EXCAVATIONS AT
KALIBANGAN
THE HARAPPANS

(1960-1969)

PART - I




B.B. LAL

JAGAT PATI JOSHI
MADHU BALA

A.K. SHARMA
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FOREWORD

I am very greatly delighted to present to scholars the second book entitled Excavations at Kalibangan; The Harappan, Part-1, which embodies the account of valuable contributions of the excavations. In this series the first book on Early Harappans had already been published in 2003 by the Archaeological Survey of India as Memoir No 98.

In fact, after the partition (in 1947) extensive explorations were carried out in various places to search Harappan sites in India, since both the major Harappan sites, Mohenjodaro and Harappa, remained with the present-day Pakistan. Kalibangan was the first Harappan site which was explored and subsequently excavated after Independence, in 1960-69.

The excavations at Kalibangan have undoubtedly produced very good results and established Fabric A to F in pottery, added a unique finding of the earliest ploughed field from the early Harappan period and traces of earliest earthquake marking the end of the early Harappan and Harappan. Scale, cylindrical seal, charging bull, inscribed pottery, fire-alters, wells, bathing platforms, linga-with-yoni, plumb bob, etc. are the noteworthy findings, along with the plans of citadel, the city and burial ground, from Harappan Period.

However, for this long-pending report and its enormous delay, the senior author, Prof. B. B. Lal, states in the Preface of the book: "Better Late than Never". The completion of the report has only been possible due to painstaking approach of the authors, after their retirements: Prof. B. B. Lal and Late Shri Jagat Pati Joshi, both former Directors General of Archaeological Survey of India.

This Part-1 on the Harappans throws light on chronology; three-mounds concept of the settlement; fortified citadel and city; stratigraphy and structures; chess-board plan of the city; ritual platform, fire-altars, wells; representative pottery, plain as well as decorated, with their design-repertoire; cylindrical seal, square seals and sealings, with scientific studies of steatite seals; crafts and industries.

The academic community which has eagerly been waiting for this report for a long time will surely welcome it.

I have great pleasure in placeing on record my appreciation of my colleagues in the Archaeological Survey of India, for their joint efforts for the completion of the report. My special thanks are due to Dr. B. R. Mani, Additional Director General, Dr. D. N. Dimri, Director (Publication), Shri Daljit Singh, Superintending Archaeologist (Publication), Shri Vishnu Kant, Assistant Superintending Archaeologist, Delhi Circle, Dr. Sujeet Nayan, Assistant Superintending Archaeologist (Publication), Shri Hoshiar Singh, Production Officer (Publication), Shri Abinash Mohanty, Assistant Archaeologist and others who have provided assistance with ardent zeal in bringing out this publication. M/s. Aravali Printers, New Delhi, deserve my thanks for their co-operation and publishing this book.

R. Tewari

Place: New Delhi
Date: 31/01/2015

(Rakesh Tewari)
Director General
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CHAPTER 1

INTRODUCTION AND A SUMMARY OF THE RESULTS

B.B. LAL

Although in the earlier report on the excavations at Kalibangan we had given a detailed account of the location of the site and its environment, it may not be out of place here to recall some of it, since we don't expect the readers to remember all that; and perhaps some of them may not have even seen the earlier report.[1]

Located on the left bank of the now-dry Ghaggar (ancient Sarasvatī) river in Hanumangarh District of Rajasthan, Kalibangan (Lat. 29° 29' N; Long. 74° 08' E) is one of the most important sites excavated on the Indian side of the border after Independence. As would be seen a little later, it has made some very valuable contributions to our knowledge of the Harappan Civilization (also known as the Indus/Indus-Sarasvatî Civilization). The site is about 6 km south of the nearest railway station, called Pilibangan, which lies between Hanumangarh and Suratgarh. From Delhi, it is a little over 300 km by road in a north-westerly direction (cf. Fig. 1.1).

As one moves in this area, one sees during the winter season luscious fields of wheat interspersed with those of mustard, the latter welcoming the visitor by waving their lovely yellow flowers. But all this is a recent development. In the 1950s when we were exploring the area we were greeted by nothing but sand, often swirling up in the air and blinding us. The recent environmental change has come up because of the canal that has been laid out in the dry bed of the Ghaggar (Sarasvatī). Likewise, one can well imagine that during the Harappan times when the mighty Sarasvatī itself was flowing past the site the environment must have been no less green. Indeed, the discovery of a ploughed field with criss-cross furrow marks, ascribable to the Early Harappan times,[2] fully endorses such a view.

The ancient site consists of three mounds (Fig. 4.1). Of these, the one in the middle (called KLB-2) is the largest, though it has been badly eroded on the southern side. It measures approximately 240m east-west and seems to have been not less than 360m north-south. That on the west (called KLB-1) measures roughly 240m north-south and 120m east-west. As would have been observed, the longer axis in both the cases is north-south, i.e. almost at right angles to the adjacent river, which is somewhat unusual, since normally habitations stretch along the river. Anyway, both the mounds rise to a height of approximately 10m above the surrounding plains. The third mound, named KLB-3, is a bit away to the east of KLB-2 and is very much smaller in area, approximately 70m x 50m, and only 2.5m in height. The reason for this small size of the last-named mound lies in the fact that it was not a residential complex but was used only for a limited (ritualistic) purpose.

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1 B.B. Lal, J.P.Joshi et al. 2003, *Excavations at Kalibangan : The Early Harappans*, New Delhi : Archaeological Survey of India.

2 *Ibid.*, pp. 95-98.


EXTENT OF
THE HARAPPAN CIVILIZATION
0 100 200 300
KILOMETRES
AFGHANISTAN
PAKISTAN
INDIA
NEPAL
ARABIAN SEA
BAY OF BENGAL
PESHAWAR
SRINAGAR
MANDA
GUMLA
REHMANDHERI
HARAPPA
NAGAR
KATHPALON
ROPAR
DADHERI
DHALEWAN
BHAGWANPURA
KALIBANGAN
BALU
HULAS
BANAWALI
SISWAL
ALAMGIRPUR
DELHI
MOHENJODARO
KOT DIJI
SUTKAGENDOR
SOKTAKHOH
AMRI
CHANHU-DARO
KARACHI
DHOLAVIRA
SURKOTADA
LOTHAL
RANGPUR
ROJDI
BHAGATRAV
DAIMABAD
MUMBAI
KOLKATA
CHENNAI
MODERN TOWNS
R.INDUS
R.TAPI
R.NARMADA
60°
64°
68°
72°
76°
80°
84°
88°
38°
32°
28°
24°
20°
16°
12°
8°

Fig. 1.1

SOME THOUGHTS ON THE NOW-DRY RIVER ON WHOSE BANK STANDS THE SITE OF KALIBANGAN

B.B. LAL

CHAPTER 2

ITS IDENTIFICATION

The ancient site of Kalibangan stands on the left bank of a river which is now dry, though its bed is about 5 kilometres wide at this point and has been measured even up to 8 km in width elsewhere (cf. Fig. 2.1). Its present name in the Kalibangan region is the Ghaggar but downstream in Cholistan (Pakistan) it is known as the Hakra. Still further down, in Sindh, it goes by yet different names, such as the Raini, Wahinda and Nara. There is geomorphological evidence to show that the river fell into the Rann of Kachchha, an arm of the Arabian Sea (Fig. 2.2).[1] However, it is very difficult to find out why and when this same river was given these altogether different names in the various regions. And more important is the question: What was its name when it was flowing and was the life-line of the Early and Mature Harappan people whose settlements, dating back to at least the fourth millennium BCE, prospered all along its bank?

Perhaps we have to get back to ancient Indian literature in search of the answer. The earliest text, the *Ṛigveda*, has a very famous hymn known as the *Nadī-stuti*, i.e. 'Prayer to the Rivers'. Its verses, relevant to the present context, *viz. RV* 10.75.5-6, run as follows:

Imam me ***Gaṅge Yamune Sarasvati Śutudri*** *stomam sachatā Paruṣṇyā/*

Asiknyā Marudvṛidhe Vitastyā Ārjikīye śṛiṇuhyā Suṣomayā //5//

Tṛiṣṭāmayā prathamam yātave sajūḥ Susartvā Rasayā Śvetyā tyā/

tvam Sindho Kubhayā Gomatīm Krumum Mehatnvā saratham yābhiriyase //6//[2]

O Gaṅgā, Yamunā, Sarasvatī, Śutudrī (Sutlej) and Paruṣṇī(Ravi), O Marudvṛidhā with Asiknī (Chenab), O Arjikīyā with Vitastā (Jhelum) and Suṣomā (Sohan), please listen to and accept this hymn of mine. [5]

O Sindhu (Indus), flowing, you first meet the Tṛīṣṭāmā (and then) the Susartu, the Rasā, and the Śvetā (Swat), and thereafter the Kubhā (Kabul), the Gomatī (Gomal), the Krumu (Kurram) with the Mehatnu; and (finally) you move on in the same chariot with them (i.e. carry their waters with you). [6]

From the foregoing it would be seen that during the Ṛigvedic times there flowed a river called the Sarasvatī, **between** the Yamunā and the Sutlej. And even today there flows a river called the Sarasutī (=Sanskrit Sarasvatī) between the aforesaid two rivers.It now originates at the foot of the Siwalik hills and flows in a southwesterly direction in Haryana, passing by Pipli, Kurukshetra and

[1] Louis Flam. 1999. 'The Prehistoric Indus River System and the Indus Civilization in Sindh', *Man and Environment*, Vol. XXIV, No. 2, pp. 35-69.

[2] It is well known that Griffith's translation is faulty at places. I, therefore, give my own.

Fig. 2.1 *The Saraswati Basin in the 3rd Millennium BCE*

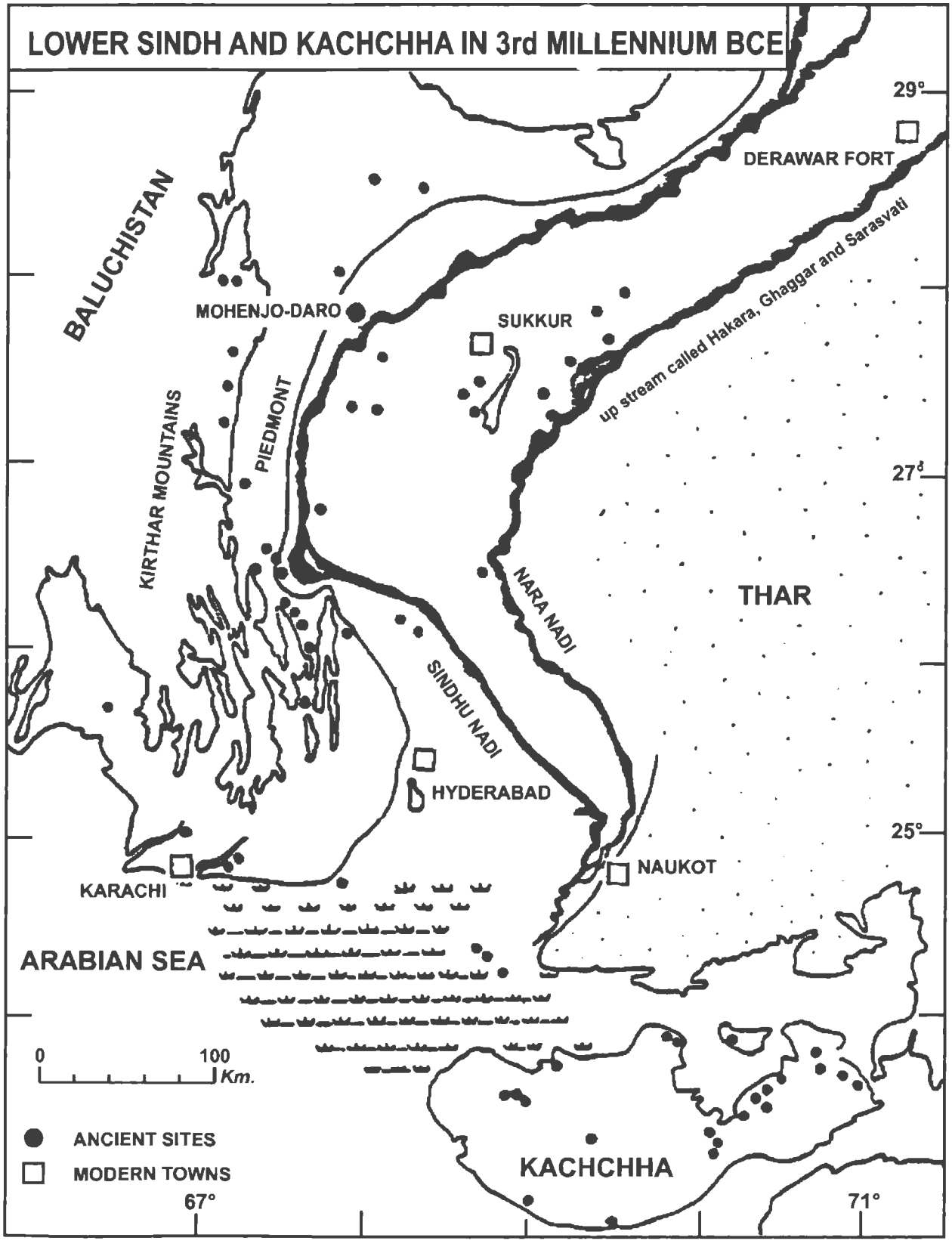


Fig. 2.2 *Lower Sindh and Kachchha in the 3rd Millennium BCE*
(After Louis Flam 1999)

Pehowa. Thereafter it joins the Ghaggar and the combined Sarasvatî-Ghaggar stream dries up near Sirsa. Beyond that it is only the dry bed that is identifiable, through Rajasthan, Cholistan and Sindh down to the Rann of Kachchha, as already mentioned earlier.

A question may well be asked: Since as of now the Sarasvatī-Ghaggar combine does not carry plenty of water and dries up beyond a certain point, how come that the dry bed is so wide, sometimes, as already stated, up to 8 km? In search of the answer, we have once again to get back to the *Ṛigveda*. Verse *RV* 6.61.2 states:

iyam śuṣmebhirbisakhā ivārujat sānu girīṇām taviṣebhirūrmibhiḥ/
pārāvataghnīmavase suvṛiktibhiḥ Sarasvatīmā vivāsema dhītibhiḥ//

This (Sarasvatī river) has shattered the mountain peaks with her fast and powerful waves, just (as easily) as one uproots the lotus stems; let us invoke her, who strikes what is far and near, with holy hymns and prayers.

Again, *RV* 6.61.8 endorses that: *yasyā ananto arhutastveṣaścariṣṇurarṇavaḥ / amaścharati roruvat //*

Whose (i.e. of the Sarasvatī) boundless, impetuous and swift-moving flood gushes forth with tempestuous roar.

From the foregoing it would be abundantly clear that the Ṛigvedic Sarasvatī had plenty of water in it, so much so that its fast and powerful currents could sometimes even shatter the peaks of mountains.

That this river flowed all the way down to the sea is also duly vouchsafed by the *Ṛigveda*. Verse 7.95.2 very clearly states –
ekāchetat Sarasvatī nadīnām śuchir yatī giribhya ā samudrāt /

Purest amongst all the rivers and vibrant, **the Sarasvatī moves on from the mountains to the ocean** (cf. Figs. 2.3 and 2.2).

It may also be pointed out that the *Pañchaviṁśa Brāhmaṇa* (XXXV.10.16) refers to the drying up of the Sarasvatī. Thus, the literary data fully corroborate the presence of tremendous amount of water in the Sarasvatī river in ancient times as well as its subsequent drying up.

From where did the Sarasvatī get its water?

The next question obviously is: What was then the source of the immense water-supply to the Sarasvatī? In this connection many suggestions have been made, one of which is that the Yamunā as well as the Sutlej had anciently joined the Sarasvatī and hence the inordinate volume in the last-named river. However, not all scholars accept this proposition. In respect of the Yamunā it has been held that it flowed through the present-day dry channel of the Dṛiṣadvatī, a tributary of the Sarasvatī, thus feeding the latter. Against this proposition, Marie-Agnis Courty raises quite a few objections. The most significant of these is the fact that the Yamunā has well developed terraces in its upper reaches, which shows that its present course is very ancient, dating back to the Pleistocene times or at the latest to the Early Holocene. This would not support the view that the Yamunā flowed via the Dṛiṣadvatī in the fourth millennium BCE – time of the Early and Mature Harappan occupation of its

In search of the source of this once-mighty river, these geologists draw our attention to the Tons basin where quartzite and metamorphic rocks abound. They then aver: 'All the evidences point to only one conclusion that the present-day Tons was in fact Vedic Sarasvati in its upper reaches.' (ibid., p.16).

After a further study of the region, these geologists produced a map which shows that the ultimate sources for this Vedic Sarasvatī were what are known today as the Sarasvatī, Jamadar, Supin and Manjee Glaciers, supplemented by Rupin and Nargani Glaciers. All these glaciers melted near Naitwar and the river thus formed moved first in a southwesterly direction and then in the westerly. Breaking through the Siwaliks near Adh Badri, it finally made its mighty descent on the plains (Fig. 2.3). This, in brief, is the story of perennial water supply to the once mighty Sarasvatī which is now represented by mere dry beds, though, as already stated, these are at places as wide as 6-8 kilometres.

HOW AND WHEN DID THE SARASVATĪ DRY UP?

A very relevant question that may now be asked: If the Sarasvatī was such a mighty river, how did it dry up? The answer, again, had to be sought through an investigation of the Himalayan Terrain, which the afore-mentioned geologists, Puri and Verma, verily did. According to them, there took place a major seismic upheaval in the Himalayas, as a result of which there arose the Bata-Markanda Divide, nearly 30 metres in height (Fig. 2.4). It blocked the passage of the Sarasvatī, which could no longer flow westwards. Since water must find its way out, it flowed backwards and, taking advantage of the Yamunā Tear opening, joined the Yamunā river. Thus ended the glorious history of the river long-venerated by the Ṛigvedic Aryans.

In this context attention must be drawn to some very telling evidence from the Ghaggar-Sarasvatī bed itself at Kalibangan. When the excavations over here were in progress, we were naturally keen on verifying locally the facts about the drying up of the river, since it was obvious to us that the massive settlement at Kalibangan could not have flourished without the adjacent river having been alive and active. With this end in view, a project, combining the efforts of the Archaeological Survey of India, Geological Survey of India (represented by Shri R.K. Karanth) and an Italian firm named Raikes and Partners (headed by Mr. R.L. Raikes) was set in motion. Four bore-holes were dug, one of which lay in between KLB-1 and KLB-2, though close to the river-bank (Fig. 2.5), and three in the river-bed itself, located at a distance of 300 metres from one another towards the centre of the bed. All things apart, the most revealing fact was that the greyish sand encountered in these bore-holes, at a depth of about 11m below the present flood-plain, was 'very similar in mineral content to that found in the bed of the present-day Yamunā.'[6] This confirms the findings of Puri and Verma that the source of the Ghaggar (Sarasvatī) lay high up in the Himalayas from where the Yamunā also originated, thus making the sand similar in both the cases. Further, as Raikes has very aptly captioned his paper just referred to, viz. 'Kalibangan: Death from Natural causes', the Harappan settlement at Kalibangan came to a sudden end because of the drying up of the Ghaggar, even though it was still in a Mature stage and not decaying and ending up in a normal process.

[6] Robert Raikes, 1968. Kalibangan: Death from Natural Causes. *Antiquity*, XLII: 286-91.

Middle	TF-139	Charcoal	3775±100 BP 1825±100 BCE	3880±105 BP 1930±105 BCE	1 Sig BCE 2391(2192,2157,2147) 2033 2 Sig BCE 2467(2192,2157,2147) 1898
Middle	TF-151	Charcoal	3800±100 BP 1850±100 BCE	3910±105 BP 1960±105 BCE	1 Sig. BCE 2450(2200) 2041 2 Sig BCE 2489(2200) 1934
Middle	TF-948	Wood Charcoal	3815±100 BP 1865±100 BCE	3930±105 BP 1980±105 BCE	1 Sig BCE 2454(2274,2243,2205) 2046 2 Sig BCE 2556(2274,2243,2205) 1946
Middle	TF-147	Charcoal	3865±100 BP 1915±100 BCE	3980±105 BP 2030±105 BCE	1 Sig BCE 2465(2321) 2144 2 Sig BCE 2580 (2321) 1987
Middle	TF-145	Charcoal	3895±100BP 1945±100 BCE	4010±105 BP 2060±105 BCE	1 Sig BCE 2481(2399,2376,2355) 2198 2 Sig BCE 2613(2399,2376,2355) 2039
Middle	TF-608	Charred Wheat	3910±110 BP 1960±110 BCE	4025±110 BP 2075±110 BCE	1 Sig BC 2558(2452,2423,2405) 2200 2 Sig BCE 2853(2452, 2423,2405) 2038
Early	TF-947	Wood Charcoal	3765±85 BP 1815±85 BCE	3875±90 BP 1925±90 BCE	1 Sig BCE 2289(2184,2163,2144) 2034 2 Sig BCE 2458(2184, 2163,2144) 1930
Early	TF-163	Charcoal	3910±100BP 1960±100 BCE	4030±105 BP 2080±105 BCE	1 Sig BCE 2553(2452,2423,2405) 2203 2 Sig BCE 2837(2452, 2423, 2405) 2044
Early	TF(BS)-163	Charcoal	3925±125BP 1975±125 BCE	4040±130 BP 2090±130 BCE	1 Sig BCE 2573(2456) 2200 2 Sig BCE 2867(2456) 2033
Early	TF-607	Charred Wheat	3930±120 BP 1980±120 BCE	4040±125 BP 2090±125 BCE	1 Sig BCE 2573(2457) 2203 2 Sig BCE 2866 (2457) 2038
Early	TF-160	Charcoal	4060±100BP 2110±100 BCE	4180±105 BP 2230±105 BCE	1 Sig BCE 2863(2577) 2464 2 Sig BCE 2886(2577) 2313

In spite of all the laurels that may be showered on the C-14 method of dating and its end-products, it is always necessary to take these dates with a pinch of salt. This becomes clear when we cast a closer glance at them. Thus, for example, a 25th Century BCE horizon is indicated for all the three levels, viz. Early (Sample Nos. TF–163, TF-(BS) 163 and TF–607), Middle (Sample No. TF-608) and Late (Sample Nos. TF–25, TF-153). However, we need not be so despondent, since if we go into the majority of the dates in a given level, we find that the picture is not so bleak. Thus, for the Early Levels, out of the five dates only one (TF-947) is in 22nd Century BCE, while three (TF-607 and TF-163, TF-(BS) 163 are in the 25th Century BCE, and one (TF-160) in the 26th Century BCE. This would imply that the Mature Harappan settlement at Kalibangan may have begun some time in the 26th Century BCE.

Now to the likely date of the end of the Mature Harappan settlement at Kalibangan. Here we may straightaway write off AD 80 (TF-599) since it requires no explanation to do so. One would have given some credence to the two late dates, viz. 1516 BCE (TF-244) and 1378/1345/1319 BCE (TF-138), but these are heavily out-voted by ten other dates, viz. TF-942, TF-25, TF-153, P-481, TF-605, TF-150, TF-149, TF(BS)-149, TF-946 and TF-143. Of these ten dates, the first nine fall between the 26th and 20th Century BCE and only one (TF-143) falls in the 19th Century BCE. The consensus of all these dates would, thus, indicate that the end of the Mature Harappan settlement at Kalibangan is not likely to be later than the 20th Century BCE.

KALIBANGAN : 1960 - 69

DISTRICT HANUMANGARH, RAJASTHAN

KLB- 1, TRENCH XJ-I, XE-I TO E-I

SECTION, LOOKING NORTH

1 0 1 2 3 4 5 METRE

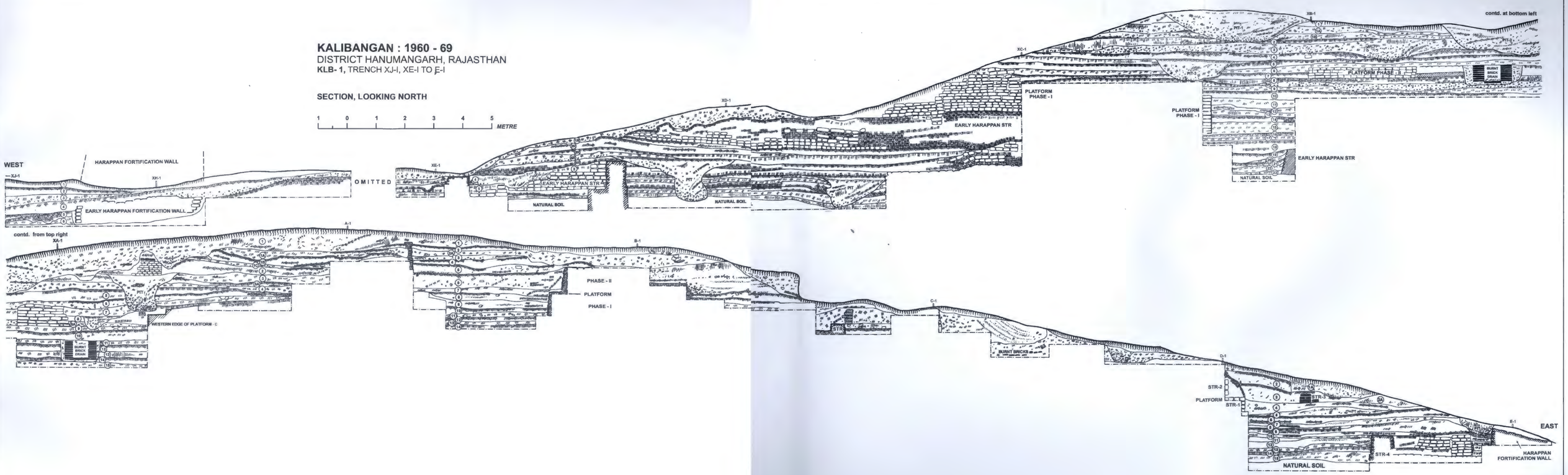


Fig. 5.2

TRENCH ZD-2 AND ZD-3 QD-2, SECTION LOOKING WEST, Fig. 5.4

This is an important section looking west showing two phases of the Harappan fortification wall which were built on the top of layer (13) having 12 courses of bricks of size of 20x40x10cm. This is the first phase of the fortification. The second phase of the Harappan fortification begins from the top of layer (9).

In this section layer (1) is humus having a 30 cm. deposit. Layer (2) consists of 40 cm. loose earth, bone and charcoal pieces. Layer (3) is a loose deposit of 40 cm. with bone pieces and brick bats. Layer (5) is made of loose ashy patches, bone pieces, and brick bats. Layer (6) is loose clay having pot sherds with a thickness of 35 cm. having water deposition marks. Layer (7), having a deposit of 40 cm. with compact earth and bone pieces. Layer (8) consists of earth with ash and charcoal loose in nature having a deposit of 30 cm. The upper most layers strike against the burnt brick structure over the rampart while layers (4) to (8) are contemporary to Phase II of the fortification wall. Layer (9) is compact earth with water marks having 40 cm. thick deposit. Layer (10) is a compact layer with more water marks having a thickness of 40 cm. Layer (11) contains debris material and 25 cm. thick. Layer (12) has loose patches with charcoal. It is 40 cm. thick. Layer (13) consists of loose earth and has been exposed to a width of 24 cm.

TRENCH ZE-4 AND ZF-4 SECTION LOOKING NORTH, Fig. 5.5

This is a section, which clearly shows the gap between the platform and the fortification wall. The gap is 2.50 m wide filled with compact earth, sand and potsherds. While layer (1) seals the Harappan platform and the fortification wall having a batter in angle 80°. The Harappan wall is having thirteen courses in all. This wall stands over an Early Harappan wall. The height of the wall is 1.60 m while the platform has a height 1.50 m. Layer (1A) is a local layer. Layer (2) is a loose deposit having a thickness of 80 cm. followed by layer (3) which is 70 cm thick and is composed of compact clayey earth. The layer is just above the Natural Soil. There is an Early Harappan wall having two courses in the area between the gap.

(For Concordance of Layers see Fig. 5.6)

2. STRUCTURES, Fig. 5.7

(A) The Fortification Wall (Eastern side, Northern side, Western Side, Southern Side), Bastions, Gateways and Entrances, Bipartite Wall

(a) The Bipartite wall
(b) Bastions
(c) Gateways
(d) Entrances

Catalogue of Structures Trench wise : A-5, A-6, B-1, B-5, B-6, C-6, D-1, D-6, XA-1, XA-4, XA-5, XB-1, XB-6, XC-1, XC-6, XD-6, YA-1, YA-4, YC-2, YG-11, YG-12, YG-13, YG-14, YG-15, YG-16, ZA-8, ZA-9, ZB-9, ZC-1, ZC-11, ZF-8 and ZG-11.

(B) Northern Rhomb, Elite Residential Area

Group A	House complex, Drain
Group B	House complex
Group C	House complex
Group D	Stray walls and steps on Bipartite Wall

Catalogue of structures Trench wise : ZA-7, ZA-8, ZB-8, ZB-9, ZC-7, ZC-9, ZD-7, ZD-9, ZE-7 and ZE-9

fortification-wall at some places, notably in the central part of its length, showed a battered angle both on the exterior and the interior faces, the taper being obtained by thick coating of mud plaster. At the extant highest point, the wall was found to stand to a height of 3.40 m., with its outer face (in the earlier phase) battered back to an angle of 34°. The thickness of the wall was available at a couple of places, it still requires to be properly determined, keeping in view the projections and the salient (Figs. 5.12 and 5.12(a)). The western end of this wall is incompletely preserved, both its inner and outer angles being absent. Nevertheless, at the north-western turn, remains of an impressive structure, perhaps part of a corner-tower with a battered exterior were brought to light. This construction is in the nature of a reinforcement to an earlier damaged or eroded structure and both by the size of the bricks used and by the stratigraphic evidence, belonged to the second phase of the fortification-wall.

WESTERN SIDE

Despite patient search, no traces of the fortification-wall have been found on the western side beyond the turn of the corner tower. It may be recalled that no turning or re-entrant of the fortification was noticed at the south-western corner as well. The western side of the mound is badly riven by flood-water and modern depredations. It is likely, therefore, that all vestiges of the fortification-wall on this side have been completely lost due to erosion.

On the western side, however, further attempts to trace the outline of the Harappan fortification wall, further west of the already-trenched area, revealed the existence of an Early Harappan fortification-wall. While exposing its full width, typical Harappan bricks (size: 40x20x10 cm.) were found well laid on the outer side indicating that the Harappans had used the existing Early Harappan fortification-wall on this side for raising their citadel-fortification. At some places, the eroded face of the existing Early Harappan fortification-wall, up to the height it was exposed, seems to have been reinforced by the Harappans by some sort of a mud-brick revetment. Whereas the alignment of the outer face of the Harappan fortification wall on this side, based at some places on the bottom course alone, could thus be recovered, its inner face and consequently its original width, being insufficiently preserved, remained unknown. However the remains of the fortification in its eroded and reinforced position is about 2 m in the basal stage.

SOUTHERN SIDE

On the southern side, the Early Harappan (Period I) fortification wall was exposed to a length of about 35 m. from the south-western end, beyond which distance it was found to be cut for the foundations of the Harappan fortification wall entrance complex and the salient. The outside face of this wall seems to have originally been plastered with mud, patches of which were still found at places.

Excavations at this citadel-mound had already indicated the existence of the fortification wall on the northern side of the northern half, which was thus shown to be similarly enclosed as the southern half. The entire length of the fortification wall on the northern side, including the north-western corner bastion, was exposed, the details of the north-eastern corner, being insufficiently preserved, remaining undetermined. The wall was found to run parallel to the partition-wall up to a length of about 85 m from the eastern

Orientation of longer axis is north-south. Dimension of bricks: (a) length 40 cm (b) width 20 cm (c) thickness 10 cm.

7. TRENCH NO. XB-1

1. Location KLB-1 Square No. XB-1 Quadrant 2
2. Type of structure: Indeterminate
3. Stratigraphic position : Sealed by (1)
4. Period and Structural phase: Harappan, Phase II
5. Measurement of structure : (a) length .92 m (b) width .42 m (c) height 20 cm
6. Number of courses: Three
7. Masonry and bond: Irregular
8. Composition of mortar: Compact clay
9. Composition of plaster: Plaster not found
10. Orientation of longer axis: North to south
11. Nature of bricks used: Kiln burnt-bricks
12. Dimension of bricks: (a) length 25 cm (b) width 12.50 cm (c) thickness 7 cm
13. State of preservation: Very well preserved bricks with thick mortar lines.
14. Shape and other distinguishing features: The structure coming out of the section looking north ends abruptly.

8. TRENCH NO. XB-6

1. Location KLB-1 Square No. XB-6 Quadrants 3 and 4
2. Type of structure: Fortification Wall (Mass of mud bricks)
3. Stratigraphic position : Sealed by surface
4. Period and Structural phase: Harappan, Phase II
5. Measurement of structure : Not determined
6. Number of courses : Not discovered
7. Masonry and bond: Not discovered
8. Composition of mortar: Brown mortar
9. Composition of plaster: No plaster
10. Orientation of longer axis: North-south
11. Nature of bricks used: Brownish red mud-brick
12. Dimension of bricks: (a) length 40 cm (b) width 20 cm (c) thickness 10 cm, depth below surface 40 cm (a) length 30 cm (b) width 15 cm (c) thickness 7.5 cm, depth below surface 53 cm
13. State of preservation: Very bad

9. TRENCH NO. XC-6

1. Location KLB-1 Square No. XC-6 Quadrant 2
2. Type of structure: Fortification Wall on plan
3. Stratigraphic position : sealed by surface humus
4. Period and Structural phase: Harappan
5. Measurement of structure : (a) length 4 m (b) width 2.50 m (c) height not discernable
6. Dimension of bricks: (A) (a) length 38 cm (b) width 19 cm;
   (B) (a) length 34 cm (b) width 17 cm;
   (C)(a) length 34 cm (b) width 17 cm
7. State of preservation: (A) + (B) type of bricks are of light yellow colour with brown mortar. (C) type of bricks are of brown colour with same brown mortar
8. Shape and other distinguishing features : It is available on plan only

10. TRENCH NO. YC-2

1. Location KLB-1 Square No. YC-2 Quadrants 3 & 4
2. Type of structure: Platform

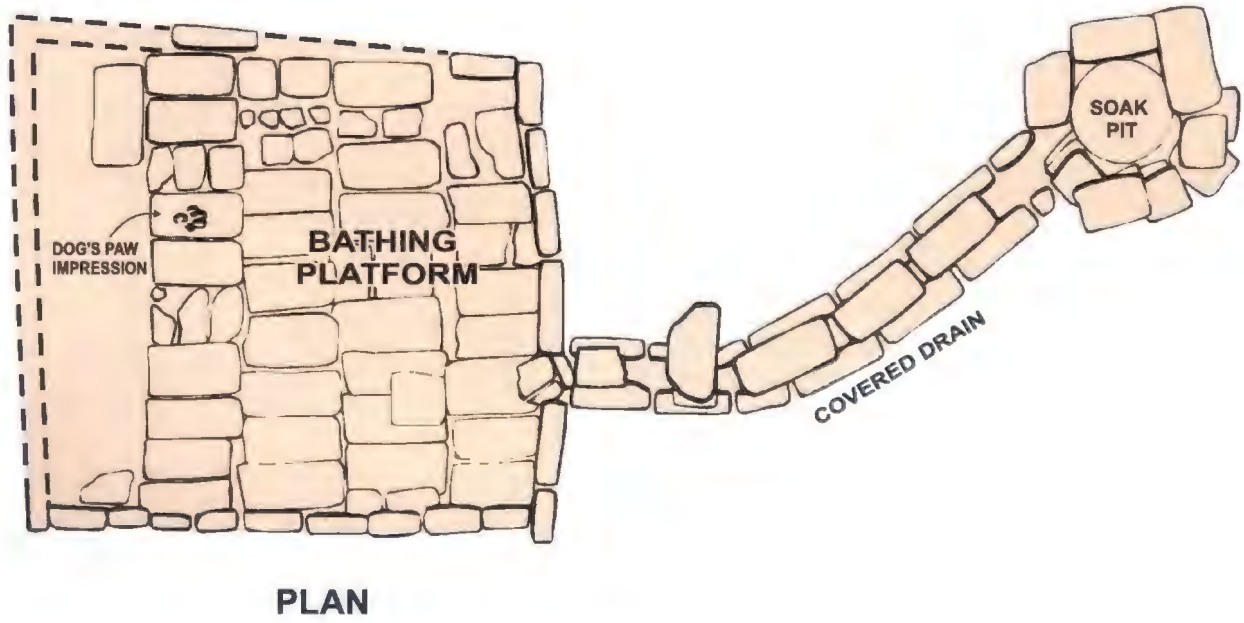
KALIBANGAN : 1960-69

DISTRICT HANUMANGARH, RAJASTHAN

KLB-1, TRENCH ZC-8, Qd.-3

BURNT-BRICK BATHING PLATFORM
WITH COVERED DRAIN AND SOAK PIT

PHASE.. IV



PLAN

Fig. 5.23

Group G: Platform B and Platform C Wall, series of drains and bathing platforms

Group H: Drains, well, ritualistic altars and a later drain cutting it

Group I: Bathrooms and Platforms

Group J: Drains & structures

Group K: Drain (long) steps?

Group E : Platforms (Figs. 5.29, 5.30 and 5.31)

These platforms were built in two phases. One first phase was built on layer 18, Layers 17, 16, 15, 14, 13, 12 and 10 are contemporary and layer 9 seals it. The latter platforms are built on layer 8. Layers 7, 6, 5 and 4 are contemporary and layer 3 seals it (see section looking north)

The mud brick platform in the north eastern part of the southern half of the citadel was determined, on further excavation found to be 75.70 m. x 24 m (earlier reported 60 m. in *Indian Archaeology* - when not exposed fully), The longer axis being along east-west. Its three angles along could be recovered, the 4th viz. north-western, having been eroded away. The platform has two structural phases. The width of the passage running between this platform and other lying to the south, was found to be 10 m. In its earlier phase part of the passage was seen to be paved with mud bricks. On the extent the platform obviously belonging to the upper levels of occupation was found.

There were no residential buildings in this area. The platforms are marked as A, B, C, D, E, and F in the plan. The available sizes along with the passage are as below belonging to both phases (as available):-

No. of Platform	Size	Height
A	75.70 m x 24 m Passage 10 m (earlier)	1.90 – 2.67 m
B	30 x 20 m Passage 3.40 m (later)	1.20 – 2.50
C	30 m x 11 m Passage 5.30 m (later)	1.30 – 2.40
D	30 m x 10.60 m Passage 3.40 m (later)	1.20 – 2.30
E	30 x 25 m Passage not clearly discerned	1.15 – 2.20
F	12 x 11 m Passage not clearly discerned	1.20 – 2.30

(i) Group E: Well The platform which is situated in trench YA-4 has a well of baked wedge-shaped bricks laid horizontally. It is sealed by layer 5. The width of the ring of the well is 30 cm. and supported by four radial walls having a width of 27 cm. The inner diameter of the well is 1.25 m and outer diameter is 1.85 m. It appears that at the outset of the buildings the well a huge foundation was dug and these supporting radial walls were constructed to give further strength to the wall. The well had 86 available exposed courses and so the radial walls but the bricks have been robbed. This has been an unusual construction. It appears that after the construction of the radial walls the in between space was filled up gradually with the gaining of additional height during the

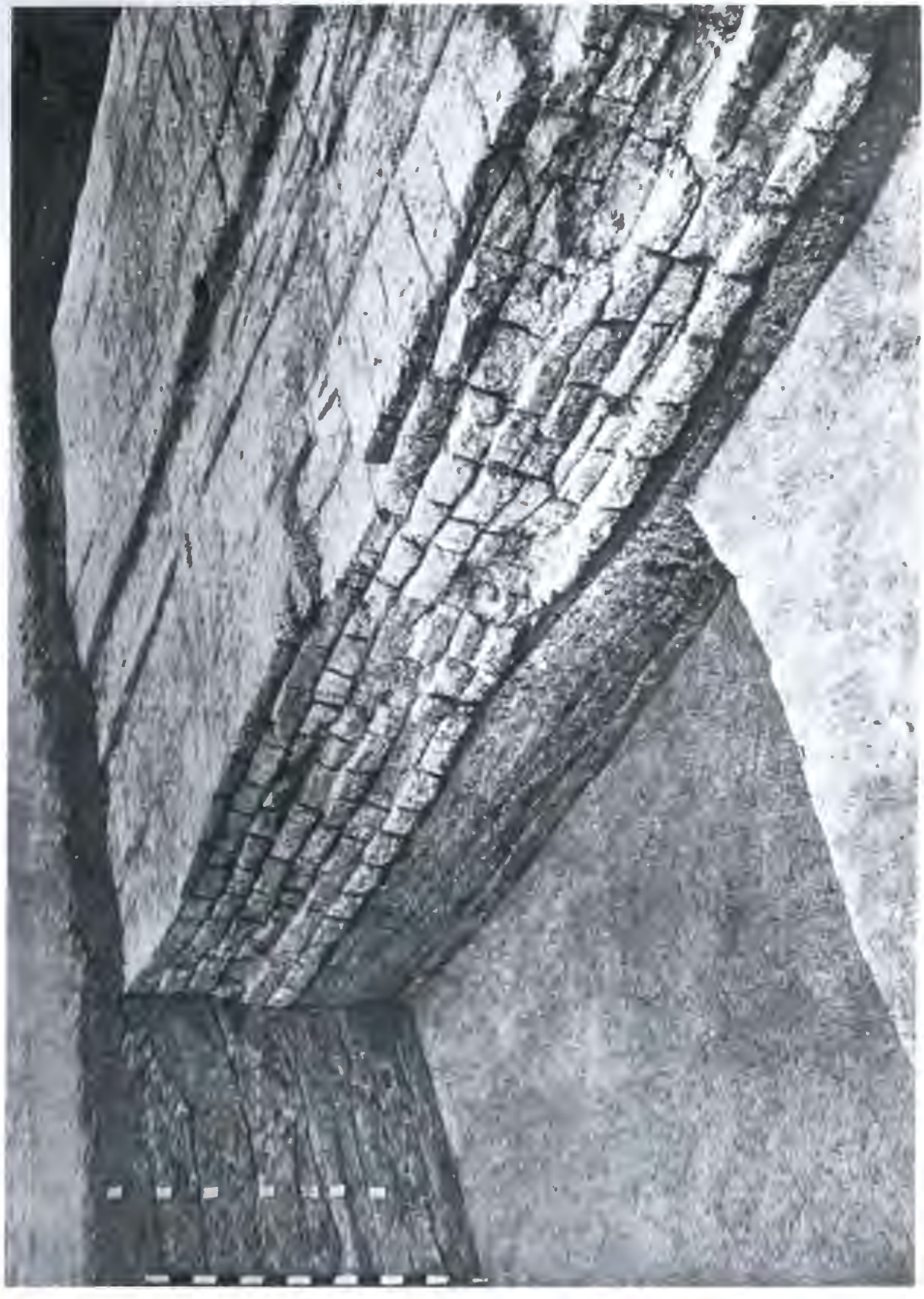


Fig. 6.9 KLB 2 *Fortification wall on the northern periphery of the mound*