NOTES AND REFERENCES

CHAPTER 1


CHAPTER 2

2. B.B. Lal, Excavation at Hastinapura and other Explorations etc., A.I., nos. 10 and 11, 1954-55, pp. 13, 97.

3. I.A., 1958-59, pp. 54-55; and information from Dr. Y.D. Sharma.


5. Ibid., p. 18.

6. Ibid., 1956-57, pp. 20-28, 1957-58, pp. 32-36; N.R. Banerjee, The Excavations at Ujjain, Indologen Tagung (Proceeding of the Indological Conference at Essen, West Germany, July, 1959), Goettingen, 1959, pp. 78. The site was excavated by the Excavations Branch of the Archaeological Survey of India (then called Department of Archaeology) under the direction of the author, during the years 1956-58. The report is under preparation.


9. The word *Aryan* has been construed by many in an ethnological sense, which is far from correct. Throughout this work, let it at once be made clear, the word has been employed to denote groups of people who speak the Aryan language.


13. Wheeler, *op. cit.*, pp. 24 and 164. To quote Wheeler's words, "Persia transmitted, directly or indirectly, not merely a pattern of empire but also important new schemes and utilities, above all the use of iron and of coinage . . . . that in northern India (as indeed in distant Britain) 500 B.C. or a little earlier marks the nominal beginning of the Iron Age, always with the proviso that cultural backwaters are a familiar feature of the Indian landscape . . . . Following the arrival of iron — perhaps, indeed reflecting the new and fashionable metal the Ganges craftsmen invented a distinctive and remarkable ceramic which is a godsend to the archaeologist; the so called Northern Black Polished or N.B.P. Ware of steel like quality . . . " He goes on to state further (*op. cit.*, p. 164), "There is in fact no more difficulty in deriving the early ironwork of south India in the 4th and 3rd centuries B.C. from Gangetic sources in the 5th and 4th centuries B.C. and ultimately from Persian sources at the end of the 6th century B.C. (p. 24) than in deriving the ironwork and N.B.P. Ware of the towns of Upper Deccan".

In this context it will be worthwhile examining the question of the Persian (Achaemenid) influence on Indian life, in particular, in the background of the history of the Persian rule in India.

The Persians held sway over the north-western parts of the Indo-Pakistan subcontinent for well-nigh two hundred years and would naturally be expected to have left their impress on the way of life in this new
Gandhāra, identified with the modern Rawalpindi and Peshawar Districts of Pakistan (D.C. Sircar, *Select Inscriptions*, 1942, p. 5, note) is included in the list of the countries constituting the empire of Darius, the Achaemenian emperor of Persia, who ruled between 522 and 486 B.C., mentioned in the Behistan Rock Inscription of Darius (Sircar, *op. cit.*, pp. 4 and 6). But Sindhu, in the old Persian form of Hindush, is mentioned for the first time in the Persepolis Inscription of Darius (Sircar, *op. cit.*, pp. 7 and 8). Thus the two areas, distinguished as Gandhāra and Sindhu, respectively, were parts of the Persian empire from the time of Darius.

Herodotus (III, 94) says that 'India' was the twentieth satrapy in the realm of Darius from where a tribute of 360 talents of gold dust was claimed by the Imperial treasury, and it amounted to one-third of the total tax levied upon the Asiatic provinces. The Persian connection with India can be said to have snapped about 330 B.C., when the last of the Achaemenians was defeated by Alexander. Very little indeed is known of the extent of the Persian influence upon India. Archaeologically not much can be adduced by way of comparable material remains in proof. The coin types, Daric, issued by Darius, and Sigloï appear indeed to have exercised some influence.
on early coinage in India, but it is quite natural that they should have done so at almost the dawn of coinage in India, though it has now been established that India evolved her own independent coinage. It was, however, D.B. Spooner (J.R.A.S., 1915, pp. 63-89, 405-455), who made exaggerated claims for the Persian influence on India. But his arguments have been met by V.A. Smith (J.R.A.S., 1915, pp. 800-802), A.B. Keith (J.R.A.S., 1916, pp. 138-143), Thomas (J.R.A.S., 1916, pp. 362-366) and Nimrod (The Modern Review, Cal., 1916, pp. 372-76, 490-498, 597-600).

In this context Wheeler's attribution of iron in India to the Persian source cannot be sustained in the light of the archaeological evidence coming up in the recent years. It cannot, however, be denied that the relationship between India and Iran remained close and intimate almost throughout.

As N.R. Ray (Maurya and Sunga Art, 1945) has put it, "there is more or less definite evidence of intimate cultural contact of India with Iran in particular from about the eighth and seventh centuries B.C. The North West and the Indus Valley forming a part of the empire of Darius made contacts with Iran earlier still. The intimate contact must have been responsible for certain elements in Buddhist and later Brahmanical mythology, tradition, worship and iconography, especially those connected with the cults of the Sun and the Fire. It was also responsible for the origin and evolution of the Kharoṣṭḥī
"In matters of art the Archaemenid joined with the other elements of the Ancient East to form a synthesised common heritage."

14. Excavated by the author in 1955-56; A.I., 1955-56, p. 12; Wheeler, op. cit., pp. 139, 146. The report of the excavations at Nagda, which gives a full description of the material, is awaiting publication with the Archaeological Survey of India.

19. Ibid., 37, pp. 46-47.
20. Ibid., no. 43, p. 75.
22. Ibid, p. 86.
24. Ibid., no. 37, p. 47, pl. XII, Miii.

CHAPTER 3


26. K. Deva and Wheeler, Appendix A on Northern Black Polished Ware, A.I., no. 1, pp. 55-6, wherein a date between the fifth century B.C. and the beginning of the second century B.C. has been assigned to this ware. See chapter 14, p. 331.

27. Lal, op. cit., p. 23.
28. Ibid., pp. 150-1.
32. The deposits of Period I at Ujjain cover approximately a total height of seven ft. (±213 cm.) distributed in ten layers. A period of from two hundred and fifty years to three hundred years for these strata to accumulate would seem a reasonable estimation.

33. The author experienced difficulties in the course of conducting the excavations through the virgin deposits, when the tools, blunted by the impact, had to be sharpened at frequent intervals. The rather loosened deposits used in raising the mud fortification had also some degree of hardness, being only a little less difficult to dig through.

34. The analysis and report were prepared by the late S.S. Ghosh, Wood Anatomist, Forest Research Institute, Dehradun. The author owes a profound debt of gratitude to that scholar, who had taken up the study of the wood remains in view of their special significance, having visited the site himself early in the summer of 1958.

39. The arguments for and against the proposed identification have been discussed at length by H.D. Sankalia in the report on the *Excavations at Maheshwar and Navdatoli*, 1952-53, Poona-Baroda, 1958, pp. 1-15, and the identification can now be said to be established beyond any reasonable measure of doubt.


42. D.C. Sircar has suggested to the author that 'Purvāpara may really mean country from east to west'. He has further stated that "Ākara-Veṇ-Āvantaka in the *Brihatsamhitā*, 14, 12, seems to show that Ākara was a separate country".


47. A sample of the material was analyzed and examined by Dr. B.B. Lal, Archaeological Chemist in India of the Archaeological Survey of India, Dehradun, and found to be aragonite, mainly on the ground of its hardness. Calcite and aragonite often co-exist as a mixture and as aragonite is unstable it changes into calcite; see H.S. Dana, *Text Book of Mineralogy*, 1955, pp. 513, 521-522. Irrespective of its being aragonite
or calcite, the material concerned, a variety of limestone, could have served only as a flux in the smelting of iron ores at Ujjain.


50. Information from Shri V.S. Wakankar of Ujjain.


52. Ibid., p. 30.

53. Ibid., p. 196.


55. Ibid., p. 266.

56. Ibid., p. 267; Raychaudhuri, *op. cit.*, pp. 145-146.


59. Ibid., p. 206.

60. S.B.E., XVII, p. 187.


Tradition and Buddhist literature record the dedication of a monastery by Jīvaka, the court physician, at Rajgir (see B.C. Law, Rajgrīha in Ancient Literature, M.A.S.I., no. 58, pp. 8, 9 & 12). That the Buddha himself dwelt here for a while is recorded in Dīgha Nikāya, II, pp. 116-7.

The monastery called Jīvakāmra Vanavihāra at Rajgir, known to have been dedicated by Jīvaka to the Buddha, has since been exposed by the recent excavations at Rajgir, seeking to establish at once the truth of the tradition and literary accounts, and, more significantly, the tremendous contemporaneity of the Buddha with Pradyata, Bimbisāra, Ajātasātru and, of course, Jīvaka. See I.A., 1953-54, p. 9, 1954-55, pp. 1647.


Ibid., pp. 147, 204, 227-228.

H.C. Tolman, Ancient Persian Lexicon and the Texts of the Archaemenid Inscriptions; Rapson, Ancient India, p. 81; E. Herzfeld, M.A.S.I., no. 34, pp. 1 ff.; Raychaudhuri, op. cit., p. 240.

Majjhima Nikāya, III, 7; Law op. cit., p. 24.

Law, Ujjayini in Ancient India, Gwalior, 1944, p. 13.


76. G.R. Sharma, The Excavations at Kausambi, 1957-59, Allahabad, 1960, pp. 15-16. That Kausambi was invaded and conquered by the Huṇas under Toramāna (c. 510-515 A.D.) is established by the debris of vandalism found in the excavations as well as by the find of two seals bearing, respectively, the legends 'TO RA MĀ NA' and 'HUNA-RAJA' against the background of the general trouble caused by the Huṇas, who were first defeated by Skandagupta before 457 A.D. (Bhitari Stone Pillar Inscription, Ep. Indi., III, pp. 53 ff.) and again by Yasodharman of Mandasor, who ruled between circa 525 and 535 A.D. (Mandasor Pillar Inscription of Yasodharman, Corp. Ins. Ind., III, pp. 146 ff., Kielhorn, Ind. Ant., XVIII, pp. 219 ff.).

77. Law, Kausambi in Ancient Literature, No. 60, 1939, pp. 17 ff.


81. Ibid.,


84. Besides containing the Edicts I-VI, this pillar also contains one inscription of a gift by the queen, Kāruvāki, who was the mother of Tivara, and a special Kausambi Edict on the punishment of those who fomented and fostered schism in the Buddhist order, besides the later inscription of Samudragupta giving an account of his *āgrijaya* (campaign of universal conquest).


89. Law, *op. cit.*, (Kausambi), pp. 13-16.

90. Pargiter, *D.K.A.*, p. 5; The lines quoted by Pargiter as contained in the Matsya Purana read:

\[ \text{Adhisīmakrišna-putro Nichaksur} \]

\[ \text{bhavitā nripah} \]

\[ \text{Gangayāpahrite tasmin nagure} \]

\[ \text{Nāgasāhvyeye} \]

\[ \text{Tyaktvā Nichaksur Nagaram} \]

\[ \text{Kauśāmbyān Nivatsyati} \]

But the Vishnu Purana replaces the words 'tasmin
nagarā with Hastināpura.

Pargiter, *Ibid.*, pp. 65, 66, translates the text thus: "Adhisimakriśa’s son will be King Nichakṣu. When the city of Hastinapura is carried away by the Ganges, Nichakṣu will abandon it and will dwell in Kauśāmbi*.

94. Notwithstanding the divergent numbers of the kings, Pargiter has shown that it would be fair to count 26 kings in the Paurava dynasty. See *A.I.H.T.*, p. 181.
95. *Ibid.*, pp. 181-182; Strictly speaking the period would work out to 26 x 18 = 468. The addition of this figure to 402 (B.C.) would bring the date to 870 B.C.
96. *D.K.A.*, p. 58, quotes the two versions in the following words:-

"Mahāpadmabhisēkāt tu yāvajjana-
ma parikesitāṁ evaṁ varaṁ
saharaṁ tu jñeyam", and

Yāvat Parikesito janma
Yāvan Nandabhisechanam jñeyam
Pañcasaḍ-uttaram or Pañchasadottaram

The last words relating to the lapse of years before the Nandas are translated as either 1050 or 1015 years. See also *A.I.H.T.*, p. 180.


**CHAPTER 7**


111. Sankalia, Subbarao and Deo, *op. cit.*, Addendum between pages xii and xiii.


115. Ibid., 1957-58, p. 32.
117. Sankalia, op. cit., p. 248.
119. India number of Man, 1930, No. 134, p. 172.
125. It is dated to circa 600 A.D. in University of Ceylon Review, Vol. VI (1948), p. 105; S. Vaityapuri Pillai in History of Tamil Literature, pp. 81, 147, 152, dated it to circa 800 A.D.
129. The question of the chronology of the neolithic-chalcolithic culture has been dealt with at length by several scholars in recent years: Thapar,
op. cit. (Maski), was content with the date-scheme earlier suggested by Wheeler. H.D. Sankalia, and S.B. Deo suggested in their *Excavations at Nasik and Jorwe*, Poona, 1955, a still earlier date-scheme, 1500-1000 B.C., and followed it up in their preliminary report on the excavations at Maheshwar-Navdatoli, 1958 wherein they suggested the same date.

Sankalia further suggested this date in the report on the excavations at Nevasa, in *From History to Prehistory*, 1960, p. 68, and as earlier stated, in the *Illustrated London News*, 5th September, 1959, p. 182, and A.I., 1958-59, p. 31, and lastly, Sankalia in his work on *Indian Archaeology Today*, 1962, p. 19, has suggested the date-range of circa 1700-1100 B.C. The present author has discussed this question in chapter 3 and has indicated that the culture is post-Harappan in stratigraphy and datable to between circa 1500 and 800 B.C. in general.


134. Information from Shri B.K. Thapar.
135. Aurel Stein, in Archl. Reconnaissances in North-Western India and South-Eastern Iran, p. 74, describes the phenomenon in the following words, "Frequently one of the side walls shows a small opening similarly roofed over and intended to represent an entrance". This is also confirmed in M.A.S.I., no. 43, p. 78, where Stein refers to Major Mockler's description of a door to the enclosures in J.R.A.S., 1877, pp. 122 and 132.

136. V.D. Krishnaswami and N.R. Banerjee in a paper (not published) on the Megalithic Monuments of the Chingleput District, presented to the 1948 (Patna) session of the Indian Science Congress, Anthropology and Archaeology Section.


138. Diodorous, Bibliotheca, XVII, cv. trans. by McCrindle, Invasion of India, p. 297; also see Stein, M.A.S.I., no. 43, p. 82.

139. Stein, M.A.S.I., no. 37, pp. 45, 47.

140. Stein, Ibid., pp. 47, 48.


142. Beatrice de Cardi, A new prehistoric ware from Baluchistan, Iraq, Vol. XIII, Part 2, 1951, pp. 63 ff. The connected discussion of the Londo ware in the following lines are based on the above named paper as on a discussion with Miss De Cardi herself.
143. Ibid., p. 71.
144. Ibid., p. 71.
145. Ibid., p. 72.
148. Stein, M.A.S.I., no. 43, p. 77.
150. Ibid., pp. 404 ff.
151. Ibid., p. 438.
152. Ibid., p. 439.
155. Ibid., pp. 559-561.
156. See fig. 255 (26) of Stratigraphie Comparée. It is pertinent to quote the words of Schaeffer from Stratigraphie Comparée, p. 472, "Mais, il ne faut pas oublier que les trouvailles de Sialk VI B, comme toutes celles du Luristan et du Nihavend, montrent que l'élevages des chevaux était la préoccupation et la principale ressource de cette civilisation". It simply means that it should not be forgotten that the finds of Sialk VI B, as all those from Luristan and Nihavend show that the raising of horses was at once the principal preoccupation and resource of this civilization.
158. Stein, M.A.S.I., no. 43, p. 88.
159. Gordon, op. cit.,
also H. Cousens, The Antiquities of Sind, Arch. Surv.
Ind. Imp. Ser. XLVI (1929), 44-5.
163. Ibid., p. 349.
(Simla 1871) Introduction, p. XXX.
166. Arch. Surv. Ind. An. Rep. VI, for 1871-73,
pp. 104 ff.
167. Ibid., p. 14; whence Wheeler op. cit., p. 302,
foot note No. 2.
168. Carlleyle, Report of a tour in Eastern
Background etc. p. 161.
169. W.J. Henwood in the Edinburgh New Philoso-
phical Journal, N.S. (Edinburgh, 1856), pp. 204-5.
170. Carlleyle, op. cit., whence Gordon, Ibid.,
p. 161.
171. H. de Terra, Excavations at Burjrama,
1909-10, pp. 104 ff.
Series, I, 18 Calcutta 1945.
174. R. Heine - Geldern, Das, Megalith Problem,
Beitraege Oesterreichs zur Erforschung der Vergangenheit
und Kulturgeschichte der Menschheit - Symposion, 1958,
under the auspices of Wenner-Gren Foundation, New York, 1959, p. 179.


180. E. Thurston, *Castes and Tribes of Southern India*, Vols. IV and VII.


189. See Macdonell and Keith, *Vedic Index*, Vol. I,
The Rigveda recognizes both burial, anagnidagdha (Rigveda X, 15, 14), and cremation, agnidagdha (Bigvada, op. cit.). Burial, however, receives a fairly elaborate treatment, being dealt with in a whole hymn (Rigveda X, 18, 1-14). Of special interest is the setting up of a stone to serve as a barrier between the dead and the living. Rigveda X 18, 14, which reads as follows, relates to stones recalling the stone circles of megaliths:

\[
\text{Imām Jīvebhyaḥ paridhim}
\]
\[
dadhāmī māisāṁ nu gādaparō
\]
\[
arthametaṁ
\]
\[
Śataṁ jīvantu śaradaḥ puruchi
\]
\[
rantarūpamadhatām
\]
\[
parvatena
\]

It means (see Wilson, The Rigveda, Vol. VI, p. 28), "I erect this circle (of stones) for the protection of the living, that none other of them may approach this limit; may they live a hundred years, occupied by many holy works, and keep death hidden by this mound".

The allusion to an earthen house (mrinmayam griham) in the Rigveda may possibly stand for a pit-burial. In this connection, the invocation in Rigveda X, 18, 11, to earth appeals to mother earth to rise up above him (to enclose him), not to oppress him, to provide him comfort with attention and to cover him as a mother covers her child with the skirt of her garment. The funeral hymns of the Vājasaneyi Samhita contemplate the burning of the
body, but burial of the ashes of the mortal remains, in the burning ground (śmaśāna) as mentioned (Atharva-veda, V, 31, 8; X, 1, 18, Taittiriya Samhitā, V, 2, 8, 5; 4, 11, 3). Atharvaveda XVIII, 2, 25 refers also to a coffin.

Thus both burial of sorts and cremation were known to the Rigveda, though from the paucity of finds of burials and the preference for cremation it may be stated broadly that cremation seems to have come to stay, early enough. From the erection of a circle of stones, or a block of stone, an earthen house (or pit), and the practice of the exposure prevalent in the days of the Atharvaveda, it may be stated that the megalithic ritual was perhaps not unknown to the Rigvedic people. This provides another link of the Rigvedic Aryans with Sialk VI, B.

201. Ibid., p. 27, see also *I.A.*, 1955-56, p. 8.
The use of lime for plastering floors were observed at Nevasa and Daimabad (see *I.A.*, 1955-56, p. 8 and *I.A.*, 1958-59, p. 18).
205. Ibid., p. 164.
207. These names occur in the second Rock Edict. See Hultsch, *Corp. Ins. Ind.* Vol. I, pp. 2 ff. They are referred to generally as Rājāno (kings).
209. The language used in these inscriptions was, however, Prakrit.
211. T. Burrow, *The Sanskrit Language*, London,


Sarkar has brought out the similitude between Brahmagiri skulls and the majority of skulls in Sialk VI, (p. 23). To quote him, "its (Sialk VI's) brachycephaly may be responsible for the brachycephaly of Brahmagiri". While emphasizing the brachycephal (represented by mesocranial characteristics), he points out the presence of an autochthonous Australoid ethnic entity among the skulls as well. Rappaz has pointed out the cephalic index of the Scytho-Iranians, who migrated to Iran from the region of Ukraine between 2000 and 1000 B.C., in An Introduction to the Anthropology of the Near East, Amsterdam, 1934, as brachycephal. The parallelism, howsoever limited, does point to a possible source of inspiration.


CHAPTER 4

216A. Wheeler, Early India and Pakistan, p. 28.

216B. It extends at least upto Alangipur, District Meerut, Uttar Pradesh, in the Ganga plain, to the north-east, (see I.A., 1958-59, pp. 50-54), while unproved claims of Harappan affinities for finds at Kausambi, on the Yamuna, near Allahabad, Uttar Pradesh further eastwards have already been made (see I.A., 1957-58, p. 48).
The discovery of about twenty-five Harappan sites in the Bikaner Division of northern Rajasthan has established the existence of the Harappan civilization in the valleys of the Sarasvatī and Drisadvatī, which formed the prime habitat of the Rigvedic Aryans and has indicated the expansive character of the far-flung and so-called Indus civilization, extending beyond the bounds of the Indus system (see A. Ghosh, The Rajputana desert - its archaeological aspect, Bull. Nat. Inst. Sciences, No. 1, 1952, pp. 38-40).

The recent discoveries of the Harappan sites of Telod and Mehgam, in District Broach, on the Narmada estuary and at Bhagatrav and Hasanpura, in District Sorath, in the Tapti valley have pushed the frontiers of the civilization into the very fringes of the Deccan (see I.A., 1957-58, pp. 13-15).

The architectural remains of Harappa and Mohenjodaro are well known enough.

I.A., 1954-55 to 1960-61. The most remarkable discovery on the site was of the remains of a harbour or dock-yard pointing at once to its importance as a commercial centre and as a centre of maritime activity (I.A., 1958-59, pp. 13-14, pl. XV A and B).


Ibid., pp. 58-63, pls. XIII and XIV.

Ibid., pp. 49-52, pl. XII, figs. 1-10.

Ibid., p. 67, pl. XIII, fig. 17.
The Mahisa or buffalo is described in the Rigveda, IX, 96, 6, as follows:

Brahma devanam padav
Kavinam risirvpranam mahiso mrigam
Syeno gridhranam svadhitir
Vanam soma pavitramatyeti rebhan

Wilson translates it thus: The Brahma of the gods, the guide of the sages, the risi of the pious, the buffalo of the wild animals, the falcon of the vultures, the hatchet of the deadly weapons, the soma passes through the filter with a roar.

The Divinadevas are mentioned twice in the Rigveda, viz., VII, 21, 5 and X, 99, 3. As Macdonell and Keith suggest, the word "refers probably to the phallus worship of the aborigines" (Macdonell and Keith, Vedic Index of Names and Subjects, Vol. II, p. 382). Rigveda VII, 21, 5 reads as follows:
Na yatava Indra jujurvano
na vandana savistha vedyabhih
Sa ādhardayo visumasya jantormā
Śisnadeva api guritaṁ nah

Wilson (Rigveda Translation IV, p. 151) translates it thus: "Let not the Rāksasas, Indra, do us harm: let not the evil spirits do harm to our progeny; most powerful Indra: let the sovereign lord, (Indra), exert himself (in the restraint) of disorderly human beings, so that the unchaste may not disturb our rite".

Rigveda X, 99, 3 reads as follows:

Sa vājaṁ vātāgṛuspada van
& tasvāvartā pariṁ sadat
sanisyān
Anaryā yaohchhatadurasya vedo
ghnachchhisnadeva api
varpasā bhūtā

Wilson translates it "Going to the battle marching with easy gait, desiring the spoil, he set himself to the acquisition of all (wealth). Invincible, destroying the phallic-worshippers, he won by his prowess whatever wealth (was concealed in the city) with the hundred gates. Yaska (IV, 19) describes "Śisnadevaḥ abrahmacarya itvarthuḥ", but it may have the sense of those who have the Līnga (phallic emblem) for a deity.


Z33-230. See illustrations in Marshall, op. cit.,
Marshall, Ibid., vol. I, fig. 24. Ramachandran quotes from the Rigveda in the paper named above thus:

Tridhā baddho vrisabho
roravīti mahodevo
martyāṇāvivesā
d and translates:

"The thrice bent bull goes on roaring that the Great God (is no longer in some invisible heavens) has actually completely entered the mortals".


Wheeler, The Indus Civilization, 1960, p. 98
Ibid., p. 102.
Lal, in a paper presented to the first International Conference on Asian Archaeology held in New Delhi, in December, 1961.

Though both burial and cremation were known to the Rigveda, it should be clear from the paucity of finds of burials of this period and the preference extended to cremation in the later Vedic period, that cremation had come to stay in preference to burial.

Wheeler, op. cit., p. 56.
Barton, Scientific and Hamitic Origins, p. 39; Father Heras, Proto-Indo-Mediterranean Culture, p. 159.
Father Heras, Ibid., p. 159 ff.

The divergent views on the date of the Rigveda have been considered in chapter 5. Here the date that appears reasonable to the author has been employed
as the basis of discussion.

244. Maxmuller in his *History of Ancient Sanskrit Literature*, published in 1859, expressed the view that by 1000 B.C. at the latest the Rigveda Samhitā was composed, and the date of 1200-1000 B.C. was the date of the Rigveda as a terminus ad quem. The basis of this calculation was the consideration that Buddhism is the result of a reaction against Brahmanism and it presupposes the existence of the entire Veda. He expressed, however, the view, later, in his Gifford Lectures on 'Physical Religion' in 1889 (published in 1901) that "we cannot hope to fix a terminus a quo, whether the vedic hymns were composed 1000 or 1500, or 2000, or 3000 B.C. no power on earth will ever determine".

N. Winternitz considered the different views on the chronology of the Vedic literature prevailing in his time, including that of Maxmuller, and came to the conclusion on the same grounds as the latter, to the exclusion of astronomical data, the inscriptive evidence from Boghaz Keui, linguistic interrelationship between the Veda and Avesta, and geological speculations, that the beginning of the development should be dated to between 2500 to 2000 B.C. and the end between 750 and 500 B.C., relying entirely on the factor of the possible time that could be conceded to the rise of the Buddhistic or Jain revolt against Brahmanism, in the *History of Indian Literature*, Vol. I, 1927, pp. 290-310.


247. See remarks in reference no. 473 under chapter 5.

248. See remarks in reference no. 473 under chapter 5.

249. Sankalia in *Indian Archaeology Today*, pp. 81-99.


Piggott explained that the great Harappa civilization was destroyed by "the arrival of new people from the west", who were "conquerors who travelled light and adopted the pottery traditions of the regions in which they established themselves". This was indicated by the burning of the Baluchi villages and the equipment of the graves at Shahi-tump. About this time the civilization, had already become 'effete' at Mohenjo-daro and the people were on the defensive, as revealed by the rebuilding of the citadel at Harappa, and in spite of these precautionary measures they were overwhelmed by the 'Conquerors'.


260 257. Copper hoards. R. Heine-Geldern, first wrote his views in his paper on the 'Archaeological traces of the Vedic Aryan', *J.I.S.O.A.*, IV (1936), pp. 87-113; and followed it up a year later in his paper on the 'New light on the Aryan migration to India', in the *Bull. Amer. Inst. Iran. Art and Arch.*, V, (June 1937) pp. 7-16, in both of which he recognized the Aryans as the introducers of the copper implements into India.

Lal pointed out in his excellent review of the position, in 1953, in his paper on "Further copper hoards from the Gangetic basin and a review of the pro-"
blem*, A.I., no. 7, pp. 20-39, the obvious anomaly between the specialized objects of apparent western inspiration and those from the Ganga plains.

Heine-Geldern, while reconsidering the evidence in the light of Lal's criticism, brought forth a few new issues and conceded that if the copper objects of the west had not been brought by the Aryans, they came with other tribes that shared with the Aryans in the invasion of India. His latest views were expressed in his paper on 'The coming of the Aryans and the End of the Harappa civilization', Man, vol. LVI, (Oct. 1956), pp. 136-140.

Lal, Prehistoric Investigation, in A.I., no. 9, p. 93.

Lohuisen was the first to point out in her paper on 'De Protohistorische Cultuuren van Voor-Indie en hun datering' Leyden, 1960, that the piece in question though published as a celt was in all appearances an anthropomorphic figure. To quote her own words, Ibid., pp. 24-25;

'Voorts mag niet onvermeld blijven dat er onlangs in de Harappa-nederzetting te Lothal een fragment is ontdekt, dat als bijl gepubliceerd, doch dat er all schijn van heeft voor de koperdepots typerende anthropomorfe figuur te zijn waarvan de armen en benen zijn afgebroken'. It simply means that it may be mentioned that a fragment discovered at Lothal in the Harappan settlement, has been published as a celt, To all appearances it has a si-
milarity to the anthropomorphic form of the copper hoards, though its legs and arms are broken.

Y.D. Sharma, independently, as I understand from the scholar, arrived at an identical conclusion which he stated in his paper on the subject presented at the first International Conference on Asian Archaeology in New Delhi, 1961.


265 268. Ibid., p. 137.

266 269. Ibid., p. 138.

267 270. Ibid., p. 138-9.

268 271. Ibid., p. 139.

269 272. Ibid., p. 139.

Lal, *op. cit.*, pp. 32-35, 38-39; Protohistoric Investigation, *A.I.*, no. 9, p. 93, wherein he writes that "Professors Childe, Piggott, Wheeler and Haimendorf have agreed (in correspondence) that the Hoards need no longer be associated with the Aryans".


271 274. Ibid., p. 36.

272 275. Ibid., p. 36.

273 276. Ibid., p. 38.


278. Lal, op. cit., p. 147.

279. Thapar, in a paper on the subject at the first International Conference on Asian Archaeology entitled "The West Asian Background to the Protohistoric Pottery of India in the second and first millennia B.C."

280. S.C. Ray, at the above mentioned conference on Asian Archaeology in a paper on "The Indo-Aryans and their Earthly Culture".

281. A. Stein, An Archaeological Tour in Gedrosia, M.A.S.I., no. 43, pp. 98-103; Stuart Piggott, op. cit., pp. 216-218. For the description of the Painted Grey Ware, see Lal, The Painted Grey Ware of the upper Gangetic Basin, J. Roy. A.S.E., Letters; vol. XVI, No. 1, 1950, pp. 89-102; A.I., nos. 10 & 11, pp. 32 ff. and the Appendix at the end of this treatise. The painted grey ware pottery found in the burial at Shahi-tump is a distinctive ceramic and is represented in the usual shapes of shallow bowls with a foot-ring, deep bowls of large size and beakers of globular or conical profile and bowls enlarging themselves into dishes. The painting is executed in a colour "which varies from black to a reddish brown, and has sometimes a tendency to run".

The designs are worked both on the exterior and interior; while the arrangement on the exterior is in zones or panels, the decorative effect is achieved with a swastika or allied motif in the centre of the
inside of bowls. The other motifs employed include angular spirals, chevrons, sigmas, lozenges, triangles and wavy double lines enclosing dots.

According to Piggott the nearest parallel to this pottery is to be found in the Khurab Cemetery near Bampur in Eastern Iran, about 150 miles away from Shahi-tump. He is of opinion that this ware is to be traced to the Buff-ware group represented in Susa I and other sites in Fars, representing the final expression of a tradition that lasted in southern Persia from the fifth millennium B.C. to the beginning of the second. Sir Aurel Stein had already recognized parallels nearer home in Sistan.

The Painted Grey Ware of India is similarly a thin smooth grey ware, with variants becoming reddish-brown (or brownish red), having a soapy feel. The shapes represented comprise bowls, sometimes with a flattish foot, and dishes. The painted designs are executed both on the exterior as well/on the interior in linear or dotted designs, usually in black colour. The designs on the exterior consist of various combinations of plain bands, groups of dots, dots and dashes, wavy lines, concentric semicircles, sigmas, concentric circles with radiating rows of lines and criss-cross-hatched lozenges or diamonds.

The inner base of the vessels, especially dishes, carry scalloped concentric circles, groups of circles and spirals. Apart from the similarity of the basic utilitarian pot types, namely, the bowls and dish, some of the designs like the swastika, sigma
or circles, wavy double lines enclosing dots, and several other simple arrangements are common. It is also to be noted that the designs are usually in black in both cases, and the patterns share in common the lack of crisp vigour. While the Painted Grey Ware of the Ganga plains is associated with a brownish-red ware, also similarly painted, the ceramic ware from grey to pinkish and yellowish-buff. It is interesting to note that the only ceramic ware approaching the Painted Grey Ware in ancient Turkey (Asia Minor) is a polished grey ware found in Troy, VI (see Seton Lloyd, Early Anatolia, pp. 151-152; Schaeffer, Stratigraphie-Comparée etc. pp. 253-254 and Foot Note 1 on p. 254).

Mon. Blegen, writing in the American Journal of Archaeology, 1934, p. 17 and note 1, states that the other distinguished grey ceramic, known as the Minyan ware, which Professor Milociz of Heidelberg is stated to have admitted as comparable to the Painted Grey Ware of India during his recent visit to this country, probably reached the Greek mainland and Troy more or less synchronously from a common source.

It may have been introduced by the Hittites, to be replaced soon in Asia Minor, first by the Cappadocian Ware and then by the Hittite Ware. The fact that it has not been observed elsewhere in Asia Minor may be set down as much to accident as to a dominating influence of native pottery. Though other island-like appearances of the Grey Ware have been noted in widely separated regions, and a developed stage of the Ware is met with in India, without traces
of its antecedent stages, an extraneous source in the west is quite possible in view of Piggott's emphasis on the links with Khurab and Susa etc., though an under-current of Aryan influence throughout, linking them all, is neither necessary to presume nor is it likely to be found. It may also be noted that the design of swastika painted on the pottery is peculiar to Shahi-tump and does not occur elsewhere in the region.

It is interesting to recall that the weapon of Indra, the principal god of the Vedic Aryans, was called Vajrayudha in the Rigveda. It originated no doubt from heaven. It might possibly refer to a powerful weapon made of meteoric metal (iron?), stronger perhaps than any that was known before.

The subject of the antiquity of iron has been dealt with variously in the following works. The list is not exhaustive but fairly representative.


(v) J. Przeworski, Metallindustrie Anatoliens in der Zeit von 1500-700 vor Christus, Internationales Archiv fuer Ethnographie, Leiden, 1939, Band XXXVI,
It has been made clear in chapter 1 that the Iron Age does not begin until it actually replaces copper and bronze as the principal metal in the use of man and this happened long after man had learnt to smelt iron ores.

It may be noted in this connection that paddy husk has been playing a bigger role than charcoal in small-scale metal working till today in south India. Paddy husk retains the glow and heat longer than charcoal.

Professor R.J. Forbes of Amsterdam informs the author that "iron is not liquid below 1350°C. This is its big difference with copper. Iron ores are readily reducible at low temperatures (700-800°C.) but resulting iron is obtained in small solid grains. In case of copper, reduction proceeds only
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at higher temperature, but the result is liquid copper".

289. Coghlan, op. cit., p. 87.

290. M.E.L. Mallowan, Excavations at Tell Cha-


292. H. Frankfort, 'Early iron in Iraq', Man,

293. R.F.S. Starr, Nuzi: Report on the Excava-
tions at Yorgan Tepe near Kirkuk, Iraq, Vol. II, Cam-
bidge, Massachusetts, 1937, p. 125.

294. Andre Parrot, Kudurru archaique provenant
de Senkereh, Archiv. d'Aur Orientforschung, Berlin,
1937-9, XII, pp. 319-24.

295. R.J. Forbes, Metallurgy in Antiquity,
Leiden, 1950, p. 446.

296. O. Johannsen, op. cit., Duesseldorf, 1953,
p. 40.


298. G. Schaeffer; Ugaritica, I, Mission
de Ras Shamra III, Paris, 1939, pp. 109 ff. and W. Lamb,
Review of Schaeffer's Ugaritica I, Antiquaries Journal,

299. Ibid., pp. 110-111.

300. Ibid., pp. 116-117.

301. Ibid., p. 116; note (4); J.A. Kudutzon,
Die El-Amarna Tafeln, I, pp. 159-169. Tell-el Amarna
is in upper Egypt, about 300 kilometres from Cairo.
The language of the Mitanni inscription in question
is Hurrite.

300. Schaeffer, *op. cit.*, p. 166; R.T.O'Callaghan in *Analecta Orientalia*, 1948, vol. 26, p. 68, writes: "Further more . . . . . . the earliest examples of weapons forged in iron may be attributed to the Mitannia".


313. S. Przeworski, Metallindustrie Anatoliens, Appendix 'D'; Keilschrifttexte aus Boghaz Koey, IV, no. 1; M. Witzel, Hethitische Keilschrifturkunden, Keilschriftliche Studien, pp. 4, 81.


316. Luckenbill, American Journal of Semitic Languages, XXXVII, p. 206.

317. E. Cavaignac, Revue Hittite et Asianique, ii, 1934, pp. 233 ff; A. Goetze, Kizzuwatna and the problem of Hittite Geography (1940), chapter III.

318. Schaeffer, Stratigraphie Comparée etc., pp. 297, 546.

319. A.R. Hutchison, Iron and Steel through the Ages, The Museums Journal, vol. 50, July, '50, p. 83. Hutchison is of the view that the purposeful smelting of iron ore probably originated in the forest uplands between the Taurus mountains and Ararat, the land of the ancient Hittites. The date suggested for this metallurgical achievement is around 1400 B.C.

320. Przeworski, op. cit., pp. 161 ff. He is on the contrary of the view that the development of the
efforts of all Near Eastern Countries, though the folks from Asia Minor have taken a large share in this endeavour. To quote his words: "Eine Monogenese der Eisenindustrie ist deshalb abzulehnen. Ihre Herausbildung ist der langwierigen gemeinsamen Versuche der gesamten Vorderasiatische Welt".


322. B.E. Schmidt, in Anatolia through the Ages, Oriental Institute of Chicago, Communications, 1927-29, pp. 116-119, says that the Iron Age in Asia Minor began during the period of the second Hittite empire (1440-1200 B.C.), arrow-heads (illustrated in fig. 164 of the text referred to), spear-points and blades (fig. 164), all of which played a decisive role in the victories of the Hittites.

323. Schaeffer, Stratigraphie Comparee etc. p. 297.


326. G. Schumacher, Tell-el-Mutesellim, Band 2, Die Funde, Leipzig, 1929, fig. 98.

327. G.E. Wright, Iron, the date of its introduction into Palestine, Amer. Journ. of Arch. 1939; XLIII, p. 459.


333. Coghlan, *op. cit.*, p. 64.


335. Schaeffer, *op. cit.*


337. Information from Shri B. B. Lal, who recently led an expedition in Nubia; also from newspaper reports.

338. Randall MacIver and Wooley, *Buhen I*


341. Johannsen, *op. cit.*, p. 38; see also *Antiquity*, vol. X, pp. 355-7, for the evidence on VIth dynasty iron in Egypt.


344. Ibid.; See also O. Montelius, *op. cit.*

299.

345. Montelius quotes Hall from *Man*, 1903, p. 149, wherein he expresses the view that in all probability iron became known in Egypt more or less generally before the 19th dynasty though it did not in any way replace bronze at this stage.


348. Ibid., p. 63.

349. Ibid., p. 71.


351. Ibid., pp. 86-87.

352. Ibid., pp. 99-100.

353. Ibid., pp. 99-100.

354. Ibid., pp. 105-106.

355. Ibid., p. 88.

356. Ibid., p. 88.

357. Ibid., pp. 87-88.

358. Schaeffer, *op. cit.*

The discussion of the whole question in the following pages is based on the views of Schaeffer expressed in the above named work. Writing about the commencement of the Iron Age in the Talish basin, Schaeffer expresses the view in the following words, (Ibid., p. 436):
"D'après ce que nous disions plus haut, nous sommes amené ainsi à les placer vers la fin du XIIIᵉ siècle au plus tôt au XIIᵉ au plus tard, ou en chiffres ronds entre 1200 et 1000 avant notre ère. Nous appellerons cette période le Talyche Fer I. Cette estimation est confirmée par les indices chronologiques que nous pouvons tirer de l'examen typologique des trouvailles de Chagoula-Derré."

The tombs of Tulu was earlier attributed by De Morgan to a transitional phase between the Bronze and Iron Ages, and dated between 1350 and 1200 B.C., but have been dated by Schaeffer to 1250-1100 B.C. (Ibid., pp. 438-439)

The tombs of Chir-Chir-Pori, originally raised in the Bronze Age, were re-used in the Iron Age, (Ibid., p. 439).

The tombs at Agha Evlar reflect a similar sequence of events (Ibid., pp. 439-442).

359. Schaeffer, Ugaritica, I, pp. 110 ff.
360. Schaeffer, Stratigraphie Comparée etc, p. 307.
361. The incursion of the Sea folks was stopped at the Egyptian frontier first by Minephtah about 1229 B.C., and then by Rameses III in the 8th Year of his reign (1198-1167 B.C.), Ibid., pp.307-435.
362. Ghirshman, Iran,1954, p. 64; Schaeffer, Stratigraphie Comparée etc. p. 436. Schaeffer states that the upheaval marking the end of the Bronze Age and bringing in the Iron Age coincides with the downfall of the Kassites in Babylon, after a hegemony
The inference about the general introduction of the Iran Age about 1200 B.C. is confirmed by the results of excavations at several sites, including those in Persia. Schaeffer, *Ibid.*, p. 436, says "Nous verrons plus loin (...) qu'au plusieurs sites persan au Sud du Talyche, dans le Nihavend, et le Luristan, on a releve les traces d'une conflagration analogue qui surprit la civilisation du Bronze a son declin et causa son remplacement par celle du Fer".

To quote his actual words:

"Il est bien entendu que le chiffre de 1200 a ete choisi pour aider la memoire. Les evenements qui marquent le debut de l' Age du Fer en Syrie, comme en Chypre et ailleurs, ont commence au cours du XIII e siecle et ont dure jusqu'au commencement du XII e comme les chroniques egyptiennes nous l'appmennent. En fait, donc, si nous disons 1200 nous visons la periode entre 1250 et 1175 environ."

The form of the poignards (daggers) is described on p. 433 of the vol. in question in the following words: "Orne a la base de la lame d'un croissant en relief fait de bronze et a l'extremite du manche d'un pommeau egalment au bronze."

R. Ghirshman, *Fouilles de Sialk*, ii,
pp. 44-5 wherein he states "a cette époque, le fer est relativement précieux."

370. Schaeffer, Ibid., p. 527.

371. The types of carvings on the seals in Persia, with comparable specimens elsewhere, have been illustrated in fig. 30, p. 410, of Stratifigraphie Comparée etc.

372. Ibid., pp. 411, 472.

373. Ibid., fig. 30, nos. 3 and 7 and pp. 410-411.

374. Ibid., p. 411.


376. Schaeffer, op. cit., p. 472.

377. R. Ghirshman, op. cit., vol. II, pl. XXXI;


379. Ibid., pp. 475-476.

380. Ibid., p. 469.

381. Ibid., p. 475.

382. Ibid., p. 472.

383. Ibid., p. 472.

384. Ibid., pp. 474-475.


386. Ghirshman, Iran, p. 63.

387. Ibid., p. 73.

388. V. Gordon Childe has discussed the question in great detail in The Aryans, London, 1926.
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389. They are referred to in the Akkadian business documents of the Assyrian commercial colony in the form of cuneiform tablets found at Kuel Tepe, near Mazaka. See Seton Lloyd in *Early Anatolia*, a Pelican Book, 1956, pp. 12, 67, 112-114.


394. The name Mitanni was derived from the name by which the Mitannian rulers called themselves in thirteen of the letters found in the Egyptian archives at Tell-el-Amarna.

395. B. Hrozny thought that it was the same as Ras-el-Ain on the Habur.

396. The word Mariyannu means Chariot warriors in the Hittite and Egyptian texts and the word Marya in the Rigveda means the retainers of Indra. The close connection between the two words is significant.

The Mitannis were the first to introduce the horse and chariot in the Near East. Though chariots
were known from an earlier date both at Mari and Chagar Bazar, the horse was not mentioned in the comprehensive code of Hammurabi (1690 B.C.).

The fact that the Hittites had to depend on the Mitannians for the training in horse riding or yoking it to the chariot, as indicated by the text of Kikkuli, points to the importance of the improved technique and speed of wars made possible by this novel means of warfare.

The possession and mastery of the horse and chariot gave them military superiority and consequentially a raised status in social life, which enabled them, in spite of their numerical weakness to hold their own against the odds, and wrest the ruling power from the Hurrians.

Not a little of it may have been derived from the earliest examples of weapons forged in iron, attributed by Schaeffer to Mitannis (see page ante). O'callaghan in Aram Naharam, Analecta Orientalia, 26, 1948 (Rome), p. 68, makes a pointed reference to this phenomenon. The Mitanni's introduction of the horse chariot and iron into Egypt is also referred to by P.K. Hitti in History of Syria, London, 1951, p. 146.

397. Naharina, the land of the Mitannis, is also called Hannigalbat in Assyrian inscriptions.

398. It was a political expedient essential for the survival of the dynasty, sandwiched between two powerful rivals, namely, the Egyptians on the one hand and the Hittites on the other, both of whom were interested in aggrandisement.
399. While the Mitanni house was weakened by family feuds, the Hittites were reinvigorated, and a policy of active aggrandizement was pursued by Suppiluliuma (1375-1335 B.C.).


401. The remains of the Eastern Mitannian kingdom were apparently annexed by Ashur Ubalit (1380-1341 B.C.) of Assyria, who called himself a Hannigal-batean or Mitannian.


404. Rigveda, VIII, 26, 8.

405. See Archiv. Orientalni, III, 1931, pp. 431 ff


407. J. Friedrich is of the view that the adaptation of the horse to the chariot appears to have been made by the Indo-Europeans (Mitanni) in the eighteenth century B.C., when they came into the region. By the time the Amarnah letters they were culturally and linguistically completely assimilated (see Reallexikon der Assyriologie, Arier in Syrien und Mosopatamien, p. 148.).
408. N.D. Mironov, op. cit., pp. 140-217, has made a list of the proper names among the Mitanni, of which seven are names of Mitanni kings, and four are of their deities, a geographical name, and five common names of Indo-European, all of affinity, that occur in the Tell-el-Amarnah letters and in other epigraphs. He was, however, of opinion (p. 24) that though the principal element in these names was Indian, there was also side by side an Iranian, split into two tribes, namely, the western and the eastern, respectively (see Mironov, op. cit.)

Mironov concludes (op. cit., p. 214), "The linguistic facts discussed above seem to corroborate the conclusion Konow draws from the (supposed) fact of the Aswins (Nāsatya) being mentioned in the Boghaz Keui treaty as groomsmen that the extension of the Indo-Aryan civilization into Mesopotamia took place after the bulk of the Rigveda had come into existence. The oldest portions of the collection would certainly have to be considered as considerably older than the Mitanni-treaty." (see also Sten Konow, Mitanni, Kristiania, 1921).

R.T.O'callaghan, writing in Aram Naharaim, Analecta Orientalia no. 26, Rome, 1948, refers to the recovery of 2,989 names at Nuzu, a Hurrian establishment near Kirkuk, out of which 1500 were Hurrian, 631 Akkadian, 23 Sumerian, 53 Kassite, 27 Indo-European and 754 were unclassified names. In all about 81 names, including those from other sources, could so far be identified as akin to Indo-Aryan forms (see
He adds, keeping in view Mironov's interpretation, "Although it is readily to be conceded that a certain amount of conjecture underlies such attempts to identify with precision these 81 personal names, since most of the deviations are hypothetical, still there is no denying that the majority of cases provides us with names unmistakably Indo-Aryan in character". He indicates that although Hurrian names were also among the ruling princes, "the Indo-Aryans were the governing element, (p. 65), deriving their superiority from the mastery over the horse and chariot and the use of iron (p. 68).

409. O'Callaghan writes, op. cit., p. 35, footnote 2, "The supremacy which the Indo-Aryans gained over the Hurrians in the Mitanni was due to the chariot and to the earliest use of weapons forged in iron."

410. It occurs in the inscription in the form of Na Sa- at - ti - an - na. The form na is the plural termination (E. Forrer, 250, na.16).

411. Please see the divergent views on the subject in note 415 below.


413. N.D. Mironov, op. cit.

414. Ghirshman, Iran, pp. 64-65.

415. Many divergent views have been expressed on this point. J. Friedrich writing in the Reallexikon der Assyriologie, I, Berlin, 1928, brings together the views of several scholars.

Edward Meyer (p. 146) holds, on the ground of
the retention of the 'S' sound in the names Subandhu, Sutarna, Suwardata, Satya, Sattawartana, etc., that the people had not yet separated themselves as Iranians and Vedic Aryans, and were the old Indo-Europeans.

W. Porzig (p. 147) holds the view that they were unseparated Aryans at home in Syria. It is further pointed out that the sequence of Mitra-Varuna is exactly as in the Rigveda. But Varuna is unknown to the Iranians. Besides, the form Satta in Sattawartana points to a later Prakrit (Mittelindisch or the language of the middle period as he expresses it) form, on the assumption that the cuneiform form of this word is correctly rendered, while the pronunciation of 'S' in the proper names points to an earlier date. Their separation into Iranians and Indians (Vedic Aryans) took place after the Mitanni period. In this connection it may be pointed out that P.B.J. Kuiper does not see in the form -tta, for -pta in Satta, any contribution of the Middle-Indian Prakrit and adduces the occurrence of this form in the word abhyāṭṭa in Chhandogya Upanisad, 3, 14, 2, as pointed out by Oertel in Studia Indo-Iranica, 134 ff. On this ground there cannot be any justification for seeking a connection about 1400 B.C. between Mitanni and Middle-Indian Prakrit (Kuiper, Review of Albert Thumb, Handbuch des Sanskrit, Revised Edition, 1958, by Richard Hauschild, Heidelberg, 1958, in Lingua, International Review of General Linguistics, December 1959, p. 432.).
P. Kretschmer (p. 147) holds the view that the Aryans (Indo-Aryans) had once settled in Syria, and uninfluenced by the cultural and religious influences of the neighbours moved away towards India, while those that were left behind were Mitanni.

Friedrich himself (p. 148) is of the view that since the 'Aryans' of Syria in the Amran period are not described by any distinctive name, they had been by that time completely absorbed and assimilated by the local people, and the remains of their language were only the fossil witness to an earlier individuality.

In this connection O'callaghan (op. cit., p. 69) writes "yet within the scope of our study, it is important to emphasise that these personal names show there was an early wave of Indo-Aryans migrating into Mesopotamia several centuries in advance of an Iranian movement proper".

He quotes Professor Dumont in note on p. 70, *Ibid.*: "Professor Dumont has suggested that either those Indo-Aryans may have not penetrated east into India, but stayed in Mesopotamia (and this would explain their early presence there) or else that they may have penetrated into India and then migrated westward again. This would explain the Vedic Character of the Mitannian gods".

It is also to be considered that the Aryan immigration into India has to account for the preceding Zoroastrian Schism in Iran. If the supposed exodus of the Aryans from Mitannian-Syria has to be set
at all after 1365 B.C., the date of the Mitannian discomfiture at the hands of the Hittites, several centuries have to be stipulated for the Iranian bifurcation from the parent stock and the date thus worked out for the entry of the Aryans into India would be too late in consideration of the archaeological evidence in hand, nor would the time-lag, in that eventuality, be sufficient to account for the rise of Buddhism and Jainism respectively, which has been set down to the 6th century B.C. There is no case, therefore, for an Aryan immigration from that direction or about the time (circa 1366 B.C) either.

Such a view has however, been expressed by R. Hauschild, in Handbuch des Sanskrit, 1958, pp. 47, and 130, but the improbability of the idea has been pointed out by F.E.J. Kuiper, op. cit., p. 431.

416. Ghirshman, Iran, p. 61.
417. Ibid., p. 62.
418. Ibid., p. 63.
419. Ibid., p. 74.
420. Ibid., p. 70.
421. Ibid., pp. 70-71.
422. E.F. Schmidt, Excavations at Tepe Hissar-
-Abghan, Philadelphia, 1937, p. 325; Schaeffer,
Stratigraphie Comparée etc., p. 451.
423. Ghirshman, Fouilles de Sialk, II, pp. 18-19;
K. Bittel, Boghaz Koey, Abhandlungen der Preussischen
Akademie der Wissenschaften, Berlin, 1935, p. 36.
424. Ghirshman, Ibid., pp. 29 ff; Iran, p. 80.
427. The Aryans are spoken of here as elsewhere only as a symbol of linguistic affinity, and, to the extent permissible, also cultural.


431. A recent work summarizes the up-to-date cross-currents of scholars' views on this subject, between 1940 and 1956, in Kratylos, Kritisches Berichts und Rezensionsorgan fuer indo-germanische und allgemeine Sprachwissenschaft, Jahrgang 1, Heft 1, 1956, by Otto Harrasowitz, Wiesbaden.

More recently some views favouring an Indian home for the Aryans have been expressed in the Indian History Congress, Delhi 28-31, December, 1961.

Though no substantial argument has been cited endeavour has not been spared to plead the cause for an original home in the region known as Sapta Sindhu, for a later migration from this centre to different parts of Asia and Europe, and for the theory of coexistence between the Aryans and Harappans for about five centuries (2000-1500 B.C.) (S.D. Gıyani, New Light on the Aryan Problem, Indian History Congress, Twenty-fourth session, 1961, Summaries of Papers, p. 6).
H.K. Bhattacharya, in "Similarities of words in the Indo-European Languages and the concept of one cradle", Ibid., pp. 6-7, pleads, however, against a common home and explains the linguistic similarities among divergent peoples as due to grammatical peculiarity.

Swami Sankarananda, in Mythological Aryans, Ibid., p. 7, reiterates the stand that the original home of the Vedic reciters was in the delta built by the Indus and Sarasvati.

434. T.H. Engelbrecht, Die Urheimat der Indo-Germanen, Glueckstadt, 1933. He thought that the Swedish coastal regions were marked by the use of the horse and chariots after the end of the Stone Age. These provided them with a superiority in fighting and they made full use of it - and it reflects itself in the expansion of the Indo-Germanic speeches. The region was, therefore, to be considered as a proper claimant to being the original home of the Indo-Europeans.

435. Penka, Origines Aricae, 1883; T.H. Engelbrecht in "Die Urheimat der Indo-Germanen", Glueckstadt, 1931, expressed the view that the coastal regions of Sweden appear to have been inhabited by the superior Aryans, who, by and large, moved from this region into India in the course of their adventurous expansion following the line of the least resistance.

436. K.F. Wolff, Amman Festgabe, Innsbruecker
437. G. Kossina, *Die Indo-Germanen*.
441. Adolf Pictet was the first to look for the Indo-European home in Asia, between the Hindukush and the Caspian Sea, as far back as 1859.
442. E. Waldschmidt, for instance, believes that the home lay between the Volga and the Carpathian ranges, *Historia Mundi*, II.
446. G.A. Grierson, writing in the *Linguistic Survey of India*, vol. I, part 1, 1927, on the Indo-European family, said that the Aryans were to be traced to South Russia. They came first into Afghanistan and entered India through the Kabul valley in several waves, and he was in agreement with the view that the Indo-Aryan elements in the names and Gods of Mitanni are of Vedic origin.
Chapter, VIII. According to him the southern parts of Russia, extending up to the Caucasus, was the settlement centre of the Indo-Europeans. They discovered their way from there to the Indus valley as well as to the Mitanni area in Mesopotamia. They spread in all directions from this centre through the Caucasus.


450. W. Brandenstein, in Die erste Indo-germanische Wanderung, Klotho, II, Vienna, 1936, held the view that the Kirghiz steppe marked the original home. From here one band moved towards Poland in the west in the third millennium B.C., and another went over the Caucasus towards the east to form the ancestors of the Indo-Iranians. (See Studien zur Indo-germanische Grundsprache, Vienna, 1952, pp. 23-25 wherein he reiterates the standpoint calling it the Eurasian Steppe-land.)


460. Leonard Woolley, *A Forgotten Empire*, A Pelican Book, pp. 31-35. Though the Khirbet Kerak Ceramic is named so after its findspot in Palestine, its real home seems to have lain in the southern Caucasus region. It is a hand-made pottery either wholly red or partially black and partially red, partaking of the characteristics of a black-and-red ware. Woolley states (p. 34) "in the Khirbet Kerak people we must recognize the ancestors of the Hittites", and again "it has long been recognised that the Hittites were a Caucasian stock which moved thence into Asia Minor".


463. Tocharian, also called Tochari or Tocharish,
is the name of an Indo-European language spoken in the Tarim basin during the latter half of the first millennium A.D. The documents date from about 500-700 A.D., and were discovered towards the end of the 19th Century. This language was probably in contact with the Celtic and Italic dialects on the one hand and the Balto-Slavonic on the other, as also with the Germanic and Greek languages of antiquity. The Tocharian speakers migrated to the east over a northern route. It had come into touch with non-Indo-European speakers as well, especially the Finno-Ugric and Altaic. It is a Ṛatam dialect, and, from its ultimate habitat, can be said to have strayed wide away from its original home (See Encyclopaedia Brittanica, 1959, Vol. 22, pp. 268-269).


465. One of the unresolved riddles of Iranian history, which is of equal universel interest, is the date of the birth of Zoroaster, who was responsible for the schism with the vedic way of life. E. Herzfeld, writing on the Traditional Date of Zoroaster in Oriental Studies in Honour of Cursetji Krachji Pavry, London, 1930, pp. 132-36, favours the view that Zoroaster lived 258 years before Alexander, whose era begins with 312 B.C. and on this basis the date works out to 570 B.C. But recent excavations in Persian Azerbaijan, about 250 miles north-west of Teheran by the German Archaeological Institute (See Universitas, A German Review of the Arts & Sciences, Stuttgart, pp. 330-1) have adduced evidence to support the other date of
630 B.C. in vogue. At any rate, Zoroaster lived a considerable time before 521 B.C., when Darius ruled, as the Behistan inscription makes a reference to Zoroaster. J.H. Moulton, *Early Zoroastrianism*, London, 1913, places him between 660 and 583 B.C. and indicates the possibility of a still earlier date.

466. E. Herzfeld, *The Archaeological History of Iran*, 1935. The annals of Shalmaneser III (855-36 B.C.) mentions two of the Iranian tribes, Amadai Mada and Parsuas-Parsa, who occupied the land of the Medes and Persia respectively. These became an Assyrian province in 755 B.C. under Sennacherib. The region east of the Caspian gates was called Khwār which is called hvāra in old Persian but Svara in Aryan speech. But the mountains are known as Patishvāra. In Esarhadon's annals they are called patusarra and in Darius inscription of Behistan as patishvāra. The retention of the S-sound at this date in the language shows that the Persian immigrants into the region spoke an Aryan dialect, and their bifurcation from the Indo-Aryans could not have been very old.

467. B.K. Ghosh, *op. cit.*, p. 203. He says, "From a purely linguistic point of view the Rigveda in its present form cannot be dated earlier than 1000 B.C."


469. H. Jacobi, in *Ind. Ant.*, June, 1894, pp. 154 ff. says, "the period of civilization extended accordingly from about 4500 to 2500 B.C. and we shall perhaps not be far wrong if we put the collection of
hymns which has come down to us in the second half of this period.

G. Buehler lent support to this date-scheme of Tilak and Jacobi in his note on Professor Jacobi's Age of Veda and on Tilak's Orion, in *Ind. Ant.*, XXIII, pp. 283 ff., though he suggested the need of fresh investigations.


471. J. Halevy expresses a doubt as to the correctness of the identification of the deities of the Boghaz Keui text with those in the Rigveda, See *Revue Semitique*, 16, 1908, pp. 247 ff.; Jacobi, Sten Konow and Oldenberg, among others, are, however, in agreement.

472. Walter Wuest in *Ueber das Alter des Rigveda*, *Wiener Zeitschrift fuer die Kunde des Morgenlandes*, XXXIV, 1927, pp. 165-214, states that several *Mandala* of the Rigveda had been composed in the Mitanni period in Mesopotamia before the bulk of the hymns were composed in India. He is, however, in agreement with the suggested dates of the Mitanni period in Mesopotamia.

Jarl Charpentier, *op. cit.*, p. 167, states that the Aryans entered India or about 2000 B.C., or perhaps one or two centuries earlier.

Carbon date approximating to circa 2100 B.C. for Damb Sadat II. He argues that the Harappan Culture must, on this showing, have commenced at Harappa itself about 2000 B.C. and the presently accepted date of circa 1500 B.C. gives too short a life for the Harappa culture, considering its great spatial expansion. Hence a date around circa 1200 B.C. or even later would be suitable for the end of the Harappan Civilization.

Fairservis' reference to several cultural traits in Quetta of the post-Harappan phase, has been mentioned and shown to be of the order of 'cultural fragmentation' that set in following upon the discomfiture of Harappa.


It was, however, G. Huesing, who had first attributed the impulse of the Indo-European wandering into India to the invasion of Asia Minor and Armenia by the Thracio-Phrygians in the 12th century B.C. (1190 B.C.). Heine-Geldern, considers a time of about fifty years as a sufficient time-lag for the incursion to be completed.

475. B.C. Sircar, Select Inscriptions, 1942, pp. 3-14.

476. Rigveda, V, 53.


478. Rigveda VI, 27, 8; Vedic Index, I, pp. 29, 504, 521.

479. Rigveda VIII, 6, 46, and elsewhere.
The idea of the Iranians and Indo-Aryans separating themselves before reaching the soil of India as suggested by Burrow (see page 224) are not based on firm grounds. There is, however, no direct evidence to support this statement. The fact of their common existence prior to separation is amply clear. The absence of any reference to a foreign country, their original home before their migration into India, points to their coming across identical environments in their new home as not to feel differently. The motive of the bifurcation, however, is provided to an extent by their differences in religion. The folk movement, which had inspired their onward movement, had possibly a distant focus in Asia Minor as indicated before. As has been seen the folks which caused this movement also helped in the dissemination of the knowledge and use of iron throughout. The benefits of the novel technological advance which iron bestowed was scarcely to be lost upon the Aryan folks, especially as the new
movement did result in the settlement in Iran of a people, namely the Sialk VI, who were undoubtedly well acquainted with the use of iron. As a matter of fact, iron had already come into vogue in this region still earlier in Sialk V, A levels. Against this background, it may be stated that the use of iron was increased and accentuated by the newcomers in Sialk VI.

Regardless of the direction of the movement of the Aryans into India, there was more than a fair chance for the incoming Aryans to have acquired their acquaintance with the use, and possibly of manufacture too, of iron on the way from the very folks who pushed them from behind.

It was also seen that the use of iron was known commonly almost throughout Iran about 1200 B.C., as inferred from the evidence in Kaman, Luristan, Tepe Giyan and Sialk, as considered already earlier in this chapter.

492. E. Herzfeld, Z.D.M.G. 80, 267 ff.
496. G. Huesing, Mitteilungen der Akademischen Gesellschaft in Wien, XLVI.
497. Anabasis, VI, 24.
499. R. Heine-Geldern, op. cit., p. 106.
501. Rigveda, 10, 75.
502. A. Stein, op. cit., p. 197. He goes on to say, 'It is from the same designation of Ārya, as likewise claimed by this population, that the name Iran for the whole country is derived'.

CHAPTER 6

503. The word ayas has been repeatedly used in the Rigveda and has been variously interpreted. Some of the principal references to ayas are quoted below to indicate the contexts in which the word has been employed and the significance it tends to convey:

(i) Rv. 4, 2, 17:

Sukarmānāh surucho deva-yām-
tofyo na deva janimā dhamaṁta
Śruchatām agni vavridhataṁ
indramurvaṁ gavyaṁ parisadaṁtoṣagman

Geldner, Der Rigveda, I, p. 488, refers to the ayas in this passage as ore which was smelted by fanning or blowing in fire.

(ii) Rv. 5, 62, 7:

Hiranyānirnīgaya ayaṁ sthuna
vi bhrājate divyamāvaśajina
Bhadre Kṣetre nimitāś tilvīte
vā sanema madhyaḥ adhigayatasya

This passage refers to the rule of Varuna and Mitra from a high seat or seat resting on a thousand pillars. The reference to ayas in this passage is to the ornamentation of the pillars of ayas with gold.
(iii) Another reference to ayasthūna also occurs in Rv. 5, 62, 8 as quoted below:

\[ \text{Hiranyarūpamāsa ṣ vyustāvayaḥ sthūnaṁ} \]
\[ \text{udita suryaśaya} \]
\[ \text{Arohatho varuna mitra gartamata-} \]
\[ \text{schaksathe aditiṁ ditiṁ cha} \]

Here the appellation hiranyarūpam applied to ayasthūna gives the story away as it indicates the pillars made of ayas, as shining resplendantly like gold in the rays of the rising sun.

(iv) Rv. 5, 75, 15:

\[ \text{Alakta vā ruruśrṣnatho yasyā ayomukham} \]
\[ \text{Idem parjanyaretas isvai devyai brihannamaḥ} \]

This occurs in a section dealing with the blessings of weapons, and refers to arrows tipped with ayas (ayonakham) which Geldner, op. cit., II, p. 178, translates as iron.

(v) Rv. 6, 3, 5 describes ayaso dhārā in the following passage

\[ \text{Sa īdastevā prati dhādasīyaṁ} \]
\[ \text{chhiśita tejo ayaso na dhārāṁ} \]
\[ \text{Chitradhrājatiratiryo aktoverma} \]
\[ \text{drusadvā raghupatmaµahā} \]

Geldner, op. cit., II, p. 95, translates ayaso dhārā as a blade made of iron, which is sharp as a flame.

(vi) Rv. 6, 47, 10 gives another instance of ayaso dhārā:

\[ \text{Indra mrīla mahyāṁ jīvatumiccha chodaya} \]
\[ \text{dhiyamayaso na dhārāṁ} \]
Yat kim chāha tvāyuridaṁ vadāmi tajjusasva
  kridhi mā devavataṁ

It is a supplication to Indra beseeching him
to sharpen the intellect like the blades of objects
made of ayas, which Geldner, op. cit., II, p. 145,
translates as iron.

(vii) Rv. 5, 30, 15 brings out the word ayasmaya

Chatuh sahasraṁ gavyasya paśvah
  pratyagrābhāma ruśamavesvagne.
Dharmāschattaptah pravrije ya

Here the word ayasmaya apparently refers to a
vessel made of iron, which has been explained by
Sayanacharya as a kalasa (pitcher) for containing the
Pravargā milk.

(viii) Rv. 10, 99, 6 contains the word ayogra:

Sa iddāsam tuvīravam patirdan
  salaksōm trisireṇāṁ damanyat
  Asya trito nu ojasā vridhānah
  vipā varāhamayo-agrayā han.

Here is a reference to the sharpness of speech,
which is said to be as sharp as an object with a tip of
ayas.

(ix) Rv. 10, 87, 2: contains the word ayodamstra

Ayodamstre arṣīsā vātudhānānupe aprīda
  jātavedah asiddhāh
  ā jihvāyā muradevan rabhasva
  Kravyādo vriktavyāpā dhātvasāsan

It is a petition to fire to destroy the Rākaśasas
with the flames which have the teeth as strong and sharp
as those of iron.

(x) Rv. 10, 99, 8 contains the word *ayopasti*:

\[
\text{So abhriyo na yavasa} \\
\text{udanyanksayya gatum} \\
\text{vidanno asme} \\
\text{Upa yatsidadindum sariraih} \\
\text{ayonuyopastirhamte dasyun}
\]

Here *ayopasti* is translated as one gifted with claws as strong and sharp as those of *ayas*, translated as iron by Geldner.

(xi) Rv. 9, 1, 2 contains the word *ayohata*:

\[
\text{Raksoha visvacharsanirbhin} \\
\text{yonayohatam drunam sadhastmasadat}
\]

Here the reference is to a wooden cradle or seat (of Indra) trimmed with *ayas*.

(xii) Rv. 9, 80, 2 also contains the word *ayohatan* as an adjective of *Yoni* (vessel) in the same sense as above.

(xiii) Rv. 6, 71, 4 contains the word *ayohanu*:

\[
\text{Udu aya devah savita damunah} \\
\text{hiranyapami pratidosamaathat} \\
\text{Ayohanuryajato maamraijiva} \\
\text{a dasfuse suvati bhuri vamam}
\]

Here is a reference to Savitar with chins as strong as those made of *ayas*.

(xiv) Rv. 8, 101, 3 contains the word *ayasirsa*:

\[
\text{Pra yo van Mitravarunairo} \\
\text{duita adravat ayah sirsa maderaghuh}
\]

Here *ayas* as an adjective of *Sirsa* (head) may refer to gold, instead of iron, and therefore would
suggest the use of *ayas* in a general sense of metal, though Geldner, *op. cit.*, II, p. 430, has translated the word as iron. Nevertheless, the word can be, on this showing, stated to have covered both iron and gold.

(xv) Rv. 4, 37, 4 contains the compound word *ayah sipra*:

\[
\begin{align*}
\text{Pīvo asvā'suchadrathā hi} \\
\text{bhūtāyah sipra vājinaḥ suniskāḥ} \\
\text{Indrasya sūno śavamo napata-anu} \\
\text{vaschetyagriyam madaya}
\end{align*}
\]

This passage is addressed to the Ribhus, who are stated to have, among others, chin or nose as explained by Sayanacharya as though of *ayas*.


505. P. Neogy in *Iron in Ancient India* considered *ayas* to be iron, but the interpretation did not, as would normally be expected, find any ready acceptance, even though it was itself based on the assumption of Sayanacharya, commentator of the Rigveda, that it meant iron. V.G. Childe, *The Aryans*, 1926, p. 294.


507. The Rigveda contains several references
was indeed a strong weapon as claimed by M.N. Banerjee:

Rv. 10, 79, 6:

Kim deveśu tyaja ena4oha karthāgne prichhāmīnu tvaṁavidvān/Akrīlan kṛīlan harirattīves-adanvi parvasāsāchakṣara guṇāvāśik-

Here the use of the aei is for cutting the bull into bits or joints.

508. The use of svadhiti is mentioned repetitively in the Rigveda; and a few are quoted below:

(i) Rv. 9, 96, 6 contains the word svadhitir-

Brahmā devānām padāvi kāvinām risirvīprāṇām
vahiga mrigānām śvено grīdhraṁ
svadhitirvṛtānām somaḥ pavitraṃ vṛtvi vṛtvi Rebhan
Sayanacharya explained that Svadhiti was the name of the axe which was used extensively for the clearance of forests.

(ii) Rv. 3, 8, 11 mentions the words Tejamānāh

Svadhitiḥ

Vanaśpate śatavāleśa vi roha sahasrevalāśa
vi vayaṁ ruheśa/Yaṁ tvāmayaṁ svadhitiḥ
tejamānāh pra-nināya māhate saubhagaya
Here the destruction of large trees with the sharp and hard storkes of the svadhiti is referred to.

(iii) Rv. 1, 162, 20 has the following passage:-

Mā tvā tapatpriya ātmāpiyaṁtaṁ ma
svadhitistanva ā tisthipatte //
Mā te gridhnuraviśastātiḥāva chhidra
śatānyasaṁi mithukāh
Here the use of both *svadhiti* and *asi* in the horse sacrifice is indicated. They are also stated to be efficient enough to perform their jobs at a blow, without making the animal suffer the agony for long.

509. *Rv. 8, 4, 16* mentions the *Kaura:*

*Saṁ na śāśāhi bhurījorīva kuraṁ rāśva rāyo viāochana/ Tve tannah suvedamuśriyam vasu yam tvam hinosi martyam*

It makes an appeal to Indra to make the intellect of men sharp as a razor held in the hands of the barber.

It cannot be gainsaid that nothing can be sharper than the steel blade of a razor, and in modern conception it is unthinkable to devise any other standard of comparison for sharpness than can be achieved in steel.

510. The word *Karṇāra* is mentioned several times in the *Rigveda*. *Rv. 10, 72, 2* contains the following line:

*Brahmanaspatireta saṁ karṇāra ivādhamat devānāṁ pūrvy e yuge-sataḥ sadajāyata*

It means that the creator fanned the flames as the *Karṇāra* (blacksmiths?) do, at the earliest period of the gods, for the purpose of creation.

This passage points to the importance of the *Karṇāra* who are compared with *Brahmā*, the creator. This is strengthened by the reference to the *Karṇāra* as *Marīsinah*, meaning ingenious workers of metal or iron, in the *Atharvaveda*, 3, 5, 6. The full passage reads as follows:
Ye dhivāno rathakārah karmārah ye Manisīnāh
Upāstinparṇa mahyam tvam sarvān krīnabhītojanānān.

See also S.B.E., Vol. XLII, Hymns of the Atharvaveda.

Russel and Hiralal, in the Tribes and Castes of the Central Provinces of India, vol. III, p. 323, write,

"In Bengal and Chhota Nagpur the term Kamar is merely occupational, implying a worker in iron and similarly Kammala in the Telugu country is a designation given to the five artisan castes." Christoph von Fuerer-Haimendorf refers to "a few families of Kamars, aboriginal blacksmiths" amongst the Hill Reddis of Andhra Pradesh, but considers them to be purely an aboriginal people, having nothing to do with the Telugu blacksmiths (See The Reddis of the Bison Hills, pp. 243-244).

Likewise there is a tribe in Chhattisgarh, Madhya Pradesh, bearing the name Kamars, but they are neither ironsmiths, nor does their tradition point to any ancient association with iron workings. S.C. Dube, writes in The Kamar, 1951, p. 5, "There is nothing to prove any affinity between the Kamars of Chhattisgarh and the tribes or castes of the same name in the other parts of the country. The Kamar tradition does not give us any clue regarding their original home and the earlier migrations of the tribe. The mythology of the Kamars does not indicate any ancient association of the tribe with iron or smithery". This is a very interesting example indeed of changes that do
come about in the life of a tribe to the exclusion of any memory of the original home or profession, for the word Kamar, in its different regional ramifications, has come to be associated with the profession of blacksmith throughout India, and the earliest known tradition of smithery associated with the term goes back to the Rigvedic times.

511. The reference to smelting and smelter in the Rigveda are ample, and a few relevant ones are quoted below:

(i) Rv. 2, 24, 7.

\[ \text{Bitavan 'pratichaksyānritā punaraṅkā tasthuḥ} \]

\[ \text{kavayāḥ mahaspathaḥ} / \]

\[ \text{Te bāhubhyāḥ dhāmitaṁagnimāṁnī naki ṣo} \]

\[ \text{asyarano jahurhi tam} \]

This refers to the throwing of stones (āśmaṇī) into fire (agni) and fanning (dhamitaṁ) the flames, using both the hands (bāhubhyāṁ).

Sayanacharya explains the operation in the following words: \[ \text{Te bāhubhyāḥ dhāmitaṁagnimāṁnī jahuh hi dagdhūṁ i.e. they threw the stones (ores) in the fire (flames) fanned with both the hands.} \]

(ii) Rv. 4, 2, 17: has been quoted before under reference no. 503.

Here the purification of the human life is compared to the purification by smelting of ayas practised by the Karmāras by means of bellows, which were no doubt wielded and marked by both the hands as stated above.

Sayanacharya explains the passage in details.
of smelting by fanning the flames.

(iii) Rv. 10, 81, 3 gives further details of the process of smelting:

\[
\text{Viśvataśchakuruta viśvatomukho viśvatobāhuruta viśvapatāḥ}
\]

\[
\text{Śaḥubhyāṁ dhamaḥ saṁ patatraiṁ dyāvabhūṁ āh}
\]

This refers to Viśvakarma or the creator of the universe, who has eyes, face, arms and feet and who created the heaven and earth with his hands and feet even as the Karmāra who uses his hands and feet in the act of blowing while smelting (i.e. by the use of the words bāḥubhyāṁ and patatraiṁ).


Rv. IX, 112, 2:

\[
\text{Jaratibhirosadhībhiṁ pārnetbhiṁ sakunām kārmāro}
\]

\[
\text{dyāvabhīṁ aṁabhīṁ hiranyavatamichchhatindrayendo}
\]

\[
\text{parīṁ sravāṁ}
\]

Wilson (Ṛgveda Translations, vol. V, p. 338) translates it as follows. "With dried plants (are arrows made), with the feathers of birds, with glistening stones, the smith seeks a man who has gold; flow Indra for Indra.

The throwing of ores into the fire and fanning up the flames to raise the temperature points to the metallurgy of iron, which was not smelted at once, or at low temperatures but was reduced in the beginning to a spongy mass, unlike the ores of copper, which became liquid on heating and had to be collected in a vessel."
513. Āśmabhīḥ āyubhīḥ

514. Parṇebhīḥ Sakunānāṁ

515. The Rigveda mentions many other equipments besides āṣa, svadhiti and keura, which are at once sharp, hard and awe inspiring and could have been made, in all possible cases, of iron. The weapons and tools referred to in the Rigveda include varman (protective coat) āyudha (weapon in general), īṣa (arrow), bāṇa (arrow), parāsu (axe), dhanus (bow), ālva (arrow shaft), āringa, kulamalā, nīṣāga, bhṛsti, charu, vāsi, kṛti, yuri, jurni, vrika, pavi, khadga, titona, dharma etc. Of these some are made of iron, from their hardness or sharpness, and these will be dealt with specially, in view of the problem in hand. These comprise, besides, keura, āṣa and svadhiti, parāsu, vāsi and pavi.

āṣa, svadhiti and keura have been dealt with earlier (see notes, nos. 507, 508 and 509, respectively).

Parāsu occurs, for instance, in Rv. 6, 3, 4:

Tisam chidena mahī varṇo asya bhasādāsvo na
yamasya āṣa

Vijehanānāḥ parāṣūna jihvāṃ dravirna dravayati
dāru dhaksat
It refers to the devastating force of fire (agni) which devours (smelts) all wood like the parasaú (axe), which imposes its own force when employed for the cutting of wood.

Parasaú has always been used in the sense of an axe, with both weight and sharpness to perform its job efficiently.

Vādi: The general sense of the word is an axe, as the following passages would show:

(i) Rv. 10, 8, 293 has the following passage:

Yadā ghrītebhīrāhuto vāsiṣṭhīagnibharata uchchāvacha
asura iva nirnijam

It simply means that when clarified butter (ghrita) is offered to fire (agni) its sharp (axes of) flames move up and down like that (axe) of the asura (demon).

The sharpness of the vāsi (axe) is compared herewith that of fire.

(ii) Rv. 8, 29, 3 reads as follows:

Vādimeko vibhartī hasta āyasaṁantardevaṁ nidhruviṁ

It refers to the holding in the hand resorted to by the devas (gods) of the axe made of āyas (iron?)

Pavi also occurs at several places.

(i) Rv. 1, 166, 10 reads as follows:

Bhūrini bhadrā naryesu bāhūsu vakṣāhusu rukmā
rabhaeṣūṃ abhajah

Aṣṭavātāh navīna ksūrā adhi vavo na naksān
In this passage addressed to the Maruts, they are described as armed and equipped with different objects which make for their welfare, and treasures which hold out for the supplicants as Sayanacharya explains.

The word *pavi* occurs in this context and is one of the equipments or weapons (*ayudham*) of the Maruts. It is at once hard like the *vajra* and sharp like *ksura*.

(ii) *Rv.* I, 174, 4 contains the word *pavīrava*:

Sesāṣṇu tu Indra saṃmīnyonau prāṣastavā pavīravasya maṃhā  
Srijadarśāhā tva vajyudha gātisthadhāhi dhriṣṭā  
mṛiṣṭa vājnā
d

Here the reference is to the weapon (*pavīrava*) equated with *vajra* (thunder) wielded by Indra, which by its greatness puts the enemy to flight.

(iii) *Rv.* X, 60, 3 contains again the word *pavīrava*:

Yo jñāmānabhisānu eva itastasthau pavīravān utapavīravān  
vudhā
d

This is in praise of the king *Asamati*, who conquers or overcomes men (people) with or without the *pavi*, which has been taken by Geldner as a weapon of iron and by Sayanacharya as a *Khaḍga* or axe.

Thus it is clear that *pavi* was a powerful weapon as much in the hands of men as of the gods, and by its hardness and sharpness, it would equate to one of iron rather than of copper.

*Pavi* has also been used like the *svadhitā* or *parasū* for the cutting down of woods as exemplified in the following Rigvedic passage (*Rv.* VI, 5, 5):
It refers to the extensive cutting down of the forests by means of the pavā, which has the hardness of the vejra (thunder-bolt) as Sayanacharya explains. Pavā is also used as the metallic tyre of wheels of chariots, which has the strength to split rocks as stated in the passage quoted below (Rv. V, 52, 9):

*Uta soma te paruṇayāmurū vasata aruvihāvah,
Uta pavā rathānūmadriṁ bhindatvajāsā.*

H. Zimmer, in *Altindisches Leben*, 1879, p. 243, says that the tyres of the wheels were made of metal, and the chariots of the gods had naturally golden tyres. Marut split the rocks apart with pavis or tyres of the wheels.

The use of gold to split the rocks is out of the question. So is the case with silver or copper. Unless the metal was bronze, which has a greater measure of hardness than the other metals but to which or to tin, which is its essential component, there is no reference in the Rigveda, the only metal that could achieve the task was iron.

Pavā is employed in the sense of wheels as well, as stated in the following passage (Rv. I, 34, 2):

Trayaḥ pavayo madhuvāhane rathe somasya venāmant viśva ādviduh.

It simply means the occurrence of three wheels in the chariot of the Āśvins, whose anxious desire for Soma is known to all.

The following reference to pavayoh (plural) in Rv. V, 31, 5 may imply the thunder-bolts or equally efficient
weapons which were hurled against the Dasyus, the ene­
mies of the Aryans.

\[ \text{Anasvāso ye pavya/rathā Indraśitā abhyavartanta dasyūn} \]

It means that the pavīs which Indra sent without
the horse and chariot turned against the dasyus.

Pavīs appear, therefore, to have been employed
from the very beginning of the encounter of the Aryans
with the dasyus.

In this connection it may be noted that the word
pavī is derived from a basic Indo-European root which has
the sense of striking, sawing or purifying. (see J. Pokorny,
Vergleichendes Woerterbuch der Indo-germanischen Sprachen,

In Lithuanian it has the form of pān : (pau): pu and
means 'to strike'. In the same language, appianti, which
is derived from the same root, means 'to cut'; Puiklas
means a saw.

In Latin the form pavio means to strike, and clean
or cleanse.

In old Persian the root 'pav' means to 'purify'
and the form pavī, obviously derived from it, means the
rim of a wheel and pavīram- means a weapon with a metallic
head or top. (Uhlenbeck, Altiranische Woerterbuch, p.160)

The Sanskritic root is pav and means to purify or

516. See the remarks under note no. 511.
518. Macdonell and Keith, Vedic Index, I, pp.31-32;
P. Ray, History of Chemistry in Ancient and Medieval India,
1956, pp. 36-37.

Vṛiṣaṇayī Samhita, of the Yajurveda, 12, 13 has
the following passage:

'Hiranyam evah svamam, loham, gisaam trupa'.

Mahabharata

Mahabharata explains hiranyam as suvarna (gold) or rajatam (silver); avas as lohem (copper) svamam (iron) tamraloham (copper), kalayam (bell metal), suvarna (gold) or rajatam (silver). He further says lohem (copper) as kalayam (black iron) sarvatai' (in all utensils).

Gisaam (lead) is well known, and so is trupa (tin). Thus according to Mahabharata 'aves' stood in the days of the Yajuv-veda, in the post-Rigvada phase, as a general term for metals, which did include iron. To distinguish the latter further he uses the term Kalyas, which was used, along with copper, for making all utensils.


521. E.H. Warmington, The Commerce between the Roman Empire and India, pt. II, chapter III, pp. 257-8;

D.H. Gordon, Prehistoric Background etc. p. 55

522. V.A. Smith, The Early History of India, 1924, p. 102; Q. Curtius, Germany, IX, 24


527. H.C. Raychaudhuri, R.A.I., pp. 8, 10, 277.

529. Ibid., op. cit. p. 85

530. Ibid., p. 86

531. R.K. Mookerjee, Chandragupta Maurya and his Times, p. 106. The metal singled out for importance is *lauha*, which stands for iron. The various types of objects under mine or *Khani* are indicated in the following passage *(Kautilya's Arthasastra, II, 6)*

Suyarne - rajata - vaire
Muni - Mukta - pravala - sankha, lavana.

bhumipraastara rasa - dhatava* khani*.

CHAPTER 7


536. Ibid., p. 23.


544. Ibid., pp. 28-29.


547. Sankalia, Subbarao and Deo, op. cit., addendum between pages xii and xiii.


549. Sankalia, Subbarao and Deo, op. cit., pp. 22, 211.


551. The details have been furnished by the present author in the report on the Nagda excavations awaiting publication.


553. Sankalia, Subbarao and Deo, op. cit., pp. 245-246.


555. Ibid., p. 19.


561. D.R. Sahni, Archaeological Remains and Excavations at Sambhur, p. 49, pl. XIV.

562. K.N. Puri, Excavations at Raith, pp. 35-36, pls. XIX, XX.
564. Ibid., pp. 31-32.

**CHAPTER 8**

565. Of *Kantilyde Arthasastra*, translated by R. Shama-sasstry, 4th edition, 1951, p. 54, under the chapter entitled "Buildings within the Fort". To quote it:

"To the west artisans manufacturing worsted threads, cotton threads, bamboo mats, skins, armour, weapons and gloves, are well as the people of the Sudra caste shall have their dwellings."

Though the remains of the smelting operations are located nearer the western side than the eastern, they are not yet within the southern sector; and large numbers of finished and unfinished objects of iron have indeed been found in the workshops for the manufacture of stone beads, bone arrow-heads and, presumably, also of iron objects, located towards the south-eastern side.

566. This conforms to one of the methods of smelting described by Forbes in the chapter on "Extracting, Smelting and Alloying", in the *History of Technology*, vol. I, p. 593, fig. 388.

567. *L.A.,* 1957-58, p. 3, pl. XLI B.

**CHAPTER 9**

568. Manimekalai is a post-Sangam work of the 7th-8th centuries A.D.

569. Perungadai of Kongu-velir is based on the Sanskrit *Brihatkathā* of Gupadhya, and was composed in the early centuries of the Christian era.

570. K.R. Srinivasan, in the chapter on Art and Architecture of South India in *A Comprehensive History of*
The subject has been dealt with in detail by Verrier Elwin in The Agarics, pp. 177 ff.

Ibid., pp. 216-221.


P. Neogy, op. cit., p. 59.

M.S. Krishnan, op. cit., pp. 102 ff.

According to a report presented to the Director General of Archaeology in India.


S.S. Ghosh, Further records of Rice, Indian Forester, (Oryza spp.) from ancient India, vol. 37, no. 5, p. 296.


S.S. Ghosh, op. cit.

Ibid.

H. K. Bose, A. I., no. 15, p. 42.