Chapter 3

THE CHRONOLOGY AND THE SOURCES OF DIFFERENT CULTURAL LANDMARKS ASSOCIATED WITH IRON IN THEIR BEARING ON THE EVOLUTION OF IRON IN INDIA

A. General

A connected study of the advent of the Iron Age in India and its progress in space and time cannot lose sight of the possible and plausible interconnections among the widely distributed evidence described in the previous chapter. The task on hand is to interrelate the diverse testimony and examine their proposed chronological assessments in order to work out a workable sequence in the evolution of iron in India. Simultaneously it will also be endeavoured to trace the source of inspiration of the tremendous technological outburst that iron should have ushered in and also to lay bare, if possible, the identity and source of the concerned folk responsible for the introduction of iron and its propagation and development in India.

B. The Painted Grey Ware

One of the most significant and epoch-making discoveries in recent years was that of the Painted Grey Ware ceramic. It had, of course, been found earlier at Ahichhatra in the excavations of 1940-44. Since the publication of the report on the excavations at Hastinapura, in which was appended a list of Painted Grey Ware sites known till then, the extent of the distribution of this ware has gone
on growing larger with every year's exploration. The present distributional area covers a wide area, reaching as far as Ujjain in Madhya Pradesh (fig. 18).

Since both Kausambi and Ujjain are also associated with the Painted Grey Ware, the chronology of the early settlements on the sites are interlinked, and will, therefore, be treated together being mutually interdependent and complementary.

(i) Hastinapur

In assessing the chronology of the different occupational-cum-cultural periods at early Indian settlements, the N.B.P. Ware serves almost as a sheet anchor, with reference to which the bulk of the chronological assessments of recent years have been arrived at. The N.B.P. Ware deposits at Kausambi were topped by coins of the Mitra dynasty, assignable to the second century B.C. The N.B.P. Ware had, therefore, come to an end at the site in the beginning of the second century B.C. The average deposit of the N.B.P. Ware-bearing layers at Kausambi, being about 8 ft. with eight occupational phases, could be reasonably assigned to the beginning of the sixth century B.C. The evidence at Taxila also points to a similar conclusion, where the N.B.P. sherds have been seen to occur up to a depth of 7 ft. below the levels of the coins of Alexander in mint condition. This evidence was employed by Lal to fix the chronology of Period III (or N.B.P. associated levels), which was represented by a maximum deposit of about 9 ft. (c. 274 B.C.)
thickness at Hastinapura, with six occupational periods, to a span of three hundred years between the beginning of the sixth and the beginning of the second centuries B.C., i.e. *circa* 600-200 B.C. It may be remembered in the context that the N.B.P./ was at home in the Ganga plain, and Hastinapura was well within the focus. The preceding period, characterized by the Painted Grey Ware was represented by a deposit of 6-7 ft/thickness and was separated from the succeeding N.B.P. Ware period by a time-lag, during which there was apparently no occupation at the site, the pre-existing township having been washed away by a heavy flood from the neighbouring Ganga. Since the succeeding N.B.P. Ware cultural assemblage marked a radical change consisting of burnt brick houses, in the place of those of sun-dried bricks, coinage, and larger use of iron, Lal postulates a time-lag of two hundred years. This takes the terminal date of the Painted Grey Ware period (II) to *circa* 800 B.C. The occupational deposit of this period was 7 ft/thick and for this a duration of three hundred years, shifting the initial date of the occupation to *circa* 1100 B.C., is considered by Lal as a conservative estimate. At this stage the terminal date for the earliest Period (I) of occupation at Hastinapura, characterized by a non-descript rolled 'Ochre Coloured Ware' contained in a brownish clay 1 - 1½ ft/thickness, overlying the virgin soil, fixed by the excavator at *circa* 1200 B.C., or a little earlier, may be recalled. Its initial date
Further, in consideration of the distributional limits of the Painted Grey Ware and its stratigraphical position, Lal made certain important inferential observations. These may be summarized as follows:

(i) The Painted Grey Ware is post-Harappan in stratigraphy and, therefore, in chronology. This is proved by the excavation at Rupar and by the exploration in Bikaner.

(ii) The chronological range of the Painted Grey Ware is, therefore, broadly and generally between circa 1500 B.C., the presently accepted terminal date of the Harappa culture, and circa 600 B.C., the proposed initial dated of the N.E.F. Ware.

(iii) Since the Painted Grey Ware occurs in a post-Harappan context in Bikaner, the very region comprising the valley of the Sarasvati or the modern Ghaggar, which is known as the early habitat of the Aryans in India, and since they are also found in a number of sites in the Ganga plain, which are associated with the Aryan tribes, it may be postulated that the Painted Grey Ware was possibly associated with the Aryan speaking people. In this context it may be shown that the Puranic tradition of Hastinapura being abandoned in favour of Kausambi after the former city had been washed away by a flood during the reign of Nigas, is indicated to have had some basis in historical fact, considering the paucity of the Painted Grey Ware sherds at Kausambi and the comparative simplicity of the painted
design, confining itself to a rim band, as was characteris-
tic of the later phases of this ware at Hastinapura itself
when it was already on the decline.

While the question of the proposed equation of
Painted Grey Ware users \textit{with} Aryan speakers will be examined
in detail later, in proper context, the chronology of
Ujjain and Kausambi may now be considered against the
chronological background elaborated and postulated above.

\textbf{(ii) Ujjain}
\begin{itemize}
  \item \textbf{(a) Archaeological Evidence.} The excavations
  at Ujjain have shown broadly four Periods of occupation.
  They are respectively called Periods I - IV, in
  chronological sequence. Period I has been dated by the
  author to circa 750-500 B.C. and Period II to circa
  500-200 B.C. The remaining two Periods of occupation
  are not relevant to the problem in hand.

  Period I is characterized, among others, by
  the black-and-red ware pottery, a distinctive granulated
  ware, designated as the Vesiculated Ware, a sturdy
  double-slipped ware, a mat-impressed red ware, and an
  unslipped red ware represented by the typical internally
  beaded bowl. The black-and-red ware has a wide range of
  distribution, both in space and time, and would not by
  itself be a safe criterion for chronological conclusions.

  The double-slipped ware may perhaps alternatively be
  called as a black-washed, slipped or painted red ware. It is
  fine in texture and has a smooth and thin fabric with
  just a superficial feel of raised lines of striations on
  the exterior surface. Dishes with sagger base and
inwardly tapering tall sides and bowl with internally inclined cordoned rims are the two typical shapes available in this ware. The dish on the same ware has been found previously at Ahichchatra in association with the Painted Grey Ware, and also at Kausambi with the unpainted plain grey ware. On this analogy, a chronological equation with the corresponding levels of Kausambi may be postulated.

The mat-impressed ware occurs at Hastinapura in the upper levels of Period II (c. 1100–800 B.C.).

Similitude in cultural wherewithal, one of the most important components of which is pottery, can perhaps be employed to infer a tentative chronological equation, allowing a time-lag for dispersal from the obviously earlier centres of settlement. The mud houses of Period I at Ujjain present yet another parallelism with Period II of Hastinapura, which, however, cannot be pressed too much, but can, nevertheless, be maintained. On this basis, the earliest Period (I) of habitation at Ujjain is dated, tentatively, to circa 750 B.C. It seems to be corroborated by about 7 ft thick strata representing the deposits of this period in as many as 10 layers.

The next succeeding Period (II) of life at Ujjain is characterized, among others, by the well known N.B.P. ware in a wide variety of shapes and forms including local imitations. The inclusive dating of circa 600–200 B.C. attributed to this pottery and the associated cultural milieu by Lal has been discussed above. Taking the Ganga valley as the mature home of
the related cultural complex, and allowing approximately a hundred and fifty years at the outside for its dispersal to peripheral regions, including Ujjain, the dating suggested for Period II at Ujjain, distinguished by the N.B.P. ware was easily set down to circa 500-200 B.C.

The excavations have also revealed that the ancient township of Ujjain was protected from almost the beginning of its life by a massive mud-fortification (covering an area measuring 1 x \(\frac{1}{2} \) miles) on the basis of extant remains, the fortifications were two hundred and fifty ft broad at the base and about forty five ft high. It was further reinforced by a one hundred and fifty two ft wide moat on the south and east and by the river Sipra on the west and distantly on the north. The flank or toe of the fortifications, which sloped away both exteriorly and interiorly on either side of the axial apex, were further reinforced on the water-front, that is on the west, but the placement of well-cut wooden sleepers or beams in a connected manner for a stretch of nearly three hundred and fifty ft alongside the river, corresponding in length to an inward bend in the stream (pl. \(\overline{7} \)).

This feature was observed along the northern half of the western face of the ramparts. The sleepers were placed angularly to the flow of the river so as to serve as buffer to break the force of the striking waters. These served, therefore, as the first line of defence against the frequent floods of the
adjoining stream which is alternatively also called
the ἅλυμα, or the speedy one. The sleepers are laid,
as seen in the trench sunk, carefully in several
courses to form a series of deep, rectangular chambers,
intended apparently to contain the dumped clay in
position and prevent it from being scoured away. It
may be added in fairness that in order to save the
defences from the frequent onslaught of rising waters,
the width of the fortification was first extended on the
west or river side to the hundred and fifty ft before
lining it with the wooden reinforcements. At other
places brick revetments or platforms were erected to
save the fortifications from destruction. The wooden
reinforcements belong to a phase of Period I.

The fortification was built of hard yellow
clay and black cotton clay respectively heaped up in
the manner of building up a bund. The black clay was
clearly dug up from the surrounding regions, from the
five to seven ft thick mantle of virgin black cotton
soil overlying hard yellow clay.

Both these clays are very compact and
extremely hard, and even modern pickmen armed with
iron pickaxes find it extremely difficult to cut
through them. The fort builders used these very clays,
and must, apparently, have employed a hard metal for the
purpose. No remains of copper or bronze objects,
either in size or strength, have been found that could
have answered the requirement. In view of modern
experience, the metal employed for the work must presumably have been of iron. Incidentally a fairly well preserved blade of an iron spade, and some indeterminate objects of iron, suggesting from their length, crowbars, under advanced disintegration, have been found in the body of the rampart. The occurrence of well-defined iron objects in the deposits of Period I has already been mentioned. These tend to prove that the construction of the defences presupposed a fairly extensive use of iron.

The wooden sleepers or beams referred to above employed in the reinforcement of the defences, were found to be extremely hard and, even now in good state of preservation. They vary in length from approximately thirteen to eighteen ft. and are neatly cut and have straight and smooth sides with a nine ins. square cross-section. Apart from the felling of the trees, even the skilful cutting of hard wood suggests the use of some hard metal such as iron, besides a fairly long probation in the art of wood cutting, giving iron a still earlier date of origin in this part of the country. The smooth surfaces of the logs further suggest the employment of a saw. The beams or logs account for two varieties of wood, namely, Teak (Tectona grandis) and Safed Khair (Acacia ferruginea), both of which are examples of hard and strong timber. On this matter one can do no better than quote from the report of the late S.S. Ghosh of the Forest Research Institute, Dehra Dun, who had finished preparing
the report of these wooden remains from Ujjain shortly before his sudden death in August 1961.

"Besides the identity and technological aspects of these timbers, the most remarkable point that has emerged from this study is the possible manner of fabrication of such large-sized beams during a period when much technological advancement had not taken place. At present such large-sized beams are cut in a saw mill with the help of high class, efficient steel saws of various types. In the absence of such mechanical devices in ancient times, the fabrication must have been done by some sharp axe-like hand implement. This becomes quite clear when both the end and longitudinal surfaces of the beams are examined. Firstly, the trees must have been felled with this hacking tool and then cut into required lengths. In the case of teak (Tectona grandis), the entire logs have been trimmed into 9" x 9" square beams. In the case of Son-Khair or Safed Khair (Acacia ferruginea), the log has been first divided into two portions longitudinally from the middle and then again hacked into 9" x 9" square beams. The way this timber has been hewn shows clearly that the hacking tool must have been made of some metal, probably iron. The possibility that such a hard, heavy, dense and strong timber like Acacia ferruginea could have been cut and shaped without the use of a heavy axe-like implement made of iron is indeed very remote for
other metals or alloys like copper or bronze could hardly have served the purpose satisfactorily. A perusal of the high-strength properties of the Ujjain timber (Son or Khair or Safed Khair vis a vis *Acacia ferruginea* and other allied species of *Acacia*) furnish further support to this view. A check of the cuts noticed on the beams indicates that the length of the cutting edge of such an axe must have been about 9.5 cm. (3.08 ins.) or so. The tool must have been also very sharp as indicated by the rather longitudinally cut surfaces of the beams."

Thus this evidence points to the use of iron during the earliest phases of the fortification around Ujjain, i.e., in Period I, *circa* 750-500 B.C. This inference is strengthened by the discovery of the remains of an apsidal structure, built of columnar dressed stones, (pl. VIII) belonging to the earliest levels of Period II (c. 500-200 B.C.). The use of dressed stones at so early an age is a striking phenomenon. The dressing can easily be set down to the use of iron implements, themselves the result of a reasonably long experience, obviously rooted in Period I.

It would not be out of place to mention here in passing that the fortification served merely as a citadel where possibly the rulers and the soldiery, besides the tribesmen who were required to supply the sinews of war, were allowed to live. Considerable areas of habitation lying outside the fortifications point to this inference.
Stratigraphically the deposits of Period I overlie the mud ramparts. As the body of the rampart also contains some quantities of materials of Period I, a time-lag between the earliest settlement in the region by the people of Period I and the growth of the habitations into sufficient importance to justify the construction of a fortification must, therefore, be conceded. The traces of habitations outside the fortifications point to the earlier settlement in the area.

It would, therefore, be a fair assumption or concession to allow a period of twenty-five or fifty years as the time-lag between the first settlement at the site and the raising of the defences. The iron objects found in the lowest levels of Period I, outside the fortifications, might possibly belong to the earlier part of the period, circa 750 - 500 B.C., and even before the defences came into being.
(b) **Literary and Epigraphical Evidence on the History of Ujjain Bearing on its Chronology.**—It will not be out of place to consider the literary and epigraphical evidence in respect of the ancient history of Ujjain as the archaeological evidence tends to confirm the former in some respects. The first separate Rock Edict of Asoka mentions Ujjayini (Ujjeni). Ujjain in his days was the headquarters of a southern viceroyalty. The Periplus of the Erythraean Sea also mentions the name as Ozone, which is a Greek version of the contemporary form of the name of Ujjain. Anciently, however, it was possibly named Avanti and the same name occurs also in some later inscriptions. The Nasik inscription of the Andhra king, Vasishthiputra Pulumayi and the Junagadh Rock inscription of the Saka ruler, Rudradaman, mentions Avanti along with 'Akara' among the names of territories in their domains. The identification of 'Akara' has been the subject of a controversy. Vasishthiputra Pulumayi's inscription mentions simply 'Akara', while Rudradaman's Junagadh inscription mentions 'Puruapara Akaravanti'.

On the basis of the description of Mahismati as the capital of the Avantis in the Pali Mahagovinda Sutta, D.R. Bhandarkar was inclined to think that there were two Avantis, namely, the northern with Ujjain as its capital, and the southern with Mahismati.
identified with Maheshwar on the northern bank of the Narmada in district Nimar, Madhya Pradesh, as its capital. Malalasekhara is, however, of the view that after Mahismati lost its importance Ujjayini became the capital of Avanti. Roychoudhuri has, however, translated ‘Purvaparśāvākāraparcarnelavanti’ as Eastern and Western Malwa respectively.

This leaves out of account the appellation ‘Akarā’ added to Avanti. Aka in Sanskrit means a mine or quarry. It is well known from the Periplus that Ozene or Ujjain was a source of export of agate and carnelian stones among other articles. Agate and carnelian are available to this day in the veins of the trap bedrock in the bed of the Sipra. The recent excavations too have revealed large scale workings on agate, jasper and carnelian for the manufacture of beads in the period after circa 200 B.C., the raw material being amply available locally. The stone quarries of Ujjain in the days of the writer of the Periplus must have been well known enough to have merited the description of Ujjain as a source of agate and carnelian in it.

The excavations have also shown the existence of extensive manufacture of iron objects at Ujjain involving smelting and forging in the Period II, dated to circa 500-200 B.C. This task would have been rendered easier and all the more
Iron ore in the form of mammilated limonite is indeed available in the hollows of trap in the region. Calcite or aragonite, a form of lime-stone or calcium carbonate, appears also at Ujjain along with slags amidst the stratified objects as flux for smelting. Calcium or aragonite too is available locally, and a little over 20 lbs. of calcite has been found in a limited area of the excavation. Lumps of calcite or aragonite crystals occur sporadically in the occupational deposits as well as on the surface at the site. The presence of slag amid the iron workings alongside the lumps of calcite or aragonite shows their obvious interconnection. The use of calcite or aragonite as flux in the smelting of iron ore could only have emerged at an advanced stage of the industry. One of the main difficulties in the extraction of iron from iron ore is the "gangue" of iron ore. The gangue is siliceous and combines in the furnace with a part of the ferrous oxide of the ore and forms into slag. The slag, however, is not easily separable from the metal, and in the early stages of the metallurgy of iron repeated heating and hammering was necessary to eliminate the slag from the metal, involving considerable waste or loss of the metal imprisoned in the slag, besides also of time and fuel. The use of lime as a flux to make the slag more fusible and thus separable from
the metal was slowly achieved after much trial and error. Lime is added even in modern undertakings as a flux; nevertheless, it is considered that lime was used, if not in the very early days of iron metallurgy, fairly early in the evolution of iron technology. This would presuppose a considerable background for the iron industry at Ujjain, the beginning of which would recede to much earlier times than the commencement of Period II at Ujjain, even if the well-defined conventional objects of Period I are not attributed to a local industry. Even so the occurrence of conventional objects at the very commencement of Period I at Ujjain would presuppose the beginnings of the iron industry and technology in India, at a still earlier date, wherever it may have lain. This evidence has an indirect bearing on the chronology of the periods concerned as well of the technology of iron in India.

Thus Ujjain has been shown by archaeology to have indeed been rich anciently in minerals. It is not, therefore, to be wondered at if the ancients should have really named it 'Akavanti', in recognition of its being endowed with mines and quarries.

'Ākaravanti' has been identified also with the little township of Āgar, situated about 40 miles to the north-east of Ujjain. Incidentally, Āgar is
reported to have some ores of iron. The occurrence of mounds in its neighbourhood points, in all likelihood, to the ancient habitations in the area. Ágar may, therefore, be a phonetic transformation of Akara, and in this identification may be the proper clue to the nomenclature of Akaravanti.

To steer clear of the divergence of literary accounts as of interpretations it may be stated that the country of Avanti corresponded to the Ujjain region. While the early history of the region is clothed in obscurity, the Puranas aver that the two sons of Yadu, claiming descent from Manu Vaivasvat, divided up between themselves the land bounded by the Charmapvatī (Chambal), Vetrawatī (Betāwa), Suktimatī (Ken) and the Narmada. The southern division went to the Haihayas, and the northern region was taken by the Yadavas. The Puranas describe the first dynasty ruling at Mahīṣmatī as the Haihayas. Originally their capital may have been located at Mahīṣmatī (Maheshwar), and on its decline the capital may have shifted to Ujjain (Ujjainī). The Haihayas had established themselves in the region by overthrowing the aboriginal Karkoṭaka Nagas.

The Matsya Purāṇa states that the Haihayas were divided into five branches, namely, Vitihotras, Bhojas, Avantis, Tuṇḍikeras or Kuṇḍikeras and
Talajanghas. When the Vitihotras and Avantis declined, an amatya (minister or governor), called Pulika or Punika, killed his master and set up his own son, Pradyota, on the throne of Avanti.

At the unfolding of the so-called historical period in India, north India was divided into sixteen Mahajanapadas or kingdoms. Of these the kingdoms of Avanti, Vatsa, Kosala and Magadha with their capitals at Ujjayini (Ujjain), Kausambi, Sravasti (Saheth Maheth), in District Bahraich, and Rajgriha (Rajgir) in District Patna (Bihar), respectively were the most important.

At the time of Buddha, the throne of Avanti was occupied by Chapda Pradyota Mahasena, who is no other than the Pradyota who replaced the Haihayas. The Mahavagga calls him 'Chapda', meaning fierce, and the Puranas describe him as 'Nayavarjita' or devoid of principles. Pradyota was naturally a contemporary of Bimbisara of Magadha and made war with him, but the hostilities were terminated by a treaty of friendship.

Later, when Pradyota was once stricken with jaundice he requested his ally, Bimbisara, to send a physician to his court. Bimbisara accordingly sent the physician, Jivaka to Ujjain. Jivaka, apart from being a capable physician, was a shrewd judge of men and matters. Knowing that
his royal patient was of uncontrollable and unforeseeable temper, he first obtained from him permission to enter into or leave his kingdom (or capital) at any time and also a quick animal, namely, an elephant for his exclusive use for rapid transport to enable him to gather the ingredients (roots and herbs etc.) of the required medicament. As he knew his medicine to be unpalatable he was not sure of its effect on the king's mercurial temper, and he, therefore, took this precautionary step to secure his escape from the king's wrath in advance in the event of the wind blowing against him.

His seeking permission to enter into and leave the capital could have meaning only if the capital city was walled or fortified. On this assumption, the fortification at Ujjain must have been in existence at the time of his visit, that is during the reign of Pradyota.

Pradyota also made king Udayana—contemporary of Buddha of Vatsa, which was evidently a contiguous kingdom, his captive by a stratagem recalling the Wooden Horse of Troy. Recent archaeological discoveries at Kausambi, the fortified capital city of Vatsa, have lent support to the historicity of Udayana. These evidences will be examined in detail in proper context while dealing with the chronology of
Kausambi.

Pradyota waged an unsuccessful war against king Pukkusati (or Pukkusarin) of Gandhara (Taxila). This must have taken place prior to circa 521 B.C. as, by that date, these areas in the north-west part of India, comprising Gandhara, were conquered by the Persians under Darius, and made into one of the Satrapies under the Persian empire which continued until the time of Alexander. Both Pukkusati and Pradyota must, therefore, be dated prior to the Persian conquest.

Pradyota was also feared by Bimbisara's son and successor, Ajatasatru, because the former planned an attack on the latter for having murdered Bimbisara. To safeguard himself against the threatened attack by Pradyota, Ajatasatru strengthened the fortifications of Rajagriha.

Recent archaeological excavations have exposed remains of ancient fortifications at Kausambi, Sravasti, Rajghat and elsewhere thus confirming the tradition of fortified cities. A king, who was ambitious and who waged so many wars against his neighbours as well as distant kingdoms, as Pradyota did, could not have left his own capital undefended. The defences of Ujjain must, therefore, have existed in completed form before at least the armed campaigns of Pradyota.
His title or epithet of Chanda cannot be without significance. The early warlike exploits of Pradyota could not have been inspired except by a sense of security emanating from the possession of a superior fighting equipment, besides, of course, his unruly nature nurtured by ambition. That he was a redoubtable fighter is suggested by the epithet, Mahasena. Can it be suggested that he owed his strength to steel weapons? It is not unlikely, though the point cannot be pressed in view of inadequate data on the degrees of differential carburization or steeling of iron objects of antiquity. It is not likely, however, that Bimbisara or Ajatasatru did not possess any equipments of iron, especially in the face of the positive evidence from Hastinapura, Kausambi and Alamgirpur. Nevertheless, Pradyota's repeated trials of strength against formidable enemies cannot easily be explained except by attributing it to a superior weapon. A newly discovered object is likely to be more frequently used than justified, by its owner, like a new possession, say the catapult in the hands of a child. The indiscriminate use of his weapons of steel may have resulted in endless and meaningless slaughter and earned for him the title of Chanda and Navavarjita respectively. The
possession of a newly found superior weapon may have given him success in comparatively minor engagements with his less powerful adversaries. His record of armed conflicts shows him as a defeated general both against Bimbisara, his illustrious Magadhan contemporary, who had enlarged his kingdom and laid the foundation for its hegemony in the whole of India, which it enjoyed under his son and successor, Ajatasatru, as well as the less known Pukkusati of Taxila. The ruse he employed to capture his rival from Kausambi was not the open manner of a noble warrior. Notwithstanding these facts, Pradyota is designated as a Mahasena, or great warrior. A powerful man, even in discomfiture may, therefore, be called great because perhaps of prowess as well as such extraneous factors as efficient organization of the army and fighting equipments. Such success may have emboldened him to try conclusions with the powerful northern kingdoms. Though unsuccessful in the wars he concluded peace treaties with his matched adversaries. If it is conceded that Pradyota had steel weapons, it is inevitable to presume that his adversaries were possessed of an equipment that was no less efficient. It would only imply that iron had become widespread in India at that date.

The literary evidence on Pradyota is mostly derived from the accounts in the Puranas.
According to the Buddhist sources, Pradyota, called Pajjota in Pali, is said to have been born on the same day as the Buddha. He ascended the throne at the time of Buddha's Enlightenment, i.e., in the thirty-fifth year, of both i.e. in (563-35 =) 528 B.C. Majjhima Nikaya (iii, p.7) shows that Pradyota was alive even after the death of king Bimbisara of Magadha, who died eight years before the demise of the Buddha. Some manuscripts of the Mataya Purana give fifty-two years as the total duration of the reign of the five Pradyotas. This may actually refer to the reign of Pradyota himself, in the light of the evidence of the Buddhist accounts, in which case he may have survived the Buddha by about seven years like Udayana.

The other Puranas relate that he ruled for twenty-three years. This short duration would put his death at (528-23 =) 505 B.C., relying on the Buddhist evidence for the date of his birth. This would imply that he was dead long before Bimbisara, and this is at variance with the Buddhist accounts of his threatening an invasion of Magadha on the accession of Ajatasatru. Pradyota felt outraged at the murder of his friend and fellow-monarch, Bimbisara, by the latter's son, and the latter who
in the face of the threatened attack repaired and reinforced, as stated above, the fortifications at Rajgir. If these latter facts were true, Pradyota's death should have taken place after the death of Bimbisara, and counting a reign of 52 years it should have come about in (528-52 =) 476 B.C.

The dating of Pradyota, arrived at on the basis of literary evidence, the central factor of which is his contemporaneity with the Buddha, fits in suitably with the archaeological evidence of the existence of the defences at Ujjain, much before 500 B.C. His contemporaneity with Udayana, highlighted by several literary works, is further sought to be proved archaeologically by the possible remains of the latter's palace and well known monastery of Ghoṣṭitārāma, built during his reign and hallowed by the sojourn in it by the Buddha himself, as described below. His contemporaneity with the Buddha, Bimbisara and Ajītasatru (also Jivaka) has been indicated above.

The recent small-scale excavations at Rajgir have shown the earliest settlements on the site as prior to the introduction of the N.B.P. ware and associated cultural assemblage. The earlier settlements are indicated by the
rare occurrence of shapeless sherds of a ware, not presently definable, being 'rolled' by water action, though sherds of a coarse to medium-red ware may represent this phase of existence. The N.B.P. Ware and associated stratigraphical level would, therefore, be contemporaneous with the period of Buddha and this interconnection would plead for a support to Lal's revision of the initial dating of c. 500 B.C. for the N.B.P. Ware at such a westerly site as Hastinapura among the Aryan settlements. It may be emphasized here that Rajgir has yielded a rich ensemble of this ware. It is also to be noted that traditional history takes the antiquity of Rajgir to the period of the Mahabharata, with the founding of the Barhadratha dynasty by Brihadratha of the Kuru family at Girivraja (Rajgir) as the capital. His son and successor, Jarasandha, was a contemporary of the Pandavas.

The literary tradition and the archaeological evidence thus combine to show a comparatively late settlement of the Aryan tribes at Rajgir, in the fitness of things, in the course of their gradual expansion in the Ganga plain towards the east. This evidence at once pleads for an earlier date of the N.B.P. Ware at Hastinapura and, correspondingly, a still earlier date for the preceding Painted Grey Ware culture,
lending support to Lal's chronological conclusions in regard to them, as also connectedly to the scheme of dates for the first two Periods at Ujjain.

(c) Conclusion. - Since the date-scheme arrived at purely with the help of literary evidence seems to accord with the chronological conclusions on archaeological grounds, one feels emboldened to conclude that the literary evidence is not altogether useless as a source of historical and even chronological data. If these dates are acceptable archaeologically the earliest occurrence of iron at Ujjain can be set down accordingly, to a period before Pradyota.

Lal's excavations have brought out that Period III (associated with the N.B.P. Ware) at Hastinapura was marked by a richer environmental and cultural repertoire than the previous periods. It was a characteristic shared commonly by the Ganga-Jamuna sites at this time. Similar prosperity is also reflected in the corresponding Period (II) at Ujjain. Not a little of it should be attributed to the close contacts established by Pradyota with the Ganga plain a little after the beginning of this time. Inherently, it suggests a time-lag between the first emergence of this cultural milieu and its importation to distant Ujjain from the focal point, and points to the correctness of Lal's tentative dating.

In this context the date for the commencement of Period II at Ujjain would seem
to recede, strictly speaking, under the circumstances by a necessary revision to c. 528 B.C., at the earliest, historically, though for cultural purposes the proposed initial date of circa 500 B.C. is not perhaps too late.

The consideration of the political history of north India after Ajatasatru, pieced together on the basis of literary evidence, shows that the dynasty of Pradyota was humbled during the reign of Sisunāga, one of the successors of Ajatasatru, whereupon the hegemony over Ujjain passed to the rulers of Magadha. Not many years later was Asoka, the third Mauryan king, installed, during his princehood, as the Viceroy of Ujjain. Between Pradyota, the founder of the Pradyota dynasty of Ujjain, and Asoka lies a gap of nearly three centuries, and this period is not politically a blank, even though literary evidence is almost the only evidence to go by, bearing the archaeological remains coming up in recent times.

(iii) Kausambi

(a) Archaeological Evidence: The Ghosita Rāma Monastery and the Palace. — The recent excavations at Kausambi near Allahabad, on the left bank of the Yamuna, have shown a sequence of habitation beginning with a declining phase
of the Painted Grey Ware or a little earlier. The duration of the ware here is apparently shorter than at Hastinapura, being represented by 11 ft* nut thick strata as contrasted with Hastinapura's six to seven ft. The distribution of the ware is also sparse and the ware as a whole is less fine here than at Hastinapura. The painting too is confined for the most part to a thin band along the rim, or hesitant blotches as opposed to the characteristic variegated and deliberate designs found elsewhere, say at Hastinapura or Rupar. These circumstances would indicate a late date for its emergence at the site. Excavations have shown that (i) the mud rampart with a burnt brick facing or revetment, which enclosed the ancient habitations, dates from the earliest Period, and, (ii) Ghoṣitārāma monastery, which was used till its destruction by Hūpa Toramāna, had been built almost simultaneously with the introduction of the N.B.P. Ware following immediately after the Painted Grey Ware.

The Buddhist tradition attributes the construction of a monastery to Ghoṣita, one of the leading bankers of Kausambi, whose foster-daughter, Samavati, was married to the reigning king, Udayana. The discovery of the monastery in the south-eastern corner of the site at
Kausambi agrees with the description of Yuan Chwang of its location. Archaeological evidence has shown the continued existence of the monastery from the time of its construction, in the 6th century B.C., to the 6th century A.D., when it was destroyed by Huna Toramana, through sixteen successive phases of structural activity, comprising repairs and extensions. Apart from the record of literary tradition, the monastery was seen and described by Fa-hsien between 399 and 414 A.D., before its destruction, when it was already in a decadent condition, and later by Yuan Chwang between 629 and 644 A.D., when it had already fallen into ruins because of the destruction that took place in the interval. He was still able to see a monastery in the precincts, which he attributed to Asoka, but which, archaeologically, had come into existence during the second stage of the constructions, datable in the excavator's estimation to the fifth century B.C. Nevertheless, there are evidences for a second stage of additions to the monastery in the third phase of general constructional activities, that took place in the third century B.C. These additions were, no doubt, made during the reign of Asoka. Asoka also raised a pillar at Kausambi with
Edicts, which have since been removed to Allahabad.

The identification of the monastery has been conclusively settled with the help of inscriptions and seals found in the premises in the course of excavation. Though these are later in point of time than the date of its erection, there can be no question about the correctness of the identification. The discovery of the Ghositarama monastery is one of the most significant discoveries of the present epoch as it really sets the seal on the question of the date of the Maurya Empire at the site as being contemporaneous with the Buddha and Udayana and connectedly with Pradyota of Ujjain and Bimbisara of Magadha, as literature records as well that Udayana was born on the same day as the Buddha even as Pradyota was.

It may be recalled that the monastery was erected by one of the leading bankers of Kausambi in honour of the Buddha, whom he, with two other colleagues, had invited to visit Kausambi. According to the literary tradition the Buddha paid several visits to Kausambi, but his first visit took place in the 6th year of his ministry. On this calculation the Ghositarama monastery should have been thrown up before before 553 - 41 (i.e. 35 + 6) = 522 B.C.
It is also recorded that the Ghosmitarama was also visited by Sariputta, Mahakachchayana and Upavana. The historicity of Sariputta is established by the find of his mummified remains in the stupa at Sanchi.

Thus it is clear that the archaeological evidence on chronology seems to receive support from the literary evidence about king Udayana ruling in the sixth-fifth centuries B.C., and about the construction of the monastery during his reign.

Excavations at Kausambi during the year 1960-61 have brought to light yet another significant archaeological evidence of importance. It is in the form of an enormous palace-complex covering an area of about 75 x 75 metres. Even the fraction of the area that has so far been exposed shows the gigantic size of the palace. The northern wall which measures 130 metres, shows from its having towers at each end with return-walls on the east and west respectively, now only partially revealed, the general lay-out of the royal dwelling broadly suggesting an inner fortress or citadel within the larger defences of Kausambi.

Structurally, the palace shows three phases of construction. The earliest, built partly over a purposely raised level platform
of mud and mud-bricks, was built of random rubble set in lime-mortar just prior to the appearance of the Northern Black Polished Ware on the site. The second phase came into being shortly after the emergence of the N.B.P. Ware, and was marked by the use of dressed stones as veneer for a rubble core. The third and last phase, following an extensive destruction of the palace, before the N.B.P. Ware had finally died out, was marked by the use of bricks for the core and dressed stones for the facings. The palace was deserted after the fall of the Mitra dynasty.

Being an imposing edifice, suggested by its size and towers, it is very likely to have been used by king Udayana, circumstantially and in keeping with the tenour of chronology, in the second or N.B.P. phase. The earlier emergence of the N.B.P. Ware than the commencement of the second phase of construction might represent a time-lag for the diffusion of the cultural milieu which had become general at this period and also to enable the young monarch to come into his own as a mature man of refined taste.
(b) The Literary Evidence on the
History and Chronology of Kausambi in the Light
of the Archaeological Evidence.

Certain aspects of the character,
upbringing and circumstances of this ruler
would make such an inference plausible. Though
born and brought up in a hermitage of a sage in a
Himalayan region, religious opinion sat very
lightly upon him. He is alleged to have once
aimed an arrow at Buddha but missed. His
kingdom was one of the four powerful kingdoms
of the time, and it was the jealousy of
Pradyota on account of Udayana’s wealth and
prosperity that had prompted the former to
capture the latter. The mainstay of his army
was the elephant corps, and he was an expert
in taming the mighty beasts by his playing of
the Vina (lute). That he was resourceful is
indicated by the manner of his escape from
captivity under Pradyota. His campaign of
digvijaya (conquest of all directions) is
mentioned by the Kathasaritsagara, and
'Priyadarsika' refers to his conquest of
Kalinga. Apart from being a celebrated
musician he was a man of romantic temperament
and much married. Circumstances saw him on
the throne of an affluent country, and one of
the leading bankers of the times, namely,
Ghosita was his father-in-law. Ghosita, who
was himself a builder of public institutions, was doubly under the sphere of influence of Udayana and could be made to loosen his purse strings in an emergency, say the enlargement and improvements to the royal palace. The taste and circumstances of a romantic man in power and wealth would naturally have prompted him to improve the architecture of his palace, at least to please his vanity, if not to placate his numerous mistress wives.

The Puranic evidence of the flood in the Ganga at Hastinapura is sought, very reasonably indeed, to be proved by Lal by the occurrence of an erosional scar, the result of an inundation, doubtless from the Ganga flowing by, removing and washing away the remains of the earlier habitation in the exposed section at Hastinapura. Archaeologically, it is inferred that the flood was so disastrous that the site remained unoccupied for some time before the next settlers moved in. The new cultural ensemble was so variegated and advanced as to present a complete contrast with its predecessors. Lal's postulate of a period of two hundred years as the interregnum, during which this development took place, has already been mentioned (p. 17). Calculating backward from the date of 800 B.C. for the abandonment of the site at Hastinapura was arrived at by him. The Puranas describe the flood to have taken place.
during the reign of king Nichakṣu of the Paurava line, whereupon he abandoned Hastinapura and settled at Kausāmbi, which henceforth became the capital of the dynasty. Nichakṣu was the son of Adhisimakriṅga, and fifth in order of descent from the Pāṇḍavas, according to the Purānic list. The Purāṇas enumerate a list of twenty-five kings beginning with Adhisimakriṅga. Udayana, the hero of legends and romances, the mythical king who has now become a historical figure, was the twenty-first in succession. It may be noted in passing that the Puranic genealogy, normally, enumerates merely the names of kings with their titles of valour or prowess, bringing out only the father and son succession; and the only out of the way or extra event mentioned in these stereotyped accounts is the flood in the Ganga, the consequent abandonment of Hastinapura and the new settlement at Kausāmbi. Is it not remarkable that no other exploit occurs with this list? It was obviously a great event to justify the specialized treatment it has received in the Purāṇas.

It is also to be noted that the character of the ceramics, one of the prime
indices of early cultures, in a stage of decline towards the end phase of Hastinapura II and the commencement of the corresponding phase at Kausambi are similar. This shows that where Hastinapura winds up, Kausambi commences, as if the corresponding settlement at Kausambi catches up with the dying phase at Hastinapura. This is surely no accidental coincidence between archaeology and literary account, but apparently a tangible corroboration of a fact that literature has been carrying forward.

The flood evidence at Hastinapura is attributed by Lal, by implication, though provisionally, suggestively and circumstantially, to the period of Michakṣu, the fifth king in the Paurava family, in descent from Abhimanyu, son of Arjuna, as per genealogical list of the Purāṇas. On the basis of inferential archaeological evidence it is dated by him to circa 800 B.C. Udayana, the twenty-first king in the same line, is seen to be on the throne of Kausambi contemporaneously with the Buddha. Though stated to be born on the same day as the Buddha, he, like his Avantian contemporary, Pradyota, survived the Buddha by about ten or fifteen years.

(c) Conclusion:- As the Buddha is taken to have departed in 483 or 486 B.C., Udayana could have lived and ruled up to a maximum
of fifteen years thereafter, i.e. till \( \frac{1}{5486 - 15} = 471 \text{ B.C.} \). Counting back from him till the time of Nichaksu, twenty-one kings in all have to be accounted for. An average of fifteen years per period would bring the commencement of the reign to \( 471 + 315 \) i.e. \( 786 \text{ B.C.} \), while an average of twenty years per reign would bring it to \( 471 + 420 \text{ B.C.} \) or \( (21 \times 20) = 891 \text{ yrs} \). As the latter would separate the end-phase of the Painted Grey Ware from the beginnings of the N.B.P. by about 300 years, the discrepancy would be rather too wide, in view especially of the recent archaeological evidence of the Painted Grey Ware being a precursor of the N.B.P. with an overlap between the two cultural representatives found at Sravasti. Thus an average reign period of between fifteen and twenty years, respectively, per reign, would bring the chronology of the commencement of the rule of Nichaksu within a reasonable measure of the date suggested on archaeological grounds. For this purpose it is reasonably presumed that the flood in the Ganga took place shortly after the accession to the throne, obliging him to shift to Kausambi almost immediately thereafter.

Pargiter has arrived at certain chronological conclusions on a similar basis.
The genealogies of the early dynasties are available in the different Puranas, and setting aside the anomalies of palpably tall and often divergent claims about the periods of reign of the multitudinous monarchs, a reasonably workable scheme of sequence and time can perhaps be estimated. A firm date in Indian chronology is provided by the date of Chandragupta Maurya, the Magadhan contemporary of Alexander the Great. The initial year of Chandragupta has been accordingly fixed, after Sir William Jones' famous identification of the Greek writer's Sandrakottus with Chandragupta Maurya, at 322 B.C. The Puranas give the preceding dynasty, the Nandas, a period of a hundred years, bringing the commencement of the reign of Mahapadma Nanda to \(322 + 100 = 422\) B.C. He is described as the destroyer of all contemporary Kshatriyas, and can, on this evidence, be taken as the real founder of the Magadhan hegemony in ancient India as Pargiter shows. This task may have taken him 20 years to accomplish, and it is unlikely that he came to the throne before he had attained the age of 20 years. The starting point of the rule of Mahapadma Nanda would, on this basis, be \(322 + (100 - 20) = 402\), as the period of 100 years of the Nandas includes the life-span of Mahapadma Nanda himself and his sons.
and not merely the reign period as Pargiter would interpret it.

The 26 kings of the Paurvava line, beginning with Adhisimakriṣṇa, before the Nandas, have been assigned by Pargiter an average reign each of 18 years, which would show Adhisimakriṣṇa’s reign to commence about 850 B.C. Allowing 20 years on an average to the reign of each of the five preceding rulers or kings up to Yudhishṭhira, a period of hundred years would be arrived at to fill the gap between the end of the Epic War and the commencement of the reign of Adhisimakriṣṇa. The Epic War would seem, on this showing, to have taken place about 950 B.C. No doubt this is against the Purānic evidence that Mahāpadma Nanda flourished more than a thousand years after Parīkṣita’s birth. But Pargiter has shown that the discrepant evidence on this point cannot be relied upon. A strict calculation of the date of the Epic War, on this basis, would take it to \((402 + 1050) = 1452\) B.C. at the earliest. This would imply a much earlier arrival of the Aryans into India, and a corresponding time-lag for their settlement in the Ganga plains before the Epic War. This is, however, against the trend of modern chronological assessment of the Aryan immigration into India, which will be discussed at some length in Chapter 5. In view
of this development, the Puranic statement,
regarding the time-span between Parikṣita and
Mahapadma Nanda, divergent and discrepant as
they are, need not, therefore, be taken as
absolutely correct, not taken into considera-
tion for chronological calculations. At best
the statement can be interpreted as expressive
of a fairly long period of time, which, in the
present statement, has come to about five
hundred and fifty years.

Other scholars have fixed still
earlier dates for the Epic War at higher lengths
of the average reign periods. Raychaudhuri,
however, has pleaded for a later dating in the
ninth century B.C., on the basis of a smaller
average regime per ruler. One need not, and
cannot, indeed be categorical about these
dates in the absence of concrete evidence and
a date anywhere between 950 B.C. and 850 B.C.
would be reasonable as demonstrated by Lal.

On the calculation of Pargiter, the
date of Michaksu's reign would commence about
(870-20 =) 850 B.C. or (850-20 =) 830 B.C.
as he was the son of Adhisimakrisna. But
Pargiter has dated the commencement of
Michaksu's reign to 820 B.C. The great flood
in the Ganga may have come immediately after-
wards whereupon the capital was shifted to
Kausāmbi.
Counting Hichakṣu and his successors up to Udayana, there are 19 kings to be accounted for before the accession of Udayana. Calculating forwards from the suggested date of the Bharata War at Pargiter's rate of 18 years per reign, the end of the period works out to \[(830 - (19 \times 18) = 508 \text{ B.C. or } (830-342 = 486 \text{ B.C.}) \]

It is already known from the Buddhist accounts, as discussed earlier in this Chapter (pp. 33-34) that Udayana was a contemporary of the Buddha, as of Pradyota, and the demise of the Buddha is known to have taken place in 486 B.C. The date of the commencement of the reign of Udayana, on this calculation, is so remarkably near this date that a reasonable reduction of the reign periods of some of the intermediate kings would easily accommodate him within the framework of the Buddha's date, and would make a plea for the near accuracy of Pargiter's calculations. Though there is nothing definite to prove the historicity of Udayana of the Purānic lists, the convergence of several literary works about him, and the concrete discovery of the Ghositārama monastery, attributed by literature to his period, and of the palace in recent years would plead
for the acceptance of the king as a historical figure. Circumstantial and even archaeological evidence, limited though, would make a similar plea for Pradyota of Avanti also and bring them both along with Bimbisara and Ajatasatru within the framework of the Buddha’s chronology, which fits in with the presently interpreted archaeological evidence on chronology too. The evidence of the fortifications at Kausambi would impart to the earliest settlement here the importance and dignity of a capital city.

The evidence at Ujjain has shown that the dating of its earliest Period (I) would be somewhat later than the commencement of Aryan settlement under Vishakha at Kausambi. This is indicated not merely by the extreme paucity of the Painted Grey Ware, but also by the tell-tale simplicity of the painted bands on the ware. It is also to be noted that there is no hiatus between the earliest Period and the next succeeding one at Ujjain, as the cultural equipments of the two periods overlap. The introduction of the N.B.P. and associated wares and materials in Period II at Ujjain must indeed have been an innovation. This must have come in the wake of the Avanti ruler’s northern exploits and contacts and should have been possible on the basis of the
literary evidence, between the access:
dead respectively of Pradyota i.e.
the end of the sixth century B.C. and
beginning of the fifth century B.C.

* * * * *

(iv) The Views of Mortimer Wheeler

D.H. Gordon on the Chronology of the
Grey Ware

Incidental before closing this section, it would
necessary to consider the views of Si
Mortimer Wheeler and D.H. Gordon on the
chronology of the Painted Grey Ware as
the succeeding N.B.P. Ware. On the
stratigraphic evidence of its occurrence
earlier than the latter ware, found in
a deposit of six to seven feet at Hasti,
the key site for the present, the date
the beginning of the Painted Grey Ware
recede at most from two to three centen
according to him. But the date of the
N.B.P. Ware cannot at present be fixed
earlier than the fifth century B.C., "Gan
basin", and in the north-western
region of the subcontinent comprising
Charsadda, near Peshawar, besides Ud
Swat, not before circa 320 B.C., on t
alleged ground that its arrival in the
region "should be equated with the sp
of the Mauryan Dominions" from the Ga
these parts after 323 B.C." He is further of the view that "since Taxila was not dug stratigraphically in the modern usage of the term, these depths, on which Lal based his chronology are an unreliable guide". On this showing, the inclusive date of the Painted Grey Ware is suggested by him to be circa 800-500 B.C.

The late Col. D.H. Gordon had also made similar suggestions. To quote Gordon, "the dating of the Northern Black Polished Ware which follows the Painted Grey Ware, and of the Ochre-washed Ware (meaning, of course, the ochre coloured ware of Hastinapura as suggested by Lal), which precedes it are factors in this problem, the evidence (then available) does not admit of the N.B.P. Ware being dated back earlier than 400 B.C., at the very earliest. A central date for this ware is not the fourth century B.C. but the second century B.C.". He goes on to write, "It seems unlikely that the Painted Grey Ware can carry us back earlier than 650 B.C. and this I regard as optimistic". Gordon did not change his views very much while reviewing the position in a subsequent publication, his first and only book.

There is not much that argument can do against such firm convictions. The only
remedies seem to lie in re-excavating Taxila or any other site where such documented evidence may be forthcoming with the off-chance of getting the evidence again in a modern stratigraphic excavation, in fully present usage of the term. Till that happens and turns the apple-cart, the foregoing analysis of the available evidence would seem to tilt the balance of inference in favour of a near-accuracy of Lal's basic but tentative chronological scheme. A carbon date for any of these sites is not likely to be very helpful in view of the relatively large margin of swing for the central chronological pendulum, especially when applied to such late periods in human evolution with which the papers deals and where the discrepancy of even a couple of hundred years makes all the difference. The difficulties of the involved calculation and the possibilities of errors are no less overwhelming. Nevertheless, it would be worthwhile submitting stratified specimens from the relevant levels to the carbon-14 analysis, if only to make sure of the margin of possible extension on both sides of the mean datum and build up a sort of inclusive chronological framework for what it is worth. Meanwhile, the benefits of
'thermo-luminiscence', the latest scientific method of chronological assessment, may also be extended to the concerned archaeological data.

The evidence of the fortifications at Kausambi would impart to the early settlement of Period I in the importance and dignity of a capital city associated with Michakṣu.

The consequential repercussions of the inference detailed above on the early chronology of Hastināpura need no repetition.

C. The Chronology of the post-chalcolithic-cum-pre-N.B.P. Ware Ironwork

(1) General.—As the caption implies, the pre-N.B.P. iron works, which are also post-chalcolithic, are evidenced on a small scale in west-central India. The main evidence is from Period II at Nanga and a support from Prakash, Bāhāl and Eran.

The cultural equipment of Period II at Nanga is in fact closely related to the cultural assemblage of Period I at Ujjain, and, would, therefore, have also corresponding date-scheme, with a possible earlier beginning. This is, to an extent, dependent on the chronology of the preceding cultural period I or the chalcolithic proper, of which the evidence in hand is large, but firm
conclusions as to chronology have so far been postulated in respect of Maheshwar, Navdatoli and Nevasa respectively with provisional datings suggested for Nasik and Jorwe, Brahmagiri and Maski as well.

(ii) The Tentative Chronological Scheme.- The earliest chronological estimate applicable to the neolithic-chalcolithic cultures in general was offered by Wheeler when he dated the IA culture at Brahmagiri to the beginning of the 1st millennium B.C. Wheeler's dating was clearly tentative, based on the dating arrived at in respect of the overlying deposits of the megalithic culture. Nevertheless, it served as a basic starting point. During the fifteen years that have rolled by since Wheeler's work at Brahmagiri, the volume of work in and around the region, and, connectedly, on the problem itself as a whole has grown enormously, bringing in its train a corresponding mass of new evidence. While Sankalia has shown that the chalcolithic culture has impinged itself on the neolithic, Krishnaswami has endeavoured to show that the chalcolithic culture is an offshoot of the neolithic, with newer elements, which seem to have a western inspiration. The recent excavations at Daimabad confirm the above-mentioned view points, and establish that the chalcolithic culture impinges itself on and dovetails with the neolithic culture. This is borne out by the evidence at Brahmagiri, Sanganakallu and Maski as well. Since the culture has been proved at Rangpur, Prabhaspatan and Somnath as stratigraphically post-Harappan, a new
probable lower date, posterior to the terminal date of Harappa, viz., \textit{circa 1500} B.C., could be reasonably stipulated. Meanwhile, the publication of the date of carbon-14 studies of carbon materials from Navdatoli indicated a date-range of 1631-1375 B.C. for phase III of the culture there. The 5 feet (152.4 cm.) accumulation below the deposits of phase III, for which no carbon-14 data are available, would call for still earlier beginnings which have been estimated by Sankalia to \textit{circa 1800} B.C. Thus the beginning of the chalcolithic culture in general trend to recede further backwards, and as suggested by the excavators, well before the end of the Harappa civilization. The culture is characterised throughout, apart from microliths and objects of copper, by the pale red ware ceramic painted variously in black and a black-and-red ware pottery painted in white pigment as at Ahar in Rajasthan, by the white-slipped ware in phase I and II, and by the emergence of a sturdy matt ware with a metallic ring, called the Jorwe ware. The date-scheme is further supported by parallels with Iran in shapes of pots and painted designs. These have a further bearing not only on the source of inspiration of the elements of the culture-complex, but also on chronology.

It is clear that the chronological assessment in respect of the chalcolithic culture at Navdatoli can only be generally representative. Any subjective chronological estimate for the two early phases at Navdatoli is bound to lack definiteness.
though related to the more firm date in respect of the next succeeding Phase III. As regards the date-range 1631-1375 B.C., there is no reason why the upper limits of this period may not be nearer to the truth than the other, notwithstanding the well-known flaws of the method of dating under consideration. It is clear also that the culture-complex at Navdatoli does not have any stratigraphic connection with Harappa. Nor is there any material found here that can be described as an inflow from Harappa. It is, therefore, rather strange that the culture, which has been assessed, on the showing of C-14 studies of material from Navdatoli, as a later contemporary of Harappa, imbibed little or nothing from this well-established and far-flung civilization, while it could not forget the influences, however meagre, transmitted from distant Iran. It is all the more so as the site at Navdatoli, not to speak of other sites, including Nagda, further north, were well within the distributional zone of Harappa civilization. Navdatoli could easily have had contacts with Tilod and Mehgam along the Narmada, if not Bhagatrav, along the Tapti. The absence of influences from Harappa, and the fact of post-Harappan horizon for this culture in the Kathiawar region would plead generally for a posterior date and it would not be unlikely, if the higher dating, viz., circa 1375 B.C., for Phase III at Navdatoli is correct, and, on this basis, a date after circa 1500 B.C., for Phase I is
stipulated as the inceptional datum.

The adduced Iranian contacts would, further, have been transmitted over a land route, as the inland distribution would show. If so, the overland route would have lain either through the Makran or the Bolan pass, in Pakistan, and the trend would have been from the north to south. The northern sites would, therefore, have chances of an earlier settlement than those further south. Against this background the significance of the post-Harappan occurrence of the culture in Kathiawar need only be mentioned. On this analogy, sites like Navdatoli would have even a slightly later beginning. This would also plead for a post-1500 B.C. date for the beginnings, and Nagda by close association, and in consideration of its nearly common cultural repertoire and geographical location, would begin anywhere slightly before the beginnings at Navdatoli.

It has already been mentioned that the white-painted tradition of the black-and-red ware at Lothal appears as a precursor of the similarly painted black-and-red ware of Ahar. The painted black-and-red ware of the chalcolithic cultures at Navdatoli or Nagda seems to be derived from its prototype at Ahar. Even this would plead for a later date for its earliest occurrences both at Navdatoli and Nagda.

In this context, the evidence of this culture being later than the later phases of Harappa, on the analogy of Rangpur and Prabhas Patan referred to above, is worth consideration.
(iii) The Archaeological Evidence at Nagda. — The chalcolithic culture at Nagda has two phases, of which the earlier, called Period I, is represented by 17 ft. 6 ins. (5.16 metres) of strata containing on an average 22 layers and six structural phases. The culture in Period I, characterized by microliths, painted and other pottery and a little copper, shows affinities, very limitedly though, with the earlier stone-axe or neolithic culture in the form of red ochre decorations on burnished grey ware carinated jars. This, in fact, forms a connecting link with the neolithic culture in general.

By and large the culture at Nagda conforms to the typical Malwa ware culture and is marked only by the absence of the white-slipped ware of Navdatoli or even the typical Jorwe ware.

A sturdy pale red or creamy-slipped ware, of well-levigated clay, fine fabric and smooth feel occurs, however, towards the end of the Period. This ware has, further, a metallic ring and is painted usually in black and red, with plain, but uniform and well-executed bands, combining rarely, with vertically drawn wavy lines. Though basically distinct from the Jorwe ware, it may well have been a prototype. This parallelism itself would strike a note of contact and, therefore, to an extent, of relative contemporaneity. Among the shapes, the typical dish-on-stand points to a leaning more towards the dish from the Harappa than to any bowl-form, and
it is not, therefore, unlikely that it is an earlier feature. The corrugated-bodied jar with tall neck, oval body and stand, the channel-spouts, the dancing group of human figures painted on a red ware sherd, the crude hand-made dough or bake-plates in red ware, simulating in shape and use, those from Navdatoli, the black-and-red ceramic further distinguished by dotted designs painted in a whitish pigment in imitation of ample prototypes from Ahar and the violin-shaped terracotta objects tentatively recognized as Mother-Goddess help to bring the culture within the Navdatoli complex, and, therefore, the Iranian sphere of influence. This would justify for Nagda the same date-scheme as has been proposed for Navdatoli.

In this connection mention may be made of Krishnaswami's ad hoc dating of the beginnings of the culture at Nagda, on the basis of thickness of strata to circa 2000 B.C.

Though no yardstick of chronological equations on the basis merely of thickness of strata can be invoked to arrive at chronological conclusions, a 40 years per ft. (30.5 cms.) of accumulation would account for 700 years for the entire deposit of 17 ft. 6 ins. (5.16 meters). The six occupational phases, covering on an average 116.6 years each would likewise account for 700 years, and would suggest a date around 800 B.C., as the terminal date. The
duration of about a hundred years for an occupational phase cannot be held as excessive. At this rate the period for the formation of a stratum would be little over 30 years. The suggested terminal date of 800 B.C. is confirmed by the inference adduced below for the beginnings of Period II. Besides, Sankalia has pointed out that the terminal date for Phase IV of the culture at Navdatoli has been estimated, on the basis of carbon-14 studies, to circa 1419-1169 B.C. and this terminal phase, named earlier as 'D', was dated to circa 700 B.C. on the analogies of channel-spouts occurring in Necropole B at Sialk (VI) in Iran, which is datable to circa 1200-1100 B.C. or 1000-800 B.C. according to the excavator, R. Ghirshman.

Sankalia has already indicated that the cultural settlement at Nagda was within the Malwa group. Taking into consideration the points of contact enumerated above, and the generally preferred thesis of a north to south trend of the cultural movements, Nagda is likely to have a slightly earlier date than Navdatoli. As regards the terminal date of Period I, the cultural homogeneity which Navdatoli would bring it to circa 800 B.C. and possibly earlier still.

At the end of Period I the site was obviously abandoned for a while, though for how long, it is difficult to guess. But that the abandonment of the site could not have been for long is clear as is established by the continuance into the next Period of certain ceramic wares, and even microliths. This period of abandonment may be estimated at 50
years at the outside. This would place the beginning of Period II at circa 750 B.C.; this is also borne out by the following consideration.

The second phase of the chalcolithic culture, in Period II, imbibes many new influences, and can no longer be designated as chalcolithic, as iron has already made its appearance at the very beginning of the new life on the site, at the lowest level, above the black soil separating the two Periods. That the gap could not have been far long is almost clinched by the Archaeological Chemist’s analysis of the black soil as the result of decomposition of vegetable matter in stagnating water. While floods can account for the stagnation they can also explain temporary abandonment of the site. The continuance of the earlier features points to the shortness of the interval before the next cultural Period, and the occurrence of iron speaks definitely for a new element in Period II.

Period II is represented by 6 ft. 9 ins. (2.10 meters) of accumulation in approximately nine layers and cover two structural phases. These should account for a span of 250 years at the rate of about 40 years (or slightly less) per foot of accumulation, accounting for a period of 125 years for the two occupational phases, consistently with the corresponding assessment for Period I, on the above-mentioned analogy. This is in agreement with the dating actually arrived at, namely, circa 750-500 B.C., as discussed below.
The most significant feature of this Period is its adoption of iron. At Ujjain a more southerly site, but removed from it only by 35 miles and situated on the banks of the Sipra, a tributary of the Chambal, iron has been seen to occur at the earliest Period of habitation. The earliest cultural complex at Ujjain, called Period I, is dated, on the basis of the double-slipped red ware, occurring in the dish-form at Ahichchatra in its earliest levels and also at Kausambi in the earliest Period, and sherds of Painted Grey Ware, characteristically of its later and leaner days, to circa 750-500 B.C., as elaborated earlier. This culture is represented at Ujjain by a 5-7 ft. (2 meters approximately) thick deposit. The occurrence of iron objects in the lowest levels of Kausambi in association with sherds of the Painted Grey Ware, at Alamgirpur, and a couple of slags at Hastinapura in the upper levels of Period II, i.e., in association with the last days of Painted Grey Ware on the site provide the sum total of corroborative evidence, so far known, on the dating suggested above. The chronological horizon of all these earliest occurrences of iron at different far-flung sites is almost uniformly the same.

The chronology of the Painted Grey Ware as of the N.B.P. Ware has been discussed at some length above (see Chapter 3, B., pp. 15-20) and the conclusions drawn on the chronology in general hold good for Period II of Magda on the grounds of its affinities with Period I of Ujjain.
(iv) The Evidence of Iron.- The evidence of the occurrence of iron throughout the deposit of 14 ft. thickness below the lowest occurrence of N.B.P. Ware at Prakash would also point to a similar chronological level for the beginning of iron on the site, considered in conjunction with the evidence at Alamgirpur, Sravasti, Hastinapura, Kausambi and Ujjain. It is further to be noted that the iron-bearing deposit at Prakash is separated from its immediate predecessor, the chalcolithic, by a thin deposit of gravel. As Prakash has been considered an outlier of the Malwa group, its link with Nagda is recognized, and the terminal date of the culture cannot be very far removed from circa 800 B.C.

As the culture of the Period II of Nagda is closely related to the culture of Period I of Ujjain, the Period II settlement at Nagda would also have a corresponding date-scheme, with a possible earlier beginning. The black-slipped, vesiculated and black-and-red pottery wares and types, besides the incurved bowls in unslipped plain red ware and collared basins in slipped red ware easily establish a close parallelism between the two. The Painted black-on-red ware or the microliths of Nagda, however, are entirely missing from Ujjain. Among the other wherewithals the iron objects present a further point of contact and of chronological parallelism. Though the chalcolithic repertoire would tend to plead
for an earlier date for Nagda Period II, the chronological limitations of iron would counteract it, and hold the date down to around 750 B.C. Ujjain was, obviously, on the basis of the find of specialized iron tools in Period I, and of a larger evidence of iron objects in Period II, about this time a centre for the manufacture of iron. If the developmental trend of iron was, as it appears likely, from the north to the south, Nagda could not have escaped its impact, when still on the march, earlier than Ujjain, having a more northerly situation. If on the contrary Nagda imbibed its iron from Ujjain, its date would not be very far removed from circa 750 B.C. in either direction as Nagda is not more than 35 miles from Ujjain. As iron occurs for the first time right at the beginning of Period II of Nagda, the lower date of this Period, on this analogy, would be circa 750 B.C. Granting for a moment that Nagda imbibed its iron from Ujjain, being obviously a contemporaneous habitation of less importance, the date of its arrival at Nagda could not, in any case, have been very much later than circa 750 B.C. Period II of Nagda would, therefore, have a date-range corresponding to Period I at Ujjain, namely, circa 750-500 B.C. The occurrence of a square punch-marked copper coin, towards the upper levels of this Period at Nagda, would be a further argument in the present state of knowledge, for the dating suggested above, though such coins cannot yet be exactly dated.

(v) Conclusion. -
manifest. Granting that the N.B.P. were took some time to travel to peripheral regions, it could not plausibly have taken longer than a hundred years. Even so the actual occurrence on these sites may be put at a still later stage in its fairly long life. This factor need not be common, and is actually indeterminable. The evidence for the chronology of Period I at Ujjain has already been discussed at length, as also for the preceding chalcolithic culture. There is, therefore, no difficulty in locating the date of iron characterizing this culture in accordance with the date-scheme proposed. The evidence at Nagda is, therefore, another landmark in the evolution of iron in India. Its inspiration is doubtless to be traced to the northern plains of the Ganga and Jamuna respectively.

D. The Chronology of the Megaliths of South India

(a) Introductory. - The chronology of the megaliths in south India cannot indeed be dealt with in isolation from the variegated vestiges of allied practices, which, in some case, are in vogue till to-day within the bounds of India and in the bordering regions. These can, in fact, be divided into three distinctive groups, leaving out those in the south, namely, (i) the cairn-burials of Baluchistan and Persia and Baluch Makran, (ii) the straggling remains of megaliths in the northern parts of India and the bordering regions including Sind and
former North-West Frontier Province of undivided India besides Ladakh and Tibet, and, (iii) megalithic relics raised traditionally till to-day by the tribal people, in middle and north-east India, and, limitedly, in south India.

The distinctive characteristics of each group and their inter-relationships, which have a bearing on the source of inspiration and the directional trend of the megaliths into the south, and, connectedly, on their chronology, will be dealt with below.

The upper limits of the chronology of the megaliths of south India are quite well-defined. The 1947 excavations at Brahmagiri showed the megalithic culture on the site to overlap with the succeeding Andhra culture, dated firmly with the help of coins of Tiberius and Augustus to the first century A.D. The evidence at Sengamedu and Arikamedu, where the megalithic black-and-red ware dovetails with the rouletted ware, lends support to this chronological horizon. At the lower levels is the evidence of the Eran coin in a cist-grave at Sulur, in Coimbatore, dated to circa third-second century B.C. Then, there is the evidence of the occurrence of associative urn-burials without the megalithic appendage of the bounding circle, below the [Main Stupa at Amaravati, dated to circa 200 B.C., which points to a lower date well into the third century B.C., if not earlier. The occurrence of a nine ft. thick deposit, bearing the
megalithic ceramic at Sengamedu, a habitation site but not associated with any megalithic remains, in District S. Arcot, point to a still further receding lower and a lengthening time-scale.

At Brahmagiri the megalithic culture overlaps in its lower levels with the upper levels of a neolithic-chalcolithic culture. The evidence at Nagarjunakonda, District Guntur, Andhra Pradesh, shows the occurrence of iron objects, associateable with the megaliths obviously posterior to the neolithic strata. At Maski, District Raichur, Andhra Pradesh, the evidence is similar.

Thus a date if about 300 B.C. for the commencement of the megalithic cult in south India has almost been conceded. But there are indications that the date would recede further backwards. As to the upper limits, the mention in Manimekalai, a post-Sangam work dated to 600–800 A.D., of the different methods of the disposal of the dead, except cremation, met with in the megaliths and cognate, allied or associated monuments, with or without the megalithic appendage of the bounding stone circles, namely, (i) exposure, (ii) pit-burial, (iii) pot-burial, and (iv) cist-burial shows their late survival.
Inscriptional evidence points to the existence of the megalithic cult even as late as the 13th century. It is, however, with the lower date of the introduction of megalithic practice in south India that the paper is concerned.

(b) The chronology of the Neolithic-Chalcolithic Cultures in West and Central India and the Megaliths. — Wheeler dated the neolithic-chalcolithic culture in central India within the first millennium B.C. But the discovery in recent years of a far-flung post-Harappan chalcolithic culture in western and central India and northern Deccan in levels which could be chronologically placed between c. 1500 and 800 B.C. has changed the picture of the neolithic-chalcolithic cultures as earlier presented by Wheeler. This later chalcolithic culture is seen to impinge itself, as at Brahmagiri, on the neolithic, and, by implication, calls for at least a parallel chronological range, if not an anterior, for the neolithic culture as well. By stratigraphic connection or interlocking with the preceding neolithic culture in the lower levels, a correspondingly early beginning for the megalithic culture is also called for.

This is strengthened by the considerations of the origins of the megaliths themselves. An independent origin of the megaliths
in south India and an attendant south to north expansion of the culture, as earlier suggested by Wheeler, are clearly ruled out in the light of recent evidence. But the most overwhelming of all evidence is the similitude of the port-holed cists of the sepulchral remains in structure and import, including the bounding circles or their simulating or masquerading counterparts, though chronologically earlier, on the Mediterranean or in the Caucasus region, which tilts the balance in favour of the alleged western moorings of the Indian megaliths. By association in space, import and typology of contents, the same observation should hold good for the innumerable variants of the sepulchral remains, classified broadly as megalithic, in south India.

(c) The Cairn-burials in Baluch and Persian Makran and Baluchistan

(i) General—An interesting link in the chain of evolution of the megaliths in south India is suggested by the occurrence of the cairn-burials brought to light by Sir Aural Stein, in Persian and Baluch Makran as well as in Baluchistan. Some of these had been observed earlier, as far back as 1877, by Major E. Mockler, who opened quite a few of them and has left an interesting account of his finds.

The monuments consist, simply of a circular wall,
built of blocks of stone, three to five feet high, endorsing a cairn five—fifteen ft. wide. The tumulus enclosed was seen mostly to contain fragments of human bones, obviously recovered after excavation, as was the practice in southern megaliths, occasionally calcined as a result of primary cremation. The skeletal remains were accompanied by pottery vessels in the shape of flattish flasks, with grooved lugs for a carrying cord, spouted jugs, animal bones including occasionally the head of a horse, and bronze or iron objects, the last being found in five of the sites out of a total number of twentyfour in the area. These graves belong apparently to the megalithic order. The occurrence of the head of horses is another striking connecting link. The usual equipment among objects of iron in the south Indian megaliths which suggests the extensive use of the horse, consists of the horse-bit or the stirrup. In a few cases even the head of a horse, as at Junapani, near Nagpur, or in Salem has been found to clinch the similitude.

One of the tombs at Dambakoh is a square chamber with an opening on a side or port-hole.

Similar doors or openings, often elaborately flanked, have been found among dolmenoid cists, made of rough boulders, at a number of sites in the south.

Krishnaswami has established that the structural features of these monuments are based for the most part on the characteristics of the
stones employed for the monuments. In regions where the material is not easily tractable, rough boulders are hauled up to form the dolmenoid-cist burial chamber, occasionally leaving a deliberate gap in the chain, subsequently blocked up. This feature at Dambakoh is comparable with a similar feature in the south.

In another instance there are double enclosure walls, as though there were double circles of stones. The enclosing walls, built of blocks of stones, recall those observed at Brahmagiri round the cists. Wheeler describes the primary enclosure at Brahmagiri in the following words: "The tomb thus formed was surrounded by a dry stone wall .............

.... The surrounding wall might complete the structure but was more often supplemented by a circle of untrimmed granite boulders." The parallelism is striking indeed.

The method of disposal of the dead employed was clearly post-exposure or-excarcarnation as in south India. The practice of exposure prevailing in the region in Alexander's time has been reported vividly by one of his historians, namely, Diodorus, who describes the elaborate process of how a dead body was left in the coppice, stripped of all clothes, to be devoured by birds and beasts of prey.

The occasional occurrence of calcined bones is also paralleled as a variant
in the megaliths of Krishna and Godavari valleys.

The presence of iron objects amid the tombs was disturbing to Sir Aurel Stein, and he voted for a date in the early centuries of the Christian era for these cairn-burials. He was no less influenced in this chronological assessment by the occurrence of a pot with an impressed Hellenistic motif in a Moghal Ghundai cairn together with a bezel ring of bronze with an intaglio.

(ii) The Cairn-burial Pottery and the Londo Ware and their Links with Iran. The pottery found in the cairns is a red ware, but occasionally painted in black volutes or pot-hook spirals. Gordon asserted that the makers of the Londo Ware, found in as many as thirty-seven sites including Alizai, near Surab in North Baluchistan, in the Baghwana valley of Jhalawan in Baluchistan (Pakistan) by Miss Beatrice de Cardi, named after the type site, and those of the pottery found in the cairn-burials are at least contemporaneous, if not identical.

The Londo Ware is dated by Miss De Cardi, on account of its affinities with the Persian pottery of Sialk VI, B, to circa 1200-1000 B.C., in keeping with Schaeffer's date-scheme in preference to Ghirshman's original dating of 1000-800 B.C. Though cairns are recorded near the site, no pottery nor bones were found in them.

The pottery was made from a pinkish red paste - with a gritty composition and a rough
surface, caused inferably by the admixture of the husk. It was not, however, wheel-turned but well fired, dipped wholly or partly in a darker slip and decorated with black or polychrome designs. The shapes include carinated bowls, beakers, and the goblets with a small pedestal foot vessels with handles and plain lids.

The painted designs consist of parallel bands, pot-hook spirals, voluted scrolls, hachured triangles, and rayed discs painted in black on a red or maroon slip. White or a varied shade of red was employed to bring out polychrome effect. Black or brown designs were occasionally painted on a buff surface.

The similarity with Sialk VI, is strongly established by the motif of a frieze of horses, occurring on the Londo ware, and these are similar to their counterparts on spouted jugs from Sialk VI, B. A horseman seal at Sialk VI, B lends support to the identity and to the idea of horse breeding emerging rather on the plateaus than on the southern plains. This is corroborated by the find of horsemen seals occurring in Assyria in the 9th and 8th centuries B.C.

Other motifs of Sialk VI inspiration are the metopic groups. The griffins bear resemblance to two statues of the time of Nebuchadnezzar (1145-1123 B.C.) and lend further support to the suggested chronological assessment.
Miss De Cardi is definite that the animal motifs of Londo are of Sialk in inspiration though they are far less vigorous.

In view of the prevailing evidence, the Londo ware was attributed by Miss De Cardi to circa 1250-1150 or the early years of Sialk VI, B, and considering the time taken by this ware to travel further south, a date around 1100 B.C., or later is considered adequate for its arrival there.

Though the nearness of the Londo ware to the Sialk VI, B pottery is clearly established, the same, however, did not appear as the obvious between the cairn-burial ware and the Londo ware to the explorer. Nevertheless, the link between the Zhob sites and Sialk can be traced through the Nad-i-Ali evidence in Afghanistan, where a characteristic Sialk VI, B long-spouted vessel was found with simple polychrome pottery.

It is also important to note that both Moghul Ghundai and Nad-i-Ali have yielded specimens of the trilobate iron arrowhead, which is absent at Sialk VI, B, but occurs in the Iron Age levels at Boghaz Key and Alisar Huyuk in Asia Minor. This has led to the suggestion of a post-Sialk VI, B date for the cairn-burial sites.

Miss De Cardi has further made the point that the cairn-burial pottery from Zangian, Jiwanri, Dambakoh and Gatti, three of which sites except Dambakoh, have also yielded iron, besides other cairn-burial sites in south Baluchistan, bear
close similarity to the late Luristan ceramic. It is a brittle, wheel-made red ware, similar to the red ware of the Londo sites in the Zhob valley, and is decorated with a white slip. The motifs comprise simple scrolls, volutes, triangles and bands.

The jugs with fan-shaped spouts from Jiwanri and Zangian are linked to those from Sialk VI, Bv. The narrow-necked flasks with loops for suspension are similar to late Luristan types as well as those from Sialk VI, Bv (pl. XXII). The straight spouted jug with rope-like handles from Zangian is paralleled at late Luristan. The same conclusion holds good for the hachured triangles and wavy lines of Jiwanri. The occurrence of the horses' skulls in two cairns at Zangian, together with the evidence of the horseman seal at Sialk VI, Bv and the horse-motif in the painted designs of Sialk VI, Bv present a connecting link among the entire complex.

It would be best to quote Miss De Cardi in conclusion: "On general stylistic grounds it is suggested that the Londo ware should be ascribed to the early rather than the late phase of cemetery "B", and the case for dating it to about 1100 or later is supported by analogies with motifs on Kassite boundary stones dated by inscriptions to 1145-1123. The impact of Sialk VI, Bv ideas can also be recognized in pottery and grave goods from cairn burials in Baluchistan.

There is, however, no resemblance between the Londo ware and the pottery from the cairns and in view of its affinities with late Luristan, it is suggested that the latter ware should be ascribed to a slightly
The only Londo ware site to be excavated is Alizai near Surab in northern Baluchistan. The pottery from the site has not been published, but thanks to the generosity of Miss De Cardi, I have had an opportunity of examining the pottery from the site at her office of the Council for British Archaeology and also at the British Institute of Archaeology, London. The excavations have revealed the occurrence of two wares, in the Londo miscellany, belonging respectively to two successive levels. The earlier one is a red ware, slipped and painted. The shapes in this ware comprise: (i) jars, small and medium sized, with rolled and flanged rims, and a concave profile below the rim, and (ii) an elongated bowl with a slight carination at the base. The painted designs comprise plain concentric bands, volutes, in different varieties, forming incomplete loops connected with horizontal lines, and designs of fish, frog, the human figure or tree.

The other ware, which is later, is whitish (washed) or buff with simpler painted designs, comprising simple lines, angular strokes and dots etc. The shapes in this ware are mostly jars with almost flanged rims and concave necks joining with the globular body at a slight carination, and bowls with a pronounced flanged rim.

In spite of the differences between the Londo ware and the cairn-burial pottery, the basic
under-current of a connecting link between the two through Sialk VI, B and late Luristan forces itself, and is admitted or recognized even by Miss De Cardi herself. Gordon, however, is more emphatic about the inspirational link, which appears to be clinched by the horseman seal, the burial-cairns, some of the painted designs, the flattish flask type vessels and also objects of iron.

The Londo ware is analogous again to the pottery found in Sialk VI, cemetery B, which is dated by Schaeffer to c. 1200-1100 B.C. and by Ghirshman to 1000-800 B.C. Gordon, however, was more inclined to accept Schaeffer's chronology, and allowing a time-lag of nearly three hundred years for the tradition of the cemetery B ceramic to trickle down to Baluchistan, he fixed the date of the Londo ware, and, therefore, of the associative cairn-burials at circa 850 B.C. But the Moghul Ghundai cairns, being considered later, were dated to circa 650-450 B.C. by Gordon. There is no justification for such a late date on the ground of these two finds alone in view of the extreme speed of Sir Aurel Stein's otherwise examplarily excellent works. To use his own words, "out of this number fully 178 were opened and examined by us in the course of four days' strenuous work". It was quite possible for his workmen, pressed for such an incredibly large volume of scientific work within such a short time, to mix up evidence, even from unrelated sources.
(iii) The Cairn-burials and Megaliths in Upper Iran and South India.— It is not unlikely that the megalithic disposal of the dead as represented by the dolmenoid cist like monuments at Dambakoh, with the prototype of the port-hole and the use of iron came from upper Iran, the Talish basin. It may be noted that the port-holed dolmens circumscribed by circles, occurring in the upper regions of the area between the Black sea and the Caspian Sea, around Kaban, belong to the Bronze Age, and are dated before c. 1500 B.C. Similar monuments in Talish basin, further south, are first noticed towards the end of the Bronze Age. The dolmen graves of Tulu, Chirchir Pori, Agha Bwar, Chagouladder of the Bronze Age were found to be re-used in the Iron Age together with the interment of iron objects in the form of spear-heads and daggers or swords with bronze handle. The emergence of the iron-using folk is set down by Schaeffer to a widespread chain reaction caused by the invasion of Asia Minor (Turkey), and the expulsion of the Hittites, who sought refuge in Syria. This point has been discussed at length in Chapter 5. The Kassites too were dispossessed of their Assyrian hegemony about this time. Above all there was almost simultaneously an intrusion into Iran of an iron-using people. The date of these tombs with iron objects has been fixed by Schaeffer as referred to above, at circa 1200-1100 B.C. From here to the south-eastern regions of Iran bordering
on the north-western marches of the Indo-Pakistan subcontinent was not indeed a far cry.

The possible connection between the two regions is also suggested by a flattish flask (pls. II & III) type of vessel with lugs for carrying cord, possibly for slinging alongside a pack animal, as though in the use of a folk on the march, occurring at Sialk VI, cemetery B. Besides, the occurrence of horseman figures on a seal at Sialk VI, B points to a similarity of propensity with the cairn-burial folk, who appear to have loved their horse dearly enough to bury it alongside the human remains in the same tomb. Like them the cairn-builders were also possibly horse-breeders. This characteristic of the use of the megalith-builders of south India, where the horse-bit or sometimes a stirrup, and here and there, the head of a horse itself find a place alongside the repertoire of arms and grave goods, is very striking, indeed.

(iv) The Date of the Cairn-burials in Relation to South Indian Megaliths. As stated before, the cairn-burials have been dated between 850 and 450 B.C. The basis of this chronology is the relationship with Sialk VI, B. The prevailing discrepancy of chronological assessments, however, makes a firm chronological conclusion in regard to
the linked Londo ware and the cairn-burials rather
difficult. Counting a central c. 1000 B.C. as a
compromise, a date-range beginning about 800 B.C.
can be reasonably postulated for the cairn-burial
culture in general.

It is clear to see that the directional
trend of the cairn-burial ceramics as well as its
megalithic aspect is from Iran. But from the point
of view of the manner and contents of the interments,
the cairn-burials are closely connected with the
megaliths in south India. In Iran, between the
Black and Caspian Seas, there is the continued
evidence of a tradition of megalith-building from
the Bronze Age. The occurrence of the dolmen with
the substitute opening for a port-hole, a comparable
ceramic in the form of the flattish flasks with
spouts, which could be stoppered and slung on the
side of their pack animal, obviously the horse, point
to a connection that cannot be brushed aside. The
chronological range, though not firmly fixed yet, is
related. The horseman seal found at Sialk V, B, and
the horse-head in the cairn-burials, forge another
link. The horseman seal is dated to 1300-1000 B.C.
by Schaeffer.

In view of these evidences it would not
perhaps be hypothetical to state that there was a
connection between the dolmens of Iran and the
associated monuments in a continuous stretch.
covering E. Iran and Near-India (Pakistan). Similarly the connection between the cairn-burials of S.E. Iran and N.W. Pakistan on the one hand and with the megalithic monuments of south India on the other is indicated. The post-excororation fractional burial, the port-hole or its prototype and the presence of iron, besides the close association with and attachment to the horse in the form of the stirrup or horse-bit from the connecting link. The presence of animal bones, besides human, is another significant feature in common. But the most important link among the three groups is provided by the indisputable, if a little disturbing, occurrence of iron everywhere.

Gordon Childe's views on the possible link between cemetery 'B' of Sialk in Iran, on the basis of the port-holed slab, and those in India, is another support in regard to the directional trend and the chronological compatibility of the cemetery 'B' of Sialk with the dolmens of the Talish basin.

(v) A Comparison between the Iron Objects of the South Indian Megaliths and those of the Cairn-burials

If the hypothesis of the megalithic inspiration in India from the cairn-burials be true, it is likely that the megalith-builders obtained their knowledge of iron from the cairns themselves, and possibly from other sources as well. The difference in cultural repertoire between the cairn-burial zone of Iran and Pakistan border and the megalithic zone of south India relates mainly to the ceramics. In so
far as the iron objects themselves are concerned, the
arrowheads and spearheads show similarity in form to
those from the megaliths in general, and a comparison
of tool types (Tables 2, 4 & 5) shows several
parallels, viz., barbed arrowheads, swords, daggers,
knife and hook. The barbed arrowhead (trilobate) at
Moghul Ghundai was no doubt a connecting link.

The establishment of the link between
the cairn-burials and south Indian megaliths
attempted here would, however, depend on the
elimination of rival claimants to megalithic
inspiration in south India. To these we must
now proceed.

d. Megalithic Remains in Other Parts of North
India and Adjacent Border Regions.

(1) General.— If the south Indian megalithic
monuments, with port-holed, have any moorings with the
west, as they appear to have with Sialk VI, cemetery B,
and through them with those in the northern regions
of Iran, described above, the cairn-burials in the
Makran and Baluchistan form a significant connecting
link. But the intervening land-mass between peninsu-
lar India and the cairn-burial area is a formidable
gap. But it is not entirely devoid of what may be
relics of intermediate links in the chain. In fact,
throughout the length and breadth of India there are
remains of monuments that could be related with the
megaliths of south India, but they are too isolated
from one another and the interconnections are yet not
Nevertheless, even a brief consideration of the evidence is likely to be rewarding.

(ii) Sind.- The most important of these remains are those reported from the neighbourhood of Karachi. Captain Freedy, Collector of Karachi, about a hundred years ago, described the occurrence of stone-graves on the hills near Waghodur in the shape of dolmens or slab-cists throughout the hilly district and extending towards the frontier. He also emphasized that these graves exactly resembled those described by Captain Meadows Taylor and Captain Congreve in the Deccan and the Malwars respectively.

H.B.E. Frere, then Commissioner in Sind, observed the occurrence of cairns and cromlechs such as described by Captain Meadows Taylor on the road to Shabhalawal in Baluchistan and also in the hills on the direct road from Karachi to Kotri. Wheeler has found some remains of cists and stone-circles in the region following these hints. But no port-holed dolmen could indeed be found. It is a pity that those remains have not been excavated, for exposure alone would establish their antecedents.

(iii) Delhi, Uttar Pradesh, Orissa and Rajasthan.- Cunningham reported the occurrence of 'cromlechs', cairn and stone-circles in the hilly parts of the Districts of Delhi, Mirzapur and Orissa. These are apparently megalithic monuments. Wheeler has stated that these observations had not been confirmed. But the discrepancy under the circumstances need not be
attributed to inadequate or incorrect observation by Cunningham. The disappearance of some of these monuments, through the ravages of time or even of the deliberate but unknowing human hand, cannot be overemphasized, assuming that the sincerest search has already been made for their re-discovery as claimed.

A.C. Carlileyle observed a cromlech within one of four stone-circles at Deesa near Jaipur in Rajasthan. Similar monuments were observed at Khora near Fatehpur Sikri, Satmas, besides, granite and slate 'cromlechs' at Deodhoora, near Almora in U.P. At Visalpur in Rajasthan he found an ancient arrowhead, which is made of iron in an apparently megalithic context.

(iv) Kashmir, Ladakh and Tibet.— Further north menhirs have been noted at Burzahom near Srinagar in Kashmir. Burial-cists have also been observed in Leh valley of Ladakh, on the border of Tibet. The excavations conducted on some of these in 1903 and 1909 have yielded burials containing disarticulated human bones, accompanied by bronze and iron objects. The ceramic contents are impressed or painted in dark red colour.

Menhirs and associated monuments are reported from Tibet. Many of these are reported to be covered up by sands and the local people have no idea of their significance.
(v) Former N.W.F.P. of Undivided India, (now in Pakistan)-- The discovery of a stone-circle at Asota, 17 miles east-north-east of Mardan in the former N.W.F. Province (now in West Pakistan), needs only to be mentioned.

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It is not easy to connect these diverse remains with the megalithic culture of south India, but the similarity of the remains is arresting and calls for a thorough investigation, for they may have a bearing on the directional trend of the emergence of megaliths as well as their chronology. In this connection attention may be drawn to the view of Heine-Geldern that the megaliths have travelled to India in several waves, both from the east and from the west, but in every case over the land route.

§. Megaliths in Middle and North-East India

Practiced by Tribal People

(i) General.-- Apart from the burial monuments of the past, there is yet another comprehensive group of monuments representing a living cult of megalithism with undoubted moorings in the hoary undetermined past. This covers an extensive area of the country and occurs in the middle-eastern and north-eastern parts of India amidst the tribal settlements of the Mundas and Hos in Chhota Nagpur (Bihar), Maria Gonds of Bastar (Madhya Pradesh),
Gadabas and Bondos of Orissa and Khasis and Nagas of Assam and some others in addition. In these regions the monuments are occasionally sepulchral as among the Mundas, Hos and Khasis, but mostly commemorative as among the rest, but, limitedly, both, as among the Hos and Mundas. The forms of the monuments are also different. Some among these are held as tribal property and zealously guarded, but some, possibly coming down from olden times and forming some kind of megalithic monuments, are not so cared for. Some practices in Assam have a wide distribution in Indonesia, Polynesia, Philippines and isolated groups of islands in the Pacific Ocean, and are considered to be integral to a common cultural complex in the South-East Asiatic region.

Among the people practising these living megalithic rites there are different linguistic as well as racial groups. The Mundas, and Hos, are Austro-Asiatic in language, the Gonds are Dravidian in language, the Gadabas and Bondos are Austro-Asiatic, while the Nagas are Tibeto-Burman in language and Mongoloid in racial characteristics. Nevertheless, the underlying cultural bias seems to have been Austro-Asiatic-cum-Austro-Asiatic in inspiration. In this context it is interesting but anomalous to note the occurrence of the eastern tradition of the megalithic strain among the Gonds who speak a Dravidian language.
(ii) The Neolithic Association. - It has been surmised and suggested that the monuments in the region were introduced by the Austro-Asiatic and Austro-Nesian language groups. Distributionally this cultural complex is supposed to be coeval with the provenance of (i) neolithic shouldered adzes of Austro-Asiatic contribution, and (ii) polished neolithic celts of square cross-section of Austro-Nesian contribution, respectively. The geographical contiguity of these monuments may suggest a genetic connection, but it is yet to be firmly established. Heine Geldern sees in the megalithic complex ramifications of a cultural influence from the Mediterranean region transmitted over Central Asia and China over a land route. Haimendorf, on the other hand, is not very definite about its main source of inspiration and the course of its expansion.

The neolithic association in origin of these monuments as supposed by Haimendorf has not been examined. Even if the regional distribution of the shouldered adzes and the celts of square cross-section were to coincide with the distribution of tribal monuments of menhirs and dolmens, respectively, there is no ground for an a priori cultural and chronological association between the two. This point has been clearly indicated by A.H. Dani in his recent work on the Prehistory and Protohistory of Eastern India. The issue of cultural equation and movement based on an unproved association of neolithic with megalithism
raised by Haimendorf must, therefore, remain open until it is proved or refuted.

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To quote Dani, "These (i.e. megalithic) monuments form a class by themselves and much fieldwork is needed before any connected account and chronological sequence can be given of them. One thing appears probable that the stone tools, of which the study is made here, can hardly be connected with them, since they have not been found in association with any megalithic remains. ..... J.P. Mills and J.H. Hutton point out that throughout the area of megaliths in North Cachar stone adze-heads are found, but it remains to be proved. My recent exploration of the Jaintiapur menhirs produced not a single neolith."

Dani has equally assailed the grouping of neolithic cultures in eastern India on the basis of the shape of the celt advanced by Heine-Geldern, as also their association with the movement of the Austro-Asiatic language groups. In his opinion, "the available evidence suggests the appearance of the tool types in India later, and, therefore, would not lend support to Heine-Geldern's chronological assessment of the emergence of the tool types before the Aryan migration, around 2000 B.C."

Notwithstanding these difficulties, it has to be admitted that the question can be solved only archaeologically. Till then the question of the origin of the megalithic monuments in eastern India and their relationship with the south Indian megalithic monuments should remain open.
(iii) The Relationship with the Megaliths of South India

Meanwhile, the basic differences between the two cultural and zonal groups can only be emphasized. While the southern megalithic monuments are sepulchral and belong to the Iron Age, the eastern Indian megalithic culture is commemorative and festive, being devoted to fertility, owing itself to the dead ancestors, and are possibly, though not yet proved, neolithic in origin. It may be said at once that the south Indian megalith-builders were also a settled agricultural folk, who employed tank-irrigation to enhance their yield and took special care to ensure that the megalithic monuments did not encroach upon their arable lands nor permit them to interfere with their cultivation of the soil. There are instances, as at Uttiramerur, in the Chingleput District, of a gigantic non-functional megalithic dolmen standing alone in isolation and majesty as a guardian spirit and sentinel on a rocky outcrop in the midst of a fertile field, securing the growth and safety of the crops as it were.

The cultural relationship between the groups deserved careful investigation, especially in view of the commemorative rituals of a handful of tribes in south India who still practise some attenuated forms of megalithism. These comprise the Mala Aryans of Travancore, the Todas of the Nilgiris, the Kurubas of North Arcot, the Kurumbas of Mysore and the Tottiyans of Madura.
The Mala Aryans bury their dead and, as a secondary practice, inter a silver or brass image of the dead person, depending upon the affluence of the next of kin, or merely a representative pebble, among the indigent, inside a box-like chamber of stone erected into the earth. Food and drink are offered to the departed spirit on anniversaries.

The Mundas and their neighbours erect dolmens surrounded by stone-circles and put into them the skeletal remains of a whole family. It is possible that the Khasis imbibed this practice from them in turn. Certain common features between the megalithic and allied monuments in middle and north-east India are, however, undeniable, in spite of Haimendorf's insistence to the contrary. His argument, that the elaborate megalith-ritual and culture built up by the surrounding tribes or those in Assam could not have sprung from such humble beginnings as the monuments in the Kolarian area, is not strictly supportable, because the megalithic assemblage of south India is quite variegated and yet it seems to have sprung from the apparently humble or simple beginnings of the dolmen cist with port-hole and bounding circle, which, being the commonest form found over an extensive area, stretching even beyond the bounds of India, may be held as the standard norm.

In fact the megalithic form adapted itself continually to the local genius. The norm was perhaps the slab-cist circle. When the geological factors did not permit splintering of slabs, rough
unhewn boulders were employed for the chamber, and the opening was provided by a deliberate gap amid the supporting stones. In the lateritic zones the stones were dressed on the inner side to provide a regular rectangular interior. The sarcophagi came in their turn to receive the mortal remains in the cists. The urns were also provided in the complex of funerary monuments and suitably protected in a pit. In the lateritic zone new experiments were made with local stone to provide for the preservation of the urn or sarcophagi in Kudakals, Topikals or even in subterranean caves. Even the caves were excavated in the model of the slab dolmen and often provided with a symbolical opening at the top. The cave itself was girdled by a circle of stones. The circle around the cave was no longer utilitarian, but it stood, therefore, as a symbol of convention. The ever-new experiments appear indeed to have been the result of creative impulse adjusting itself to local circumstances.

Nevertheless, the cultural and chronological links between the middle Indian and north-east Indian megalithic monuments on the one hand and between these two groups and those of south India on the other are an unknown factor. In this context a possible point of contact between the megaliths of south India with some tribes in north-east India may, however, be recalled, for what is worth. Some of the shell ornaments found among the megaliths in south India are similar to those in use among Angami Nagas and other tribes inhabiting the Naga Hills District.
of Assam. The similarity led Hutton to think that the Nagas contain an element which migrated from south India to the north-east through the Bay of Bengal. It is to be noted, however, that the raw material is imported by the Nagas from the sea coast via Calcutta. Shell bangles are used extensively by the married Hindu women in West Bengal to this day as an auspicious emblem of married status, and West Bengal has to depend for the bulk of her supplies of raw chank upon the chank fisheries of Madras to meet the demand for chank bangles.

It cannot, therefore, be claimed nor established as yet that the megalithic inspiration into south India had anything to do with the megalithic practices of tribal people in middle and eastern India. The contraindications of any genetic connections can only be emphasized for the present. The possibility of an influence spreading out from the southern focus into the northern or eastern regions cannot be ruled out. Common factors between the two groups may as well be attributed to a collateral influence in a two-way traffic. The possible extent of the impact of an eastern inspiration on the south Indian megaliths can best be imagined in the light of the latter's proclivities to the cairn-burials of Baluchistan, detailed earlier.

(5) "The Source of Inspiration of Megalithism in South India in its Bearing on Chronology - Divergent Views"

(i) The Views of D.H. Gordon.- In this study the route taken by the distributors of megalithism
assumes some importance. Gordon's suggestion that the megalithic idea travelled across the sea through Arabia is not likely to be correct, in view of the absence of any archaeological evidence of such an early cultural contact with Arabia. Though the sea route to India from the west was not extensively employed until the discoveries by Hippalus in the first century B.C., of the trend of monsoons, there can be no doubt about some pre-Hippalus sea contact between Arabia and India, especially by coasting. This, of course, would not prove that the megalith concept travelled in this manner in view, especially, of what has been stated above, about cultural contacts between Iran, Pakistan and Peninsular India. The spread of the megalithic idea along the sea coast, as suggested by the Gordon Childe and Wheeler, may not be strictly correct. In the beginning it may indeed have been coastal, if at all, up to a point, but in that case very soon it spread very deep into the hinterland. The megaliths in the Nagpur District, which represent the northernmost limits of megalithic distribution in peninsular India, are more than five hundred miles away from the western coast line.

Under the circumstances, a more plausible route seems to have lain on land, as emphasized by Heine-Geldern, from the direction of S.W. Iran over north-west Pakistan and the intermediate land masses. Wheeler has been looking tentatively to
Karachi as the spring-board of the megalithic idea for entry into south India. If the consideration of moorings could suggest a link with the distant Caucasus region or even the Mediterranean coast, as suggested by Childe, the cairns, more akin to the southern graves than to the distant western prototypes, would be the nearest known link, being also located on an intermediate zone between more distant distributional blocks.

(ii) The Views of R. Heine-Geldern

The occurrence of straggling megaliths or such monuments in north India, even beyond the northernmost latitudes linking the cairn-burials, sounds perhaps a jarring note in the framework thus built up. But it is easily explained. There may be more than one strain of megalithic concept entering into India, as actually suggested by Heine-Geldern, and some megalithic remains in northern regions can well be independent of the southern complex. The occurrence of bronze and iron objects in the cist-like graves in the Leh valley of Ladakh probably shows the incorporation of the megalithic monuments already within the Iron Age. This is likely to bear out Heine-Geldern's views about the movement through Central Asia. Such a movement could have been influenced by the impact of Iron Age in the Talish basin or Central Asia. But until more is known about them further opinion has to be reserved.

In this context, it is indeed interesting to note that though cremation was the

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apparently known even in the days of the Rigveda. In fact, elaborate rituals have been laid down in the sacred texts, of the post-Rigvedic phase, and this theme has been dealt with at some length by P.V. Kane. It is extremely difficult to say if the burials described in the texts belong to the megalithic order. But from the utter paucity or absence of the related material evidence, their megalithic aspect may perhaps be discounted.

The Rigvedic references to burial are contained in Rigveda X, 15, 14, where the word employed is anagnidagdha (not burnt), and in RV. VII, 89, 1, where the earthen tabernacle is referred to as mripmayam griham.

Some passages in Satapatha Brahmana (XIII, 8, 1-4) refer to the collection of charred bones, and their placement in an urn, which was interred after a considerable interval, with the erection of a mound over it. It refers to the erection as well of a stone-circle around the mound.

The stages of disposal of the dead in ancient India consisted of (i) cremation, (ii) collection of charred bones, (iii) depositing them in an urn and interment underground and (iv) erection of a mound over the burial. It was, therefore, a practice of post-cremation urn-burial, under a mound or cairn-heap, enclosed by a stone-circle, that was limitedly practised. But the remains of not all persons were thus buried, for the charred bones were to be deposited
either under a tree or cast into the Ganga river. The monument of a mound over a burial was also not erected in all cases.

At any rate, the relationship of the burials spoken of in the Rigveda, if any, with the megalithic practices is not clear, and any categorization on the matter at the present stage of research would be a presumption, fraught with hazard.

(iii) The Views of Walter Ruben. In this context, however, a reference may be made in passing to the view expressed by Walter Ruben, that the megalithic trait came into India from Palestine via Persia. As interpreted by him, one strain proceeded to the south and the other towards the east till the land of the Mundas was reached.

The Iranian connections with the south Indian megalithic graves have been already indicated. Whether the Iranian megaliths owed themselves to Persia (i.e. Iran) or to a source outside Iran, is a moot point and beyond the scope of the question in hand.

Nevertheless, it may be hazarded to suggest that the megalithic monuments around Karachi, Delhi, Fatehpur Sikri and Jaipur are the straggling remains of the onward movement of the megalithic idea from Makran to Middle India and thence to the south. It is not possible to be categorical on this point without excavation. It seems fairly clear, however, that they are hardly the result of a back-surge, into
what is now being held as the land of passage, from the south. The occurrence of an iron arrowhead in a megalithic context in Visalpur, in Rajasthan, is possibly a significant link in the chain, and, if so, perhaps proves incidentally the prior acquaintance of the megalith-builders with iron before the entry into south India as an additional evidence to that from the cairn-burials.

(iv) **Views of Sir Mortimer Wheeler**.

(a) General.— Wheeler has pointed out that the expansion of the Mauryan empire into the south was signalized by a cultural wave, widely different from its predecessor. It may be contended that the only Indian culture other than the Aryan which could have penetrated into the south at this time was surely the Dravidian. For the moment it will be assumed that it was so. The ultimate confinement of the Dravidian culture into the south also indicates, under the assumption, a pressure from those who were surging around further north.

To return now to the movement of the megalithic idea to the south, it may be pointed out that apart from the straggling and isolated remains of megalithic monuments in north India, of doubtful or unproved association with the south, there are indeed no other known monument asociable with the Dravidian speakers, so far discovered in the north.
This can be explained by their disadvantage and discomfiture at the hands of the expanding Aryan tribes, besides, of course, possibly of the assumed north-western, almost coastal, source of the megalithic concept. The few straggling remains may point to their passage through the land, as has already been suggested. A people on the move hardly have the time for fastidious ornamentation. Their basic ceramic wares are possibly, therefore, plain, in contrast to the painted pottery of the cairn-burials or of the neolithic-chalcolithic cultures.

(b) The Megalithic and Chalcolithic Cultures:—The other distinctive and characteristic of the megalithic culture in south India is the controversial black-and-red ware pottery produced by the technique of inverted firing. It is difficult to be categorical about its emergence. Wheeler has suggested that the megalith—builders adopted this ware from the chalcolithic culture towards its end-phase and adapted it to their purpose. The adoption and adaptation of the black-and-red ware from the chalcolithic culture has been
amply supported also by the evidence of Bahal, in
District East Khandesh, Maharashtra, where the
similarities of the bowls can be clearly marked. The
fusion between the two was perhaps crystallizing at
this stage, as the funerary pottery at Tekwada, on the
opposite bank of the river Pravara, bears in addition
graffiti marks, which appear in identical form,
repetitively, on the black-and-red ware of the megaliths,
obviously in imitation of the former.

The comparative plainness of the pottery
of the last stage of the chalcolithic-cum-post-
chalcolithic phase is also borne out by the almost total
cessation of the painted black-on-red ceramic by which
the plain black-slipped, black-and-red and the plain
red wares in the post-chalcolithic -cum-pre-N.B.P.
cultural horizon or Period II at Nagda is characterized.
It is, therefore, fairly reasonable to postulate that
the megalithic tradition imbibed the ceramic tradition
of the chalcolithic culture, shorn of its decoration.

But the imbibing of the cultural traits
would not stop short at the ceramic stage only. The
mode of burial practised at the burial site of
Tekwada opposite the habitation site of Bahal could
hardly have left the megalith-builders unimpressed.
The incarceration was a common enough example before
them. It was practised at Daimabad and Nevasa as
well. In this context it is to be noted that the
neolithic-chalcolithic culture at Brahmagiri was
characterized by full burial of infants in urns
and of adults in pits. Though the urn as a receptacle for the dead remains was easily adopted, the mode of prior exposure and fragmentary burial, as characterized the cairn-burials in Baluchistan, could not obviously be given up. This is almost cemented by the evidence from Maski, where full as well as fractional burial in pits have been practised side by side, in the megalith-
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complex, even to the extent of the use of the deliberately laid bed of lime, possibly intended for preservation as a link with the chalcolithic funerary custom as noticed at Nevasa, where the urns were lined interiorly with lime.

The chalcolithic culture in general lasted a long while, i.e., from circa 1500 to 800 B.C. and it is likely that the megalith-builders in the south, overlapping with it in the last stages, came into their own about 800 or 700 B.C.

This agrees also with the date-scheme of the cairns handsomely enough and gives the probability of the proposed correlation and interconnection between them and the megaliths, a considerable measure of probability.

(c) Chronology -- Wheeler had earlier thought and announced that the megalithic culture would not go back earlier than circa 200 B.C. The discrepancy of the assessment was pointed out by Haimendorf when he said that the three versions of the inscriptions of the Edicts of Asoka, located concentratedly at and around
Brahmagiri, namely, at Siddapura and Jatinga Rameshwara in addition, could not possibly have been addressed to the primitive neolithic settlements. The propriety of this argument has brought about a minor change in Wheeler's date-scheme as well in keeping with his earlier assessment. With the modified circumstances he has conceded *circa* 300 B.C. as the inclusive lower date. He has further offered the suggestion, rather firmly, that a strong and vigorous movement of the megalith-builders entered the south during the reign of the second Mauryan king, Bindusara, a short time before Asoka in the third century B.C., but has aptly described it as "a gratuitous historical intrusion".  

There is no indication anywhere, either in India's prolific literature or in stratigraphy, that such a revolutionary movement took place so short a time before Asoka's appearance on the scene. It may be noted that Asoka's grandfather, Chandragupta Maurya, abdicated the throne towards the end of his reign, and went as a recluse to the south. The building up of the vast empire, therefore, is circumstantially attributed to his father, Bindusara. The fact that Chandragupta moved to the south, in the Mysore region, indicates that his reign was already within his empire before his abdication about 300 B.C. The southward movement, suggested by Wheeler, appears, therefore, to have taken place well before the accession of Chandragupta.
It may be noted that Asoka's inscriptions mentioning the four well established kingdoms of Chola, Pandyanas, Keralaputra and Satyaputras in the south presupposes a fairly early and long enough settlement for the evolution of civilized constitutional Government under monarchies in a land previously inhabited by the primitive neolithic agriculturists, as stratigraphy reveals.

The issue of the inscriptions, which were not merely court or official documents but public proclamations, meant no doubt to be understood by all and sundry, in the Prakrit language of the north in a land of Dravidian speakers would further presuppose even a fairly prolonged Aryan penetration into the region. The use of the Prakrit language was not merely a matter of pride for the ruling house within its domains. The use of both Greek and Aramic in a recently discovered Asokan inscription at Kandahar in Afghanistan and the use of the locally understood Kharosthi script at Shabazgarhi and Manshera in his inscriptions bespeaks the solicitous monarch's desire to be intelligible to his subjects, for he had a religio-social message to convey, seeking to place his people on the path of a gentleman's virtue, inspired no doubt by the Buddha. The use of the Brahmi script of the north for the Tamil inscriptions in south Indian caves belonging to the centuries immediately before the Christian era, is
another evidence of an earlier penetration of Aryan influence.

In this context it may be recalled that the Aryan literature bears some ambiguous testimony to the megalithic mode of disposal of the dead, while Manimekalai, a piece of the post-Sangam literature, is replete with it.

There can be no doubt, therefore, that the megalithic mode of disposal of the dead was associated with the Dravidian speakers, who appear to have entered into south India considerably earlier than Asoka. The cultivation of an advanced literature in Tamil, as the Sangam literature is undoubtedly acclaimed as a highly evolved literary creation, even as early as the first-second century A.D., would imply several centuries of its existence as a patois before the prolonged apprenticeship of literary endeavours, the earliest expression of which were the Tamil inscriptions in caves. This would indicate much earlier Dravidian beginnings in the south.

All these circumstances would point to a much earlier date than the days of Asoka for the introduction of megalithism into peninsular India. This is indicated by the fact of the absence of megalithic relics in the Mauryan levels in north India. As megaliths cannot be held as characteristic of the Mauryan culture, or of any other earlier culture in north India revealed by stratigraphy, the occurrence
of the megaliths in south India has to be attributed, of necessity, to some other cultural force, and the Dravidians have come in handy to claim the plaudits.

(v) The Views of Haimendorf and the Linguistic and Racial Evidence on the Chronology of Megaliths in South India

(a) The Views of Haimendorf. - It was Haimendorf who sought to connect the introduction of megaliths in south India to a distinctive linguistic group in India. He expressed the view that the present distributional zone of the megaliths in peninsular India covers exactly the Dravidian speaking area. In view of the sequential position of the megaliths following, with an overlap, immediately upon the very primitive neolithic agriculturists, and in view of the obvious need of some degree of civilization to enable a people to comprehend and imbibe the full import of the Asokan inscriptions occurring within the megalithic zone, the prior existence of the iron-using megalithic culture at the time of the extension of the Mauryan sphere of influence into the south was a necessary pre-condition. Such a picture of the civilized life in the south can only be attributed to the Dravidians in India, who, linguistically speaking, are now confined strictly to south India and this phenomenon should have been the result of a gradual losing of ground under sheer pressure of a more northerly people, no doubt, the Aryan
speaking people, if not of any violent armed conflict with the latter. The question now is about the date when such an event could have taken place. It could not have been at any definite point in time, affecting as it did a mass movement, but quite an expanse of time to account for such a movement.

The question whether the Dravidian speaking people could have imbibed the megalithic concept at any stage, whether before or in the course of their southward movement, needs to be established. Though a direct evidence on the point is not forthcoming at the moment, the circumstantial evidence, therefore, deserves consideration. As regards the chronological position of the infiltration of the Dravidian speakers, Haimendorf estimates it at the middle of the first millennium B.C., and that they entered peninsular India about 300 B.C., i.e., before Asoka. He also places the course of their movement along the coast, and does not answer the question of the exact source of their megalithic concept.

The linguistic evidence of the Dravidian language flourishing in the Indus plains at or before the time of the Aryan immigration into India goes against Haimendorf's contention of chronology as well as source, especially that it was unknown in north India. The megaliths in the interior, both in north and south India, also runs against the coastal route theory of its immigration.
(b) The linguistic and racial evidence on the chronology of megaliths in south India.— The linguistic evidence on the question of the megalithic chronology has been dealt with by the author at some length elsewhere. It has been endeavoured therein to show that it was the Dravidian speakers, who were once spread over north-west India at 1500 to 1000 B.C., introduced megalithism in south India. They were being gradually pushed down southwards by the expanding and oncoming Aryans. On their way they had but a reasonable chance of picking up the use of iron, black-and-red pottery and also the megalithic strain, the triple characteristics of the early Dravidians, either from the cairn-burial folk or from the Aryans, with whom such burials were becoming unpopular at the time, or from both. The black-and-red ware could have come from Ganga plain, where it was quite at home, even before 600 B.C., or with greater possibility from the central and west Indian chalcolithic folks, especially as Subbarao has demonstrated the parallelism between the so-called megalithic black-and-red ware and the chalcolithic black-and-red ware during its last days, as shown earlier. Though the Rigveda is acquainted with a form of burial, recalling the megalithic, it would, on the present showing, be an oversimplification of the case to attribute even a strain of the megalithic concept or practice of the Dravidian
speakers to the Aryans.

Some of the cairn-burial folk may as well have accompanied the Dravidian speakers in their southward movement and accentuated the megalithic aspect. The find of brachy-cranial features in the Brahmagiri (Mysore) and Yelleswaram (Andhra Pradesh) megaliths in India, though very limitedly, and in the cemetery of Sialk VI, B, in Iran, which are otherwise culturally allied through the cairn-burials of Pakistan as a connecting link, leads support to such an inference. The cranial characteristics of the cairn-burial folk are at present unknown. But it is interesting to emphasize that the brachy-cranial people of Sialk VI, B practised megalithism and employed iron.

The event of the Dravidian movement into the south was clearly post-vedic, in view of the substantial volume of North-Dravidian elements in the Rigvedic language and at once pre-Mauryan, as shown above. The date of the Dravidian infiltration into the south, has, therefore, to be put at between circa 1000 and 300 B.C.

In this context the links with the cairn-burials, helps to date this movement more pointedly to around 800-700 B.C. The incorporation of the black-and-red ware and iron in their repertoire lends support to this date-scheme.
On these and other grounds, elaborated in the earlier paper of the author, the thesis regarding the source of megalithic inspiration and its date, as enunciated, stands vindicated. The linguistic and racial evidence too lend support to the new chronological scheme proposed, and it derives for the present, a limited but indirect support for the established directional trend of the megaliths as well.

It is to be noted, however, that Brahui in Baluchistan, akin to Tamil, and Kurukh and malé languages in Chhota Nagpur and Rajmahal hills, respectively, are said to represent late migrations from the south, the latter two being regarded as importation from the Kannada country with marked analogies to Telugu. With the migration of the language, some strains of the cultural trait of megalithism would be expected to emigrate as well. This would create fresh complications in the issue, and at the moment the extent of cultural diffusion through these languages, in so far as it relates to megalithism, is not clearly established.

(vi) Iron and the Megaliths of South India. In this context it may be contended that, if the use of iron, which is an integral element of the megalithic culture, developed independently, earlier in the south than in the north, it would scarcely have been possible, on the assumption that c. 300 B.C.,
is the earliest date of megaliths as of iron, for
Asoka to have set his foot on the southern soil.
But on the contrary not only did Asoka set his foot
on the southern soil, but he put his decisive stamp
upon it, lasting through the mists of history. He
further maintained good neighbourly relations with
four established kingdoms of the south. This would
have been possible more as a result of his possession
of a superior strength, resting on an adequate reserve
of competent arms, not to be employed for harass­
ment but ready to be flashed out in defence against
aggression and less by a mere empty abjuration of wars a:
honest liquidation of normal defences. In those days
they should have comprised arms of iron or possibly
steel imparting a superiority of strength that
inspired fear and commanded respect.

If the carriers of the megalithic
concept did not have any substantial knowledge of
iron prior to their ultimate penetration into south
India, they could at least have picked up its rudiments
on the way to the south, possibly from the
Aryan tribes themselves, pushing further on into
the south, as they did, and establishing an
extensive Iron Age culture in all its ramifications.
They then utilized the immense deposits of ores in
south India to produce their miscellany of weapons
and agricultural tools.

If, on the contrary they had acquired
the knowledge of iron prior to the contemporary
Aryan tribes it would surely have given rise to a trial of strength between the two. The obvious superiority of iron weapons and its earlier possession would normally have tilted the balance in favour of the iron-using megalithic folk, and they would be under no obligation to be confined to the peninsular south. This was not apparently the case. But as iron forms an integral element of the southern megalithic culture, it is likely that the bearers of the megalithic tradition had obtained their knowledge of iron partly from the cairns of Baluchistan and Makran and partly from the northern plains.

If, therefore, the tradition bearers of a megalithic cult had already acquired the knowledge of iron and yet, in fact, they moved down to the south, the circumstances must be set down to the superiority of their northern compatriots and a timely realization on the part of the former of the utter futility of any trial of strength with superior forces. Practical experience, may be on small scales, should have been another guide in this decision of wisdom. The admission of such a possibility implies an adequately earlier development of the Iron Age technology in the northern parts of India. But, in fact, no trial of strength by an appeal to arms is indicated by evidence, nor was there any need for it as the mutual relationship between the pressed bearers of the Dravidian traditions and the
expanding Aryan speaking juggernaut appears on the whole to have been one of tolergence, and to an extent, even of amity, such as a strong fellow-traveller can evince towards the not so strong.

(vii) Summary of the Arguments.— Wheeler's analysis of the megalith problem traces (i) its black-and-red ware to the dying phase of the chalcolithic culture, (ii) iron to the northern plains, and (iii) the megalithic burial complex to an unknown source, possibly lying outside India, in the west.

There is no dispute about the first premise, except about its chronological assessment.

The second can be accepted, limitedly, in so far as it relates to iron, though not again, with its chronological bounds suggested by him. About the N.B.P. ware sharing, even initially, the plaudits of the suggested cultural conquest as indicated by him, over the megalithic culture, resulting in the development of the black-slipped ware of the megaliths, one cannot be over-enthusiastic. Is it not surprising to see that this de luxe ware did not live beyond the second century B.C., and was not able to penetrate beyond Amravati in the Krishna valley? The reason is perhaps not far to seek. By this time the megalithic ceramic was evolved, improved and matured enough not to be enticed by the dying intruder to fall for its fading lustre. Even its distribution in the megalithic zone does no honour to its dignity. In fact, it is so sparse in the south as to attribute its presence to an accident of importation rather
than to the deliberate effort of local manufacture.

It has already been shown that though iron objects and the N.B.P. were went hand in hand, iron was earlier in point of emergence in the northern plains. About tracing the iron of the megaliths exclusively to the Ganga plain, even at an earlier date, one cannot be very sure either.

Wheeler has no present answer for the third aspect, namely, the source of megalithism in India, except a near-guess. An attempt has been made to answer the third question also in the foregoing lines. The integrated solution of the problem was obliged, above all, to modify the old time-table, almost beyond recognition.

(c) Conclusion

The convergence of all the available evidence in hand leads to the following conclusions regarding the megalith-builders:

(i) The megalith builders penetrated into the south considerably before the Mauryan invasion.

(ii) They had a reasonable chance of picking up acquaintance with iron either from their Aryan compatriots or from the cairn-burial folk.

(iii) They imbibed and continued the ceramic tradition of the chalcolithic culture, of an end—phase or even a post-chalcolithic phase. Such a phase is indicated by Period II at Nagda, where the chalcolithic tradition continues. Though Nagda
Period XI occurs after a hiatus, separating it from the earlier chalcolithic culture, the possibility of its survival through an overlap is not ruled out. To quote a parallel case, the Painted Grey Ware and the N.B.P. Ware are separated by a hiatus at Hastinapura, but at Sravasti, further east, they occur together in an overlap, obviously at a later date.

Nagda II represents a continuity of some of the chalcolithic traditions even after the introduction of iron technology, though in a modified form. At a corresponding period, Ujjain, one of the most important settlements in the region, shows an Iron Age urban culture, not entirely impervious to the surviving chalcolithic traditions, though in its modified form.

(iv) They appear to have imbibed and incorporated some aspects of the burial customs of the chalcolithic folk as well. Burial customs have a tendency to persist; and absence of evidence of survivals in the post-chalcolithic phase cannot strictly be used as a negative argument to exclude their contact with the megalith-builders, even in a phase of overlap with the succeeding Iron Age culture. Ghosh's discovery of rare remains of post-cremation burials at Rajgir in clay-lined pits provide a parallel example of continued survival possibly from an earlier date.
(v) The chronological extent of the cairn burials, taking its initial date back to c. 800 B.C., accords well with the end-phase of the chalcolithic culture extending up to circa 800 B.C., as well as with the succeeding Iron Age culture at Nagda and Ujjain, namely, circa 750 B.C., and set the possible lower limits, in harmony with the attendant evidence for the introduction of the megalithic cult into India. The time factor involved in its southward movement may account for a hundred years, and point to the date of its introduction there around 700 B.C.

If, however, an independent origin of megaliths in south India is to be posed, it is to be traced hypothetically as an isolated development of an advanced culture on the expiry of a primitive crop farming culture of neolith users, as archaeology has revealed, and it has, of course, to be attributed to the Dravidian speakers. Even this would presuppose a long time gap before the advent of the Mauryas on the field, as shown above. A full-fledged Iron Age culture is also to be conceded from the very beginning, as a non-iron megalithic culture in the south, representing, if at all, a possible earlier development-phase, is yet to be discovered.

All this would point to a palpable improbability of a such a course of megalithic evolution in south India.

The corresponding chronology of the Painted
Grey Ware, the post-chalcolithic-cum-pre-N.B.P. culture as in Nagda and limitedly at Ujjain, as of the cairn burials lend support conjointly to the chronological scheme suggested for the megaliths in south India and impart, at the least, a semblance of admissibility to the theory of the introduction of megaliths into India including the incorporation of iron advocated. Thus it is clear that the introduction of megaliths into south India should be dated to about 700 B.C., and traced, on the present showing, to the cairn-burials of Baluchistan, with wider links further afield.

It is, therefore, obvious that there was knowledge of iron both among the cairn-burial folks on the Irano-Pakistan borderlands on the one hand and the users of the Painted Grey Ware ceramic in the northern plains on the other almost about the same time. It cannot, however, be maintained that the two people had any cultural contact or exercised mutual influence, though the iron of both the groups can indeed be traced in common to Sialk VI, B, which again is easily attributed to chain reactions which had engineered and directed the movement of the Aryan speaking peoples eastwards into Iran and further still into the Indo-Pakistan subcontinent (see Chapter 5, pp. A).