian goat has originated from a wild species (*capra aegagrus*) which formerly had been widely distributed in southern Europe and western Asia<sup>356</sup>. Archaeological excavations conducted at different places also prove the use of the goat as an animal which supplied meat. Further, these confirm that the present variety of the Indian goat had wide distribution in India. Hastināpura<sup>357</sup> and Rangapur<sup>358</sup> excavations have brought to light fragments of the teeth of goats. The Rangapur fragments of the goat's teeth resemble those of the domesticated goat of our time and closely resemble<sup>359</sup> their counterparts unearthed from Harappā, Hastināpura and Maski. The occupation of *ajapāla*<sup>360</sup> (goatherd) was well recognised. Even now in Kashmir there is the community of the goatherds known as the *bakarwālās*.

*Avi* (sheep) is one of the earliest domesticated animals which existed in Egypt and Sumer even<sup>361</sup> before 3000 B. C. The historians think that the domesticated sheep have spread throughout the world from two species of wild sheep, namely, the *mouflon* and the *urial*. The former species still survives in Iran and Turkistan. It is an animal with a hairy coat; it has a mane and long twisted horns. The *urial*, a more lightly built creature with a taller neck, more slender horns and longer tail, is found widely from the Punjab to Turkistan. No wild sheep had a thick woolly fleece. The use of its wool is a by-product of the knowledge of its initial utility as a domestic animal. Heavily fleeced sheep were possessed by the Babylonians who used wool as a textile material.

The sheep, like goats, were very useful, and were domesticated by the people of the Indus valley culture<sup>362</sup>. As a pastoral people, the early Vedic Āryans reared them, and the *Rgveda* refers to them in different contexts. Ewes were milked like she-goats and their meat was eaten. But Baudhāyana forbids the drinking of their milk<sup>363</sup>. The Vedic texts refer to different varieties of clothes woven with fleece. As it yielded fleece, the ram

was termed as *urāṇa*<sup>364</sup>. *Urṇa* means wool which is derived from the root, *vr*, meaning to cover<sup>365</sup>. The ram was also a sacrificial victim to different gods in numerous sacrifices<sup>366</sup>. *Ṛjraśva* is said to have slain one hundred rams<sup>367</sup>. The slaughter of ram in sacrifices is corroborated by the discovery of bone-remains of a ram from the sacrificial altar at Kauśāmbī<sup>368</sup>. These bones were the objects of gift<sup>369</sup>. Among small creatures, the ram was considered as very strong because it was supposed that Prajāpati had created it along with the *rājanyas*<sup>370</sup>. Generally the sheep were of two colours, black and white<sup>371</sup>. There were *avipālas* who reared them<sup>372</sup>.

The sheep of Gandhāra yielded the best quality of wool<sup>373</sup>. *Āvika* denoted wool because it was obtained<sup>374</sup> from *avi* (ram). The river Paruṣṇī was named after the sheep, yielding the best variety of wool<sup>375</sup>. Gandhāra and the Punjab are still famous for the best variety of sheep which yield superior quality of wool.

Archaeological finds corroborate the literary data regarding the sheep. Their bone remains have been found at Hastināpur<sup>376</sup> and Rangapur<sup>377</sup> which obviously resemble bone-remains of Harappan sheep. Their fragments bear definite cut marks by sharp instruments indicating that the people slaughtered them most probably for obtaining meat. The Greeks of the Homeric times also slaughtered them for obtaining meat.<sup>378</sup>

*Aśva* (horse) is the only animal which increased the mobility of the ancient people. The historians think that *equus przewalski* is the only species from which the domesticated horse is originated<sup>379</sup>. Rancar thinks that the horse was domesticated for the first time in Tripolje culture in the south-east European steppes at the end of the third millennium B. C. Huppertz, on the other hand, suggests that its domestication took place in Central Asia<sup>380</sup>. It appears that in the beginning, the domesticated horse was the supplier of meat, but when it crossed the Caucasus, it was harnessed to the cart. In Syria and Asia Minor, the cart developed into the horse-drawn chariot, which helped to overthrow and build empires. Thus, on account of its swiftness, horse got special importance. The riding of the horse is more recent than using it to drive the chariot. Horse-riding originated



in Central Asia, and thereafter mounted warriors have ever since been figuring prominently in the history of the world. It was also a beast of burden. In Asia Minor and in parts of Asia, it was the companion of the socially privileged classes.

The question arises as to when and how the horse appeared in India. There is no trace of horse in the Indus valley civilisation<sup>381</sup> though attempts have been made<sup>382</sup> to prove that it was known to the people of Lothal. Basham thinks that the Harappans may have knowledge of the horse, since a few horses' teeth have been found in the lowest stratum of Baluchistan site of Rana Ghundai, probably dating from several centuries earlier than the foundation of Harappā. This would indicate that horse riding nomads found their way to North-West India in small number long before the Āryan invasion, but it is very doubtful whether the Harappā people possessed domestic horses themselves and if they did, they must have been very rare animals<sup>383</sup>. At Chanhudaro, on the lower Indus, the Harappans were replaced by squatters living in small huts with fireplaces, an innovation which suggests that they came from a colder climate. These people, though unsophisticated in many respects, had superior tools and weapons. Similar settlements were made in Baluchistan at about the same time. Among the scanty remains of these invaders there is clear evidence of the presence of the horse. The Indus cities fell to barbarians who triumphed not only through greater military prowess but also because they were equipped with better weapons, and had learned to make full use of the swift and terror-striking beast of the steppes<sup>384</sup>. A few hymns of the *Rgveda*<sup>385</sup> describe a divine horse Dadhikrā and contain some of the finest lines on the horse in the world literature, and recall the famous passage in praise of the war-horse in the *Book of Job*<sup>386</sup>. It is generally believed that the early Vedic Āryans introduced horses in India. The Vedic texts refer to *asva* which is derived from the root 'aś', meaning to reach<sup>387</sup>. It had the quick running feet, and had the capacity to discharge its duty<sup>388</sup> promptly. In Zend it has the similar term, the *aspa*, denoting the fast running animal. In Latin also there is a similar term the *eyuus*, for horse. *Asurāśva*<sup>389</sup> was the term which denoted the fastest running horse, and on account of its speed, sometimes it was

termed as the flying bird<sup>390</sup>. Perhaps, due to this, wings were given to the sculptures of horses in Iran. For the early Vedic Āryans, it was a prized animal for its swift movement. The *Rgveda* mentions its several breeds on the basis of its quality and colour<sup>391</sup>. The Indus and the Sarasvatī valleys were famous for their best breed<sup>392</sup>. Even today the horses of Sind are considered as some of the best, and on account of their abundance in the Indus Valley, they got their nomenclature as *saindhava*<sup>393</sup> which were definitely superior to all other members of the same species<sup>394</sup>. Among all the varieties based on colour, the *śyāmākarna*<sup>395</sup> horse was considered to be the most auspicious. *Mahāsahya*<sup>396</sup> was the *saindhava* horse, which, on the basis of its might and high spirit, could easily uproot the pegs of its hobbles. Like the oxen, the horses were also castrated, hence they were termed as *nirasta*<sup>397</sup>. *Aśvā* and *badavā* denoted the mare which also were yoked to chariots and carts<sup>398</sup>. It was considered that the draught-mare is neither male nor female, for as it pulls the cart, it is not a female, and being a female, it is not a male<sup>399</sup>.

On account of their utility the horses were counted as an item of property. The person possessing them was regarded as a very fortunate one, blessed with the compassion of Indra<sup>400</sup>. In contemporary Iran also the horses were highly prized and were considered as a sign of fortune and material prosperity<sup>401</sup>. The horse was treated as the lord of treasures<sup>402</sup>. The persons desirous of horses were termed as *aśvayantāḥ*<sup>403</sup>, and one who possessed them was known as the *āśvin*<sup>404</sup>. *Bhṛṃyāśva*<sup>405</sup> was the person whose horses were wandering or who was engaged in horse-rearing.

The Vedic texts mention some of the positions of horse, such as, when standing it stood only on three legs, but when harnessed, it pulled with all its legs at one and the same time<sup>406</sup>. It was restrained by rein, as a horse without restraint and direction was free to go to an indefinite distance<sup>407</sup>. It has been remarked that a horse curbed by the rein, appears to be most beautiful<sup>408</sup>. Its long hair was for warding off the flies which usually bite it<sup>409</sup>. There were other equipments for the horse, such as, the *saṃdāna*<sup>410</sup>, (halter) which was the string tied around its neck,

*sandana* (headrope)<sup>411</sup>, *śiṛṣaṇya*<sup>412</sup> (headstall) and *raśanā*<sup>413</sup> (girth) or *kaṣṣyā*.<sup>414</sup>

The horse became the symbol of military power. On account of its courage it was considered as the *kṣatriya* among the animals and was used on the battle-field<sup>415</sup>. The *Avesta* also describes the use of horses on the battle-fields in a befitting manner: "The wide hooped horses carry Mithra against havocking hosts, against foes coming in battle array, and in the strife of conflicting nations".<sup>416</sup> It was sacrificed in several sacrifices, but the most important sacrifice was the *aśvamedha* in which it played a significant role. This sacrifice had political importance, and the sacrificer established his superiority over others. By performing the *aśvamedha*, he attained the supreme political status because the horse was given the supreme position among the animals<sup>417</sup>. The horse was supposed to have been a sacred animal and was regarded as the form of Agni<sup>418</sup>. The sacrificial use of the horse during the post-Vedic times is confirmed by the discovery of its skull from the *śyenaciti* site at Kauśāmbī<sup>419</sup>.

The remains of the bones of horses discovered from Hastināpur<sup>420</sup> prove their existence in the Gangetic valley during the later Vedic period. Their remains have been found in association with the PGW. It proves the traditional concept of the association of the horse with the Āryans<sup>421</sup>. Further, these remains resemble the specimens of the Indian horses<sup>422</sup> we find now-a-days. It is the earliest known archaeological evidence of the existence of horses in India.

*Aśvatara*<sup>423</sup> (mule) was a beast of burden which was usually yoked to the carts<sup>424</sup> or used for carrying loads. It was the result of cross-breeding between the ass and the mare<sup>425</sup>, but it was unable to procreate<sup>426</sup> offspring. In Homeric Greece<sup>427</sup> also mule was considered as the most suitable beast of burden. Its native place is considered to be the region of Paphlagonian Eneti, and Mysinians were the first who brought about the union of the ass and the mare. Thus, the mule originated in Asia Minor and spread to other regions from there<sup>428</sup>. Though it belonged to the species of horse, but as it was inferior to the latter in swiftness, usually it was not yoked to chariots<sup>429</sup>. As it was crossbred, it was not considered fit for being sacrificed to gods, but it could

be offered to priests as a sacrificial fee<sup>430</sup>.

*Vṛṣabha* (an ox) has remained in a more modest position as a domestic animal and has played an important role in the economic life of the people. The predominance of bulls in India began even during the proto-historic times. The occurrence of the figures of bulls on the Indus seals shows how deeply they influenced the agricultural and commercial life of the people. Their sacredness in India may have an origin in the Indus valley. On the Indus seals, the most common ox is a humpless one shown in profile with its horns superimposed on each other side of its head pointing forward. The bull was a sacred animal. On several seals it stands before a peculiar object which does not seem to be a manger, and has no utilitarian purpose but is a "cult object", probably a table on which corn was grown for fertility rites. The bull is usually depicted with a single horn, and has sometimes been referred to as a unicorn, though there is little doubt that the artist was trying to portray a normal bull, whose second horn was obstructed by the first. In Hinduism the bull is specially associated with Śiva, but it does not seem to have been connected with the "proto-Śiva" of the Indus valley, for it is not among the animals surrounding the god on the famous Paśupati seal. The horns evidently are those of a buffalo<sup>431</sup>. It must be a descendant of *bos primigenius* and, therefore, indicates that this breed vied with *bos Indicus*. The common place of the former was Mesopotamia, and its presence in the Indus valley proves its spread from there. But the humpless variety did not continue, and soon it disappeared in subsequent period.

The Vedic texts furnish information regarding the oxen, such as, the *vṛṣabha* which originally denoted the present day bull and rained down offspring or increased the seed very much<sup>432</sup>. It appears to have been a term of the pastoral stage of the Āryan society when the bulls were not utilised for agriculture but for raising cattle. But later it became a generic term to denote all kinds of oxen. The *unnata* and *vāmanavṛṣabha* denoted the tall and the small species of oxen<sup>433</sup> respectively. Likewise, the *tikṣṇasṛṅga* was the ox having long pointed and upraised horns<sup>434</sup>. The *śṛṅgavṛṣa*<sup>435</sup> was an ox whose horns were very prominent.

Different stages of the growth of a calf into a full grown ox

have been mentioned. *Atrṇādvātsa* was a newly born calf which had not yet started to eat the grass<sup>436</sup>. *Tryaviga*<sup>437</sup> was the calf of 18 months and *dityavāha*<sup>438</sup> denoted a calf of two years. *Pañcaviga* denoted a calf of two and half years. *Trivatsa*<sup>440</sup> was a three-year old calf and *turyavāha*<sup>441</sup> a four year old one. The grown up calf was castrated<sup>442</sup> (*nirāsta*) and such a fully developed ox was termed as the *mahānirāsta*<sup>443</sup>. These oxen were trained for ploughing the fields and were termed as the *vāha*<sup>444</sup>. The *anadvāha*<sup>445</sup> oxen were those which were used for drawing carts but seldom for ploughing fields.

Some selected calves were not castrated and were allowed to grow into bulls. Such a bull was termed as *mahokṣa*<sup>446</sup> or *ukṣanāga*<sup>447</sup> which injected semen into the cows. The *mahokṣa*<sup>448</sup> was the fully grown up and sturdy bull in the prime of its life, and *vṛddhokṣa*<sup>449</sup> was a bull advancing in age. The *vṛhatvṛṣa-bha*<sup>450</sup>, like the *mahokṣa* was a bull possessing vitality of high standard. It rushed swiftly and roared loudly, hence, it was used as a simile describing Indra's rushing through the regions like a furious bull<sup>451</sup>. *Vṛṣāyamāṇa*<sup>452</sup> was the term to denote the acts of a bull in its furious mood.

Excavations of ancient sites have brought to light the existence of humped oxen in northern India. Hundreds of bones of such bulls have been discovered from Hastināpura<sup>453</sup> and Rangapur<sup>454</sup>. The high frequency of their bones in comparison with the bones of other animals proves that the inhabitants maintained a large herd of oxen. Numerous bone-remains are of the young ones. Out of 148 fragments of their bones from Hastināpura<sup>455</sup> so far examined, 22 bear on them signs of cuts by sharp instruments, which prove that the people probably slaughtered them for food. It is interesting to note that in the Homeric Greece also oxen were slaughtered for the same purpose<sup>456</sup>. Seven fragments unearthed from Rangapur<sup>457</sup> have definite cut marks on them. From the close resemblance between the skeletal remains excavated at Rangapur, Hastināpura, Rupar and Harappā, and those of the present day domestic humped oxen of India, it is obvious that the excavated remains are of the same species as those of the domesticated oxen found in India today<sup>458</sup>. Further, it indicates the distribution of the same species in a vast region.

of northern and western India.

*Gardabha*<sup>469</sup> (ass) known also as *khara*<sup>460</sup> and *rāsabha*<sup>461</sup> is an animal of the horse family. It has been suggested that it was domesticated for the first time in north-east Africa<sup>462</sup>. All the species of the domestic ass have come from the original wild ass of this region. It was able to thrive on much poorer fodder. It was well known to the Harappans<sup>463</sup>. The she asses were milked. The draught donkeys were used to draw both ploughs and chariots. The Aśvins have been mentioned as seated in the chariot driven by them<sup>464</sup>. The ass was considered as the dullest<sup>465</sup> of all the animals. It had neither the strength of a bull nor the swiftness of a horse. On this consideration, it was regarded as inferior to the horse<sup>466</sup>, but was the most suitable as a beast of burden<sup>467</sup>. On account of its characteristics, it was considered as the vaiśya or śudra among the animals<sup>468</sup>. It was termed *dviretas*<sup>469</sup>, meaning one having double seed as it couples with the mare to give birth to the mule as well as with the she-ass; hence the ass is regarded as the least of animals<sup>470</sup>. Its disagreeable cry has been particularly noted in the Vedic texts<sup>471</sup>. In spite of its defects, it was an object of gift to the priests<sup>472</sup>. In the *āsvamedha*, it was a sacrificial victim<sup>473</sup>. Archaeological excavations have brought to light its bone remains<sup>474</sup> which closely resemble the bones of the present days asses. *Parasvanta*<sup>475</sup> was a wild species of the ass.

*Gardabhejyā* was a ritual in which the ass was sacrificed on cross-roads to Nirṛti. It was a domestic rite. Its meat was cooked on the ground and not on the *kapālas* and was offered to the common household fire<sup>476</sup>. Its inferior status is obvious from the fact that its meat was prescribed to be taken by the person expiating the sin incurred by a *brahmacārin* having sexual intercourse with a woman<sup>477</sup>. Among other things, the wearing of ass-skin was necessary for a *bhrūṇahā* (the killer of an embryo) expiating his sin.<sup>478</sup>

*Go* (cow) appears to have been the most useful and favourite domestic cattle to the Āryans because their material prosperity depended upon it. Even during the pre-Vedic times the cow had got its importance as the major milk yielding animal in different regions. The Sumerian term for the cow and ox was *gud*,

which later was known as *gu*, and being borrowed by the Indo-Europeans it became *gau* in Sanskrit, *bous* in Greek, *cuo* in old German, *gove* in old Russian, *gava* in *Avesta* and cow in English<sup>479</sup>. Thus, it is apparent that the term *go* originally is a Sumerian word and was borrowed by the Āryans. Yāska, however, has advanced a somewhat different interpretation. He thinks that this animal is known as *gau* or *go* because it goes very far, moreover it is a synonym of an animal<sup>480</sup>.

The *Rgveda* states : "Cow is food that moves on feet"<sup>481</sup>. The cows have been compared with the earth<sup>482</sup> because both yield the means of livelihood. The people desired to possess as many of them as they could<sup>483</sup>. They attempted to multiply them and it was observed that they were the most numerous among all the animals<sup>484</sup>. The person possessing many cows was termed as *gomata*<sup>485</sup> but *gopati* was an ordinary owner of the cow<sup>486</sup>. The valley of the Gomati river got its name after the cows because in that region of Gandhāra, they were abundantly reared<sup>487</sup>. For the possession of many cows, *gaviṣṭi* was performed which was but the refined form of the cattle raid practised by the Vedic Āryans<sup>488</sup>.

The Vedic texts mention different aspects of their age and characteristics. *Vatsā*<sup>489</sup> was a she-calf, but *vatsatari* denoted a considerably newly born she-calf<sup>490</sup>. It was observed that the horns and teeth begin to come out in the 10th month after the birth<sup>491</sup> of a calf. *Vāsitā* was a fully grown-up she-calf<sup>492</sup>, desirous of correlation with the bull. *Trivatsago*<sup>493</sup> was the cow having delivered three times or having three calves. The *Turyavād*<sup>494</sup> and *ṣaḍvād*<sup>495</sup> denoted the cow of four and six years, respectively. Commenting<sup>496</sup> on *ṣaḍvād*, Uvāṭi and Mahidhara say that it means the cow which carries six loads but their view appears to be unconvincing because the cows were not used as a draught animal. Moreover we have not been told what the six loads stand (*ṣaṣṭhabhāram*) for. A pregnant cow was termed as *ukṣagau*<sup>497</sup> but a barren one was known as *vasā*<sup>498</sup> and *vehatagā*<sup>499</sup> was the cow which miscarried. *Sūtavasā*<sup>500</sup> was the cow which became barren after giving birth to the first calf. *Pravayyā*<sup>501</sup> denoted the cow which was about to deliver the calf, and *nāityakī*<sup>502</sup> was the cow whose milking period lasted till the next

delivery. In the post-Vedic times<sup>503</sup> the former was termed as the *adyasvinā* and the latter as the *mahāgr̥ṣi*. *Dhenu*<sup>504</sup> was the milch cow and *mahādhenū* denoted a cow yielding much milk. *Sudughā*<sup>505</sup> was the cow which could be milked easily and *payasvati* was one yielding much milk<sup>506</sup>. *Vilipit*<sup>507</sup> and *ghṛtāc*<sup>508</sup> denoted the cows whose milk contained much more butter than the milk of other cows.

The cows were milked thrice<sup>509</sup> a day, in the morning, in the mid-day and in the evening. The first milking yielded more milk than the other two. Prayers were offered to the gods for a benediction on the cow and the calf<sup>510</sup>. *Dhenuṣṭarī*<sup>511</sup> was the cow which ceased to yield milk while she was pregnant, but the *dugdhadohā*<sup>512</sup> denoted the cow which was milked for the last time and was unable to yield milk in future on account of her old age or ill health. Sometimes, the calf of a cow died (*mṛtavatsā*) and it did not allow itself to be milked, so an artificial calf was shown to it or the calf of another cow was employed to persuade her to be milked. Such cows were known by different terms, such as, *nivānyavatsā* or *nivānyā*<sup>513</sup>, *abhivanyāvatsā*<sup>514</sup>, *abhivanyā*<sup>515</sup> and *vānyā*<sup>516</sup>. The milk of such a cow was used for preparing porridge with half ground barley. This porridge was stirred with a piece of sugar-cane and was used as an offering in the *mahāpitṛyajña*<sup>517</sup>. The old cows which were unable to move for grazing and had ceased to take fodder and water were termed as *jagdhātṛṇā* and *pītodakā*<sup>518</sup>, respectively. Such cows were useless, hence very often offered to the priests. This act of religious merit was criticised as the priests did get nothing with the gift of such cows<sup>519</sup>. *Adughā* was the cow which was not milked<sup>520</sup>.

The Vedic texts refer to cows of different colours and varieties<sup>521</sup>, such as, *rohiṇī* (red), *śyenī* (white), *kṛṣṇā* (black) brown and yellow. Some were of similar colour and some of different ones. *Kūṣā* was the hornless cow, *ślonā* was the lame cow, *bandhā* was the maimed cow, and *kāṇā* was the one-eyed cow<sup>522</sup>.

The question arises as to whether the cow was slaughtered for food. This has remained a very confusing and controversial problem since long. The slaughter of cows caused heavy loss to the owner, hence the public opinion was against it. The cow slayer (*goghāta*) was punished with death penalty<sup>523</sup>. On account



of its economic utility and religious sentiment attached to it, its slaughter was prohibited. The consumption of beef was considered as the destruction of everything<sup>524</sup>. In spite of this strict prohibition, the slaughter of cows was recommended in certain sacrifices. On the new moon day, the cow was prescribed to be slaughtered for Mitra and Varuṇa<sup>525</sup> and in the *somayāga*, a barren cow was to be slaughtered for the same gods<sup>526</sup>. The cow is, in one or two places<sup>527</sup>, given the epithet *aghnyā*, not to be killed, but this may only imply her economic importance. In any case, it is quite clear that both oxen and cows were slaughtered for food<sup>528</sup>. In Homeric Greece also the cow was a sacrificial<sup>529</sup> victim to gods. If it was not available, it was substituted by an ox<sup>530</sup>. A barren cow or a goat was slaughtered in honour of the king or high dignitaries<sup>531</sup>. The slaughter of such a cow did not cause economic loss as it neither yielded milk nor gave birth to calves. But, side by side, it was considered as an act of religious demerit<sup>532</sup>. On the other hand, it was also believed that the cows along with the *vaiśyas* have been created by Prajāpati. Therefore they are to be eaten, for they were created to serve as food. That's why they were more numerous than others<sup>533</sup>.

The *Śatapatha Brāhmaṇa* informs that during the period of its final compilation, it was a general practice to eat beef. It states that the sacrificer should not eat beef during the period of the performance of a sacrifice on the ground that the cow and ox undoubtedly support everything here on the earth. So these must be protected and nourished with all care. It further mentions that were anybody to eat their flesh, there would be, as it were, destruction of everything or everything was coming to an end. Such a person would likely be reborn as a strange defamed being<sup>534</sup>. This prohibition apparently indicates that beef was eaten but public opinion was against this practice. In spite of this prohibition, Yājñavalkya thinks it proper to eat beef if it is tender<sup>535</sup>. The authors of the *Dharma Sūtras* have advanced divergent views on this point. Gautama does not refer to the prevalence of beef-eating and recommends for expiation of the sin incurred by the slaughter of a cow. Baudhāyana<sup>536</sup> has prohibited the eating of flesh of domestic animals (*grāmyapaśavaḥ*) in which cow may be included. In the *Āpastamba Dharma Sūtra*

there is a clear sanction of the eating beef. It states that the flesh of *dhenu* may be eaten<sup>537</sup>. Haradatta explains *dhenu* as a milk-cow (*payasvanī gau*). Further the same text states that the departed souls derive satisfaction from the flesh of cows. The *Vaśiṣṭha Dharma Sūtra*<sup>538</sup> obviously provides for the offering of cow's flesh as a great delicacy to distinguished guests of the *brāhmaṇa* and *kṣatriya varṇas*. Like Āpastamba, *Vaśiṣṭha* states that *dhenu* is not only eatable but also holy, but he has also cited the view of some other authors condemning the practice of beef-eating<sup>539</sup>. The *Śrouta* and the *Gṛhya Sūtras* prescribe the immolation of cows in certain rituals. At the close of the *somayāga* and after the performance of the *udayaniya* rite, an *anubandhiyā* (a sterile) cow was immolated<sup>540</sup>. At the funeral rite, an old cow (*anastaraṇī* or *jāragavī*) was killed after which its limbs were placed on the dead body which was covered with its leather. Its flesh was cooked and offered to the gods<sup>541</sup>. In *agnyādheya* rite, on the day preceding the setting up of fire, a game of dice was played by the sacrificer with his wife and sons, while a cow which was immolated remained tied to a stake. Her omentum was offered into the fire. A goat could be substituted for the cow<sup>542</sup>. In *anvaṣṭakā* sacrifice (a kind of monthly *śrāddha*) the *brāhmaṇas* were served with cooked beef which was kept away from the immolated cow of the *aṣṭakā* ceremony<sup>543</sup>. *Gorālambha* (slaughtering of cow) was done on three occasions, namely, the reception of guests, rites to the *pitṛs* and in marriage<sup>544</sup>. At the marriage a cow was slaughtered by the bride's father in honour of the guests<sup>545</sup>. In *śrāddha*, the kidney or lungs of the immolated cow were roasted along with other limbs on the *udumbara* spits and being sprinkled with *ājyā* were served to the *brāhmaṇas*<sup>546</sup>. *Vapāśravaṇa* was the rite of roasting the omentum of a cow on a spit of *udumbara* after spreading *ājyā* under it. It was offered to the departed souls in *śrāddha*<sup>547</sup>. Āpastamba also recommends beef to be served to the *brāhmaṇas* on the occasion of the performance of *śrāddha* but he further lays down that much greater satisfaction is derived from the cooked flesh of buffalo<sup>548</sup>. The practice of the slaughter of cow in sacrifices may be corroborated by archaeological evidences. The discovery of the evidence of what has been interpreted as sacrifice of cow at *Ujjayinī* during the PG ware

phase, indicates the importance attached to this practice, which was undoubtedly considered as a means to bestow benefits upon the faithful in a spiritual sense<sup>549</sup>.

It appears that the cows were not normally killed for meat, and even in sacrifices their slaughter was symbolic. Even touching the cow with leg was considered as a heinous crime which was supposed to result in one's own destruction<sup>550</sup>. Sporadic references, however, should not be taken to prove the practice of the slaughter of cows for beef. Contrary to their views the authors of the *Dharma Sūtras* have extolled the cow very highly. They are said to be auspicious purifiers. It is the cow alone that makes sacrificial oblations possible. The six excellent productions of cow, viz, urine, dung, clarified butter, milk, curd and *go-rocana* (a bright-yellow pigment prepared from the urine of a cow) are always propitious. Drops of water falling from the horns of a cow are productive of religious merit and have the power of expiating sin. Great merit is acquired by serving fodder to it.

*Mahiṣa*<sup>551</sup> (buffalo) is one of the earliest domesticated animals, and the evidences prove that it was reared in the Indus valley culture. It was most suited to the hot and damp climate and was used as draught animal because it was sturdy and could carry heavy loads or draw plough and carts. It was second only to the ox as a beast of burden and served as a common victim of sacrifice. In the early Vedic period it was yoked to the cart<sup>552</sup>. It was an object of gift<sup>553</sup> offered to the priests and a sacrificial victim to the gods<sup>554</sup>. The she-buffalo yielded milk. Its meat was also consumed. It is corroborated by archaeological evidences as two of the remains of the bones of buffalo discovered from Hastināpura bear cut marks proving that it was slaughtered for food or was sacrificed to the gods<sup>555</sup>. Further, these remains indicate close resemblance with those of the present day domestic buffalo and are similar to those of Harappā and Mohenjodaro<sup>556</sup>. It appears that one and the same breed of buffalo had wide distribution from the Indus to the Gangetic valley. The rearing of she-buffaloes for livelihood was regarded as a sin of the *upaśātaka* kind presumably for members of twice born castes<sup>557</sup>.

*Śvāna*<sup>558</sup> (*kurkura*)<sup>559</sup>, dog is supposed to have been the earliest animal domesticated by people because it was useful both

in hunting and in war. Trouessart<sup>560</sup> thinks that all species of dogs of Europe and Asia have originated from the wolf as it is remarkably similar in size and shape to them. In India the domestication of dog began in early ages, and there are archaeological evidences to prove that the Harappans<sup>561</sup> reared them. Their bone remains have been discovered from Mohenjodaro<sup>562</sup> and terracotta figures have been found at Lothal<sup>563</sup>. These clearly prove the existence of three species of dogs, namely, the Indian pariah dog, the mastiff and hound dogs.

The dog, with its highly developed brain and smelling power is the most faithful companion of men as it protected their household from thieves and helped them in hunting. It was a fast running animal, which, when directed, could sharply run and catch the victims. The early Vedic Āryans tamed them for protecting their animals and houses. The importance of watchdogs has been highlighted in some hymns of the *Rgveda* concerning *Vāstospati*<sup>564</sup>.

*Śvapati*<sup>565</sup> was the person who possessed a dog, and *śvanya*<sup>566</sup> was one who led the dog for hunting or who hunted with its help. The Homeric Greeks also trained and used them in hunting<sup>567</sup>. The dogs were so closely associated with the Āryans that they accorded divinity to them and developed the concept of the *divyāśvāna* (the divine dog). It has been associated with Yama who hunts with his dog in chase of the mortals<sup>568</sup>. Indra's bitch Saramā was very faithful to him.

The dog did not mean as much to the people of the *Rgveda* as it did to a kindred Āryan pastoral people, the ancient Irānians, who made it a sacred animal<sup>569</sup>. According to the *Avesta*, Irānians had more information regarding dogs than the Vedic Āryans. A section of this text deals with their characteristics, functions, food habits and dangers arising from them<sup>570</sup>. In the Vedic texts the dog has been mentioned as an object of gift<sup>571</sup>, but was not considered fit for being a sacrificial victim<sup>572</sup>. Its meat was not consumed, but in abnormal circumstances, it was the last resort of desperate hunger<sup>573</sup>. Śvapac was regarded as the most degraded person in society on account of his eating dog's meat. The *Dharma Sūtras*<sup>574</sup> maintain that even the dog's

touch is supposed to defile not only places and objects, but also men. It is considered to be pure in hunting excursion. Dog is so degraded that its skin has been recommended to be worn by one expiating the sin of *bhrūṇahatyā*, the killing of an embryo.

*Śūkara* (pig) was also a domesticated creature. Its antiquity goes back to the Indo-European period as it is cognate with the Latin *suculus* and Zend *hú*. In Homeric Greece, the pigs were enumerated as an item of wealth<sup>575</sup>. The pigs have played a limited role in providing meat, but their use was quite widespread. Originally, forest and swamp-animals, they did not live on grass but on shrubs and roots. They were considered as the most dirty among the animals. Pigs of the *sus cristatus* species existed in the Indus<sup>576</sup> valley, and probably were used for food<sup>577</sup>. The wild pigs (*durvārāh*) were found in forests and dogs were used for hunting them<sup>578</sup>. The wild pigs were not considered as impure because they did not eat human excrements as the domesticated ones did in villages. The skin of the pig was very hard, hence it was used for making footwear, which were particularly put on by the king on the occasion of his royal consecration<sup>579</sup>. During the post-Vedic times also, it was offered to the gods in sacrifices, and this is proved by the remains of its bones which have been found from outside the *śyenaciti* altar at Kauśāmbī<sup>580</sup>. The principal virtue of the she-pig was that it procreated a large offspring at frequent intervals. The bone remains of pigs discovered from Hastināpur<sup>581</sup> have cut marks which prove that they were slaughtered for food. The *Āpastamba* and *Baudhāyana Dharma Sūtras* prohibit the eating of the flesh of *grāmaśūkaras* but the *Vaśiṣṭha Dharma Sūtra* appears to refer to the existence of difference of opinion on the edibility of the flesh of a boar not living in village<sup>582</sup>. The bones of Indian boar *sus cristatus* discovered from Harappā and other sites in the Indus valley resemble those discovered from Hastināpura<sup>583</sup>. These bones are closely similar to those of modern species of pigs found in northern India. This proves the wide distribution and long continuity of the same species of pigs in this region. The Avestic people also were well acquainted with pigs<sup>584</sup>.

*Uṣṣra* (camel) is a late comer in the early civilizations, and it is essentially a desert animal. In west Asia, two species of camel

existed, namely, the Arabian, and the two-humped camel of Bactria. A wild form of the Bactrian camel, whose legs were short but the body was heavy, was best suited for the continental climate of the interior deserts of Asia. This still survives in the basin of the Tarim river. The Arabian camel was probably first to be domesticated<sup>585</sup>. In Egypt it existed in the beginning of the middle kingdom. The earliest references to the camel in Babylonia are as late<sup>586</sup> as 1100 B. C. It appears that they reached India very late in the proto-historic Indus valley. Their bone-remains have been discovered from the latest levels of Mohenjodaro<sup>587</sup>. It was the most useful animal in desert regions, where it was used for carrying loads, drawing carts and ploughs. There it was a substitute for the ox and ass, and was the quickest means of transport<sup>588</sup>. The Vedic people also were well acquainted with them. In sacrifices, these were objects of gifts to the priests<sup>589</sup>. In contemporary Iran also they were considered very useful and the material status of a man was judged by the number of camels he possessed<sup>590</sup>. In some of the Vedic texts it has been considered as impure (*dhūmra*)<sup>591</sup>.

### Animal husbandry

Animal husbandry contributed so much to the material prosperity of the people that the Vedic texts have given emphasis on looking after the animals properly. In Avestic Iran also the same concept was in prevalence. It was asserted that the people should take care of their animals and the work exacted from them should be proportionate to the care taken for them<sup>592</sup>.

It was an ancient practice to slaughter animals for pleasing the gods. During the later Vedic period the sacrificial cult developed much, and side by side, cruelty to animals also increased. This happened as the scriptures prescribe several sacrifices in which they were slaughtered. But this practice was vehemently criticised by intellectuals and reformers. The slaughter of animals was not supposed to bring any good, so the Upaniṣadic philosophers instructed the people to be kind and considerate to them because they also were the manifestations of the Universal soul. In the *Avesta* also violence against the kine has been loudly deprecated<sup>593</sup>. By the end of the Vedic period, Buddha and Mahāvīra took up the cause of the prevention of cruelty to

animals. Their teachings of *aśimsā* influenced the public mind and the slaughter of animals in sacrifices was checked. Animals provided both labour and fertilizer in agricultural societies, and any depletion was a serious loss<sup>594</sup>. That animals were singled out for protection is clear from the emphasis in some sections of the *Majjhima Nikāya*<sup>595</sup>.

### Gods Presiding over Animal Husbandry

The Vedic texts refer to the gods who were the presiding deities of animals, hence prayers were offered to them for their welfare. The most prominent presiding god was Púṣan<sup>596</sup>, who appears to have been the god of the pastoral society. He increased the cattle wealth<sup>597</sup> and brought back the lost and strayed ones<sup>598</sup>. He was the lord of routes and guided the herdsmen<sup>599</sup>. He supervised the cattle and caused their welfare<sup>600</sup>. The pastoral people being nomadic, laid special emphasis on his importance as the path finder. He was worshipped for tracing out the lost cattle<sup>601</sup> and was considered as *paśupa*<sup>602</sup> (protector of animals). Among the pastoral tribes, there was a particular section of people who distinguished themselves in the art of tracing out the trails of the lost animals<sup>603</sup>. So, Púṣan was their chief deity. His *aśtrā* (staff) has been mentioned as *paśusādhani* as it helped him in acquiring, preserving and increasing the cattle of his worshippers<sup>604</sup>. *Arā* was his small staff which came in handy when he wanted to punish the mischief mongers among whom were notorious Paṇis who harassed the pastoral communities in course of their march to pastures<sup>605</sup>. His peculiar connections with goat<sup>606</sup> may be assumed from the fact that it is the most sure footed animal and can traverse the most difficult paths. Originally and essentially he was the god of shepherds<sup>607</sup>. The term Púṣan itself shows the pastoral nature of this god as *púṣa* means to nourish, increase and bestow bounty. Carpentier rightly traces Púṣan back to *pshu san* and further, to *psu-san*, that is to say, *paśu-san*, which means the acquirer of cattle<sup>608</sup>. The Púṣan's *aśtrā* as *paśusādhani* supports the view of Carpentier which corresponds to the Avestic *Fsu-san*<sup>609</sup>.

The Vedic references indicate that the Bhārdvāja clan was devoted to Púṣan because the chief means of their livelihood was

cattle rearing. The Panis harassed them so the latter ones prayed to him for protection<sup>610</sup> against them. The association of cattle with Púṣan may be assumed from the fact that this term was taken to mean productiveness, and cattle were productive<sup>611</sup>.

Rudra was also a presiding deity of animals<sup>612</sup>. Originally he was a destructive god who caused suffering to them in the form of diseases; so prayers were offered to him for not causing any injury to them<sup>613</sup>. For their welfare, fasting was observed in his name<sup>614</sup>. He had his agents, such as black worms, insects, dogs, jackals, vultures, flies and crows<sup>615</sup> which caused untold sufferings to animals. Rites have been prescribed in the Vedic texts by performing which one could please him for the welfare of animals.<sup>616</sup> Originally Rudra represented the phenomenon connected with storm, so he was placed in the list of deities belonging to the aerial region. He was represented as discharging brilliant shafts towards heaven and earth<sup>617</sup> as the slayer of both animals and human beings with deadly weapons<sup>618</sup>. He was also their lord and protector<sup>619</sup> as well as healer of their diseases<sup>620</sup>. It appears that the Vedic Āryans borrowed the concept of Paśupati from the Indus valley people who worshipped him in this form. The figure of Paśupati<sup>621</sup> Siva engraved on a seal unearthed from Mohenjodaro indicates that the Indus valley people had their own god presiding over animals.

His general features are very interesting. On his head there is a pair of horns meeting in a tall head-dress. To his either side are two animals, an elephant and a tiger on his right side, and on the left are a rhinoceros and a buffalo. Beneath the throne there are two deer. The association of these animals with him proves that he was the god of wild beasts and domestic animals. However in the Vedic and classical literature Śiva has association with the ox as his vehicle, and he puts on skin of an elephant, or of a deer, or of a tiger.

Agni was also associated with animals. Oblations and prayers were offered to him for restoring them to the original owners when they strayed or were lost due to darkness at night or were stolen by thieves<sup>622</sup>. A particular prayer was offered to different gods for several purposes, such as, to Vāyu when they were lost



or injured, to Varuṇa when they had fallen into deep water, to Nṛṛti if they fell into a ditch and to Rudra in case they were attacked by snakes or tigers<sup>623</sup>.

The Vedic texts refer to Ilā as a powerful goddess presiding over animals. In the *R̥gveda* she is associated with the rivers<sup>624</sup>, and was regarded as the mother of herds<sup>625</sup>. Dowson<sup>626</sup> thinks that the *R̥gvedic* Ilā symbolises a libation of milk. Macdonell<sup>627</sup> also is of view that she was a personification of offering of milk and butter and she represented plenty derived from the cow. She has been called "butter-handed and butter-footed<sup>628</sup>." In an interesting story she has been mentioned as taking birth<sup>629</sup> from clarified butter, sour milk, whey curds and water. It has been suggested that originally Ilā was a non-Āryan deity. In the opinion of Hewitts<sup>630</sup>, she was an Akkadian goddess who was related to Irw, the sacred bull. The Greeks had a goddess called Idā but she was associated with the mountains.

### Gopala

Rearing of animals called for the service of a person who could devote his time to looking after them. He was known as *gopa*<sup>631</sup> or *gopāla*<sup>632</sup>, meaning the protector and rearer of the cattle. He had to control the herds, so he used to hold a staff in his hand. He protected them from wild animals and insects. Gopāla was so acquainted with animals that they acted according to his instructions<sup>633</sup>. He was familiar with their habits, characteristics and defects. The term *paśupa*<sup>634</sup> also denoted a cowherd. The *avipālas*<sup>635</sup> were shepherds, the *ajapālas*<sup>636</sup> reared the goats, the *aśvapa*<sup>637</sup> nourished the horses and *hastipa*<sup>638</sup> the elephants.

The herdsmen had to keep a vigilant eye on the animals<sup>639</sup>. The later *Saṃhitās* and the post-Vedic texts furnish information regarding their duties. Gautama thinks that the cowherd is responsible for the damage caused to anyone in any form by the animals under his charge<sup>640</sup>. To avert injury, it has been suggested that he should not approach them from the front, and should not move face to face<sup>641</sup>. The long horns of animals were very useful as with their help they attacked dangerous animals and protected themselves<sup>642</sup>. The herdsmen had to face<sup>643</sup> such beasts which usually attacked them and their animals.

According to Gautama, the owner is responsible for the damage caused by his animals, but if they were placed in charge of a man, the herdsmen will be responsible. The responsibility will be shared by the herdsmen and the owner of the field, if the field lies on a thoroughfare and is not enclosed. The punishment to be inflicted on the persons responsible for the damage, consists in fine the amount of which varies according to the kind of animals causing the damage. The fine is the heaviest for damage done by horses and buffaloes, and the lowest in the case of goats and sheep. In the event of the destructions of the entire crop, crops equal to the whole produce, which was expected to be obtained from the field in question, was to be restored to the owner besides paying the usual fines<sup>644</sup>. Āpastamba lays down that if the animals, straying away from the pastures, damage the crops, the animal concerned may be kept confined and subjected to starvation. He, however, advises moderation in this measure presumably to guard against too much torture to the animal which after all is innocent<sup>645</sup>.

### Lakṣaṇa

Numerous cattle went to pastures for grazing and they mixed together. It was very difficult to identify them in such a situation. In order to avoid this confusion special marks were made on their bodies for identifying them. This practice of branding the body of the cattle with specific symbol is very ancient. *Aṣṭakarnī* denoted the cow on whose ear sign of number eight was marked<sup>646</sup>. The later *Samhitās* furnish interesting information about branding the cows with different marks for identification or for denoting ownership. *Lakṣaṇa*<sup>647</sup> denoted the sign or mark to be branded on the body of the cattle, while *aṅka*<sup>648</sup> was the act of branding. Some cows were marked with the *mithuna* sign which was supposed to have magical power bestowing fertility on them<sup>649</sup>. Other marks<sup>650</sup> to be branded were lute, sickle, stake, etc. The ears of some of the cattle were bored.<sup>651</sup> The ears of the cows were generally twisted in order to brand them. But this technique was injurious, so it was considered a sin<sup>652</sup>. Even during the post-Vedic times, *lakṣaṇa* and *aṅka* were used in the sense of branding the cattle with marks<sup>653</sup>.

The cows were not branded throughout the year but only

during the *revati nākṣātra*<sup>654</sup> because it was believed to be the period causing material prosperity. The *Gṛhya Sūtras*<sup>655</sup> prescribe branding to be performed on the new moon-day after the *phal-guṇa* full moon. Marks were made on the body of the cattle with a heated piece of copper or iron (*lohita*)<sup>656</sup> or with an arrow shaft<sup>657</sup> or with a stem of sugarcane (*ikṣukāṇḍa*)<sup>658</sup>. During the post-Vedic times, elaborate rules of branding were formulated<sup>659</sup>.

### Goṣṭha

Sheds were required to protect the animals from cold, heat and rain. It was realised that they should be fed properly because only grazing was not sufficient. The cattle stalls were as essential as the houses for the human beings<sup>660</sup>. The *Avesta* also considers the making of resting place for the animals as one of the most excellent deeds<sup>661</sup>. The cattle were driven to the pasture in the morning and they returned in the evening to the house of the owner. Cowpens were considered as protective shelters for them<sup>662</sup>. In the night they stayed in them<sup>663</sup>. The entrance of cattle into their sheds had become a widely used simile<sup>664</sup>.

*Goṣṭha* meant resting place for the cattle.<sup>665</sup> Some sort of enclosure<sup>666</sup> (*saṃvaraṇa*) and roofed constructions were built for protecting the cattle resting in a *ghoṣṭha*. In the *Avestic*<sup>667</sup> Iran, an enclosure was made on the basis of specific measurements. That was termed *vārā* which is still used in vernaculars for the same. This appears to have been the Indo-Iranian term used by both the races. In spite of all such precautions, the cattle suffered in stables which caused material loss to the owner; hence prayers were offered to the gods to save them from dangers<sup>668</sup>. The cattle owners followed certain rules while building their stables. The ground was to be made smooth and clean, so that the cattle could sit, stand, sleep and move with comfort<sup>669</sup>. The provisions for adequate supply<sup>670</sup> of water and fodder were made. In such stables the cows could yield much milk and other animals could also be properly nourished<sup>671</sup>.

In cowpens the animals were allowed to rest freely and normally they were not tied to wooden or bamboo pegs (*śaṅku* and *drupad*)<sup>672</sup>. The calves were tied near them, but kept a little away from their mothers, so that they could not suck milk. *Bandh-āha*<sup>673</sup> denoted a rope or any other thing for fastening the

animals. *Veśka*<sup>674</sup> and *Samnahaua*<sup>675</sup> denoted a long rope used for the same purpose. *Pāsa* was the most common term for denoting the rope<sup>676</sup>. It conveys a significant historical meaning and points to a stage of economic development. Further, it shows the termination of the stage of economy depending on hunting and beginning of the cattle rearing which led to the beginning of agriculture. The people began to fasten the animals with a rope to domesticate them. Ropes were made of *mūñja* grass and of other similar materials. The hobbles were used to fasten the back legs of horses, so they were termed as *paḍabisā*, meaning the foot-fetter<sup>677</sup>. In this sense it corresponds to its Latin equivalent *vincire*<sup>678</sup>.

The animals were properly fed and for this purpose big earthen pots were used which have been discovered from different excavated sites. These were fixed on small earthen mounds or on small pieces made of bamboo in which fodder<sup>679</sup> was served to them. *Nisadana* denoted the place where the animals stayed for rest and *vivaritana* meant their movement where they were fastened to pegs inserted into the ground<sup>680</sup>.

*Goṣṭha* was so significant that later some social formations like *gotra*<sup>681</sup> originated from it. The early days of the people were insecure, so a number of families entered into a mutual understanding to erect common enclosure for protecting their animals. Those families, having a common cow-shed, belonged to the same *gotra*, and a number of such *gotras* who used a common pasture land, likewise, belonged to the same *goṣṭha* or club<sup>682</sup>.

### Feeding

The people have been advised to look after their animals properly and provide them with nutritious food and fresh green grass (*suyava*). They had to protect grass from wild animals so that their domestic animals could get adequate fodder. The deer and other wild animals lived on grasses both wild and cultivated so the domestic animals sometimes could not get sufficient fodder for their proper growth<sup>683</sup>. The importance of adequate supply of fodder to them may be assumed from this fact that in certain sacrifices the bricks made of *dūrvā* were placed for the support

of the sacrificial animal<sup>684</sup>. Some of the Vedic hymns. chanted during sacrificial ceremony enjoin upon the sacrificers. to please gods in order to obtain boon from them. Such sacrificers are compared with the man who places grass and water before the cows and horses in frequent succession to get much milk and efficient services, respectively<sup>685</sup>. The consumption of goat's flesh in sacrifices by Agni has been compared with the eating of grass by the cattle<sup>686</sup>. In the *Avesta* also the feeding of adequate fodder to the cow has been considered as the most excellent deed<sup>687</sup>.

The Āryans had to be constantly on the move in search of pastures. Their migratory habit is indicated by the use of the term *viś* in the sense of entering or settling. The same sense or that of settling near or re-entering and coming back is conveyed when several prefixes are added to the term *viś* (tribe) to form verbs. These are *ā-viś*, *upa-viś*, *ni-viś* *punar-viś* *pra-viś* and *bhūy-viś*, etc. The verbs like *punar-viś* and *bhūyas-viś* may refer to the habits of cattle herding tribes (*viś*) who migrated to fresh pastures with their cattle in lean seasons and came back to their original settlements when fodder became available there.<sup>688</sup>

The Vedic texts indicate that grazing was the easiest and most convenient form of feeding the animals. There were uncultivated tracts of land around the villages, which were bushy or grassy. The animals went there for grazing. It was an easy affair even to maintain larger number of them on pastures<sup>689</sup>. *Gocara* was a common term<sup>690</sup> to denote the pasture, which meant the place for the movement of cattle. *Vraja* also denoted the same, i. e., the place where the cattle went for grazing. *Vrajapati*<sup>691</sup> was in-charge of the *vraja* which was held in common by all the villagers or a number of villages. The *vrajapati* led the villagers or the tribe to pastures sometimes for capturing the grazing animals of the enemies. The Vedic texts describe the process of the driving of animals to the pastures to provide them with fresh grass<sup>692</sup>.

*Siṃgayana* denoted the time when the grazing cows were driven to the *goṣṭha*<sup>693</sup>. *Goṣpada* denoted the place where the cows could go for grazing, and *agoṣpada* stood for the dense forest wherein they could not go for the same<sup>694</sup>. The cows had to face

dangers and difficulties on pastures, and sometimes they were lost or fell into ditches, consequently breaking their limbs<sup>695</sup>. Beasts like lions, tigers and jackals also wounded them<sup>696</sup>. In order to ward them off, the cowherds held goads in their hands. Prayers were offered to the gods for ensuring safe return of cattle from the pastures<sup>697</sup>.

Pastures were very useful for cattle rearing and their possession was desired so that the animals might graze with ease and drink limpid water while wandering<sup>698</sup>. Salt was also served to them as it was essential for seasoning their food or drink. Even saline soil was considered good for them<sup>699</sup>. The lowing of the cow was noticed as a signal that her need was to be fulfilled by the owner. More often than not it indicated hunger and the owner was to give her more fodder for appeasing it<sup>700</sup>. The animals lived on grass and leaves of plants, hence Soma, the lord of plants, was worshipped as their deity<sup>701</sup>.

### **Breeding**

Domesticated animals show certain characteristics which can be statistically recorded within the overall range of variation. The environment of domestic animals and man brings about the selection of such combinations of characteristics. Selected breeds created by men through selection of animals according to definite breeding objectives and through sexual isolation show a narrow range of variation. Such selected breeds are a sign of a highly developed culture. Often it is true that the name remains the same, but qualities change. Selected breeds are improved for higher performance when man's abilities increase or they disappear when sexual isolation discontinues.

The healthy and strong breed of animals was essential for material well-being of the people whose economic activities, more or less, were based upon their rearing and allied occupation. For the possessions of the best breeds prayers were offered to the gods for bestowing mighty and sturdy oxen, milk-yielding cows and swift running horses<sup>702</sup>. Some regions were very famous for special breeds of animals<sup>703</sup>.

The Vedic texts inform us about the breeding of animals. The grown-up calves were castrated which made them sterile

to be used to draw ploughs and carts. Some persons were expert in the art of castrating them<sup>704</sup>. A few calves were not castrated and were set free. They, when grown up, roamed with herds and were no man's property but were equally held by the community. The cows cohabited with them and gave birth to calves. A cow gave birth to only one calf at a time, but sometime she brought forth two calves; that<sup>705</sup> was termed *yamāsū*. It was considered as an inauspicious sign for which the cow-owner had to perform some rites in order to ward off the evil effects<sup>706</sup>. Such calves were not healthy, and the chances of their survival also were dim; besides, its effects on the health of the cow were also adverse<sup>707</sup>.

For healthy breeds it was essential for the cow to remain in the company of a sturdy bull. That's why it was considered as the husband of the cow and the father of the young calves<sup>708</sup>. The gifting away of the bull to a brāhmaṇa was a meritorious deed as the giver saw in his own cow-pen growth and increase of his cows<sup>709</sup>.

In the *Śatapatha Brāhmaṇa* the laying down of sacrificial bricks for making altar has been compared with delivery of a calf. It has been stated that those bricks which the sacrificer places in front are its head, those on the right and left sides are its body and those bricks behind the altar signify its tail. He first lays down the bricks in front which represent the head of a calf which comes out first out of the womb, as in the case of an animal. He lays down bricks on the right side, and the left side, thinking that together with both the sides this body shall be born. Those bricks which are laid down behind the altar signify the tail of an animal which comes out from the womb at the end<sup>710</sup>.

### Medical Care

The growth of animals and their subsequent utility depended upon their health for which it was essential to cure their diseases. This required medical care. The Vedic people prayed to the gods for removing ailments from them<sup>711</sup>. Rudra was regarded as their divine physician<sup>712</sup> as he had the power of magic to cure them<sup>713</sup>. *Sūlagava* was a common rite to be performed for the welfare of

animals. *Goyajña* was performed for obtaining a thriving condition for cows in which boiled rice with milk was offered to Rudra<sup>714</sup>. *Baudhyayihāra* was a rite of distribution of *palāśa* leaves, forming a part of the *śūlagava* for propitiating Rudra and his hosts for averting evil from the cattle. The *palāśa* leaves were used for making a basket in which lumps of boiled rice were offered as oblation to him<sup>715</sup>. Likewise, Agni<sup>716</sup> and Aśvinikumaras were also considered divine physicians who ward off sickness. Several kinds of worms harmed the animals, so charms were prescribed for their eradication<sup>717</sup>.

The people were acquainted with the anatomy of animals which was possible for them due to two reasons, namely, they hunted and slaughtered small creatures for getting meat and this helped them to know their anatomy. Secondly, they sacrificed different kinds of animals and carried on dissection of their bodies as part of sacrificial rites. *Samitṛ* was a priest specialized in dissecting different limbs of slaughtered animals. For that purpose he used knives and other instruments. Devabhāga Śrautrvā was famous for having knowledge of this science, and he had taught it (*paśorvibhakti*) to his disciple Girija Bābhavya<sup>718</sup>. The art of dissection subsequently proved to be very helpful in the development of veterinary surgery.

It appears that there were two kinds of veterinary doctors, the physicians who cured diseases by applying medicinal herbs, and the surgeons who cured ailments by operating upon the diseased animals. There were also magicians who cured diseases by the application of the Vedic hymns. Such hymns are numerous in the *Atharva Veda*. These three classes of healers were in Avestic Iran<sup>719</sup> as well. The physicians were called in to examine the diseased animals who, after making necessary diagnosis, treated them with the help of medicines<sup>720</sup>. The *soma* plant was considered as having medicinal ingredients for curing certain animal diseases<sup>721</sup>. The people thought that just as the extinguished sacrificial fire is kindled with the help of fresh fire, similarly the wornout and diseased animals also can be made energetic and healthy with the application of herbs<sup>722</sup>. What was the fee of the veterinary doctors? The Vedic texts do not enlighten us on this point. However, in the contemporary Iranian society<sup>723</sup> their



fee was paid in the form of cattle.

The priests had formulated different sacrifices for ensuring the health of animals. In the *somayāga* a certain rite was performed with a jar filled with water which was considered as a soothing medicine to heal their disease. In another rite, priest offered gold to the fire, which symbolised immortality, and by this process he hoped to make the domesticated animals healthy and full of life. If the sacrificial horse was ill, a pap was offered to Pūṣan and being pleased, he gratified<sup>7-4</sup> the person who owned it. For curing sickness of animals without physical injury, a cake on twelve potsherds was offered to Agni<sup>725</sup>. For curing eye-disease, a pap was offered<sup>726</sup> to Sūrya. Tṛta was also a healing god,<sup>727</sup> who has been mentioned in the *Avesta*<sup>728</sup> as Thrta, the first healer.

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5. Rau, W., *op. cit.*, p. 24.
6. *ŚB*, 1.2.3.9.
7. *VI*, II, 358.
8. *AI*, nos. 10-11, pp. 91-92, 107-120, Plates LXI-LXIV.
9. *Ibid.*
10. *VI*, II, pp. 146-47.
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12. *ŚB*, 1.6.3.16.
13. *VI*, 1.372.
14. *RV*, 7.89.2.
15. *ŚB*, 1.1.2.7.
16. *Ibid.*, 3.7.1.20.
17. *Avesta*, *SBE*, Vol. 4, p. 24.
18. Agrawala, D. P. *CBAI*, p. 48.
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20. *Ibid.*, 2.5.1.15.
21. *Ibid.*, 7.2.3.4.
22. *Ibid.*, 1.1.4.28.
23. *Ibid.*, 1.1.4.2-3.
24. See Appendix I.

25. *TS*, 6.1.6.
26. *Ibid.*, 5.1.8.1-2.
27. *Āp. GS*, 11.5.11-16; *BŚS*, 6.24.
28. *ĀGS*, 5.4.9.1.
29. *KŚS*, LII, i.
30. *PGS*, 3.8.5.
31. *AGS*, 4.9.2.
32. *Ibid.*, 4.9.; *PGS*, 3.8; *Baudh. GS*, 2.8.10.
33. *KŚS*, 7.1.1.
34. *Āp. ŚS.*, 7.6.3.
35. *KŚS*, 6.9.14-18.
36. *Āp. SS.*, 14.1.5.
37. *VS*, 24.1 ff.
38. *Āp. SS.* 7.1.16.
39. *Ibid.*, 7.17.4-6.
40. *EŚS*, 7.9.2.
41. *Āp. ŚS.*, 20.13.12.
42. *Ibid.*, 7.15.5.; *Baudh. ŚS*, 11.4.
43. *Ibid.*, 7.14.10.
44. *Ibid.*, 7.22.5.
45. *ŚB*, 1.2.3.6-7.
46. *Ibid.*, 1.2.3.7-8; Cf. *AB*, 2.9.
47. *Ibid.*, 1.2.3.7-8.
48. *ŚB*, 2.5.2.15-16; *Āp. ŚS*, 8.5.9; *KŚS*, 5.3.5; *ĀŚS*, 2.17.
49. *BŚS*, 8.7.3.5.
50. *AV*, 4.21.4-5.
51. *AB*, 7.3.13.
52. *KU*, 7.1.23.
53. *TB*, 2.7.6; *PB*, 19.13; *JB*, 2.13.
54. *Āp. ŚS*, 22.12.19.
55. Rau, W.; *op. cit.*, p. 24.
56. *Puṣṭi Paśavah*, S. B. 3.2.4.14; *Paśavo Vasu*, *TS*, 5.4.5.2.; 5.4.6.2.; *ŚB*, 3.7.3.12; 11.8.1.3.
57. *BU*, 1.4.10.
58. *AV*, 19.47.6-9; 19.48.5.
59. *ŚB*, 1.8.2.14; *AV*, 11.1.34.
60. *Ibid.*, 5.4.3.1.
61. *TS*, 1.7.6.
62. *AB*, 1.5.28.
63. *Ibid.*, 3.2.24.
64. *Ibid.*, 2.1.3.
65. *TS*, 1.7.1.
66. *AB*, 4.1.3.
67. *Ibid.*, 5.3.17; 19.22-23.
68. *ŚB*, 3.1.4.14.

69. *Āp.* *ŚS*, 3.16.10.
70. *AV*, 19.11.1; 19.31.1.
71. *SBE*, Vol. 4, p.23.
72. *CHU*, 12.3.; *AA*, 2.6.
73. *RV*, 10.90.8; *AV*, 19.6.14; *VS*, 31.6.
74. *SBE*, Vol. 4, p. 17.
75. *ŚB*, 11,8.4.1.
76. *AV*, 3.31.3; *TA*, 3.2.29.32; *ŚB*, 2.7.1.8.
77. *ŚB*, 13.2.4.1.
78. *TS*, 1.6.7; 2.4.6; Cf. *AV*, 3.10.6.
79. *TV*, 3.31.3.
80. *Ibid.*, 4.3.6; *VS*, 14.30.
81. *AV*, 5.31.3; *VS*, 14.30.
82. *Ibid.*, 4.3.6; *VS*, 14.30.
83. *TS*, 4.3.10.2; *VS*, 14.30.
84. *RV*, 1.49.3; *VS*, 8.30; *AV*, 6.107.1; *AB*, 6.2.8.20.
85. *ŚB*, 3.7.3.2; *AB*, 2.18; 6.2.
86. *TS*, 6.4.5.7; *MS*, 4.5.7.
87. *CU*, 8.12.3.
88. *ŚB*, 9.4.2.11; *AB*, 4.9.4.
89. *RV*, 4.57.8; *AV*, 6.102.1.
90. *ŚB*, 1.6.9.30.
91. *AV*, 5.31.8; *GDS*, 2.8.25.
92. *Ibid.*, 19.6.12; *VS*, 3.18; *TS*, 2.26.
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94. *VS*, 20.53.
95. *MS*, 3.4.8; *TS*, 5.7.6.1.
96. *VS*, 16.27.
97. *Ibid.*, 20.53.
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104. *VS*, 24.22.
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107. *TS*, 5.4.11.1.
108. *GDS*, 17.32.
109. *RV*, 1.118.4; *MS*, 4.9.19; *AV*, 7.95.1.; *TA*, 4.29.
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122. *TS*, 5.5.15.1; *MS*, 3.14.20; *VS*, 24.29.
123. *SB*, 13.5.4.17.
124. *VS*, 24.33.
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132. *TS*, 2.5.1.2; *VS*, 24.31; *SB*, 1.6.3.; *GDS*, 17.26.
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173. *AB*, 2.2.15; *VS*, 25.3.
174. *VS*, 24.40.
175. *AV*, 11.6.3.
176. *RV*, 1.191.1; *VS*, 33.23.
177. *RV*, 2.42.3.
178. *VS*, 23.22.
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244. *JB*, 13.4.3.13.
245. *SB*, 13.4.3.13.
246. *AV*, 3.19.17.
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248. *VS*, 24.27-28.
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270. *CU*, 1.10.1-2. *Asoka* also refers to *Ibhya* in his inscriptions in the  
sense of the rich persons.
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272. *Ibid.*, 10.106.6.
273. *VS*, 24.28.
274. *AV*, 4.36.9; 10.1.32.
275. *SB*, 3.1.3.4.
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277. *AV*, 3.22.1-6.
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286. *MS*, 3.14.21; *VS*, 24.40.
287. *SSS*, 14.33.26.
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291. *AV*, 3.9.4.

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298. *RV*, 5.56.3; *VS*, 24.36; *TB*, 1.11.2.
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305. *RV*, 1.6.4.8; 4.61.4; *TS*, 5.5.21.1; *AV*, 4.36.6.
306. *SB*, 12.7.1.8.
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308. *AV*, 5.20.1.
309. *RV*, 1.154.2.
310. *Ibid.*, 2.33.11.
311. Homer, *Iliad*, Books 5, p. 79, 91; 13; 231.
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322. *AV*, 12.1.49.
323. *Ibid.*, 4.3.3.
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335. *TS*, 5.5.21.1; *VS*, 24.31; *PB*, 8.2.2.
336. *TS*, 1.2.3.
337. *RV*, 10.164, 1.62.2.4.



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339. *RV*, 1.161.13; *AV*, 8.6.12; *BU*, 1.4.9.; *TB*, 1.3.7.7.
340. *SB*, 3.4.1.2.
341. *RB*, 10.90.10; *AV*, 8.7.25; *VS*, 3.43, Cf. *Odyssey*, Book 9, p. 133.
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343. *VS*, 21.41-42 Cf. *Odyssey*, Book 17, pp. 264, 275; 20.310.
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461. *Ibid.*, 6.3.1.23.
462. Forde, C.D., *op.cit.*, p. 452.
463. Prasad, B. *MASI*, No. 51, pp. 28-29.
464. *RV*, 1.34.9; 7.7.4.7.
465. *AB*, 4.2.9.
466. *RV*, 3.53.23; *TS*, 5.1.2.
467. *TS*, 5.1.2.1-2.
468. *AB*, 6.4.4.12-15; *SB*, 6.4.4.12.
469. *TS*, 5.1.5.5; *SB*, 6.3.1.23; *AV*, 4.2.9.
470. *TS*, 5.1.5.4.
471. *RV*, 1.29.5; *AV*, 8.6.10.

472. *RV*, 1.134.9; 8.74.7.
473. *VS*, 24.44.
474. *AI*, Nos. 18-19.
475. *AV*, 6.72.2; 20.131.22; *MS*, 3.14.10; *VS*, 24.8; *TS*, 5.5.21.1.
476. *TA*, 2.18; *PGS*, 3.12.2-9; *KSS*, 1.1.13.
477. *ADS*, 1.10.9; 1.2.6.8; *BDS*, 2.1.3.3.
478. *BDS*, 2.1.3.30.
479. Tiwari, B.N. *UMCV*, p. 567.
480. *Nirukta*, 2.5.
481. *RV*, 10.119.1.
482. *SB*, 5.3.1.4; Cf, 3.1.2.14.
483. *AV*, 19.31.61.
484. *TS*, 6.5.10.1.
485. *VS*, 26.4-5.
486. *RV*, 1.101.4; *AV*, 3.14.6.
487. *RV*, 10.75.6.
488. *RV*, 1.91.23; *AV*, 4.24.5.
489. *VI*, II, 238.
490. *AB*, 1.27.2.
491. *Ibid.*, 4.3.17.
492. *AV*, 5.20.2; *TB*, 1.1.9.9.; *AB*, 6.18.10.
493. *VS*, 21.15.
494. *Ibid.*, 21.16.
495. *Ibid.*, 21.17.
496. Uvata and Mahidhara on *VS*, 21.17.
497. *VS*, 21.22.
498. *Ibid.*, 21.21; *VI*, II, 273.
499. *AV*, 10.4.37; *VS*, 18.27; *SB*, 12.4.4.6.
500. *TS*, 2.1.5.4; *TB*, 2.7.4.1.
501. *VI*, 1.83.
502. Agrawala, V.S., *IKP*, p. 223.
503. *Aṣṭa*, 5.2.13; 6.2.38.
504. *RV*, 1.32.9; *TS*, 2.6.2.3; *AV*, 5.17.18; *SB*, 2.2.1.21; *Nirukta*, 11.42.
505. *VS*, 28.6.16.39.
506. *AV*, 13.1.27.
507. *Ibid.*, 12.4.41-44.
508. *Ibid.*, 13.1.27.
509. *TS*, 7.5.3.1.
510. *AV*, 6.70.1 ff.
511. *KS*, 13.6, *MS*, 2.5.4.
512. *KU*, 1.1.3.
513. *SB*, 12.5.1.4.
514. *AB*, 7.2.
515. *TB*, 1.6.8.4; *AS*, 8.14.14.
516. *Ibid.*, 2.6.16.2.
517. *Ap. SS*, 8.14.10-15.

518. *KU*, 1.1.3.
519. *Ibid.*
520. *VS*, 27.35.
521. *AV*, 18.4.33.
522. *Ibid.*, 12.4.3.
523. *VS*, 30.18; *TB*, 3.4.16.1.
524. *SB*, 3.1.2.21.
525. *TS*, 1.1.1; 2.2.5.
526. *SB*, 4.5.1.5.
527. *VI*, II, 146.
528. *Odyssey*, Book, 10. p. 160.
529. Basham, A.L., *WI*, p. 35.
530. *SB*, 4.5.19.
531. *AB*, 1.3.15; *SB*, 3.4.1.2.
532. *AV*, 12.4.38.
533. *TS*, 7.1.1.6.
534. *SB*, 3.1.2.21.
535. *Ibid.*
536. *BDS*, 1.42.1.
537. *Ap. DS.*, 1.17.30.
538. *VDS*, 4.8.
539. *VDS*, 14.30.46.
540. *Ap. SS*, 13.23.6-7.
541. Sen, C., *DVR*, p. 39.
542. *Baudh. SS*, 2.8-11, 20-16.
543. *Ap. GS*, 22.11.
544. *Ap. GS*, 3.10; *PGS*, 3.10.49.
545. *Ibid.*, 3.10.
546. *HGS*, 2.15.5-8.
547. *Ap. GS*, 22.4.
548. *Ap. DS*, 2.16.25.
549. Banerjee, N.R., *IAI*, p. 199.
550. *AV*, 1.31.56.
551. *RV*, 9.29.6; *VS*, 28; *KS*, 25.6, *MS*, 3.8.5.
552. *RV*, 10.102.1 ff.
553. *Ibid.*, 8.6.64; 8.5.37.
554. *TB*, Books, 2-3.
555. *AI*, Nos. 10-11, pp. 115-16.
556. Allchin, *BIG*, p. 259.
557. *BDS*, 1.12.6; 2.2.5.
558. *RV*, 1.161.13; 2.39.4; *AV*, 6.37.3; 11.2.2; *PB*, 8.8.22.
559. *AV*, 7.95.2.
560. Vide Brock, J.C., "The Origins of the Dogs," *Science and Archaeology*, p. 273; Forde, C.D., *op.cit.*, p. 442.
561. Vats, M.S., *EH*, p. 306.

562. Marshall, S.J., *MIC*, II, p. 551.
563. Rao, S.R., *LIC*, p. 89.
564. *RV*; 7.55.1-4.
565. *VS*, 16.23.
566. *Ibid.*, 16.27.
567. Homer, *Iliad*, Book II, p. 193.
568. *AV*, 18.2.12-13.
569. Basham, A.L., *WI*, p. 36.
570. *Avesta*, *SBE*, Vol. IV, pp. 151-180.
571. *RV*, 8.55.3.
572. *SB*, 12.4.1.4.
573. *RV*, 4.18.3.
574. Banerjee, S.C., *op.cit.*, p. 220.
575. *SBE*, Vol. 4, pp. 151-172 Cf. *Vendīdād*, 13-14.
576. Vats, M.S., *op. cit.*, I, p. 305; Allchin, B., *BIC*, p. 259.
577. Forde, C.D., *op. cit.*, p. 445.
578. *RV*, 10.86.4; *SB*, 12.4.1.4; *JUB*, 1.51.4, Cf. *Iliad*, Book 11, p. 193.
579. *SB*, 5.4.3.19.
580. Sharma, G.R., *op. cit.*, p. 94.
581. *AI*, Nos. 9-10, p. 119, Cf. *Odessey*, Book 17, p. 264.
582. Banerjee, S.C., *op.cit.*, p. 19.
583. *AI*, Nos. 9-10, pp. 119.
584. *SBE*, Vol. 22, p. 137.
585. Forde, C.D., *op.cit.*, p. 455.
586. *Ibid.*
587. Allchin, B., *BIC*, p. 259.
588. *AV*, 20.127.2; *RV*, 8.6.48.
589. *RV*, 1.138.2; 8.4.6; *AV*, 20.127.1-2; *SB*, 1.2.3.9; *AB*, 2.8.
590. *Avesta*, *Vendīdād*, Ch. 14.
591. *TS*, 1.8.21.1.
592. *Yasna*, 11.1.
593. *SBE*, Vol. 31, p. 248.
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595. *MN*, 1.220.
596. Dandekar, R.N., "Pūṣan, the Pastoral God of India", *Indian Antiquary*, Vol. 5, pp. 25-30.
597. *RV*, 6.54.5-6.10.
598. *Ibid.*, 6.54.7.
599. *Ibid.*, 6.53.9.
600. *Ibid.*, 10.17.3.
601. *Ibid.*, 6.56.5.
602. *Ibid.*, 5.17.3.
603. *Ibid.*, 6.28.2.
604. *Ibid.*, 6.55.2.

605. *RV*, 6.5.35.
606. *Ibid.*
607. *Ibid.*, 1.115.4-5; 10.26.8.
608. *Ibid.*, 10.26.6.
609. Dandekar, R.N., *op. cit.*, p. 61.
610. *Ibid.*
611. *SB*, 5.2.5.8; 3.1.4.9; 14.
612. *VS*, 16.17; *AB*, 3.3.33.
613. *TS*, 1.6.8; *AV*, 15.5.3; 16; 11.2.11.
614. *Ibid.*
615. *AV*, 11.2.2.
616. *RV*, 1.114.1; *AB*, 3.3.34.
617. *Ibid.*, 7.46.3.
618. *Ibid.*, 1.114.10.
619. *Ibid.*, 1.114.9.
620. *Ibid.*, 1.43.9.
621. Marshall, S.J., *MIC*, I, p. 52.
622. *TS*, 1.5.9.
623. *Ibid.*, 1.2.3; *KS*, 2.4; *MS*, 1.2.3; *VS*, 4.11.14.
624. *RV*, 5.41.4.
625. *Ibid.*, 3.1.23; 5.41.19; *AB*, 1.58.
626. Dowson, J., *CDHM*,
627. Macdonell, *VM*, p. 124.
628. *RV*, 7.16.8; 10.70.8.
629. *SB*, 1.8.7.9.
630. Hewitts, *JRAS*, 1890, p. 356.
631. *RV*, 1.164.31; *PB*, 24.18.
632. *VS*, 33.11; *SB*, 4.1.5.4.
633. *AB*, 4.1.1.
634. *RV*, 1.114.9; 10.142.2.
635. *SB*, 4.1.5.2.; *TB*, 3.4.9.1.
636. *VS*, 30.11; *TB*, 3.4.9.1.
637. *TB*, 3.4.9.1.
638. *TS*, 3.4.9.1., *VS*, 30.11.
639. *RV*, 10.13.6; *AV*, 18.3.23 Cf. *Iliad*, Book 5, p. 78.
640. *GDS*, 12.19.20.
641. *TS*, 5.7.6.
642. *Ibid.*, 7.5.1.2.
643. *AV*, 4.36.6 Cf. *Iliad*, Books 12, p. 219; 18, p. 353.
644. *GIS*, 12.16-18.
645. *Ap. DS*, 2.28.5-6.
646. *RV*, 10.62.7.
647. *AV*, 6.141.1-3; 12.4.6.
648. *MS*, 4.2.9.
649. *AV*, 6.141.1-3; 12.4.6.
650. *MS*, 4.2.9.

651. *MS*, 4.2.9.
652. *AV*, 12.4.5.
653. Agrawala, V.S., *IKP*, pp. 226-27.
654. *MS*, 4.2.9.
655. *ŚGS*, 3.10.1.
656. *AV*, 6.141.2.
657. *MS*, 4.2.9.
658. *Ibid.*
659. *JVS*, Jan. 1934, pp. 16 ff.
660. *AB*, 19.4.
661. *SBE*, Vol. 4, p. 140.
662. *AB*, 3.2.24.
663. *AV*, 6.52.1.
664. *Ibid.*, 7.53.1.
665. *RV*, 1.191.4; *VS*, 3.21; *AV*, 3.14.1.5-6, *ŚB*, 11.8.3.2; *AB*, 3.18.14.
666. *VS*, 15.26.
667. *Avesta*, *SBE*, Vol. 4, p. 17.
668. *AV*, 2.14.2.
669. *Ibid.*, 3.14.1-6.
670. *Ibid.*, 3.14.1.
671. *ŚB*, 21.1.10.
672. *AV*, 6.115.2-3.
673. *Ibid.*, 3.6.7; *TB*, 3.8.9.4; *ŚB*, 13.1.6.2; *Nirukta*, 12.38.
674. *ŚB*, 3.8.1.15.
675. *TS*, 1.1.2.2; *ŚB*, 1.3.3.6; 2.6.1.15.
676. *VI*, I, 523, II, 287, 478.
677. *RV*, 1.162.14-16; *BU*, 6.2.13; *CU*, 5.1.12; Pisani, V., "On Horse Stables in Vedic Times", *ABORI*, Vol. 39, pp. 133.34.
678. *VI*, I, 470.
679. *AV*, 19.55.1.6.
680. *VS*, 24.38.
681. *VI*, I, 235.
682. Das, A.C., *Rgvedic Culture*, p. 121.
683. *VS*, 22.30; *ŚB*, 13.3.2.8.9.
684. *TS*, 5.2.8.3.
685. *AB*, 3.1.5; *ŚB*, 6.1.3.12.
686. *VS*, 21.43-45.
687. *Avesta*, *SBE*, Vol. 4, p. 140.
688. Sharma, R.S. *PIHC*, 1977, p. 187.
689. *RV*, 1.10.2; *AV*, 5.20.3.
690. *AV*, 19.58.4.
691. *VI*, I, 171; II, 341.
692. *VS*, 21.43.45.
693. *AV*, 9.6.46; *TB*, 1.4.9.2; *ŚB*, 2.2.3.9; *GU*, 2.9.4.
694. *Aṣṭa*, 6.1.145.



695. *RV*, 1.120.8; 6.54.5-7.

696. Three have gone hence and passed away, the man, the tiger and the wolf.

Down, verily, the rivers flow, down-goeth the *nygradha* tree, down let our foemen bend and bow.

On distant, pathway go the wolf, on pathway most remote the thief.

On a far road speed forth the serpent and the malicious man.

We crush and rend to pieces both thine eyes, O tiger, and the jaws and all the twenty claws we break.

We break and rend the tiger first of creatures that are armed with teeth.

The robber then, and then the snake the *sorcerer* and then the wolf.

The thief who cometh near today departeth bruised and crushed to bits.

By nearest way let him be gone. Let Indra slay him with his bolt.

Let the beast's teeth be broken off, shivered and shattered be his ribs.

Slack be thy bowstring, downward go the wild beast that pursues the hare.

Open not what thou hast compressed, close not what thou hast not compressed.

Indra's and Soma's child, thou art Atharvan's tiger crushing charm.

*AV*, 4.3.1.7, Cf. *SB*, 1.5.4.6; *AB*, 2.35.

697. *AV*, 1.5.46; *AB*, 2.35.

698. *Ibid.*, 1.164.40; 7.73.11; 9.10.20.

699. *SB*, 2.1.1.6; 5.2.1.16.

700. *AB*, 5.5.27.

701. *TS*, 6.30.10.4.

702. *VS*, 22.22.

703. *VI*, I, 238; *RV*, 4.22.2; 5.52.9; 10.75.8; *BU*, 4.12; 6.2.13.

704. *AV*, 3.9.2.

705. *SGS*, 3.10.4.

706. *AB*, 7.2.9.

707. *AV*, 3.28.1.

708. *Ibid.*, 9.4.2, 4.9.4.17.

709. *Ibid.*, 9.4.19.

710. *SB*, 8.2.4.17-18.

711. *AV*, 12.2.1.; 15-16.

712. *Prathamō daivyo bhiṣak VS*, 16.5, Cf. *AV*, 6.141.1.

713. *AV*, 6.141.1; *VS*, 3.5.9.

714. *PGS*, 3.8.15.

715. *Ap. GS*, 20.5-7.

716. *AV*, 5.29.1.

717. *Ibid.*, 2.32-1.6.

718. *AB*, 7.1.

719. *Avesta, SBE*, Vol. 4, p. 85.

- 720. *AV*, 3.28.2; *RV*, 10.17.6.
- 721. *TS*, 3.2.3.
- 722. *Ibid.*, 1.5.7.
- 723. *Avesta*, *SBE*, Vol. 4, p. 85.
- 724. *SB*, 13.4.1.2.
- 725. *Ibid.*, 13.4.1.3.
- 726. *Ibid.*, 13.4.1.4.
- 727. *RV*, 8.47.13.
- 728. *Avesta*, *SBE*, Vol. 4, pp. 221-22.

## Arts and Crafts

The Indus valley people had developed arts and crafts on a large scale because they were mainly engaged in trade and commerce. Though the Vedic Āryans had not developed a city civilization, they were well-equipped technicians. Their carpenters, bronze smiths, weavers and potters were highly skilled and produced different objects much superior in quality to those of the Harappan culture. They have been referred to in the Vedic texts with much respect.<sup>1</sup> They developed these and other crafts on a wide scale. This is a fact which has been confirmed by literary sources and archaeological finds. The later Vedic texts refer to several crafts, craftsmen, technique of making objects and finished goods. The importance of craftsman was realised by the priests and common people. So in some sacrifices their presence was essential.<sup>2</sup> The systematic enumeration of their crafts in the later Vedic texts indicates an advanced stage of economy.

### Śilpa

The general term for arts and crafts was *śilpa*,<sup>3</sup> meaning skill in<sup>4</sup> making objects. The *Aitareya Brāhmaṇa* maintains that culture implies an improvement on nature through planned action of man.<sup>5</sup> This improvement is effected by means of technique and methodologies advanced by human ingenuity and creativity. The primitive people were barbarous. They had no

houses to live in and they had not developed any sense of cultured manners. They used to hunt in order to sustain themselves. Skills, such as, weaving, house building, making agricultural tools, utensils and weapons, etc., marked the development of human powers. These certainly helped the process of making the people cultured.<sup>6</sup> Even arts like dance, drama and music had been also the skills required for the improvement of self culture.<sup>7</sup> These also were the means of livelihood and required proficiency.<sup>8</sup> *Silpas* were considered as the means of doing away with poverty.<sup>9</sup> Numerous miraculous acts performed by divine beings were regarded as *silpas* and the arts of human beings were to be understood as imitations of divine acts. The gilded cloth spread over the elephant and the carriage to which a mule was yoked, were considered to be wonderful works of *silpa*. This skill was appreciated by him who had, profound knowledge of fine arts. It has been claimed that *silpas* prepare soul and imbue the same with the knowledge of the *Vedas*.<sup>10</sup> Its scope was so wide that even the art of reciting the Vedic hymns was considered as an act of *silpa*.<sup>11</sup> The performance of every act required some skill, hence Yāska rightly thinks that *silpa* is an act or it is doing something.<sup>12</sup>

The Vedic texts refer to two kinds of *silpas*, namely, the *devasilpa* and the *silpa* practised by human beings.<sup>13</sup> The creation of the universe is the best illustration of the former. The *silpas* employed by human beings were numerous, such as, ivory work, bronze, weaving, goldsmithy and carriage-making.<sup>14</sup> Excavations of ancient sites in the Gangetic valley have brought to light objects of *silpas* which corroborate literary references. During the post-Vedic times, there were several villages which were the centres of production of objects of arts and crafts.

#### Tvaṣṭṛ and Rbhus

In the *Rgveda*,<sup>15</sup> *Tvaṣṭṛ* has been mentioned as the god of artisans and especially of metal workers. He was the generator of Agni with whose help he could smelt metals. This text envisages a Viśvakarman.<sup>16</sup> In the *Purāṇas* both become indistinguishable. In order to make beautiful pieces of art, the artisans prayed for divine grace. They worshipped *Tvaṣṭṛ* for

this purpose. His name occurs 65 times in the *R̥gveda*.<sup>17</sup> He held an *āyastī* axe in one of his hands<sup>18</sup> and was considered as a skilful workman<sup>19</sup> making different kinds of objects. He made the *vajra* of Indra and sharpened the axe of Brahmanaspati.<sup>20</sup> The word *Tvaṣṭṛ* has been derived from a rare root, *tvakṣa*, of which only one verbal form occurs in the *R̥gveda*, the cognate of which, *tvakṣa*, is found in the *Avesta*.<sup>21</sup> It appears to be identical in meaning with the common root *takṣ* which is used with the word *Tvaṣṭṛ*. The meaning of the word, therefore, seems to be the artificer. On account of this, he has been mentioned as the creator of forms.<sup>22</sup> The Vedic references prove that he was also associated with woodcraft.<sup>23</sup> The Homeric Greek god of artisans and especially of ironsmiths was Haphæstus.<sup>24</sup> Like *Tvaṣṭṛ* he was prayed for bestowing skill on the craftsman.

*Ṛbhū*s were the gods of carpenters. The term *Ṛbhu* is derived from the root *ṛbhū*, i.e., to grasp, thus meaning handy. It corresponds to German *irbe* and English *elb*. These words indicate that the essential character of the *Ṛbhū*s was that of skilful artificers.<sup>25</sup> The verb *takṣ*, to fashion, was generally used with reference to the manual skill of the *Ṛbhū*s as to that of *Tvaṣṭṛ*. They also were makers of chariots.<sup>26</sup> Sometimes they have been mentioned as the rivals of *Tvaṣṭṛ*.<sup>27</sup> The *Ṛbhū*s were renowned for making chariots. They are frequently said to have acquired the rank of gods on account of their marvellous skill.<sup>28</sup> The *Aitareya Brāhmaṇa* mentions them as men who by austerity obtained a right to partake of *soma* juice along with the gods. The gods rejoiced so greatly in their work that the three *Ṛbhū*s, namely, *Vaja*, *Ṛbhukṣan* and *Vibhvan* became the artificers of the gods in general.<sup>29</sup> Like the superior gods, they are besought to give prosperity and wealth in cattle, horses, heroes, and to grant vigour, nourishment, offspring and dexterity. They granted treasures to *soma* presser.<sup>30</sup>

The verb *takṣ*, to fashion, is generally used with reference to the manual skill of the *Ṛbhū*s as of *Tvaṣṭṛ*. The five great feats of dexterity by which they became gods, are spoken of with uniform frequency in the *Saṃhitās*. They made a three wheeled car which was horseless. They made a horse for *Aśvins*,

and a cow which yielded nectar. They made this cow out of hide. They transformed their parents who were like decaying posts, into young ones.<sup>31</sup>

The exhibition of skill which is most frequently mentioned as showing the R̥bhus in the character of successful rivals of Tvaṣṭr consists in their having turned the one cup made of wood by Tvaṣṭr, into four.<sup>32</sup> Their skill is incidentally exemplified by the statement that they composed prayers, formulated sacrifices and created the two worlds.

### Causes of the Development of Crafts

There were a number of factors which gave impetus to artisans for making objects of arts and crafts. From the political point of view, it was due to the establishment of territorial states in the Gangetic valley which brought stability in this region and enabled the craftsmen to engage themselves in productive activities. Administrative institutions were set up which looked after them by protecting them from anti-social elements and other obstructive agents. In comparison with the R̥gvedic times, the chances of war during the later Vedic period were minimised, though not completely uprooted. Tribal and inter-state wars usually broke out for extending the territorial limits of kingdoms. Battles required superior weapons and chariots which also accelerated the development of metal arts and wood craft. The use of iron for making weapons got prominence. The profession of *iṣukāra* (arrow-maker) was regarded as important. The mention of shining jewels of gold and splendid garments put on by kings and nobles in the Vedic texts also suggests that these were made by skilled hands. The association of the king with craftsman became very close.<sup>33</sup>

Some social factors also promoted the development of arts and crafts. The classification of society into four *varṇas* was based upon the principle of the division of labour, and later, this basis of social organisation became rigid. The *śūdras* who engaged themselves in different crafts were dedicated to labour.<sup>34</sup> This process continued from generation to generation and particular crafts became the specialities of certain castes, such as, weaving, woodwork, metal and ceramic crafts were practised by

the weavers, carpenters, smiths and potters, respectively. The settled life and development of agriculture also were helpful to the promotion of crafts, for the needs of the people increased and they required different objects in their houses.

Religion also caused the development of crafts. In sacrifices, different kinds of pots made of clay, wood and metals were required for containing oblations. Sacrificial implements and posts were essential for performing rituals. Garments, seats, ornaments and such other things also were required for performing them. All these might have helped the promotion of crafts, as some skill was necessary for making them.

### Textile

The *Śatapatha Brāhmaṇa* maintains that the use of cloth in any form for covering the body or for increasing the physical beauty or for protecting it from cold and heat is considered as a mark of civilised society. Further, it states that a sacrificer must put on a garment to make him thoroughly prepared for his task. Remaining naked or improperly dressed or covering his body with the stalks of grass or some other objects, he may injure himself and blood may trickle out from his body. So, he should see that he is properly clad. People like to see even a ugly person who is well dressed. Even the cows draw themselves towards only one who is properly clad.<sup>35</sup> The religious sanctity attached to the cloth was due to the importance which was attached to it in those days. It is said that the woof of the cloth belongs to Agni, the warp to Vāyu, the thrum to the departed souls, the fore-edges to the snakes, the threads to Viśvedevas and the meshes to the asterism.<sup>36</sup>

The primitive people used barks, leaves of trees, grasses and hide of animals for covering their bodies. Even during the Vedic period these materials were put on by ascetics, sages and students. *Trpā* plant was very useful for preparing material for making a garment termed *tārpya* which was put on by the sacrificer as an under-garment.<sup>37</sup> With the development of civilisation other materials were used and the art of spinning and weaving came into vogue. The early Vedic people used to spin and weave cloth.<sup>38</sup> They used wool, hide and grasses for

making garments. It appears that the Indo-Europeans, before their dispersal to different regions, knew the art of spinning and weaving as several such allied terms occur in their languages. Stretching out of the threads was an essential process for weaving for which synonymous terms occur, such as, *tan* in Sanskrit and Zend, *teino* in Greek and *tendo* in Latin. For plaiting, the Sanskrit root *prc* is akin to the Greek term *pleko* and Latin *plico*. For weaving, Sanskrit root *ve* and Latin *vieo* are somewhat similar. English term weave also belongs to the same root. These words prove the practice of the art of weaving among the Āryans in their original homeland.

In the Indus valley, the Rgvedic Āryans might have seen a well developed art of weaving. Besides their conventional materials for weaving, they saw cotton which was an excellent raw material for cloth. That the art of weaving was at its developed stage is confirmed by impressions of textiles on earthen wares and faience discovered from the Harappan sites. Whether cotton and flex both were spun, because they were in post-Harappan times in the Narmadā valley, is not yet known<sup>39</sup> Numerous spindle whorls, unearthed from the excavated Indus cities, mostly from the houses at Mohenjodaro, testify to the common practice of spinning among the rich and the poor alike. Scraps of cotton discovered from Mohenjodaro resemble the present day Indian cotton with its typical convoluted formation. Cotton was, to the best of our knowledge, first used by the Indus valley people. The Indian cotton was known to the Babylonians as *sindhu* and to the Greeks as *sindeon*<sup>40</sup> on account of its origin in the Indus (Sindhu) valley.

In the Indus valley the plant which yielded cotton belonged to one of the coarser Indian varieties closely related to the *gossypium arboreum*.<sup>41</sup> It is surprising, however, that the *Rgveda* does not refer to cotton though the Āryans lived for centuries in that region. It appears that the pastoral Āryans did not cultivate that plant for obtaining cotton, for they could easily get wool from their sheep and goats. The later Vedic texts also do not have any mention of cotton. For the first time it has been mentioned in the *Āśvalāyana Śrauta Sūtra*.<sup>42</sup> In Homeric Greece also wool was considered as the best raw material for



making clothes.<sup>45</sup> In the post-Vedic times, the Indus cotton plant was an object of attraction for the Greeks as is evident from this remark of Herodotus: "The fruit of which is a wool excelling in beauty and quality of a sheep."<sup>44</sup>

The early Vedic Āryans might have adopted some techniques of textile arts from the Indus valley people. The *Rgveda* refers to several kinds of splendid clothes put on by kings and nobles. Usually wool was used as a raw material for weaving cloth.<sup>45</sup> Wool obtained from the goats was not considered of good quality because it was rough in comparison with the wool obtained from the sheep.<sup>46</sup> Softness was a sign of the quality of wool.<sup>47</sup> *Urñāstukā* was the ball of wool which was also used for throwing on the face of the *soma* vendor.<sup>48</sup>

Technical know-how and efficiency were essential for spinning and weaving on a large scale. The early Vedic Āryans were acquainted with the triple-twisted thread.<sup>49</sup> They could spin the finest count. The *Yajur Samhitās* mention spinning as a means to earn wealth.<sup>50</sup> It was a common cottage work of women, who used to spin threads of different varieties with the help of spinning devices. *Tantu*<sup>51</sup> meant warp of a piece of weaving as opposed to *otu* (woof). The literal meaning of *tantu* is the object to be stretched out because threads were stretched for weaving cloth. The *Śatapatha Brāhmaṇa*<sup>52</sup> contains a term *anucchada* for warp. *Anu* (woof) was also termed *paryāsa*. Another term for warp was *prācinātāna*.<sup>53</sup> *Tasara* (shuttle) was used for weaving cloth and *vemon*<sup>54</sup> was the loom. *Mayūkha* (a wooden peg) was used to stretch the web.<sup>55</sup> The weaver was termed *tantuvāya*. This term is derived from the roots, *vā*, meaning to weave, and *tan*, to stretch. He stretched the threads for weaving, so he was termed *tantuvāya*. This term has been retained in vernaculars in the form of *tāntawā*, who are a class of weavers. Spinning and weaving were also done by the women who were known as *vayitri*.<sup>56</sup> References to weaving competition between two female weavers prove occurrences of weaving contests.<sup>57</sup>

Weaving of cloth was considered to be a very useful job, for it resulted in material prosperity of the weaver and ensured

his sound economic condition<sup>58</sup>. On account of this, cloth was regarded as the embodiment of prosperity and nourishment<sup>59</sup>. Weaving has been compared with the mixing of *soma* juice. It is also said that like shuttle through the loom, the steady ferment mixes the red juice with the forming spirit<sup>60</sup>. Weaving of cloth in the later Vedic period has been attested by the discovery of two sherds bearing cloth impressions unearthed from Atranjikhara<sup>61</sup> (pd. III).

The composition of hymns by seers has been compared with the weaving of cloth with wollen threads<sup>62</sup>. The term *ṛgāyānam* meant a mode of recitation of the hymns in which the stanzas were "woven together" by reciting them one after another continuously<sup>63</sup>. It has also been compared with the day and night. *Uṣā* was the beautiful impression on the cloth in the form of the day and night<sup>64</sup>. The passages have summarised the complete process of weaving in such manner : "Dawn and night, lofty, sapful, richly yielding, fair showing as they weave with varied colours, the long extended thread in concert<sup>65</sup>. The *Atharva Veda* describes this process in an excellent way : May all the hems and borders, all the threads that form the web and woof of the garment woven by the bride, be soft and pleasant to our touch."<sup>66</sup> These references prove that weaving was a highly developed art and there were weaver teachers to impart the knowledge of techniques concerning weaving<sup>67</sup>. During the post-Vedic times, this art was much developed as is evident from the early Pāli texts. During the NBP ware phase, the weaving of cloth became stabilized as indicated by the spindle whorls employed in spinning yarn and, now and then, by a bit of rope well preserved by centuries of immersion in the waters of the moat at Ujjayinī. The impressions of the warp and woof of a piece of textile on the surface of a sherd discovered from the same site<sup>68</sup> also confirm this view point.

Dyeing of cloth was essential for increasing its beauty. The Vedic people knew different methods of dyeing it. In this art both male and female dyers were engaged<sup>69</sup>, but the latter excelled the former, so they have been dedicated to delight (*prākāma*)<sup>70</sup>. The Vedic texts refer to several colours in which cloth was usually dyed. *Lohitavāsa*<sup>71</sup> was red cloth which was to be

put on by the widows in contrast with the modern practice. *Lohitaka* also denoted red cloth. *Lākṣā*<sup>72</sup> and *haridrā* were also common dye-stuffs. *Mahārājan*<sup>73</sup> was a term to denote the cloth dyed in saffron. *Piṣaṅga*<sup>74</sup> (brown) threads were used for weaving cloth of the same colour. The white cloth was known as *pāṇḍu*<sup>75</sup>. Though the texts refer to several dye stuffs and cloths of different colours, they do not shed any light on the technique of dyeing. It would have been the same as during the post-Vedic times.

People in general wanted to make their clothes beautiful for which it was necessary to make fascinating designs on them. In this regard embroidery played an important role. Even threads made of gold and silver were used for decorating them<sup>76</sup>. Designs were made with the help of needles (*sūci*<sup>77</sup> and *veśī*<sup>78</sup>). There were quite a few persons who could turn out beautiful pieces of cloth. It was worthwhile doing this on more systematic lines with designs and fabrics that could catch up with popular imagination. For a large sale of these clothes, it was but necessary to keep their prices moderate. Some historians think that the Vedic Indians did not know the art of sewing or stitching pieces of cloth. But this view is wrong for the *Rgveda* refers to *sūci* (needle) and the process of sewing<sup>79</sup>. The *Atharva Veda* clearly mentions the stitching of pieces of cloth for making coats<sup>80</sup>. In an allegory, Rākā has been asked to sew her garment with a never breaking needle<sup>81</sup>. The *Aitareya Brāhmaṇa* refers to two pieces of cloth being joined together with a needle<sup>82</sup>. The existence and use of needle as referred to in the Vedic texts are corroborated by archaeological evidence as knitting needles made of bone have been discovered from Hastināpura<sup>83</sup> (pds. 2-3). Needle made of gold, silver and lead were used for drawing lines on the dead body of the sacrificial horse for dissection<sup>84</sup>. It appears that the art of sewing and stitching pieces of cloth was known to the Āryans even in the Indo-European period. *Sūci* has been derived from the root *śiv*, meaning to sew<sup>85</sup>. In Āryan languages the term sew is akin to Sanskrit *śiv*. *Syū* was also a term for the needle<sup>86</sup> which is a synonym of sew.

The Vedic references<sup>87</sup> show that the people usually wore long pieces of cloth draped around the body and over the shoulders

and fastened with a belt and pins. The lower garment (*paridhāna vasan*) was usually such cloth fastened round the waist with a belt or string (*mekhalā*). The upper garment (*uttariya*) was another such length draped shawl-wise over the shoulders. The later garment was often put on in the home or in hot weather. A third garment (*pravāra*) was also worn, draped like a cloak in the cold season.

In the Vedic literature there are terms which refer to different grades and types of clothes. *Vasana*<sup>88</sup> denoted clothes in general which were of ordinary grade but *suvasan*<sup>89</sup> signified a splendid garment which was beautifully embroidered and decorated with designs. *Suvāsas*<sup>90</sup> was a properly dressed person or one whose garments were decorated or were of superior grade. *Peśas*<sup>91</sup> was the term denoting ornamentation on clothes. Beautiful designs were made on them with the help of needles and threads of various colours. *Peśas* generally meant embroidery. It was a synonym of beauty because it was derived from the root *piś*<sup>92</sup>, to adorn. *Supeśas*<sup>93</sup> was a beautifully carved and embroidered cloth. It was an epithet of Uṣā because like this cloth, she was beautiful in form and had different colours on her body. Embroidered clothes were also put on by female dancers<sup>94</sup>. The nobles liked to wear clothes embroidered with threads made of precious metals like gold and silver<sup>95</sup>. The dress of the king, compared with the splendid dress of later times, was simple. The *Jaminiya Brāhmaṇa* mentions that Janaka Vaideha appeared in the court with staff and sandals, for the rest of his dress he did not obviously differ from the others present<sup>96</sup>. A little more luxurious, but still more modest was the dress of the monarch at the *rājasūya*. He put on an embroidered cloth, a grey woollen skirt, a wrapper and on the head a turban<sup>97</sup>. *Kaśipu* was a sort of mattress or cushion embroidered in gold on which the *hotṛ* sat during the recitation of the hymns<sup>98</sup>. *Sic* was the decorated borders<sup>99</sup> of a cloth and *ārokāḥ* denoted designs made on clothes<sup>100</sup>. There were two methods of making *peśas* (beautiful designs) on clothes. They were either woven or were made with needles and threads<sup>101</sup>. There were *peśaskāras* (persons who did embroidery work) and *peśaskāris*, females engaged in embroidery. The

later ones have been dedicated to form making<sup>102</sup>. So it seems that they had specialised in the art of making designs on clothes. During the post-Vedic times this art improved much.

### Woodwork

Woodwork was practised by the Āryans even in the Indo-European period because in their languages there occur synonymous terms for carpenter, such as, *takṣaṇ* in Sanskrit, *tosan* in Zend and *taktan* in Greek<sup>103</sup>. The early Vedic Āryans had achieved a high standard of skill in chariot making on account of which they increased their mobility and dominated over the enemy on the battle field. The Vedic texts mention the importance of chariots and their makers and allot them a high status in society as well as in the affairs of the kingdom<sup>104</sup>. The Bhrgus were expert chariot-makers<sup>105</sup>. Incidental references seem to indicate that they might have worked their way upto priesthood from the position of wood workers. The art of making a chariot required intelligence, so in the *puruṣamedha*<sup>106</sup> a chariot maker has been dedicated to it.

*Takṣaṇ* denoted the general class of carpenters who made domestic utensils and agricultural implements with an axe, their main tool<sup>107</sup>. The carpenter made sacrificial jars and posts by cutting the pieces of wood, so he was termed as *vanaspati samitṛ* because a priest known as *samitṛ* dissected the dead body of the sacrificed animal and cut it into several pieces. The *Takṣaṇ* and *rathakāra* have been placed in close proximity obviously due to their occupation being alike. But the latter has been differentiated from the former because he was mainly a chariot-maker and was more accomplished in his skill than the former who turned out cruder types of objects.<sup>108</sup> It appears that the *rathakāra* class of carpenters came out from the general class of wood craftsman.<sup>109</sup> The work to be done by them required patience, so they have been dedicated to *dhairya* in the *rājasūya*.<sup>110</sup>

It seems that *takṣans* did not enjoy their exalted social status for a long time. The *Śatapatha Brāhmaṇa* states that they are *aśuddha* (impure). By touching the sacrificial jars they made them desecrated, so they were to be purified by sprinkling waters on them.<sup>111</sup> The cause of such an impurity is not mentioned in this text. It appears that their impurity was connected

with the earlier offence to the woodland spirits which they committed by destroying the trees.<sup>112</sup> But on the other hand, the *rathakāra* retained his high status and even in the post-Vedic times he was allowed to perform sacrifices and to put on sacred thread.<sup>113</sup> Perhaps the honour accorded to him was on account of the importance of chariots on battle fields.

It was impossible for the carpenters to make different kinds of objects without using strong and sharper tools. During the earlier times, they worked with tools made of copper and bronze, but the discovery of iron gave a new impetus to the development of woodcraft. *Svadhiti*<sup>114</sup> was the chief working tool of carpenters, but axes (*paraśu*<sup>115</sup> and *kuliśa*<sup>116</sup>) were also used for cutting down trees. Archaeological evidences prove that the axes of the Vedic Āryans were superior to those of the Harappans. The axe-heads of Harappans had to be lashed to their shafts but the same of the Vedic Āryans had holes for the shafts, on account of which they were more effective than the Harappan axes. Basham thinks that though the Āryans of the great steppeland may never have come into direct contact with the Sumerians, they had adopted some Mesopotamian innovations, notably the shaft hole-axe.<sup>117</sup> Only in the topmost levels at Mohenjodaro and Harappā we find tools of a better type, which were probably left by invaders.<sup>118</sup>

Another tool of the carpenter was a saw with which he could work efficiently. In one respect, the Harappans had technically stolen a march over their contemporaries, for they had devised a saw with undulating teeth which allowed the dust to escape freely from the cut and thereby much simplified the carpenter's task. From this, we may assume that they had particular skill in carpentry.<sup>119</sup> It is reasonable to think that the Vedic Āryans also might have adopted this improved type of saw. There are evidences to prove that during the later Vedic period saws made of iron were used. The wooden beams of *acacia ferruginea* discovered from Ujjayini's ramparts belonging to period I (C. 750-500 B.C.) are neatly cut and have straight and smooth sides. Such type of smooth cutting of hard wood proves the use of some hard metal, such as, iron saw, because other metals or alloys like copper, or bronze could hardly have

done the job so finely.<sup>120</sup> Borer was also essential for making holes for fitting different pieces of wood with each other. Such a copper borer, which is of round section and top square, has been discovered from Hastināpura, Pd. II.<sup>121</sup>

### Bamboowork

In the Yamunā-Gangetic valley, bamboo grew wild, and there were several bamboo forests. Pieces of bamboo were used for making houses, cots, chairs, winnowing baskets, fans, umbrellas and baskets of different shape and size for containing grain and other things. These were used for making sticks and several parts of bullock-carts. On account of this, the *Śatapatha Brāhmaṇa* mentions that bamboo is the one affording subsistence, so it is used up.<sup>122</sup> Though the *Rgveda*<sup>123</sup> refers to bamboo (*veṇu*) as a form of property along with dogs and hides, it does not mention the bamboo workers. The later Vedic<sup>124</sup> texts frequently refer to bamboo in different contexts, but occasionally in the sense of cane and reed. The *Vājasaneyī Saṃhitā*<sup>125</sup> refers to *bidalakāri* as a victim in the *puruṣamedha*. Mahīdhara explains it as *vaṃśavidārīṇī* and *vaṃśapatrakāriṇī* which mean female bamboo splitter and a female cane worker, respectively. Undoubtedly basket making required bamboo splitting.

*Bidakalāri* has been dedicated to Piśācas in the *puruṣamedha* which is of much socio-economic significance. Piśācas are associated with the Rākṣasas and Asuras who were hostile to the Āryan gods. Her association with the Piśācas indicates her aboriginal background. She did not command respect as the carpenter or the chariot maker did. It seems that bamboo work did not involve hard physical labour, so mostly women were engaged in it though the male members also made objects of bamboo. A basic and essential craft during the PGW phase was that of making baskets. The warp and woof of the baskets, even from their crumbling impressions upon the earth where they had been placed at Ujjayinī, are amazingly modern in form.<sup>126</sup>

References to bamboo workers are numerous in the post-Vedic texts. Old terms, such as, *bidalakāra* and *bidalakārt*

have not been used in them. A new term *veṇa* has been used for the bamboo worker. The *veṇas* were a low and despised caste.<sup>127</sup> Fick thinks that they did not know any use of metals including iron which widened their cultural gap from the Āryans who despised them socially. His view does not hold good because the use of iron was not the only basis of social status. The *takṣan* used iron tools but he was considered as impure.

The Vedic sources do not shed any light on the working tools of bamboo workers. It seems that they used a heavy knife to cut and split the bamboo. The present day bamboo-workers also work with only one heavy knife. It is made of iron and has sharp edge only on one side.

### Leather-Work

The Vedic Āryans knew the use of hide and made numerous objects of it, such as, garments, shoes, containers, cords, bed-covers and roofing material.<sup>128</sup> Some of the gods have been mentioned as wearing hides of animals as their garment. The peculiar garment of Śiva was the hide of an elephant.<sup>129</sup> *Kṛtṭyādhivāsa* was covering of leather placed over the *āsandi* (chair) kept on the spot where the sacrificial horse was immolated.<sup>130</sup>

On account of the use of hide on a large scale for making different objects, tanning became a highly developed art. The tanners<sup>131</sup> (*carmanna*) were the leather-workers. The Vedic texts shed very dim light on the art of tanning. The stretching of hides with the help of pegs made of wood inserted into the ground<sup>132</sup> proves that after dressing it, the tanner made it fit for making leather goods. The dried up hide was made soft with water.<sup>133</sup> *Carmaṇya* meant leather<sup>134</sup> work in general and *ajinasamdhā*<sup>135</sup> was the dresser of the hide of deer. After dressing and stretching, the hide was rolled up.<sup>136</sup> According to specific requirements, each rolled up dressed leather was cut into several pieces which were stitched to one another for making desired objects. It is evident from description of the arrangement of the hymns in the *Vedas*. Concerning this, the *Altareya Brāhmaṇa* states: "*Vyāhṛtis (bhūh, bhūvaḥ and svaḥ)* are like nooses to tie together the *Vedas*. It is just like joining one



thing to another, one link to another link, similar to the stringing of anything made of leather or of any other thing and connecting that which is disconnected.<sup>137</sup>

There must have been tools made of copper and iron with which the leather craftsman could make goods but their names have not been mentioned. However, it may be suggested that the socketed comb made either of stone or metal was used for removing hair from the hide. It might have been applied against the natural direction of the hair to make them to erect. The final dressing of the hair was done with a blunt edged tool. The leather was cut with the sharp instrument which was operated with the pressure of the palm. The working end of the leather sewing needle was purposely made flat so that it could more easily pierce the leather than the needle with round end could do. The present day leather sewing tool is also made flat-ended. For sewing different pieces, woollen threads and leather strings might have been used.

### Ceramic Art

The Harappan potters had attained a high standard of ceramic art. Their tradition did not discontinue with the disappearance of their culture, rather it was continued and developed in several other styles. The Vedic term *kulāla* (potter) has no synonym in other Indo-European languages which suggests that the Āryans might have adopted local traditions of ceramic art.<sup>138</sup> The term ceramic proves its origin to the Greek word *kermos*, meaning something made of clay as also the clay of which pots were made.<sup>139</sup> It has no linguistic affinity with Sanskrit term *mṛd*, meaning clay.

The availability of clay, comparatively simple process of the moulding of pots, and great demand by the people gave impetus to potters to make different kinds of earthen wares. Religious practices and domestic requirements also were conducive to the development of ceramic art. The *Rgveda* does not refer to any specific term for the potter. For the first time, such terms *kulāla* and *mṛtpac* (potter) occur in the later *Samhitās*.<sup>140</sup> However, the *Rgveda* refers to Śakra who destroyed his foes as easily as an earthen ware was broken.<sup>141</sup> The later Vedic texts refer to

several kinds of pots made of wood and clay. The potter was an important member of the society and was invited by the king along with other craftsmen to come to the sacrificial ground in certain sacrifices.<sup>142</sup>

The making of earthen pots required skill and patience, so the potter has been mentioned as a hard working and skilful craftsman (*utthataḍakṣa karmakaritā*).<sup>143</sup> In *puruṣamedha* he has been dedicated to labour.<sup>144</sup> Like other crafts, ceramic art was practised in families in which the fathers trained their sons.<sup>145</sup> Though the potter played an important role in the socio-economic life of the people, the texts have referred to his degraded social status possibly because he belonged to the śūdra class. On account of this, he could not make some specific sacrificial pots, such as, the *maitrāyaṇī*.<sup>146</sup> The *Kāthaka Saṃhitā*<sup>147</sup> prescribes that the milking pot for *agnihotra* should not be made by a *kulāla* but by an Ārya. On the basis of this, Rau suggests that *kulāla* originally belonged to the non-Āryan class and, consequently, he was considered as a śūdra.<sup>148</sup> In spite of degradation of such class, the potter even in our times considers himself as Prajāpati (Brahmā) perhaps on account of making different kinds of pots as Prajāpati has created the universe of countless forms. However, in the Pāli texts and the *Sūtra* literature his importance has been mentioned in detail.<sup>149</sup>

The later Vedic texts enlighten us on different aspects of the technique of making earthen wares. *Mṛttikā* (clay) was the material of which earthen wares<sup>150</sup> (*mṛṇmayapātra*) were made. *Mṛtkhan*<sup>151</sup> denoted a pit from which clay was collected for making pots. The processing of clay was the primary work of much importance. For making it hard and durable, some binding materials were added to it, such as, small particles of pot sherds obtained from deserted sites, sand, and the hair of goats and deer.<sup>152</sup> Some other materials to be added to the clay were powder of stone and copper or iron dust.<sup>153</sup> Husks of rice, resin of *palāśa*<sup>154</sup> and water boiled with the bark of this tree were added to clay for making it compact and durable.<sup>155</sup> The pot *mahāvira* to be used in *pravargya* was made of the clay mixed with cowdung and soft soil of the ant-hill.<sup>156</sup>

After mixing aforesaid materials with clay, the potter kneaded it with strength and skill for a long time.<sup>157</sup> *Sinivāli* was prayed for making it soft so that beautiful earthenwares would be moulded of it.<sup>158</sup> The early Pāli texts also mention in detail the process of preparing clay for making pots. Childe thinks that this process was similar to that practised in the later Vedic period. Even now, it is the same in rural areas.<sup>159</sup>

Making of pots began with the lumps of processed clay. To make a hand made pot, the lump had to be beaten to make it flat which served as the bottom of the pot.<sup>160</sup> Lumps of clay were beaten and spread out. Their sides were raised. It was done in several layers called *purvadohi* and *uttaradohi*.<sup>161</sup> If desired, girdles, bands and knobs were made on the surface of the pot. *Agnihotra sthālī* was such a pot which was not turned on a potter's wheel; hence it was termed *acakravartī*.<sup>162</sup> Similarly, in some cases earthen lamps also were made only by hands.

Some other techniques of pot making were practised. Heavy wheel of stone or some other material was employed for moulding earthen wares.<sup>163</sup> The advantage of the potter's wheel is obvious. It made it possible for his both hands to be free to shape wares and as the piece turned smoothly beneath his hands, the light pressure of the tip of a single finger could alter its entire shape. Marks of the cutting strings and occasional impressions of fingers of the potter are visible on earthen wares. Vessels having thick rims were fashioned on wheel. The *Śatapatha Brāhmaṇa*<sup>164</sup> states that lumps of clay were placed on rotating wheels and vessels of desired shape and size were moulded. While pot was on the wheel, the potter applied a thin coat of very fine liquid clay or water to smoothen its surface that it may not have any pore or other defects.<sup>165</sup>

When the wet pot had hardened sufficiently to become leather hard, i.e., when the clay had set and dried, yet retaining a little softness, it was returned to the wheel or attached to the lathe of some kind on which its foot could be made smooth or its walls could be reduced in thickness with a scraper. In that condition it could be trimmed, pared and scraped. The walls of

vessels could be reduced to egg-shell thickness. Such types of vessels were always open-mouthed, i.e., the mouth was fairly wide to allow scraping to be done both from outside and inside.<sup>166</sup>

After being moulded, the pots were dried in the sun<sup>167</sup> and a kind of surface treatment was given to them which was known as *dhūpanam* (fumigation). The dried pots were placed in fire-pit.<sup>168</sup> *Avadhānam* denoted the arranging of pots properly in it while *paryāvartanam* meant turning them from the pit. Keeping them aside was termed *nididhānam*.<sup>169</sup> There were three techniques of firing, such as, open firing, oven firing and kiln firing. In the first technique, pots were piled up on a flat piece of ground, or on a raised platform or in a dugout hollowed ground. The fuel was placed below, around and above the pots. In oven firing, pots were fired in an oven made of bricks or clay. There was a difference between open firing and oven firing. In the former, less wood and more dried cowdung, husks, straw and dry leaves were used, whereas in the latter no such fuel bed was made and the pots in the bottom layer were, instead, raised on clay potsherds. Because of its open structure, the pile in open firing was ignited from all sides or from the top of the dome but in oven firing the pile could be ignited only through the stoke hole on the side. The enclosed oven conserved more heat than the open firing.

Kilns were simple in structure and construction in which heat could be better preserved than by the process of open and oven firing. In a kiln, draught was controlled and heat was introduced by means of muffing. In it, pots were piled up in a chamber formed by a circular wall, and fired normally on a perforated floor which protected them from direct contact with the flames. Fire was lit at the mouth of the trench or the stoke hole, just beneath the floor, and flames found their way up through the piled up pots in a verticle direction.

Post-firing treatment was given to some of the earthenwares for making them attractive. To make the sacrificial pots durable, goat's milk was poured into them.<sup>170</sup> Some pots were painted and decorative designs were drawn on their surface, details of which have been mentioned while describing pottery types.

The *Yajur Samhitās* and the *Brāhmaṇa* texts refer to earthen-ware which were used in sacrifices. Most of them were also used as household utensils. The *Śrauta Sūtras* also mention them and furnish details about them. Some of the pots were as follows :

*Apracarāṇīya*<sup>171</sup> was a vessel kept as reserve along with the *mahāvīra*. Details about it are not known.

*Camū*<sup>172</sup> has been usually mentioned in connection with the preparation of *soma* juice. Zimmer<sup>173</sup> thinks that when used in dual number, it denotes the two boards between which the *soma* plants were crushed. But, Roth<sup>174</sup> appears to have been right in taking the normal sense to designate a vessel into which the *soma* juice was poured from the press. On the other hand, Hillebrandt<sup>175</sup> thinks that when the word occurs in the plural number it always has this sense corresponding to the *grahapātras* of the rituals. In some cases, he has shown its use as denoting the mortar in which the *soma* was pressed. In the *Śatapatha Brāhmaṇa*<sup>176</sup>, it has been used as a trough either of solid stone or consisting of bricks used by the eastern people to protect the dead body from contact with the earth like modern stone-lined graves.

*Capya*<sup>177</sup> was a sacrificial vessel. Its exact shape and size are not known.

*Doghra*<sup>178</sup> was a milk pail made out of the same clay as the *mahāvīra*. It resembled the lip of an elephant, had a beak, and looked like a ladel without handle. *Dohan*<sup>179</sup> was also a milk-pail with wooden or metallic or clay lid.

*Ekadhana*<sup>180</sup> was a jug in which the sacrificial water was stored, which was fetched from the running water early in the morning on the day of pressing *soma* plants.

*Grahaṇī*<sup>181</sup> was a mixing vessel.

*Kamaṇḍalu*<sup>182</sup> was a jug for carrying water. Mostly it was used by the ascetics.

*Kalaṣa*<sup>183</sup> was a widely used term for pot or jar from the *Rgveda* onwards. It was used for containing water or other liquids.

*Kapāla*<sup>184</sup> was not a complete earthenware. It was a kind of burnt potsherds. Usually, it was a broken piece of a jar which was used for offering oblations to the gods, or for baking *purodāṣa*, or for roasting grains for sacrificial use. It was two fingers in length and breadth. Sometimes, *kapālas* were so arranged as to obtain the shape and size of a horse-shoe.

*Koṣa*<sup>185</sup> (*koṣa*) was the term denoting a bucket for drawing water from a well by means of a rope. On the evidence of the Vedic texts, Hillebrandt<sup>186</sup> thinks that it denoted a large vessel to hold *soma*.

*Kumbha*<sup>187</sup> has been used in the *Ṛgveda* as a simile for destroying the enemies as easily as it is destroyed. It was used for storing water, juice and grain. Charred bones of a dead body were collected in it, and sometimes it was buried in a pit. *Kumbha*<sup>188</sup> was differentiated from *kumbhī* as the former had no marks but the latter had bulges like female breasts. Sometimes, *kumbha* and *kumbhī* having male and female sex marks, respectively, were used as urns for the preservation of the bones of the deceased persons on the basis of their sex. Such pots were put into pits.<sup>189</sup>

*Mahāvīra*<sup>190</sup> was a pot in which milk for sacrificial use was boiled. It was moulded by the *adhvaryu* with his two thumbs. It was one span in height having three or five elevations (*uddhi*). Sometimes it resembled the *vāyavya*<sup>191</sup> cup. Round it there was a border<sup>192</sup> of clay resembling a rope. It was made hollow and was polished with new garments of a bride and *gavidhukā* grain. It was held with a pair of tongs. In certain sacrifices, a plate made of silver was placed below, and a golden one over it.<sup>193</sup>

*Maṇika*<sup>194</sup> was a large water bottle.

*Nināhya*<sup>195</sup> was a jar buried into a pit upto its neck. Water was stored in it to keep it cool.

*Pucana*<sup>196</sup> was a vessel for cooking food, hence *pacata*<sup>197</sup> denoted cooked food.

*Pan-nejan*<sup>198</sup> denoted a vessel for washing the feet.

*Pātra*<sup>199</sup> was primarily a drinking vessel (from *pā*, to drink), but generally it denoted a vessel of any type. It was made:

either of clay<sup>200</sup> or wood.<sup>201</sup> According to Roth<sup>202</sup>, in some of the Vedic passages it indicates a measuring pot. *Pātri*<sup>203</sup> was also a vessel which perhaps was a drinking pot.

*Pinvana*<sup>204</sup> was a milk-pail which was used in rituals. *Piṣṭa-pātri*<sup>205</sup> was a vessel for storing flour. *Prāṇitapraṇayana*<sup>206</sup> was a pot in which water was fetched for sacrificial use.

*Pūrṇapātra*<sup>207</sup> denoted a vessel which being filled with water, was placed on the sacrificial ground. It indicated completeness, hence it was considered as an auspicious symbol. Till now, it is a custom to place such vessels on the occasion of the performance of religious rites. Besides, it meant a measuring pot containing 128 handfuls of grain.<sup>208</sup>

*Pūtābhṛt*<sup>209</sup> was an earthenware for holding *soma* juice. It had a large opening. During squeezing of the *soma* juice, it was covered with a filter through which the juice poured into it.

*Śarāva*<sup>210</sup> was a shallow cup with which water was drawn or in which liquid was contained. It was used for drinking wine or water in community feast.

*Sota*<sup>211</sup> was a large vessel for carrying fire to different places or for sacrificial use.

*Śatatṛṇa*<sup>212</sup> was a pitcher having a hundred holes in which curd was preserved and was hung up over the jar which contained the charred bones of the cremated body to soothe the departed soul.

*Sthālī*<sup>213</sup> was an earthenware in which sacrificial oblations were cooked. *Sthālīpāka*, a dish of rice or barley boiled in milk has been mentioned in the *Bṛhadāraṇyakopaniṣad*.<sup>214</sup> The *Śrauta Sūtras* refer to it as a dish with a straight brim which contained things of sacrificial use. It was neither made by a potter nor turned on the potter's wheel, hence it was *acakravartā*.<sup>215</sup> But, such was not the case with the *sthālī* which was meant for domestic use. It appears that it was like the earthen *kaḍāhi* used in rural areas for cooking and holding *prasāda* (offering to the gods). It was made also of metal in which meal was served. The present day *thālī* is the term for metallic *sthālī*.

Besides making different kinds of pots, the potter produced terracotta objects, such as, dice for entertainment. Such a dice has been reported from the PGW levels at Noh.<sup>216</sup> Rectangular grey coloured dices have been found from the same levels at Allahapur and Chak.<sup>217</sup> Terracotta seals, balls for play, ornaments such as, bangles and beads have been discovered from PGW sites, namely, Hastināpura, Allahpur, Rupar and Atranjikhara. A terracotta object described as a stopper has been discovered from Kāmpila. It is a hand-made object having a small handle with a roundish base. Such object has not been noticed at other sites.

On the basis of colours painted on their outer and inner surfaces, earthenwares have been classified into several types. In this context, it is necessary to study the Red ware, Black and Red ware, Ochre coloured ware, PG ware and NBP ware. Each of them represent a particular culture in a certain region. Sometimes they intermingle, so it is necessary to study them in their different aspects.

### Red Ware

It is essential to make a study of the Red ware which has been found in association with the PGW. The distinctive feature of this ware is its painted designs in red. It is to be noted that the total number of Red ware specimens in any collection is considerably greater than PGW. Fabric of this ware ranges from fine to coarse, and barring a limited number of specimens, the Red ware is undecorated.

The Red ware has been placed under three categories :

Group-A has a very fine fabric and also is more effectively burnt, and is very close to the PG ware pottery in fabric and form. The common shapes are bowls and dishes which are found in all PG ware yielding sites. Dishes were used for serving the purpose of modern Indian *thālī* and bowls were suitable for containing liquids.

Group-B has specimens of medium or coarse fabric. Common shapes in this class are storage jars, bowls, vases and miniature vessels. The clay is tempered with husk and mica. Sand has been used in a large quantity as a degreassant, but firing is not



uniform and at places, like Hastināpura, it turns black.<sup>218</sup> Vases usually have a high neck and out-turned rim. There are only a few bowls and basins. Small necked vases occurring in group-A are not common in group-B.

Group-C has miniature vessels. Almost all the sites containing Red ware yield these vessels as also vessels of other shape and size. It appears that these did not serve any utilitarian purpose but it has been suggested that these might have served some ritualistic purpose.<sup>219</sup> Footed and footless bowls also belong to this group.

The Red ware which occurs in association with the PG ware, generally is plain. But on a few pots of this ware some kind of stamped or incised designs may be seen. Paintings, however, are rare. The decorated Red ware is not uniformly distributed. From Bikaner to Śrāvastī, varying degrees of decorated pottery have been discovered. At Bikaner, it is profusely decorated. From Bikaner to Rupar, we find a particular kind of decoration, but from Rupar to Ahicchatrā, Atranjikhhera and Hastināpura, decorated Red ware is only a few, and even designs are confined to simple lines. Unlike PG ware, the decoration of the Red ware is confined to a very small part of the pot, usually below the neck portion. But at Śrāvastī, it seems to have been revived.<sup>220</sup>

It is desirable to study the impact of the Red ware on the PG ware. It is to be noted that there is much similarity between the stamped motif on the Red ware and the painted motif on the PG ware. The stamped spirals and concentric circles in the Bikaner region are commonly painted in black pigment on the PG ware sherds. Besides shapes like dishes and bowls, the decorated motifs of Red ware are also similar to those of PG ware. It is obvious that the motifs in PG ware and the decorated Red ware belonged to a common tradition. There was more scope for a greater variety in the case of painted pottery than in the case of stamped and incised decorations. On account of this, the PG ware is more decorated.

It should be examined whether the Red ware associated with PG ware had an earlier beginning. From excavations it has

been proved that Red ware was preceded by CCP at several sites like Hastināpura and Ahicchatrā, but at Noh and Atranjikhhera OCP represents the earliest culture. Earlier types of Red ware continued in the PG ware phase. On the basis of archaeological evidence, it has been proved that earlier tradition of OCP had influenced the Red ware occurring in association with the PG ware. The chances of this are not too remote as stratigraphically OCP precedes the PG ware.

### Black and Red Ware

Like other earthenwares, it also has its own special features. On the exterior of the pots there is red colour and the interior is black. This was done by adopting the technique of inverted firing.<sup>221</sup> Black and Red ware precedes and co-occurs with PG ware, and at some sites it continues even during the post-PG ware times.<sup>222</sup> In Black & Red ware, most common shapes are incurved or straight-sided bowls, shallow dish on stand and a globular jar with a high and narrow neck. Characteristic of the Ahar ware is the painting executed on it in white. The common designs are wavy or straight lines, dashes, cross-hatched lozenges, etc.

Black and Red earthenwares have been discovered from an extensive area from Sind to Bihar. For the first time, its occurrence was observed in the earliest phase at Lothal. Since then it has been reported from several sites. At Rangpur, it has been unearthed from the middle of phase IIA (C. 2000-1500 B.C.). The bowls of this ware discovered from there are deeper and bigger than those found at Ahar.<sup>223</sup> But in quality and beauty the earthenwares from Ahar are superior to those unearthed from Lothal and Rangpur. At Ahar, it is found in the lowest stratum (pd. IA, C. 2000 B.C.) and there is no controversy about the contact of Harappan elements in this phase. It was not found at Kalibangan in chalcolithic context. Some sites have yielded it in association with PGW. A comparative scrutiny proves that plain Black and Red ware found from Bikaner sites has closer ties in shape with PG ware, and has nothing to do with the chalcolithic Black and Red ware unearthed from Ahar. Chansola and Agatari in Rajasthan<sup>224</sup> have

yielded Black and Red ware in association with the PGW. At Atranjikhhera the shape of pots is similar to Black and Red and PG wares. It is very likely that some PG ware shapes have been derived from plain Black and Red ware. The former has been noticed in levels earlier than the PG ware at this site. The Black and Red ware ceramics discovered from Kausāmbī have similarities in shape to some of their counterparts discovered from Navadatoli (pds. 1-4), Rangpur (pds. II-III), Lothal and Somanāth. This ware unearthed from Chirand in western Bihar occurred in association with socketed hoe and other iron objects. The designs on Chirand pottery are similar to the PG ware designs, although no PG ware sherd has been found at this place.<sup>225</sup> Black and Red ware has been reported from Pandu-Rajar-Dhibi in West Bengal.

Agrawala thinks that Lothal was the place of origin of Black and Red ware where from it appears to have spread to the Banas region (Ahar). The people using this ware appear to have gone to the north in the Punjab, but they could not penetrate deeper into the Doab. The other group of people went to West Bengal via Central Chalcolithic sites, and returned back to Bihar and Eastern Uttar Pradesh. This view lacks secure support. Some barriers had to be faced both by the northern and eastern groups which could only be the monsoon fed dense forests. This explains the late dates of Rajaghat, Chirand and Sonapur specimens of the Black and Red ware<sup>226</sup>, whereas the new evidence from Chirand proves the occurrence of inverted firing technique from the neolithic times. Excavations of sites yielding Black and Red ware prove that with the advent of iron, people using this ware moved in different directions and by the end of the 7th century B.C. they practically spread all over India. The problem related to this ware has been discussed by Subbarao<sup>227</sup> who has made an attempt to prove the commonness of its origin dating back to about 1000 B.C.

A detailed comparison between painted B & R ware of Ahar in respect of shape, fabric and designs with that unearthed from Navadatoli, Chirand, Eraṇ and Pandu-Rajar-Dhibi is also essential before we start propounding theories about the ethnic

movements and wide impact of Ahar culture. It is quite likely that the Chalcolithic people, using the painted Black and Red ware in different regions of India, were the local folk who had imbibed and imported certain ceramic traits due to common contacts or some ethnic movements from one place to another. We should not feel enthusiastic for having located the wide distribution of Ahar type of Black and Red ware. We should take due note of this ware discovered from Sohgauna in Gorakhpur (Uttar Pradesh) in association with a few sherds of PG ware from the same levels. We should also look for some source of this type of painted Black and Red ware contemporaneous with the PG ware.<sup>228</sup> It is interesting to note that iron has been reported from the pre-PG ware deposit (i.e., B & R ware levels) at Noh. This would strengthen the hypothesis that these were the people who came from the west to settle down in the Sarasvatī valley. Does it prove the borrowing of iron by the PG ware using people from the Black and Red ware using people? Tripathi suggests that the knowledge of iron of the Black and Red ware using people was later borrowed by the PG ware using people. Although we require further evidence to present boldly the above mentioned hypothesis, at present such a possibility is not altogether untenable.<sup>229</sup> For we have seen earlier that iron objects have been discovered from Chirand from the Black and Red ware levels but there is absence of PG ware. It is a very complicated problem. The possibility of borrowing the use of iron by the Black and Red ware people from the PG ware using people should not be ruled out.

The probable date of the Black and Red ware falls also in the later Vedic period. The *Atharva Veda* refers to *nilalohita*<sup>230</sup> and *amā* (unbaked) pots. Ghosh thinks that the former meant Black and Red ware.<sup>231</sup> But Banerjee identifies it with the PG ware. The particular hymn is an invocation for the destruction of those who put their magic spells in unburnt and *nilalohita* vessels. Bloomfield regards *nilalohita* as an adjective of "thread" which does not appear in the text.<sup>232</sup> Sāyaṇa explains it with remarkable scientific precision. He thinks that *nilalohita* was an earthenware burnt in a kiln where the fire was *nila* on account of the emission of smoke, and *lohita* due to burning. This

explains the combined process of carbanization and oxidization that went into the making of the Black and Red ware. *Nila* means blue, which is nearer to light black colour and *lohita* means red, so *nilalohita* pot means Black and Red ware.

### Ochre Coloured Pottery

It is a variety of pottery preceding PG ware. Scholars are of different views regarding the problem of its ochre colour though the archaeologists like Sankalia and Ghosh generally think that it was due to waterlogging.<sup>233</sup> The main concentration of this ware has been observed in the upper Gaṅgā-Yamunā valley around the present districts of Saharanpur, Eath, Kanpur, etc. and the contiguous regions of eastern Punjab. It has been reported from Rajasthan in the west to Oriup in eastern Bihar. A study of this ware indicates that there is no homogeneity in shape and designs.

The chronology of this ware is uncertain. Lal and Gupta suggest that it has some affinity with the Harappans (Lothal pd. IV) and a date bracket should be assigned to it between 2000 to 1500 B.C. It is also believed that the material culture of the OCP using people was in an elementary state and they have been associated with "Copper Hoards" discovered in the Gangetic valley. The material remains associated with OCP are very poor. Mostly they have been represented by ceramic remains, copper tools, rolled sherds and a few pcst-holes.

It is desirable to study the impact of OCP on the FG ware or the cultures associated with it. On the basis of Ambakheri excavations, Deshpande notices the presence of a dull Red ware bearing relief decoration which is traceable on the PG ware culture as an associated type. It is this ware which continues in the subsequent period and thereby provides an important clue to the make up of the PG ware culture. If it (PGW) is an external imposition, the dull Red ware is an indigenous element contributed by a people whose earlier traditions had degenerated and who had lost the skill of their forefathers. Thus, according to him, it is obvious that OCP had some sort of impact on the PG ware. Tripathi's view appears to be logical when she states that PGW itself does not show any impact of OCP in shape,

fabric or design. It is so distinct from OCP that it could hardly have derived anything from it (OCP).

As the OCP deposits are generally not more than one metre thick, it seems that the OCP people set up shifting settlement based on hunting more than on agriculture. Their copper implements may have been mostly made of the ores from khetri in Rajasthan. Even when allowance is made for different categories of Copper Hoards and OCP, the fact remains that most OCP settlements are found in the foothills of the Himālayas. Relatively less difficulties in clearance and comparatively greater dependence of earlier settlers on stone tools explain their proximity to the mountains<sup>234</sup>.

### The Painted Grey Ware

The PG ware occupies a significant place among the proto-historic pottery traditions of India. It is such a distinctive ceramic that it has been considered as a "hall-mark" of culture of this period<sup>235</sup>. The fabric of this ware is characterised by a superior quality of paste formed of properly levigated clay free from all impurities. The common colour of the pots is grey which varies from ash-grey to battleship-grey. Buff grey also is found. Other shades met with are brownish and reddish grey but in every case the core is grey. Sana Ullah suggests that it was due to the presence of black ferrous oxide produced by the gases in the kiln.

Painting is a remarkable feature of the PG ware. The pots have been painted in Black or deep chocolate colours but in some cases white and red colours also have been used. The colour generally has a mat finish. The paint was applied on the pot before it was baked. Lal observes that a close study of the patterns indicates that the outline of some of the designs was first drawn in a thin deep black line, since where the paint has faded a thick black line is seen running along with the whole pattern<sup>236</sup>.

The designs on the PG ware are mainly geometric designs, drawn of lines, dots and their combinations, such as, vertical and horizontal lines, wavy lines, dots, circles in row, concentric circles, triangles and *swastika*. There are some other patterns,

such as, loops and hooks around a circle, a star-like pattern, curved lines, a lotus pattern, leafy pattern, petals and the sun pattern.

The main types of pots discovered from several sites are bowls of different shape and size, dishes with a vertical or inturnd featureless rim being rounded or having tapering sides. These dishes are conveniently large for serving meals. Some other types are vases of small and big size for storing liquid and grain or for drinking water.

For the first time, this ware was found at Ahicchatrā (Uttar Pradesh) in 1940, but its real importance was established after the Hastināpura excavations by Lal in 1954-55. Wheeler was so much impressed that he termed the associated culture as the Gangetic culture. The ware has been found at least at more than three hundred sites, and is confined to a particular region. The main concentration of this ware is in the western part of the Gaṅgā-Yamuna Doab and in the immediate west of this region. Occasional sherds have been found from Vaiśālī (Bihar) in the east, at Chosala and Gandi (Rajasthan) in the west and Ujjain in Madhya Pradesh. The main excavated sites yielding this ware are Ahicchatrā, Śrāvastī, Alamgirpur, Allahpur, Atranjikhhera, Hastināpura Khalaua, Mathurā, (all in Uttar Pradesh) Noh and Sardargarh in Rajasthan and Rupar in the Punjab.

Generally the PG ware sites are located on the banks of the rivers which were the most convenient mode of transport. Hilly areas were not attractive to the PGW using people. They preferred cultivable plains with pastures suitable for their cattle. A migratory pattern is proved by the map of the distribution of this ware. It seems that as the river course of Rajasthan began to dry up, the people might have been forced to move further in the east. Thus, its main concentration is noticed in the western Doab. Nowhere in the Sarasvatī valley the PG ware using people settled on the Harappan sites. Perhaps they preferred higher ground levels to avoid waterlogging.

The archaeological remains associated with this ware prove that the society enjoyed mainly a village culture with an economy based on the subsistence pattern. It had some definite

elements of superiority over the cultures immediately preceding it. The evidence of pottery is itself decisive in this context. They possessed technical knowhow in the field of metallurgy. Iron was slowly and gradually replacing copper. A beginning was made in producing and looking after a class of specialised craftsmen. However, the society remained a rural one.

PG ware got more importance as it was attributed to the Āryans. For the first time, B. B. Lal suggested that the Āryans were the makers of this ware. In support of his theory he advanced some literary and archaeological evidences<sup>237</sup>. Sankalia,<sup>238</sup> Chakravarti<sup>239</sup> and other historians support him. But the hypothesis of Lal has been challenged<sup>240</sup> by historians on two grounds, viz., the antecedent stages of PG ware along the route which the Āryans are believed to have taken on their way to India, and secondly, the chronology of PG ware. The same or a similar pottery has not been discovered along the supposed route of the Āryans' migrations to India. The analogies between Thesaly and Shasi Tump grey pottery and PG ware do not appear convincing. But the occurrence of PG ware at Lakhimpur in Sind and a fully developed form of it in the western Gangetic valley are significant. Dani<sup>241</sup> suggests that for tracing the origin of this ware attempts should be made to find out archaeological sites between the Indus and Beas rivers. Any direct borrowing should not be claimed from the Gandhāra Grave culture in PG ware because of distinct forms and fabric. But, some kind of mutual contact between the two should not be ruled out because of grey coloured pottery, horses, iron and chronological coherence.

Ghosh<sup>242</sup> suggests that in the Indo-European languages there is no word for the potter, which points to the absence of ceramic tradition among the Indo-Europeans. On account of this, they succumbed to the local pottery traditions whenever they went. In the whole of west Asia, which is associated with the Āryan movements, it may be stated with a degree of certainty that no two regions yield identical pottery. However, grey pottery is the common characteristic of the entire region<sup>243</sup> so the possibility of the association of the Āryans with the PG ware should not be ruled out. Ghosh<sup>244</sup> thinks : "It would suffice to



emphasise that the geographical horizon of the later Āryans is conterminous with that of the PG ware; there is also a remarkable chronological proximity between the dates of the beginning of the PG ware and the later Vedic age, which no critical scholar would place before the start of the 1st millennium B.C. There can, therefore, be no reasonable doubt in ascribing this ware to the later Āryans, together with the vast mass of Red ware associated with it." But the problem of the association of the Āryans with this ceramic style has not been solved to the satisfaction of historians and still it is a debatable topic.

### **NBP Ware**

About ancient Indian pottery preceding the NBP ware, Basham observes : "Unlike ancient Greece and medieval China, India developed no true ceramic art, indeed from the aesthetic point of view no pottery of historical times is as good as the simply patterned but well designed wares of the pre-historic North West, but the bright hard polish of the type of pottery usually called NBP ware is a very creditable technical achievement<sup>245</sup>. This ware follows the PG ware and is finer in comparison with the latter which appears to be hard and rough. It has different varieties and developments. It has the diversity of shades which range from coal-tar black to steel grey and silvery glow to a golden shine, and sometimes it is painted with decorative designs. In this ware, mostly the shapes are of bowls, dishes, lids and rimless big pots. These were so valued that broken pieces were joined together and used. Some of the pieces of this ware found at Kauśāmbi<sup>246</sup> are painted with rimbands, oblique lines on the body, arches, triangles and some complex motifs in chocolate, reddish-yellow and steel-black colour over a lustrous black, silvery and shining yellowish red surface. The continued occurrence of the PGW along with the NBP ware and occasional similarity in the painted motifs of both of them prove an influence of painting tradition of the former on the latter<sup>247</sup>.

The NBP wares have been discovered from many sites from Udegrāma and Charasadda in the west to Chandraketugarh in the east, and from Tilaurakot in the Nepalese Terai to Tamilnadu

in the south. These were in use from *circa* 6th century B. C. to *circa* 1st century B.C.<sup>248</sup> This ware is famous for its lustrous black polish. This slip might have been obtained by the application of properly levigated emulsion of refined clay and organic liquid over the dried pots. After the slip had become dry, the pots, were fired under reducing condition. The organic matter in the slip carbonised without burning out, resulting in uniform lustrous black surface<sup>249</sup>.

Attempts have been made to present a comparative study of both the pottery types. Sinha points out that there is a close similarity of shape between these wares, the core is grey in both the cases and thinness of the body is a feature common to both. The difference between the two appears to be confined only to the surface treatment. The Painting of the PGW gave way to the luster of the NBP ware<sup>250</sup>. It is also worth mentioning that both of them are deluxe wares of their times. The presence of rivetted sherds unearthed from Rupar, Bairat and Sonapur prove NBP to be a prized commodity of the period.

Both wares have fine fabric, thin section and common pots are bowls and dishes. In both of them strong vessels are not available. The painting of PGW is replaced by the glossy surface of NBP ware<sup>251</sup>. Questions have been raised about the glossy surface of the NBP ware as to whether it was the result of impact of silver ware in use in that period or it was due to impact of metal or it was an outcome of trade contacts with west Asian countries. From the point of view of distribution, the PGW is confined to a limited geographical area, whereas the area of distribution of NBP ware is very extensive. The chronology of PGW and NBP ware also coincide. The former has a bracket of C. 500-800 B.C. to 400 B.C. and the latter of C. 600 B.C. 100-50 B.C. The two existed for a short time.

A study of the unearthed objects proves that most of the shape and size of the PGW continued in NPW ware times. Iron and glass which were introduced during the PGW ware phase also were widely used in the NBP ware times. Structural activities of the people greatly improved during the NBP ware phase. In the preceding phase, the houses were built with mud or

mud-bricks. These materials continued in the subsequent period but baked bricks were used on a large scale. Drains made of burnt bricks at Hastināpura in the NBP ware phase indicate a sophistication in the house scheme. Ring wells were also being used in the NBP ware period.

We see a marked change in economic life of the people. Metallic coins have not been discovered from the PG ware levels but the NBP ware layers have yielded copper and silver punch-marked coins which prove the practice of commercial activities on a large scale. Of course certain objects of different denominations discovered from the PGW levels have been considered as weights, but these are of uncertain nature. In the subsequent period weights of steatite and jasper have been discovered from Eraṇ, Vaiśālī and Chirand.

Use of sickle and hoe has been confirmed by archaeological evidences. Perhaps plough-shares made of iron were used. The large scale cultivation boosted the economy fast. In the PGW phase the settlements were small but in the NBP ware times those expanded extensively. It may be proved by excavation at Atranjikhhera where the PGW culture is confined to the eastern side of the mound whereas NBP ware has been unearthed from a wider area.

### **Metallurgy and Metal-Crafts**

One of the great turning points in the history of culture may, with good reasons, be considered as the beginning of the epoch when the people made their first acquaintance with metals. These effected their life and labour in several ways so strongly that their influence adumbrated a new age. Dense forests were cleared with the help of metallic axes for settlement, and reclaiming land for agriculture. The use of metallic tools, such as, sickles, ploughshares, and spades also accelerated the development of agriculture. Weapons made of copper, bronze and iron were effective in hunting and on battlefields. Gold, silver and copper were used for making ornaments to increase physical beauty and were considered as the forms of property. Basham observes that if clothes were simple and few, ornaments were complex and many. Gold, silver and precious stones of every

available kind were always in demand for personal adornment. Further, it would seem that the early Indian, like his modern counterpart, would often save his money by investing it in jewellery for his wife and himself<sup>252</sup>.

In India the history of the use of metals on a large scale goes back to the chalcolithic period. The Harappans had developed metal-crafts to a considerable extent. The Vedic Āryans further developed them adding their own contribution to them. The *Rgveda* refers to several metals, the technique of purifying ores, making ornaments, pots, weapons, etc. The later Vedic literature throws much light on different aspects of metal-crafts which necessitated extraction of ore, alloying of metals and forging, etc. The literary information which is corroborated by archaeological evidence will point to the mines used and to the affinity as also differences noticeable in the crafts.

The first act in metallurgy was the collection of ore. The people usually collected ores from the surface of the earth and, if required, they dug it out for obtaining them. Agrawala suggests that the Harappans used the Khetri copper mines in Rajasthan to obtain copper<sup>253</sup>, and Kolar mines in Karnataka were explored for gold. The Vedic texts mention the earth as *vasundharā*, *vasudhānti* and *hiranyavakṣā*, meaning that it contains wealth and gold, respectively<sup>254</sup>. Agni has been credited with having the knowledge of treasures deposited in the earth<sup>255</sup>, and the gods as digging out them for their worshippers<sup>256</sup>. These references obviously refer to the practice of mining. The *Śatapatha Brāhmaṇa*<sup>257</sup> indicates that the ore of gold was extracted from the stone. Besides, the Vedic people collected gold dust from rivers of Punjab. The ores of different metals contained alloy of several other metals in small quantities, and their analysis helps us in locating the mines explored.

After the collection of ore, the first work to be done was to purify it by smelting with the help of some chemicals. This process was a very appropriate simile for the Vedic seers who have remarked that as ore is freed from drass by smelting (*dhamantāḥ*), so too the person should purify his humanity to shine like smelted ore<sup>258</sup>. The purification of raw gold and

making ornaments of it have been compared with the purification of soul through the process of meditation<sup>259</sup>. The *Rgveda*<sup>260</sup> describes the process of smelting ores which required the use of certain medicinal plants as fuel, and fans made of the feathers of geese as bellows. Metals were purified being alloyed with some other metals or were converted into other ores. Gold was used for softening silver, tin was softened by means of silver, lead by means of tin and *loha* by means of lead<sup>261</sup>. The softening of gold by means of salt was a widely used method<sup>262</sup>. It is interesting to mention that during the post-Vedic times also salt was prescribed for the same purpose<sup>263</sup>. The *Satapatha Brāhmaṇa* informs that after smelting several times, a metal became luminous<sup>264</sup>. *Trapu* could be easily smelted as its root *trap* means to shy, and in this sense it signifies immediate smelting.

The Vedic texts refer to smelting of ore which has been confirmed by archaeological remains of a furnace datable before C. 6th century B. C. Recent excavations at the village Suneri<sup>265</sup> in Jhunjhunu district of Rajasthan have brought to light the PGW culture. The most distinguished feature of this site is the evidence of the use of iron smelting and blacksmithy during the PGW phase. Two furnaces for iron smelting and forging of iron objects were discovered at this site. The hearths are of the open type and provided with bellows, which indicates that the people of this culture were very advanced in technique of iron metallurgy. It is also interesting to note that the excavation of an iron smelting site dated to 5th-4th century B.C. near Dhatwa (in the Tapi valley in Gujrat) has brought to light a flourishing iron industry. In the same area an ancient iron smelting furnace (C. 5th-4th century B. C. ) has been discovered from Kumbharia. A study of the iron slag and furnace shows the simple, yet laborious process that the ancient Indian iron smelters and smiths used.

The Dhatwa iron smelters collected the locally available limonite ore. They heated the ore to convert it into haematite and extracted much of water content together with carbon dioxide and other volatile components like sulphur in the ore. Heating renders the ore more porous, fragile and hence easier to

crush and suitable for reduction. The heated ore was crushed to road-metal size and charged into the furnace in small quantities together with equal quantities of charcoal. The furnace was small, crucible shaped, clay lined and worked with a forced draught blown in from bellows through tuyeres. It had an outlet for trapping the slag. In such a furnace they could produce one kg of a spongy bloom at a time. This bloom was as pure and soft as the present day wrought iron. Microscopic study of the objects indicates how the ancient iron-smiths made hard, effective and durable implements and weapons from this soft iron.

The evidence of smelting is provided by enormous deposits of iron slag, unsmelted and partially smelted iron ore, lumps of a crystalline material identified as calcite or aragonite, and quantities of a whitish powder, presumably lime, the result of smelting in close association in the fillings of a canal or channel of pd. II (C. 500-200 B. C.) at Ujjain)

As regards the actual mode of smelting, the evidence is not clear, though certain broad inferences are possible. Alternate deposits of charcoal mixed with the iron slag and a whitish powder, possibly lime, occurring in an exposed section point to a simple method of smelting employed at Ujjain. This consisted in laying several alternate courses of charcoal and iron ore and covering the entire pile thickly with clay to preserve the heat. The sides of this heaped and simple kiln, which should have been circular in plan, must also have been provided with passages for the intake of air and escape of gases, and outlets for molten iron. The molten liquid, after collection, was undoubtedly first cooled by dipping into water and then beaten with hammer to remove the charcoal<sup>266</sup>. Such a stage of development would suggest a prolonged experimentation involving much trial and error, and would indicate a still earlier stage of the iron working.

The Vedic texts inform that the smith used different kinds of pots and tools for purifying and smelting ores and lumps of metal. *Asi*<sup>267</sup> and *svadhiti*<sup>268</sup> were two useful tools of the smelter. The art of smelting was confined to the *dhn:atṛns* who were

metal workers. In this context, it is worth knowing that in the oldest documents of the Indo-Iranians, in spite of their close relationship, the melting furnace has totally different terms, such as, *dhima'a* (smelter) in the *Rgveda*, whereas in the *Avesta* it is *soepa*. In the latter text, the term denoting furnace is *tanura* which is of Semitic origin<sup>269</sup>. It appears that the Avestic Āryans had borrowed technical terms from the Semitics and the Vedic Āryans formed their own term or might have borrowed it from the Harappans. The smelters used *bhastrā* (*dhavitra*) made of leather to kindle fire by supplying air to the furnace<sup>270</sup>. After purifying the ore, pure metal was obtained which was used for making various kinds of objects. In some cases alloying was but essential for making objects hard or soft or for getting desired colour.

The R̥gvedic Āryans considered gold as the most precious metal on account of its shining colour and durability. For the first time, the *Vājasneyi Samhitā*<sup>271</sup> refers to several metals in a systematic order, such as, gold, iron, copper, lead and tin. Other Vedic texts<sup>272</sup> mention various metals and objects made of them in different contexts. In comparison with the *Rgveda* the later Vedic texts refer more to metals and metallic objects. It proves growing use of metals during this period.

The comparative importance and value of metals were also studied by the people who considered gold as of the highest value, silver of intermediate value and copper as of lower one<sup>273</sup>. It has been maintained that as a horse signifies nobility among the animals, similarly gold occupies the most exalted status among the metals<sup>274</sup>. Gold, silver and copper have been compared with the *brāhmaṇa*, *kṣatriya* and *vaiśya*, respectively<sup>275</sup>. The metals were valuable forms of property, so prayers were offered to the gods for bestowing them on the worshippers<sup>276</sup>.

### Gold

The Harappans also were very fond of gold and made ornaments of it. The Vedic people were very much attracted towards it on account of its shining yellow colour. The Vedic hymns addressed to the gods abound with fervent prayer for gift of gold. For a long array of similes and metaphors and a luxuriant

terminology of *hiranya*, one may easily conclude that the Vedic people had wide knowledge of it<sup>277</sup>. As many as 16 synonyms of gold occur in the *R̥gveda* alone, some of which denote its different varieties<sup>278</sup>. Some of the important terms in relation to gold are *rukma*<sup>279</sup> which denoted ornaments made of gold, *jātarūpa*<sup>280</sup> meant original beauty or form of gold or ornaments made of it, having native beauty. On account of its yellow colour it was known as *candra*<sup>281</sup>. The goldsmith made different kinds of ornaments of gold of several colours. So in the *rājosiya*, he has been dedicated to colours<sup>282</sup>. He was considered as a highly respected person in society<sup>283</sup>. He made ornaments which made the physical appearance of the wearer more attractive.

Besides making ornaments, the goldsmiths made sacrificial pots<sup>284</sup> and spoons<sup>285</sup> of gold. The sacrificial knife for dissecting the dead body of the horse was made of it. The *Śatapatha Brāhmaṇa*<sup>286</sup> maintains : "Gold is shining and *aśvamedha* is the royal office, so the *samitṛ* bestows light upon the royal office. Horse is the symbol of nobility and gold is the form of the same; hence, nobility is combined with its like (nobility)." Similarly, needles made of gold were used for piercing the slaughtered body of the sacrificial horse, and doing that, the priest was supposed to bestow heaven on the sacrificer because among the metals gold was considered to be the most valuable and the best<sup>287</sup>. Seats and throne, to be used by the priests and sacrificer king, respectively were decorated with wire of gold. It was done so as it was thought that gold being glory, it would bestow glory on them<sup>288</sup>. On certain occasions, the sacrificer smelt a piece of gold or scratched himself with it. About this, Rāma Aupatasvini and Buḍila Aśvatarāśvi think that gold is the symbol of immortality, so by smelling, touching or scratching, the sacrificer charges himself with immortal life<sup>289</sup>. The Vedic priests and seers were so charmed with gold that they attributed divine origin to it and visualised the form and lustre of Brahman in its shining colour<sup>290</sup>. On account of its immense material value and religion importance, theft of gold was considered as a graver offence than any other crime. Āpastamba<sup>291</sup> and Gautama<sup>292</sup> prescribe punishment to be imposed on a stealer of gold. Such a culprit was punished with death penalty, and if



the king wanted to show mercy to him, the guilt of the latter would taint the former.

Gold was also a metal containing medicinal properities which cured certain diseases<sup>293</sup>. Wearing of amulets made of it was considered to be very auspicious and was supposed to bestow longevity, lustre and high social status on the wearer<sup>294</sup>. In ancient China, as also in Egypt, gold was regarded as a magic medicine<sup>295</sup>.

From the chemical analysis of gold ornaments discovered from the Harappan sites, it appears that the Harappans imported it from places, such as, Kolar and Anantpur in South India<sup>296</sup>. The possibility of its import from Iran and Afghanistan also should not be ruled out. What about the gold obtained and used by the Vedic Āryans? The *R̥gveda* does not refer to the places of South India as sources of gold. On the other hand, the Vedic literature mentions gold in connection with rivers. It seems that they obtained it from the beds of rivers<sup>297</sup>. The Himālayan rivers flowing through the Punjab carried gold dust in their waters which must have attracted the attention of the people. The *R̥gveda* refers to the river Sindhu as *hiranyāni* and *hiranyavartni*<sup>298</sup>. The practice of collecting gold dust from the beds of rivers continued even during the post-Vedic times. Herodotus and Megasthenes mention that west India was rich in gold<sup>299</sup>. According to the former, the Indians obtained it by digging the earth, collecting it from the beds of rivers and from the deserts<sup>300</sup>. In ancient Iran also, gold was obtained from the river beds and the most important tributary of the river Oxus was called Zarafshan, meaning gold-bearer<sup>301</sup>. It seems that particles of sand containing gold dust were washed several times for obtaining this metal. So the *Tattiriya Saṃhitā*<sup>302</sup> states that the purity of gold comes from water.

## Silver

It is comparatively a late comer in the galaxy of metals, but sometimes, on account of its scarcity, it was considered more valuable than gold. From the Harappan sites, ornaments and other objects made of silver have been discovered which are more common than those made of gold, though less made than

copper<sup>303</sup>. The Indo-Europeans had the knowledge of silver, as is evident from several similar terms denoting this metal which occur in the Āryan languages, such as, *rajata* in Sanskrit, *erezata* in Zend, *spin-zar* in Pusto, *artsath* in Armenian and *argentum* in Latin. The *R̥gveda*<sup>304</sup> contains only one reference to silver (*rajata*) which means white, and that also as a term qualifying horse which is white. It is reasonable to think that during the R̥gvedic period it was rarely used and was not much favoured, because it was not easily available. It was obtained from the mountainous regions of Afghanistan<sup>305</sup> with much difficulty. However, the later *Saṃhitās* and the other Vedic texts refer to it in different contexts<sup>306</sup>. Mostly ornaments were made of it which were used by the women of middle class, and a few pots also were made of it for ceremonial use<sup>307</sup>.

In the later Vedic period, the Āryans had immigrated to Bihar and Vidarbha where silver was found. In spite of this, its limited use is confirmed by discovery of only a few objects made of silver from the PGW and NBP were levels. Some of the Vedic texts refer to *rajatahiranyam*<sup>308</sup> which simply means silver and gold. The *Taittirīya Saṃhita* prohibits the offering of this metal as gift to the priests<sup>309</sup>. It has been suggested that it meant white gold<sup>310</sup>, which was an alloy of gold and silver. In gold, obtained both from the river beds and from mines, a varying percentage of silver usually occurs. Perhaps such kind of metal was termed as *rajatahiranyam*. In ancient Egypt, this kind of metal was known as *asem* and was enumerated in value after gold. Thus, *rajatahiranyam* appears to have been an alloy of gold and silver similar to the Egyptian *asem*<sup>311</sup>.

### Copper

Before the discovery of iron, copper was the most widely used metal. It accelerated the process of the development of human civilisation because it was a step ahead of the stone technology. The prehistoric people using stone implements realised that copper would not break like stone and any desired object could be made of it.

The Harappans were well acquainted with copper and they made several objects of it some of which have been discovered

from the Harappan sites. They had developed a technique to extract pure copper upto 99% from chalcopyrites. These specimens contain considerable proportion of arsenic besides a small amount of nickel. Their analysis proves that these tally with the Khetri and Afghanistan samples of copper<sup>312</sup>. The Chemical analysis of copper objects unearthed from Lothal proves that in none of them arsenic is present in any appreciable quantity. It appears that the people of Lothal obtained copper from a source which did not contain arsenic, hence it might have been brought from some place other than Khetri<sup>313</sup>. Basham suggests that the people of North India learnt the use of copper from the Harappans. The main basis of his contention is the discovery of certain finds of copper implements in the district of Ranchi (South Bihar) because the blades of weapons are without the strengthening midrib, but the dating of these objects is very uncertain, and they may be dated much later than the fall of Harappā<sup>314</sup>.

Recently some copper objects have been discovered from Kotaputali, Neem-ka-Thana (district Jaipur) and some sites in the Sikar district of Rajasthan. The antiquity of these objects goes back to from C. 2800-2500 B. C., or these may be even older than the copper objects excavated from pre-Harappan levels at Kalibangan in the same region and Kota Digi in Sind. The area around Ganeshwar near Neem-Ka Thana is known for its copper mines. It is believed that in C. 3000 B.C. the people in this region began to make objects of copper. They also supplied objects like fish-hooks, blades, knives and arrow-heads to the people of pre-Harappan Kalibangan and other centres of the Indus valley culture. There are no copper mines near Harappā and Mohenjodāro, so it seems that copper was obtained from the mines of Rajasthan. The early Vedic Āryans might have obtained copper from the mines of this region but in the later Vedic period the Āryans could easily exploit copper mines of South Bihar.

A study of different terms for copper in Indo-European languages sheds light on its history. The earliest known term for it in Sanskrit is *ayas*. In Latin, it is *ayes*. All these have derived

from the Aegian term *alasya*, which was the name of a region of the Aegian with Crete as its centre. This region was very much rich in copper mines. Carpenter<sup>315</sup> and Pokarni<sup>316</sup> identify Alasya with Cyprus which was renowned for its copper in ancient times. This (*alasya*) appears to have been a variety of copper known after the name of the place where it mines are located. The Sumerian term for copper was *urdu*. Its original form in Indo-European languages was *urudh* which transformed into *raudhu-roundnu* and *rodha*. In English it is red, its German term is *rata* and in Sanskrit it is *loha*. All these terms mean red colour<sup>317</sup>. The colour of copper was reddish<sup>318</sup> (*tāmro aruṇaḥ*). The *Śatapatha Brāhmaṇa* especially, distinguishes the copper from gold on the basis of their respective colours. It states : "Copper is not reddish like gold and black like iron, so its value is neither of gold nor of iron."<sup>319</sup> It has been argued by Neogi that the term *tāmra* for copper became current in the 3rd century<sup>320</sup> B. C. but this view is wrong because it has been used in the later *Samhitās*<sup>321</sup>.

In the Vedic texts copper has been considered as a very pure and sacred metal<sup>322</sup>. It was regarded as the form of Brahman<sup>323</sup>, because he is Agni and Agni is red (*lohita*). Weapons, household utensils, ornaments, sacrificial pots and implements, and several other objects were made of copper. The *Śatapatha Brāhmaṇa*<sup>324</sup> prescribes the razor made of copper for shaving the head of the sacrificer for encircling him with Brahman and the *Vedas*.

Since 1892, a large number of copper implements have been discovered from the Gangetic valley. Scholars associate them with Harappans<sup>325</sup> or with the Āryans<sup>326</sup> and the aboriginals of India. Smith thinks that these are of pure copper but his view has been based merely on a superficial observation<sup>327</sup>. An analysis of Bisauli copper implements was made by Lal<sup>328</sup> which showed 98.77% copper content but some other pieces contained higher percentage of impurities upto 13%. It is very difficult to agree with the contradictory views of historians about the authorship and date of the Gangetic Copper Hoards. It is to be noted that these implements are surface finds, therefore, no other cultural sequence associated with them could be found.

It also has been noticed that there did not exist parallels of these Copper Hoards either in the Indus valley or in any of the proto-historic culture of Western India and even Asia. These point to a culture which was confined to the Gangetic basin with a possible southward extension. In order to find out their cultural sequences, some trial trenches were taken at Bisauli and Rajpur-Parsu in Uttar Pradesh, where, in association with these implements, fragments of ill-fired and thick OCP ware were found<sup>329</sup>. Similar fragments have been discovered from the lowest levels at Hastināpura. It seems that these OCP ware fragments belonged to the one and the same class. At Hastināpura, the strata overlying this pottery contained PGW, the authorship of which has been attributed to the Āryans who occupied the upper basin of the Gangetic valley<sup>330</sup>, round C. 1000 B. C. Thus, it appears that these Copper Hoards are the products of the people who inhabited the Gangetic basin before the advent of the Āryans.<sup>331</sup> At the Purana quilla site, however, the OCP ware associated with the copper pieces has been dated C. 1000 B. C.

Several PGW yielding sites have yielded copper objects, such as, antimony-rods from Noh and Alamgirpur have been unearthed. Allahpur has yielded arrow-heads and nail parer. From Atranjikhera hooks, chisels, rings and bangles have been unearthed. Śrāvastī has yielded needles, antimony rods, pins and bangles. The copper objects discovered from Hastināpura include bangles, antimony rods, borer and arrow-heads.

Excavations prove that before the use of PGW, copper was the most common metal and it continued to be so even in the levels of this ware. Does the metallurgy of the PGW period prove any continuity with the preceding period? A comparative study of the copper objects obtained from the OCP ware levels which are usually associated with the Copper Hoards and those from the PGW phase would help us to reach at some conclusion. The Copper Hoards using people were not as advanced as the Harappans. The PGW using people seem to be closer to the Copper Hoard people which proves some contact between the two. Such a probability may not be ruled out because there are similarities between the Red ware associated with PGW and

OCP associated with the Copper Hoards. But it is to be noted that the metallographic study is at a somewhat elementary state and a study of a large number of copper objects obtained from the PGW levels and from the Copper Hoards would enlighten us on this problem. The excavations of NBP yielding sites prove that during this phase, copper lost its earlier importance and as it had no place in armoury, so it was replaced by iron.

### Bronze (Kamsa)

It is much stronger and harder than copper. Cutting tools made of bronze possess harder, keener and more enduring edges. The Chalcolithic copper smiths knew the advantage of alloying copper with tin. But the fact that there were only a few small number of bronze objects suggests that tin was probably scarce. In comparison of copper objects, the objects of bronze have been discovered in negligible numbers. The chalcolithic people used it for making weapons, utensils and images. The famous image of dancing girl discovered from Mohenjodaro proves the skill of the Indus bronze craftsmen. In 1959, four artistic objects made of bronze were discovered from Daimabad, a chalcolithic site (district Ahmedabad, Maharashtra) datable *circa* 2000-1000 B. C. These objects include a bull-chariot, an elephant, an rhino and a buffalo. These figures are solid and obviously cast from moulds. These are undoubtedly the handiwork of skilled artists and are probably the finest of their kind in the entire range of the chalcolithic art of India. Since they have not been recovered from closely sealed deposits of controlled dig, their antiquity may be questioned. But stylistically these closely resemble the Indus figures of oxen, elephants and rhino. The analysis of their elemental composition indicates that the metal is arsenic bronze. It is necessary to note that of all the Indus valley centres, the bronze artifacts from Harappā have a considerable proportion of arsenic. Considered in this light, it is highly probable that the Daimabad bronze images may originally have been Harappan, and then they were probably brought to the Deccan or that some artist from the Indus valley made them locally at Daimabad.

In the Vedic texts, however, there are only a few references to bronze. The vessels made of it were used for holding butter and *madhuparka* in certain sacrifices<sup>332</sup>.

## Iron

Archaeological evidences prove that for several centuries, copper and bronze were commonly used metals for making different objects. In the PGW levels, the introduction of a new metal, namely, iron is seen in India. This metal brought about drastic change in the life of the people. It opened a new era of territorial expansion and material prosperity.

The Vedic literature refers to *ayas* in different contexts. In the *Rgveda*<sup>333</sup>, 40 times references have been made to it but it has been a controversial term, and its appropriate interpretation has not been established. These references may help us in ascertaining its real nature and form. It was a very hard, tough, tenacious and ductible metal. Smelting of *ayas* by the *karmāras* has been mentioned. Some scholars think that it was iron, but some others interpret it as copper or bronze. The *Vājasaneyi Samhitā*<sup>334</sup> refers to *ayas*, *lohā* and *śyāma* as three distinct metals. It seems that the last one was iron because its colour was black. *Lohāyas*<sup>335</sup> appears to have been copper as its colour was red. The *Śatapatha Brāhmaṇa*<sup>336</sup> clarifies this distinction as it states : "As a long haired man is neither woman, nor a man, because being a male, he is not a woman, and being long haired, he is not a man, similarly *lohāyas* is neither iron nor gold." In some other Vedic texts *kāṛṣṇāyas* seems to convey the meaning of iron because it has been used as a synonym of *śyāma*<sup>337</sup>. The *Atharva Veda* classifies *ayas* into two varieties, namely, *śyāma* and *lohita*, meaning iron and copper respectively<sup>338</sup>. In Homeric Greece also this black metal was differentiated from other metals<sup>339</sup>.

The earliest occurrence of iron objects in firm stratigraphic contexts was noticed in the PGW levels though these have been reported from Black and Red ware contexts at Chirand<sup>340</sup>, (Bihar) Pandu-Rajar-Dhibi<sup>341</sup> and Mahishadal in West Bengal. Iron objects have been discovered from the PGW levels from several sites. At Hastināpura, the presence of iron ores has been

noticed<sup>342</sup>, and Kauśāmbī also has yielded several iron objects<sup>343</sup>. From Alamgirpur arrow-heads, spear heads, nails and pins have been discovered<sup>344</sup>. Atranjikhhera has yielded knives, axes, kitchen tongs, fish hooks and weapons, like spear and arrow-heads<sup>345</sup>. From Bairat, iron objects along with the iron slags have been discovered in association with the material remains of the earliest period of occupation belonging to the PGW phase<sup>346</sup>. Sites like Noh, Ujjayinī and Śrāvastī also have yielded iron objects in association with the PGW and NBP ware. Taxilā<sup>347</sup>, Rupar<sup>348</sup>, Purana Quilla<sup>349</sup>, and Rājagīr<sup>350</sup> are the main NBP ware sites from where iron objects have been discovered. The iron smiths made different objects of iron, so they have been rightly dedicated to devices in the *rājasūya*<sup>351</sup>. The use of iron became more common during the NBP ware phase.

The problem of the date of PGW ware is itself a controversial one. But the chemical analysis and C-14 dating of material objects associated with this ware prove that its date should not be fixed earlier than the 8th or the 7th century B.C. However, it should not be dated earlier than C. 1000 B. C. The period from C. 1000 B. C. 700 B. C. should be assigned to the introduction of iron in India.<sup>352</sup> It is worth mentioning that in Homeric Greece also bronze was the chief metal and the use of iron was rare. It became widely used after the Dorian invasion, but after the 8th century B. C. bronze remained as a common metal for making weapons<sup>353</sup>.

In comparison with copper objects, number of objects made of iron is far less. Why was it that in spite of the knowledge of iron technology, iron goods were produced only in a limited quantity? There seem to be two reasons, firstly, the iron technology was in the beginning stage in the PGW phase, so only a limited use of iron was possible. Secondly, it might have easily taken sometime for the metallurgists to locate the ores and obtain them. At present the richest mines of iron ore are located in South Bihar, Madhya Pradesh, Orissa and Maharashtra. Small deposits are found in Mandi in Himachal Pradesh, Kumayun, Nainital and Almora in Uttar Pradesh. Good quantity of iron ores are found at Naranaul in Patiala (Punjab). In



Rajasthan these are found in Alwar, Bundi, Jaipur, Jodhpur and Udaipur. Possibly, the Rajasthan ore deposits along with those in Uttar Pradesh were easily accessible to the users of the PGW people. These ores were sufficient to begin with, but in the absence of any spectrographical examination, it is difficult to confirm which particular ore deposit was tapped by them.

In the post-Vedic times (between the 6th and 4th century B.C. represented by the NBP ware phase) there was an enormous increase in the making of weapons made of iron. Arrow and spear heads, daggers and knives were made in large quantities. Probably the iron industry of this period was chiefly geared up to meet the military requirements of the ambitious warring *Mahājanapadas*. The metallurgists tapped the rich mines of iron ore deposits in South Bihar because before the 6th century B. C. this region was well known to the people.

Now the question is : Who were the people to introduce iron in India ? For answering this, it is necessary to be acquainted with the West Asian history with special reference to the movements of the Āryans towards the east. It has been suggested that technique of smelting of iron ores was first invented in Asia Minor, sometime between C. 1800 B. C. to C. 1200 B.C. It remained virtually a monopoly of the Hittites. The earliest epigraphic evidence of the use of iron occurs in an inscription of the Hittite King Anittas. It mentions that he received a sceptre and a throne, both objects made of iron, as tributes from the city of Puruskhanda<sup>354</sup>. The Hittite king Hittusibis III politely turned down the request of an Assyrian king (13th century B.C.) for the supply of iron but sent a present of a blade of dagger made of iron<sup>355</sup>. Iron weapons were supplied to the Hittite army and the barbarian mercenaries popularised the technique of their manufacture. In Mesopotamia, iron was not used on a large scale before 1200 B.C. In Syria, it was a rare thing before 1500 B.C. In Turkey, iron was produced by 1200 B.C. In Palestine, it became common between 1500-1200 B.C. In Cyprus, it was known by 1200 B.C. to 1000 B.C. It is obvious that in West Asia<sup>356</sup>, the full Iron Age began in C. 1200 B. C. The breakdown of the Hittite empire hastened the earliest diffusion of iron working. It led to the east-ward spread

of iron into Iran which is exemplified by the two Necropolises (A & B) at Sialik. In Necropolises A, iron is a rare thing, but in Necropolises B, dated C. 1000 B. C. it is very common and more known than bronze. The people who buried their dead in Necropolises B, were horse men. They have left paintings of horses and horse riders on their pottery. In graves, with the dead, they buried such pots, horse equipments, horsebells and pectorals. They used chariots who may be associated with the horse-centred<sup>357</sup> culture represented by the early Iron-Age graves of the Caucasus, and therefore, indicate movements of turbulent nomadic people who possibly were Indo-Iranians<sup>358</sup>.

It appears that these iron using horsemen moved further towards the east. In southern and central Baluchistan and in Swat valley a chain of similar cemeteries has been discovered. The people associated with these graves also used similar pottery and had a uniform cultural level which manifested horse riding and the use of iron. These graves<sup>359</sup> are dated between C. 1000-750 B.C. It is reasonable to think that the same people introduced iron in India but it did not appear to have suddenly replaced copper everywhere. The PGW using people were the first to use iron for making their weapons. A comparative study of the tool typology of the PGW phase and those discovered from Iran is noteworthy. Banerjee comments that the close connection between the Sialik tools forms and those of the early Iron Age of India draw almost an irresistible inference which points to a semblance of probability. On the circumstantial evidence it may be suggested that iron was introduced into India either with the eastward migration of iron using people or through contacts<sup>360</sup>.

It is necessary to ascertain the impact of the introduction and use of iron on the life of the people of the Gangetic valley. At the time, when the earliest settlements were coming in this region, the economy was mainly based on animal husbandry and limited farming. For cultivation, the land was to be cleared and then tilled with the such tools which could be effective in thick monsoon forests. It required ploughshares far harder and sharper than those made of stone, copper and bronze. A study of the iron objects discovered from the PGW levels indicates

that most of them are weapons, but the agricultural tools are conspicuous by their absence. It is reasonable to credit these early people with the clearance of forests, making routes and starting farming as a means of food producing economy<sup>361</sup>. Concurrently, the efficiency of craftsmen increased. There was quickening of transport, trade and civil life<sup>362</sup>. The surplus of production led to the urbanisation of the Doab. Within a short period a transition took place from small tribal states to extensive kingdoms. The economic changes found political expression in the post-Vedic times. This is evident from the case of Magadha which increased its power as it possessed a high grade of iron ore in abundance. A study of the iron objects unearthed from NBP ware levels shows that these include more agricultural tools than before. It seems that by the end of the later Vedic period, iron replaced copper and it began to be used on a large scale. Regarding this the *Satapatha Brāhmaṇa*<sup>363</sup> states that in the *asvamedha* all the sacrificial animals, excepting the horse should be slaughtered with the knives made of iron because they were used by peasantry. It confirms the use of iron as a widely used metal.

### Trapu (tin)

It was a very light metal, on account of which the objects made of it were not durable. The Harappans used it because in bronze objects discovered from the Harappan<sup>364</sup> sites, proportions of tin have been found from 8% to 11%. Tin content of the copper-bronze objects discovered from Lothal proves its higher percentage and it was more used to make bangles and pins than in the production of tools and weapons<sup>365</sup>. It seems that the early Vedic Āryans did not use tin because the *Rgveda* does not refer to it, but the later Vedic texts<sup>366</sup> mention it in the list of metals. From the sites in the Gangetic valley, objects of tin have not been found in abundance to be assigned to the later Vedic period. It could be explored from the mines of Hazaribagh in south Bihar<sup>367</sup>. In this regard, it is interesting to note that the Homeric Greeks had great fascination for tin. For obtaining it they undertook dangerous adventures to the southern coast of Greece<sup>368</sup>.

**Sisa (glass)**

It appears that glass is not so ancient. The Harappans had no knowledge of its real variety. However, it has been detected in bronze objects in low proportion but faince (semi-glass) was known to them which has been reported from the Harappan sites<sup>369</sup>. For the first time, the term *sisa* occurs in the later Vedic texts<sup>370</sup>. The amulets made of glass were used for curing certain ailments<sup>371</sup>. It also has been suggested that glass was used by weavers as weight<sup>372</sup>, but Griffith refutes this view. He thinks that the particular reference indicates its use as a charm against demons and sorcery<sup>373</sup>. Balls of glass were used for hitting the thieves and enemies from a long distance<sup>374</sup>. Regarding the comparative value of glass, it has been stated that it is neither like gold nor like iron in value<sup>375</sup>. In the *rājasūya* a piece of it was placed on the hide of a tiger to be kicked off by the *kṣatriya* going through the royal consecration ceremony<sup>376</sup>. It had commercial value as *parisrut* (wine) was bought for it<sup>377</sup>.

Interestingly it is noteworthy that in the Indian context, the credit of introducing the complicated glass manufacturing technique goes to the PGW using people. Two bangles made of true glass have been discovered from Hastinapurā<sup>378</sup> from the PGW levels. One of the specimens is a brown coloured glass. This piece is an ordinary soda-lime silicate, containing a small amount of iron which accounts for its brownish colour. This kind of glass was suitably soft for making bangles. Another specimen is of black colour. It contains a very low proportion of aluminium and silica. It is a very soft variety of glass. There is no presence of cobalt in it but iron is present accounting for its black colour. Traces of phosphate have also been detected in it, but sodium is present in large quantities. Twenty-two beads made of glass have been obtained from Śrāvstī, half of which belong to PGW phase. From the same site bangles also have been discovered in large quantities and in a variety of colours. They are mainly of sea-blue and light green glass and include occasional specimens with a thick section indicating their use as bracelets<sup>379</sup>. Thus the later Vedic Āryans had made and introduced advanced technical knowledge of glass, and Ghosh is

of the opinion that it was their own innovation<sup>360</sup>.

Some scholars have studied the history of glass in India<sup>381</sup>. Coomarswamy thinks that the art of glass making had attained a high degree of perfection in the pre-Mauryan times<sup>382</sup>. For the first time, the objects of true glass were discovered from Bhīr<sup>383</sup> (Taxilā). Kopia in Basti district and Sazadpur Bhitari in Vārāṇasī district of Uttar Pradesh have yielded beads of glass which resemble the beads of the same material discovered from the Piparahawa *stūpa*, thus the antiquity of this glass goes back to the 5th century<sup>384</sup> B. C. several glass objects have been discovered from the NBP ware levels<sup>385</sup> from Rajaghat, Kauśāmbī, Ahicchatra, Tripurī and Vaiśālī.

Altekar thinks that the Indians had the knowledge of glass and before C. 1000 A. D. they did not know the art of making bangles of this material<sup>386</sup>. Similarly, Sankalia suggests that in the Deccan, bangles of glass were introduced by the Persians in the 14th century<sup>387</sup> A.D. But, the archaeological evidences prove that bangles of glass were made and used in the Gangetic valley in circa 1000 B. C. Thus the views of both the scholars cannot be supported.

### **Ivory**

It was an object of special fascination for the artists. The use of ivory objects by the people was the mark of their high socio-economic status. Ivory was extremely expensive and due to its high cost and delicate carving, it was used for making either the luxury goods or ordinary objects for comparatively richer people. Most of the great cultures of the world have practised the art of ivory. Its antiquity in India goes back to the Harappan times. Ivory was used for making useful<sup>388</sup> objects, like combs, small sticks and hair pins. The high efficiency and skill of the Harappan ivory craftsmen is confirmed by their skill in beautifying the upper portions of hair pins with the motifs of birds and animals<sup>389</sup>. Ivory was a hard material which required sharper tools to work at and marks of chisels are still visible on some of the ivory objects found from the Harappan<sup>390</sup> sites. Even in the post-Vedic times, Sind had an abundance of ivory. It is evident from the fact that the palace of Darius I (522-486 B.C.)

was decorated<sup>391</sup> with ivory brought from Sind, Arachosia and Ethiopia.

A study of ivory objects discovered from the post-Harappan sites obviously proves that the high skill of the Indus ivory craftsmen did not last long. In the early Vedic period, it appears to have been an unknown craft. The Vedic literature refers to elephants but it is surprising that nowhere in the *Samhitās*, the ivory work has been mentioned or even alluded to. However on the basis of a reference to *babhrū* (brown) colour of the dice in the *Rgveda*, it has been argued that it refers to "nothing else but dice made of ivory which takes a brownish colour by constant handling, and, therefore, it can be the earliest reference to an ivory object in the Vedic literature<sup>392</sup>." But it is very difficult to prove the practice of ivory work in the early Vedic period only on the basis of the brown colour of dice. It was usually made of *vibhiduka* which may also have been brown in colour.

The later Vedic texts refer to a few ivory objects. The *Atharva Veda*<sup>393</sup> prescribes an amulet made of ivory to be tied on arms for curing certain ailments. It seems probable that the Vedic Āryans had not attained high skill of ivory carving. Besides, it was an arduous job and they were not used to producing complicated objects. However for the first time, the *Aitareya Brāhmaṇa*<sup>394</sup> enumerates ivory work in the list of *śilpas*. But a large number of ivory objects with carvings have not been discovered from sites to be assigned to the later Vedic period. A few arrow-heads have been discovered from Kauśāmbī with their main concentration in the NBP ware levels<sup>395</sup>. From Sonapur (pd. II, C. 850-650 B.C.) rectangular ivory pieces having incised decorations have been unearthed<sup>396</sup>. Their exact use is not known. A similar piece has been found from Jhusi<sup>397</sup>, the ancient site of Pratiṣṭhāna associated with Pururavā. The most interesting and informative ivory piece so far discovered from the Gangetic valley is a broken female figure which has been found at *Campā* from the earliest NBP ware levels<sup>398</sup> (C. 6th to 5th centuries B. C.). The figure has lost its right hand and leg. It measures 18.9 cm. and has developed breasts, slender waist, long arms and figures. She has oval face, properly delineated eyes, prominent aquiline nose and broad forehead. Its

importance lies in the fact that different parts of the body have been carved of ivory pieces separately and then joined together at neck, shoulder, elbow, wrist and knee. In this regard, it is to be mentioned that Campā was the capital of Aṅga, and the *Aitareya Brāhmaṇa* states that this region was famous for the best species of elephants which were offered as gift even to the priests. The availability of ivory in large quantity might have given impetus to ivory workers in this region.

Objects made of bone also were widely used. The remains of such objects have been discovered from several PGW were yielding sites<sup>399</sup>. These range from beads to bangles. Arrowheads have been reported from Rugar, Alamgirpur and Khalaua. Sockets have been obtained from Noh. Points have been unearthed from Atranjikhara and Allahpur, which have been called styluses, but in the absence of any written material from the phase of their occurrence, it may be wrong to call them so. Other miscellaneous<sup>400</sup> objects made of bone discovered from the same phase are hairpins found at Rugar and Alamgirpur, needles at Allahpur and *Hastināpura*. Bangles have been reported from *Hastināpura*, Allahpur and Sardargarh. A comb with engraved circles is a beautiful specimen discovered from Atranjikhara.

The Vedic texts do not shed light on the technique of making objects of bone. But a study of these objects may enlighten us on this point<sup>401</sup>. It appears that firstly different parts of the skeleton of the dead animal were dismembered and dumped. After sometimes, the marrow was destroyed by bacterial effects. For clearing the marrow from the innermost cavities, parts of bone were boiled in water or were heated in the fire. The former method was the most prevalent. Bone became soft when it was boiled. After this, when still warm, it was cut, holed and bent in any desired direction, Saw made of copper or iron was used to cut it into pieces. Each piece was dressed with blades to make a rough form of the desired object. Then, it was rubbed against for making its surface smooth. Finally, the object was filed down to give it a final shape.

**Saṅkha (conchshell)**

It also was a material for making utilitarian objects. The Harappans had developed the art of making objects of conch-shells because they were a maritime people. They had attained high degree of efficiency in making bangles, beads and some other ornaments of them<sup>402</sup>. The Vedic people were acquainted with seas which were explored by them for obtaining conch-shells<sup>403</sup>. They made amulets of them which were tied round the neck for warding off effects of evil spirits<sup>404</sup>. Powder made of conch-shell was used for curing certain diseases<sup>405</sup>. On ceremonial occasions, in rituals and on battle fields conch shells were blown as a wind instrument<sup>406</sup>. *Saṅkhadhṛma*<sup>407</sup> was the blower of conch-shell who was a sacrificial victim in the *puruṣamedha*. Some conch shell objects, such as, bangles, beads and spoons discovered from Rangapur (pd. II, C. 1000 B. C.) indicate the practice of this craft during the later Vedic period<sup>408</sup>. A Conch shell of light pink colour and conch-shell bangles have been discovered from the PGW levels at Allahpur and Sardargarh, respectively<sup>409</sup>.

**Maṇi (beads)**

It is the most common ornament, and has been used by the Indians at least since the Harappan times<sup>410</sup>. Different kinds of ornaments, mostly necklaces and ear-rings, were made of beads<sup>411</sup>. Varieties of materials, such as, wood, clay, bones, stone and metals were used to make them<sup>412</sup>. Their varied shapes comprise square, rectangular, cylindrical, globular, biconal, hexagonal, tubular and pyramidal. Sharp instruments were used for cutting, chiselling and boring them. Some of the beads were polished for making them bright and beautiful. The Vedic texts refer to the *maṇikāra* (bead-maker) who has been dedicated to beauty at the *puruṣamedha*<sup>413</sup>. In the Vedic literature *maṇi* means a jewel used as an amulet against all kinds of evil effects<sup>414</sup>. It is not clear whether it denoted pearl or diamond. But it is obvious that *maṇis* could be strung on a thread (*sūtra*)<sup>415</sup>. The term *maṇigrīva* indicates that beads or jewels were worn round the neck<sup>416</sup>. On the basis of the term *maṇā* of Babylonian origin, Weber thinks that the art of making



*maṇi* also is of the same origin<sup>417</sup>. But his view is not convincing. A large number of beads have been discovered from the PGW yielding sites which are made of agate, jasper, glass, copper and clay. Terracotta beads in *ghaṭa* shape are very common antiquities of the PGW phase. Such beads have been discovered from Hastināpura, Noh, Atranjikhara, Ahicchatra and Allahpur. Their colour varies from red to dark-grey. Another variety of terracotta bead is "short blunt-edged bi-cone circular". This type is found at almost all the sites of PG ware. The Agate and Jasper beads have been discovered from Hastināpura and Allahpur. Cornelian beads have been reported from the PGW levels at Hastināpura, Khalau and Sardargarh. Of special interest are the beads made of glass discovered from the PGW levels at Hastināpura, Alamgirpur and Allahpur. Beads of bone and lapislazuli have been reported from Sardargarh. But the NPB levels have yielded the bulk of beads so far discovered.

The Vedic texts do not enlighten us on the technique of making beads of different materials, but their study proves that metallic beads were made by goldsmiths, of clay by potters, of wood by carpenters and of stone by stone cutters. It seems that stone pieces were first chipped to small sizes, and from them flakes were removed to produce the desired shapes in rough outlines. After this, these were placed in pots with mouths tightly closed and were placed on channel ovens to subject the roughly made beads to slow heat, thus tinting them. Then perforation was executed from both ends, and grinding was done with the help of some abrasive material. These beads were bored with drill and were polished<sup>418</sup>.

The beads help us in studying the economic condition of the people who used them. The rich persons could afford to wear the beads made of precious metals and stones whereas the beads of terracotta, bone and inferior metals were worn by the poor people. The terracotta and bone-beads have been discovered in large numbers but the number of the metallic beads is comparatively more limited.

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## Trade and Commerce

The Indus valley people had developed trade and commerce on a large scale as they produced surplus grain. These helped them to produce objects of arts and crafts and other commodities which were in great demand in and outside the regions of their settlement. After their cities were destroyed, their commercial activities declined. The Rgvedic people were not much concerned with trade and commerce because they were a fighting class mostly at the pastoral level of economy. Still, however, the *Rgveda* refers to traders and commercial articles. The archeological finds discovered from the PG ware sites also attest to the existence of trade in a limited way. The objects found so far are beads of various types, some copper objects and earthen pots of different shapes and sizes. During the later Vedic period, when the Āryans had started leading a settled life in villages which were centres of production, this aspect of economy considerably developed. The *Yajus Samhitās* prescribe several rites to be performed for gaining profit in trade. the *Vājasaneyi Samhitā*<sup>1</sup> enumerates numerous professions, which were productive. The *Atharva Veda*<sup>2</sup> contains several hymns which were recited on different occasions by the traders to make a journey safe and bring a good profit. Trade, as a means of livelihood had already become an established profession. As an evidence we may refer to some of the *Brāhmaṇa*<sup>3</sup> texts. There it (*vāṇijya*) has been

enumerated along with farming (plough) and priesthood. What were the possible causes of this change? During this period several factors were conducive to the development of trade and commerce. The fertile soil of the Yamunā-Gangetic valley was a suitable region for surplus agricultural products. The vegetation of this region was ideal for animal husbandry leading to dairy products on a larger scale. Metals like copper and iron could be easily obtained from the mines of south Bihar and Madhya Pradesh which could be used for making tools of production. The region had a network of rivers and roadways which accelerated the pace of trade and commerce. During the last phase of the later Vedic period, several towns emerged in the Gaṅga-Yamunā Doab, and these became the centres of trade and commerce.

### Traders

The Indus valley people were expert traders who travelled and sailed to distant lands in connection with trade, but the early Vedic Āryans were not specialised in this profession. However, the *Rgveda* refers to two classes of traders, namely, the Paṇis<sup>4</sup> and the Vap̥i<sup>5</sup>. The Rgvedic references indicate that the Paṇis were non-Āryans and they were perhaps a trading class among the Indus valley people. They were very rich and enterprising and were solely devoted to the cause of gain either through trade or usury. Some of the Paṇi merchants, one such was Br̥bu who attained the distinction of being head of the merchants, have been mentioned<sup>6</sup>. The Paṇis disliked the Vedic priests<sup>7</sup> for the simple reason that the latter followed a different religion which gave rise to ideological differences between them. Zimmer regards them as a niggardly merchant class that neither worshipped the Vedic gods nor revered the Vedic priests. A peculiar reason has been advanced for enmity between the Paṇis and the Āryans: "Production was in the hands of the Āryans and exchange was controlled by the Paṇis, Asuras and the Dasyus, etc. Dissatisfaction on material grounds brought about conflict between them. We know that the political power was in the hands of the commercial community. This also made the conflicts more intense which resulted in a civil war between

the two"<sup>8</sup>. It is very difficult to subscribe to this view because there is nothing in the *Rgveda* to confirm that production was only in the hands of the Āryans and that the Paṇis, having ruling authority and commercial skill, always harassed the Āryans. Usually they captured their cattle wealth. The main cause of their enmity appears to lie in their racial and religious differences. The Paṇis did not like the alien Āryans who were attempting to hamper their material interest.

Various theories have been propounded for their identification. Macdonell and Keith regard them an aboriginal<sup>9</sup> non-Āryan tribe. Majumdar thinks that they were Babylonians<sup>10</sup>. They have been identified with Paramians<sup>11</sup> and Phoenicians<sup>12</sup>. Das, however, is of the opinion that they were the Āryan<sup>13</sup> traders. In Latin texts they have been called the Poeni which corresponds with the Vedic Paṇi.<sup>14</sup> Further, it has been argued that the Paṇis had colonised the sea-coasts of Syria which they named Phoenicia, meaning the land of the Paṇikas, which was called Fenkhu by the Egyptians<sup>15</sup>. The main basis of this identification lies in similarity between the two names. But it may as well be only a probability and the evidence is so slight that this conclusion cannot be accepted<sup>16</sup>. The Paṇis appear to have been fairly numerous, and if they were the Phoenicians, it is surprising that no evidence of their presence has been found by the archaeologists.

From the *Rgvedic* references it appears that they were a non-Āryan trading class who were very adventurous, greedy like a wolf and extremely selfish and cruel<sup>17</sup>. Some of the Vedic texts mention their methods of cheating while they roamed about the country in connection with their trade. They used to steal away others' cows and mixing them with their own herd, moved swiftly to other places<sup>18</sup>. This practice usually led to conflicts. Carrying their goods, they moved from one place to another in groups and even challenged the attackers. The Vedic Āryans also attacked them in order to capture their wealth. They offered prayers to the gods for destroying them<sup>19</sup>. It appears that hostility between them did not continue for a long time for the later portion of the *Rgveda* and the later Vedic texts do not refer to it. Possibly, they were merged with the Āryan society.

Another class of traders was that of the *vaṇij* (*vaṇik*). They formed a part of the *vaiśya* class, therefore, they were devoted to production, trade and commerce. With the schematisation of the *varṇa* system during the later Vedic period, trade became a specialised profession of the *vaiśyas*. They comprised the majority of the people, and that is why the term *viśaḥ*<sup>20</sup> meant both people and the *vaiśyas*. On account of their material prosperity they supported the *brāhmaṇa* priests and the *kṣatriya* rulers. Since they were entitled to *upanayana*, they could study the *Vedas* and perform sacrifices. A study of the *Brāhmaṇa* texts indicates that there was an attempt on the part of the *brāhmaṇas* and the *kṣatriyas* to keep them down so that they could not surpass them in their bid for social ascendancy. The *vaṇiks* had an exalted status among the *vaiśyas* who were engaged in dealing with trade and commerce.

The *Atharva Veda* mentions some of the characteristics of traders. There are three<sup>21</sup> most essential conditions for expanding trade and gaining profit, viz. *balam* (physical strength) *dhiḥ* (wisdom) and *ruci* (interest). A trader had to be physically fit, so that he might face the hardships of journey through difficult regions. For this purpose prayers were offered to the gods for bestowing strength on him. Only physical strength was not enough, he had also to be wise in transacting business so that he might not suffer loss<sup>22</sup>. Notwithstanding these qualities, a trader may not be successful in his profession if he had no interest in it<sup>23</sup>.

### Trade Routes

The Indus valley people had developed trade-routes which connected their settlements, with a wider region extending from Baluchistan to western Uttar Pradesh, and from the Punjab to the Narmadā valley. Their settlements were connected with roadways and water-ways. The *Āryans* also followed those routes in the course of their migration in that region during the early Vedic period. They also discovered new routes. From the *Rgveda* we learn that the early Vedic *Āryans* were acquainted with the geography of western India which included Afghanistan and Pakistan of today in addition to the present regions of the



Punjab, Haryana and western Uttar Pradesh.

The merchants visited different places for selling their commodities, but Rau rightly thinks that the later Vedic texts refer more to the wanderings of philosophers<sup>24</sup> than to those of the traders by the trade routes. The exact routes followed by them have not been mentioned but the names of territories and places have been referred to. The brāhmaṇa theologists visited the courts of Kāśī, Pañcāla and Videha in the east, Kekaya, Madra and Gandhāra in the west, and sometimes the court of Vidarbha in the Deccan. They followed the traditional routes. Details of such routes have not been given in the texts.

For tracing out the Vedic routes, the literary references may be useful, but one has to work on assumption and probabilities in the absence of clear evidence. The sites from where particular pottery and iron objects have been unearthed may also help us in finding out the routes. It is also quite likely that since both trade and migration routes were selected by the people for their convenience, they often coincided with one another.

The usual term for the road was *patha* which derived from the root *pad*, meaning to go, or from *patha*, which means to move<sup>15</sup>. The importance of the roads was realised by the R̥gvedic people to such an extent that they identified prosperity<sup>26</sup> with them. Prayers were offered to the gods to protect the people in their dwellings and also those travelling to distant places<sup>27</sup>. There were several routes<sup>28</sup> which ran to different directions. Hundreds of roads have been compared with the streams of juice flowing through inter-stitches of the woollen filter<sup>29</sup>.

There were several types of roads. While *patha* was the road in general, *prapatha*<sup>30</sup> was the wider road. *Mahāpatha*<sup>31</sup> was the highway which connected several villages and towns and to which many minor roadways were joined. *Vipatha*<sup>32</sup> was the term which denoted the uneven roads. *Baḍavan*<sup>33</sup> stood for a causeway which was more durable than ordinary roads. *Sruti*<sup>34</sup> denoted the thoroughfare which was comparatively free from dangers. It was short and comfortable. *Parirathya*<sup>35</sup> was the road suitable for chariots. There were cart-roads<sup>36</sup> made on a level higher than that of the adjoining fields. *Setu*<sup>37</sup> was the raised

bank for crossing inundated land. The large rivers crossed in route by roads were not bridged because the Vedic Āryans had not attained the skill to span large rivers with bridges. Sometimes roads were made for making the boundaries of villages<sup>38</sup>. Since there were several dangerous bends and curves<sup>39</sup> in roads, straight roads were most liked<sup>40</sup>. Oblations were offered to Rudra on *catuspatha*,<sup>41</sup> a place where four roads met.

The regions through which roads passed were covered with dense forests full of dangerous beasts. Making or discovering a new path was considered to be a matter of great credit. On account of this, the term *pathikṛt*<sup>42</sup> was used for the pioneer who discovered a new route. Generally it has been an epithet for Agni<sup>43</sup> and alludes to the burning of forest, rendering the movement of the people possible. Indra<sup>44</sup> and Pūṣan also have been mentioned as the *pathikṛt*. As guardian of flocks Pūṣan had to find out new pastures, leading to opening up of new routes. He was the overlord of roads, and by offering oblations to him, the sacrificing king in the *aśvamedha*<sup>45</sup> was supposed to have secured progress for his horse. It has been argued that Pūṣan was a master of caravans of his time always anxious to "win the wealth" (*sic*) in course of trade<sup>46</sup>. This view is unconvincing because Pūṣan was not a human being but a god.

The routes starting from the Indus valley cities and running to the settlements in the eastern Punjab and those in the Drśdvatī valley were comparatively safe. For sometimes, it seems the Harappans took shelter there. Being thrust by the PG ware using people, they left those places and took shelter in the Yamunā-Gangetic valley mainly in western Uttar Pradesh. By about 1500 B. C., the Āryans had established themselves in the region from Gandhāra to the eastern Punjab. They regularised the routes between the Indus valley and the west and Central Asia through the Khyber pass. From some graveyards of the Swat, Dir and Chitral regions, weapons and other objects of iron have been discovered. Those graveyards belong to the period in the beginning of the first millennium B.C. Recent excavations in the Pamir area confirm the co-existence of relations between the populations in the settlements on the opposite sides of the great mountainous chains separating the

sub-continent from Central Asia<sup>47</sup>.

The Āryan migration from Sutej to the Sarasvatī-Dṛṣṭvati valley was also an important historical event. The Āryans might have destroyed several cities in the Indus valley which probably were Harappan settlements. This led to grave economic consequences because the trade routes were disturbed and arts and crafts were adversely affected. But later, as the Āryans began to evince interest in rural pattern of life and in commercial activities, those trade routes might have been revived. They developed some new land routes in the mountainous regions<sup>48</sup> because the Maruts have been described as having crossed them in course of their victory. The Āryans advanced towards the east during the later Vedic period and opened up areas for habitation. After marching from the eastern Punjab, they established their *jana-padas* in the Kuru-Pañcāla regions<sup>49</sup>. The story of the east-ward immigration of the Āryans has been mentioned in the *Śatapatha Brāhmaṇa*. Videgha Māthava, starting from the Sarasvatī valley, reached the banks of the Sadānirā<sup>50</sup>, the present Gaṇḍakī river in northern Bihar. In this text there is no reference to the actual route followed by him, but it alludes to some place names which were situated in that region, such as, Āsandvit<sup>51</sup>, Paricakrā<sup>52</sup> Kāmpilya<sup>53</sup> and Nimiṣa<sup>54</sup>. Indraprastha and Ahicchatrā also were contemporary places to Āsandvit. Some of these places have yielded PG ware which is associated with the Vedic Āryans<sup>55</sup>. It seems that these towns (*purās*) were established in that region after opening up the line of communication in eastern India. Hypothetically it may be assumed that Māthava Videgha crossed the river Yamunā starting from the Sarasvatī valley, from where he might have gone to the Gomatī and the Sarayū rivers and on to the banks of the Sadānirā.

The sites from where the PG ware has been discovered may help us in tracing out a communication line. It appears that from Rupa people came to Indraprastha, and from there to Mathurā and Kauśāmbī, whence possibly a route ran to Vidiśā and from there to Vidarbha. Kauśāmbī was a prosperous city and a certain Kauśāmbeya has been mentioned as a famous theologist<sup>56</sup>. Kāśī was also a famous place and its king philosopher,

Ajātaśatru<sup>67</sup> was the centre of attraction for scholars. A certain Vedic king Satānika Satrājī made a raid along the Ganges upto Kāśī<sup>68</sup>. The river course of the Ganges might have opened a route between Kauśāmbī and Kāśī. The Pañcāla king Jaibali Pravāhaṇa<sup>69</sup> and the Vaideha king Janaka<sup>60</sup>, also were prominent kings whose capitals were visited by theologists hailing from different regions. Vaiśālī was a prosperous city during the post-Vedic times and so were Rājagṛha in South Bihar and Ujjayinī in western Madhya Pradesh. By the sixth century B. C. a large number of towns had emerged which were connected with one another, details of which occur in the early Pāli texts.

By the period when the *Brāhmaṇa* and the *Upaniṣad* texts were composed, a considerable portion of the Dakṣiṇāpatha had come to the knowledge of the Āryans who had established their settlements there. These texts refer to some territories of the South<sup>61</sup>, such as, Vidarbha and Āndhra. The line of communication was opened across the Vindhya to the Deccan, and the philosophers like Vaidarbha Kauṇḍinya<sup>62</sup> from Vidarbha came to the north for philosophical discussions with prominent theologists of Kāśī and Videha. Bhandarkar thinks that since it was very difficult to cross the Vindhya, the Āryans might have gone there by some eastern route<sup>63</sup>. According to Shastri, the possible route from the north to the south was through the Vindhya and Narmadā at convenient places<sup>64</sup>. Bhandarkar suggests that the Āryans entered the Deccan through Avanti and reached Māhiṣmatī on the Narmadā<sup>65</sup>. From there, they crossed the Vindhya and went to Vidarbha. However, the ancient route from the Deccan to the Gangetic valley may be traced out with the help of the early Pāli texts. The *Suttanipāta*<sup>66</sup>, considered as the oldest surviving work of the Pāli Buddhist canon mentions a Kosalān brāhmaṇa Bhāvarī who had settled in the Āsmaka region on the banks of the river Godāvarī. He was attracted towards the Buddha to whom he had sent some of his disciples with some questions to be put to the Enlightened One. They started from Pratiṣṭhāna, crossed the Narmadā at Māheśvara, and reached Ujjayinī, Gonarda, Vidiśā, Kauśāmbī, Śāketa, Śrāvastī, Kapilāvastu, Pāvā, Kuśīnārā and Vaiśālī. From Vaiśālī they went to Rājagṛha where the Buddha was staying.

Prior to the advent of the Āryans in India, the Indus valley people had established commercial and cultural contacts with the regions of the present Middle-East. The Āryans also had come to India through Turkey, Iran and Afghanistan. The question arises as to what the land route leading from West Asia to India was. On the basis of the archaeological evidences, Mackay and Piggot think that there were two land routes running parallel between the Indus commercial cities and the Sumerian ones.<sup>67</sup> One passed from the north and the other from the south of the deserts of Dasht-in-Lut and Dasht-i-Kevir. Schmidts had traced the existence of several proto-historic sites situated along these routes<sup>68</sup>.

The northern route started possibly from Quetta and reached Helmand via Kandhar. From Helmand, the route passed through north along the river Ferah upto the city of the same name (Ferah) and from there to Herat which was a trade centre during the historical times. Anau in Merv oasis was a proto-historic site in Russian Turkistan. The culture of Anau was influenced by the culture of Baluchistan. *Nisāpur* was also an important trade centre from where the trade route went to Tape Hissar. Star thinks that the Harappan and Hissar potteries have similarities<sup>69</sup>. From Tape Hissar the route took a new turn towards the south, terminating at *Sūsā*, capital of Iran, where it proceeded towards the Mesopotamian cities.

Another route starting from Baluchistan ran to Shahi Tump<sup>70</sup>, which was connected with Kandhar and Quetta by a sub-route. Shahi Tump was in contact with the east as well as with the west<sup>71</sup>. From there, it passed through the hills of Makran. Beyond Rampur, it passed along the river Hilal Rud, and from there to Sialik via Ardhan and Ardistan<sup>72</sup>. During the historic period, Persepolis and *Sūsā* were connected by a road running through Shiraz<sup>73</sup>. *Sūsā* had commercial contacts with the Harappans<sup>74</sup>. The routes going to *Sūsā* from India via Hissar had their junction at Hamaddan and Gian. From Gian, the route passed to Akkad and Sumer via Kirman Shah, from where, it ran to Teil Asmar and Khorasabad. Teil Asmar and the Harappan cities were in commercial contact which is confirmed

by archaeological evidences<sup>75</sup>. Wheeler suggests that from Teil Asmar probably the Harappan traders went to Mesopotamia<sup>76</sup>. In spite of this, it is difficult to ascertain whether the Vedic Āryans continued their trade with those countries. But the *Atharva Veda*<sup>77</sup> refers to the Asuras, and there are several Asura elements of the Assyrian and Sumerian origin in the text. It may, therefore, be assumed that they had contacts with Assyria and Mesopotamia via these routes.

To go to distant lands through land routes with vendible commodities was quite arduous. It was for this reason that water-ways were also utilised for transporting these commodities. The Indus seals and the remains of Lothal port<sup>78</sup> prove that the Harappans had developed maritime trade, and they were expert navigators. Lothal<sup>79</sup> (pd. second dated *circa* 1500-1000 B. C.) corresponds to the advent of the Āryans in India and to their migration to the Yamunā-Gangetic valley, but that was the period of decline of this city. Perhaps that was on account of the disturbed situation caused by the advent of the Āryans. Similar seals have been unearthed from Lothal and Bahrain<sup>80</sup> in the Persian Gulf which confirm the existence of commercial intercourse between the Indus valley and Western Asia. It is generally conjectured that the coastal route from Lothal reached Orangi in Sind, the last Harappan outpost. From there the route extended to Sukagedor and Sotkakoh, both parts on the Arabian<sup>81</sup> sea. From Bahrain, the Harappans sailed to Bunder Abbas and Bushir and from there they went to Ur.<sup>82</sup> We have no reference in the Vedic texts, however, to prove whether this maritime route was utilised by the Āryans. Some of the Vedic texts refer to the oceans<sup>83</sup> and the sea-going vessels propelled by hundred oars, but there is no reference to the sea-going vessels loaded with commodities going through the sea-routes. In the later Vedic texts, there are references to the sea but mostly in connection with sacrifices<sup>84</sup>. It seems probable that in the beginning, navigation by the Āryans was limited only to coastal regions. On the basis of information gathered from the *Taittirīya Saṃhitā*, Rau suggests that the sailors at first sailed along the coast and then from island to island, but they did not venture to

lose sight of the land<sup>85</sup>. These references prove that the sailors or traders limited their activities mostly to the coastal areas. They started going to the West Asian countries very late. References to this occur in the early *Pāli* texts<sup>86</sup>. It appears that the *Sūrpāraka* and *Bharukaccha* were developed much before the sixth century B. C. and were in existence in the last phase of the later Vedic period, but there are no references to them in the Vedic sources.

### Journey Conditions

Journey conditions, such as, security of life and commodities on the highways, also played a vital role in the advancement of trade and commerce. Generally the roads passed through forests, mountainous regions and marshy lands. Some roads passed through very low regions<sup>87</sup> and were obstructed by blocks<sup>88</sup> of stone or mud or by bushes. The most dangerous elements on the roads were wild beasts which sometimes attacked the merchants causing loss to their life and commodities<sup>89</sup>, or devoured them. It is obvious from the *Śatapatha Brāhmaṇa*<sup>90</sup> that the king wishing to perform the *asvamedha* had to complete it with the tame animals for making all the roads safe from dangerous beasts. When the sacrifice was not completed with them, it was believed that the roads would become unsafe. The same text refers to difficult journey conditions. It was safe for the travellers to entrust their garments and other belongings with reliable persons before they dared to go through the deserts<sup>91</sup>.

Besides the beasts of the forest, highway robbers, called *paripanthins*<sup>92</sup>, were another source of danger to the merchants<sup>93</sup>. They decamped easily after robbing the belongings of travellers and merchants. This is clear from the following simile : "The priests having adequate knowledge of the process of the sacrifice, exalt the status of the sacrificing king, but in absence of the requisite knowledge, they, by sacrificing for him, cause his destruction and deprive him of his wealth, just as the most degraded of robbers and murderers seize a wealthy man when travelling through a forest, and after having thrown him into a ditch, run away with his possessions<sup>94</sup>. Sometimes, the merchants were misguided by the highway robbers or they lost right path

in the dense forests. This has been compared with the task of correcting the wrong pronunciation of one reciting the Vedic hymns, and it was only with considerable difficulty that the path was eventually found out<sup>96</sup>.

What were the steps taken for checking the highways dangers caused by the robbers ? It was rightly thought that he who escapes all dangers gains wealth<sup>96</sup>. The people had also taken suitable measures for their safety as usually they went out trading in caravans so that they could protect themselves from the dacoits, robbers and savages<sup>97</sup>. There were trail-masters (*patha-rakṣin*)<sup>98</sup> possibly appointed by the king who protected the merchants and common travellers from the afore-mentioned anti-social elements, or they might have been forest people who were engaged by the merchants for their protection. The early Pāli texts also refer to the *corakāntaram*<sup>99</sup> (forest infested by the robbers) in which the merchants were robbed. The kings also appointed path-guards for protecting them<sup>100</sup> but some of them allowed the robbers to act against the merchants by accepting some gratuity from them.

Sea-routes were equally dangerous. Storms, waves, currents, fogs and darkness, aquatic creatures and rocks were dangers to all people sailing up the river or in the seas<sup>101</sup>. There were pirates who operated on the seas and plundered the merchants<sup>102</sup>. Sometimes it was very difficult to find out the sea-shores. It was an ingenious practice among the merchants to carry with them trained birds having strong wings in their voyage. Sensing the existence of dry land within a few miles, the birds would fly in that direction and would not return. Crows, a conspicuous species of birds were mainly utilised for the purpose<sup>103</sup>. During the early Vedic period<sup>104</sup>, shore-finding birds were set free when the voyagers were misled on high waters. The early Pāli sources also refer to the use of such birds<sup>105</sup>. This practice was in vogue in West Asia<sup>106</sup> and Ceylon upto the sixth century A. D.

In order to surmount the difficulties and dangers on roads, and in the oceans, divine help was sought. On the eve of their departure, the merchants offered prayers for safety. Mother Earth was invoked to bestow power on them to subdue all



highway robbers<sup>107</sup>. They prayed to Indra to guide them and ward off ill-will and wild beasts<sup>108</sup>. Prayers were offered to Agni and other gods for gaining immense wealth, for profit in sale and for increase in the invested capital. The *Brāhmaṇa* texts prescribe some hymns to be recited in a particular form for making the journey safe<sup>109</sup>. To the gods of roads prayers were offered for safety<sup>110</sup> on roadways (*pathyāsvasti*) and waterways. It is interesting to note that even during post-Vedic times prayers were offered to the gods, and rites were performed at the time of departure<sup>111</sup> from home.

The merchants had to suffer from hunger and thirst when they had exhausted their provisions. A desire was, therefore, expressed that the commercial roads must be provided with milk and ghee, so that the merchants could be carefree and in a position to earn wealth<sup>112</sup>. *Avasāya* was the term to denote the provisions carried along during journey<sup>113</sup>. In order to overcome these difficulties, rest houses (*āvasatha*)<sup>114</sup> were built on road-sides where the merchants could stay and take their meals. The post-Vedic sources also mention the inconveniences faced by the merchants after their provisions and water had been exhausted. Though there were difficulties which the merchants had to face, they were inspired to undertake long and tedious journeys for their material prosperity. According to a well-known text, there is no happiness for him who does not travel<sup>115</sup>.

### Means of Transport

Since it is essential to transport commodities from the places of their production to the areas of their demand and consumption, the means of transport played an important role in the development of trade and commerce. For this purpose, different types of transporting means were used by the traders.

Human beings appear to have been the earliest means for transporting things from one place to another. It was very convenient for them to carry objects on their head and back. In different regions, where the roads were uneven, especially in hilly areas, it was convenient to carry loads on heads<sup>116</sup>. The vendors and small traders carrying commodities in baskets or

bundles moved from village to village for disposing them off. Till now, this practice is in vogue in villages and towns.

Since large quantities of commodities could not, however, be carried on head and back to distant places, swings (*preṅkhā*) became a convenient means for carrying them. These were made of *udumbara* wood or bamboo shaft with containers, mostly baskets and pots, hanging by cords of *mūñja* grass<sup>117</sup>.

Animals employed for transporting materials were called *vāhana*. Commodities loaded on the back of the animal were carried to distant places. Oxen, horses, asses, mules, elephants and camels, etc. were looked upon as ideal *vāhanas*. The beast of burden has been compared with the Vedic hymns. It has been stated that the metres, having carried the offerings to the gods once became tired, and stood still on the later part of the tail of the sacrifice, just as a horse or a mule, after having carried a load to a distant place, stands still<sup>118</sup>. Animals, mostly horses and asses, are deployed even today by small traders for transporting commodities in rural areas.

Among the means of transport the cart was the most convenient. In comparison with the beast of burden it could transport larger quantities of things to distant lands. The Indus valley people used carts for the same purpose. Toy carts have been discovered from Mohenjodaro, Harappā and Chanbudaro; some of these appear like the modern Sindhi cart<sup>119</sup>. Their wheels are solid and have no spokes. The Āryans also used them. Generally there were two kinds of carts, namely, the *anas*<sup>120</sup> and *śakata*<sup>121</sup>. The former was made of hard wood like that of *khadira* and *śiṃśapa*<sup>122</sup>. It was a draft wagon as opposed to the chariot. The Vedic sources throw much light on the parts of *anas*. It had a wooden floor which was attached to the axle<sup>123</sup> by leather straps on each side. In the axle, wheels were inserted and were made secure by linch-pins (*aṇi*)<sup>124</sup> on the outer faces of the nave<sup>125</sup> portion of the wheel. In order to make the wheels of the cart movable, the axle was lubricated with oil. This practice has been compared with the testing of ghee by the tired priests in sacrifices. It has been remarked in the *Aitareya Brāhmaṇa*<sup>126</sup> that the priest should test ghee before repeating the

hymns :” Just as in this world, a cart moves well if lubricated with oil, likewise his repeating proceeds well, if he also is lubricated with ghee by testing it.” The axle was fixed to the middle of the body. In front, it had a yoke<sup>127</sup> (*yugā*) resting on a pole (*iṣādāṇḍa*)<sup>128</sup>. *Kastambhī* was a wooden rod fixed below the pole either at the centre or at the rear, serving as a prop of a stationary cart<sup>129</sup>. The beasts of burden or the oxen were yoked to it and were controlled by long pins<sup>130</sup> (*samyā*) fitted to the yoke. *Dhur*<sup>131</sup> denoted that part of the yoke which was placed on the shoulders of the animals drawing the cart, so they were called *dhurasah*<sup>132</sup>, meaning yoke bearing. *Apālamba* was a brake led down to check the speed of a wagon. Etymologically<sup>133</sup>, the word *anas* signifies that it was a means of livelihood for the people who carried loads on it. On account of its utility, the cart was considered as a symbol of social status<sup>134</sup> and was used for carrying loads of wood,<sup>135</sup> *soma*<sup>136</sup> plants and grain, etc. Besides, it was regarded as a form of property. The *Śatapatha Brāhmaṇa*<sup>137</sup> states : “When there are much of anything people say that there are cart-loads of it.” Only wealthy persons could afford carts and even now it is not possible for average cultivators and traders to possess it. Its sanctity was so high that it has been identified with sacrifice ; “Its yoke is fire, the middle part represents the altar and the enclosed space which contains the grains constitutes its *haviradhāna*<sup>138</sup> (receptacle of the sacrificial food)”. The carts were driven by oxen, mules, horses and asses<sup>139</sup>. Sometimes bad roads caused damage to the cart which when broken, was called *sampiṣṭa*<sup>140</sup>.

Macdonell and Keith hold that *śakaṭa* is a rare word in the Vedic literature<sup>141</sup>. Frequent references to it in the post-Vedic texts signify its growing importance<sup>142</sup>. This view appears to be unconvincing because even during the early Vedic period<sup>143</sup>, *śakaṭa* was a common means of transport. Its creaking has been compared with the sound heard at night in the forest<sup>144</sup>. It appears that it was rather a large cart capable of carrying heavy loads. Its small size was termed *śakaṭi*<sup>145</sup>. Being of large size and carrying heavy loads *śakaṭa* moved slowly<sup>146</sup>. The early Pāli texts refer to *śakaṭa* several times as one of the means of transport and to the *śakaṭasārtha*<sup>147</sup> (caravan of carts) which

went on commercial enterprises. Generally the *śakaṭa* was driven by two animals, but sometimes only one animal was yoked to it which was known as *sthūri*<sup>148</sup>. Likewise, *vipāṭha*<sup>149</sup> was also a cart suited for rough and uneven roads and was used by the *vrātyas*. Though there are references to bullock carts in the Vedic texts, no toy cart or a model cart has been discovered from the PG ware levels<sup>150</sup>. It is on account of this reason that the carts were made of perishable materials and the potters confined their activities to making utilitarian objects.

The chariots were most useful vehicles of communications which could be afforded only by the nobles and kings. They were used on the battlefields and decided the fate of kings. The Indus valley people had no knowledge of chariots with spoked wheels and driven by horses. For the first time, such chariots were introduced into India by the Āryans who had borrowed their general features from the Sumerians<sup>151</sup> (circa 2000 B.C.). Piggot points out that *ratha* is an Indo-European word for wheel<sup>152</sup>. The words for axle, nave and yoke are likewise common to the Indo-European group of languages. On the basis of references to the chariots in the Vedic texts, attempts<sup>153</sup> have been made to bring out complete form of a chariot, so it would be merely repetition to mention it here. However, it is essential to mention the main parts of a chariot. It had a *koṣa*<sup>154</sup> (box) of wood which was fixed on a wooden axle<sup>155</sup> (*akṣa*) fastened with straps of leather. The wheels were fixed to the ends of the axle and were secured by linch-pins on their outer faces. The wheels had rims<sup>156</sup> (*pavi*) besides a felly (*pradhi*), spokes<sup>157</sup> (*arā*) and a nave<sup>158</sup>. A central pole projected forwards from the bottom of the chariot, its end passing through a hole in the yoke. A staunt-pin was provided through the chariot pole against which the yoke was tied with straps of leather. Usually two horses were yoked to a chariot, but even more also could be yoked in consideration of its size and speed desired.<sup>159</sup>

A study of the information about the chariots as mentioned in the Vedic texts indicates that they were not used by traders for carrying commodities of commercial utility. It was on account of the simple reason that a chariot had limited space in.

which large quantity of commodities could not be loaded. However, the *R̥gveda* informs that these were used for bringing booty of war<sup>160</sup>. The *Chāndogyaopaniṣad*<sup>161</sup> refers to a mule-car loaded with slaves and jewels which presumably formed the prize of victory. The *Aitareya Brāhmaṇa*<sup>162</sup> further states that chariots were used for carrying weapons, such as, arrows, spears, daggers and swords, etc., to the battle-field. During the post-Vedic times Kauṭilya<sup>163</sup> has highlighted the importance of chariots as a means of supplying weapons and other war materials to the battle-fields.

Though references to chariots are numerous in the Vedic texts, it is surprising that no model chariot has been discovered from any PG ware yielding site. This is because timber was the main component of a chariot, and, therefore, chances of its being perished in the course of time were high<sup>164</sup>.

There were several rivers in the western and eastern parts of the country and it was very convenient to transport commodities in boats through them within a short period. The Harappans<sup>165</sup> used boats of several sizes for transporting their commodities in the area of their settlement and abroad. It is essential to study the general features of the Harappan boats, on the models of which the Āryans might have built their own boats or might have borrowed them in the same form. The vessel depicted on a seal of Mohenjodaro<sup>166</sup> has sharply up-turned prow and stern. It has no mast. At one end of the boat a steersman is seen seated at a rudder on steering car. The cabin is in the middle of the boat. Five terracotta models of boats and some paintings on potsherds discovered from Lothal<sup>167</sup> give a general idea of the boats of the Harappan times. The boat<sup>168</sup> had a sharp keel, a pointed prow and a blunt stern. A painting on a sherd may be interpreted as depicting a boat having at least 36 pairs of oars. The Āryans also used them for different purposes as is evident from frequent references to them in the Vedic texts. Most of the sites yielding PG ware are located on river banks. The ecological conditions were such that forests covered most of the un-inhabited region and were infested with wild animals and inhabited by hostile aborigines. Under such conditions, water transport must have been the safest. Since boats were made of wood, physical

traces of them have not been unearthed from the excavated sites well known for their PG ware.

The *R̥gveda* refers to two kinds of boats, namely, those which were used for crossing the rivers (*tarāḥ*)<sup>169</sup> and those which were used on the sea<sup>170</sup>. The former were small in size while the latter were larger. Some of them had a hundred oars<sup>171</sup>. *Naukā* or *nāva* was the ferry boat for crossing the rivers<sup>172</sup>. *Sunāvam*<sup>173</sup> denoted a well-built and good boat. *Asravanti*<sup>174</sup> was the boat which did not leak and made the voyage safe. *Plava*<sup>175</sup> was also a type of boat which could not be used on the sea. *Plava* has been mentioned as a war-ship<sup>176</sup>, but this is hypothetical and unconvincing because the *Mundakopaniṣad*<sup>177</sup> describes it as *adṛḍha* in which one cannot cross the ocean. Such a weak boat could not be used as a war-ship. *Śairavatī* was a particular type of vessel in which one could cross the ocean<sup>178</sup>. Manu had built a strong vessel which could stand the rage of wind and water. He had kept himself afloat in that ship which sailed over the fathomless water<sup>179</sup>. *Nāvaja* was the boat propeller of a boatsman and *navya* was the navigable stream<sup>180</sup>. The boat was fastened to a peg with the help of rope on the banks of the river and sea, but sometimes due to storms, it went into the speedy current and was destroyed<sup>181</sup>. Besides, using the boats for transporting commodities and as a means of communication, these were used by fishermen to catch fish in the rivers and lakes. Regarding the making of boats, it has been suggested that normally the timbers of ancient Indian ships were not nailed or riveted, but fastened together; this was done to avoid the imaginary danger of magnetic rocks<sup>182</sup>. It seems reasonable to think that it might not have been the case with ordinary boats sailing in rivers. The post-Vedic texts, namely, the *Jātaka* stories and the *Arthasāstra*<sup>183</sup> of Kauṭilya furnish details about the commercial boats, such as, their construction, general features, types, management, use and control of the king over them.

#### Medium of Exchange

For the development of trade and commerce, suitable means and medium of exchange are essential conditions. Before the use of metallic coins, which are the most convenient means of sale and purchase, different things were used. The Indus valley

people probably used cattle, grain, cloth, and metal for that purpose. The Vedic texts also refer to different articles which were used for purchasing commodities.

The value of commodities called *śulka*<sup>184</sup> (price) was fixed. In the post-Vedic texts, this term has been used in the same sense. In the beginning, exchange took the form of barter. A livestock-breeder, for example, gave a sheep and received grain in return. *Vasnā*<sup>185</sup> denoted the price paid for anything or its value or the thing itself, as an object of purchase<sup>186</sup>. *Vasnika*<sup>187</sup> denoted the worth or price of a commodity. The term *vasnā* may be explained with the help of certain post-Vedic references to it. Pāṇini has used it in the sense of price or value realised<sup>188</sup>. In the first instance, a *vasnika* trader was one who only owned a financial interest in the profits of the deal, as contrasted with *kraya-vikrayi*<sup>189</sup> who carried on actual business himself. A *vasnika* trader was known according to his share in his sale proceeds. For example, *sahasrivasnika*<sup>190</sup> was the trader whose share of sale proceeds was one thousand. Third, a *vasnika* trader was different from *dravyaka*<sup>191</sup>, a trader on outward journey conveying merchandise for sale, but the former was so called because he carried the sale proceeds on his return journey home. After Pāṇini, the term has been used only once by Patañjali, and after him, it went out of use<sup>192</sup>.

Since there were inherent disadvantages in the barter system, the need for a special commodity arose which could serve the purpose of a convenient means of exchange. The early Vedic economy was based on cattle wealth, due to which cow was considered as the standard of value and the prices of commodities were adjusted with them. Some references to the price of commodities in terms of cows are found in the Vedic *Samhitās*. A wooden image of Indra<sup>193</sup> was sold for ten cows. *Somakrayaṇi*<sup>194</sup> was the term for a cow for which the *soma* plant was bought. *Somakrayaṇa*<sup>195</sup> denoted those objects for which *soma* stalks were obtained such as, a piece of gold, a she-goat, a piece of cloth, a milch cow, a pair of kine, a mat and three other cows. In this list, the number of cows is much more than that of other objects. Regarding this, it has been further stated that the priest

should purchase *soma* stalks for these ten objects and not for other than these because the *virāja* consists of ten syllables and *soma* is of *virāja* nature<sup>196</sup>. The value of the sacrificial horse used in the *śvamedha*<sup>197</sup> was fixed for one thousand cows. Besides, the cow was the most common form of sacrificial fee to be offered to the priests, likewise other animals were also offered. In ancient Iran, the cows and other cattle served as a unit and means of exchange of commodities or were offered as fee to the priests and other persons of skill<sup>198</sup>. The *Iliad*<sup>199</sup> also refers to weapons worth a hundred cows.

Though the cows were used as one of the means of exchange of commodities, there were some inconveniences faced by the traders due to this system. Metallic currency, therefore was needed to facilitate the development of trade. When used to facilitate the exchange of goods, metal is a currency, and when used according to specific weight standard, currency is money, but money stamped with a device is a coin. In the beginning, metal dust or solidified metal was used for purchasing commodities. In the Vedic texts, gold has been mentioned as a price paid for *soma* plants<sup>200</sup>, but its exact quantity has not been mentioned. Lead was also used for purchasing such commodities, such as, rice<sup>201</sup>. There are evidences to prove that during the early Vedic period, a metallic currency was already evolved. The *niṣka*<sup>202</sup> has come to denote a medium of exchange. In order to avoid repetition it is not necessary to refer to the contexts in which the *niṣka* has been mentioned in the Vedic texts. Whether the *niṣka* was a currency, is a controversial matter. Bhandarkar<sup>203</sup> thinks that it was a metallic coin but this view has been refuted on the ground that in the Vedic texts the *niṣkas* have not been mentioned in connection with purely trade and commercial transactions and were not a stamped currency<sup>204</sup>. However, Altekar<sup>205</sup> thinks that though the *niṣka* was used as an ornament of the neck it was somewhat distinct from the general type of ornament and should not be considered as a standard coin of definite shape and value<sup>206</sup>. Macdonell and Keith hold that *niṣka* was not a coin but merely an ornament<sup>207</sup>. In the Vedic texts, it has been mentioned usually in connection with gifts. Being costly, it was not used in daily transactions. The post-Vedic



texts, however, refer to its use in commercial transactions<sup>208</sup>.

The *Rgveda*<sup>209</sup> refers to gold dust packed in bags and to pieces of gold<sup>210</sup> stored in pots and buried into the ground for safety<sup>211</sup>. The *hiranyapiṇḍa*<sup>212</sup> denoted solidified gold dust used as unstamped metallic coin like the *niṣka*. It was also an object of gift<sup>213</sup>. It perhaps was also called *suvarṇa*, one fourth of which was known as *suvarṇapāda*<sup>214</sup>. References to it in the post-Vedic texts prove that it was a metallic currency<sup>215</sup>.

The later Vedic texts refer to *śatamāna*<sup>216</sup> several times. The term itself denotes an object weighing a hundred units of weight. It was equal to the weight of 100 *guṇjas* and was *vṛtta*<sup>217</sup>, so it appears that it was circular in shape. It was made of gold<sup>218</sup> and was an object of gift. Since *suvarṇa* and *hiranya* were associated with *śatamāna*, they appear to have been gold currency<sup>219</sup>. There were also silver *śatamānas*. To think that no distinction between gold and silver *śatamānas* has been made is wrong for the reason that the later Vedic texts refer to them in clear terms<sup>220</sup>. On the basis of the references to *śatamāna* of silver<sup>221</sup>, it has been suggested<sup>222</sup> that the long-bar or the bent-bar coins mostly found from the Gandhāra region and weighing a hundred *rattis* or 175 grains should be identified with *śatamāna* dated circa 1000 B. C. This suggestion appears to be unconvincing because the *śatamāna* was not a bent-bar, but was circular in shape. The *śatamāna* was a metallic piece of definite weight standard symbolising a century, the supposed span of life of the sacrificer<sup>223</sup>.

During the early Vedic period, *manā*<sup>224</sup> was an object of gift along with cows and horses. The term *minā* was used by the Babylonians prior to the prevalence of regular currency to denote a lump of silver or gold of a definite weight. It seems probable that the early Vedic Āryans might have borrowed this term from them. It appears to be reasonable because they had contact with western Asia. In other Vedic and the post-Vedic texts it has not been used, and its solitary reference in the *Rgveda* proves that it has been borrowed from elsewhere. It seems that it was just like *hiranyapiṇḍa* mentioned in the Vedic texts.

Though *kṛṣṇāla*<sup>225</sup> was a basic unit of weight, it was also a term for the metallic currency and was an object of gift. It was the seed of the *abrus precatiorius* (*guñjā*) and weighed one *ratti*. It was made of different metals as there was *kṛṣṇāla*<sup>226</sup> of gold.

A study of the contexts in which references to metallic currency occur, reveals that they were not used in commercial transactions, rather they were mainly the objects of gift. For the first time, the *Jātakas* refer to metallic coins in connection with commercial transactions for which mostly copper and silver coins were used. The so-called Vedic coins were offered by kings to the priests and were not the objects of common use. One cannot suppose that in India a true metallic coin was in use before the sixth century B. C. though Cunningham and Altekar suggest earlier<sup>227</sup> dates. The earliest real coins were made of silver and copper and not of gold. For the first time, the term *kārṣāpaṇa* occurs in the *Sadaviṃśa Brāhmaṇa*<sup>228</sup> which is a very late work belonging to the *Sūtra*<sup>229</sup> period.

Several archaeological sites which have yielded PGW have been excavated in the Gangetic valley, the core area of the later Vedic period, but nowhere a single piece of genuine coin of whatever metal has been discovered. Even at Hastināpura<sup>230</sup> for the first time, the coins appear in the NBP ware layers ascribed to the sixth century B.C. On the basis of the discovery of cast coins from Kauśāmbī<sup>231</sup> preceding the find of the punch-marked coins, it has been suggested that cast copper coins constituted the currency, as in Vidiśā<sup>232</sup> and Ujjayinī<sup>233</sup>, much before the introduction of the punch-marked coins in the early years of the first millennium B.C. This view, however, has no logical basis as nowhere the coins have been unearthed from the layers datable *circa* 1000 B. C.<sup>234</sup>

During the PGW phase, barter appears to have been the system adopted for exchanging commodities, for the economy was not so developed as to necessitate the use of metallic coins. The NBP layers heralded a new era, and the coinage in the form of punch-marked coins and un-inscribed bits, usually of copper removed the old uncertainty as to the medium of exchange and recorded technological advancement. A stratigraphic study of the

punch-marked coins from different sites<sup>235</sup> proves that the earliest date of introduction of these coins was not before the days of the Buddha<sup>236</sup>, i.e., the sixth or the fifth century B.C. The problem of their dating is closely related to the dating of the NBP ware, since the presence of the former has been reported from practically all the levels of the latter<sup>237</sup>. It has been suggested that coinage was introduced into India from the west, but it cannot be proved with certainty. Basham thinks that the clear references to coined money are found in texts looking back to a period shortly after the foundation of the Achaemenid empire in Persia, which was the first great empire to mint an official coinage. The Babylonians and Assyrians managed with unstamped silver shekels, but the Achaemenid emperors adopted stamped coinage from Lydia and the Greek cities of Asia Minor, which had already employed it for a century or two. He rightly observes : "If India did not learn the use of coinage from the Persians, she invented it independently, but the coincidence is too striking to make this seem probable"<sup>238</sup>.

### **Weights and Measures**

Introduction of weights and measures in ancient India facilitated the development of trade and commerce. The Harappans had evolved their own weights and measures which were of different shapes and sizes and were made of different kinds of stones. A large number of weights consisting of accurately cut cubes of blended grey chert have been discovered from the Indus valley cities. They follow the ratio 1 : 2 : 4 : 8 : 16 : 32 : 64 : 160 : 200 : 320 and 640. A study of the Indus valley metrology indicates decimal divisions of length, e.g., the use of a foot of 13.2 inches divided into tenths<sup>239</sup>. They had a cubit of about 20.6 inches. It appears that the Indus valley weights and measures were standardised by an authoritarian regime.

It is very difficult to say whether the Āryans followed the Harappan system of weights and measures or evolved their own. It is difficult to determine the unitary relationship between one terracotta weight and another. It is noteworthy that even after the destruction of the Harappan cities, the Indus weight system might have continued at least in western India for sometime<sup>240</sup>.

Chert and jasper weights have also been discovered from Hastināpura<sup>241</sup> from the PGW levels. In comparison with other finds, the number of such weights, however, is disappointing. What should be its possible cause? It appears that during the Vedic period, grains, milk, ghee and other commodities were measured, and not weighed. That is why different types of measuring pots were used. References to measuring are numerous but those to weighing are a few. However, some Vedic texts refer to the existence of different kinds of weights and scales of measurement as well as measuring pots for gauging volume. Generally sticks were used for measuring length, but the arm was equally, if not more, common. For measuring agricultural plots, a staff of bamboo known as *tejana*<sup>242</sup> was used. In sacrifices various kinds of altars were made and sacrificial posts of definite shapes, sizes and height were used. So later on, the *Śulva Sūtras* were composed which were the parts of the *Kalpa Sūtras*. As terminal writings, "they summarise the knowledge of several preceding centuries and provide an excellent picture of the achievements of Hindu geometry"<sup>243</sup>.

Basu thinks that the Āryans did not know any measure of weight during the whole of the Vedic period<sup>244</sup>, a view not at all tenable since the Vedic sources refer to such measures in several contexts.

*Prasṛta*<sup>245</sup> was a measure of capacity which contained a handful of grain. Primarily, it denoted the palm stretched out to receive what was offered. *Muṣṭi*<sup>246</sup> denoted a handful of anything, especially the grains. *Añjali*<sup>247</sup> signified the cup-shaped hollow formed by the joining of the two palms together. *Māna*<sup>248</sup> was the measure of weight which was equal to one *kṛṣṇāla*. *Khārti*<sup>249</sup> was a measuring pot. During the post-Vedic times it was used for the same purpose. *Urdarā*<sup>250</sup> was probably another measuring pot, but sometimes it also denoted a granary. *Sihivi*<sup>251</sup> was a measurement of volume. Different kinds of pots<sup>252</sup>, such as, *droṇa*, *kalaśa* and *camu* were used for containing *soma* and other liquids. *Purnapātra*<sup>253</sup> was a vessel used for measuring grains. It was equal to four *puṣkalas*, one *puṣkala* being equal to eight handfuls.

There are references in the Vedic texts to different kinds of

units for measuring distance. It was essential to have these units for measuring farm holdings. Measures of length were required for planning and executing the construction of sacrificial altars. Childe rightly observes that requisite measurement could still be effected by direct comparison of the component pieces or at least by the use of personal standard, such as, the finger, hand, foot and span<sup>254</sup>. The conversion of such units into conventional standards sanctioned by a whole society had, of course, been effected easily.

*Āṅguli*<sup>255</sup> (finger) was a common unit of measurement. Its single unit being as *āṅgula*, approximately equalled an inch. *Āṅguṣṭha*<sup>256</sup>, the thumb was usually regarded as equal to an *āṅgula*. *Prīṭha*<sup>257</sup> denoted the length of the palm. *Vitasti*<sup>258</sup> was the unit of measurement equal to the length of the outstretched palm from the thumb to the little finger. *Vyāma*<sup>259</sup> denoted the span from the tip of the middle finger of one hand to the tip of middle finger of another hand of a person standing with arms outstretched. It was used for measuring the sacrificial ground<sup>260</sup> and the stakes<sup>261</sup>. In the *Āśvalāyana Śrauta Sūtra*, *vyāma* has been equated with four or five *aratni*<sup>262</sup>, one *aratni*<sup>263</sup> being of 24 *āṅgulas*. *Aratni*<sup>264</sup> an elbow, indicates the distance from the elbow to the tip of the hand. *Śamyā*<sup>265</sup> as a measure of length was of 32 *āṅgulas*. A man's stride, called *prakrama*<sup>266</sup>, is mentioned as a unit of measurement, but the exact length denoted by it has not been referred to. The *Kātyāyana*<sup>267</sup> *Śrauta Sūtra* states that three *padas* make a *prakrama*, and a *pada* is one tenth of of *puruṣa* (sacrificer's height). The length of *puruṣa* was measured from the finger of the foot when the sacrificer stood raising his hands. Thus, its length differed from person to person<sup>268</sup>. The term *pada*<sup>269</sup> (foot) appears as a measure of length as well as a measure of weight. As a fraction, it meant a quarter. The term *śapha*<sup>270</sup> (clent hoof) meant one-eighth part, because of the divided hoofs of the cow, just as *pada* meant a quarter. *Prādeśa*<sup>271</sup> seems to originate from the index finger or forefinger which is the indicator, hence the span from the tip of the thumb to the tip of forefinger, when stretched out, was called *prādeśa*.

*Krośa*<sup>272</sup> was a long unit of measurement. It denoted the

range of voice raised to the highest pitch, but from the post-Vedic texts it appears that it was equal to two miles. *Yojana*<sup>273</sup> was the longest unit for measuring distance. Literally, it indicates the distance which may be covered in one ride or traversed at one stretch without unyoking the horse. *Trīpāda*<sup>274</sup> denoted three quarters of a *yojana*, and half a *yojana* was termed *gavyūti*<sup>275</sup>. *Āśvin* denoted the distance covered by a horse rider, in a single<sup>276</sup> day. As it depended upon the horse and horse rider, its exact length has not been mentioned in the Vedic texts. Some of the post-Vedic texts<sup>277</sup> aver that it ranged between 25 and 60 miles. Likewise *rathāhnya*<sup>278</sup> denoted a day's journey by a charioteer.

The Harappans might have used different kinds of balances<sup>279</sup>, which possibly were prototypes of the balances used now-a-days. *Tulā*, the widely used term for balance, has not been mentioned in the *R̥gveda*. The word occurs for the first time in the *Vājasaneyi Samhita*<sup>280</sup> where it has been dedicated to the merchants. The use of balance for weighing commodities has been mentioned in the *Śatapatha Brāhmaṇa*<sup>281</sup> in the context of the weighing merits and demerits of the departed souls. In certain sacrifices, the sacrificer had to weigh a hundred grains indicating<sup>282</sup> a century. From references to it, it appears that its beam made of wood sustained wooden pans with the help of cords. The beam contained a hole in the centre through which a cord was inserted and held in hand while weighing an article. It appears that during the post-Vedic times, the use of balance became more common with the development of trade as is obvious from Kauṭilya's reference<sup>283</sup> to 14 kinds of balances which were used for different purposes. It is difficult to say what steps were taken by the Vedic king to have control over weights and measures, especially, for maintaining their correct standard, because the Vedic sources do not enlighten us on this point. Possibly, it came under the purview of general administration.

### Commodities

Commodities constitute the main basis of trade and commerce and production being the main basis of commodity, a people engaged in surplus production may profitably go for

trade and commerce. The later Vedic people carried on trade on a large scale because they practised arts and crafts more than their predecessors. The term *paṇya* was used for mercantile commodity and *paṇa* for barter or purchase<sup>284</sup>. The root *paṇ*, from which the term *paṇa*<sup>285</sup> is derived, has been used several times in the later Vedic texts. The word *paṇam*<sup>286</sup> denoted trafficking. From *paṇa* several terms concerning trade and commerce have been derived, such as, *āpaṇa* (market). *Paṇi* denoted a person engaged in trade and commerce. *Kārṣāpaṇa* was used for a metallic coin and *kravya*<sup>287</sup> for the article worth purchasing. The Vedic texts refer to different commodities, but those have not been enumerated systematically as articles of trade. However, they may be classified into several categories, such as, agricultural products, dairy products, forest products and products of arts and crafts.

Agricultural commodities were grains and vegetables of different kinds. These were purchased by landless people who required them for subsistence or for trade. Barley and rice were exchanged for lead<sup>288</sup>. Some spices like *jambila*<sup>289</sup> (a kind of large lemon), *haridrā*<sup>290</sup> (turmeric) and *pippali*<sup>291</sup> (pepper) were mercantile commodities. Fruits, cotton, dyeing ingredients, oil and oil-seeds were agricultural products which were sold.

Among dairy products, milk, butter, ghee, curd and the like were useful. These were sold by the persons who were engaged in cattle rearing as their principal occupation. Different goods were made of the leather of their animals, such as, footwear, garments, containers, bed-spreads, sheaths of swords and straps of different kinds. These were sold by the leather-workers. Arrow-heads which were in great demand were made of the teeth and bones of animals. Sheep's wool was also used as a means of barter for obtaining grain and other commodities<sup>292</sup>. The cattle supplied meat which was an item of dietry, and so were the fishes<sup>293</sup>. Horses, cows, goats, sheep, elephants, oxen and others were also sold.

Forest products were the articles of trade and commerce. Forest wood was sold for constructing residential and official buildings, for making furniture, containers, measuring pots,

household utensils, sacrificial stakes, agricultural implements etc. Finished objects of wood were purchased by the people from the carpenters. Herbs were used for curing different kinds of diseases and were possibly sold to the patients by the physicians in the form of medicines. *Soma* plant could be exchanged for ten objects<sup>294</sup>. *Guggula* (the exudation of *amyris agallochum*) was a costly fragrant gum which was used for curing diseases and removing the effects of evil spirits. It has been called *samudriyam*<sup>295</sup> which indicates that it was imported from the countries of the coastal regions. Honey, mentioned several times in the Vedic texts, was a prized commodity and was in great demand. It was offered to the gods in sacrifices and several oblations were made of it mixed with other materials. *Pr̥ṣātaka*<sup>296</sup> was such a mixture of curd and honey. Taboos against the use of honey have been mentioned in the later Vedic texts<sup>297</sup>. It had medicinal property. It was mixed with *surā* in order to make it a delicious drink<sup>298</sup>. Likewise, fruits, birds and beasts might have been sold to others. Ivory, another costly commodity, was used for making ornaments.

Water resources were also explored and the objects obtained from them, such as, fish, aquatic birds, water-fruits and flowers like lotus and lily were sold. Salt<sup>299</sup> was also a commercial commodity which on account of its utility, was sometimes placed above gold in value. Pearls and conchshells were obtained from the sea and were regarded as precious commodities. Pearl was considered as the bone of gods living in waters. It was put on as an amulet for ensuring strength and longevity<sup>300</sup>.

As we have seen earlier, the Vedic texts refer to different metals and persons engaged in making different kinds of metallic objects. Archaeological finds from excavated sites belonging to the later Vedic period, confirm that minerals like gold, silver, copper, bronze, iron, tin, lead and glass, etc., were important mercantile commodities sold in the form of finished goods, such as, ornaments, weapons, agricultural implements and household utensils.

### Business Transaction and Commercial Convention

Business transactions followed commercial conventions which



constituted an important aspect of trade and commerce and which must have been established by the Indus valley people some of whom were expert traders. A number of clay seals discovered from Lothal clearly prove that they were used in commercial transactions. Some of them bear the impression of reed and coarse-cloth<sup>301</sup>. Their other conventions are unknown to us.

It is difficult to ascertain whether there was only wholesale or retail dealership. It appears that in villages and towns there were retailers who sold their commodities to the consumers. The producers disposed of their wares mostly in local markets. The whole-sellers purchased goods from producers and transported them to distant places. In foreign trade, middlemen might also have played an important role, but details about them are not available.

The main objective of the trader was to gain maximum profit on his sale proceeds<sup>302</sup> for which he travelled to distant land, even risking his life. He prayed to the gods<sup>303</sup> for profit in trade for which he had to act tactfully. In this context the terms *utthāna* and *caritraṃ* are of special significance<sup>304</sup>. A trader must be both alert and industrious resulting in his rising: In addition, he should also be a man of impeccable moral character. He should be honest and sweet to his customers because honesty and sweetness yeild good profit.

Businessmen invested capital in trade, profit being their sole end. For this, it was essential to fix the price of the commodities in the areas of their disposal. They had to keep certain points in view, such as, the capital invested, labour involved and maintenance of the employees. Moreover, they had to be firm to the hagglers who always insisted on reducing the prices of commodities<sup>305</sup>. The practice of haggling about the price of commercial commodities may be gleaned from the dialogues<sup>306</sup> between the *adhvaryu* and the *soma* seller. A more comprehensive dialogue between the two is contained in the *Bhāradvāja Śrauta Sūtra*<sup>307</sup>. After the transaction was over, the *soma* seller was driven away by the priest with a leather-whip perhaps because he charged an exorbitant price. A trader was expected not to

charge more than fixed and agreed price. The Vedic texts do not refer to the commercial disputes and the way they were settled, but it appears that when disputes arose they were normally settled by the local people or by the law courts by arbitration.

As regards the agency that controlled the traders and standardised weights and measures, it may be mentioned that there were certain conventions which the sellers and the purchasers were probably expected to follow. Generally, the *vaiśyas* were engaged in trade and commerce and constituted the main section of the society that paid taxes to the king. As mentioned earlier, the term *śulka* has been mentioned in the *Atharva Veda*<sup>308</sup> and its rate has been fixed as 1/16th, but it has not been mentioned on which commodities it was imposed. In the post-Vedic period, the term has been used in the sense of toll-tax, but its exact nature during the Vedic period is not known.

The question arises whether there were village-markets and markets in towns. The excavated sites of the Indus valley cities have amply demonstrated that there existed markets in which there were shops, but the Vedic literature does not mention the existence of regular markets. The excavated sites of the old cities mentioned in the Vedic texts also do not reveal their remains. Undoubtedly, the *R̥gveda*<sup>309</sup> refers to several Asura cities which were well built and adequately protected, but there is no mention whatever of markets and shops in them. The early Vedic *Āryans* destroyed the cities of the *Asuras* and *Dāsas* but they had no interest in using them because "they lacked the technical ability to keep them going on"<sup>310</sup>. The later Vedic texts refer to several fortified cities. such as, *pura*<sup>311</sup> *mahāpura*<sup>312</sup>, *nagara*<sup>313</sup> and *nagari*<sup>314</sup>. Some of these fortified cities were *Ahicchatrā*, *Hastināpura*, *Indraprastha*, *Kāśī* and *Kauśāmbī*. *Ayodhyā*, *Ujjayinī*, *Rājagṛha*, *Vaiśālī* and a few others were prosperous cities during the closing years of the later Vedic period<sup>315</sup>. Even these cities have not brought to light the remains of markets. The excavation of PG ware yielding sites prove that there did not exist cities of modern types. The houses built during this phase are typical of village culture. No burnt-brick structures have been found in this phase though the technique of making baked bricks was known. However, baked bricks were not generally

used still the succeeding NBP phase<sup>316</sup>. In such a situation, it was not possible to establish markets on modern pattern. It appears that the merchants disposed of their commodities in local village markets or brought them to the so-called towns, and after selling them openly, returned to their respective places. For the first time, the early *Pāli* texts mention markets in detail. Since cities developed rapidly during the early Mauryan period, markets might have been established in them, details of such markets may be found in the *Kauṭilya Arthaśāstra*<sup>317</sup>.

Money lending was closely related to trade and commerce because traders required capital to invest in trade. In the Vedic sources the usual term for loan or debt is *ṛṇa* which could be borrowed in kind, cattle and metals. It was mainly the profession of the persons belonging to the *vaiśya* class. The *Paṇis* have been mentioned as *bekānāṣas*<sup>318</sup> because they lent money and realised interest thereon. There are numerous references in the *R̥gveda* to money lending but it is wrong to think that "there existed Vedic bank of the city"<sup>319</sup> only on the basis of the meaning of *Puramdhi*, the proper name of a wealthy person. The archaeological finds do not prove the existence of cities and trade on a large scale during the early Vedic period to necessitate the establishment of the city bank. The later Vedic texts usually refer to *Kusidin*<sup>320</sup>, meaning interest eater. The *Śatapatha Brāhmaṇa*<sup>321</sup> informs that money lenders used to assemble from time to time. Perhaps they did so for mutual discussions regarding the terms and conditions to be fixed for money lending. *Kusidam apratitam* was the loan not yet repaid<sup>322</sup>. It was objectionable to withhold the interest<sup>323</sup>. The Vedic texts do not shed any light on the rate of interest. For the first time the *Gautama Dharma Sūtra*<sup>324</sup> mentions the kinds of interest levied as well as their rates. The just rate of interest is generally given as  $1\frac{1}{4}$  per cent per month or 15 per cent per year. Later commentators interpret this as applying only to secured loans. In practice, however, rates of interest were often much higher<sup>325</sup>. During the post-Vedic times, *Kauṭilya* furnishes even minute details about money lending<sup>326</sup>. The early *Pāli* texts also refer to *śreṣṭhin* like *Anātha-piṇḍaka* who lent money even to the king, but on this analogy it would be wrong to think that the Vedic *śreṣṭhin* was also a

money lender because in the Vedic texts in all cases it does not mean the chief of the guild of merchants or even a prosperous merchant.

In order to facilitate the development of trade and commerce, it was essential to use some sort of style of writing. The Indus valley people had evolved their own art of writing which is evident from inscribed seals discovered from the excavated Indus sites. But the *Rgveda* does not contain references to writing. Certainly writing was known in India before the Mauryan period. It seems probable that it was practised at the close of the later Vedic period. But the texts of this period do not furnish information concerning the use of writing or recording commercial transactions on writing materials. Probably the traders did not keep records of their business and it was carried on orally.

### Business Organisation

From the Vedic *Samhitās* we learn that trade was mostly carried on by individual traders and that during the early Vedic period the merchants had not organised guilds. It seems that the Paṇis went for trade in an organised manner, but nothing is known about their organisational principles and practices. The commercial guild was the result of a considerably advanced stage of economy. The persons engaged in production had sufficient business instinct and they organised themselves for the purpose of promoting their individual and collective interest.

It is not clear whether the caravan of traders proceeded under the leadership of any distinguished merchant. No Vedic text contains the term *sārtha* (caravan) and *sārthavāha* (leader of the caravan). It seems, however, that since it was dangerous to embark on trade adventures to distant places individually, some kind of organisation might have existed, but details about it are not available. In the later Vedic period, the *varṇa* organisation was in the process of becoming rigid. Society had advanced towards division of labour leading to differentiation of occupations. It had also progressed in such a way as to allow specialisation in arts and crafts and to promote organisations for specific economic purposes. The associations were organised for mutual

assistance and self-preservation<sup>327</sup>.

The allusions to the head of the guild and his high social status and pre-eminent influence seem to support the conclusion drawn by Mukherjee<sup>328</sup> that the guild was already a familiar institution. In some Vedic texts references have been made to *śreṣṭhin*<sup>329</sup> in order to explain abstract philosophical subjects. A perusal of the contexts in which the term *śreṣṭhin* has been used confirms that it does not mean the head of the guild. Similarly, another term *śraiṣṭhyam* has been interpreted as the presidency of the guild. It also has been maintained that the *Brhadāraṇyakaopaniṣad*<sup>330</sup> refers to the term *gaṇa* in the sense of corporation of traders and artisans, while the gods of the *vaiśyas* were called *Gaṇasah*. Likewise the *Aitareya Brāhmaṇa*<sup>331</sup> refers to the status of the chief of the guild (*śreṣṭhin*). The position of leadership has been indicated by the terms, such as, *śraiṣṭhyam*<sup>332</sup> and *śreṣṭhata* which mean a superior, a man of honour<sup>333</sup> or a leader. A minute study of the contents in which these terms occur indicates that these have no connection whatever with economic activities. It is, therefore, unreasonable to identify the *śreṣṭhin* of the Vedic sources with the *śreṣṭhin* as mentioned in the post-Vedic texts. It merely indicates his superiority among his own kinsmen by performing a particular rite or by possessing some knowledge. It has been said that the person having the knowledge of *valiṣpavamāna* becomes the mouth (spokesman) of his own people or the chief among them<sup>334</sup>. This view may be substantiated by a statement contained in the *Śatapatha Brāhmaṇa*: "This is to the effect that the sacrificer could install his sacrificial fire under *mṛgaśīras*, for this indeed is the head of *Prajāpati*, and the head (*śīras*) means excellence; hence they say of him who is the most excellent (*śreṣṭha*) in a community, that he is the head of the community. Whatsoever, knowing this he who sets up this fire under *mṛgaśīras* attains excellence<sup>335</sup>. Further it states that the person who sets up his sacrificial fire under *rohini* becomes rich in cattle and offspring<sup>336</sup>. Thus it is proved that the Vedic *śreṣṭhin* or *śreṣṭha* was not similar to the post-Vedic *śreṣṭhin*. It appears that the necessity of trade guilds was realised with the emergence of cities and the introduction of true metallic coins. For the first time, the *Jātakas* furnish details about them.<sup>337</sup>

Basham rightly thinks that there are vague and uncertain references to some sort of guild organisation even in the Vedic literature, but by the time the Buddhist scriptures were composed, guilds certainly existed in every important Indian town<sup>338</sup>.

### Foreign Trade

There are archaeological evidences to prove India's cultural and commercial relations with the west Asian countries even during the chalcolithic times. The Indus valley people continued this relationship even upto the 15th century B.C. The Vedic texts neither directly allude to these regions nor shed light on the commercial relations of the Āryans with the people of these lands. In spite of this, there are several archaeological finds which evidence India's relations with these countries. Besides, there are several allusions in the Vedic texts to the west Asiatic people, which go a long way in indicating the contacts of the Āryans with the people of west Asia. For the first time, the post-Vedic texts and mainly the *Jātaka* stories mention India's trade with the regions of west Asia which was perhaps in continuation of the age old tradition of commercial contacts.

### Iran

In ancient times, Iran was India's immediate neighbour in the west. It was but natural, therefore, to have commercial and cultural relations with that country<sup>339</sup>. Some archaeological objects, namely, the typical channel-spouted bowls of Tape Giyan in eastern Iran, have been found from Navadatoli in central India and from Ahar in Rajasthan where as analogous spouts have been reported from Gilund in the same territory. Besides, Nevasa and Chandoli in Maharashtra, Sonapur in Bihar and Pandu-Rajar-dhibi in West Bengal have also yielded analogous pots<sup>340</sup>. Evidence of this Iranian contact (between 1700 to 1300 B. C.) is limited to some pot-shapes in the ceramic. Such things imply contacts of some kind, especially commercial contacts. The movement of the people from Iran to India may also be inferred. Of course some more convincing pieces of evidence are required to corroborate it. That those pots were brought to India by the Iranian or the Indian merchants would indeed be an unacceptable inference.

The *Vedas* and the *Avesta* have been derived from the same original tradition and culture, and have undergone some significant changes in the course of centuries. One cannot possibly make a fair critical study either of the *Vedas* without the *Avesta* or of the *Avesta* without the *Vedas*. Comparison alone may enable us to put things in their proper perspective for tracing their origin, development, changes and mutual borrowings. The *Avesta* is the oldest written record of the Āryans of Iran and the *Vendīdād* is its earliest surviving part which refers to the Hapta<sup>341</sup> Hindu as one of the sixteen countries created by Ahura Mazda. This Hapta Hindu is the Zend variant of the R̥gvedic Sapta Sindhu. This proves Iran's contact with the Punjab<sup>342</sup> and Sind. The dividing line between Iran and India has been the Hindukush range. After their separation, the Iranians and the Vedic Āryans might have come in close contact on this borderland. Some Iranian tribes like the Parśu, the Parthians and the Bactrians have been mentioned as the Pāraśavas<sup>343</sup>, Pārthavas<sup>344</sup> and the Bāl̥hikas<sup>345</sup> in the Vedic texts. During the post-Vedic times India's close contact with Iran became closer and regular.

### Phoenicia

The Phoenicians were the earliest connecting link between the Indian and Mediterranean cultures<sup>346</sup>. Phoenicia and India had established commercial relations whose antiquity goes back even to the proto-historic times. Present Israel and her adjoining territories were known as Phoenicia. From 2000-1300 B.C. we find in the documents of west Asia a certain number of people with unmistakably Āryan names. They introduced war-chariots and the art of training the horses. They allied themselves with a non-Āryan tribe called the Hurrians and founded the empire of Mittani which came to an end in *circa* 1250 B. C. All the kings of this empire had Sanskrit names. About 1100 B. C. Israelites fought against a group of rulers including one Siser, a great warrior, who perhaps was Śisira, an Āryan. Even as late as the 8th century B. C., Shebna was a high official at the court of Jerusalem whose Sanskrit name appears to have been Subhānu.

After 1100 B. C. when Israelite kingdom was established,

especially during the reign of king Solomon (Circa 963-923 B. C.), India's trade relations developed on a considerably large scale, and Indian goods began to appear in the markets of west Asia. Solomon made himself the master of the Edomite<sup>347</sup> and thus he had access to the Red Sea. He concluded an alliance with Hiram, the Phoenician King of the city of Tyre, the largest port on the Syrian coast. He traded in horses and launched a trading fleet in association with him. The control of the route to India was in the hands of Hiram. The *Old Testament*<sup>348</sup> in which Solomon's enterprises have been mentioned, informs that he had a strong commercial fleet in Ezian Geber on the shore of the Red Sea. Hiram sent Solomon's commercial fleet along with his shipmen who had the knowledge of the sea. They usually visited Ophir and fetched gold. Further, the same text records that, once in three years, his ships brought (besides gold) silver, ivory, monkeys and peacocks from Ophir. Ivory and monkeys could be brought from East Africa, but there was only one country India, from where the peacock could be brought. Caldwell<sup>349</sup> thinks that the Hebrew term for the peacock is *thukkiyim* which resembles the Tamila word *toka* (peacock). Clark<sup>350</sup>, on the other hand, has argued that the term *thukkiyim* never means peacock. Albright<sup>351</sup> believes it is an Egyptian word for ape.

The location of Ophir is a topic of much controversy. Marco Polo thought that it was located in Zipangu (Japan) and Columbus looked for it in America<sup>352</sup>. Lassen takes Ophir to be a sea port on the south-west coast of India and he identifies it with Sophir<sup>353</sup> (Supārā). In the view of Basham this suggestion of Lassen has been strengthened by the fact that in the *Septuagint*, the Greek version of the *Old Testament*, the word occurs as Ewpapa<sup>354</sup>. Manning says that it was situated on the western coast of India<sup>355</sup>. Sauvāra has also been suggested as another probable name of Ophir. On the authority of Ptolemy that there was a country called Ābhīra (Abiria) at the mouth of the river Indus, it has been suggested that it was situated somewhere in Sind and Saurāstra. But its location in India has been doubted on the ground that India's west coast, the supposed location of Ophir, is purely an agricultural region which does



not have the products mentioned above. It has, therefore, been argued that it was located somewhere on the Arabian coast of Persian gulf, but it has been admitted that Ophir was a trading centre in close contact with India. Most of the commodities brought by Solomon's ships were of Indian origin<sup>356</sup>. It has been argued that it was situated in Abyssania or near Zambezi in the East Africa or on the Gold Coast in West Africa<sup>357</sup>.

It appears that during the reign of Solomon the commerce of Jerusalem was a state monopoly, but the commercial commodities the merchants brought to his kingdom, made foreign merchants flock there making that city one of the most important centres of trade in the western world. There was a keen competition between Jerusalem and the Egyptian cities of the Delta. The conflict between Palestine and Egypt for the control of the Red Sea trade became inevitable after the death of Solomon. The impetus given by him continued for a century and cooled down slowly. It seems that India's trade with Palestine was not direct but was carried on in an indirect way. Ships from India might have come to the end of Arabia and did not proceed further due to the monsoon. On the other hand, it was very difficult to sail upto the Red Sea on account of the adverse wind and also because of the pirates. Goods were, therefore, brought overland by camel caravans from South Arabia.

After the death of Solomon, the commercial activities of the Phoenicians declined gradually with the chequered fortune of the Jewish people. The *Old Testament*<sup>358</sup> informs that Jehoshaphat, V in succession after Solomon, tried to revive it, but his fleet met with disaster in a storm. After this event, the Jewish foreign trade came to a stop. The Edomites also revolted and were suppressed with much difficulty though the neighbouring port of Elath was in Jewish hands till its capture by Tiglath Pileser<sup>359</sup>.

As to the commodities in which the Israelites traded, there is reason to believe that rice was one such commodity. In Hebrew, the term for rice is *ores* which is derived from Tamil *arici*. There are several other terms in the *Old Testament* which suggest the existence of India's trade relations with Israel. Even

the modern Hebrew contains some terms which appear to have been of Sanskrit origin, such as, *riwdan* (Sheath) from *nidhāna*, an object in which a sword is sheathed. The Hebrew word *kamil* for camel is derived from Sanskrit *kramilika*. Likewise, the Hebrew word for ivory is the literal translation of Sanskrit *ibhadanta*, and *kopla*<sup>360</sup>, meaning monkey, is Sanskrit *kapi*. The Phoenicians supplied Indian spices and perfume to the western world markets<sup>361</sup>.

### Mesopotamia

There are several archaeological evidences to prove that the Harappans had commercial contacts with Mesopotamia. The most important sea-route was one that ran from the mouth of the Indian river to the Arabian sea-coast. It linked India not only with the gold fields and wealthy South Arabia and Somaliland but also with Egypt and Judea. Through Judea, Indian goods found another outlet by way of the adjacent ports of their allies of Tyre and Sidon to the Mediterranean. There was a land-route running from the mountains of the Hindukush range to the Mediterranean port, but it was long and arduous. The caravans travelled to the great emporium of Baktra where the roads from India, China and the west converged. From there, the cargoes were shipped on to rafts and floated down the Oxus to the Caspian, and thence, partly by land and partly by river, to the Euxine. This trade route was regular even during the time of Strabo<sup>362</sup>.

In inscriptions<sup>363</sup> of the kings of Akkad, there occur two place names Magan or Makkan and Meluhha. Leemans has identified the former with Makran coast in Baluchistan and the latter with Western India, including Sind and Saurāṣṭra. It also has been argued that carnelian and wood were imported by the Babylonians<sup>364</sup>. Numerous Assyrian documents of Larsa period refer to Assyria's foreign trade. Ur was the port of entry for copper into Mesopotamia. It was imported by boat from Telmun, the island of Bahrain in the Persian gulf. This trade was in the hands of a group of merchants called Alik Telmun who brought garments to Telmun to buy copper from there. The island did not yield even copper ore. Telmun served as a

market place and it found a doorway to the east, namely, the regions of Makkan and Meluhha<sup>365</sup> through which certain raw material, specific plants, breeds of animals and birds, etc, were imported to Babylonia<sup>366</sup>.

The Mesopotamian merchants imported from Telmun a large number of commodities to Ur which have been recorded on the tablets found in the temple of the goddess Ningal. In these tablets, the countries from which the commodities<sup>367</sup>, such as, gold, copper, utensils, stone-beads, ivory, pearls, eye-paints, silver-rings and certain kinds of wood were imported to Telmun have not been mentioned. For ivory, South Mesopotamia had to depend exclusively upon imports from the east via Telmun. Since this place was only a market place, two possibilities have to be envisaged : the ivory obtained there by the traders of Ur could have come either from Egypt or from India through the Indian ocean<sup>368</sup>. In favour of the second alternative it may be pointed out that there are several pieces of evidence to prove that there was an age-old commercial link between the Indus valley and Mesopotamia. Oppenheim thinks that interruption of this trade route after the fall of the Larsa dynasty put a sudden end to the use of ivory in Mesopotamia.<sup>369</sup>

One further remark concerning the relation between southern Babylonia and India may be made in this context. A Babylonian document mentions a monkey made of red stone. In it, the word for monkey is *dab*, which appears to have been derived from Sanskrit *kapi*. In Hebrew, it is *yup* and in Greek *kepos*<sup>370</sup>. The black obelisk of the Assyrian king Shalmaneser III (C.859-824 B. C.) showing possibly the figures of Indian apes, elephants and Bactrian camels, was set up in the king's palace at Calah. These representations may be taken to confirm the Biblical statements concerning the import of Indian goods into the west.

In the Vedic texts, there are several references to the Asuras and their culture<sup>371</sup>. For the first time, Tilak invited the attention of scholars to the Sumerian<sup>372</sup> elements in the *Atharva Veda* which are mainly related to witchcrafts<sup>373</sup>. Asura-Vidyā<sup>374</sup>, the science of the Asuras, the term used in the *Śatapatha Brāhmaṇa* and a few *Śrauta Sūtras* as the equivalent of the term *māyā*

clearly means magic<sup>375</sup>. It also proves mutual contacts and borrowings. Terms like *taimata*, *āligi*, *viligi*, *tabuva*, *tastuva*, etc., seem to be of foreign origin. The commentators on these words are silent about their meanings or have relied mainly on wild speculations. Tilak thinks that "Urugula" appears in the Akkadian language as "Urugala" or "Urugula", meaning a great city, an abode of the dead, and when personified, it stands for a deity of the underworld<sup>376</sup>. Some of the linguistic evidences go to long way to prove Indo-Mesopotamian relations. Assyrian language and Sanskrit contain some common words. Some of them have been recorded in the Assyrian inscriptions (C. 2500-500 B. C.). These appear to have been derived from Sanskrit. Wolfram Von Soden and Kronassar think that some Sanskrit terms pertaining to horses are derived from some Akkadian words which are preserved in Nuzi documents<sup>377</sup>. Vittore Pisani is of the view that some adjectives for the horses, such as, *babhru* (reddish brown) and *Piṅgala* (yellow) appear to have some phonetic similarity to such Akkadian terms as *babrunnu* and *paprannu*. Probably the Vedic term *Asura* is derived from *Assura*, a word signifying the Assyrians. There are several words in Sanskrit, Zend and Semitic languages which have phonetic similarities and appear to have been derived from a common source.<sup>378</sup>

How have such words and ideas of Assyrian origin crept into the *Atharva Veda*. It has been suggested that the Indo-Iranians might have come into contact with the Assyrians as neighbours. The references to the story of the deluge in the *Brāhmaṇa* texts and in the Mesopotamian sources also authenticate this contact. The four names of the Vedic gods, namely, *Mitra*, *Varuṇa*, *Indra* and *Nasatyau* in the Boghazkeui inscription of circa 1350 B. C. have helped a great deal in establishing the fact of cultural contact between the nations of West Asia and the Indo-Iranians<sup>379</sup>. Several Sanskrit terms occur in the Babylonian documents and Babylonian terms in the *Atharva Veda*. It has been argued that the Vedic Indians had established trade relations with Mesopotamia and had founded their colonies there on account of which Chattopadhyaya has attempted to prove the colonisation of Mesopotamia by the Vedic Āryans<sup>380</sup>. This conjecture

is based on the term Urukšiti<sup>381</sup>, which according to him refers to Ur and Kish, two of the Mesopotamian cities<sup>382</sup>. This interpretation, however, is unfounded as the particular term means the wide (*uru*) earth<sup>383</sup> (*kšiti*), therefore, ferreting the Vedic texts for the names of Mesopotamian cities is an exercise in futility.

Some Greek historians inform us that in ancient times, the region to the west of the river Indus, as far as the river Kophen (Kabul), was subject to the Assyrians, afterwards to the Medians and then to the Iranians<sup>384</sup>. Alexander was told by the inhabitants of Gedrosia (Baluchistan) that the Assyrian queen Semiramis, on her retreat from India, passed through this tract, escaping only with twenty men. Justin<sup>385</sup> says that no one invaded India except Semiramis and Alexander. Very little can be made out of these vague and often contradictory statements of the classical authors. Expedition in *circa* 808-7 B. C. against the Mannai, which marked the most impressive display of Assyrian arms, affords a weak basis for the fabled conquests of Semiramis in Bactria and India. India's contact with the Assyro-Babylonian empire also lends colour to such stories. Winkler points out that Shalmanesar IV of Assyria received presents from Bactria and India especially Bactrian camels and Indian elephants. Rassam found at Birs Nimrud a beam of Indian cedar in the palace of Nebuchadnezzar III (first quarter of the sixth century B. C.) of Neo-Babylonian empire, part of which is now exhibited in the British Museum.

From the ruins of the library of Assurbanipal (C. 668-26 B. C.) a tablet recording the term *sindhu* has been found. It has been used in the sense of Indian cotton. He had interest in gardening and might have imported cotton bearing plants from Sind and Punjab. Next, in point of time, is the presence of logs of Indian teak found in the temple of the Moon at Mugheir and in the palace of Nebuchadnezzar, both belonging to the sixth century B. C.

The Persian gulf trade was at first principally in the hands of the Chaldaens, who were ousted in 649 B.C. by Sennacherib. After that it fell into the hands of the Phoenicians. Prophet

Ezekiel<sup>386</sup> prophesied the overthrow of the great city of Tyre in 575 B.C. by Nebuchadnezzar II. In 606 B. C. the Assyrian<sup>387</sup> empire came to an end and Babylon took the place of Ninevah as the queen of West Asia. India's trade continued even during the post-Vedic times as is evident from the numerous references to it in the *Vāberú*, *Samudda Vanija*, *Kundakakuci* and *Sindhava Jātakas*.

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59. VI, I, 206, 290, 469; II, 40.
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To the South-West section of the dock-yard, there is a structure of 12 rectangular blocks made of mud bricks, covering an area of 17×14 metres. Between the blocks ran criss-cross channels evidently air-ducts, over a metre in width. Overlying these blocks was a spacious hall of timber. In this structure over 100 backed of lumps of clay bearing impressions of typical Harappan seals on one side and of reeds on the other were found. These were evidently sealings on packages made of reed. In the context of the dock-yard, it seems likely that this structure was a ware-house.

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93. *Ibid.*, 4.23.3; 6.121.4.



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95. *Ibid.*, 4.1.4.
96. *VS*, 4.34.
97. *JB*, 2.423-24.
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102. *Ibid.*
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105. *DN*, I, p. 222, *Vāberūjātaka*.
106. *Genesis*, 6-8, Hariharan, K. V., *loc. cit.*, pp. 317-18.
107. *AV*, 12.1.47.
108. Indra the merchant, do I summon : may he come to us, may be our van; driving away the demon of grudge, the waylayers, and wild beasts, may be, the possessor, bestow wealth upon me.  
—*Ibid.*, 3.15.1.
109. *AB*, 4.5.29-30.
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112. May be many paths, the roads of the gods, which come together between heaven and earth, gladden me with milk and ghee, so that I may gather in wealth from my purchases.  
—*AV*, 3. 15.2.
113. *Nirukta*, 1.17.
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126. *AB*, 4.2.7.
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133. *SB*, 3.3.4.13.
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## The Emergent Picture

The present study of the later Vedic economy, based on the information gleaned through the original texts, after corroboration with archaeological finds, reveals that the core area of the later Vedic culture was wider than that of the early Vedic age. The Yamunā-Gangetic valley became the centre of the Vedic Āryans and a base for further immigration to the east and the south. The later Vedic *Samhitās* and the other Vedic texts have not praised the Sarasvatī and the Indus rivers but the Madhyadeśa. New vistas were opened for economic development in various fields.

The early Vedic Āryans had ardent desire to win over their enemies. Numerous R̥gvedic hymns mention battles. Several of them have been dedicated to the elements of nature, and in them aspects of economic life have not been mentioned in detail. But the later Vedic people had no such problems in changed situations. They had not to fight the Asuras and the Dāsas for their existence. They pined their *svasti* and *kṣema* sound existence and material wellbeing. Several terms for property used in the Vedic texts indicate their main concern with wealth and not with battles. Means and methods for acquiring it also have been mentioned. It was considered that no one may be satisfied with material possessions and their enjoyment, hence one

should not involve himself in them. Undoubtedly, the Upaniṣadic philosophers condemned the concept of involvement in material life but they did not adopt a negative attitude towards wealth. They considered the accumulation of wealth as a source of vices, hence it was to be disposed of by performing sacrifices, offering gifts to the priests and doing works of public utility.

The *Ṛgveda* informs that on account of the prevailing political conditions, the king did not show keen interest in the economic activities of the people, and mostly he was their protector from external aggressions and internal anti-social elements. During the later Vedic period, the king became the *rāṣṭrabhṛt* and had to support the people by ensuring their material prosperity. He gave impetus to farmers and artisans along with the others. His association with them is evident from the fact that their presence was essential on the occasion of the performance of the *rājasūya*. The role of the assemblies, and particularly of the *Sabhā*, also had some concern with the economic life of the people. The king established his control over villages through his officers such as the *grāmaṇi* and *sūta* who did not remain only the troop leaders, as they were during the earlier periods. The more important matter is the king's concern with regular taxation. *Bhāga* became his established share in agricultural produce. *Śulka*, a new tax, was also introduced, but its exact nature is not known.

From the agricultural point of view, more progress was made than in comparison of the *Ṛgvedic* period. Though the cattle rearing had its due importance, yet the importance of agriculture immensely increased. Different types of land came to be known on the basis of their characteristics. Reclamation of land by burning and clearing the forests was an easy task. This work was accelerated with the introduction of iron tools. The king had his sovereign authority over his kingdom and realised taxes from the subjects but the cultivators were the real owners of agricultural fields. The forests, water resources and pastures were under the control of the king. Some pieces of land were held by the village communities, and without their sanction, the king could not dispose them of to others or utilise

them otherwise. It is to be noted that for the first time the *Upaniṣads* have mentioned the importance of foodgrain in detail and in an independent manner. They have compared them with Brahman in the sense that they also sustain our physical existence. The later *Samhitās* and the *Brāhmaṇa* texts describe the process of ploughing the fields, sowing operations, plant protection, irrigation and harvesting. These indicate that agriculture was the chief means of the livelihood of the people in place of animal husbandry. The *Rgveda* mentions only a few grains but the systematic enumeration of seven or ten kinds of grains in the later Vedic texts, and details about them, also as a long way in proving the growing importance of agriculture. Remains of grains discovered from several sites also corroborate our hypothesis. Further, the texts mention the technique of separating the grains from plants, and the means and methods of storage in different kinds of storage jars.

Most of the land was covered with forest and villages were surrounded by them. The people used plants, grasses and creepers for different purposes. Their close association with plants is obvious from the fact that they had studied their structure in detail, and considered them also as living beings. They had classified them into several classes on the basis of their characteristics. They used them as medicinal herbs. It was the result of minute and intensive study of plants for a long time. They obtained fruits, flowers and other things from them. Religious importance was also attached with them and sacrificial posts were made of particular wood in different sacrifices. Discovery of plant remains from different sites also confirm the use of plants for several purposes.

Though the later Vedic people had adopted systematic agriculture as the chief means of their subsistence, they did not abandon animal husbandry which was their old occupation and had become regular and systematic. Animals were essential for ploughing the fields, carrying loads, and to be used on battlefields. The material prosperity of a person was judged in the number of animals which he possessed. In the later Vedic texts, prayers are numerous in which animals also have been desired

as boon. They had studied the characteristics of birds, beasts and cattle. The introduction of horses in India was of special importance, and the later Vedic texts furnish details about them. Besides, the texts throw considerable light on different aspects of cattle rearing. Attention was paid on their feeling, breeding and medical care was also taken for ensuring their health and proper growth.

The early Vedic Āryans did not practice several arts and crafts on a large scale because they were a pastoral and migratory people. It changed situation during the later Vedic period, different arts and crafts, based on agriculture and animal husbandry, were developed. They utilised forest resources and metals for the purpose. *Śilpa* was considered as an essential aspects of economic life for the improvement of self-culture through the planned action of man. In contrast to the early Vedic age, details are numerous in the later Vedic texts to arts and crafts, such as, weaving, carpentry, metal-work, pottery, etc. The period under study marks the origin and spread of the PG ware which is generally associated with the Vedic Āryans. The close of the later Vedic period marks the emergence of the NBP ware which is characterised by its widespread association with iron. A large number of objects of metals, earthen pots and others testify the literary information concerning the development of arts and crafts. The *Vājasaneyi Samhitā* contains a list of artisans who were required to remain present at the time of the king's coronation. Their systematic enumeration indicates the development of arts and crafts on a large scale.

Surplus production is the main basis of trade and commerce. The Harappan trade which discontinued after 1500 B. C. seems to have been received impetus during the later Vedic period. Though, reference to the sea and sea-voyage are numerous in the *R̥gveda* their connection with trade has been doubted. The development of agriculture and arts and crafts gave rise to the inland trade on a larger scale. New routes were discovered in the Gangetic valley and even across the Vindhya. The Paṇis who were the *R̥gvedic* traders were replaced by the later Vedic *vaṇiks*. Numerous *Atharva* Vedic charms to be recited, and rites

prescribed in the *Yajur Samhitās* and the *Brāhmaṇa* texts to be performed by traders on different occasions concerning trade, indicate developing commercial activities. It was very difficult to go by routes with commodities because there were dangers on them but steps were taken for removing them. The Vedic texts refer to gold and silver pieces of different denominations but barter was the chief means of purchasing commodities. During this period real metallic coins were unknown. Different types of weights and measures were used for weighing and measuring commodities. It has been suggested that the later Vedic traders had organised trade guilds and the *śreṣṭhin* was the head of such a guild but a study of the relevant passages in their proper contexts, indicates that there did not exist such an organisation. The *śreṣṭhin* was the leader of his tribe or his own people. Sacrifices were performed for pleasing the gods for achieving this status. Such notion developed during the early Buddhist period, when *śrenīs* were organised and the *śreṣṭhin* became the chief of the guild. Some terms of the Semitic origin in the *Atharva Veda* and a few references to the west Asian people in the later Vedic texts prove that traders had contact with these regions. This trade relation developed much during the early Buddhist period, references to which are numerous in the *Jātaka* stories.

The later Vedic economy was not an isolated phase of economic activities. It was associated with the early Vedic economy which was mainly based on pastoral stage of economic life. In the subsequent period, marked progress is witnessed in agriculture, use of metals, development of crafts and arts, and trade and commerce. The horse and iron were the two main basis of political expansion and stabilisation resulting in material prosperity. Some Harappan economic traits also must have continued during this period such as the emergence of cities in the Ganges valley. It seems that the later Vedic economy was the foundation on which the early Buddhist economy found its efflorescence. "Culturally the period of the later Vedic texts saw Indian life and thought take the direction which it has followed ever since. The end of this period marks the beginning of the

great period of India's culture in which the pattern of her society, religion, literature, and art gradually assumed something of its present shape."<sup>1</sup>

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## Appendix

### ITEMS OF DAKSINA

Sacrifice	Priest	Service	Gift
<i>Agnihotra</i> <sup>1</sup>			a milch cow.
<i>Āhavanīya</i> <sup>2</sup>	<i>adhvaryu</i>	Ploughing the site of altar	two oxen
<i>Ahina</i> <sup>3</sup>			a cow
<i>Aśvamedha</i> <sup>4</sup>	<i>adhvaryu</i>		gold ornament tied to the neck of the sacrificer.
		offering oblation to Púṣan	100 pieces of cloths
		offering oblation <sup>5</sup> to Sāvitrī	a gold <i>śatamāna</i>
		„ „	a silver <i>śatamāna</i>
		offering oblation to Soma and Rudra	white cow with a calf of the same colour
	<i>udgātṛ</i> <sup>6</sup>	singing the <i>udgītha</i>	a gold <i>śatamāna</i>
	A priest of Atri line who is disfigured and ill. <sup>7</sup>	for conducting the concluding bath.	one hundred gold pieces.

*Daśapeya*<sup>8</sup> *adhvaryu**udgātṛ**hotṛ**prastotā* and  
*pratihatā**brahmā**maitrāyaṇa**brahmanachansin**neṣṭṛ* and *potṛ**ācavaka**agnidh**brahmā*<sup>9</sup>*udagātṛ**hotṛ**adhvarvu**prastota**neṣṭṛ**potṛ**agnidh**akṣavak*

two mirrors.

a garland

a *niṣka*

a horse.

12 heifers.

a cow.

a bull

garments.

a wagon drawn by  
an ox laden with  
barley.

a draught ox.

12 heifers

a chain of gold.

gold plate

gold-mirror

a horse

a piece of cloth.

a piece of cloth.

an ox

a cart loaded with  
barley yoked to  
only one ox on  
only one side.*Dvādaśāh*<sup>10</sup>performance of  
*amśugraha* rite.12 pregnant  
heifers.performance of  
*udavasantiya* ritea cart with two  
oxen.*Hayiryajña*<sup>11</sup>

6 or 12 cows.



*Rājasūya*<sup>12</sup>

offering made to Agni	gold.
„ „ Sarasvatī	a calf.
„ „ Sāvitrī	a speckled ox.
„ „ Púṣan	a black ox.
„ „ Bṛhaspati	white backed ox.
„ „ Indra	a bull.
„ „ Varuṇa	a castrated bull.
„ „ Soma	a brown ox.
„ „ Tvaṣṭṛ	a white ox.
„ „ Viṣṇu	a dwarf ox.
„ „ Maitrāvarṇ	a cow.
„ „ All gods	a twany heifer.
„ „ Āditya, Varuṇa	a bag made of leather.
Ásvinī, Púṣan, Sar- asvatī and Savitar	a cow and three arrows.
„ „ Agni, Soma, Savitar, Bṛhaspati, Tvaṣṭṛ, Púṣan, Mitra, Varuṇa, and Āditya. <sup>13</sup>	northern drawer of the chariot- stand.
offering a cake on 8 potsherds to Anumati <sup>14</sup>	a cow.
offering a potsherd to Nirṛti	a black garment
offering oblations to Āditya	an ox.
—11 potsherds to Viṣṇu and Agni	a dwarf beast of burden.
—11 potsherd go Agni and Soma	gold

	—11 potsherds to Indra	a bull.
	—8 potsherds to Agni	a bull.
	—11 potsherds to all gods	first born calf.
	—millet to Soma	a garment.
	—Sarasvatī	a pair of oxen.
	—Indra and Agni on 12 potsherds, an oblation to all gods, milk to Vāyu and Sūrya on one potsherd <sup>15</sup>	a plough to be drawn by 12 oxen.
	—oblation to Indra Agni, Rudra and Varuṇa.	a cow.
<i>udgātṛ</i>	for chanting hymns	a chariot with three horses.
	offering oblations to Dhātṛi, Anumati Rākā, Sínivālī and Kuhu	a pair of cattle.
	offering oblations to Agni and Viṣṇu <sup>16</sup>	a dwarf beast of burden.
	—to Agni, Soma, Indra-Soma and Soma	a brown animal.
	—Indra, Indrāgni	a black animal.
	—12 potsherds to Agni	gold.
	—barley cake to Varuṇa.	a horse.
	—oblation to Bṛhaspati at the house of a brāhmaṇa. <sup>17</sup>	a white animal.
	—Indra at the house of a Kṣatriya	a bull.
	—Āditya at the house of the chief queen.	a cow.

- Nirṛtin at the house of neglected queen. a hornless black cow.
- Agni at the house of the leader of host. gold.
- Agni at the house of a minstrel. a castrated bull.
- Marut at the house of the *grāmanī*. a dappled ox.
- Sāvitrī at the house of the carver. a speckled ox.
- Aśvin at the house of the charioteer. a two-born of the mother.
- Pūṣan at the house of the bhāgadugh. a black ox.
- Rudra at the house of akṣāvāp a speckled ox.
- Mitra and Brhaspati a white cow with white calf.

For fastening two round *śatamānas* to the wheel of a chariot.<sup>18</sup>

offering cake on eight gold  
potsherds to Agni.<sup>19</sup>

offering cake on eleven a bull.  
potsherds to Indra.

offering a pap to Soma a brown ox.

performing a carriage with  
*śākamedha*<sup>20</sup> a side-horse

—*Indratūriya* rite<sup>21</sup> a yoke-trained  
cow.

offering oblation to gold  
Agni at the house of  
*senāni*

- |                                                     |                                                       |
|-----------------------------------------------------|-------------------------------------------------------|
| —Bṛhaspati at the<br>house of a<br>brāhmaṇa         | a white-backed<br>bullock.                            |
| —Indraṭ at the<br>house of a kṣattr                 | a bull.                                               |
| —Aditi at the<br>house of chief<br>queen            | a milch cow.                                          |
| —Varuṇa at the<br>house of <i>Sūta</i>              | a horse.                                              |
| —Maruts at the<br>house of <i>grāmaṇī</i>           | a spotted bull.                                       |
| —Aśvins at the<br>house of<br>sangrahitr            | a pair of twin<br>bullocks.                           |
| —Pūṣan at the<br>house of<br><i>bhāgadugh</i>       | a black Grey<br>bullock.                              |
| —Rudra at the<br>house of akṣāvap<br>and govikartṛn | a bullock, a<br>knife and a dice-<br>board.           |
| —way at the<br>house of<br>curier.                  | a leather-covered<br>bow, quiver and a<br>red turban. |
| —Niṛṛti at the<br>house of the<br>discarded queen   | a black, decrepit<br>and diseased cow.                |
| —Viṣṇu                                              | a dwarfish bull.                                      |
| —Pūṣan                                              | a black-grey bull.                                    |
| —Varuṇa                                             | a black cloth.                                        |
| —Anumati <sup>24</sup>                              | a garment.                                            |
|                                                     | all possessions.                                      |

*Trisamyukta*<sup>23</sup>  
rite (*rājasūya*)

*Sarvamedha and  
Puruṣamedha*

*Sautrāmaṇi*<sup>25</sup>

33 kinds of gifts.  
a draught mare  
or  
a castrated bull.

*Somayāga*<sup>26</sup>

offering oblations to Soma a brown bull.

a priest of Atri gotra without doing any work<sup>27</sup> without doing any work because in ancient times Atri had dispelled the Asuras from the sacrificial ground.

a set of 17 categories of priests for performing different rites gold

*agnidh* for offering oblation to Agni gold

*hotṛ* a cow.

*udagāṭṛ* for offering oblation to Bṛhaspati a piece of cloth.

all the priests 112 cows, a horse an ass, a goat, a sheep, a mule, māṣa, lentils, sesamum paddy and barley.

*Traidhātayī*<sup>28</sup>  
*iṣṭi*

*brahmā* 3 gold *śatamānas*

*hotṛ* 3 milch cow.

*adhyaryu* 3 garments.

*agnidh* an ox

*Trirātra*<sup>29</sup> all the priests for performing different rites. 1000 cows.

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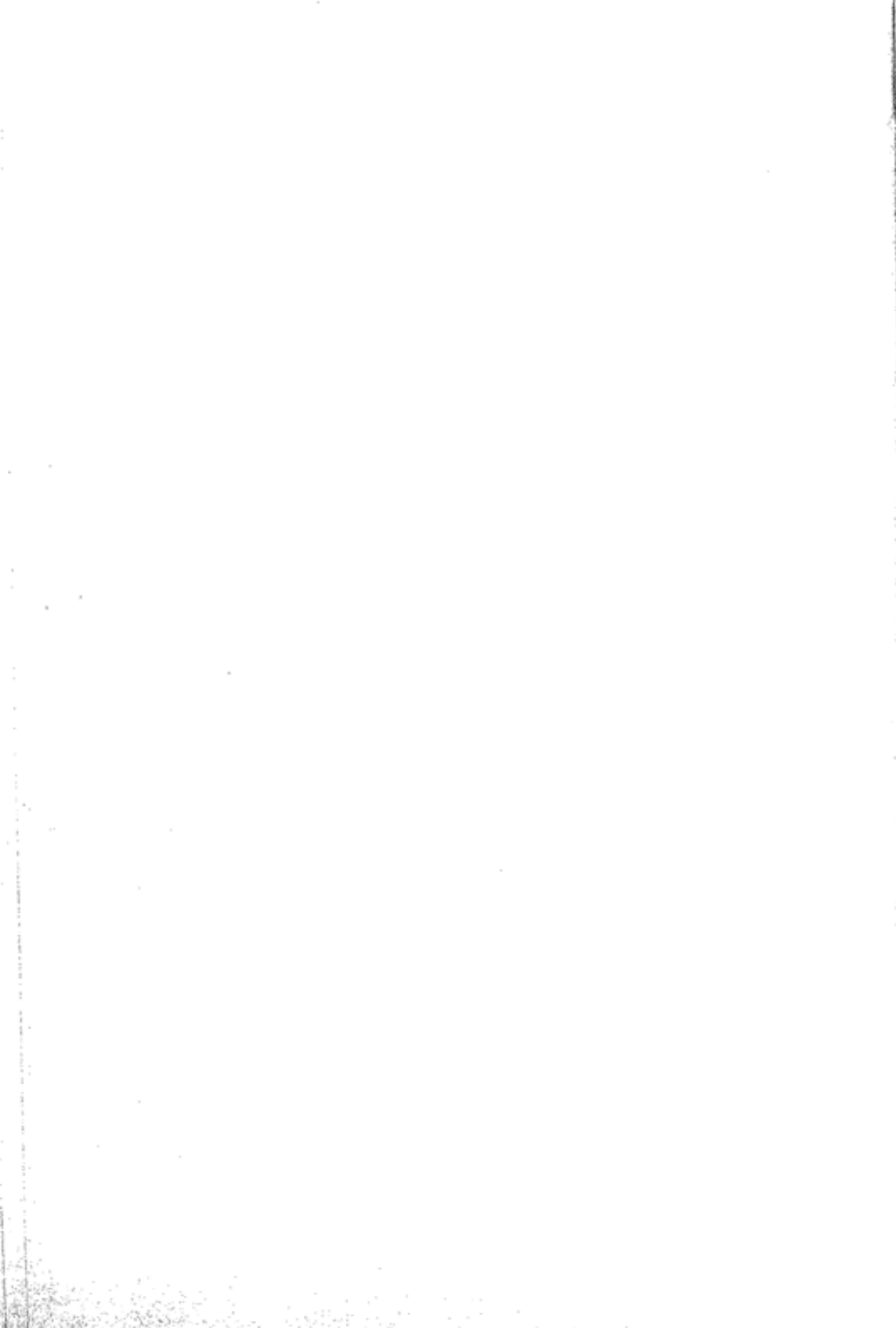
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    - manta*, 142
    - sād*, 142
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  - Yoga**, 23, 48, 49
  - Yūpas**, 190, 218.
- Z**
- Zaghah**, 192
  - Zarabschan**, 320
  - Zend**, 25, 29
  - Zeno**, 31.

# ERRATA

<i>Page</i>	<i>Para</i>	<i>Line</i>	<i>For</i>	<i>Read</i>
5	2	16	date	date
8	2	11	hte	the
10	3	3	was	has
11	1	5	blod	blood
15	1	4	earlies	earlier
23	1	9	Buddhist	Buddhism
23	1	11	if	is
23	2	1		add "of" after dates
24	1	8	its	it
26	2	14	on	of
26	2	22	through	though
28	1	2	later	latter
28	1	3	discharge	discharged
28	3	9	of	delete "of"
28	3	10		add "that" after comments
29	2	6	informative	informative
29	2	11	argeements	aggreements
30	1	4	paralleled	paralleled
31	2	4	Indian	Ionian
32	2	2	archaeological	archaeology
32	2	4	banded	hended
32	3	2	impressings	impressions
33	2	4		add "remains"
33	2	12		after plant
33	2	12	dendrocho- nology	dendrochrono- logy
33	2	18	method	matched
35	2	12	harbal	herbal
35	3	2		add "and" after Fauna

37	2	3	Carper	Copper
37	2	9	Iron	Iran
38	2	1	Calcolith	Chalcolithic
38	2	15	or	ore
39	4	3	Ths	The
40	2	10		add "of pottery"
				after aspects
41	1	3	raliative	radioactive
42	2	12	archieue	archive
47	1	10		add "1.7" after
				<i>Rājatarāṅgini</i>
48	1	7	material	materials
"	2	3	balance	balanced
"	2	7	spiritually	spiritual
49	1	15-16	illustrarains	illustrations
"	2	2	health	wealth
50	2	7	clads	clans
51	1	3	Iron	Iran
52	1	7	an	on
"	1	13	epithat	epithet
"	1	13	india	Indra
"	1	18	yāśka	yāśka
53	3	8		delete "to"
54	3	8	invoke	invoked
56	1	6	aborigins	aborigines
57	2	3	bhritya	<i>bhṛtya</i>
58	2	16	epithats	epithets
60	1	1	predominently	predominantly
"	1	14	capture	captured
"	2	4	<i>Veda</i>	Vedic
"	2	11		delete 'he' after apparently
62	2	2	are	and
62	2	10	<i>rayivṛdoha</i>	<i>rayivṛddha</i>
63	2	3	materials	material
67	2	8	wealth	wealthy
68	1	4	what	that
"	3	1	indicated	indicates

69	2	7	in	is
"	2	7	is	in
"	3	1		add "is" after
				share
71	2	8	Fall	all
72	2	15	it	is
"	3	3	a	an
73	2	7	birds	bards
"	3	4	at	as
"	3	7	performance	preference
"	4	6	is	in
74	2	6		add 'of' after use
"	3	12	was	as
75	1	3	<i>yājasaśūya</i>	<i>rājasaśūya</i>
"	2	18	most	moot
"	2	19	consideration	consecration
77	1	3		delete "the"
"	1	9	linked	liked
84	2	2		add "and"
				after king
"	2	2	How	Bow
"	3	12	affered	offered
"	3	16	<i>Samgrahitṛ</i>	<i>Samgrahatr</i>
"	4	4	organi	organised
90	2	7	it	in
91	2	8	to	of
"	2	10	monson	monsoon
92	3	2	Pṛthu	Pṛthu
"	3	8	these	thee
"	"	10	Foods	Food
93	1	2	gold	good
"	2	6	above	brave
94	1	4	if	it
"	2	3	have	brave
"	2	5	was	has
"	2	12	of	to
"	3	4		add 'to' after go

95	5	2	and	had
„	5	8		add 'them' after some of
96	1	2	them	than
„	1	12	usually	usually
106	2	1		delete 'the' after of.
107	3	8		put 'and' after anyone.
109	3	11		delete 'of' before the.
117	1	7		add 'in' after contained.
121	3	8	to	so
122	2	8	persisted	persisted
„	4	3	of	delete 'of'
127	4	1	rhe	the
128	2	2	men	man
140	2	12	patna	Patna
141	4	6	Indua	Indus
142	2	8	where	which
144	2	13	later	latter
156	2	11	<i>Kṛdarm</i>	<i>kṛdaram</i>
176	1	3	later	latter
183	2	2	importance	importance
184	1	1	bulis	bull's
192	1	7	Akkadion	Akkadian
196	1	1		add 'on' after strewing.
217	2	3	sacrifices	sacrifice
231	1	16	notes	nets
239	4	2	eyurs	eyuus
240	2	32	„ „	„ „
255	3	3	rite	right
260	1	9	Folder	Fodder
309	2	4	khetri	Khetri
311	1	5	craftsmen	craftsmen
312	2	4	pettery	pottery
319	2	23	religion	religious
350	2	2	het	the
356	3	2	yuetta	yuetta
357	2	16	parts	ports

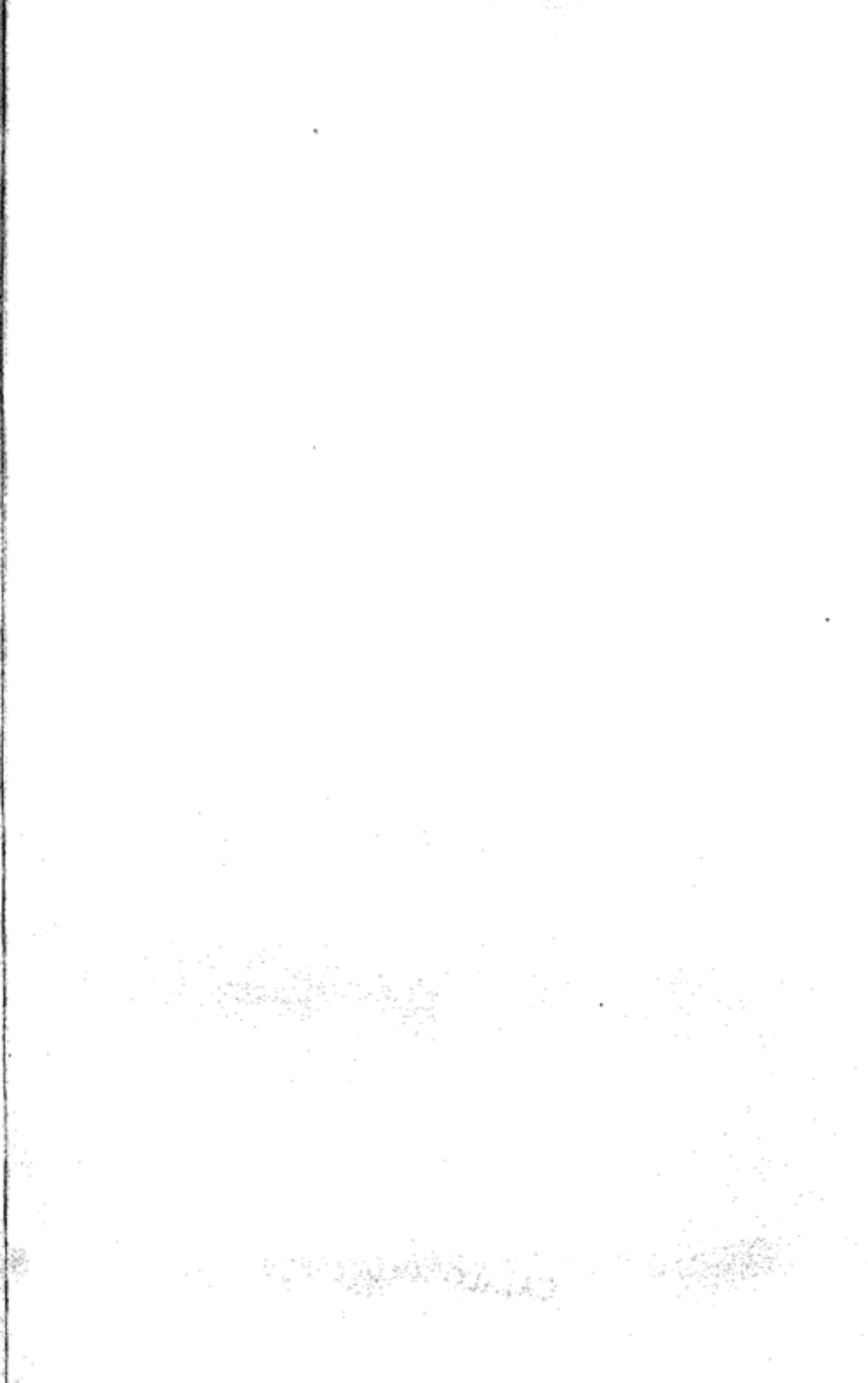


383	2	8	Mediterranean	Mediterranean
388	1	6	Fertility	Futility
399		43	Rawvinson	Rawlinson
403	2	3	It	In
405		5	Iw	WI
406		2	middle	milch

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